Elgar Encyclopedia of Innovation Management

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Elgar Encyclopedia of Innovation Management

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PREFACE

The *Elgar Encyclopedia of Innovation Management* is the culmination of a two-year collaborative effort. It brings together the contributions of 115 expert authors, representing a wide range of academic careers, from researchers to full professors. This Encyclopedia aims to extend and redefine the field of innovation management (IM) by addressing contemporary, emerging, and entirely new topics through a holistic, inclusive and ethical lens. We believe this work is a significant step in providing scholars and practitioners with a comprehensive resource to inspire reflection, dialogue, and exploration of both foundational knowledge and new perspectives in IM.

The term innovation is derived from the Latin verb *innovare*, which means to renew or alter. In other words, it conveys the meaning of making something novel. Management originates from the Italian verb *maneggiare*, meaning to handle. This meaning has expanded over time from handling tangible tasks to managing people, activities, and enterprises. This Encyclopedia extends an understanding of IM further by exploring the multifaceted nature of organizing, managing and leading innovation in companies and other organizations, both locally and globally.

The genesis of this project stems from the University of Eastern Finland Business School's 15-year commitment to developing the interdisciplinary area of IM teaching and research. This longstanding dedication to fostering innovation in higher education has driven the need for an expansive and forward-thinking resource such as this Encyclopedia. It embodies the spirit of collaboration and openness at the core of innovation, providing in-depth coverage of foundational topics such as creative destruction, open ecosystems, and innovation paradoxes, while also venturing into new areas such as impact investing, radical creativity, and 'dark innovation'.

As innovation increasingly intersects with issues of diversity, responsibility, sustainability, and global ethics, this Encyclopedia aims to serve as a one-stop guide to understanding IM from new perspectives such as frugal innovation. It also introduces less-familiar approaches and methods, such as process philosophy and sociomateriality, that can shape future research on innovation and IM. By doing so, we aim to support the wide-ranging interests of innovation researchers, students, teachers, and practitioners.

For researchers, this Encyclopedia offers cutting-edge theories, methods, and substance that push the boundaries of IM. For students, it serves as a comprehensive guide to essential concepts, supplemented with up-to-date readings and case studies. Teachers will find a wealth of interdisciplinary material for developing curricula on innovation, while practitioners will gain valuable insights into managing innovation in local and global contexts across sectors.

We extend our heartfelt thanks to the authors who generously contributed their time, knowledge, and expertise to this project. We also express deep gratitude to the dedicated reviewers of each entry, whose constructive and critical insights were invaluable in shaping the final product. Special thanks go to the publisher, Edward Elgar, and to our editor, Daniel Mather, for his consistently friendly support and tireless dedication in guiding this project to completion. Finally, we wish to thank Eeva Aromaa, our editorial manager at the University of Eastern Finland Business School, for handling the often unseen but crucial operational work that held everything together.

With great enthusiasm, we present this Encyclopedia as a vital resource that we hope will inspire and advance the field of innovation management for years to come.

Introduction: possibilities and limits of innovation management

Päivi Eriksson, Tero Montonen, Pikka-Maaria Laine and Anna Hannula

In the organizational milieu, innovation management (IM) is closely linked to fostering economic growth and enhancing competitiveness. Historically, the military sector has been a fertile ground for innovation, and it was predominantly in the aftermath of World War II that large corporations and governmental bodies began to increase their investments in scientific and technological advancements. This period witnessed science, technology and innovation as critical drivers of prosperity and competitive superiority in post-war economies. Over the past decades, innovation scholarship has evolved to emphasize not only economic outcomes but also openness and collaboration across sectors. As organizations increasingly rely on external knowledge and partnerships, the focus of IM research and practice has shifted from closed, internal research and development (R&D) processes to more open and networked approaches. Furthermore, innovation is currently perceived as a systemic process, involving ecosystems and multiple stakeholders who contribute to creating complex, adaptive systems.

Innovation research acknowledges that social–cultural dynamics, such as creativity and tension, as well as diversity and inclusion, are core ingredients of novelty. This highlights how IM is shaped not only by creativity and inclusivity but also by inequalities and power relations. Power dynamics within organizations and the broader society influence who may participate in innovation processes, who can lead them and whose voices are either amplified or silenced. Challenging the dominant IM research agendas based only on competitiveness, efficiency and profit, the perspectives of marginalized groups can spur alternative approaches to IM and oppose institutionalized practices. By examining innovation through the lenses of power and resistance, scholars are acknowledging the need to address practical and empirical, but also ontological and epistemological inequalities in innovation.

Although the era after World War II has heralded significant progress and prosperity, particularly for the advanced societies of the Global North, it has also marked the beginning of the so-called Great Acceleration. This period has been characterized by humanity's belief in its omnipotence, often operating beyond the Earth's ecological limits. According to Richardson and colleagues' (2023) research findings, humanity has transgressed six of the nine planetary boundaries: climate change, biodiversity loss, land system alteration, freshwater depletion, biochemical flow disruption and the proliferation of novel entities such as microplastics and nuclear waste. In parallel with these ecological challenges, global inequality continues to escalate. Historians have documented how colonial exploitation of resources from the Global South underpinned the prosperity of the Global North. Moreover, Hickel and colleagues (2022) have quantified the continuous benefits that advanced economies derive from the unequal exchange of goods and labour with the Global South.

The objective of the *Elgar Encyclopedia of Innovation Management* is to provide scholars and practitioners with a comprehensive, forward-looking resource that inspires reflection and dialogue across various sectors of society. Acknowledging the roots of current problems as well as future possibilities, the concept and practice of innovation and IM can be enriched by new philosophical, reflexive and speculative approaches that challenge traditional understandings of innovation. These approaches not only deepen the understanding of innovation but also open up new ways of thinking about issues such as aesthetics in the IM context. New theorizations, philosophies and methods are needed to understand the complex world of innovation and to enable IM to renew and reinvent itself.

This Encyclopedia is divided into five sections that cover classic, emerging and entirely new approaches to innovation and IM, conceptualized as a constantly evolving field of expertise. In the following, we introduce all topics within each section (entry titles are provided in the text in italic).

Part I: science, technology and innovation management

The first part of the *Elgar Encyclopedia of Innovation Management* focuses on the connections between science, technology and innovation management in both the past and the present times. Foundational to the first entry – *A Broad Perspective on Innovation Management* – are the different forms of innovation, including incremental, radical and revolutionary. These classifications help researchers distinguish between varying degrees of technological and organizational changes. Incremental innovations focus on gradual improvements, while radical innovations involve substantial shifts in products, services and processes. Revolutionary innovations disrupt established industries and markets, possibly creating entirely new paradigms. The concept of *Creative Destruction* – the broader context for which is provided in the entry on *Joseph Schumpeter* – describes the process through which new innovations displace existing ones, leading to shifts in industries and markets. This idea has been widely studied to understand the cyclical nature of economic and technological changes. Similarly, *Drucker's Seven Sources of Innovation* provides a framework for analysing potential drivers of innovation, such as shifts in industry structures, market changes, or technological advancements.

Innovation is linked to scientific discovery and technological development. In *Three Legendary Innovators*, Thomas Alva Edison, John von Neumann and Claude Shannon exemplify the role of curiosity-driven innovation in advancing scientific knowledge and practical applications. These innovators contributed to advancements in technology and information theory, and their work remains a subject of study for understanding how individual creativity and scientific inquiry intersect. *Academic Entrepreneurship* examines how universities and research institutions engage in *Science Commercialization*. Research in this area explores the mechanisms through which scientific discoveries are exploited for their practical applications in marketable technologies; it also studies the role of academia in fostering innovations beyond traditional research environments. Research into challenges and contradictions in innovation highlights various *Innovation Paradoxes*, which refer to the tensions and oppositions that arise in the innovation process. For instance, organizations may face challenges in balancing stability with the need for continuous innovation. These tensions are compounded in *Institutional Complexity*, where conflicting interests influence innovation processes. The entry on *Negative Consequences*, including unintended social, environmental and economic impacts on innovation, offers insights into how innovation can lead to uneven distribution of benefits and risks and how these outcomes can be better understood and managed.

The emergence of new technologies, such as *Artificial Intelligence* (AI), has prompted research on their impact on innovation. IM research further explores how *Business Models* facilitate the integration of new technologies into markets and how businesses adapt to technological changes. *Agile Human Resource Management* examines how organizations respond to rapidly changing environments, particularly in innovation-driven sectors. The role of *Sales in the Innovation Process* is another area of interest, focusing on how innovative products and services are introduced to markets. The *Capability Approach* emphasizes the importance of understanding the resources and abilities necessary for sustaining innovation over time. Related to this is the study on *Employee-Driven Innovation*, which investigates how individual workers contribute to innovation efforts in organizations. Furthermore, research on *Pedagogies for Innovative Competencies* explores educational methods designed to develop creativity, critical thinking and problem-solving skills. These competencies are increasingly recognized as essential in innovation-intensive fields, and research in this area investigates how different pedagogical approaches influence the development of these skills.

Part II: open, collaborative and systemic innovation

The second part of the Encyclopedia focuses on the defining characteristics of innovation processes and their management. These processes are becoming increasingly decentralized, involving multiple stakeholders and crossing traditional boundaries. IM encompasses approaches that emphasize openness, collaboration across sectors and systemic innovation.

In this context, digital technologies are integrated into products, services, business models and IM practices, reflecting their influence. IM also deals with complex, interactive and systemic frameworks, such as innovation ecosystems. Within these ecosystems, firms engage in collaborative ventures with diverse stakeholders – including customers, competitors, academic institutions and start-ups – to co-create value within an interconnected network.

Digitalization and platform-based models have significantly impacted the innovation landscape, creating new opportunities for collaboration and systemic coordination. The entries on *Business-to-Business Platforms* and *Digital Platforms* provide information on how these online spaces enable organizations to share resources and collaborate across sectors, fostering innovation through interconnected networks. Within these frameworks, *Innovation Ecosystems* thrive, involving multiple players who work together to co-develop solutions. *Networked Innovation* explores how such ecosystems operate in a highly interconnected, digital world, breaking down silos and promoting shared problem-solving.

Collaboration between competitors and across sectors has emerged as a key theme in IM. *Coopetition* refers to the balance between cooperation and competition, where organizations collaborate on shared goals while maintaining the dynamics of rivalry. *Co-Creation in Private and Public Sector Contexts* focuses on collaborative innovation efforts involving stakeholders from both spheres. *Co-operative Innovations* examines how organizations develop joint solutions through cooperation. *Multi-Stakeholder Settings* highlights the involvement of various actors – government, private firms, non-profits and communities – in collective innovation processes. Ensuring that innovation benefits a broad range of societal groups is a growing focus of research. *Inclusive Creative City* models how urban environments foster creativity and innovation in ways that are accessible to all citizens. *Inclusiveness in Research and Innovation Settings* underscores the importance of involving diverse stakeholders in R&D processes, ensuring equity in access to resources and opportunities. *Social Acceptance* is crucial for the successful implementation of innovations, particularly in socially sensitive areas. The concept of *Moral Orders of Innovation* examines how ethical considerations shape the development and dissemination of innovations in society.

Organizations are adopting less rigid, more dynamic structures to facilitate innovation. *Less Hierarchical Organizations* highlights how flattened organizational structures enable faster decision-making and more collaborative innovation. *Public Sector Innovation* explores how government institutions and public services are embracing innovation to improve efficiency and service delivery. *Service Innovation and Service Design* focuses on how both private and public organizations are rethinking service delivery models to create more user-centric, innovative services. *Open Social Innovation* involves the use of open approaches to solve social problems, leveraging collective knowledge and engagement. *Open Innovation Ecosystems* extend this idea to collaborative innovation networks where openness and knowledge sharing are central to the development of new technologies and ideas. *Open Strategy* further examines how organizations can leverage open approaches in their strategic planning, ensuring a wider input of ideas and perspectives.

Part III: creativity, diversity and power in innovation

Innovation and IM do not only comprise a technical process but are also embedded in creativity, social dynamics and power relations. Creativity, diversity and power are core components of innovation in terms of producing something new. The third part of the Encyclopedia explores how diverse elements such as creativity, emotional states, diversity, gender and power shape the processes of innovation. It also highlights aspects of innovation and its management that have been bypassed, ignored or remained invisible to us. These include the affective and emotional aspects of innovation and creativity, as well as questions of diversity and power necessitated by persistent global and local inequalities, namely the lack of integration of previously marginalized groups in the innovation process. Innovation and its management are increasingly scrutinized from critical perspectives, fostering novel approaches to understanding and analysing innovation and knowledge generation. By comprehending these underlying influences, we gain richer insights into how innovation emerges and evolves across different contexts.

The role of creativity is central to innovation; thus, the entries on *Creativity* and *Radical Creativity* focus on how novel ideas emerge, particularly in environments that challenge the status quo. *Creative Teams* emphasizes the collaborative nature of innovation, where group dynamics and the integration of different perspectives foster the development of new ideas. Similarly, *Creative Environments* are explored by inquiring how physical, social and organizational settings can either support or hinder the creative process. Research in this area seeks to understand the conditions that maximize creative output and innovation potential within teams and organizations. Emotional and atmospheric factors also play a critical role in shaping creativity and innovation. *Affect and Creativity* investigates how affect intertwines with creative processes, while *Atmospheric Creating and Innovating* concentrates on the environmental and sensory experiences that contribute to innovation. *Harmonious Passion* examines how a deep but balanced passion for work can fuel sustained creative engagement, while *Emotions in Innovation Development* probes how sentiments guide decision-making and collaboration in innovative projects. *Reflective Design* adds another dimension by considering how the iterative and reflective nature of design thinking influences the development of innovative products, services and systems.

Innovation does not occur in a vacuum; it is shaped by social identities and power structures. *Gender and Gendering* explores the effects of gender dynamics on participation and leadership in innovation processes, while *Gender, Empowerment and Social Innovation* focuses on how gendered perspectives contribute to innovations that address social challenges. The entry on *Intersectional Lens to Innovation* broadens the view by examining how intersecting identities such as race, class, gender and age affect access to resources and opportunities in innovation. *Workforce Diversity* highlights the importance of different teams in generating a wider range of ideas and solutions. Likewise, *Youth-Driven Innovation, Engagement and Empowerment* emphasizes how young people contribute to and shape innovation efforts, while *Ageing and Innovation* delves into the overlooked contributions of older generations to innovative processes. *Dark Innovation* refers to hidden or unnoticed forms of innovation that are obscured by common biases and assumptions. It challenges conventional innovation research by revealing the limitations of current concepts, methods and techniques, which were designed with only certain kinds of innovation in mind, leaving others unrecognized. The dynamics of power and resistance are also critical to understanding the full scope of innovation. *Foucauldian Power and Resistance* examines how power relations within organizations and societies shape who are privileged to innovate and whose voices are heard in innovation processes. Finally, *Resistance* deals with how individuals and groups push back against dominant innovation agendas, creating spaces for alternative approaches and solutions.

Part IV: responsible and sustainable innovation

Responsible and sustainable innovation emerges as a crucial facet of IM in the context of escalating planetary crises. The fourth part of the Encyclopedia addresses the growing need for innovation and IM research that not only drives progress but also adheres to ethical standards, promotes inclusivity and ensures environmental sustainability and biodiversity. The responsible innovation framework considers the ethical implications of innovation, how it can support marginalized communities and the role of stakeholders in fostering sustainable solutions. The consideration of ethics and organizational frameworks lies at the core of responsible innovation. *Human Rights Responsibility* highlights the requirement for innovation to respect and promote human rights, ensuring that new developments neither cause harm nor marginalize vulnerable populations. *Responsible Research and Innovation* focuses on the importance of accountability and foresight in the research process, encouraging innovations that are socially responsible and ethically sound. Furthermore, *Organizational Capabilities for Responsible Innovation* examines how organizations can develop internal structures and competencies to support long-term, responsible innovation practices. *Impact Investing* has emerged as a new way of channelling the resources of financial markets towards addressing major societal challenges such as the climate crisis.

The global environmental crisis urges a re-evaluation of the purpose and nature of innovation and IM beyond single organizations or

ecosystems. It calls for a critical examination of the objective of innovation, the types of knowledge valued in the innovation process, the methods for developing innovation and the diverse range of actors involved in this endeavour. As the global community seeks alternatives to traditional growth models, *Innovation Beyond Growth* investigates how innovation can address societal needs without relying on unsustainable economic expansion. *Leadership for Biodiversity: A Radical Management Innovation* explores new forms of leadership that prioritize biodiversity and environmental stewardship, transcending the conventional goals of profit and success. *Radical Sustainability from the Global South* adds to this discourse by bringing forward sustainable innovations emerging from the Global South, often driven by necessity and resilience in resource-constrained environments. Addressing inequality through innovation is another key focus. *Frugal Innovation* points out cost-effective solutions that meet the needs of settings with limited resources. *Innovation and the Base of the Pyramid (BOP) Context* studies how businesses and organizations can innovate to serve the billions of people at the bottom of the economic pyramid. *Refugee Economic Integration* highlights how innovation can support the integration of refugees into host economies, offering pathways for economic inclusion and sustainability in humanitarian contexts.

The move toward sustainability is underscored by the adoption of new practices and competencies. *Social Enterprises* aim to create social and environmental value while remaining financially viable. *Circular Economy* promotes the redesign of industrial systems to eliminate waste and continually reuse resources, ensuring that innovation aligns with environmental sustainability. *Public Procurement for Sustainability* explores how governments and public institutions can drive sustainable innovation through their purchasing power, fostering markets for sustainable products and services. Sustainable innovation requires a foundational shift in education and skills development. *Ecosocial Education* investigates academic frameworks that promote ecological and social awareness, equipping future innovators with the knowledge to address complex sustainability challenges. *Enskilment* focuses on hands-on acquisition of skills, highlighting the importance of learning through practical engagement with sustainable practices and technologies. *Local Experimentation* illustrates how trial runs at the local level can foster sustainable solutions that are tailored to specific communities and ecosystems. *Stakeholder Engagement* emphasizes the significance of developing new theoretical frameworks for involving various stakeholders in the innovation process to ensure inclusivity and collaboration across different sectors. *Non-Human Stakeholders* expands this idea by considering the role of the environment and other non-human entities in innovation, acknowledging their intrinsic value. *Sustainable Value Creation* requires involvement of diverse stakeholders, including non-human actors.

Part V: new theorizations, philosophies and methods

The study of innovation processes and IM is enriched by philosophical, reflexive, and speculative approaches that challenge traditional understandings of processes and outcomes. These approaches not only deepen our understanding of innovation but also open up novel ways of thinking about ethics, embodiment, leadership and creativity in the context of innovation.

The fifth part of the Encyclopedia introduces a range of new theorizations, philosophies, and methods, each offering unique insights into the complex world of innovation. Philosophical approaches draw attention to the fluid and dynamic nature of reality and innovation processes, including IM. *Process Philosophy and Innovation* challenges the notion of innovation as a discrete event, instead viewing it as an ongoing activity that emerges through everyday practices. This perspective highlights the perpetual change and serendipitous emergence of the new within the old. *Critical Sensemaking* provides a framework for understanding power dynamics within organizations, exploring how structures and discourses shape agency in and resistance to innovation. This method blends postmodern and critical theory to examine how power can both enable and restrict actors in innovation processes. *Phenomenological Doubt* takes a more introspective approach, focusing on the bodily experience of uncertainty as a tool for disrupting conventional research and innovation practices. By inquiring about how doubt is felt, this perspective brings a new dimension to organizational research, accentuating

the multiplicity of viewpoints. *ANTi-History* employs actor-network theory to investigate how historical narratives are constructed within specific networks, privileging certain perspectives while silencing others. By tracing the assemblage of actors (people, things and ideas), it reveals the plurality of historical accounts that shape innovation processes.

Theorizations focusing on the body, materiality and non-human entities bring a new lens to the study of innovation. *Corporeal Ethics* explores how ethics emerge from embodied, interpersonal experiences rather than rational calculation. It stresses the importance of ethical relations between bodies, emphasizing the political and ethical dimensions of innovation processes. *Non-Corporeal Actant Theory* extends this exploration by analysing how social networks influence decision-making in organizations. This theory suggests that the social environment exerts agency over individual actors, affecting their choices and actions through relational networks. *Posthumanist Aesthetics* takes the conversation further by examining how human bodies are hybridized with non-human entities – such as plants, animals and technologies – in organizational settings. This approach encourages us to think beyond the human and consider how innovation is shaped by interactions with the broader material world. *Sociomateriality and Embodiment of Leadership* introduces a novel understanding of leadership as a sociomaterial phenomenon. Rather than focusing solely on human interactions, this theory examines how leadership emerges through embodied experiences and material environments, bringing to the fore the sensory aspects of leadership in innovative contexts.

Arts-based methodologies bring alternative ways of knowing and understanding to innovation studies. *Arts-Based Methods* use artistic practices – such as visual arts, music and theatre – as tools for fostering creativity, critical thinking and empathy. These strategies enhance learning by offering a reflective and dialogical approach to innovation pedagogy. *Curiography* challenges the anthropocentric nature of traditional research methodologies by introducing a post-qualitative framework that emphasizes curiosity and novel types of relationships. This approach encourages researchers to explore innovative questions through polite curiosity, inspired by feminist materialisms and post-qualitative inquiry. *Sonar-o-Graphy* offers a sensory, embodied approach to understanding human and more-than-human relationships. By using sonar technology to explore underwater worlds, this methodology expands the boundaries of human knowledge and opens up new ways of thinking about sensory connections and empathy in innovation.

Speculative approaches exploit the power of imagination, allowing new possibilities in innovation. *Science Fiction* explores the potential impacts of future technologies on society and organizations. By using speculative fiction, organizations such as Intel and Nike have begun incorporating future scenarios into their planning processes, demonstrating the value of speculative thinking in innovation. *Scientific Fabulation* is a creative method that blends storytelling with scientific insights to navigate alternative futures and environmental challenges. Unlike traditional fables, scientific fabulation complicates our understanding of innovation by including multiple voices and perspectives, especially those of non-human entities. *Sleep* adds an unusual dimension to speculative methods, proposing that sleep and dreams can serve as metaphors and tools for imagining alternative futures. By moving beyond the ideals of control and mastery, sleep enables new ways of relating to the self, others and the Earth, fostering life-affirming rhythms and perspectives in innovation.

Further readings

Hickel, J., Dorninger, C., Wieland, H., & Suwandi, I. (2022). Imperialist appropriation in the world economy: Drain from the Global South through unequal exchange, 1990–2015. *Global Environmental Change*, 73, 102467.

Jammulamadaka, N. (2019). The contradiction of Indian innovation: An epistemological explanation. *Qualitative Research in Organizations and Management: An International Journal*, *14*(2), 194–216.

Lubberink, R., Blok, V., Van Ophem, J., & Omta, O. (2017). Lessons for responsible innovation in the business context: A systematic literature review of responsible, social and sustainable innovation practices. *Sustainability*, *9*(5), 721.

Ortt, J. R., & Van der Duin, P. A. (2008). The evolution of innovation management towards contextual innovation. *European*

Journal of Innovation Management, *11*(4), 522–538.
Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., ... & Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, *9*(37), eadh2458.
Voegtlin, C., Scherer, A. G., Stahl, G. K., & Hawn, O. (2022). Grand societal challenges and responsible innovation. *Journal of Management Studies*, *59*(1), 1–28.
Wakunuma, K., Castro, F. D., Jiya, T., Inigo, E. A., Blok, V., & Bryce, V. (2021). Reconceptualising responsible research and innovation from a Global South perspective. *Journal of Responsible Innovation*, *8*(2), 267–291.

PART I:

SCIENCE, TECHNOLOGY AND INNOVATION MANAGEMENT

1. A broad perspective on innovation management

Tero Montonen

Outline of the topic

Innovation management (IM) research focuses on structuring and directing the creation, development, implementation and launch of new products, services and technologies. This entry suggests, however, that innovation research supports a broader perspective on IM. This broader perspective illustrates how IM extends beyond overseeing product and service creating innovation processes to encompass organising, managing and leading various forms of innovation. As Dodgson and colleagues, as well as Tidd and Bessant, remind us, innovation is not simple and monolithic. Rather, it exists in multiple forms, each of which plays a distinct role in companies and industries.

This entry explores IM by illustrating how three archetypes of innovation – incremental, radical and revolutionary – are not merely managed but also organised and led. Additionally, it addresses the potential risks and negative consequences associated with each type of innovation relevant to IM. For example, while incremental innovation may offer steady improvements, it may lead to stagnation or inefficiencies if relied upon too heavily. Radical innovation allows new possibilities but also carries risks and uncertainties. Though it is highly transformative, revolutionary innovation introduces significant resource demands and raises novel ethical questions. This entry draws on insights from the innovation and IM literature to consider how these complexities can be navigated in a way that strikes a balance between the benefits of innovation and its broader implications.

Conceptual overview and discussion

A broad perspective on innovation

The management and business-related literature describes innovation as a process in which companies translate new or improved ideas into marketable solutions. Thus, innovation refers to commercialised ideas that have various degrees of novelty in relation to the context in which they are used. The benefits of innovation have been widely discussed, especially within an economic framework. It is a common argument that innovation stimulates the economy by creating new industries and jobs. For companies, innovation generates fresh ideas and methods, enabling them to remain vibrant, competitive and able to adapt to environmental and market changes. For managers, it may enhance strategic agility and operational effectiveness, enabling organisations to seize new opportunities and overcome challenges. For employees, innovation may lead to engaging and rewarding work environments by fostering creativity and professional growth.

According to Ringberg and colleagues, the innovations produced by companies can be categorised into three archetypes, each with distinct characteristics. *Incremental innovation* focuses on gradual, ongoing improvements to existing products, services or processes. Typically, these are small changes that enhance performance or efficiency over time. *Radical innovation* introduces more significant shifts, which may disrupt existing markets or offer new solutions to unmet needs. This type of innovation often challenges established norms within an industry. *Revolutionary innovation* involves transformative changes that have the potential to reshape industries or create entirely new markets. These innovations tend to be rare, but can have profound long-term effects. Understanding these innovation types can help in determining appropriate approaches to organising, managing and leading within various innovation contexts.

Each of the innovation types plays a different role within organisations. Incremental innovation provides stability and ongoing refinement, radical innovation addresses more substantial market opportunities and gaps in current industries and revolutionary innovation leads to significant breakthroughs in terms of disrupting the existing innovation landscape. Considering these types of innovation as distinct archetypes offers a framework within which to explore how innovation can be organised, managed and led.

A broad perspective on IM

Dodgson and colleagues define IM as purposeful action for designing and maintaining structures and processes that enable the creation and use of new and improved ideas. While most of the research deals with IM in

companies, less is known about IM in other organisations (e.g., ecosystems, networks and public and third-sector organisations). Furthermore, much of the research deals with incremental innovation, analysing small-scale improvements in products, services and business models for existing markets and customers. Less empirical research and theoretical development have been performed regarding IM in the context of radical and revolutionary innovation (i.e., in the context of emerging and new markets).

This entry focuses on three questions, offering a broad perspective on IM: how to organise innovation; how to manage it; and how to lead it in the context of incremental, radical and revolutionary innovation. *Organising innovation* refers to establishing supporting structures, processes and the flexible coordination of interactions with internal and external innovation actors. It involves rules and practices that facilitate collaboration, idea-sharing and cross-functional engagement, ensuring that innovation activities are embedded within other organisational operations. *Managing innovation* involves creating strategies, directing resource allocation and project timelines and ensuring that innovation efforts are aligned with broader organisational goals. This includes the evaluation of risks and rewards, as well as guiding initiatives from conception to implementation, alongside evaluating and measuring innovation outcomes. *Leading innovation* involves shaping an organisational culture that encourages experimentation and creative problem-solving. Leadership provides a vision for innovation and motivates individuals and teams to explore new possibilities while navigating the uncertainties associated with innovation efforts.

A broad perspective on IM acknowledges the existing and potential negative consequences of innovation. This includes paying attention to tensions in IM between various goals, such as short-term profits versus long-term growth, and individual creativity versus team collaboration. Furthermore, IM includes finding ways to align diverse interests and risks, ensuring that innovation processes are responsible, inclusive, fair and sustainable given the impact of innovation on all parties involved in it.

Organising, managing and leading three types of innovation

Incremental innovation plays a crucial role in helping organisations maintain competitiveness. The focus on small, continuous improvements ensures that an organisation evolves in response to market demands without introducing unnecessary risks or disruptions. The *organising* of incremental innovation benefits from well-established processes that emphasise continuous improvement. For example, cross-functional teams can be structured in such a way as to focus on optimising existing products and services through minor but consistent enhancements. *Managing* incremental innovation focuses on performance metrics, timelines and short-term goals that drive steady improvements. Decision-making is data driven, with an emphasis on refining processes and products incrementally. *Leading* incremental innovation encourages a culture of operational excellence. Leaders emphasise the importance of continuous development in the form of small changes, recognising that these contribute to long-term organisational health.

Radical innovation creates opportunities for significant shifts within industries and can position organisations to capture new markets. This requires an adaptive approach that allows teams to experiment and iterate while maintaining alignment with broader organisational objectives. *Organising* radical innovation requires flexible organisational structures that support experimentation and allow for deviation from standard processes. Creating dedicated innovation teams or labs can enable exploratory work, in which the uncertainty and risk are high. *Managing* radical innovation involves dealing with uncertainty and ambiguity. This may include rapid prototyping, iterative testing and adapting strategies based on early-stage feedback. Agile management practices are often employed to respond quickly to new information. *Leading* radical innovation involves fostering a mindset that is open to challenging the status quo. Leaders provide vision and support for innovation teams, encouraging them to take calculated risks and explore unconventional solutions. The communication of this vision is crucial to align efforts toward more disruptive innovation goals.

Revolutionary innovation has the potential to redefine industries and open entirely new

markets. While it is rare, when it is successful, it can lead to profound shifts. *Organising* revolutionary innovation tends to demand large-scale organisational changes, including new structures and alliances that can accommodate the high-risk, high-reward nature of this type of innovation. External collaborations, such as partnerships with universities or technology firms, are often leveraged to push the boundaries of what is possible. *Managing* revolutionary innovation involves navigating high levels of uncertainty, requiring managers to balance vision with practical execution. Resource allocation becomes critical, as revolutionary projects may require long-term investment without immediate returns. Close attention is paid to aligning revolutionary innovation with both current operations and future possibilities. *Leading* revolutionary innovation is a visionary process, with leaders articulating long-term goals that motivate both internal and external stakeholders. These leaders build networks and coalitions to support large-scale transformations and manage the complexities involved in bringing groundbreaking innovations to fruition.

Organising, managing and leading challenges and negative consequences

Incremental innovation is valuable in maintaining competitiveness, but the innovation literature also connects it to negative consequences, such as market saturation. Small improvements may not be sufficient to differentiate products and services in a crowded market, and they may result in resource misallocation. An overemphasis on incremental changes may divert resources from transformative innovations. Continuous small improvements can lead to complacency, preventing organisations from pursuing radical shifts that may be necessary for long-term survival. IM processes for evaluating when incremental changes are insufficient can direct attention towards more impactful innovations. Regular reviews of the return on investment for incremental improvements can help prevent resources from being wasted.

Radical innovation has the potential to transform industries, but it carries increased risks, such as high failure rates related to uncertainty. While market disruption is assumed to be positive for the innovator, it may negatively affect stakeholders, such as employees, customers and partners. In an organisation, radical innovation initiatives may face resistance from staff who are comfortable with established practices, leading to conflicts or inefficiencies. To address the risks associated with radical innovation, organisations can create flexible structures that support experimentation while managing potential downsides. For example, isolated autonomous teams work on high-risk projects to avoid jeopardising the core business. Radical innovation initiatives benefit from an understanding of their high failure rates. Phased approaches that allow for frequent reassessments and chances to pivot or stop projects before resources are wasted are common. Leading radical innovation should involve setting realistic expectations and preparing the organisation for potential setbacks. It should foster a culture that embraces calculated risks and learning from failures to avoid negative repercussions.

Revolutionary innovation aims to redefine industries, but it also carries significant risks. Revolutionary initiatives require significant financial and human resources, which can strain the organisation or lead to underinvestment in other areas. Allocating resources for revolutionary innovation requires balancing the need for large-scale investment with the risk of failure. While revolutionising an industry, this type of innovation displaces existing businesses, creates new monopolies and destabilises markets in ways that companies such as Airbnb and Wolt have illustrated. In addition to these, ethical questions concerning unintended negative effects on society or the environment are evident in areas such as biotechnology, artificial intelligence (AI) and environmental technology. Scenarios for potential negative impacts can be developed, but these often remain uncertain. Considering societal and environmental impacts over the long term is ethical but not without challenges. Striking a balance between incremental improvements and more disruptive changes is among the key tasks of IM. Encouraging forward-looking visions and actions may prevent an organisation from becoming too focused on small, short-term gains at the expense of long-term success.

Application: innovative organisations

Ringberg and colleagues combine the technology perspective and the managerial

mindset perspective on innovation into the Technology-Mindset Matrix, which they adopt to analyse incremental, radical and revolutionary innovation in organisations. They suggest that company managers are increasingly being pushed to innovate processes in which products and services are developed. They argue that prior research on innovation focuses either on technology or the managerial mindset but rarely considers both together. They propose that, in practice, these two are deeply interconnected and should be analysed in combination. For this purpose, they have introduced the Technology-Mindset Matrix, a two-by-two model.

The Y-axis of the model represents the level of innovative technology, while the X-axis represents the level of innovative mindset. The matrix defines four types of technology-mindset interactions in organisations, with each leading to a different innovative outcome: incremental innovation (low mindset, low technology), radical technological innovation (high technology, low mindset), radical mindset innovation (low technology, high mindset) and revolutionary innovation (high mindset, high technology). Ringberg and colleagues provide several case examples to illustrate each of these innovation types and discuss the challenges managers face, particularly in business-to-business contexts, when attempting to move from incremental to more advanced forms of innovation.

Incremental innovative organisations emphasise competitive actions over customer or consumer needs. Their management practice is reactive, focusing on planned, step-by-step developments that lead to stability within the constraints of the current organisation culture, leadership and know-how. Changes in technology, products, services and management practice are gradual to the extent that they are difficult to identify in the short term. Embedded routines, cognitive inertia and rigidity lead to a negative emotional reaction to change and managers' unwillingness to explore new business opportunities. It is challenging, especially for successful organisations and their managers to engage in radical, competence-destroying ideas. Ringberg and colleagues provide several examples of the difficulty companies face when shifting from incremental to radical innovation. These include resistance on the part of Swiss watch manufacturers to the transition from mechanical to quartz-mode watches, as well as the inability of Blackberry's management to appreciate the usefulness of touchscreens in mobile phones.

Radical innovative organisations connect novel technologies to the future needs of customers, consumers and other stakeholders, and their managers succeed in developing new mindsets that help them to identify and apply technologies from other fields that can strengthen existing business models. When adopting new technologies, their potential may remain underused if managers draw from their current mindsets instead of developing new ones that would be more appropriate in relation to the new technology in question. On the other hand, efforts to change managers' mindsets, which are understood as conscious cognitive-behavioural maps or scripts, may be restrictive because they neglect the subconscious, implicit and affective aspects of management practice. The computer industry was initially focused on incremental innovation in the function and design of computers. Then, new internet technology provided opportunities for radical innovation, which were not realised due to the prevailing mindsets and sensemaking of computer company managers, which later prevented these companies from anticipating the disruption created by smart mobile phones.

In *revolutionary innovative organisations*, radical novel technology and radical novel management mindsets are combined to produce 'new to the world' innovations. Managers in these organisations break away from existing assumptions, beliefs and sensemaking patterns and move into uncharted territory. To survive, they must reinvent their current offerings to the existing market. This combination of exploration and exploitation requires entrepreneurial competence, which management teams often lack, as well as an exceptionally long timeframe, agility and endurance. The open-source software programme Linux, which was introduced by Linus Torvalds, is provided as an example of how radical innovation draws from paradigmatic and ideological shifts. While traditional programming is based on the capitalist principle of restricting access to intellectual property, the open software approach shares the source code and engages users and participants to develop and update the software.

Critical summary

The broad perspective on IM outlined in this entry elaborates on how three innovation archetypes – incremental, radical and revolutionary – are connected to organising, managing and leading innovation. In practice, many organisations benefit from accommodating both incremental improvements and more exploratory projects in their portfolio.

Much of the IM literature is written for the purpose of managing innovation in the economic context (i.e., companies and industries). This means that it offers concepts, tools and practical advice on how companies can coordinate and improve innovation activities, processes and outcomes. Less research has been done on how to organise and lead innovation, especially in other organisations. Furthermore, regarding the various types of innovation, more is known about managing incremental innovation as compared to radical or revolutionary innovation, which are risky because of their complexity and systemic character.

As Adams and colleagues highlight, in the face of pressing societal and environmental challenges, innovation research should extend beyond existing narrow understandings that shy away from sustainability-oriented innovation. Given the needs of society and the planet, not merely the economy, innovation research should focus on how to challenge existing practices and systems to create sustainable, responsible and inclusive innovation practices, with the hope that progress benefits a broader set of actors than previously. Thus, a broad definition of IM should resonate with research on pressing societal issues, such as climate change, the loss of biodiversity, poverty and inequality.

To conclude, the IM research of the future should extend beyond a narrow economic orientation to include the societal, environmental and technological dimensions of innovation. Concerning technology, Appio and colleagues gear our attention to the relationship between IM and digital transformation. Nambisan and colleagues suggest that the rapid digitisation of innovation has disrupted traditional theories of innovation management by challenging core assumptions about the definition, agency and processes of innovation. They further argue that new theories of IM are needed to better reflect the role of digital technologies in innovation. To guide future research, they propose four new theoretical approaches to explain IM in a digital context. Finally, Haefner and colleagues focus their attention to how AI is changing IM and what this implies for IM research in the future.

Further readings

Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2016). Sustainability-oriented innovation: A systematic review. *International Journal of Management Reviews*, *18*(2), 180–205.

Appio, F. P., Frattini, F., Petruzzelli, A. M., & Neirotti, P. (2021). Digital transformation and innovation management: A synthesis of existing research and an agenda for future studies. *Journal of Product Innovation Management*, *38*(1), 4–20.

Dodgson, M., Gann, D. M., & Phillips, N. (2014). *The Oxford handbook of innovation management*. Oxford University Press.

Haefner, N., Wincent, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. *Technological Forecasting and Social Change*, *162*, 120392.

Leonidou, E., Christofi, M., Vrontis, D., & Thrassou, A. (2020). An integrative framework of stakeholder engagement for innovation management and entrepreneurship development. *Journal of Business Research*, *119*, 245–258.

Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management. *MIS Quarterly*, *41*(1), 223–238.

Ringberg, T., Reihlen, M., & Rydén, P. (2019). The technology-mindset interactions: Leading to incremental, radical or revolutionary innovations. *Industrial Marketing Management*, *79*, 102–113.

Tidd, J., & Bessant, J. (2018). *Managing innovation: Integrating technological, market and organizational change*. Wiley.

2. Academic entrepreneurship

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Outline of the topic

Academic entrepreneurship (AE) has commonly been understood to describe the commercialisation of knowledge or technology transfer from university to industry via patents, licensing, contract research or the creation of research-based spinoff companies. More recent studies have extended the definition of AE to include aspects such as entrepreneurial culture, student entrepreneurship and university-stakeholder alignment.

AE has been widely studied at the macro and meso levels but less so at the micro level. This entry explores AE as a micro-level activity carried out by university-trained experts and their teams. It offers insights into how individuals and groups engage in, make sense of and experience AE, especially in its early phases, when academics begin to engage with entrepreneurship while still working at the university (or in other research institutions).

Focusing on the micro level, this entry introduces a social process perspective on AE research, which emphasises identity challenges, ethical dilemmas between academia and the business world and judgements of the competence of academic entrepreneurs and their teams.

Conceptual overview and discussion

The research scope in the AE literature ranges across three levels: macro, meso and micro. Macro-level research addresses the influence of societal and institutional factors on AE, whereas research at the meso level examines the impact of organisational structures, policies and cultures. Research on the micro level has mostly investigated the behavioural aspects of AE, including academics' motivations and their decision-making processes. A newer approach at the micro level draws attention to AE as a social process, focusing on the actions and interactions of individuals and groups and their experiences and sensemaking processes.

Macro-level discussions consider the broader societal and institutional factors influencing AE and include examining the influence of national innovation policies, funding mechanisms and regulatory frameworks on the entrepreneurial ecosystem within academia. At the macro level, research focuses on trends in university–industry collaboration, the impact of government initiatives on research commercialisation and the cultural and institutional barriers to entrepreneurship within academia. Macro-level analysis may also explore the broader socioeconomic implications of AE, such as its role in regional economic development or innovation ecosystems.

The meso-level discussion examines the dynamics within universities, departments, research groups and university technology transfer offices (TTOs). At this level, researchers explore how organisational structures, policies and cultures impact entrepreneurial activities and the commercialisation of research within academic institutions. Additionally, they may study collaborations between academia and industry, the role of TTOs in facilitating technology transfer and the formation and management of spinoff companies.

At the micro level, research has focused on the behavioural aspects of AE, with an interest in how individual actors (for instance, star scientists) and their teams contribute to AE in various institutional, environmental and cultural contexts. Studying the motivations, decision-making processes and collaborations of individuals and teams has yielded insights into how scientific breakthroughs translate into entrepreneurial ventures.

A newer social process perspective addresses AE at the grassroots micro level, emphasising the identities of academic entrepreneurs, their agency in shaping AE and the tensions between the academic and business worlds experienced by academic entrepreneurs and their teams. Social processes encompass the actions and interactions among individuals and teams that shape social phenomena. Consequently, the social process perspective is also interested in how sensemaking, narratives and discourses construct and shape how AE is understood and practised by various actors.

Identity is a key theme in the study of AE's social processes. Research highlights how identity work shapes the sense of entrepreneurial opportunity and helps academic entrepreneurs and their teams navigate the academic-commercial nexus of AE. It has been shown that academic entrepreneurs

either maintain their academic identity or develop an entrepreneurial identity, but these sometimes blend together into liminal and hybrid identities that give academic entrepreneurs more flexibility in shifting between the academic and business worlds.

The differences between the academic and business worlds constitute another key theme in the social process perspective on AE. Academic entrepreneurs' interactions with key stakeholders, such as business advisors, university TTOs and accelerator programmes, have been recognised as a major influence on the emergence of tensions between academic and commercial goals and preferences. This theme includes studying how academic entrepreneurs and their teams interact with peers and stakeholders and how they navigate the academic–commercial nexus and its tensions.

Application: three tensions at the micro level of AE

Identity reflections

Tensions between the expectations of the academic and business worlds often emerge in interactions between academic entrepreneurs, their teams and key stakeholders (e.g. university TTOs, business mentors and advisors, venture capitalists and other funders). In these encounters, the stakeholders may perceive academic entrepreneurs and their teams as being risk averse and unduly cautious in presenting their business ideas in comparison to other entrepreneurs, who are seen as risk-takers adept at simplifying complex concepts for market appeal.

Academic entrepreneurs typically navigate these tensions in one of two ways: by attempting to conform to general entrepreneurial expectations and to cultivate an entrepreneurial identity or by resisting business world expectations to maintain a stronger academic identity.

Ethical considerations

Academic entrepreneurs and their teams face ethical dilemmas as they grapple with the perceived erosion of academic integrity when engaging more deeply in risk-taking entrepreneurial activities. Discussions about entrepreneurial matters with university TTOs, venture capitalists and business consultants may be fraught with such dilemmas, reflecting academics' fundamental concerns about maintaining the purity of research. Business stakeholders' suggestions, such as funding options that compromise academic credibility, may exacerbate these tensions.

To address ethical concerns, resistance by means of compromise offers a middle ground for academic entrepreneurs and their teams. Rather than rejecting business and funding opportunities outright, they may navigate these tensions by seeking alternatives that better align with academic ethics, thereby preserving research integrity while engaging in entrepreneurial pursuits.

Competence judgements

The evaluation of entrepreneurial competence introduces tensions stemming from the divergent skill sets needed in academia and business practice. Entrepreneurs are expected to pitch ideas persuasively, even if that entails some degree of exaggeration, which conflicts with academics' meticulous approach to research presentations, which emphasise objectivity and balance in arguments.

Dealing with these tensions can be challenging in fast-paced environments, such as university spinoff projects or accelerator programmes. Time constraints and a lack of familiarity with investor expectations may require the hiring of external experts, such as an experienced CEO, to navigate the complexities of fundraising. Alternatively, some team members may reject business competence expectations by assuming research-focused roles within the academic entrepreneurial team, preserving their academic identities amid entrepreneurial pursuits.

Critical summary

Much of the research on AE focuses on the meso and macro levels (e.g. AE within universities and economies), but a growing body of literature considers the intrapersonal and interpersonal processes at the micro level of AE. This research uncovers challenges in identity construction, ethical dilemmas between the academic and business worlds and judgements of the competence of academic entrepreneurs and their teams. The critical examination of these matters underscores the complex interplay of social dynamics in AE, which merits further study.

Further readings

Cunningham, J. A., & Menter, M. (2020). Micro-level academic entrepreneurship: A research agenda. *Journal of Management Development*, *39*(5), 581–598.

Eriksson, P., Hytti, U., Komulainen, K., Montonen, T., & Siivonen, P. (Eds.) (2021). *New movements in academic entrepreneurship*. Edward Elgar Publishing.

Fini, R., Perkmann, M., & Ross, J.-M. (2021). Attention to exploration: The effect of academic entrepreneurship on the production of scientific knowledge. *Organization Science*, *33*(2), 688–715.

Moilanen, J. (2022). *Constructing a tensioned sense of academic entrepreneurship* [Doctoral dissertation, University of Eastern Finland]. http://urn.fi/URN:ISBN:978–952–61–4641–6

Montonen, T., Eriksson, P., & Aromaa, E. (2021). Liminality and hybridity of academic entrepreneurship. *International Journal of Human Resources Development and Management*, *21*(2–3), 178–190.

3. Agile human resource management

Pia Heilmann

Outline of the topic

This chapter discusses human resource management (HRM) and reviews some innovative and agile HRM practices implemented in organizations. It suggests new ways of thinking about HRM. Innovative HRM practices embody new and different ways of carrying out HRM. This entry highlights the different practices of organizations so that they can learn from each other. Innovativeness and agility are relevant to all aspects of HRM. Our concern is with developing HRM practices in new, agile, flexible, and rapid ways based on the needs and culture of each organization. Our goal is to question and challenge established HRM processes. We consider HRM practices in hospitals and small and medium-sized organizations, but the best practices can also be applied at larger companies.

Conceptual overview and discussion

HRM systems are integral to the development of organizations' innovation capability. Previous research has established a link between HRM practices and organizational performance, suggesting that HRM systems have great strategic potential in terms of driving organizational effectiveness. It has been argued that a company's investments in HRM practices may enhance key elements of its sustained advantage (e.g., innovation capability) through the use of training, sophisticated personnel selection, financial incentives, teamwork, and other kinds of practices and policies. Donate and colleagues argue that HRM practices are the primary means through which organizations can influence and shape the skills and behaviors of individuals, as well as activities and business processes, to achieve the organizations' strategic goals.

Bailey and colleagues identified several HRM practices that can be used in organizations. Some of these are obligatory and legal, while others are based more on organizational needs. HRM encompasses a broad range of functions that are essential for managing people within organizations. These include organizational design, workforce planning, and the entire employee lifecycle, from recruitment, selection and placement to contract termination. HRM also involves fostering employee commitment, loyalty, and engagement, as well as overseeing performance management, leadership, attendance, and absence. It addresses change management, career development, motivation, compensation, benefits, and services. HRM promotes equality, diversity, and ethical practices, and it governs talent, discipline, rewards, and labor relations. It also covers areas such as corporate social responsibility, IT in HR, health and well-being, work–life balance, downsizing, flexibility, communication, and global HRM practices.

Innovative and agile HRM practices

Innovation is about identifying and using opportunities to develop new products, services, and work practices and processes. According to Xiu and colleagues, organizations should place more emphasis on developing innovative HRM practices to stay competitive in a rapidly changing business environment. Innovative HRM practices can enhance organizations' performance by developing a unique and valuable pool of human capital that cannot easily be imitated. A typical innovative or agile HRM system is characterized by a positive, proactive, and forward-looking management style, where human resources are efficiently used to quickly adapt to changes.

Agile HRM practices seem to provide a foundation for innovativeness. HRM practices or systems have been shown to promote innovative outcomes, albeit through mediating variables such as knowledge or intellectual capital. Compensation systems, information sharing, and supportive supervision seem to affect innovative work behavior. HRM practices can increase job satisfaction, facilitate knowledge sharing among employees, and contribute to the perception of a more welcoming workplace. In turn, this can contribute to more innovative behavior. Thus, effective HRM practices support productivity and help competent and innovative employees contribute to the achievement of organizational goals.

Innovative HRM practices (sometimes called high-performance or progressive HR practices) include free market selection and recruitment, incentive rewards, performance evaluation and promotion, training

and development, and worker participation in the decision-making process, all of which are closely associated with HR outcomes and organizational performance. Innovative HRM practices center on enhancing workforce effectiveness through selective staffing, extensive training, and development opportunities. They promote teamwork, team problem-solving, and job rotation or enrichment for the sake of flexibility. These practices also emphasize internal promotions, comprehensive performance appraisals that evaluate both individual and team contributions, and performance-based pay.

Application: innovative HRM in hospitals and small and medium-sized enterprises (SMEs)

Innovative and agile HR practices in hospitals

Hinkin and Tracey analyzed HRM practices in hospitals listed among Fortune's 100 best companies to work for and identified six HRM practices that were widely used in these successful hospitals: 1) innovative hiring and retention practices, 2) training focused on career advancement and promotion from within the organization, 3) flexible scheduling, 4) performance evaluation in alignment with organizational goals, 5) performance-based compensation, and 6) a culture of caring for employees. Platonova and Hernandez added to this list strategic HR planning, work system design, and a focus on the customer. There have also been studies in the healthcare sector on agile, resilient, or nimble HRM attributes as part of organizations' HR strategy processes. These agile characteristics pertain to flexible work arrangements, blended assignments, needs assessments, ad hoc learning, personnel acknowledgment, and position reevaluation. Such attributes enrich work, promote personal growth, and provide commensurate returns. However, according to Platonova and Hernandez, innovative HRM practices are underused, e.g., in some U.S. hospitals, despite their potential to improve overall hospital performance. These authors suggest that senior HRM executives should be more involved in the organizational strategic planning process, incorporate strategic HRM practices into organizations' or units' business strategies, and increase the use of innovative HRM practices in their organizations.

Renkema and colleagues discovered the important role of nursing leaders in improving innovative climates and innovativeness. To increase innovation, there is a need for nursing leaders to adopt various high-involvement practices, such as investment in training and development, autonomous teamwork, information sharing, and performance feedback. It is also important to actively communicate the availability of these practices to nursing staff in order to reap their potential innovation benefits. When nursing leaders invest in boosting the commitment and autonomy of nursing teams, it can create a climate of positive innovation that leads to even higher levels of innovation by providing nursing staff with opportunities to enhance their experience with competence, relatedness, and autonomy through high-involvement practices.

Innovative and agile HR practices in SMEs

Heilmann and colleagues noticed that HRM practices in SMEs seem to be quite traditional rather than noticeably agile, practical, or innovative. However, SMEs enjoy potential advantages over larger businesses due to their smaller size, reduced hierarchy, and, in many cases, relative dearth of formal HRM procedures. The agile and innovative HRM practices found at SMEs seem to be based on the SMEs' unique cultural needs and fostered at firms courageous enough to do things in their own way. These agile HRM practices most often concern flexible working hours, organizing, organizational cooperation, work well-being, leadership, development, interaction, the workplace, work–family balance, recruitment, and work equipment. Flexibility in terms of working hours can be related to organizing and adjusting time in the form of daily, weekly, or monthly working hours. Personnel in SMEs also appreciate flat hierarchies and easy communication.

During the Covid pandemic, it was noticed that remote work can offer practical agile solutions that can increase workplace well-being and decrease travel costs. Work well-being can be improved through health events and programs related to exercising and nutrition, such as 'vegetable–fruit Friday.' The leadership skills of managers can be developed through education, coaching, and mentoring. In addition, agile HRM practices appear to

interact with organization members in terms of how people communicate or treat and help one another. Examples include a 'thank you' flip chart for personnel, a 'blunders' flip chart for personnel, and the organization of meetings dedicated solely to complaining.

Work and family balance can be improved, for example, by offering free temporary childcare for employees' sick children. Innovative recruitment methods can be guided by new ways of networking and informing candidates about open positions. Homework can also be assigned to the applicant in the recruitment situation. Social media can be used more effectively in recruitment marketing and employer brand-image creation. Work equipment can be agile as well; new technological solutions, such as mobile tools, smartphones, and software applications, can enable better work processes. To sum up, innovative HRM practices in SMEs seem to be based on organizations' specific cultural needs, and their implementation seems to require courageous thinking and a willingness to do things in the firm's own way.

Critical summary

A new perspective on HRM has emerged that emphasizes the importance of innovative and agile practices. Over the past decade, there has been growing interest in these approaches, particularly within SMEs and hospitals. These innovative HRM practices are often deeply rooted in an organization's culture and require a willingness to rethink traditional HR operations at the strategic, operational, and personal levels. This 'thinking outside the box' approach fosters organizational development by encouraging the adoption of agile and creative HRM practices.

While research to date has primarily focused on hospitals and SMEs, there is a recognized need to extend this exploration to larger companies, as organizations of different sizes can learn from each other's experiences. Future research should further investigate how innovative HRM can be integrated into strategic planning, management, and leadership across various organizational contexts. Although developing unique HRM processes requires significant effort, the long-term benefits are clear: improved productivity and enhanced employee well-being.

This summary highlights the ongoing evolution of HRM and underscores the potential for innovative practices to transform organizational performance. However, it also suggests that more research is needed to fully understand their impact across different types of organizations.

Further readings

Bailey, C., Mankin, D., Kelliher, C., & Garavan, T. (2018). *Strategic human resource management* (2nd ed.). Oxford University Press.

Donate, M. J., Pena, I., & Sanchez de Pablo, J. D. (2016). HRM practices for human and social capital development: Effects on innovation capabilities. *International Journal of Human Resource Management*, *27*(9), 928–953.

Heilmann, P., Forsten-Astikainen, R., & Kultalahti, S. (2020). Agile HRM practices in SMEs. *Journal of Small Business Management*, *56*(4), 1–11.

Hinkin, T., & Tracey, B. (2010). What makes it so great? An analysis of human resource practices among Fortune's best companies to work for. *Cornell Hospitality Quarterly*, *51*(2), 158–170.

Platonova, E. A., & Hernandez, S. R. (2013). Innovative human resource practices in U.S. hospitals: An empirical study. *Journal of Healthcare Management, 58*(4), 290–301.

Renkema, M., de Leede, J., Van, Z., & Llewellyn, E. (2021). High-involvement HRM and innovative behaviour: The mediating roles of nursing staff's autonomy and affective commitment. *Journal of Nursing Management*, *29*(8), 2499–2514.

Xiu, L., Liang, X., Chen, Z., & Xu, W. (2017). Strategic flexibility, innovative HR practices, and firm performance: A moderated mediation model. *Personnel Review*, *46*(7), 1335–1357.

4. Artificial intelligence

Meng Ma

Outline of the topic

This entry provides an overview of artificial intelligence (AI) and its evolving role in business innovation. It traces AI's journey from its early days as knowledge-based systems to current generative models, highlighting its symbiotic relationship with innovation throughout its development. The entry discusses AI's function as an efficiency tool, aiding in ideation and iterative innovation processes, while also addressing the challenge of AI-generated inaccuracies. Furthermore, the entry explores AI's contribution to collective innovation, emphasizing the advantages it brings, such as enhanced efficiency and broader collaboration, as well as the areas that need further research, including task division and consensus building among diverse teams. It also addresses the risks associated with AI integration, such as reduced human engagement and the potential for content homogenization. Looking ahead, the entry envisions a future where AI integration leads to augmented human capabilities, accelerated innovation cycles, and a greater emphasis on lifelong learning to keep pace with technological advancements.

Conceptual overview and discussion

AI is the technology of making machines, especially computers, mimic human intelligence. It has evolved from its inception as knowledge-based systems to the current era of deep learning and transformer-based generative models. This progression has significantly enhanced AI's capabilities, enabling machines to not only process information with far greater efficiency than humans but also to perform cognitive tasks in a manner that closely resembles human input and output.

AI began as the study of algorithms that simulate human cognition, with the vision that machines could be programmed to think and reason like humans. Limited by hardware technologies at early times, AI was initially dominated by 'rule-based systems' or 'expert systems', where knowledge was hard-coded into machines by experts in the form of rules. It was believed that machines could simulate human expertise in specific domains if provided with enough rules. However, these systems faced limitations in scalability and adaptability.

The limitations of expert systems led to a shift towards statistical methods, where algorithms were designed to learn from data. This approach, known as machine learning, allowed for the identification of patterns in data. However, these statistical methods also faced challenges. Feature engineering was a significant limitation, requiring extensive domain knowledge to select and transform input features effectively. Moreover, many of these algorithms were linear models, which limited their ability to capture the non-linearity present in real-world data. Generalization was also a concern, as models often overfitted the training data, leading to poor performance on unseen data. These limitations highlighted the need for more advanced techniques, eventually paving the way for the development of deep learning.

Deep learning, a significant advancement in AI development, addressed numerous challenges by leveraging the design of neural networks. These networks, inspired by the human brain, utilize layers of interconnected nodes to extract feature information. Although the concept of artificial neural networks was proposed as early as the 1970s, it was the advent of deep learning that popularized their implementation and demonstrated their full potential. Early deep learning typically adopted architectures like convolutional neural networks (CNNs) and recurrent neural networks (RNNs). A notable example of such AI architecture is AlphaGo, which demonstrated the power of deep learning in mastering the complex game of Go. CNNs excel at tasks involving spatial data, such as image and video recognition, while RNNs are well-suited for sequential data processing, making them ideal for natural language processing and time series analysis. These neural networks have altered various fields by enabling machines to perform tasks with efficiency that was previously unattainable.

The most recent phase of AI evolution features transformer-based generative models, such as GPT (generative pre-trained transformer) and BERT (bidirectional encoder representations from transformers). The key improvement of transformer-based models lies in their ability to process input data with different levels of attentions, which significantly enhance their effectiveness in capturing

long-range dependencies in data. This has led to groundbreaking advancements in natural language processing, enabling applications like language translation, text generation, and sentiment analysis with high accuracy. Additionally, transformer-based models have found applications such as content creation and protein structure prediction, showcasing their versatility and potential to reshape various domains with their advanced capabilities.

AI has seamlessly integrated with business innovations, revolutionizing tasks from automating repetitive actions to predicting market trends. It has the potential to significantly improve various stages of innovation by efficiently collecting data and recognizing patterns. This transformative potential aligns well with dynamic business methods such as the lean startup, agile innovation, and exponential organizations. AI can also enhance collective innovation processes through better coordination and facilitation. Advances in human-AI collaboration, including task division and consensus forming, can further improve these benefits. However, there are still uncertainties in collective innovation when AI is involved, particularly in human-to-human communication, thus the long-term impact of AI requires further exploration. Looking ahead, we can expect AI-integrated innovation to greatly enhance individual capabilities, shorten innovation cycles, and emphasize the importance of lifelong learning.

Application

Efficiency tools for various innovation processes

At the core of innovation lies ideation – generating new ideas that lead to practical solutions. Traditionally, ideation was limited by human cognitive capacity, available data, and the ability to analyze it. However, the introduction of AI-driven tools has transformed this process. AI algorithms can efficiently handle large amounts of data, uncover patterns that are not easily detected by humans, and extract insights at an unprecedented speed. By analyzing vast datasets, such as social media and market research databases, AI can identify hidden consumer needs and emerging market trends, providing businesses with refined, data-driven starting points for innovation.

Iterative models of innovation, like lean startup, agile innovation, and exponential organizations, rely on feedback loops that emphasize rapid release of solutions, assimilation of responses, and continuous refinement. AI is a game-changer in this context, speeding up the processing of data from minimum viable products (MVPs) in lean startup or feedback in agile innovation's 'sprints'. It enables real-time analysis of interactions and feedback, generates rapid insights, and even automates updates in digital services, facilitating quicker, data-informed iterations. This acceleration in processing feedback and implementing adjustments significantly shortens development cycles and enhances product quality. In the context of exponential organizations, AI's ability to automate and provide intelligent analysis is used for swift, efficient scalability strategies. Across these models, AI enhances speed, efficiency, and depth of data analysis, transforming traditional iterative approaches into more dynamic and responsive ones.

The emergence of large language models (LLMs), a subset of generative AI, has redefined the potential for understanding consumer needs. These models, skilled in natural language processing, can analyze vast amounts of textual data, such as product reviews and customer support interactions, to understand customer sentiments, needs, and pain points. When integrated with frameworks like jobs-to-be-done (JTBD), LLMs can rapidly process existing data to uncover latent product requirements and customer needs, shortening the time to ideation and ensuring that innovations align with actual market requirements.

When considering AI's capability for creativity, it's important to note that AI generates new content based on patterns and information from its training data. While the output can be unique and surprising, it is still grounded in the data it has been trained on. The debate around AI's creativity revolves around whether it can be a critical part of innovation by combining and reconfiguring existing ideas in novel ways. For example, in drug discovery, AI algorithms can propose new molecular structures that might not have been conceived of by human researchers. However, some experts caution that AI's creativity is limited by its training data and algorithms, and that true innovation often requires a deep understanding of context and

culture, which is currently beyond AI's capabilities. This debate is an interesting direction for interdisciplinary research.

The involvement of AI in collective innovation

Collective innovation is the process of creating new solutions through the collaboration and contributions of multiple entities, often to address complex, systemic challenges. The integration of AI into this process offers both benefits and uncertainties.

Incorporating AI into collective innovation processes can transform the way we innovate. First, AI enhances efficiency and productivity by automating tasks and quickly analyzing large datasets, revealing insights that might be missed by humans. This allows human collaborators to focus more on creative and strategic tasks. Second, AI's ability to synthesize information from various sources provides teams with a wide range of ideas and perspectives, fostering innovative solutions that might not emerge from human brainstorming alone. Additionally, AI's scalability enables collaboration among larger groups of stakeholders, increasing the scope and impact of innovation efforts. This expanded collaboration ensures a richer pool of ideas, driving forward breakthrough innovations to tackle complex challenges.

To fully realize these benefits, further research is needed. For example, determining the optimal division of tasks between humans and AI is crucial to leverage their distinct strengths. This includes balancing creativity, cognitive tasks, and decision-making processes to maximize innovation outcomes. Additionally, the latent value judgments passed to AI during task allocation require scrutiny to ensure that implicit biases do not skew innovation in unintended directions. Enhancing mutual interpretability between humans and AI is also essential, as it can significantly improve collaboration outcomes. Lastly, developing effective strategies for consensus building within diverse teams of humans and AI is crucial to ensure that innovation processes benefit from a genuine synthesis of perspectives, rather than being dominated by technologically driven solutions.

The future of AI-integrated innovation

As new versions of AI tools are being released rapidly, individuals will experience an unprecedented level of augmentation in terms of cognitive and creative abilities. These AI tools will act as extensions of human intellect, providing real-time data analysis, decision support, and creative insights. Consequently, such augmentation will empower people to solve complex problems more effectively, innovate more quickly, and make better-informed decisions. For instance, designers might use AI to instantly test hundreds of design variations against specific criteria, while researchers could employ AI to sift through vast amounts of scientific literature to identify potential breakthroughs. The partnership between humans and AI will blur the lines between human and machine capabilities, making augmented intelligence a crucial component of everyday tasks and decision-making.

The integration of AI into innovation processes will significantly speed up the development of new products, services, and technologies. AI's ability will reduce the time from idea conception to market introduction. This acceleration will have a profound impact in innovation fields. For example, in pharmaceuticals, AI can simulate drug effects, reducing the length of trial phases. In engineering, AI-driven design and simulation tools will streamline the development of new technologies, enabling rapid prototyping and iteration. Accelerated innovation cycles mean that businesses and societies must be prepared to quickly adapt to new technologies and the changes they bring, creating an environment where agility and flexibility are essential.

The dynamic nature of AI-integrated innovation requires a commitment to lifelong learning and adaptation for both individuals and organizations. As AI technologies evolve and new tools emerge, the skills needed to collaborate effectively with AI will also change. Education and training will need to shift focus, emphasizing critical thinking, creativity, and the ability to work synergistically with AI. Continuous education will become the norm, with digital platforms offering personalized learning experiences tailored to the evolving needs of the workforce. Additionally, organizations will need to foster a culture of learning and adaptability, encouraging employees to embrace new technologies and

methodologies. This approach will not only ensure that individuals and businesses can keep pace with technological advancements but also leverage these changes for competitive advantage and societal benefit.

Critical summary

Beyond serving as a valuable instrument for innovation, contemporary AI models possess limitations, including the phenomenon of hallucination. The hallucination problem in modern generative AI arises from fundamental challenges like language uncertainty, lack of real-world knowledge, and limitations in objective functions guiding AI training. These models struggle with human language nuances and lack experiential knowledge, leading to inaccuracies. Application-wise, issues like training-data quality, overfitting, and lack of contextual understanding exacerbate the problem. To address the hallucination issue, businesses should develop robust validation frameworks that continuously assess and correct AI outputs, ensuring accuracy and relevance in applications like customer service or content creation. Integrating feedback mechanisms between AI systems and human oversight can provide practical checks on AI-generated content, aligning AI outputs with business goals and enhancing decision-making processes.

Another concern related to the potential risks of integrating AI into businesses is the presence of many uncertainties in human–AI interactions. These interactions can lead to unpredictable consequences that need to be carefully considered. Notably, the increasing prevalence of AI and AI-powered bots in collaborative efforts raises worries about their impact on human connection and creativity. While these AI tools excel in mimicking human conversation, they fundamentally alter how we interact, potentially reducing the rich, spontaneous discussions that fuel innovation. The essence of teamwork and brainstorming could be overshadowed by interactions with machines, leading to a decrease in human engagement and a loss of the personal touch and diversity that drive creative solutions. Moreover, the socio-psychological effects of substituting human interactions with AI conversations can be significant. People might feel less motivated and valued, diminishing their desire to contribute to collective projects. An additional worry is that the widespread use of generative AI could homogenize content, limiting the range of ideas and perspectives. This homogenization threatens the core of collective innovation, which relies on a rich tapestry of inputs to spark groundbreaking ideas.

Further readings

Chan, L., Hogaboam, L., & Cao, R. (2022). *Applied artificial intelligence in business: Concepts and cases*. Springer Nature.

Duffey, C. (2019). *Superhuman innovation: Transforming business with artificial intelligence*. Kogan Page Inspire.

Echeberria, L. (2022). *Artificial intelligence for business: Innovation, tools and practices*. Springer International Publishing.

Soni, N., Sharma, E. K., Singh, N., & Kapoor, A. (2020). Artificial intelligence in business: From research and innovation to market deployment. *Procedia Computer Science*, 167, 2200–2210.

Tanev, S., & Blackbright, H. (Eds.) (2022). *Artificial intelligence and innovation management* (Vol. 38). World Scientific.

Voehl, F., Harrington, H. J., Fernandez, R., & Trusko, B. (2018). *The framework for innovation: A guide to the body of innovation knowledge*. CRC Press.

5. Business models

Ville-Veikko Piispanen, Kaisa Henttonen and Hanna Lehtimäki

Outline of the topic

A business model provides a template and a structure to describe how business activities are performed and what are the outcomes. An iconic view on business models discussed by Osterwalder and Pigneur includes value proposition, value creation, and value delivery as integral components. Value proposition describes what kinds of product and service offerings a business or an organization provides and what value is provided and to whom. Value creation and delivery define how the value is provided to customers and stakeholders and how the business or organization delivers value with the offerings they have. An innovative business model, at its core, uses unique ideas and strategies to industries and markets and incorporates values for the offerings. Innovative business models can uniquely incorporate circular economy, digitalization, and a platform economy in fast-changing economic landscapes where agility, adaptability, and responsiveness are competitive advantages. Businesses and organizations that implement new ideas and strategies and have flexible innovative business models may have environmental, social, and economic value creation opportunities and impact for customers and society in general.

Conceptual overview and discussion

At its core, a business model outlines how an organization offers value proposition, creates value and delivers value. It provides a framework that describes how the different components of a business fit together to generate revenue and sustain operations. Osterwalder and Pigneur present in their seminal work on business models the value fundamental elements and their interdependencies, and how a business model provides a comprehensive view of how a company intends to create and deliver value. It helps to guide strategic decision-making, identify potential areas for innovation, and establish a foundation for sustainable growth and profitability.

Fundamental elements of a business model

Value creation as the first fundamental element refers to the process by which organizations generate benefits and advantages for their customers, stakeholders, and themselves. It involves leveraging resources, capabilities, and activities to develop offerings that meet customer needs and provide value. Value creation can take various forms, such as the provision of high-quality products or services, innovative solutions, improved organizational or operational efficiency, and enhanced customer experiences; thus, these different forms can offer competitive pricing in the markets.

The second fundamental element of the business model is value proposition that defines the unique value a company offers regarding its competitors. The business model encompasses the specific benefits, solutions, or advantages that a company's products or services provide to address customer needs and solve their problems. A strong value proposition communicates why customers should choose a particular offering over alternatives available in the market. It clarifies the value customers can expect to receive and sets the foundation for customer acquisition and retention.

The third fundamental element of business models is value delivery, which refers to the ability of a company to deliver and extract a portion of the value it creates in the form of revenues and profits. It represents the financial aspect of a business model and is crucial for assessing sustainability and profitability. Value delivery strategies determine how an organization monetizes the value it delivers to customers and generates revenue streams.

Overall, value creation, value proposition, and value delivery are the interconnected elements of a business model. Value creation focuses on generating benefits for customers and stakeholders, the value proposition articulates the unique value offered to customers, and value delivery ensures the company can sustainably monetize the value it provides. Aligning these components is vital for building a successful and resilient business model.

Benefits of innovative business models

Companies with innovative business models are transforming industries and creating new opportunities to deliver value to customers. By creating a unique and sustainable competitive advantage, companies can increase their market share, improve profitability, and

create long-term value for shareholders and stakeholders. Additionally, innovative business models can drive innovation and spur economic growth by creating new products and services and through driving technological advancements. Organizations are motivated to innovate their business models, for example by changing customer behaviours or regulations, so that they generate sustainable environmental, social, and economical value. Some attempts, such as Evans and colleagues, to describe how to create sustainable value have been made, but there is still a lack of understanding, for example, on stakeholder collaboration. Circular supply chains may be required to develop unique expertise, such as the ability to dismantle, inspect, and repair used products. Sustainable business models also require the monitoring of customer behaviours, as new behaviours from customers may emerge. One effort has been via the triple-layered business model canvas, which adds to the original economic business model canvas by including an environmental and social canvas.

Innovative business models have several key features that distinguish them from existing business models, which may have linear processes and structures and absence of innovativeness, flexibility, digital integration, and efficiency that modern and ever-evolving market landscapes would require. Perhaps the most significant of these is the use of disruptive technologies to create more efficient, scalable, and customer-friendly approaches to delivering products and services.

Companies that successfully implement innovative business models are often able to leverage new technologies to streamline their operations, reduce costs, and improve the customer experience. By leveraging new technologies, focusing on customer-centricity, and prioritizing flexibility and scalability, innovative business models can help companies create a unique and sustainable competitive advantage. Another key feature of innovative business models is customer-centricity. Companies that prioritize the needs and preferences of their customers are often able to create a more loyal customer base and can differentiate themselves from their competitors. This can be achieved through a variety of means, such as personalized marketing campaigns, customized product offerings, and responsive customer service.

Flexibility is another important feature of innovative business models. Companies that can quickly adapt to changing market conditions and evolving customer demands are often better positioned to succeed in today's fast-paced business environment. Flexibility can be achieved through a variety of means, such as agile development methodologies, lean business practices, and cloud-based technologies.

Finally, innovative business models are often designed to be highly scalable, enabling companies to grow quickly and gain a larger share of the market. This can be achieved through a variety of means, such as platform-based business models, network effects, and economies of scale.

Innovativeness emphasizes the importance of constantly iterating and refining business models. By seeking feedback from customers, monitoring market trends, and staying attuned to changing customer needs, businesses can adapt and enhance their value creation efforts. This iterative process allows organizations to continuously improve their offerings, stay competitive, and create sustainable value over time.

Challenges of innovative business models

While innovative business models can provide significant benefits, they are not without their challenges and criticisms. Some of the challenges that companies may face when implementing an innovative business model include resistance to change, uncertainty, and regulatory requirements.

Resistance to change can be a significant barrier to adoption for companies that are trying to implement innovative business models. Customers, employees, and other stakeholders may be resistant to changes to existing business models, which can slow down the implementation process and create friction within the organization. To overcome this challenge, companies must be proactive in communicating the benefits of their innovative business model and addressing concerns and objections from stakeholders.

Uncertainty is another challenge that companies may face when implementing innovative business models. Innovative business models are often untested and unproven, which can create uncertainty and risk for companies and investors. To mitigate this risk, companies must be prepared to invest in

research and development and also be willing to experiment and iterate with their business model until they find a winning formula.

Application

Based on a review of key scholarly contributions, an innovative business model can be understood, as Foss and Saebi outline, as "designed, novel, and nontrivial changes to the key elements of a firm's business model and/or the architecture linking these elements". Novelness and nontriviality is naturally dependent on several newness-related questions; what is new, how new and new to whom. We give some examples from different sectors and explicate the new value in their business model.

Companies like Amazon have transformed the retail industry by using advanced analytics and logistics technologies to create highly efficient and customer-centric value. Salesforce has built highly flexible and scalable business models by leveraging cloud-based technologies to provide a wide range of services and solutions to its customers. Uber has transformed the transportation industry by creating a highly scalable platform-based innovative business model that leverages network effects to rapidly expand its customer base and market share. Airbnb revolutionized the lodging industry with its peer-to-peer marketplace for short-term rentals. Key aspects of its innovative business model include a platform that connects hosts who have spare rooms, apartments, or homes with travellers seeking accommodations, creating a platform for peer-to-peer rentals. Airbnb implemented various measures, such as user reviews, verification processes, and insurance coverage, to establish trust and ensure safety for both hosts and guests. The platform allows hosts to offer unique and personalized accommodations, providing travellers with a more authentic and local experience. Airbnb charges hosts a percentage fee on each booking and charges guests a service fee, generating direct revenue through its platform.

Organizations are encouraged to innovate business models that are sustainable in terms of economic, social, and environmental value creation; such business models have been defined by Schaltegger and colleagues as "supporting voluntary, or mainly voluntary, activities which solve or moderate social and/or environmental problems". Combining social, environmental, and economic values in innovative business models is challenging, but, in the following, we give some examples of companies and the value they have created. We also explain the types of sustainability value creation in their innovative business model.

Tesla is known for its innovative business model in the electric vehicle (EV) industry. It has integrated multiple elements into its business model, including electric vehicle manufacturing where it focuses on designing and manufacturing its own vehicles, focusing on high-performance and long-range models. It has also developed a global network of supercharger stations, enabling convenient and fast charging for Tesla owners. Tesla's vehicles are equipped with advanced software and connectivity features, allowing over-the-air updates and data analysis. Tesla offers sustainable energy storage solutions through its Powerwall and Powerpack products, allowing customers to store renewable energy for home or commercial use. Another example is IKEA, whose business model promotes sustainable consumption by offering repair services and recycling opportunities to its customers.

Critical summary

While innovative business models can provide significant benefits, they are not without challenges and criticisms. Some of the challenges that companies may face when implementing an innovative business model include resistance to change, uncertainty, and regulatory requirements. Resistance to change can be a significant barrier to adoption for companies that are trying to implement innovative business models. Customers, employees, and other stakeholders may be resistant to changes to existing business models, and this can slow down the implementation process and create friction within the organization. From a value creation standpoint, innovative business models often rely heavily on technology and data analytics. While this can lead to business opportunities, there is a risk of becoming overly reliant on technology-driven solutions without fully understanding customer needs and preferences. It is essential to strike a balance between leveraging technology and maintaining a deep understanding of customer insights to ensure that the value created is meaningful and relevant.

In terms of value proposition, innovative business models may introduce new pricing structures or unconventional value exchanges. However, there is a need for careful consideration of the long-term viability and sustainability of these approaches. Offering low-cost or freemium services, for example, may attract customers initially, but it can pose challenges in terms of profitability and maintaining customer loyalty in the long run. Additionally, value delivery is crucial for the success of innovative business models. While digital platforms and advanced supply chain capabilities can enhance efficiency and convenience, there is a risk of overlooking the human element of value delivery. Customer experiences can be negatively impacted if there is an excessive focus on automation and impersonal interactions. Balancing technology-driven efficiency with personalized, human touchpoints is essential to ensure a repeatable, positive, and holistic value delivery experience.

Further readings

Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E. A., & Barlow, C. Y. (2017). Business model innovation for sustainability: Towards a unified perspective for creation of sustainable business models. *Business Strategy and the Environment*, *26*(5), 597–608.

Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation. *Journal of Management*, *43*(1), 200–227.

Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. *Journal of Cleaner Production*, *198*, 401–416.

Johannessen, J. A., Olsen, B., & Lumpkin, G. T. (2001). Innovation as newness: What is new, how new, and new to whom? *European Journal of Innovation Management*, *4*(1), 20–31.

Joyce, A., & Paquin, R. L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of Cleaner Production*, *135*, 1474–1486.

Kraus, S., Filser, M., Puumalainen, K., Kailer, N., & Thurner, S. (2020). Business model innovation: A systematic literature review. *International Journal of Innovation and Technology Management*, *17*(6), 1–20.

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers* (Vol. 1). John Wiley & Sons.

Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. G. (2012). Business cases for sustainability: The role of business model innovation for corporate sustainability. *International Journal of Innovation and Sustainable Development*, *6*(2), 95–119.

6. Capability approach

Tiina Rättilä

Outline of the topic

Continuous innovation capability is considered a necessary condition for the successful performance of companies and the entire economy. In the literature on innovation management, the study of innovation capability has recently gained popularity. The role that innovation plays, or should play, in people's well-being and societal development is a key question for innovation researchers. The Capability Approach (CA), developed by economist-philosopher Amartya Sen and philosopher Martha Nussbaum, makes an important contribution to this discussion. CA identifies and evaluates factors that impact people's well-being and their ability to function in society, suggesting policies to further human development. This approach has opened up interesting perspectives for research, which partly challenge and partly complement previous economic and technology-focused viewpoints on innovation.

Conceptual overview and discussion

Considered a crucial issue for the successful performance of firms and the entire economy, the concept of innovation capability has received increasing attention in research and theorizing about innovation and innovation management. While there are many definitions available for innovation capability, most commonly the concept refers to the ability to continuously transform knowledge and ideas into new products, processes, and systems for the benefit of the firm and its stakeholders. Research literature has identified several dimensions and determinants of innovation capability, but the focus of research has mostly remained at the micro level, examining the innovation capability of individual companies. In an extensive literature review, Mendoza-Silva points out that more research is needed on external factors, such as the political, cultural, and resource context, which can also significantly impact the development of a firm's (or other actors') innovation activity. More recently, the theory of innovation systems has emphasized the role that institutions and knowledge play in fostering innovation and growth, apart from market factors.

CA, cultivated by a multidisciplinary community of followers, offers a way to bridge the gap between micro and macro levels of innovation capability analysis. CA can be defined as a general normative framework for assessing and evaluating individuals' well-being and their impact on social institutions, policy design, and proposals for social change. The core characteristic of this approach is its focus on what people are effectively able to do and be – that is, on their capabilities. It emerged in the 1970s from dissatisfaction with classical welfare theories and as a critique of post-war economic development models.

The argument posits that utilitarian theories, subjective well-being measures, and evaluations related to primary goods or basic needs are overly simplistic and lack an adequate informational foundation for comprehending a multidimensional phenomenon like well-being. The central objective of CA is to gather information on the various facets of well-being, enhance people's access to it, and address economic and social inequalities.

CA directs attention to the ends that people find valuable and assesses whether they possess the necessary capabilities to transform these ends into realized *functionings*. If not, it considers what actions society should take. However, rather than viewing individuals as passive recipients of rights and welfare, CA recognizes their active agency in shaping their own well-being or that of their community. Furthermore, in CA, people are not merely seen as maximizers of narrowly defined self-interest. Instead, they are understood to embrace various values, including empathy for others and commitment to ethical norms.

Application

CA has opened new critical perspectives for innovation research. It introduces a way of thinking that does not view economic growth as an end in itself but rather as a tool to promote human and social development. A notable practical application of this approach is the Human Development Index (HDI), initiated in 1990 by the United Nations Development Program (UNDP), along with the annual Reports on Human Development published by UNDP. The HDI emphasizes that a country's development should be assessed based on the capabilities people have at their disposal and how these translate into actual well-being. The index provides a summary measure of

average achievement across three key dimensions: a long and healthy life, being knowledgeable, and a decent standard of living. By evaluating national policy choices, the HDI prompts questions about how countries with similar levels of gross national income per capita can yield different human development outcomes. These contrasts stimulate debates about government policy priorities.

Exploring connections between CA and innovation economics, Capriati applies CA to the theory of innovation systems. Capriati suggests that innovation significantly impacts human development by providing individuals with an increased quantity and improved quality of goods, services, and technologies, along with opportunities for interactive learning processes. Consequently, innovation contributes to the expansion of human capabilities and enhances well-being. More broadly, Capriati believes that CA, together with human development theory, can serve as a normative framework for shaping the social and institutional context in which innovation systems evolve. Conversely, innovation systems can offer growth strategies that foster the expansion of capabilities.

Bajmócy and Gébert examine what CA has to offer from the perspective of innovation policy. They begin by highlighting that innovation policies are typically expected to contribute to economic performance, productivity, or employment growth. Since these objectives are formulated in the political arena, they are often considered beyond the scope of traditional innovation studies. However, such assumptions are increasingly challenged in other fields of economics, prompting innovation policy research to engage in critical debates. In their discussion, the authors explore the type of information necessary for designing, implementing, and evaluating innovation policy if it were grounded in the CA. They also assess how this informational foundation would differ from the growth-centered view. Their conclusion is that transitioning from classical theory to the capability approach would fundamentally alter our thinking about innovation, while still recognizing the usefulness of the systems of innovation approach for analyzing the interplay between innovation and capabilities.

Critical summary

Amid the current global crises and grand challenges, the importance of capability for innovations at all societal levels and across economic and social actors becomes increasingly significant. Both public and private organizations face mounting pressure to demonstrate greater social responsibility and readiness for sustainable practices, making innovation a crucial response. However, innovation management research has predominantly focused on the micro level, examining the capabilities of individual companies. Insufficient attention has been given to the macro-level social and cultural framework that intersects with and influences innovation activity and systems.

CA highlights that the consequences of innovation are not always favorable for well-being and human development. While innovation often enhances the wealth and capabilities of certain individuals and groups, it can also exacerbate new inequalities and harm others' capabilities. CA suggests that, in some cases, innovation and human development may even be incompatible in terms of their purpose and values. On the other hand, where CA's primary focus lies in defining and evaluating the social conditions of capabilities and people's freedom to utilize them, it provides limited guidance on the type of economic and innovation system necessary to ensure basic capabilities and well-being for all, as well as how such a system should be managed. Consequently, there is a pressing need for innovation management literature to engage in deeper critical analysis and exploration of the multi-level and multidimensional interrelationships between innovation, well-being, and development.

Further readings

Bajmócy, Z. & Gébert, J. (2014). The outlines of innovation policy in the capability approach. *Technology in Society*, *38*, 93–102.

Capriati, M. (2013). Capabilities, freedoms and innovation: Exploring connections. *Innovation and Development*, *3*(1), 1–17.

Mendoza-Silva, A. (2021). Innovation capability: A systematic literature review. *European Journal of Innovation Management*, *24*(3), 707–734.

Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development*, *6*(1), 993–114.

Sen, A. (1999). *Development as freedom*. Oxford University Press.

7. Creative destruction

Jeffrey Muldoon and Douglass Smith

Outline of the topic

Creative destruction is among the most important topics in entrepreneurship, innovation, and economic growth. It is the process through which an economy reorders itself by moving resources such as financial capital from older, moribund industries to newer, more vital ones. Thus, through this shift, creative destruction creates a new equilibrium within a new industry, and the process is repeated until that industry is also destroyed. The Austrian-born American economist Joseph Schumpeter helped make the term popular. In the process, he became what commentators such as Alan Greenspan have deemed him, a "prophet for our time."

Conceptual overview and discussion

In Schumpeter's economic view, creative destruction is one the primary drivers of modern capitalism as it is never stationary, never predictable, and always in a deep state of flux, driven in part by both technological innovation and changes of perception.

Although Schumpeter popularized the term creative destruction, its genesis is more complex. One can see creative destruction in the writings of Karl Marx, who argued about how the destruction of exchange opportunities can lead to the emergence of a new capital order. Of course, Marx viewed this as largely destructive and exploitative. However, he valued the creative potential of capitalism; he despaired the exploitative aspects of capitalism and the strain it provided to the social framework.

However, creative destruction became popular through the writings of Werner Sombart, a German economist who directly influenced Schumpeter. Sombart borrowed his ideas from Friedrich Nietzsche, especially the idea of the Übermensch (entrepreneur) and the aspects of Hinduism. In Nietzsche's work, the idea of consistent death and rebirth is a common theme, especially Zarathustra, in that the creator is always a destroyer; creation and destruction are bound together, and its opposite is stagnation; the role of the entrepreneur whose will to power produces the new industry; and life is a constant battle between death and then rebirth. Sombart developed these themes in his works, arguing that the scarcity of materials and new knowledge would lead to establishing a new order.

Accordingly, Schumpeter was not as original as one would imagine, as there was a deep legacy of creative destruction in the writings of German economics—especially the historical school. However, the influence of German economics would wane after World War I and was largely unknown in the English-speaking world, where the neoclassical model dominated. Likewise, although Schumpeter has since been regarded as a genius, his work appeared out of vogue during the 1940s and 1950s, when mathematics entered the economics profession.

Schumpeter's reputation again rose during the 1990s when he accurately predicted how the new information age was overtaking the industrial age. Economists began to recognize that traditional price models, which assume unconcentrated markets have lower prices, do not explain economic reality as much as creative destruction. A simple explanation is that technology—which traditional economic models hold as constant—is anything but. Technological changes drive the destruction of old industries and the emergence of new ones. As such, we are in a period where middle-class jobs, such as teaching and accounting, appear threatened by the new order. Another example would be that artificial intelligence can eventually replace human pilots or how information technology has allowed for the emergence of the sharing economy, represented by Airbnb and Uber, which threatened older industries such as taxis and hotels. Accordingly, business theorists, such as Clayton Christensen, have borrowed ideas about creative destruction to propose his disruptive technology theory.

The evidence is mixed as to whether small businesses or corporations are drivers of creative destruction, as is demonstrated through Schumpeter's own work. In fact, at different times, both small businesses and large corporations can be drivers of innovation. Tom Nichols found evidence that larger corporations during the early 20th century drove the transformation of the economy due to their more efficient capital structure. Arthur M. Diamond has argued the reverse: smaller is better. In terms of technology, it is often both a start-up and then a large corporation that

drives change. What driver is most salient will depend upon a combination of laws, circumstances, and the technology used.

Empirical evidence

According to Davis and colleagues, there are several manners through which economists empirically measure creative destruction, such as factor reallocation and job flows. In particular, they found in their study of American manufacturing that 10 percent of jobs did not exist a year before and will not exist next year. One particularly interesting finding is that job flows take place within rather than between sectors of the economy that is driven when an economy upgrades its technology. One of the major aspects of creative destruction is that it occurs through sharp liquidations of an industry usually concurrent with a recession. This is a slightly controversial viewpoint—one that Caballero and Hammour found, that restructuring falls during contractions—although these authors support Schumpeter's argument that liquidation is more ideal than propping up failing industries. They also argue that job creation may not keep pace with job destruction as the economy is heterogeneous and different outcomes are possible. Caballero and Hammour's argument is that liquidation is very unsteady and complex. In particular, they also found that policies such as job security can delay or impede the rate of liquidation in the economy.

Application

There are several examples, both historical and contemporary, of creative destruction; historical examples would have been the horse and buggy and the train as the primary means of conveyance throughout the mid- to late 19th century and into the 20th century. During this period, incremental improvements to both the buggy and train were highly profitable. Costs were reduced—however, usage issues remained. For the buggy, it took time to travel distances; horses were expensive and, as such, few families could afford them. Likewise, the train partially replaced the horse and buggy/stagecoach to move materials and people across a continent. However, trains could only travel where there was a track and on a schedule. Accordingly, they were inefficient, meaning most people never moved beyond their small town or section in a city.

However, the emergence of the automobile changed this equilibrium. Unlike the horse and buggy, the car was practical, effective, and efficient. Regarding the train, people could ride their cars according to their own schedule and, without needing a track, reach places that a train could not. Yet, the car remained expensive until Henry Ford and the Model T emerged, one of the first cars the average person could afford. Accordingly, with the 1930s and 1940s, the horse and buggy began to disappear and the train became less important. This importance of travel also led to the emergence of industries, such as the construction of suburbs, malls, and fast food, which took advantage of the car's efficiency, which occurred during the 1950s. Accordingly, new corporations, such as McDonald's, emerged from this period.

Likewise, most Americans used cable television as their primary means of watching television. Cable replaced the old model of basic television, which included, at most, about eight channels. Generally, people could choose to watch ABC, NBC, or CBS, and a few local syndicated channels. This meant that television lacked diversity of options, shows tended to appeal to the lowest common denominator, and a whole host of tastes were not being met. For example, your ability was limited if you wanted to watch a football game from beyond your area or perhaps a different baseball team. However, the emergence of cable television changed this. Now with over 200 channels, a wide variety of programming was available—offering consumers basically any entertainment they could want: sports, music videos, action, religious, or political programming.

However, as of this writing, we must note that cable television is being replaced by streaming. An example of this shift would be American football being moved from exclusively basic television from the 1960s until 1980, added to cable in the 1990s, and to streaming in the 2020s. The expectation is that during the next contract, Amazon, Disney, Google, or Apple will become the exclusive source of American football. Streaming is replacing cable television in its ease of use; while cable allows a diversity of choices, it is linked to a location; streaming media allows a near-endless possibility of content and location any time you wish. This means that watching television has changed as people now binge-watch shows, something

that would have been difficult during the period before streaming.

Critical summary

Likewise, we must conclude on a less than favorable note; both Marx and Schumpeter recognized the creative potential of capitalism, the dysfunctional properties of capitalism, and the various attitudes produced by capitalism that uprooted and changed society. However, Schumpeter believed that these disruptions were the justification for capitalism; Marx viewed them as leading to exploitation. In addition, Schumpeter saw creative destruction as helping to produce classes, such as intellectuals, who are against the progress of capitalism, because they tap into both the public's fear of the unknown and people who lost out due to capitalism. Schumpeter and others also understood that creative destruction could lead to upheaval. For example, as the northern United States embraced the telegraph and the train, it allowed for the creation of a culture based on the notion of free labor. This new attitude and norm brought direct conflict with the South, whose society was based on slavery.

Another issue of creative destruction is the ethics pertaining to it. Namely, the destruction of a sector of an economy may not provide much for those who lose out. In fact, the losers of creative destruction may never recover and they may disproportionately come from groups that are already disadvantaged. The destruction of work will create various social problems as documented by William Julius Wilson's *When Work Disappears*. Among the various social problems will be a loss of job skills and poor infrastructure leading to generations of poverty among families. The reverse is also true. Namely, as Djankov and colleagues argue, that the government may seem to create regulations that would prevent the process of creative destruction from working, with huge deadweight loss. In addition, various groups may see an opportunity to rent-seek to prevent creative destruction from occurring.

Further readings

Caballero, R., & Hammour, M. (2005). The cost of recessions revisited: A reverse liquidationist view. *Review of Economic Studies*, *72*, 313–341.

Diamond Jr, A. M. (2006). Schumpeter's creative destruction: A review of the evidence. *Journal of Private Enterprise*, *22*(1), 120.

Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2002). The regulation of entry. *The Quarterly Journal of Economics*, *117*(1), 1–37.

Elliott, J. E. (1980). Marx and Schumpeter on capitalism's creative destruction: A comparative restatement. *The Quarterly Journal of Economics*, *95*(1), 45–68.

Kirchhoff, B. A., Linton, J. D., & Walsh, S. T. (2013). Neo-Marshellian equilibrium versus Schumpeterian creative destruction: Its impact on business research and economic policy. *Journal of Small Business Management*, *51*(2), 159–166.

Nicholas, T. (2003). Why Schumpeter was right: Innovation, market power, and creative destruction in 1920s America. *The Journal of Economic History*, *63*(4), 1023–1058.

Reinert, H., & Reinert, E. S. (2006). Creative destruction in economics: Nietzsche, Sombart, Schumpeter. In J. G. Backhaus & W. Drechsler (Eds.), *Friedrich Nietzsche (1844–1900). The European heritage in economics and the social sciences. Vol. 3* (pp. 55–85). Springer.

Thompson, J. L., & Day, J. (2023). Towards a model of entrepreneurial behaviour: An evaluation of the history of Fabergé from 1842 to 2017. *Journal of Management History*, *29*(1), 134–155.

8. Drucker's seven sources of innovation

Jeffrey Muldoon and Douglass Smith

Outline of the topic

Organizations looking to generate dynamic and creative concepts can benefit immensely from Drucker's seven sources of innovation. This powerful framework gives companies the tools to explore fresh new ideas and develop revolutionary products and services. Firms that comprehend these seven sources of innovation can easily recognize chances for growth and development, forming an innovative culture that will allow them to stay ahead in this ever-evolving business world. By doing so, they can confidently advance their objectives and capitalize on the market's opportunities. Staying ahead of the curve, being innovative and fostering a culture of innovation, plays a critical role in the success of an organization in today's ever-changing business world. Companies that fail to innovate may quickly find themselves outpaced by their rivals and lose market share, potentially becoming obsolete over time. Drucker's framework can be an essential tool in helping an organization thrive.

Conceptual overview and discussion

Peter Drucker was one of the most influential management thinkers of the late 20th century. His work traversed between the general practicing managers and academics, covering a great many topics. One of those topics was the concept of innovation, on which Drucker published a book in 1985, *Innovation and Entrepreneurship*, which gave life to a new line of research on the role of innovation in driving entrepreneurship. In writing this book, Drucker demonstrated the influence of his fellow Austrian, Joseph Schumpeter, in explaining how entrepreneurs utilize changes in both external and internal environments to create new business opportunities. As such, entrepreneurs are the mechanism through which resources from businesses and industries with lower returns transfer to those which offer the chance for higher degrees of return. Therefore, Drucker placed the entrepreneur as the driver for economic activity and the wellbeing of a society. In doing so, he placed himself firmly on the outside of neoclassical economics and management theory of the 1960s to the 1980s.

While Drucker had the entrepreneur as the hero, nevertheless, he did not analyze nor seek to understand the entrepreneurial personality. Indeed, based on his long record of consulting with successful business leaders of all types, Drucker noted that it was less the entrepreneur's personality and more the mindset that makes an entrepreneur successful. This mindset is the relentless and purposeful search for new opportunities to utilize. Therefore, any individual could be an entrepreneur as all that was needed to be one was the willingness to search for new avenues of economic and social potential. These opportunities stem from changes which occur in the larger social and economic setting which creates disequilibrium, which, in turn, creates these profit opportunities. Drucker's crafting of the definition of entrepreneurs refers back to its original conceptualization by the French economist J.-B. Say.

These larger changes in the economy come from innovation, which is the purposeful change of a business potential for either a social or economic impact. In other words, innovation occurs when there is an improvement of existing resources. This point had been known since at least the time of Schumpeter in explaining the role of the entrepreneur. In Schumpeter's theory (based on the writings of Kondratieff), the entrepreneur emerges through technological changes. Yet, Drucker developed a new conceptualization beyond Schumpeter and traditional notions that entrepreneurs are not driven by technology or invention, but rather on innovation. And that innovation can be very low-tech, simply a better way of doing what a business currently does. The example that Drucker provides was McDonald's, which had started as a local hamburger company, but through standardization greatly transformed how it did business. In the process, McDonald's helped to launch a whole new industry: fast food. Hence, the best innovations can be simple and decidedly low-tech. Likewise, even established companies can be entrepreneurs as the simple reconfiguration of their existing resources is considered entrepreneurial activity.

Entrepreneurship is driven by innovation, which, according to Drucker, comes from seven sources: unexpected success or failure,

incongruity, process need, changes in industry, demographics, changes of perception, and new knowledge. The first four sources are within the firm or industry; the last three are more general trends. One of the strengths of Drucker's viewpoint is that the best innovation is something that would appear to be obvious, just as the best investment would be arbitrage. However, unlike an arbitrage, the market for innovations is consistently in flux and requires the constant observation from the entrepreneur. This flux comes from the fact that some of the sources are things that are commonly overlooked. Drucker's model also indicates that larger innovations, such as those that come from new technologies, can be highly risky. Likewise, innovations can be social, such as the emergence of the textbook, which allowed for mass education to occur. Of course, the establishment of textbooks created a new industry, expanding book publishing and increasing economic benefits, but its benefits went beyond basic economics in that it allowed for modern education to emerge. Another example would be installment payment structures. Rather than paying for everything up front, a customer could pay in parts, which allowed for greater consumption and production to occur.

Application

The first source of innovation is unexpected success or failure. One of the examples of an unexpected success would be when IBM sold an accounting machine, which was designed for profit corporations, to libraries during the midst of the depression. Libraries during the early New Deal years had plenty of money and when the New York Public Library wanted to purchase one, they could. Another example is the drug Viagra emerging from an unforeseen circumstance. Pfizer was testing the drug for heart conditions in a nursing home. While the drug had no benefit for improving heart problems, it had a major impact in restoring sexual function in older men. Hence, a new drug market was created and a thousand quips were launched.

The second source is the incongruity, which is the difference between what is versus what should be. Before the 1960s, cataract surgery was complicated, requiring the cutting of the ligament in the eye. Bill Conner of Alcorn industries noted that there was an enzyme that would dissolve cataracts. What he did was to add a preservative which allowed the enzyme to be stored for a few months. Another example would be the strategy of Edward Jones—which targeted older and more rural customers who had been ignored by other investment firms.

The third source is the process need, which can be described as necessity is the mother of invention. As Drucker pointed out, there is no modern highway system in Japan, as roads still follow from the oxcart paths. What makes it possible for Japan to have modern cars and trucks is the use of the reflector, which had been a feature in the United States highway systems since the 1930s. Another example would be the establishment of *Time* magazine. When Henry Luce and Briton Hadden formed *Time* to satisfy the need for international information that had spiked due to the First World War. At the time, most people got their news from local newspapers, which lacked the ability to have foreign services. So, Luce and Hadden produced a solution in that they had a news weekly which would summarize both the national and international news.

The next source is changes in industry structure. Industries can change for any number of reasons. Some of the circumstances can include growth, entry of new firms, new ways of competing, and a technology that can cause disruption. An example of this would be the move of Microsoft into the video game industry with the Xbox. Before Microsoft's entry, the video game consoles mostly just played games; with Microsoft, they became basically computers, which allowed for a wider variety of functions. Likewise, Vince McMahon of World Wrestling Entertainment (WWE) recognized that the emergence of cable television allowed for the creation of national corporations. Previously, wrestling was a local affair as television was local and wrestling companies used their television shows to promote wrestling. Therefore, without a national television contract, it would be highly difficult to advertise wrestling on a national basis. In addition, network television had not allowed wrestling on television since the 1950s. However, the cable networks changed this, as new networks needed content, especially cheap content. Accordingly, McMahon made business arrangements with several cable networks, especially the USA network, which he used to broadcast his wrestling. This allowed him to create a national market.

Drucker's fifth source, demographic changes, is one of the major drivers of innovation, but one that is ignored by policymakers. Whether a nation's population is expanding, retracting, aging, getting younger, or through immigration, the underlying demographics of a nation are constantly changing. For example, the United States and other developed nations face an aging population. In particular, the United States is facing the retirement and aging of the Baby Boom population, which had been the generation born from about 1945 until 1962. This is a large block of individuals who need retirement and healthcare needs that the system may not be able to respond to. As such, this is going to provide opportunities for aspiring entrepreneurs. Likewise, the spread and increased integration of the Italian American population after World War II created an opportunity for the pizzeria; American GIs also returned home from the war with a desire for Italian foods. Hence, these two factors led the pizza to become a staple of the American palate.

The sixth is changes of perception. People make decisions based not on actual facts but often their perceptions of actual facts. These perceptions may be incorrect or they could be correct, but people act on the basis of these perceptions. As Drucker wrote, whether people believe that the cup is half-empty or half-full could be a driver of innovation if people are convinced that the cup is half-empty. An example of this would be the healthcare industry—whether we are talking about medicine or other forms, such as exercise. For example, medical care is vastly better now than it has been before. Previously, medical conditions such as hypertension had been a death penalty, but it is now a condition that can be easily managed through medication. However, people believe that overall health in the developed world is worse than it has been in the past.

The seventh is new knowledge, which can be highly risky. New knowledge can be technical, scientific, or simply awareness of social conditions. For example, the development and popularization of the internet created new opportunities for commerce. In fact, you probably have purchased this book from the internet, or perhaps you are reading it on a computer. These opportunities may not have been available to you 30 years ago or even 10 years ago. However, as stated before, new knowledge may not be technical in nature; it could be social. For example, Wendy Kopp, the founder of Teach for America, only became aware of the issues with the American education system during her time as a student at Princeton University.

Critical summary

Drucker's seven sources of innovation is a reference for organizations looking for competitive advantage using innovation. Given its popularity, the reference could benefit from further critical analysis. The framework is a guide that can be used in many ways in organizations, irrespective of their unique characteristics. While this is one of the more popular reasons for adoption and use, innovation within the culture and operations of an organization is more complicated when facing resource limitations such as time, budget, and organizational culture. Those who choose to use this framework should be prepared to acknowledge and accept risk-taking and experimentation characteristics as methods to accelerate innovation within the organization. The framework is not without its criticisms. Critics of the framework point to several issues. First, the innovation process is oversimplified; it lacks specific implementation instructions and minimizes the impact of technology and other external factors. Critics also cite the static and limited emphasis on creating an innovative organizational culture as a driving force or the role of disruptive innovation. Lastly, the framework is a few decades old and generally questions whether it can still be used reliably in an age where innovation seems to be the norm, not the exception. Given the accolades and criticisms, Drucker's framework continues to be a force in the academic and professional realms of discussion in hopes that its utilization will produce innovative organizations and ultimately result in greater success, expansion, and long-term sustainability for an organization.

Further readings

Drucker, P. F. (1985a). *Innovation and entrepreneurship*. Harper & Row.

Drucker, P. F. (1985b). Principles of successful innovation. *Research Management*, *28*(5), 10–12.

Drucker, P. F. (2002). The discipline of innovation. *Harvard Business Review*, *80*(8), 95–102.

Kiessling, T. S. (2004). Entrepreneurship and innovation: Austrian school of economics to Schumpeter to Drucker to now. *Journal of Applied Management and Entrepreneurship*, *9*(1), 80–91.

Zahra, S. A. (2003). An interview with Peter Drucker. *Academy of Management Perspectives*, *17*(3), 9–12.

9. Employee-driven innovation

Esa Hiltunen

Outline of the topic

Traditional top-down approaches to innovation, in which decisions and initiatives are typically driven by upper management, are increasingly being challenged by employee-driven innovation (EDI). Unlike the conventional model, which often centralizes innovation within leadership, EDI emphasizes the active involvement and contributions of employees at all levels of the organization, particularly in generating and implementing innovative ideas. Employees, as the closest observers of daily operations, possess unique insights and expertise that can drive innovation and enhance an organization's competitive advantage. This involvement can include generating new ideas, improving processes, and developing innovative solutions to problems.

According to the research literature, EDI holds significant importance for organizations aiming to foster a culture of innovation and achieve sustainable growth. By actively engaging employees in the innovation process, organizations can tap into diverse perspectives, expertise, and creativity, which can lead to enhanced problem-solving capabilities. This, in turn, can increase employee engagement and motivation while improving organizational agility through continuous improvement. This entry will explore the conceptual framework of EDI, discuss its practical application, and examine the benefits and challenges associated with implementing EDI in organizations.

Conceptual overview and discussion

EDI has its roots in innovation literature, particularly within the context of human-centred innovation and organizational behaviour, which emphasize individual contributions to the innovation process. It refers to an approach in which innovation within an organization is primarily guided and initiated by employees at various levels. The recognition is that individuals directly involved in day-to-day operations often have valuable perspectives that can spark creative solutions, improve processes, and drive overall innovation.

EDI contrasts with traditional top-down methods by highlighting the importance of tapping into the collective intelligence and creativity of all employees to foster a culture of innovation within an organization. It is a collaborative and participatory approach that enhances ideation, problem-solving, and the implementation phases of innovation by leveraging the diverse expertise and creativity of employees. Moreover, EDI is a dynamic and ongoing process that requires commitment from both employees and management. It is supported by a theoretical framework that highlights the key factors and mechanisms underlying its success, such as employee involvement, empowerment, knowledge sharing, and a supportive organizational culture.

EDI can encompass various types of innovations, including incremental or radical ones, as well as product, process, social, and structural innovations. The implementation of EDI is significant and can vary depending on the organizational structure. For instance, in hierarchical structures, EDI may face challenges due to the inherent top-down nature, whereas in more horizontal structures, EDI may thrive due to the naturally collaborative environment.

To broaden the understanding of EDI, it is helpful to compare it with related concepts, such as total quality management (TQM) and continuous improvement. These approaches, like EDI, emphasize ongoing innovation but may differ in terms of structure and focus. TQM involves a comprehensive, organization-wide approach to quality improvement. It emphasizes a strong focus on quality standards and practices throughout an organization, aimed at long-term customer satisfaction and overall excellence. In contrast, continuous improvement is a systematic approach involving gradual, incremental enhancements to processes, products, or services. It typically follows structured methods, such as the plan-do-check-act (PDCA) cycle, which focus on refining existing processes based on data and feedback.

Application

EDI holds significant importance in the development of both private and public organizations. Research on EDI has mainly been conducted in medium-sized and large companies. As an illustrative example, this case study focuses on the application of EDI in a small retail store within the service sector. By

identifying the main barriers and antecedents to EDI, along with corresponding recommendations for management, it aims to provide insights into how to foster an environment conducive to EDI.

In their research, Hiltunen and Laitinen explored the barriers and antecedents to EDI in a small Finnish retail store. They identified several barriers, including insufficient support and opportunities for innovation, a fast-paced work environment that leaves limited time for creative thinking, an employee mindset that accepts problems as given without seeking innovative solutions, and limited communication. Innovation was observed to occur sporadically rather than as a continuous process. While customer feedback is valuable, relying solely on it may hinder the potential for employee-driven innovation, especially when resources are limited. Striking a balance between customer input and employee-generated ideas is crucial to ensuring a comprehensive approach to innovation.

The case study also highlights the antecedents to EDI in a small retail store. These include the store's positive work atmosphere, employees' eagerness to contribute to the store's growth, and autonomy in decision-making. In this context, autonomy refers to employees' ability to make decisions independently regarding certain operational aspects, which empowers them to propose and implement innovative ideas. By fostering a supportive and empowering organizational culture, establishing clear goals, and promoting collaboration and knowledge sharing, organizations can create an environment that encourages employees to contribute their innovative ideas. These antecedents lay the foundation for EDI, enabling small retail stores to maintain competitiveness, adapt to changing market demands, and achieve sustainable growth.

To create a work environment conducive to EDI, the case study suggests that management should reassess their support systems to nurture innovation. It is crucial for organizations to cultivate an atmosphere that promotes trust, psychological safety, and open communication, allowing employees to feel comfortable sharing their ideas. Managers should actively participate in, support, and promote innovative initiatives, signalling that innovation is highly valued and encouraged within the organization.

Critical summary

EDI offers several advantages for organizations and employees but also presents potential challenges, such as balancing control and autonomy and ensuring management support and direction. It is crucial to have mechanisms in place to evaluate, prioritize, and implement ideas effectively. A lack of effective management processes can result in idea overload or a loss of focus on the most promising innovations. The implementation of EDI must address the challenge of combining a spontaneous, employee-driven approach with a structured framework that ensures that the benefits of EDI can be realized. This balance is essential for organizations aiming to effectively integrate EDI into their innovation strategies.

While EDI has gained significant attention in the academic literature, several research gaps still exist. Many studies have explored EDI in specific industries or organizational settings, but there is a lack of research examining how contextual factors influence the effectiveness of EDI. Additionally, most research on EDI has been conducted in Western contexts, leaving a gap in understanding how cultural factors influence the effectiveness and outcomes of EDI in different cultural settings. More research is needed to develop appropriate evaluation frameworks to capture the multifaceted nature of EDI and its effects on organizational performance.

Further readings

Hiltunen, E., & Laitinen, T. (2021). Barriers of employee-driven innovation in a small retail store. In A. K. Dey, V.-V. Piispanen & S. Mishra (Eds.), *Sustainable entrepreneurship: Innovation and transformation* (pp. 93–103). Bloomsbury Publishing India.

Høyrup, S. (2012). Employee-driven innovation: A new phenomenon, concept and mode of innovation. In S. Høyrup, K. Møller, M. Bonnafous-Boucher, C. Hasse & M. Lotz (Eds.), *Employee-driven innovation: A new approach* (pp. 3–33). Palgrave Macmillan.

Kesting, P., & Ulhøi, J. P. (2010). Employee-driven innovation: Extending the license to foster innovation. *Management Decision*, *48*(1), 65–84.

Renkema, M., Meijerink, J., & Bondarouk, T. (2022). Routes for employee-driven

innovation: How HRM supports the emergence of innovation in a formalized context. *The International Journal of Human Resource Management*, *33*(17), 3526–3559.

10. Innovation paradoxes

Tea Lempiälä

Outline of the topic

Innovation as a phenomenon encompasses numerous paradoxical tensions, that is, contradictory yet interdependent elements that are simultaneously necessary for organizational success. Unlike managerial dilemmas or more fleeting tensions, paradoxes are characterized by their persistence over time, which means that they cannot be solved permanently; rather, their management involves acceptance and integration strategies whereby leaders and organizational actors learn to balance between the competing requirements in an effective manner. Examples of such paradoxes can be found in the need to balance exploration and exploitation as well as autonomy and control when managing organizational innovation. This entry first briefly discusses paradox research, followed by a review of the types of paradoxical tensions identified to date in the field of innovation, and concludes with a summary of managerial strategies to navigate innovation paradoxes in organizational contexts.

Conceptual overview and discussion

The roots of paradox research trace back to long-standing philosophical traditions, particularly Taoism, while to management theories paradox was introduced in the late 1980s. Paradox research holds a wide range of scholarship, and only a fraction of that research has been directed towards innovation management to date. The larger field of paradox research has identified various types of paradoxical tensions that impact organizations, their emergence and latency, dominant responses, and strategies for navigating them. The overall goal of paradox research in the field of management has been to better understand and accept conflicting elements of organizational life, hence fostering 'both/and' thinking that is likely to yield more fruitful approaches to navigating organizational tensions.

Paradox scholarship has generally adopted a categorization of organizational paradoxes where they are divided into four categories: paradoxes of performing, belonging, learning, and organizing. Performing paradoxes arise from conflicting organizational objectives whereas belonging paradoxes refer to tensions generated by plurality of memberships and roles, and the arising identity conflicts for individuals and groups. Organizing paradoxes refer to competing organizational structures, designs, and leadership practices for directing and coordinating organizational actors. Finally, learning paradoxes are most directly linked with innovation as they relate to the tensions generated by the need to renew, innovate and change while building upon the past and maintaining sufficient stability. All of them have been identified as intersecting with the field of innovation.

In the domain of organizational innovation, paradox research has particularly drawn attention to five paradoxes: exploration-exploitation (ambidexterity), creativity-implementation, control-freedom, openness-control, and paradoxes surfaced by change processes. On the regional level, innovation studies have drawn attention to policy paradoxes that deal with ironic outcomes and dynamics of innovation processes. All of these are briefly reviewed here, while primacy is given to the organizational context.

The simultaneous need for exploration and exploitation for an organization's long-term success represents a key paradoxical tension in the field of innovation, and it has been widely explored during the last two decades. While the challenges related to the push and pull of these contrary requirements have been discussed for much longer, the concept of ambidexterity was introduced in the organizational innovation literature in the 1990s to highlight the ability (and need) of organizations to successfully manage both creating new innovations and effectively capitalizing on existing solutions at the same time. Ambidexterity has been positively linked with firm performance, and an abundance of research has since examined its structural, contextual, network, and leadership antecedents. Ambidexterity has been explored both at the organizational and individual levels, where the former has examined structural designs and managerial practices, while the latter has focused on the individual actors' ability to host the contradictory logics. Paradox scholars have further identified three interconnected tensions that underlie the larger exploration-exploitation paradox in ambidextrous organizations: *strategic intent* (profit vs. breakthrough emphasis), *customer orientation* (tight vs. loose coupling), and *personal drivers* (passion vs.

discipline). These tensions operate on different analytical levels and organizational domains, and, hence, multilevel approaches are emphasized in managing the paradox.

Related to this paradox, the creativity-implementation paradox (sometimes termed as the 'innovation paradox' in itself), refers to the requirement of seemingly contrary skills of idea creation and execution over the course of the innovation process. The first skillset is related to the ability to think and act in nonconformist ways (and hence break out of the ordinary), whereas the second is related to the capability to undertake convergent tasks of organizing, stabilizing, and implementing. This paradox has often been investigated through the lens of different skills and attributes of the people involved in the innovation process. Such attributes are related to, for example, functional position, personality, and demographic background. The recommendation is to ensure a balance of both creative and conformist capabilities and personalities during the idea's journey, even for radical ideas.

The control-freedom paradox is rooted in the managerial challenge of motivating innovators while providing them with sufficient direction so that their efforts effectively contribute to organizational goals. Hence, from the perspective of managing people, the continuous balancing between creative freedom and managerial control is recognized as an essential part of innovation management. What underlies this paradox is the importance of intrinsic motivation on the quality of creative endeavors and the notion that it is supported by offering creative individuals freedom in pursuing routes and goals they are passionate about. However, to ensure organizational success, creative efforts need to be channeled so that they effectively contribute to organizational strategy and goals. This paradox has often been approached from the perspective of shielding innovators from the constraints posed by organizational realities in the creative phase of the innovation process. However, recent research indicates that innovators in organizational contexts are likely to have paradoxical motivational drivers, meaning that they are simultaneously motivated by personal passion and organizational benefit as this allows them strategic autonomy whereby they are able to direct their efforts towards worthwhile ends. Managerially, the suggestion is to enable such balancing on the individual level and facilitate strategic understanding and autonomy in creative efforts.

In a similar vein, paradox literature has identified a control-openness paradox in the context of open innovation, which arises from the need to both maintain control over the organization's key resources and foster participation through knowledge sharing among the external (and often voluntary) innovators. Scholarship in this area has recommended that better understanding of the interdependent nature of the polarities leads to better results in open innovation efforts. Overall, the need to both share and protect knowledge in open innovation processes has drawn academic interest, and a combination of integration and separation strategies has been proposed as a solution.

Processes of organizational change can surface underlying paradoxes of belonging, performing, and organizing. As change efforts modify existing structures, roles, and practices, they often create ambiguous and seemingly conflicting demands on identities, goals, and organizational designs that can become paralyzing to those involved if not managed appropriately. Furthermore, changing institutional logics can create situations where outcomes themselves are paradoxical and hence difficult to interpret. Hence, in order to capture the innovation opportunities embedded in change processes and not get stuck on the emerging ambiguities, complexities, and contractions, organizational actors need capability to engage in reflection on paradox and ability for paradoxical thinking.

Finally, innovation literature has also used the term 'innovation paradox' to refer to ironic outcomes of innovation processes and overall dynamics that counter the expected logic of cause and effect in innovation activity. Such discussion has often been had from an innovation policy perspective on the firm or regional level, and it has focused on innovation performance and development anomalies. For example, attention is drawn to cases where increased innovation investments lead to adverse (or null) outcomes for economic growth and dynamics that cause regions in greatest need of productivity gains to have the least ability to invest in innovation. Better understanding of the complexities that feed into these dynamics has been highlighted as a fruitful way to approach these types of paradoxes.

Application

Management strategies for paradoxical tensions are focused on the effort to find ways to build acceptance for paradoxical tensions in the organization, hence avoiding defensiveness, and to build capabilities to effectively operate under the condition of contradictory requirements, hence avoiding paralysis. While each paradoxical tension identified earlier will have its own distinctive qualities, the overall managerial approaches bear similarities across paradoxes. Essentially, the key is to find ways to 'work through' paradoxes, that is, finding creative and dynamic ways to engage with the seemingly contradictory requirements, and finding ways to capitalize on the opportunities that they offer. Overall, multilevel approaches and integrative, reflective strategies are favored. Three of the most common approaches presented in the organizational paradox literature are discussed here.

Separation strategies include approaches where the polarities of the paradoxical tension are kept separate either through structural arrangements, role distinctions, or temporal sequencing. Any solutions where the opposites are hosted in different people, units, or times in the development process represent these types of strategies. For example, in the context of ambidexterity this would mean structurally hosting the explorative and exploitative activities in their own units or temporally separating the polarities by first focusing on exploration activities and then changing the emphasis to exploitation. Even with these strategies, actors are still expected to alternate dynamically and flexibly between the polarities, and there should be managerial oversight that encompasses both polarities and is thus capable of coordinating between the separated elements.

Integration strategies strive to develop capabilities and mechanisms that enable addressing both polarities in the same unit, at the same time, and by the same people. These managerial approaches focus on enabling actively living with paradox and finding more long-term strategies for incorporating tensions as an accepted part of organizational life. For example, individuals can situate opposites in a new relationship with each other, in a way that removes the sense of competition and tension between them, or promote visions that enable viewing the seeming opposites as part of the same whole. In the case of ambidexterity, integrative approaches would include, for example, establishing concurrent knowledge management processes associated with radical as well as incremental innovation at the management team level in addition to lower-level integration activities that ensure flow of information across units. Generally, paradox studies emphasize the need to find such genuinely synergistic approaches in order to fruitfully manage paradoxical tensions, and emphasize the need to create practice and mechanisms that allow for acceptance and acknowledgement of organizational paradoxes.

Paradoxical cognition has been noted as essential for navigating paradoxical tensions both at the individual and organizational level. Paradoxical cognition refers to mental frames and processes that are able to recognize, process, and embrace contradiction. Such frames have been found to lead to increased innovation capability through the ability to envision richer problem and solution spaces, and identify unobvious connections between seemingly opposing elements. In addition, they have been found to facilitate the likelihood of adopting integrative approaches to paradoxical tensions, Paradoxical cognition has been particularly explored in the context of managers while the ability to cultivate such frames across the organization has also been increasingly emphasized. In the context of ambidexterity, research has pointed out the connected nature of the organizational and individual levels in the ability to develop paradoxical frames. Organizational structures and practices, such as socialization, distributed decision-making power, and recognition, are likely to positively impact an individual's ability to engage in ambidextrous thinking. Meanwhile, the ability of individual members to host paradoxical frames is likely to positively impact an organization's ambidextrous capability.

Critical summary

There is great potential that still remains to be reaped for innovation scholarship in the field of paradox research. While contradictions have been in the heart of organization theory for some time, interestingly, innovation management has not made great use of paradox theory to date. While the field frequently discusses the management of the various tensions and competing requirements, they have

largely been approached as managerial dilemmas – with the intent of identifying solutions and optimal balances, or hosting differing logics in structurally separated units. In a domain that is inherently paradoxical – with its aim to predict the unpredictable and control the uncontrollable – a richer examination of the plurality and contradiction inherent in this activity would be merited. Particularly in relation to accepting and working through conflicting elements, hosting paradoxical frames, and understanding paradoxical motivations, a more in-depth use of paradox theory is likely to yield richer understanding and improved effectiveness of managerial approaches. More specifically, such an approach is likely to yield managerial strategies that are better able to address and capitalize on the inherent ambiguities and pluralities embedded in innovation activity. Furthermore, opportunities for innovation and change can directly be found through the ability to combine unobvious institutional logics in organizational contexts.

Further readings

Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, *20*(4), 696–717.

Fragkandreas, T. (2017). Innovation paradoxes: A review and typology of explanations. *Prometheus*, *35*(4), 267–290.

Hargrave, T. J., & Van de Ven, A. H. (2017). Integrating dialectical and paradox perspectives on managing contradictions in organizations. *Organization Studies*, *38*(3–4), 319–339.

Lauritzen, G. D., & Karafyllia, M. (2019). Perspective: Leveraging open innovation through paradox. *Journal of Product Innovation Management*, *36*(1), 107–121.

Lempiälä, T., & Vanharanta, O. (2018). Rethinking the control–freedom paradox in innovation: Toward a multifaceted understanding of creative freedom. *The Journal of Applied Behavioral Science*, *54*(1), 62–87.

Lüscher, L. S., & Lewis, M. W. (2008). Organizational change and managerial sensemaking: Working through paradox. *Academy of Management Journal*, *51*(2), 221–240.

Papachroni, A., Heracleous, L., & Paroutis, S. (2015). Organizational ambidexterity through the lens of paradox theory: Building a novel research agenda. *The Journal of Applied Behavioral Science*, *51*(1), 71–93.

Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review*, *36*(2), 381–403.

11. Institutional complexity

Elina Vikstedt

Outline of the topic

Innovation processes typically engage multiple actors from a range of societal sectors, such as universities and research institutions, governments, regulatory agencies, businesses, different advocacy groups and civil society. Stakeholders representing different societal sectors often follow distinct institutional logics, which Thornton and colleagues characterize as patterns of values, beliefs, rules, assumptions and material practices, that draw from divergent sources of legitimacy, authority, identity, norms, attention and strategies. Innovation processes that involve multiple stakeholders from different institutional domains face institutional complexity in the form of multiple co-existing and incompatible institutional prescriptions, as defined by Greenwood and colleagues. While successfully combining the institutional logics of different actors can be beneficial to innovation, prescriptions of incompatible logics can lead to conflict and hinder collaborative innovation capacity.

Conceptual overview and discussion

Actors from various sectors have 'stakes' in innovation processes. Innovation is important for academic research, the private and public sectors and civil society. Innovation often relies on collaboration among diverse societal groups and actors, with the aim of synergistically combining different institutional logics and collectively transforming the functioning of the institutional fields in which they operate. While innovation serves as a shared objective that unites actors from different institutional domains, depending on their backgrounds, the different actors need to comply with different rules and norms, regard different aspects of innovation as important and valuable and pursue different outcomes. When different values, identities and practices collide and coalesce, institutional complexity may impact actors' ability to work together towards their shared objectives.

According to Greenwood and colleagues, actors can experience varying degrees of institutional complexity, depending on the extent to which a given organization, constellation of organizations or operating field is characterized by multiple, interrelated and incompatible institutional logics. Raynard argues that the way in which institutional logics diverge or converge is dependent on the degree to which they are (in)compatible, the level of jurisdictional overlap and the extent to which they are prioritized within a given field. According to them, a high degree of complexity due to unsettled prioritizations, incompatibility and the jurisdictional overlap of multiple logics is a typical feature of innovative and emerging fields.

Actors can seek to manage institutional complexity in various ways, for example by undermining the demands of conflicting logics and following one primary logic (logic replacement), keeping institutional logics separate from each other (compartmentalization, layering or structural differentiation), incorporating elements of one logic into another (assimilation or transformation), selectively and flexibly drawing from different sources of legitimacy, authority, identity and bases for norms and strategies based on the situation (selective coupling or compromising) or seeking to adopt hybrid structures and practices that accommodate multiple logics in synergistic ways (blending or integration). The responses might not necessarily be strategic or intentional and may emerge spontaneously during the innovation processes. However, actors can also consciously pursue the hybridization of logics or their deep integration, as noted by Vermeulen and colleagues.

Application

Here, institutional complexity is illustrated through the case example of CLIC Innovation, an innovation partnership that focused on promoting sustainability transition through green innovation projects, which typically involve multiple research and business partners and public sector funding. While innovation represented the common goal of the partnership, the expectations of the partners varied in terms of the roles, contributions, coordination practices, time frames, resource allocation, information exchange and end results of the joint innovation work. The partners, following a commercial logic, emphasized efficiency and sought market status and profits within relatively short time frames, whereas the research partners were focused on accumulating scientific knowledge through the

traditional practices of academic knowledge production. This meant that the partners needed to balance commercial viability with academic freedom in order to pursue out-of-the-box ideas and state-of-the-art solutions that would be operationalizable within the current market space.

To mitigate institutional complexity, the innovation management in the project planning stage involved seeking actors with aligned interests, 'matchmaking' to build actor constellations with compatible ideas and resources as well as negotiations regarding each partner's roles and responsibilities and overall performance goals. The facilitator of the partnership provided the partners with structured project design processes and workshop methods to determine the joint purpose, vision and mission and to support the development of co-innovation strategies. The innovation work in the partnership was carried out by experts with varied professional backgrounds, many of whom had previous experience working in both industry and academia as well as in cross-sectoral and multidisciplinary environments. This helped the key individuals responsible for innovation work to understand the institutional logics at play and navigate the multi-logic environment.

The innovation projects of the CLIC partnership were structured as thematic work packages in which compatible elements of logics were bundled together. Meanwhile, incompatible parts were divided into another work package under another theme or sequentially prioritized such that each actor provided project outputs following their own logics, albeit in connection with others. Compartmentalization of incompatible elements of the logics allowed the partners to pursue actions that were mainly academically or commercially oriented while drawing on the partnership's joint resources.

While the partners maintained their distinct logics, their continuous interactions enabled them to develop a better understanding of the multiple logics within the partnership and at the field level. Increased awareness of the divergent institutional demands for innovation work allowed experienced partners to adopt a more strategic approach in navigating the multiple institutional domains. Through the selective coupling of institutional logics, partners were able to strategically embrace elements relevant to their multiple stakeholders. A high level of alignment in terms of blending the logics was not achieved, but, through mutual learning, the partners who continued to work together adapted to each other's logics, gradually mitigating the tensions arising from institutional complexity.

Critical summary

The act of combining multiple institutional logics in innovation processes can result in robust innovations that benefit not only individual actors but also the society as a whole. At the same time, collaborative innovation work may be challenging due to incompatible but overlapping institutional logics. Institutional complexity, if not addressed, may lead to dysfunctional organization, an inability to coordinate collective actions and antagonistic practices between different actors that are central to the realization of societally critical innovations. By focusing on the multiplicity of institutional logics, researchers and practitioners can explore and explain institutional dynamics in innovation processes and develop more strategic ways of leveraging institutional multiplicity and diversity to promote transformative innovation.

Further readings

Greenwood, R., Raynard, M., Kodeih, F., Micelotta, E. R., & Lounsbury, M. (2011). Institutional complexity and organizational responses. *Academy of Management Annals*, *5*(1), 317–371.

Raynard, M. (2016). Deconstructing complexity: Configurations of institutional complexity and structural hybridity. *Strategic Organization*, *14*(4), 310–335.

Thornton, P. H., Ocasio, W., & Lounsbury, M. (2012). *The institutional logics perspective: A new approach to culture, structure and process*. OUP Oxford.

Vermeulen, P., Zietsma, C., Greenwood, R., & Langley, A. (2016). Strategic responses to institutional complexity. *Strategic Organization*, *14*(4), 277–286.

12. Joseph Schumpeter

Jeffrey Muldoon and Douglass Smith

Outline of the topic

Joseph Schumpeter (1883–1950), one of the preeminent economists of the 20th century, made many contributions to economics, including business cycles, creative destruction, economic development, entrepreneurship, evolutionary economics, and the history of economic thought. Few economists have had as much influence over the development of economic innovation. Indeed, Schumpeter's renown as an economist has been recognized repeatedly, whether the economist was from the neoclassical, Marxist, Austrian, or institutionalist school.

Conceptual overview and discussion

Schumpeter's principle contribution was the idea of creative destruction, in which capital flows from an older, more mature industry to a new industry due to the emergence of new technology. An example of such a movement would be the destruction of cable television due to the emergence of streaming services. As the internet improved and became more popular, companies began to offer content through a streaming service, such as Netflix, rather than using older venues such as traditional cable. Schumpeter's theory has been demonstrated due to the decline of cable subscribers and the emergence of various new streaming platforms. However, unlike other innovation scholars, Schumpeter does not view this as a completely positive outcome. Rather, he notes that such transformations come with a cost as they destroy jobs and displace workers, some of whom will not benefit from the new order.

Schumpeter's pessimism was well grounded. Born to a factory owner in Habsburg Moravia (now Třešť in the Czech Republic), Schumpeter's early life was spent in the dying Austrian-Hungarian Empire and he would witness, before his 40th birthday, the end of a dynasty that had ruled for over 300 years. He was educated at the University of Vienna by Eugen von Böhm-Bawerk, one of the major figures of the Austrian School of Economics. Bohn-Bawerk was a major critic of Marxian economics, especially the law of value, which is the average number of labor hours required to produce a commodity, rather than the law of supply and demand. In addition, Bohn-Bawerk would utilize subjectivism to critique the law of value in those products only when consumers value them. This influence was notable because Schumpeter would utilize Marxian frameworks to critique capitalism, a viewpoint that did little to endear him to his fellow Austrian economists. No wonder Schumpeter's most able biographer would call him an *enfant terrible* (terrible child).

After completing his doctorate in economics, Schumpeter became a professor at the University of Czernowitz and then the University of Graz, where he stayed during the First World War. Soon after the war, Schumpeter became the minister of finance of German Austria. His time as a minister witnessed low growth rates and high inflation. After leaving the government, he became a banker at the Biedermann Bank, a position he held until the bank was taken over, as one of the acquisition conditions was the removal of Schumpeter. With the options of government service and private work gone, Schumpeter returned to academia at the University of Bonn, where he served as a faculty chair from 1925 to 1932. In part, due to the instability of Germany and Austria, leading to the resulting rise of Nazism, Schumpeter decamped to America, becoming an economics professor at Harvard in 1932. While at Harvard, Schumpeter trained economists such as the Nobel Laureates Paul Samuelson and James Tobin. Schumpeter died in 1950, while writing his work on economic history.

Application: the nature of entrepreneurship

Schumpeter's contribution to economics was that he was one of the first scholars to theorize about the nature of entrepreneurship. By doing so, he challenged the notion of Walrus's general equilibrium, which occurs when supply and demand are in perfect harmony due to perfect information. Schumpeter's theory was a bit different; innovation provides a radical opportunity for new products, companies, and business patterns to change. As new products emerge, human tastes change, providing another source for entrepreneurs. Explaining this pattern, Schumpeter brought the ideas of Kondratiev to the English-speaking world. In Schumpeter's view, innovations are both a source of disruption and an opportunity for

growth through fluctuations in investments due to clustering around certain periods in which entrepreneurs believe that risk and returns will warrant investments in innovation, leading to long periods of generating aggregate growth.

According to Schumpeter, it is the entrepreneur that drives patterns of economic activity. He came to this conclusion based on his analysis of the European industrial structure of the late 19th century and the features of American industry of the early 20th century. Schumpeter's development of this theory is notable because, rather than using abstract concepts, he utilized methods from the German school of historicization. The assumption of this school was that there were no universal laws in the social sciences. Accordingly, the success or failure of economic policy was dependent upon historical circumstances of time and place. While this approach helped him develop a rich theory, it did limit its appeal to economists of the mid-20th century who preferred mathematical modeling for theory development. In particular, economists of the mid-20th century were in the thrall of logical positivism and its assumption of universal laws that always hold. However, in the long run, Schumpeter's theory would become the basis of modern theorizing on innovation. Three basic elements of his theory are Schumpeter's Mark I, Mark II, and creative destruction—which complement each other.

The three elements: Mark I, Mark II, and Mark III

The first, Schumpeter's Mark I, appeared in his work *The Theory of Economic Development* (1934), which was based on the analysis of Europe's industry structure of the late 19th century. This view posits that the pattern of innovation is caused by the technological ease of entry into an industry, with new firms deploying new products, processes, and ideas, causing a disruption of established firms, which either innovate or die. This disruption will lead to the end of the quasi-rents associated with previous innovations. In essence, the entrepreneur is an innovator.

Schumpeter's Mark II is a bit different but complementary to Mark I. In Mark I, the emphasis is on small business, but in Mark II, the large established firm. In developing this thesis, Schumpeter challenged the then orthodoxy that large businesses were bad for the standard of living of the average person and an impediment to economic activity in that he argued that large corporations are a driver for economic activity. The explanation offered was the industrial capacity to spend money on research and development, as those activities are often beyond the capability of a small business. Large firms will institutionalize the innovation process by developing an accumulated stock of knowledge, limiting barriers to entry of small firms.

Although these concepts appear divergent, they are, in fact, complementary. Scholars have labeled these as "widening (Mark I)" and "deepening (Mark II)." The widening pattern occurs through the enlargement of the entry of new innovators, who, armed with their new technologies, erode the competitive and technological advantages of older firms. The deepening pattern occurs in the dominance of a few firms which are able to continuously innovate. An explanation of this difference could come from the fact that truly disruptive technology will allow nascent entrepreneurs to enter into the industry because the technology creates uncertainty and firms struggle to handle this. However, larger firms can innovate through incremental improvements during periods of a dominant design.

The process that drives this is creative destruction (Mark III). Schumpeter defined creative destruction as a "gale of creative destruction… (the) process of industrial mutation that continuously revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one" (Schumpeter, 2008: pp. 83–84). Schumpeter developed his idea from the works of Marx and the German sociologist Werner Sombart. Although Marx did not use the phrase creative destruction, he and his co-author, Engels, describe how capitalism destroys previously held wealth. Sombart coined the term in 1913, keeping the negative connotation of Marxian economics. However, Schumpeter was more sanguine about the prospects of creative destruction. He noted that the justification of capitalism comes from this framework.

One last consideration about Schumpeter is that, like Marx, he proposed the ending of the capitalist order. Whereas Marx saw this as something to cheer, Schumpeter viewed it as something to jeer. In Schumpeter's view, the ending of capitalism would not come from a

violent revolution but through the erosion of capitalism from intellectuals. The irony would be the critics' prestige and funding through capitalism and within the capitalist society. As intellectuals gain prestige, they will attack capitalism by creating political movements that will form governments that will restrain capitalism by eliminating the social and legal conditions needed for capitalism to work. Businesses will aid in their demise by providing weight to the intellectuals through engaging in rent-seeking activities.

Based on his description of capitalism's strengths and weaknesses, Schumpeter has gathered a large audience from market-friendly and market-opposing constituencies. As such, Schumpeter has become one of the most influential economists of the 20th century and one of the most important intellectuals. His status would have been surprising given that he was out of style during much of his time in America as he railed against the New Deal and was even suspected of Nazi sympathies. However, the merit of his work has been recognized and forms the basis of much theorizing on innovation.

Other contributions

One of the major criticisms of neoclassical economics is that it does not consider the role of the entrepreneur and innovation in the economy. This idea stems from the general equilibrium assumption that seems to downplay the role of entrepreneurship and innovation in the economy. Instead, Schumpeter proposes that an economy is in a stable state excluding innovation and this stationary state is generally described as Walrasian equilibrium. However, this stationary state is disrupted by entrepreneurs who use innovations that are the general cause of economic growth. The economy proceeds in a cyclical fashion based on Kondratiev waves that last for 54 years. In particular, a Kondratiev wave would consist of various waves, Kuznets (18 years), Juglar (9 years), and Kitchin (4 years) that combine together to form a composite. Each of these would form cycles that would vary in length. The variation would explain the various booms and busts that occur within the economy.

In addition to his theorizing on creative destruction and business cycles, Schumpeter also contributed to the history of economic thought with the posthumous publication of *History of Economic Analysis*. This book was highly controversial both when published and into the future. In particular, one of the arguments that Schumpeter puts forward in his book was that Anne Robert Jacques Turgot, rather than Adam Smith, was the greatest economist of the 18th century. To further expand, Schumpeter did not hold Smith, who is almost universally well-regarded, as a great economist. This position may have been a result of Schumpeter not fully understanding Smith's rhetorical style. Surprisingly, Schumpeter held Leon Walras as the greatest economist, rather than a more typical answer of Smith or Alfred Marshall. This was surprising because Schumpeter felt that Walras was a great economist because of his contribution to the general equilibrium model, and this model was the same type of mathematical abstraction that Schumpeter had criticized John Maynard Keynes and David Ricardo for having in their work.

Critical summary

According to Schumpeter, economic growth and development are powered by innovation. He saw this concept in a far-reaching light; introducing fresh products, production processes, markets, and business structures encompassing his definition of "innovation." Schumpeter believed that innovation was not a constant or gradual process but rather one of "creative destruction," where new technologies and businesses replaced the existing ones. Consequently, capitalism is an ever-evolving system with periods of tremendous growth followed by consolidation and stagnation. He viewed his theory as a cyclical phenomenon in which creativity leads to rapid development only to be waned by contraction and decline afterward.

Schumpeter's contributions to the business world were monumental. He fundamentally shifted our view of entrepreneurs from profit-seeking individuals to heroic innovators who defy norms and create game-changing products. He also highlighted cyclical growth; economic expansion is interspersed with times of stagnation or decline. It is no surprise, then, that his theories remain so deeply embedded in today's entrepreneurial landscape; they are essential for understanding how businesses can drive innovation and sustained success on a global scale. Schumpeter proposed that various elements, such as technological shifts,

investment variations, and modifications in consumer needs powered these cycles. Besides his work on economic progress and entrepreneurship, he also left an imprint on monetary economics research, international commerce studies, and the political economy field; consequently becoming a significant figure within the Austrian School of Economics, whose ideas are still relevant across many social sciences.

Further readings

Baumol, W. J. (2015). Joseph Schumpeter: The long run, and the short. *Journal of Evolutionary Economics*, *25*, 37–43.

Blaug, M. (2000). Entrepreneurship before and after Schumpeter. University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship. Available at SSRN: https://ssrn.com/abstract=1512267

Harvey, M., Kiessling, T., & Moeller, M. (2010). A view of entrepreneurship and innovation from the economist "for all seasons": Joseph S. Schumpeter. *Journal of Management History*, *16*(4), 527–531.

Hospers, G. J. (2005). Joseph Schumpeter and his legacy in innovation studies. *Knowledge, Technology & Policy*, *18*(3), 20–37.

McCraw, T. K. (2007). *Prophet of innovation: Joseph Schumpeter and creative destruction*. Belknap Press.

Schumpeter, J. A. (2008). *Capitalism, socialism, and democracy* (3rd ed.). Harper Perennial Modern Thought.

Schumpeter, J. A. (2014). [1942]. *Capitalism, socialism and democracy* (2nd ed.). Impact Books.

Shockley, G. E., & Frank, P. M. (2011). Schumpeter, Kirzner, and the field of social entrepreneurship. *Journal of Social Entrepreneurship*, *2*(1), 6–26.

13. Negative consequences

Beata Segercrantz and Karl-Erik Sveiby

Outline of the topic

Organizational innovation (OI) has been defined in a variety of ways. Often OI refers to the introduction, adoption, or implementation of new organizational methods in (1) business practices; (2) workplace organization, such as the distribution of responsibilities, resources, and tasks; and/or (3) external or interorganizational relations. OI may involve new products, services, processes, organizational structures, systems, business models, or plans and policies for organizational members. Typically, an OI is adopted to change the organization in order to improve the productivity, performance, competitive advantage, or effectiveness of the adopting organization.

It is important to recognize how OI is commonly understood in research. Practical implications of OI are likely to be shaped by how innovation is framed, understood, and approached in research. For example, research of OI typically focuses on organizational practices through which managers secure their corporations' survival in the accelerating global competitive race. Therefore, research promotes an understanding of innovation as a desirable solution and as central for driving productivity, while neglecting negative consequences of OI.

Conceptual overview and discussion

The concept of discourse is useful for understanding how OI is commonly framed in research. In management research, discourse refers to spoken and written utterances as well as other symbols, which form commonly shared understandings and thus construct an object or phenomenon in a particular way (for example, a shared understanding of OI as desirable). An implication of this is that discourse entails particular forms of power relations. More specifically, as discourse invites particular ways of seeing and ways of being in the world, discourse in tightly entangled with the exercise of power. Utterances, symbols, and language thus produce reality, rather than describe it, and, in that sense, language is an action that shapes social reality. However, discourse does not only construct objects and reality; discourse is also constructed and transformed in the interaction between people. It can therefore be used for particular ends or to accomplish social action. Hence, systems of meanings and discourses construct and are constructed through social practices, power, and interpersonal relations.

Innovation management research, as with any research in social sciences, creates certain discursive understandings of organizations, organizational members, the economy, society, and desired futures. The discursive understandings also shape research practices, findings, and practical implications. In addition, all fields of research have foundational texts, which scholars must relate to, whether agreeing or objecting, and which help shape the research field and objectives. The writing and publishing practices of innovation management research are therefore important to analyse as they enable and restrict the conduct of research and ultimately practice.

The dominant academic discourse of innovation constructs innovation in a particular way. Scholarly debates of innovation have for long been almost exclusively occupied with attempts to improve, refine, and manage innovation in more economically efficient ways. Moreover, innovation has been seen as a key driver of desirable long-term economic and social development. However, critical scholars, such as Kimberly and Rogers, have highlighted this tendency to view innovation as fundamentally positive and called it the pro-innovation bias or the pro-innovation discourse.

The dominant optimistic discourse of innovation has implied that unintended and/or undesirable consequences of innovation have largely been neglected in the academic innovation management literature. Both older and more recent reviews of the innovation literature have shown that only a marginal proportion of innovation research articles address *consequences* of innovation, in particular undesirable ones.

A central starting point in the OI literature is a conceptualization of innovation as good for business and the economy. Thus, OI research draws on the pro-innovation discourse and is not an exception from the pro-innovation biased research. More specifically, the main objective of OI studies is typically to enhance organizational productivity, performance, effectiveness, and/or competitive

advantage. The focus in this body of research is on various drivers of OI, such as, creativity, learning, knowledge management, knowledge sharing, knowledge increment, capabilities, human resources, leadership, decision-making, workplace culture or climate, and team properties. In addition, OI studies often highlight various practices that are claimed to enhance productivity. Such practices may include, for example, particular HR practices and business models. Together these different drivers and practices create the dominant discourse of OI that emphasizes *OI-driven productivity*. Implicitly and/or explicitly, the discourse of OI-driven productivity favours an acceleration of innovation and self-preservation of the organization. Simultaneously, the mainstream OI research often neglects to address undesirable consequences of OI.

As a response to the dominant pro-innovation discourse in innovation management research, a research field of critical studies of innovation has emerged. These studies point at some of the shortcomings of innovation research and provide alternative approaches to examining and theorizing OI.

Application: examining negative consequences of organizational innovation

Sveiby and Segercrantz conducted a systematic literature review of OI research to analyse undesirable consequences. From the vast body of OI literature, academic articles focusing on undesirable consequences were selected. The review showed that only a marginal part of the OI literature focuses on undesirable consequences. This literature is referred to as innovation studies of negative consequences (ISNC). It is against the backdrop of the earlier-mentioned dominant discourse of OI-driven productivity that ISNC research is conducted. This body of research highlights silenced effects of innovation management in OI studies. The ISNC literature was reviewed from a discursive perspective to identify how undesirable consequences are commonly understood in the OI literature. Two discursive constructions were identified: (1) work intensification, and (2) unpredictability of technology implementation.

A relatively common undesirable consequence of OI is work intensification. Work intensification refers to how the pace of work in many workplaces has become more intense with the intension to improve productivity. For example, OI may involve an implementation of new innovative work or human resource management practices, and/or technological solutions, such as an enterprise resource planning system (ERP), teleworking, or knowledge management system, assuming that these OIs will improve the productivity. The OI and following work intensification may have positive outcomes on both organizational productivity and employee well-being. However, the ISNC literature shows that work intensification also has many negative consequences, examples of which are employee stress, burnout, anxiety, confusion, reduced job satisfaction, and unemployment. Often, managers are also surprised, frustrated, and stressed by the complexity of OI implementation and the increased demands on them. The ISNC literature thus draws attention to these issues. It does so by examining the *discourse of work intensification* and by highlighting problematic consequences of OI on different actors.

The ISNC literature also highlights other problematic effects related to the role of information technology (IT) in OI: latent errors that over time appear as bugs that disturb work and thus make organizations vulnerable to major undesirable outcomes. For example, the ISNC literature discusses implementation failures caused by leaders' or organizations' uncritical faith in the productivity gains of IT in OI and because of unattended latent errors. Some organizations may adopt OI due to an experienced pressure to imitate management fashions rather than engaging in OI based on an assessment of likely positive effects for the organization. Another source of problems may be insufficient investments in implementation training, supportive teamwork, usability, etc. Organizations engaged in OI may thus become caught in the IT productivity paradox (a situation in which organizational IT use increases while the productivity slows down at the same time) because of these problems. By examining these phenomena, the ISNC literature draws attention to the *discourse of unpredictability of technology implementation*. The studies suggest that, at worst, the unpredictability of technology implementation may result in activities which generate OI in an accelerating pace rather than producing reflection and dealing with the causes of negative consequences of innovation. This in turn can produce further negative consequences,

failed projects, more frustration, dissatisfaction, and stress.

Critical summary

A central tension can be identified within the OI literature: a contradiction between the dominant discourse of OI-driven productivity and the discourses of work intensification and unpredictable technology implementation. The objective of mainstream OI studies is typically to show how OI can be used as an efficient tool for improving productivity. Therefore, this body of research overlooks the dark side of OI and by doing so reinforces the dominant power relations and the discourse of productivity. A serious shortcoming of the academic OI literature is hence its pro-innovation bias. Consequently, individual firms or organizations have little or no help from the mainstream academic OI literature for developing sustainable management methods that recognize, prevent, and deal with undesirable consequences.

In contrast, the ISNC literature highlights unsustainable innovation management in organizations with a never-ending demand for OI in their search for improved productivity. Leaders are identified as "management fashion followers" who create an internal climate of an intense work pace and unpredictability while employees are positioned as subjects who transform from enthusiastic actors into stressed, frustrated, ill, and dissatisfied employees, or unemployed. Therefore, the ISNC literature offers accounts of OI and related IT as sources for work intensification and unpredictability, which may work against, rather than improve, productivity.

In sum, it has not become easier for management to act sustainably. Instead, organizations: (1) are often caught in an institutionalized ever-accelerating innovation race focused on productivity with little opportunity to reflect on or to deal with OI-related problems, and (2) have no help from the pro-innovation biased OI literature. Only the ISNC literature highlights the dark sides of OI and problematizes dominant IO discourses. For as long as innovation is widely regarded as and used as a key driver of long-term economic and social development in society, negative consequences on workers' health and well-being and working environments must not be ignored. If academic OI studies would challenge the dominant innovation management discourses to a greater extent and explore alternative and more responsible paths for OI, they could play a more sustainable transformative role than in the past. This would contribute towards more sustainable innovation management by drawing more attention to how to prevent or reduce negative consequences of innovation. This would help organizations to increase the net positive effect of their efforts for society.

Further readings

Godin, B., & Vinck, D. (Eds.) (2017). *Critical studies of innovation: Alternative approaches to the pro-innovation bias*. Edward Elgar Publishing.

Kimberly, J. R. (1981). Managerial innovation. In I. P. C. Nystrom & W. H. Starbuck (Eds.), *Handbook of organizational design* (pp. 84–104). Oxford University Press.

Rogers E. M. (2003). *Diffusion of innovations*. Free Press.

Sveiby, K.-E., Gripenberg, P., & Segercrantz, B. (Eds.) (2012). *Challenging the innovation paradigm*. Routledge.

Sveiby, K.-E., & Segercrantz, B. (2022). The (ir)responsibility of organisational innovation. In J. Tienari & M. Sandberg (Eds.), *Transformative action for sustainable outcomes: Responsible organising* (pp. 57–63). Routledge.

14. Pedagogies for innovative competencies

Helena Kantanen

Outline of the topic

The phases of the innovation development process necessitate distinct sets of knowledge, aptitudes, and skills. Angèle Beausoleil, in her comprehensive examination of Everett Rogers' diffusion of innovations process, undertook an extensive multidisciplinary literature review and proposed the innovative competencies framework, which provides a comprehensive list of competencies essential for nurturing productive innovation work. It is a valuable resource for educators looking to develop these skills and abilities, especially in the context of innovation management, including innovation processes, business models, and cultural and sustainable innovations. The framework encompasses various knowledge competencies, including domain and procedural knowledge, inquiry, design and production methods, market intelligence, and innovation management (pertaining to knowledge of product and organizational innovation processes, tools, and measures), as well as reflective practice. In terms of aptitudes, the framework encompasses needs and problem finding, empathy, data analysis, qualitative and quantitative research, systems and design thinking, decision-making, prototyping, operations management, market research, marketing, and evaluation. Lastly, the framework incorporates skills such as creative, visual, critical, and reflective thinking, communication, problem identification, business analysis, collaboration, decision-making, design thinking, and project management.

This entry examines three student-centered pedagogical options in the light of the innovative competencies framework: collaborative inquiry, flipped classroom and case-based learning. Collaborative inquiry is regarded as comprehensive frameworkencompassing inquiry-based pedagogy, while the latter two options are rather methodologies that strive to promote both participatory and self-regulated learning. These pedagogies have been selected for this entry because both education research and long-term experience as an innovation management educator have demonstrated their effectiveness in developing skills required for innovativeness, such as creative and reflective thinking, as listed earlier.

Conceptual overview and discussion

In the realm of university education, the integration of disciplinary research and teaching has traditionally been achieved through two primary approaches: research-led teaching, wherein recent research findings are conveyed to students, and research-oriented teaching, which involves instructing students in research methods and the processes of knowledge construction. However, as presented by Healey and Jenkins in their seminal paper, the introduction of the *collaborative (progressive) inquiry* learning model represents a significant advancement, as it empowers students to function as researchers right from the early stages of their academic pursuits. This model aims to replicate the collaborative work carried out by research teams. The learning process is viewed as a cyclical undertaking, wherein students articulate and exchange their existing knowledge, identify potential gaps and misconceptions in their understanding, seek or generate new knowledge to address these gaps, and define new avenues for inquiry. Through this process, students are encouraged to question their assumptions pertaining to the subject matter and engage in a critical dialogic exchange informed by scholarly readings. Collaborative work facilitates the presentation and evaluation of both students' own ideas and academic theories, thereby facilitating the construction of new knowledge.

The *flipped classroom* approach entails a shift from traditional direct instruction to a pedagogical structure where pre-class materials take precedence, while classroom time is dedicated to interactive and participatory learning activities such as discussions, group tasks, and case studies. During class sessions, students are given opportunities to practice and apply their acquired knowledge, challenge preconceptions, explore alternative perspectives, and establish connections. Pre-class materials may encompass concise lectures, video resources, or various forms of reading. In this approach, the instructor assumes the role of a facilitator or mentor, rather than a lecturer, guiding the process through discussion prompts or group assignments and assisting students in comprehending challenging

concepts. Research indicates that the flipped classroom method fosters students' self-regulation and self-efficacy in learning, enhances their collaborative skills, and cultivates their capacity for creative thinking.

Case-based learning has long been employed in business education due to its numerous advantages. This instructional approach allows students to acquire essential skills in critical thinking, communication, and group dynamics within the framework of authentic business scenarios. The case method intertwines the art of storytelling with rigorous discussions, shared experiences, and the application of academic theory into practical contexts. Through this approach, students develop advanced cognitive abilities such as critical analysis, reasoning, problem-solving, and introspection. Additionally, the integration of real-world business contexts within the learning process enhances students' motivation by bridging the gap between theoretical knowledge and practical application.

Application

The expansive pedagogical framework of collaborative inquiry allows for its integration with the aforementioned approaches, as well as other methodologies, for example arts-based methods, simulations, and gamifications. Collaborative inquiry, as well as flipped classroom and case-based learning, represent student-centered teaching methods that possess the potential to foster an engaging and effective learning experience. These approaches effectively shift the instructional focus from the traditional instructor-expert model to one characterized by egalitarianism and collaborative learning wherein a group of empowered specialists actively participate. Consequently, these pedagogical approaches facilitate the sharing of expertise among students, a particularly advantageous feature when working with diverse groups composed of individuals from varied fields, backgrounds, and professional trajectories. Such diverse groups hold considerable value for teaching innovativeness, as they align with the reality that future innovators are increasingly expected to operate within cross-disciplinary teams.

The presented methods can be employed across various subject areas and are applicable in traditional face-to-face classroom settings, as well as in hybrid or online teaching environments. However, the latter two options necessitate a proficient utilization of technology and a comprehensive understanding of participatory online tools in order to establish an engaging and interactive learning experience.

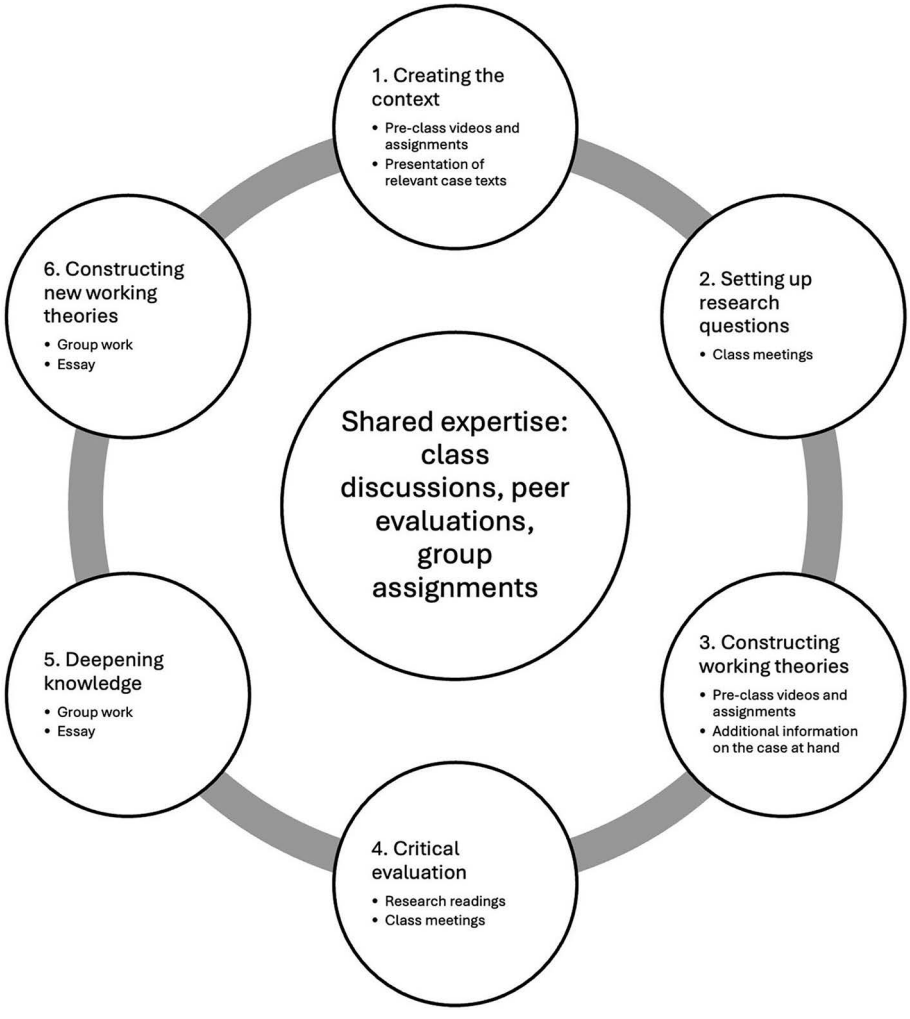
Figure 14.1 showcases the integration of the collaborative inquiry approach with the flipped classroom approach and case-based learning within the context of a bachelor-level course designed for business students. The pedagogical models chosen were particularly useful for developing reflective practice in problem-solving, and supported students' problem identification, communication, and collaboration skills.

Critical summary

Education research and the assessment of learning outcomes have consistently demonstrated the superior benefits of employing dialogic and participatory methods over traditional lecture-based approaches. Learning is a process leading to permanent capacity change, and the methods presented here have been shown to facilitate deep learning among students, enabling them to develop higher-order thinking skills such as analysis, interpretation, study, comparison, evaluation, knowledge construction, and creativity.

When viewed through the lens of the innovative competencies framework, the presented approaches effectively foster learners' reflective practice and facilitate the development of various skills. It is important to note that competencies pertaining to knowledge and aptitudes are typically inherent in most business school curricula. While the pedagogical approaches discussed here encompass a wide range of innovation skills identified by Beausoleil, they may not explicitly address visual or design thinking skills. To address this gap, including arts-based methods or incorporating cases that specifically focus on areas such as product design could be beneficial.

It is important to note that the pedagogical models presented in this context demand a considerable investment of effort and commitment from both instructors and learners. Instructors are expected to possess expertise both in the chosen pedagogical methodology and the subject matter being taught, as this is crucial for effectively planning and implementing the learning process. The



Note: For illustration, see also Lakkala.

Figure 14.1 *The pedagogical models of collaborative inquiry, flipped classroom, and case-based learning as applied in a bachelor-level business course*

development of pre-class video materials, finding relevant cases, and the planning of interactive classroom sessions can be time-consuming endeavors. Therefore, instructors must be proficient in utilizing various educational planning tools, such as the pedagogical manuscript, which outlines key aspects including learner characteristics, teaching and learning objectives, content knowledge, learning materials, instructional methods, counselling, assessment strategies, and time management considerations.

The flipped learning approach places significant responsibility on students to independently engage with and comprehend pre-class materials, which may pose challenges, particularly for younger students who may lack self-efficacy and academic study skills (see Kantanen and colleagues). However, research has demonstrated that collaborative inquiry and the case method have been effectively

implemented even with first-year students. Despite their potential benefits, these innovative methods may also encounter resistance within more traditional educational settings.

It is worth noting that all the presented approaches have the potential to bridge the gap between academic research and business studies, as well as the divide between theoretical learning and real-world business application. Furthermore, through reflective exercises and discussions, students can develop critical thinking skills and gain self-awareness regarding their own aptitude for innovation management.

Risk-taking is widely acknowledged as a vital component for fostering innovativeness. Learning is an active process of acquiring knowledge by exploring the world, engaging with others, and making connections between new ideas and prior understanding. Nurturing students' ability to take risks necessitates the establishment of supportive and trusting learning environments that foster experimentation, help to overcome the fear of failure, and embrace the notion of learning through mistakes without judgment. The pedagogical approaches discussed in this context prove valuable in this regard, as they actively encourage collaborative engagement in problem-solving endeavors. For example, assignments in the collaborative inquiry approach frequently feature open-ended formats, providing room for risk-taking, creative thinking, and the application of prior knowledge and real-world work experience. By promoting suitable conditions, these approaches effectively foster a culture of innovation among students and encourage their willingness to take calculated risks in pursuit of novel ideas and solutions.

Further readings

Beausoleil, A. M. (2018). Revisiting Rogers: The diffusion of his innovation development process as a normative framework for innovation managers, students and scholars. *Journal of Innovation Management, 6*(4), 73–97.

Healey, M., & Jenkins, A. (2009). *Developing undergraduate research and inquiry.* The Higher Education Academy. www.advance-he.ac.uk/knowledge-hub/developing-undergraduate-research-and-inquiry

Hyypiä, M., Sointu, E., Hirsto, L., & Valtonen, T. (2019). Key components of learning environments in creating a positive flipped classroom course experience. *International Journal of Learning, Teaching and Educational Research, 18*(3), 61–86.

Kantanen, H., Koponen, J., Sointu, T., & Valtonen, T. (2019). Including the student voice: Experiences and learning outcomes of a flipped communication course. *Business and Professional Communication Quarterly, 83*(3), 337–356.

Lakkala, M. (2010). *How to design educational settings to promote collaborative inquiry: Pedagogical infrastructures for technology-enhanced progressive inquiry* [Doctoral thesis, University of Helsinki, Institute of Behavioural Sciences]. http://hdl.handle.net/10138/19887

15. Sales in the innovation process

Katariina Ylönen and Saara Julkunen

Outline of the topic

In the business-to-business (B2B) market, the sales function can aid the innovation process by integrating the customer perspective into the ideation and development phases of the innovation process and facilitating the commercialisation phase. Sales teams maintain close and interactive relationships with customers, partners and competitors, which uniquely positions them to observe customer needs and market opportunities. Acting as boundary spanners and knowledge brokers between customers and the organisation, sales teams can contribute market intelligence to the discovery, development and commercialisation phases of an organisation's innovation process.

Conceptual overview and discussion

The first studies on the role of the B2B sales function in innovation focused on the commercial role of sales during the innovation process. In the 2000s, research began to focus on the role of the sales function in the early phases of the innovation process, recognising the potential of salespeople to access a vast amount of market intelligence and attributing to salespeople the role of market researchers. Dixon and Tanner define sales as human-driven interaction between and within individuals and organisations to bring about economic exchange within a value-creating context. Crossan and Apaydin define innovation as the production or adoption, assimilation and exploitation of a value-added novelty in economic and social spheres; the renewal and enlargement of products, services and markets; the development of new methods of production; and the establishment of new management systems.

According to Ernst and colleagues, the role of the sales function varies across the three phases of the innovation process: discovery, development and commercialisation. During the discovery phase, salespeople generate new ideas for products or services by leveraging customer interactions. They observe and discern tacit signals that may inspire ideas for new offerings. Leveraging their role as boundary spanners, strategically positioned salespeople capable of identifying latent and emerging customer needs gather knowledge, initiate the idea generation process and produce ideas. To enhance the discovery phase of the innovation process and reduce the risk of failure for innovation, salespeople must effectively share the market intelligence gathered within the organisation.

The development phase, which focuses on creating the product or service, often constitutes an interactive process between the innovating organisation and its customers, as the creation of new products can be a collaborative and iterative process. The sales function plays a pivotal role in this development phase by acting as a boundary spanner and facilitator to ensure customer participation. Given their profound customer insights and established relationships, salespeople can play a significant role in selecting collaborative customers, providing input on early models, and communicating deployment and user experiences to further enhance the development phase.

The commercialisation phase includes activities such as promotions, market launch, product training, after-sales support and feedback gathering. Salespeople aim to introduce the innovation to customers and reduce barriers to purchasing, thereby generating demand for the innovation. To convincingly communicate the benefits of a new product to customers, a salesperson must have embraced the innovation themselves, possess strong communication skills and be motivated to sell complex innovations. The effective management of customer interactions during the selling process influences customer adoption of innovation, while inadequate relationship management is recognised as a significant contributor to innovation failure.

The sales literature identifies various roles for the sales function in contributing to the innovation process, including gathering and sharing market intelligence, generating ideas, managing customer relationships, and commercialising new ideas. If salespeople are unaware of their role in the innovation process or if the sales function is not integrated into the process, salespeople may lack a comprehensive understanding of the organization's innovation strategy, which can lead to knowledge not being shared or to salespeople

sharing information that is inconsistent with the overall company strategy.

The literature on sales in innovation provides several insights into how the sales function engages in the commercialisation phase, how this engagement is managed and how salespeople are motivated to promote new products. However, the literature is sparse in addressing strategies for effectively managing and facilitating the sales function's involvement in the earlier phases of the innovation process. Understanding these earlier phases and incorporating the sales function into them opens new avenues for identifying market opportunities, developing long-term customer relationships and refining sales approaches.

Application: B2B sales and customer interaction model in the development phase

La Rocca and colleagues combined the ideas of product development, customer involvement and the sales function to create the concept of customer involvement, which can be utilised as an interaction model for developing new products at the interface between sales and customers. They propose that the development of new product innovations is an iterative and recursive process into which the sales function must be integrated, and they delineate organisational capabilities that can be employed in analysing the customer–supplier interface. Their study provides a research-based discussion on how the sales function acts as a bridge, channelling external insights into the organisation, along with an empirical case example of how the sales function engages in the innovation process for new product development through collaboration with the customer. The following three subsections offer insights from their study.

Sales as a boundary spanner

The sales function orchestrates the interface between the organisation and the customer, which can become complex in the joint innovation process. The architecture of this interface influences the innovation process, and challenges in monitoring and coordination may arise. Developing mechanisms for coordinating roles and activities aimed at customer involvement is essential to enhance the outcomes of the innovation process. The sales function is optimally positioned to connect and control the organisation and the customer, making it a pivotal boundary spanner function.

The interaction model for customer involvement

The interaction model between the organisation and the customer emphasises the importance of interaction in ensuring customer involvement and the significance of understanding the customer, managing knowledge and providing resources and capabilities. The strategic role of the sales function is to shape the interaction model, which determines the technical and commercial outcomes of the process, as well as to facilitate customer involvement by connecting, mobilising and motivating different roles in their own and in customers' organisations. A qualified interaction model can lead to unpredictable outcomes and innovative developments through joint action and effectuation logic. Reciprocal commitment, maintained by the sales function, becomes an essential cohesive force when parties cannot predict the features of emergent solutions in advance.

Sales capabilities in the interaction model

The sales function plays a critical role in the outcomes of the innovation process, even though salespeople may possess limited technical skills and organisational authority. Salespeople are expected to frame the development project, rendering it comprehensible within both their own and customers' organisations, which requires the ability to engage in sensemaking. Salespeople need to possess interaction skills that consider the customer's perspective, are flexible in framing issues and demonstrate resilience in the continuous process of adaptation to orchestrate customer involvement and develop the interaction model. The interaction model for customer involvement is constantly evolving and must remain flexible to enable the parties to cope with unanticipated issues.

Critical summary

Research on the role of B2B sales in innovation largely focuses on the commercialisation phase of the innovation process and provides knowledge and guidance on enhancing sales effectiveness when selling new products. Less research has been conducted on the role of the

sales function in the early phases of the innovation process; studying the potential of sales to gather market intelligence and disseminate it throughout the organisation, as well as identify potential barriers to cross-functional integration. Limited research also explores the dual role of salespeople as gatherers of market intelligence and sellers of products; studying whether the dual role expectations lead to internal inconsistencies or a misalignment of work focus. Additionally, the role of sales managers in facilitating innovation has received limited attention; future studies should examine how they can enable and manage the integration of the sales function in the innovation process.

Further readings

Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, *47*(6), 1154–1191.

Dixon, A. L., & Tanner Jr, J. F. (2012). Transforming selling: Why it is time to think differently about sales research. *Journal of Personal Selling & Sales Management*, *32*(1), 9–13.

Ernst, H., Hoyer, W. D., & Rübsaamen, C. (2010). Sales, marketing, and research-and-development cooperation across new product development stages: Implications for success. *Journal of Marketing*, *74*(5), 80–92.

Groza, M. D., Zmich, L. J., & Rajabi, R. (2021). Organizational innovativeness and firm performance: Does sales management matter? *Industrial Marketing Management*, *97*, 10–20.

La Rocca, A., Moscatelli, P., Perna, A., & Snehota, I. (2016). Customer involvement in new product development in B2B: The role of sales. *Industrial Marketing Management*, *58*, 45–57.

16. Science commercialization

Outi-Maaria Palo-oja

Outline of the topic

Science commercialization is concerned with bridging the gap between research and practical applications to generate economic value. In this process, knowledge obtained through research is refined into innovations, sometimes leading to industrial change. In a broad sense, science commercialization can describe any intentional activity that increases the value of scientifically produced knowledge, as measured by non-scientific metrics.

Since the Bayh–Dole Act 1980 in the United States, the literature on commercializing research-based knowledge has grown considerably. Recently, the focus of research has shifted to the social impact of universities and other research organizations, and this has expanded the commercialization literature from its interest in purely financial goals to also cover ecological and social benefits. It is, therefore, a broad phenomenon that can be studied using many different approaches, exploring the activities of individuals, groups, organizations, and societies and the relationships between them. For the field of innovation management, science commercialization is a rich environment in which to explore relationships between actors at different levels, the value creation of science-derived outputs, and the translation of knowledge into tangible products and services that markets and communities can evaluate and use.

Conceptual overview and discussion

In the literature, science commercialization has been linked to, for example, academic entrepreneurship, technology transfer, university–industry cooperation, and, more recently, the development of innovation ecosystems. Furthermore, various models detailing the commercialization process and identifying obstacles and facilitators have been explored, each of which will be further elaborated on in this entry.

The concept of academic entrepreneurship involves the various actions through which members of the academic community can benefit society at large, from providing public recommendations and consultation to establishing spinoffs, to name a few. Micro-level studies in this area examine the specific skills and identities of academic entrepreneurs and their commercialization activities. Individual actors whose actions are critical to commercialization are sometimes called boundary spanners, emphasizing the importance of bridging the gap between research and business and of driving commercialization forward despite potential organizational boundaries.

Technology transfer is a processual view of translating research-based knowledge, technology, and innovations into practical use. Research organizations support this process through, for example, technology transfer offices, incubators, and accelerator programs and value its ability to open new revenue streams. Technology transfer offices help research teams protect their intellectual property adequately, search for early-stage funding, and develop their value proposition. This kind of transfer is an example of a technology push strategy, in which a research organization tries to identify the most promising technologies and focuses its efforts and resources on refining them further into innovations that can be introduced to the market. The opposite approach is the market pull strategy, which requires an understanding of customer needs and market dynamics and aligning the organization's research focus with those expectations.

Bilateral cooperation between research organizations and business or their collaboration in innovation ecosystems increases the exchange of information, enabling research organizations to respond to the needs of companies and markets. Complementary expertise can also be sought by involving other stakeholders in the commercialization process, such as customers and end users or non-profit and intermediary organizations, and by forming multidisciplinary teams. In particular, university–industry cooperation has been studied to understand how complementary strengths promote innovation, economic growth, and societal impact. Research using the triple and quadruple helix models of innovation has expanded this view of cooperation and interaction to include government and citizens, respectively, in addition to companies and universities. For cooperation to be effective, the exchange of information between stakeholders must be smooth, and this requires researchers to be able to translate

and communicate their work straightforwardly so that partners do not require an academic degree just to understand it.

Commercialization process models provide a structured framework for facilitating technology transfer or generating monetary value for research results. Early studies predominantly portrayed this process as a linear progression focused on the development of new products. However, subsequent studies have adopted a more exploratory approach, considering commercialization through the various lenses of learning, collaboration, and the broader ecosystem. The literature now also reflects recent changes in business practice, and research-based knowledge and innovations that promote sustainable practices and transformative change are increasingly selected as targets for commercialization. Linear and non-linear commercialization processes share the common feature of aiming to increase the value of research-based knowledge; valorization is sometimes used interchangeably with commercialization in the academic discourse.

In addition to communication challenges, the most significant obstacles in science commercialization are lack of funding, entrepreneurial experience, or market knowledge. The transfer and commercialization of scientific results can also be complicated by contractual or ownership issues and by finding the most appropriate partners. Researchers may have a biased and negative perception of technological readiness, market expectations, and the demands of the commercialization process. Identifying potential innovations is easier for researchers if they have information about the current state of the industry and the market.

On the other hand, commercialization is positively viewed in relation to the researchers' desire to benefit financially from the results of their work, the increased pressure on research organizations to demonstrate their societal impact, and greater cooperation with various actors. Patents, commercialized innovations, and close business cooperation often positively affect the amount and diversification of research funding. However, despite these beneficial effects, commercialization efforts have also been seen to challenge academic freedom.

Application: CRISPR-Cas9 gene editing technology

CRISPR-Cas9 gene editing technology offers a compelling example of science commercialization. The revolutionary technology was developed in 2012 by French microbiologist Emmanuelle Charpentier at Umeå University in Sweden and American biochemist Jennifer Doudna at the University of California, Berkeley. Charpentier and Doudna were jointly awarded the Nobel Prize in Chemistry in 2020 for the development of their genome editing method.

The technology opened a new avenue for editing DNA sequences, understanding genetic mechanisms, and finding treatments for genetic diseases. CRISPR-Cas9 can be considered a disruptive innovation because it introduced a new technological trend and, at the same time, opened previously unknown market opportunities in areas such as healthcare and agriculture. It is also a striking example of a research-based innovation, the commercialization of which has challenged researchers, companies, and the general public, as well as policymakers who have had to consider the ethical and legal questions raised by gene editing.

As a result of its international cooperation and substantial financial opportunities, CRISPR-Cas9 has been studied from the perspectives of, for example, technology transfer, startups and spinoffs, and biotechnology business in general. However, the most fruitful field for CRISPR-Cas9 analysis has been in legal studies and the ethics of commercialization. Several studies have described the complex ownership of CRISPR technology through which researchers, their universities, and various spinoff companies are guaranteed the primary opportunity to develop the research further and benefit financially from patents and exclusive licensing. However, patents made by academic actors, albeit in good faith, and their ethical licensing have themselves been criticized because a small number of owners can then limit the socially, but not commercially, significant exploitation of the innovation in question. These potential issues illustrate the debate sparked by CRISPR technology about when research interests become business and the scientist becomes a businessperson.

Critical summary

The literature on science commercialization has only begun to grow since the end of the last millennium, but, as a phenomenon, it is not new. For example, penicillin, laser technology, and the World Wide Web were all developed from research that paved the way for such innovations and for commercial success stories.

In the early stages of commercialization research, the phenomenon was approached from a resource perspective to identify the assets, capabilities, and success factors that lead to successful commercialization. From a process point of view, various routes and steps have been identified, as well as the drivers and individual actors that move the processes forward. Commercialization often requires a multidisciplinary approach, which has also been discussed in the literature through various cooperation models. Recently, the focus has shifted to the cooperation of researchers and research groups with business and, as a new perspective, to engaging various stakeholders, such as end users and non-profit organizations, in commercialization activities within an innovation ecosystem.

The increase in the number of review articles published in quality scientific journals in recent years is a sign of the maturation of the field. However, longitudinal and empirical research on the societal benefits, including commercial value, is still required. Commercialization diverges from the main tasks of research organizations, and it would therefore be important to address what commercialization means to different actors, what it requires of them, and how these different views can be reconciled.

In the future, motivating researchers, graduates, and students to achieve scientific breakthroughs, secure commercial conditions, and start research-based businesses will be even more critical for research organizations and society at large. Therefore, studies investigating the involvement and reward of individual actors in the commercialization process and their support of and desire for competence development are needed. In particular, there is room for qualitative and interpretive approaches to enable science commercialization to be addressed in relation to both the academic context and broader society.

Further readings

Compagnucci, L., & Spigarelli, F. (2020). The third mission of the university: A systematic literature review on potentials and constraints. *Technological Forecasting and Social Change, 161*, 120284.

Feeney, O. (2022). Genetics and justice, non-ideal theory and the role of patents: The case of CRISPR-Cas9. *European Journal of Health Law, 29*(3–5), 543–561.

Fini, R., Rasmussen, E., Wiklund, J., & Wright, M. (2019). Theories from the lab: How research on science commercialization can contribute to management studies. *Journal of Management Studies, 56*(5), 865–894.

Hmieleski, K. M., & Powell, E. E. (2018). The psychological foundations of university science commercialization: A review of the literature and directions for future research. *Academy of Management Perspectives*, *32*(1), 43–77.

Wang, M., Soetanto, D., Cai, J., & Munir, H. (2022). Scientist or entrepreneur? Identity centrality, university entrepreneurial mission, and academic entrepreneurial intention. *Journal of Technology Transfer*, *47*, 119–146.

17. Three legendary innovators

Mika Pantzar

Outline of the topic

Thomas Alva Edison (1847–1931), John von Neumann (1903–1957), and Claude Shannon (1916–2001) were among the most significant American innovators of the early 20th century. From the history of giants of science and technology we can learn what kind of people are required in world-changing innovations. Exceptional talent is probably one of the essential prerequisites for top performances. The legendary actors above were united by their uncompromising demand for freedom to realize their own ideas. Their curiosity spanned multiple disciplines. Each one created or sought for himself an extremely permissive environment. Edison implemented his ideas at first in a modest workshop and later in the world's first industrial laboratory, which was a model for the famous Bell Labs founded in 1925. The math department of Bell Labs offered, just before the Second World War, almost unlimited freedom to young Claude Shannon's experimental and playful way of working. From here he transferred to Massachusetts Institute of Technology (MIT) in 1956, where he had studied as a graduate student, with von Neumann being one of his teachers. Von Neumann's most important creative years were spent at Princeton at the Institute for Advanced Study (IAS). Scientific giants like Albert Einstein worked in the same institute.

There were also differences. Edison identified himself as an 'independent inventor', in his own opinion without scientific or organizational ballast. Von Neumann was a socially active logician and mathematician whose career began by writing one of the most significant works of his era on quantum physics. Economists know him as the inventor of game theory, together with Oskar Morgenstern and John Nash. At the end of his career, he was interested in the origin of life. Shannon, in turn, was an introverted engineer and mathematician who avoided constraints all his life. He also downplayed the role of financial incentives or publicity in his work. What he liked most was tinkering with different tools and equipment.

Shannon and von Neumann, considering the potential of 'thinking electric brains' (later called artificial intelligence), drew ideas from the game of chess as well as from the latest trends in mathematical biology. The list of pioneers of computer philosophy and technology could be expanded in time and locally much more than this. The Anglo-Saxon historiography chosen here emphasizes the central role of the Americans, and to some extent the British, in the development of digital technology in the 20th century. The Atlantic connection was particularly strong during the Second World War, when encryption codes were developed partially in agreement. A comparison of careers of three prominent figures mainly based on biographical literature offers clues as to how today's innovation can be understood and possibly promoted.

Thomas Alva Edison: the wizard of Menlo Park

Edison is known for such innovations as the phonograph, the incandescent light bulb, the alkaline battery and the earliest motion picture cameras and projectors. At the end of the 19th century, the industrial revolution, enlightenment, and utilitarianism had freed humans from mysticism. At the same time, the industrial revolution also emphasized efficiency and disciplined production processes. Edison acted in accordance with the modern concept of science developed in 17th-century Europe. Only then did experimental research become a viable way to find out the nature of the world. Before modern times, it was not at all easy to justify the use of instruments such as a telescope or a microscope as a source of scientific truth. The new age emphasized 'reasonable experiments', 'certain evidence', 'public arguments' and the possibility of presenting objections and even making mistakes. Managing the public was one of Edison's strengths. His reputation as the inventor of, for example, the light bulb or record player (phonograph) spread even to distant peripheries such as 19th-century Finland. About 1,093 patents tell about Edison's importance in the world at the turn of the century.

The first early sound reproduction device invented by Edison – a year after the invention of the telephone – was not only etymologically – 'phonograph, phonogram' – but also very close to the telephone and telegraph in terms of its early use. At this stage, it was far from clear what the new

sound recording technology could be used for, and the name was apt to confirm the phone- (or dictaphone)-like use of the record player. Edison approached items he developed from a technical point of view. It doesn't matter who appears on the records (i.e. cylinders). The most important thing is the most accurate sound reproduction. Gramophone developer Emil Berliner better understood the desire of the masses to listen to famous opera singers like Enrico Caruso. Gramophone won the battle for the market. It didn't get any better for Edison's film projects. When others began to produce films containing sex and violence, Edison preferred to use the technology he invented to present the stories of the Bible through film. The films should be used mainly for educational purposes.

With good reasons Edison can be considered to be the father of the modern innovation factory, i.e. the industrial laboratory. It all started in a humble workshop. Edison's key insight was to approach electricity from the point of view of entire systems. A similar systemic way of thinking was also central to his close friend Henry Ford and also to Taylorist philosophy, which started at that time: first comes the system, then the person. Edison devoted all his time to work. He even went to a workshop in the middle of his own wedding. Meal times were wasted time. Washing was also considered to take a lot of unnecessary time. Co-workers recognized the smell of sweat from the workshop. An experimental attitude towards life was also reflected in an interest in regulating one's own health. In the last years of his life, his only food was milk. This eventually led to kidney overload and death in 1931.

Edison implemented his own ideals in his innovation activities. At the same time, he strengthened the worldview dominated by different systems (e.g. electricity, factory management). Economic historian Thomas Hughes has described how self-taught inventors and entrepreneurs like Edison of the late 19th century often became victims and prisoners of their own successful creations. Paradoxically, creativity contained the seed of bureaucratic systems that shackle creativity.

Visionaries of a digital age: John von Neumann and Claude Shannon

It is difficult to briefly describe the career of the Hungarian-born von Neumann, a scientific all-rounder. Very descriptively, Bhattacharya (2021) has named von Neumann's biography with the title *The man from the future: The visionary life of John von Neumann*. At a very early stage, the young researcher realized that Europe was threatened with another war. He immigrated to the United States like many other Jewish scientists. In 1933, Abraham Flexner, the founder of IAS invited the already famous mathematician and physicist to Princeton. This had a decisive effect. The institute's sphere of influence included many of the most significant mathematicians, philosophers and physicists of the 20th century. The general public came to know von Neumann as the father of game theory in economics, one of the developers of the atomic bomb, and a pioneer and systematizer of digital computing. He was the first to present the flow charts of computer algorithms already in 1947. He was also known as a social debater who, for example, warned in the 1950s about the effects of excessive coal burning on global warming. As an optimist, von Neumann believed that many problems would be solved with the progress of science.

Along with quantum physics, mathematical biology developed in the 1930s provided von Neumann with the most important stimuli similar to its influence on the later work of information theory pioneers Claude Shannon and Norbert Wiener. Von Neumann got the crucial idea of computer digital processing from McCulloch and Pitts' 1943 article 'A logical calculus of the ideas immanent in nervous activity', which describes a network-like entity of nerve cells. Von Neumann's special ability was to put many ideas into mathematical form. For instance, he developed a statistical Monte Carlo method that could be used to estimate the probability that neutrons would be activated in the fission reaction of an atomic bomb. Von Neumann also offered mathematically valid formulations for operation analysis and linear programming (optimization), which became common in large American companies after the war.

Von Neuman did not consider economics to be a science at all as long as it was not possible to characterize the dynamics of the economy with the help of mathematics. Game theory's complex mathematics initially deterred many economists and it took decades for von Neumann's ideas to spread into the mainstream. At the level of ideology,

new theoretical thoughts were influential: for every winner, there is a loser. Originally von Neumann was stimulated to new ideas by reading the adventures of Sherlock Holmes, in which the heroic detective and the criminal genius Professor Moriarty compete with each other, sometimes putting themselves in the position of the other and obfuscating their own intentions. As a poker player who enjoys social situations, the legendary scientist recognized the context-bound nature of game situations. As Bhattacharya shows in his biography, game theory had an influence on Cold War strategies in the 1950s. It was asked whether the Soviet Union should be destroyed with a nuclear bomb before it develops its own bomb.

Just before his death in 1957, von Neumann focused on the mechanisms of the birth of life (biogenesis) and self-reproducing machines and theory of cellular automata. Instead of competition, the origin of life is a matter of cooperation between cells and the progression of integration towards ever larger, self-producing complex entities. Even a Finnish engineering magazine reported on his thoughts:

> John von Neumann from Princeton University has just created an abstract model of a machine that can make machines similar to itself! The machine is able to assemble parts from its environment and install and assemble them to produce another machine of the same type. This robot then continues to assemble the parts to make a third machine. Yes, the robot is like this and more and more new ones are coming, they will make our life easier, better and freer. It is and will be a welcome newcomer created by civilization.

Man and machine: the information age and Claude Shannon

Shannon graduated in mathematics as well as in electrical engineering in 1936. Along with von Neumann, he considered his distant relative Edison, as well as Charles Darwin and Einstein to be his role models. Unlike many top scientists, Shannon enjoyed building and playing with various instruments and devices himself. Bell Labs established by AT&T and Western Electric in 1925 offered Shannon an opportunity to integrate scientific interest with an engineering mindset. Jimmy Son and Rob Goodmann's autobiographical work *A mind at play: How Claude Shannon invented the information age* describes an attitude towards life and work which originally was based on quantum physics and mathematics studies. Shannon became world famous with his 1948 article 'A mathematical theory of communication'. In the same year, another landmark work in the history of science on the same topic was published. Norbert Wiener's *Cybernetics or control and communication in the animal and the machine* (2019). Compared to Shannon, Wiener emphasized biology more, and thus strengthened the notion of almost universally valid cybernetics.

Man and machine can be thought of as operating according to the same information laws. The 1950s saw a proliferation of information theory concepts like entropy, redundancy, communication channels, and more, spreading into the arsenals of various scientific disciplines. Entropy was perhaps the most important new concept borrowed from physics. Wiener used this word to refer to 'disorder', while Shannon thought of it more as describing 'statistical uncertainty'. Ambiguous concepts offered a new kind of intuitive interpretation of information processing also in the human-centric sciences. The concepts united researchers and interests from different fields in the 1950s, when interest in the limits and possibilities of human and artificial intelligence arose.

During the war, Shannon's task was to develop more reliable encryption systems than before. He renewed the philosophy and mathematics of data processing almost as an unintended consequence. His systemic perspective explained many phenomena, from electronic circuit boards to learning and missile robotics. However, Shannon was critical of the enthusiasm generated by his own theories. Different disciplines must have their own traditions, and information theory was not so much a theory about information, but rather about the transfer of information. Shannon also emphasized that digitally (statistically) generated text strings, despite their apparent logic, are meaningless without human interpretation. The statistical model he presented, which after numerous iterations produces text that looks linguistically correct, can be called a pre-version of what is today known as the language model of artificial intelligence, for example ChatGPT. Shannon used individual books as imaginative teaching material.

Shannon's central and at the time radical claim was that even symbolic information can be measured and put into mathematical form. When the analog signal was replaced by a digital signal, the word *bit* became the unit of measure for the smallest information. The idea that voice could be turned into ones and zeroes was useful from the perspective of telephone companies. Eventually, the entire telephone system, which would be based on automated call centers, could possibly be described as a giant computer. Today's data giants talk about the same phenomenon when arguing that ordinary people act as inputs and nerve endings of huge algorithms.

For big players in the telephone industry Shannon's thoughts about efficient and trouble-free transfer of information from one place to another were valuable. They helped to minimize the statistical noise associated with messages while making the sending of messages technically more efficient. Preserving the message almost unchanged required redundance, i.e. overlapping communications. However, there was a tradeoff: the fact that a message containing a lot of redundant information requires more space from the channel. Minimizing space and maximizing trustworthiness of information required new statistical tools.

In many ways, Claude Shannon could be placed between an inventor like Edison and a top scientist like John von Neumann. In one way Shannon was the complete opposite of Edison, who emphasized the usefulness of his discoveries. Shannon boasted that he was doing useless work driven more by curiosity than instrumental utility. He described himself as a science fiction writer whose job it is to think about possible futures. The benefits were indeed indirect, when he developed, for example, an automatic chess player or an electric mouse which can learn its way around a maze. Through various experiments Shannon ended up identifying the meaning of feedback in learning and remembering. He was especially interested in the situation where automatic machines meet each other and are even able to produce themselves. Von Neumann had the same thing in mind when he developed the theory of cellular automata in his last years.

Critical summary

In summary, it can be stated that what the three innovators had in common was, first of all, stubbornness and uncompromisingness in implementing their own visions. Second, each of them found and created an environment suitable for themselves, where lucky coincidences and unfinished thoughts were given enough space and time. Third, all were generalists. Edison was a self-taught generalist. Von Neumann had the ability to approach many problems of his time both theoretically and practically. Shannon, on the other hand, combined his theoretical reflection with tinkering with various devices. The fourth important point, which often gets too little attention in individual-centered hero stories, is that seemingly self-directed innovators are always backed up by activity-supporting infrastructures, and fellow human beings of current and previous generations.

Further readings

Bhattacharya, A. (2021). *The man from the future: The visionary life of John von Neumann*. Penguin.

Gertner, J. (2012). *The idea factory: Bell Labs and the great age of American innovation*. Penguin.

Gleick, J. (2011). *The information: A history, a theory, a flood*. Vintage.

Hughes, T. P. (2004). *American genesis: A century of invention and technological enthusiasm, 1870–1970.* University of Chicago Press.

Israel, P. (1998). *Edison: A life of invention.* John Wiley & Sons.

Josephson, M. (1961). *Edison. A biography.* Eyre & Spottiswoode.

McCulloch, W. S., & Pitts, W. (1943). A logical calculus of the ideas immanent in nervous activity. *Bulletin of Mathematical Biophysics*, *5*, 115–133.

Shannon, C. E. (1948). A mathematical theory of communication. *The Bell System Technical Journal*, *27*(3), 379–423.

Soni, J., & Goodman, R. (2017). *A mind at play: How Claude Shannon invented the information age*. Simon and Schuster.

Wiener, N. (2019). *Cybernetics or Control and Communication in the Animal and the Machine*. MIT press.

PART II:

OPEN, COLLABORATIVE AND SYSTEMIC INNOVATION

18. Business-to-business platforms

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Outline of the topic

Business-to-business (B2B) platforms reshape how businesses organize and innovate, fostering shared value creation among organizations. Their core design uses information and communication technologies. B2B platforms are instrumental in forging new products and services, revenue streams and business models, which are essential for securing competitive advantage and profitability in today's competitive landscapes. Organizations adopt B2B platforms because they offer fertile ground, for example, for streamlining and renewing business operations, reducing transaction costs and combining complementary know-how for new product and service offerings. B2B platforms can be defined as intermediaries that facilitate and mediate interactions and transactions between business actors that may otherwise remain unconnected. B2B platforms differ significantly from platforms in business-to-consumer (B2C) markets. For instance, B2C platforms have established powerful monopolistic positions by controlling access to consumers and benefiting from economies of scale. This 'winner-takes-all effect' does not hold for most B2B platforms, which often cater to niche markets and may require additional services to create value. Additionally, B2B platforms are usually centred around the focal company's core technology or product and involve a limited number of participants, while joining the platform may necessitate extensive negotiations or system integration. Therefore, merely bringing demand and supply together is typically not enough for a B2B platform to be successful.

B2B platforms take various forms through which value-creating resources and information are multilaterally shared among platform participants. In addition to B2B transaction platforms that connect organizational buyers with sellers for the exchange of products and services, B2B platforms can include collaborative platforms where participating organizations can, for example, co-create complementary product or service offerings, nurture longer-term business relationships and foster mutual growth in their surrounding platform ecosystem.

Conceptual overview and discussion

Platforms have been studied in various literature streams, including information systems, media studies, microeconomics, tourism, sociology, marketing and management research. In information systems research, the focus has been on platforms' adaptive and interoperable architectural characteristics, thus analysing the platforms' technical nature and technological development. In media studies, the content on (social media) platforms has been looked at in platform research – for instance, studying how radicalized political views could be deplatformed. In microeconomics, platform governance issues have been quantified and modelled, including actors' choices to participate in specific platforms. In tourism research, platforms have been examined for their impact on consumer behaviour and local businesses, with many studies specifically investigating the effects of sharing economy platforms, such as Airbnb. In sociology, platform capitalism has been critiqued by analysing its key characteristics, such as monopolization, globalization and the concentration of power. Finally, in marketing and management-related research, platforms have been approached as socio-technical arrangements that consist of a stable entity and surrounding social actors whose business activities are interconnected on the platforms. Within this research stream, most literature discusses platforms in the context of B2C or peer-to-peer platforms, emphasizing innovation and competition, as well as how platforms are changing established business practices. Besides being approached as standalone (socio-technical) systems and business model innovations, platforms are seen to enhance flexibility in new product development processes and stimulate the production of complementary innovations. Notably, platforms in B2B contexts have been addressed only in marketing and management-related research.

Nowadays, opportunities provided by the platform economy are increasingly being harnessed by B2B organizations interacting and conducting business with other organizations across various industries. These opportunities include efficiency and economic gains accrued from streamlined business processes with improved customer insight and accurate

operational decisions. Hence, B2B platforms often do not act only as mere revenue-seeking vehicles – as many current B2C platforms do – but rather are created or adopted to support, develop and/or systematize (internally and externally) various business operations. For example, the role of B2B platforms in strengthening companies' supply chain operations, such as in sourcing and supplier scouting and in transforming industrial companies' businesses to be more service-centric, has been researched.

Furthermore, industrial marketing and management-related platform research has shown that, in the B2B context, business relationships, purchase processes and selling products and services are more complex, thus presenting different kinds of demands for B2B platforms than those of B2C platforms. First, direct and indirect network effects, which are argued to be highly important for B2C platforms, may not always be applicable to B2B platforms. B2B organizations might not be well positioned to harness network effects due to the limited number of buyers, sellers and/or other types of actors that would benefit from a particular platform. Hence, B2B platforms might not benefit from solely aiming to increase the number of platform participants (e.g. sellers and buyers) or supporting direct trading between these parties. Instead, B2B platforms are likely to benefit from reducing transaction costs, streamlining operations, improving managerial decision-making and providing various complementary products or services.

Second, although B2B platforms may employ market-making mechanisms and an intermediary position to facilitate transactions and interactions between platform participants, they can also be orientated towards different types of (non-commercial) interactions, such as community-building and, consequently, the fostering of longer-term relationships and trust among participants. These types of B2B platforms free resources for more strategic activities between platform participants through increased connectivity, learning and the exchange of (strategic) information, including process innovations. However, these collaborative platforms need to find suitable means for prioritizing common goals over individual or short-term benefits and balancing promoting and constraining platform growth. They also need to promote the idea of more openly sharing sensitive and industry-specific information with others acting on the platform.

Third, B2B platforms allow business organizations to access external resources and efforts for value creation, value delivery and value capture. B2B platforms can serve as enablers for moving from a narrow, firm-centric business perspective to a broader ecosystemic view, which can involve open innovation activities. Third parties can be engaged on B2B platforms to create complementary innovations, or their advanced technology solutions, such as those related to data analytics and artificial intelligence, can be integrated into the platforms. These actions can further support value-creating processes between platform participants and enable them to monitor market trends and customer preferences, make better informed decisions and identify potential areas for innovation and growth. However, the enrolment of various actors in B2B platforms necessitates consideration of the dynamics among them. For instance, recent research has highlighted the impact of perceived coopetition pressures among platform complementors, as well as their interactions with one another, on the speed and quality of innovation. Enabling increasingly porous boundaries between B2B platforms and their surrounding social actors thus requires vast changes at different organizational spheres and levels, including companies' offerings, operating models and business logics, as well as governance structures and related managerial processes. The future will show how B2B organizations make these transformations towards platform-based ecosystems.

Application: two categories of platforms

As described in the previous section, B2B platforms can be classified into two broad categories: those that facilitate on-the-spot trading of products and services between organizations (B2B transaction platforms) and those that, in addition to commercial activities, foster longer-term relationships and drive innovation activities between platform participants (B2B collaborative platforms).

B2B transaction platforms

B2B transaction platforms represent a 'traditional' B2B platform type where the focus

is on short-term interactions and transactions between buyers and sellers. Examples include Alibaba, Floow2 and ScoutStock. These platforms primarily facilitate the direct trading of less complex products and services, such as machinery parts and computer software. In essence, they are characterized by on-the-spot market-style buyer–seller relationships where participants can easily access and exit platforms. These platforms can be seen as representing business model innovation and, hence, as a disruption to the former ways of conducting B2B business characterized by enduring supplier relationships. Transaction platforms have opened a new pathway to acquiring partnerships and suppliers while decreasing transaction costs through efficient matchmaking between demand and supply parties.

B2B transaction platforms may focus on a specific industry (vertical platforms) or multiple industries (horizontal platforms) and serve as instruments to enhance participating organizations' supply chain efficiency. Buyers are primarily motivated to engage in these platforms due to the increased efficiency of purchasing activities. For sellers, these platforms offer tempting means of reaching a large pool of business customers. Consequently, transactional B2B platforms provide benefits for both buyers and sellers, including reduced transaction costs through economies of scale, a wide assortment of products or services and convenient purchasing processes. Ownership in these platforms can be centralized within a single enterprise or distributed among multiple collaborating companies seeking to lower the transaction costs associated with sourcing activities.

B2B collaborative platforms

B2B collaborative platforms have evolved beyond transaction platforms to better facilitate and foster longer-term sourcing-related interactions and other business relationships between buyers and sellers. These platforms are a relatively less studied platform type compared to transaction platforms. They are sometimes characterized as 'second-generation' platforms because they are seen to represent a paradigmatic shift of B2B platforms to move from on-the-spot business transactions towards building, managing and exploiting longer-term business relationships and learning from these relationships. B2B collaborative platforms can also be seen as a means of managing heterogeneous innovation activities because they offer a structure for ecosystem management. Furthermore, these platforms enable the development of new or complementary product and service offerings. One practical example of these B2B platforms is the SAP Business Network, which supports the digitalization of businesses in areas such as procurement, logistics and asset management. While platform participants may initially engage with this type of platform for its transactional benefits, these transactions can eventually lead to deepening business relationships and trust. Another example is KONE's ecosystemic model, which enables complementors to collaborate with KONE and utilize its application programming interfaces to develop new value-adding solutions for KONE's customers. Whereas the SAP Business Network enables collaboration with all platform participants, the KONE platform essentially aims to complement KONE's value proposition and offerings.

B2B collaborative platforms have been created and/or adopted by business organizations for various reasons. For example, industrial manufacturers can establish or join these platforms to centralize and better manage their sourcing and supply chain operations, while others may employ them for demand and inventory management by suppliers. These platforms also enable the provision of value-adding (modular) platform services, efficient information exchange and other adaptations to operations. In some cases, collaboration may even occur among industry competitors. All in all, the main benefits for companies engaging in these B2B platforms include organizational learning, resource allocation for more strategic business activities and relationship development with their business partners, which also enables unlocking innovation opportunities through, for example, joint platform service development.

Critical summary

Platforms are deemed interesting by both practitioners and academics. They have disrupted how organizations interact, transact and innovate within and across industries. While research on B2C platforms has matured, research on B2B platforms is only now gaining a foothold in the marketing and management research agenda. This research stream

emphasizes platforms' ability to permeate areas where organizations conduct business with other organizations. Most researchers analysing B2B platforms focus on transaction platforms. With their emphasis on short-term exchanges of less complex products and services, these platforms provide access to a broader network of buyers and suppliers, leading to more efficient matchmaking and improvements in operational performance. Organizations can also harness the data and analytical capabilities of these platforms to increase customers' platform engagement by personalizing experiences. Research focusing on innovation management among business organizations utilizing these B2B transactional platforms is, however, still limited. Therefore, scholars could, for example, investigate the mechanisms through which transactional platforms enable or hinder product and process innovations in areas beyond sourcing and supply chain management.

Furthermore, B2B platforms may embody other forms that shift the focus from short-term gains to competitive advantages achieved through the development of longer-term relationships between platform participants. B2B platforms are adopting collaborative characteristics. They enable the connection of multiple businesses within a shared ecosystem, through which participating organizations can attain strategic benefits, such as long-term relationships, joint product or service development, organizational learning and growth opportunities. Scholars have started discussing innovation outcomes associated with platform complementors' coopetitive relationships, but only from a single-platform perspective. However, for B2B organizations, especially those that own this type of platform where multiple parties are enrolled for value creation and capture, this discussion underscores the fact that business organizations play a crucial role in how they serve as innovation catalysts (or inhibitors) on the platform. Thus, platform governance mechanisms and rules can be fine-tuned to catalyse innovation activities among participants. This also provides a fruitful path for scholars to broaden the single-platform view to consider multiple B2B platforms and how they manage their collaborative and competitive innovation patterns. Such insights would contribute to ongoing debates on how B2B organizations can effectively make a strategic shift from transaction (product-focused) platforms to collaborative (innovation-focused) ones and under which circumstances different organizations, such as industrial manufacturers or business service providers, are capable of investing in platform ecosystem development and operating with complementary partners through open interfaces and modularity. Hence, there is a need to investigate B2B platforms' evolutionary paths and resiliency alongside other strategic changes and endeavours that business organizations are currently undergoing and experimenting with on B2B platforms with their ecosystem partners. Additionally, the ongoing platformization of B2B businesses is blurring the boundaries of platforms. This means that platform characteristics and features are constantly being redefined. More research on B2B platforms is therefore needed to better understand the nuances and hopes and fears involved with B2B platform business development among both smaller and larger B2B organizations.

Further readings

He, Y., Hu, M., & Lin, Y. (2024). Effects of complementors' perceived coopetition on fostering innovation: Evidence from Chinese software platforms. *Industrial Marketing Management*, *117*, 66–78.

Jovanovic, M., Sjödin, D., & Parida, V. (2022). Co-evolution of platform architecture, platform services, and platform governance: Expanding the platform value of industrial digital platforms. *Technovation*, *118*, Article 102218.

Paiola, M., & Gebauer, H. (2020). Internet of things technologies, digital servitization and business model innovation in BtoB manufacturing firms. *Industrial Marketing Management*, *89*, 245–264.

Ritala, P., & Jovanovic, M. (2024). Platformizers, orchestrators, and guardians: Three types of B2B platform business models. In A. Aagaard & C. Nielsen (Eds.), *Business model innovation: Game changers and contemporary issues* (pp. 91–125). Palgrave Macmillan.

Shree, D., Singh, R. K., Paul, J., Hao, A., & Xu, S. (2021). Digital platforms for business-to-business markets: A systematic review and future research agenda. *Journal of Business Research*, *137*, 354–365.

Yrjölä, M., Mattila, M., & Mikkonen, M. (2023). Value-creating and value-eroding decoupling in B2B platforms – A multiple

case study. In S. T. Marinova & M. A. Marinova (Eds.), *Reconfiguration of business models and ecosystems* (pp. 98–117). Routledge.

Zhou, L., Mao, H., Zhao, T., Wang, V. L., Wang, X., & Zuo, P. (2022). How B2B platform improves buyers' performance: Insights into platform's substitution effect. *Journal of Business Research*, *143*, 72–80.

19. Coopetition

Rauno Rusko

Outline of the topic

This entry provides a brief overview of the role of coopetition in the innovation processes, with some practical examples. Coopetition is the simultaneous cooperation and competition between firms (or other organizations). Many studies have linked coopetition and innovation with each other. Corbo and colleagues, for example, systematically review two decades of research on coopetition and innovation. They find that this facilitates the acquisition and exchange of knowledge between partners, enables the joint development of technologies, and allows firms to share the risks and costs associated with innovation.

Conceptual overview and discussion

The main reasons and roots for coopetitive innovation are a) sharing resources, costs, and risks with competitors, b) knowledge sharing with value sharing (to create together a larger business pie), and value appropriation (to split the business pie).

Discussions on coopetition have identified different typologies and structures for coopetitive innovation, such as direction (vertical versus horizontal) and dyadic versus multiple (or multifaceted) coopetition. According to Yami and Nemeh, multiple forms of coopetition may facilitate success in radical innovation, whereas dyadic coopetition appears to be more suited to incremental innovation endeavors. They further posit that different innovation objectives precipitate varying degrees of value creation and appropriation tensions among coopetitors. They contend that heightened tensions are prevalent in dyadic horizontal collaborations aimed at achieving incremental innovation and complex vertical initiatives targeting radical innovation. In contrast, a significant reduction in tensions is observed in dyadic vertical efforts concentrated on incremental innovations and in diverse horizontal projects that seek to achieve radical innovations.

Tensions in coopetitive innovation could be reduced by transactional and relational governance. Transactional governance is based on formal mechanisms and transaction cost economics, whereas relational governance is focused on developing trust to prevent opportunism and coordination problems. Tension in coopetitive innovation can be managed and reduced at the beginning of the process by relying on a structural dependence and later on by building a psychological dependence through trust and generosity to achieve a more harmonious relationship. According to Jakobsen, this structural dependence is based on the joint investments of the competing firms in the alliance, and psychological dependence is based on investments in relation-specific assets, such as trust and commitment. Repeated cooperation in coopetitive innovation is a driver of psychological dependence and may prevent firms from competing against each other later on. Jakobsen expresses that to achieve a high degree of dependence among partners, both structural and psychological dependence are needed to reduce the tensions related to the asymmetries of coopetitive innovation.

In addition to coopetitive innovation between direct competitors, coopetitive innovation could also occur between indirect competitors, i.e., where firms offer different products or services but serve the same customer needs. Coopetitive innovation can also result unintentionally from spillovers. Various activities, such as marketing campaigns, day-to-day commercial technology transactions, and projects, create spillovers where more information, knowledge, and capabilities move between competing firms than was originally intended. Spillovers can also occur in fixed-term coopetitive innovation relationships, such as intentional alliance agreements with research and development (R&D) investment. Researchers have also investigated the level of intensity of coopetition, inter-organizational versus intra-organizational coopetition, and coopetition networks and ecosystems.

Application

Cooperation between competitors Intel and Microsoft provides a seminal example of coopetitive innovation. Microsoft developed more powerful software, which increased the demand for Intel chips. Microsoft's software, in turn, became more valuable when Intel produced faster chips. KONE and Toshiba provide another example of dyadic coopetition in the innovation of high-tech lifts. Multilayered coopetitive innovation can be seen in the alliance between OHB, Thales Alenia Space, and

Airbus Defence and Space to build a satellite positioning system.

Innovation often requires the whole ecosystem, which includes several different actors. Coopetition plays an important role in, for example, Israel's nanotechnology ecosystem. In this case, inefficient bureaucracy, resource constraints, and the conflicting agendas of the government and universities created organizational bottlenecks that hindered the emergence of the innovation ecosystem. Metamorphosis and coopetition enabled actors to overcome organizational bottlenecks by facilitating organizational alignment and the pursuit of a common mission, followed by coordination and pooling of resources to support technology commercialization.

Examples of Intel and Microsoft, KONE and Toshiba, OHB, Thales Alenia Space, and Airbus Defence and Space, as well as the nanotechnology ecosystem in Israel, are based on interorganizational or dyadic coopetition. Still, coopetition literature also provides case studies about intra-organizational coopetition. One of these case studies focuses on Tencent's popular chat platform WeChat, which has over one billion users. The company's business units – technology, product promotion, and complementary assets of suppliers – have been seen as competitive. However, through controlled and planned crisis-induced intra-firm coopetition dynamics, the company has successfully provided the market with new-to-the-world innovations.

There are potential problems in intra-organisational coopetition. In the case of the French video game publisher Ubisoft, the tensions of intra-organizational coopetition limited knowledge sharing between units. The successful outcome was ultimately achieved by mechanisms through which the knowledge broker helped to overcome these limitations. The solutions offered by the broker were: 1) protecting the unit's competitive advantage by introducing a lagging principle in the transfer process, 2) reducing the costs of sharing by standardizing innovative solutions, and 3) increasing the awareness of and trust in innovative solutions by centralizing knowledge diffusion.

Critical summary

The theme of coopetitive innovation offers several possibilities for further studies, such as the effects of the different characteristics of organizations: different sizes, for example, could affect the content and process of coopetition. In addition, the time horizon of coopetition and the various fluctuations between the competitive and cooperative impact the periodic success and challenges of coopetitive innovation.

Further, new topics to be studied would be coopetitive green innovations and the role of artificial intelligence (AI) in coopetitive innovations. An especially challenging perspective is considering the AI system as a tool or 'partner' of the coopetition and strategic alliance structure that can bring innovations to the market.

Further readings

Corbo, L., Kraus, S., Vlačić, B., Dabić, M., Caputo, A., & Pellegrini, M. M. (2023). Coopetition and innovation: A review and research agenda. *Technovation, 122*, 102624.

Jakobsen, S. (2020). Managing tension in coopetition through mutual dependence and asymmetries: A longitudinal study of a Norwegian R&D alliance. *Industrial Marketing Management*, 84, 251–260.

Kylänen, M., & Rusko, R. (2011). Unintentional coopetition in the service industries: The case of Pyhä-Luosto tourism destination in the Finnish Lapland. *European Management Journal*, *29*(3), 193–205.

Yami, S., & Nemeh, A. (2014). Organizing coopetition for innovation: The case of wireless telecommunication sector in Europe. *Industrial Marketing Management*, *43*(2), 250–260.

20. Co-creation in private and public sector contexts

Tero Montonen, Päivi Eriksson and Eeva Aromaa

Outline of the topic

Co-creation refers to organisations and their stakeholders working together to develop social and economic value through participatory processes. Scholarly definitions highlight the potential of co-creation processes to transform all parties involved and the outcomes they produce together. In other words, co-creation opens avenues for innovation by incorporating various co-creators' perspectives into a joint effort for socially accepted outcomes. In co-creation processes, stakeholders receive a platform for empowerment and active involvement, allowing them to influence the creation of products, services, processes and policies that affect their lives.

Co-creation is a concept that has been applied across various sectors—mostly companies and public organisations, but also nonprofit and nongovernmental organisations. Co-creation in the private sector context has been discussed in two major streams of literature: marketing-related research on co-creation processes focused on value creation, and innovation-related research on crowdsourcing. In this context, co-creation research focuses on the collaboration between companies and customers to jointly produce a mutually valued outcome. Such an outcome may involve customers in the innovation process, helping businesses design products or services that more closely meet consumer needs and preferences. As discussed in the public sector literature, co-creation refers to the process by which public services and policies are developed in collaboration with citizens, including stakeholders such as community groups and service users.

The first part of the conceptual discussion and application sections highlights co-creation in the private sector, while the second part of both sections focuses on the public sector.

Conceptual discussion and overview

The connection between innovation management and co-creation is robust and multifaceted. Academically, they share common theoretical underpinnings that emphasise the importance of collaborative, open and dynamic processes in innovation. Practically, they complement each other by focusing on internal and external collaborations to enhance innovation outcomes, reduce risks, build customer loyalty and foster a culture of innovation. Integrating co-creation into innovation practices and processes enables different types of organisations to develop more relevant, sustainable and responsible innovations, which may resonate better with the values and needs of their stakeholders and the market.

Co-creation in the private sector

Within the private sector, two major streams of literature discuss the co-creation concept. One stream involves marketing-related research on co-creation processes focused on value creation, while the other stream focuses on innovation-related crowdsourcing literature. Both streams highlight how companies engage customers, end-users and other stakeholders in cooperative processes that improve the fit of existing and new products and services with current market needs. Whereas the co-creation literature focused on value production deals with end-user and customer relationships, the crowdsourcing literature focuses more on companies' innovation processes.

Prahalad and Ramaswamy were among the first to outline co-creation as a value-generating process, in which companies engage customers in interactions that integrate their knowledge, skills and contributions into the service and product development processes. This co-creation logic is evident, for instance, in business models in which customer feedback directly influences the design and delivery of services. One example is Airbnb, which enables hosts to co-create value for their guests by offering tools to customise accommodation listings and providing insights based on guest feedback. This allows hosts to tailor their services to match users' needs.

Ramaswamy and Ozcan's conceptualisation of co-creation extends to the joint agency of a group of co-creators and material elements, such as technological platforms

enhanced by digital technologies. Within this framework, co-creation is understood as a complex phenomenon occurring in the interplay of agency and structure. Social interactions, material elements (e.g. interactive platforms) and company practices in engaging co-creators in cooperative processes all shape the value co-creation activities between people.

According to Ghezzi and colleagues, crowdsourcing is a strategy that companies use to enrich their innovation potential and improve efficiency through co-creation. In crowdsourcing, a company outsources innovation-related tasks previously performed by its employees to a large network of people ('the crowd'). This process is done to leverage the wide range of skills, ideas and expertise among the general public for the purpose of solving problems and generating innovative solutions that the company might not be able to develop internally.

One excellent example is provided by Local Motors, a renowned vehicle maker known for its pioneering co-creation approach to building cars and other vehicles. Its most famous project, the Rally Fighter, illustrates how every part of this car – from its chassis to its exterior design – was developed through a community platform that brought together enthusiasts, engineers and fabricators from around the world. The use of the crowdsourcing strategy to achieve co-creation illustrates how companies can renew their innovation management mindset by integrating stakeholder insights and creativity into their innovation processes.

Crowdsourcing can be organised as competitions, open calls or online platforms, in which individuals submit proposals or solutions that are then evaluated by the company. The primary outcome is a diverse set of ideas and solutions that a company can choose from, often at a lower cost and with greater variety than if developed internally. Furthermore, crowdsourcing allows companies to tap into external knowledge pools without necessarily building long-term relationships with co-creators.

The literature shows how co-creation strategies employed by companies are becoming increasingly dependent on the use of social media and digital platforms, through which corresponding activities are implemented. In addition, companies can set clear guidelines for what can be considered relevant contributions from customers, end-users and other stakeholders. In return, companies also need to outline a transparent process for recognising and rewarding these contributions.

Co-creation in the public sector

Numerous studies on co-creation in the public and private sector contexts use the terms co-creation and co-production interchangeably. However, Brandsen and Honingh suggest that the process of developing and making decisions in ways that encourage citizens and community members to take initiative should be called co-creation, in contrast to co-production, which they define as another, less active, form of participation. From this perspective, the core of co-creation is that citizens and community members initiate efforts in contrast to situations wherein they are simply engaged by an organisation. Thus, co-creation marks a shift from the role of a passive citizen and community member to an active, participatory role in innovation processes.

Co-creation in the public sector context engages multiple stakeholders, including citizens and community members, in the development of single services, service systems and public policies. These partners collaborate to generate social and economic value through various kinds of participatory processes. This collaboration involves the principle of sharing power and decision-making, which, in turn, leads to a more democratic and inclusive collaboration. This contrasts with traditional development models that see public and third-sector organisations as the sole creators of value, often with a key emphasis on economic value, similar to private sector companies.

The co-creation concept, as used in the literature on public (and also third-sector organisations), is rooted in the recognition that all stakeholders, including citizens, users, volunteers and other community members, possess valuable knowledge, skills and perspectives that can enhance the multidimensional value, relevance and effectiveness of services, service systems and public policies. In this way, co-creation indicates a paradigm shift in the ways in which public and third-sector organisations interact with their multiple stakeholders, thus moving from a transactional to a relational and participatory approach.

Ideally, co-creation generates dialogue between public organisations and their stakeholders. In this context, co-creation is often

characterised by an ethos of partnership wherein the boundaries between service providers and service users or those between policy providers and those affected by the policy become blurred. This fosters a sense of joint ownership and responsibility for co-creation outcomes, such as services or policies. As such, it has the power to challenge the hierarchical, top-down models of service and policy delivery, advocating a broader and more networked approach towards collaborations within a community or society.

Thus far, scholarly definitions of co-creation in the public sector context emphasise its transformative potential for all parties involved. This can be attributed to the fact that it offers an opportunity for innovating with a diverse range of perspectives that can optimally lead to more creative, inclusive and socially acceptable solutions to complex societal problems. For multiple stakeholders, co-creation provides a platform for empowerment and active participation, enabling them to influence services, service systems and policies that affect their everyday lives.

The ethos of partnerships outlines co-creation as a longer-term iterative process rather than as a one-time event, which is typical of company research and development processes. This process requires commitment over longer periods of time, as well as flexibility and adaptability from all parties involved. Scholarly research in the public and third-sector contexts further emphasises the importance of building and using enabling environments for co-creation, such as Living Laboratories and Maker Spaces, that support creativity as a collective effort. Furthermore, co-creation entails the development of appropriate tools, methods and governance structures that facilitate creative but effective collaboration.

At the same time, the literature has shown that co-creation in public and third-sector organisations often faces rigidity and hierarchical challenges. This issue highlights the need to have clear visions balanced with flexible governance structures that enable co-creation objectives and practices to fit local needs. When certain challenges persist, such as bureaucratic inertia and the difficulties of measuring societal impact, overcoming them requires extra effort and resources.

In summary, co-creation in the public and third sectors encapsulates a collaborative and participatory approach to value creation. Such an approach emphasises the importance of generative initiatives from citizens and democratic partnerships, which, in turn, can leverage diverse stakeholder contributions, foster equal participation in decision-making and help achieve socially acceptable and more inclusive outcomes.

Application

Co-creation in the Lego Group

The Lego Group, a famous family-owned Danish company, transformed plastic bricks into a worldwide sensation by tapping into the collective creativity of its consumers. This company, therefore, stands as one of the most iconic examples of co-creation in practice. Over the years, the company has introduced multiple ways of engaging Lego enthusiasts in various co-creation activities. Two examples of these initiatives, the Lego Ideas platform and the Lego Lead User Labs, are introduced here.

The co-creation journey at Lego started when employees were encouraged to experiment with new designs and ideas. Such enhanced internal collaboration to develop new products paved the way for a company culture of continuous improvement and co-creation. The Lego Ideas online community is one of the most well-known co-creation spaces supported by a company. This platform allows fans to propose their own designs, using verbal descriptions, images, and videos, for potential new Lego sets. These user-driven ideas and designs are then discussed with the other Lego community members. Ideas that receive a predefined number of votes by the community are thereafter evaluated by the Lego Review Board, which consists of designers, product managers, and other stakeholders. Sharing ideas in this way endows Lego enthusiasts with the role of active participants in the company's innovation process.

Since its early years, co-creation at Lego has extended through partnerships with well-known franchises, such as Star Wars, Harry Potter and Marvel. Collaborating with these brands has allowed Lego to tap into new and existing fan bases, with whom they co-create products that combine the key features of Lego and the other brand. The resulting co-created products have been well received by the market, as they originated from the customers and user communities themselves, thus ensuring they meet consumers' interests

and desires. By giving a voice to its users and customers, Lego gains insights into their interests and needs, all while building a loyal and engaged community.

Meanwhile, the Lego Lead User Labs incubate and accelerate new and radical ideas that are offered and driven by lead users. These radical ideas may include new services, novel target groups, innovative distribution channels and nonconventional audiences, which expand the Lego brand and add value to its user community. In the co-creation process led by a lead user, members of the Lego user community collaborate to develop ideas in ways that increase their value. In these labs, members of the Lego community collaborate to shape and reshape ideas, make choices and carry out piloting that explores whether a new idea could be scaled up and how this process should begin.

Community-driven co-creation in the health sector

Within the health sector, a fictional example of a grassroots community-driven co-creation effort is provided by a project in which patient advocacy groups collaborate with citizens to take the lead in initiating partnerships aimed at developing lifestyle changes for individuals at risk of noncommunicable neurological diseases that are sensitive to a healthy lifestyle. Such a bottom-up approach empowers participants and helps ensure that the developed solutions are aligned with the needs and preferences of those at risk of developing neurological diseases, such as Alzheimer's or dementia.

The first phase of this co-creation effort is community mobilisation, in which patient advocacy groups invite patients with their families and caregivers, as well as interested citizens, to join a coalition that aims to address noncommunicable neurological diseases through lifestyle changes. The invitation is shared through social media, community meetings and collaborations with local health organisations.

The second phase involves forging partnerships between healthcare practitioners, researchers and lifestyle experts. These partners are tasked to reach out to neurologists, dietitians, fitness experts and mental health professionals and then invite them to collaborate in the project. The aim is to combine the lived experiences of citizens and patients with scientific and practical health expertise to develop effective and enduring lifestyle interventions.

In the third phase, a comprehensive assessment of the needs, challenges and goals of at-risk individuals and their support networks is conducted. Through surveys, focus groups and interactive workshops, the partnership coalition identifies common challenges, preferences and lifestyle factors that could be leveraged for disease prevention. Goals are then set to improve quality of life and reduce the risk of diseases through achievable lifestyle changes.

The fourth phase involves developing personalised and community-supported lifestyle modification plans in workshops, in which patients, families, caregivers and experts collaboratively design practical lifestyle modification strategies. These include diet plans, physical activity routines, cognitive exercises and social engagement activities tailored to individual and community preferences. At the same time, small groups work on creating actionable plans that address specific needs and preferences, incorporating feedback loops for continuous improvement.

In the fifth phase, the co-created lifestyle changes with community support mechanisms are implemented by identifying and training community champions, who can motivate and support others in implementing the lifestyle changes. For this task, support networks are established so that community members can encourage adherence, share success stories and navigate challenges together. Digital platforms are also used for tracking progress, sharing resources and maintaining engagement across the community.

In the sixth phase, data on health outcomes, adherence rates and participant satisfaction are collected to assess the impact of the lifestyle changes achieved and encourage their broader adoption. User forums, conferences and social media are also used to share best practices, such as successful strategies and stories that can inspire wider community engagement. Collaborations with healthcare policymakers are also established to advocate for the integration of successful lifestyle interventions into public health recommendations and practices.

This community-led co-creation process places those at risk of developing noncommunicable neurological diseases and their support networks at the centre of solution

development. Ideally, the process empowers patients, families, caregivers and citizens to actively contribute to broader policy-level changes. By leading the initiative, patients and their advocacy organisations are able to highlight efforts to ensure that lifestyle interventions are responsive to the needs of those at risk, thus fostering long-term commitment and engagement.

Critical summary

Co-creation has been widely studied in the literature, and several challenges that have been identified require further research. However, studying these challenges requires a nuanced approach that considers the specific contexts and perspectives of all parties involved.

The complexity of organising and managing diverse partners and stakeholders with different objectives and expectations is an all-encompassing challenge in co-creation initiatives and efforts. A mismatch between the expectations of various parties concerning the processes and outcomes of co-creation often exists. For instance, users may expect more personalised products and services, while companies might want to focus more on scalability and cost efficiency. Furthermore, co-creation processes often struggle with power dynamics, wherein dominant groups (e.g. organisations and experts) overshadow less powerful participants (e.g. citizens, users, consumers and community members), leading to inequitable contributions and outcomes.

Apart from good coordination and clear communication, co-creation efforts require time and financial and human resources – often much more than anticipated. However, a lack of resources limits the scope and depth of co-creation and makes it difficult to sustain such an effort over time. While co-creation has increasingly relied on technological platforms and data in the digital age, issues such as data privacy, technological accessibility and the digital divide continue to pose significant challenges that should be studied. The fact that not all co-creation contributors have equal access to or expertise in the technological tools and platforms used may hinder both the participation process and the quality of co-creation outcomes, which are difficult to measure.

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Further readings

Brandsen, T., Steen, T., & Verschuere, B. (Eds.) (2018). *Co-production and co-creation. Engaging citizens in public services.* Routledge.

Fagerstrøm, A., Bendheim, L. M., Sigurdsson, V., Foxall, G. R., & Pawar, S. (2020). The marketing firm and co-creation: The case of co-creation by LEGO. *Managerial and Decision Economics, 41*(2), 226–233.

Frow, P., Nenonen, S., Payne, A., & Storbacka, K. (2015). Managing co-creation design: A strategic approach to innovation. *British Journal of Management*, *26*(3), 463–483.

Ghezzi, A., Gabelloni, D., Martini, A., & Natalicchio, A. (2018). Crowdsourcing: A review and suggestions for future research. *International Journal of Management Reviews*, *20*(2), 343–363.

Ramaswamy, V., & Ozcan, K. (2014). *The co-creation paradigm*. Stanford University Press.

Ramaswamy, V., & Ozcan, K. (2018). What is co-creation? An interactional creation framework and its implications for value creation. *Journal of Business Research*, *84*, 196–205.

Torfing, J., Sørensen, E., & Røiseland, A. (2019). Transforming the public sector into an arena for co-creation: Barriers, drivers, benefits, and ways forward. *Administration & Society*, *51*(5), 795–825.

Voorberg, W. H., Bekkers, V. J., & Tummers, L. G. (2015). A systematic review of co-creation and co-production: Embarking on the social innovation journey. *Public Management Review*, *17*(9), 1333–1357.

21. Co-operative innovations

Anu Puusa and Tim Mazzarol

Outline of the topic

Cooperation has always been inherent in human society. The modern co-operative movement takes its starting date in 1844, with the establishment of the Rochdale Society of Equitable Pioneers in England. However, the movement was preceded by many forms of co-operative activities and friendly societies with antecedents dating back to the sixteenth century.

Co-operatives, friendly societies, and mutual enterprises are a response to economic and/or social problems (market failures) that cannot be, or are not being, addressed by other business models such as investor-owned firms (IOFs), or state-owned enterprises (SOEs). One of the key distinguishing features is that co-operatives create wealth for the many members of co-operatives who engage in their businesses as service users, producers, independent business owners, consumers, and workers. Moreover, unlike IOFs, where control is vested in the ownership of share capital (e.g., one-share-one-vote), the co-operative is democratically governed, with the principle of one-member-one-vote. This creates a basis for understanding the unique mission of co-operatives: they aim to improve both the economic and social well-being of their members through cooperation and collective ownership.

Over 3 million co-operatives are estimated to be operating worldwide across all countries and industries. The International Cooperative Alliance (ICA), the peak body of the co-operative's movement, defines a co-operative as an 'autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise.' Thus, the co-operative business model was an innovation in offering an alternative to the IOF and SOE models. In the first, ownership and control is concentrated into few hands and its purpose focuses on the maximization of investor returns. In the second, ownership and control is by the state, and its purpose is to achieve government policy objectives. By contrast, the co-operative business model places ownership and control in the hands of its members, who enjoy democratic governance, and its purpose is focused on the economic and social benefits of the members and their communities.

The co-operative is therefore a unique form of business that is guided by internationally recognised principles and values, and creation of value to members through active participation and patronage rather than the remuneration of investment capital. The movement's still current values and principles distinguish it from other forms of business and create potential for co-operatives to act as innovation platforms, which we will address in this entry. In doing so, the entry recognizes that innovation is a multidimensional construct.

At its core innovation is a process of applying new ideas to create value for customers, shareholders, and other stakeholders. It can take numerous forms, including new products and services, new industrial processes, new approaches to marketing (e.g., online vs. physical shopfronts), new organizational forms, new business models, and new ways to address social problems. Innovations can be 'radical' (e.g., piston vs. jet engines), incremental, or 'synthetic' (e.g., Apple Macintosh) where existing technologies are formed into new designs. Co-operative enterprises have a well-demonstrated track record in applying innovation across these forms to address economic and social problems.

Conceptual overview and discussion

Multiple roles and objectives are naturally inherent in the co-operative business model and these enterprises' practices. This complex nature derived from the co-operative mission has been conceptualized as dual nature. Due to their focus on addressing both economic and social objectives and balancing the needs of the individual via a collective ownership model, co-operatives have been viewed as 'hybrid' organizations, which fall between profit-maximizing IOFs and not-for-profit enterprises (NFPE) (e.g., philanthropic or social enterprises). Many co-operatives are NFPEs and even registered philanthropic charities, referred to as 'non-distributing,' as they do not pay dividends to shareholders. Other co-operatives are 'distributing' and do pay dividends to member shareholders.

However, share capital within a co-operative serves a different purpose to that within IOFs. While share capital provides the

necessary funding to allow both these businesses to operate, in the IOF its purpose is to return financial value to the investor shareholder. By contrast, within the co-operative its purpose is to reward active membership and encourage future patronage (e.g., trading with the co-operative), while providing the capital to address members' economic and social needs. 'Innovation to meet the needs of co-operative members has always been the mother and father of co-operative enterprise and will remain so,' states the ICA Guidance notes (https://ica.coop).

Co-operatives possess a duality whereby they are both collective associations of their members and independent business enterprises, a point first conceptualized by Draheim in 1952. According to Novkovic and colleagues, this duality refers to the tension in values between economic and social characteristics of co-operatives. This dual nature is a source of both strength and weakness. Although it is innovative from an organizational perspective, it is also complex to understand. This is because any in-depth assessment of the meaning of duality, its manifestation in practice, micro-economic foundations, and their interconnectedness are still largely under-theorized.

The innovative nature of the co-operative business model can be examined through the lens of the seven co-operative principles, which have been a guiding framework for these firms since their initial emergence in the Rochdale Society in the mid-nineteenth century. The first principle of *voluntary and open membership* was innovative in the formative years of today's global co-operative movement, but still has resonance in the present. Its recognition that membership is unrestricted in relation to an individual's race, gender, religion, political views, social status or wealth contrasts with the IOF, SOE and even many NFPE business models. In this regard co-operatives are an example of a social innovation.

As regards the second principle of *democratic member control* the one-member-one-vote system of governance within the co-operative business model stands in contrast to the IOF and SOE business models that are inherently anti-democratic, and even most NFPEs, which, although they may have philanthropic and benevolent aims and objectives, are not democratic in their governance. The combination of free and open membership and democratic governance serves to empower socially and economically disadvantaged communities. Worker co-operatives serve as an example of this, with their origins traceable back to the late eighteenth century. While well-established in Europe, they existed in the United States from 1768. More recently they have been enjoying a renaissance with a 30 per cent increase in these co-operatives during 2021, states Democracy at Work Institute, US Federation of Worker Cooperatives. These co-operatives offer greater job security and better conditions for workers representing a business model innovation.

The third principle of *member economic participation* is closely linked to the second principle. As shown in the case of worker co-operatives, the business model gives workers enhanced ownership and control over their own workplace, and removes the need for worker unionization, and confrontational industrial relations bargaining between the workers and the employers. This also applies to other types of co-operatives, such as producer co-ops where farmers, working collectively, can enhance their bargaining power by controlling critical stages of the supply chain (e.g., processing, manufacturing, marketing and distribution). More recently, platform co-operatives, which create digital online business models, owned and controlled by their members, can challenge incumbent monopolies. An example of this are platform co-operatives owned by musicians to secure enhanced marketing and distribution, royalties and copyright control over their creative work in response to incumbent IOF models such as Spotify and Apple iTunes.

The fourth principle of *autonomy and independence* is important because it recognizes that the co-operative, when applied in conjunction with the first three principles, is a unique and separate business model. Co-operatives have demonstrated their innovativeness by providing services in environments where IOFs and SOEs have been unwilling to do so. For example, the Ord River District Co-operative (ORDCO) Ltd., was established in 1963 to provide support for cotton farmers in the newly created Ord River Irrigation Area in the East Kimberley District of Western Australia. This required an autonomous and independent, grower-owned business that could supply farm inputs and manage cotton ginning facilities, bulk handling and storage, and export marketing

services in one of the most isolated areas of the world. Its success over the past 61 years was due to its innovative response to environmental, political, economic, and social challenges that saw it apply research and developmen (R&D), strategic alliances and continuous innovations the diversification of crop types and cultivation techniques to create sustainable agriculture in a harsh tropical environment.

The fifth principle of *education, training, and information* also forms a foundation for the innovation of co-operatives. For example, ORDCO invested and continues to invest heavily in the education and training of its members in best practices in tropical agriculture, collaborating with state and federal governments, scientific research agencies, universities, and private IOFs to apply new varieties of cotton that are resistant to weevil infestation and the use of biological controls for other pests. This member education about best practices can also be found in the cases of Co-operative Bulk Handling Group Ltd. (CBH), Australia's largest co-operative, which has been responsible for the application of state-of-the-art technologies in bulk grain handling and storage since its inception in 1933. Its application of best practices in grain handling and storage, and the tracking of all grain from seed to final distribution to end-user customers, using technologies developed within its own R&D centres, provides quality control for customers.

The sixth principle, *cooperation among co-operatives* and the seventh principle, *concern for the community* can also relate to innovation within co-operatives. The examples of ORDCO and CBH referenced earlier illustrate examples of collaboration, joint-venture formation, and exchange of technologies, personnel, and services in addressing economic and social problems. These two principles also relate to the six co-operative values of self-help, self-responsibility, democracy, equality, equity, and solidarity. The members of co-operatives believe in the ethical values of honesty, openness, social responsibility and caring for others. These principles and values play a key role in defining and guiding co-operatives, although research shows that there can also exist a gap between these ideals and actual practices. However, we argue that each of the co-operative principles may be seen as an engine for innovation, which we will address next.

The nature of co-operative innovation

Some innovations are motivated by scientific and technological inventions generated by analytical knowledge, forming a science-driven technology-push model referred to as the science, technology, and innovation (STI) mode. Many co-operatives invest in R&D that leverages STI approaches, but their common approach is that of the doing, using and interaction (DUI) mode. This form of innovation is driven by responses to the market and uses synthetic knowledge that integrates existing innovations to address specific market needs. This STI/DUI model is explained by Libaers et al. (2016), and the DUI approach has been referred to by Jensen et al. (2006) as a market-pull model.

Co-operatives adapt their business model to address market failures and follow a DUI mode. Their responses are similar to those found in other business models, although their collective ownership, member focus, and democratic governance, result in some important differences. Benavides and Ehrenhard observed that co-operatives must be economically efficient. However, due to their organizational configuration and purpose, differences emerge between types of co-operatives (e.g., producer, worker, consumer, shared-service, social, housing, utilities, and platform). Each of these co-operative types addresses specific member needs, and they are best addressed by different types of innovation (e.g., product, service, process, marketing, organizational, business model, and social).

As with any other business, the co-operative is impacted by market competition, government regulation, social and political change, technological transformation, and environmental turbulence. It must adapt and innovate in order to survive. However, according to Benavides and Ehrenhard, relatively little attention has been given to the co-operative business model and its operation at the individual, group and inter-organizational level.

Application: case study in innovation

As already discussed, there are numerous examples of innovation in co-operatives. Rath and Joshi (2020a, 2020b) provide an interesting and worthwhile example from the Indian dairy industry. India is the world's largest producer of milk, with a national bovine herd

of over 303.8 million cattle, buffalo, oxen and yak. However, the average herd size per farmer is only two to three animals. Major problems facing India's dairy farmers are lack of affordable fertilizers and energy, and an overabundance of manure. Farmers have traditionally used dried cow dung as a fuel for cooking and heating, and raw manure as fertilizer, although both are inefficient and laborious. To address these problems Indian dairy co-operatives, working with the national government and state government of Gujarat, established pilot plants for converting manure into biogas and both wet and dry fertilizers. This led to the establishment of the Sakhi Khad Sahakari (Fertilizer) Co-operative, founded entirely by women. Farmers supply both milk and manure to their local co-operatives, who pay them for these supplies; the dung is then taken to biogas and fertilizer processing plants operating across 11 states.

Critical summary

The examination of the co-operative principles shows that these enterprises were a business model innovation when the movement was established, and they remain innovators today. The co-operative has provided an innovative and effective business model for addressing economic and social problems for centuries. However, it has been ignored and marginalized by mainstream economics and management theories. Academic research focuses on neoclassical, transaction cost economics (TCE), and the new institutional economics (NIE) theories that became dominant during the second half of the twentieth century. TCE is useful in its ability to address the hybrid nature of the co-operative business model, and NIE (an evolution of TCE) provides a useful framework for understanding the co-operative within its stakeholder context. However, they have been applied more to producer co-operatives than consumer or other types (e.g., social co-operatives). They also ignore or at least de-emphasize the social capital value creation of co-operatives, which is a focus of public and co-operative economics. This lack of attention to the social capital building role of agricultural co-operatives is a major gap in the research literature.

It is relevant to increase the level of understanding about the co-operative business model and its potential to deliver innovation, not only from its organizational configuration, but also its ability to deliver product, service, process, marketing, and social innovations just as readily as IOFs. As humankind wrestles with the idea of stakeholder capitalism and seeks new solutions to balance profits and purpose, the co-operative business model remains as relevant today as it was in previous centuries. Faced with rising social and economic inequality, capitalism seeks to reinvent itself. Throughout the world, IOFs are embracing the UN Sustainable Development Goals (SDG) concerned to demonstrate their social licence to operate. More research is needed into how co-operatives deliver on these UN SDGs and the role played by innovation in this process.

The co-operative business model, as a values-based enterprise, has existed for at least two centuries. Its foundation of cooperativism, a system of running a business that puts people at the centre (maximizing member benefit), anchors wealth in a community, sets a multi-generational strategy and is competitive in the market offers an alternative to the IOF model. As an alternative to the IOF, the co-operative business model's ability to navigate between profit-maximizing IOFs and state-controlled SOEs has been recognized since the eighteenth century. This is evidenced by the concept of *associationalism* (associative democracy) that was originally proposed by Alexis de Tocqueville. These ideas align with the concept of the collective economy initially advocated by Charles Fourier and Edgard Milhaud and referenced by Whyman in 2012.

Co-operatives provide a middle path alternative to mainstream neoliberal or socialist business models; not replacing them but offering an alternative. In other words, co-operatives provide an innovative solution to the capitalistic dilemma. They combine making good business and doing good due to their dual nature. They deserve more attention from university business schools, and their economics and management departments.

Further readings

Benavides, F. A. C., & Ehrenhard, M. (2021). Rediscovering the cooperative enterprise: A systematic review of current topics and avenues for future research. *Voluntas*, *International Journal of Voluntary and Nonprofit Organizations*, *32*(5), 964–978.

Jansen, J. J. P., Van Den Bosch, F. A. J., & Volberda, H. W. (2006). Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators. *Management Science, 52*(11), 1661–1674.

Levi, Y., & Davis, P. (2008). Cooperatives as the 'enfants terribles' of economics: Some implications for the social economy. *Journal of Socio-Economics*, *37*(6), 2178–2188.

Libaers, D., Hicks, D., & Porter, A. L. (2016). A taxonomy of small firm technology commercialization. *Industrial & Corporate Change, 25*(5), 371–405.

Mazzarol, T. (2024). *Co-operative and mutual enterprises research: A comprehensive overview*. Routledge.

Mazzarol, T., Reboud, S., Clark, D., Moore, M., Malone, P., & Soutar, G. N. (Eds.) (2022). *Commercialisation and innovative strategy in small firms: Learning to manage uncertainty*. Springer-Nature.

Novkovic, S., Puusa, A., & Miner, K. (2022). Co-operative identity and the dual nature: From paradox to complementarities. *Journal of Co-operative Organisation and Management*, *10*(1), 100162.

Puusa, A., Mönkkönen, K., & Varis, A. (2013). Mission lost? Dilemmatic dual nature of co-operatives. *Journal of Co-operative Organization and Management*, *1*(1), 6–14.

Rath, D., & Joshi, Y. C. (2020a). A holistic manure management model by leveraging dairy cooperative network. *International Journal of Rural Management*, *16*(2), 131–155.

Rath, D., & Joshi, Y. C. (2020b). Prospects and strategies for accelerating the growth of the agriculture and allied sector in Odisha with specific reference to dairying. *Agricultural Economics Research Review*, *33*(2), 251–262.

Whyman, P. B. (2012). Co-operative principles and the evolution of the 'dismal science': The historical interaction between co-operative and mainstream economics. *Business History*, *54*(6), 833–854.

22. Digital platforms

Sini-Tuulia Suokas, Kaisa Henttonen and Ville-Veikko Piispanen

Outline of the topic

Digital platforms are a critical area of study from an innovation management perspective in research and practice because they offer the potential for swift and widespread commercialization of innovations. By serving as digital marketplaces, they connect users and developers, facilitating the distribution and utilization of complementary applications to a broad industrial customer base. Beyond efficient transactions, digital platforms have evolved into vehicles for business model innovation. They uncover, create, co-create, and exploit new value derived from industrial data—stretching beyond the confines of individual firms and engaging both customers and complementors. By doing all this, digital platforms have aided the digital transformation, which refers to processes that aim to improve entities through significant changes fuelled by combinations of information, computing, communication, and connectivity technologies. Research at the intersection of digital transformation and innovation management is still in its early stages, but it is gaining momentum.

This entry proceeds as follows. First, the three common characteristics shared by all digital platforms are presented. Second, technical and non-technical study perspectives and their corresponding definitions of digital platforms are discussed. Third, although digital platforms provide a variety of benefits, they also have a dark side. The dark sides of digital platforms are addressed in terms of surveillance and security, monopolies and unregulated business and societal and ethical issues. Fourth, examples of different types of digital platforms are given, and their benefits, as well as challenges, are elaborated. Finally, some critical remarks are provided.

Conceptual overview and discussion

There is no common definition of digital platforms, but all digital platforms share the following three characteristics. They are technology-mediated, they enable interaction between user groups, and they enable accomplishing tasks. Technology mediation is enabled by digital infrastructures, such as the internet and mobile networks. It facilitates interaction by linking objects, individuals, and organizations who consume, as well as generate, data. Interaction can further enable three types of tasks on digital platforms: innovation, transaction, or both. Digital innovation platforms enable third-party companies, such as software developers, to create numerous complementary products or services. For instance, these platforms facilitate the development of countless applications that enhance the features of foundational products like Microsoft Windows or Google's Android. Digital transaction platforms facilitate exchanges between various organizations, entities, and individuals. They serve as intermediaries, connecting buyers to sellers, recruiters to job seekers, and drivers to passengers. These platforms can be categorized based on their primary tasks. Examples include social media platforms (e.g., Instagram), e-commerce (e.g., Shopify), the 'gig' economy platforms (e.g., 99designs), platforms built around the notion of the sharing economy (e.g., Airbnb), online portals and app stores (e.g., Freebasics), and platforms enabling digital identity (e.g., Thales). In addition, there are platforms enabling both platform tasks—that is, transaction and innovation tasks. These are often called integrated or hybrid platforms. One could posit that every digital transaction platform necessitates an underlying innovation platform. After all, the very term "transaction platforms" implies that they are constructed upon a specific foundation, such as Android, Linux, Windows, or another similar platform.

Technical and non-technical perspectives to digital platforms

Digital platforms have been studied from technical and non-technical perspectives that have their own research interests and definitions. Studies from the technical perspective consider that digital platforms that merely act as intermediaries between various user groups but lack an extensible codebase should not be classified as true digital platforms. Digital platforms consist of components at different levels, e.g., the device, the operating system, and the applications. Within the technical perspective, innovation dynamics of a digital platform are considered to depend on its dependencies with platforms on different levels of the technical architecture. For example, in the realm of mobile platforms, the

iOS operating system is closely intertwined with the Apple iTunes app store platform. Similarly, Google's mobile wallet functions as a platform by building upon the Android operating system, leveraging its capability to emulate payment cards. More specifically, studies from the technical perspective focus on the technical elements and processes required to configure a digital platform. They also explore, for example, socio-technical dimensions of digital platforms such as their impact on organizational structures or standards. Socio-technical in this context refers to a digital platform that can be described as a socio-technical assemblage. Such an assemblage encompasses both the technical components (including software and hardware) and the associated organizational processes and standards.

Non-technical studies examine digital platforms as economic and social activity. One non-technical perspective approaches digital platforms from an economic point of view and its focus has been mainly on the transaction platforms because their management is related to areas such as pricing and contractual factors. From the economic perspective, the focus lies in bridging seemingly disparate groups, with benefits primarily hinging on the presence of network effects—whether direct or indirect. Direct network effects refer to the utility of the network (or platform) increasing to each member as more users join for the same essential use. Examples of this are digital platforms like M-Pesa and WhatsApp. On the other hand, indirect network effects in multisided platforms refer to the benefits stemming from enlarging groups that complement each other. When deciding to join a platform, the perspective of one side (e.g., demand side) is influenced by the number of users on the complementary side (e.g., supply side). This phenomenon is evident in digital platforms like Gojek and Afristay. Economic perspectives on transaction platforms increasingly delve into their emergence (how they come into existence) and evolution (how they develop) over time. Moreover, these perspectives extend beyond mere buyers and sellers, encompassing other participating actors. The other non-technical perspective approaches digital platforms from an industry point of view.

Some of the notions proposed by the economic point of view do not quite fit innovation platforms. Critics argue that the economic perspective often overlooks design-related factors and their impact on incentivizing innovation. Consequently, research on innovation platforms frequently adopts an industry point of view stemming from engineering, information systems, or product management. These studies emphasize not only the technological architectures that facilitate innovation but also delve into the design and production aspects of these platforms. Additionally, they explore the role of interfaces in the interaction between the platform and third-party complementors. The central focus when examining digital innovation platforms lies in understanding the relationship between the core platform (the central entity) and the periphery (the third-party developers or complementors). Key questions include: what types of resources are provided to these complementors, and how do these resources impact their usage and subsequent innovations? However, innovation platforms also impose constraints on complementors. For platform owners, the challenge lies in balancing these two aspects: (1) providing the necessary resources for complementors to build services atop the platform, and (2) simultaneously controlling the platform and maintaining its stability. Furthermore, the dynamics between the core platform and developers may vary across countries, particularly concerning monetization strategies.

The dark side of digital platforms

Digital platforms have a dark side, which refers to the potential negative consequences of digital platform organizations, as described by Bonina. These consequences include surveillance and security, monopolies, and unregulated business and societal and ethical issues.

Surveillance and security

Digital platforms have the potential to enable extensive data collection practices, which can lead to potential surveillance issues. This includes the tracking of user activities, preferences, and interactions without explicit consent or awareness, raising privacy concerns and the potential for misuse of personal information. As digital platforms store and process vast amounts of data, they become attractive targets for cyberattacks. Security breaches may result in the theft of sensitive personal and corporate data, financial losses,

and damage to reputation. The interconnected nature of digital platforms implies that vulnerabilities in one part of the system can have cascading effects, compromising the security of connected services and users.

Monopolies and unregulated business

The dominance of certain platforms in their respective markets can lead to monopolistic behaviours. This includes stifling competition, controlling market access for new entrants, and dictating terms and conditions that may be unfavourable to users and other stakeholders. Monopolies can also limit consumer choices and stifle innovation by preventing smaller entities from competing effectively. Furthermore, the swift advancement of digital platforms frequently surpasses the establishment of regulatory frameworks, resulting in unregulated activities. This can lead to practices that are ethically questionable or legally ambiguous, such as the exploitation of gig economy workers or the manipulation of consumer behaviour through psychologically targeted advertising. Although digital platforms can create new economic opportunities, they can also disrupt traditional industries, leading to job displacement. The automation of tasks and the shift towards digital services can reduce the demand for certain types of labour, impacting workers in sectors that are slow to adapt to digital transformations. Users and businesses may become overly reliant on a single platform, resulting in lock-in effects that make it difficult or costly to switch to alternative platforms. This dependence can limit flexibility, reduce bargaining power, and make stakeholders vulnerable to changes in platform policies or pricing.

Societal and ethical issues

Digital platforms' algorithms and operational mechanisms may unintentionally perpetuate societal inequalities and biases. It is crucial to address these biases to promote fairness and equality. Algorithmic bias, which results in unfair targeting or exclusion of certain groups based on data-driven decisions, can reinforce social divisions and disproportionately affect marginalized communities. Moreover, the operation of digital platforms raises ethical and moral dilemmas. These include the balance between freedom of expression and the prevention of harmful content, as well as the ethical use of artificial intelligence and automated decision-making systems. To navigate these dilemmas, careful consideration and the development of ethical guidelines and standards are necessary. The widespread reach and influence of digital platforms can be exploited to disseminate misinformation or manipulate public opinion. False information can spread rapidly on social media platforms, which can have significant impacts on political processes, public health responses, and societal norms. This is a particularly concerning issue, and it is important to ensure that information shared on these platforms is accurate and reliable.

Application: types of digital platforms and their benefits and challenges

Innovation platforms

Innovation platforms facilitate collaboration between parties through selling, renting, or offering services. SAP and iOS are examples of such platforms that offer cloud subscription and software licensing business models for their offerings. iOS provides a robust technological infrastructure that supports a variety of applications, services, and user interactions within the digital environment. As a platform for developers, the App Store enables the creation and distribution of apps, while a range of features and functionalities facilitate user interactions. The iOS ecosystem encompasses a diverse array of digital services, including communication, entertainment, productivity, and vast digital content. The SAP digital platform seamlessly integrates multiple business processes, data, and applications to optimize operations and enable informed decision-making. Its comprehensive modules and solutions support key functions including finance, human resources, supply chain, and customer relationship management to enable organizations to manage and run business operations and processes with efficiency. The benefits of innovation platforms are multitude as they foster collaboration and user interactions, offer infrastructure and ecosystems for services with various customer bases, including communication, entertainment, productivity, and access to vast digital content. Yet there are challenges, such as security and privacy with vast amounts of data being exchanged, stored, altered, and used for marketing, posing a significant challenge.

Transaction platforms

Transaction platforms facilitate the exchange of goods or information through advertisements or fees, creating value. An example of such a platform is Uber, which operates in the transportation industry, specifically in ride-sharing and food delivery services, and operates an aggregator business model, which is a network model that is based on a certain brand, that is Uber. The Uber platform connects riders with drivers through a mobile app, allowing users to request rides and track the location of their assigned driver. The fare is automatically calculated by the platform based on factors such as distance and time. In addition to its ride-hailing services, Uber has also expanded its offerings to include food delivery through Uber Eats. The benefits of transaction platforms are evident as they offer efficient exchange of goods, services, and payment transactions through the aggregator model. This allows service providers a seamless and transparent platform for users, and platforms can be expanded to new offerings quickly based on the customer behaviour. These changes can be very cost-effective. However, transaction platforms face challenges with regulation when operating in different regions. Also, security can be a major challenge because of cyberattacks and risks of financial information being exposed.

Hybrid platforms

Many of today's technology giants, such as Apple, Google, and Meta, are hybrid platforms that utilize both transactional and innovative methods to create value. The Apple and Google business model is based on advertising, product and service sales, and licensing, whereas Meta's business model heavily relies on advertising sales. They benefit from advertising and information exchange while also providing services. For example, Google provides numerous free services to its users, which is a crucial element of its value proposition. Moreover, Google utilizes a freemium model by charging users for upgraded features, which diversifies its revenue streams. A significant aspect of Google's value creation is its expertise in targeted advertisements, a monetization strategy that utilizes user data to improve relevance and effectiveness. Google offers a broad range of services, including search engines and cloud-based applications, across an extensive and efficient domain. The platform stands out for its effective use of machine learning and artificial intelligence (AI), which enables it to continuously enhance its services and provide users with more personalized and efficient experiences. The integration of these technologies enhances the platform's functionality and places Google at the forefront of technological innovation. Meta provides a multifaceted digital platform, including social media platforms such as Facebook, Instagram, WhatsApp, and Messenger, as well as integration with AI, virtual reality, and augmented reality technologies for customer experiences. There are plenty of benefits of hybrid platforms as they offer flexibility in value creation with diverse range of services, multiple cost-efficient revenue streams, and security with advanced technology and innovation. However, the challenges in a complex business model can be resource-intensive, and data privacy and security is an issue because of vast amounts of data.

Critical summary

Research on digital platforms covers a broad range of domains, such as technology management, economics, business, and the social sciences. However, the term 'platform' is used in various contexts, leading to considerable ambiguity regarding its interpretation in research. Clarifying conceptual ambiguities is crucial for fostering a more cohesive and comprehensive understanding of the dynamics within the realm of digital platforms, especially, as new types of digital platforms are also emerging. Sustainability-oriented digital platforms (SODPs) provide opportunities for companies to move from traditional make-and-sell logic to the creation of continuous revenue by selling sustainable solutions and services. George notes that digital platforms can aid in sustainability transformation by connecting resources and people, facilitating information exchange, and mobilizing action. For instance, platforms such as eBay and Netflea.com/Vähänkäytetty.fi allow individuals to sell their used items, extending their lifecycle and reducing the demand for new products. At their best SODPs can encourage access over ownership, reduce overall consumption, and promote more sustainable consumption patterns. Furthermore, we are also witnessing the intersection of sustainability and digital imperatives, which is gradually

gaining momentum in both private and public sectors. However, comprehensive, and rigorous academic research in this area is still lacking. It is also noteworthy that the public sector stands to benefit significantly from digital platforms and online fundraising. For example, these non-commercial platforms allow charitable organizations to shift away from vulnerable offline fundraising methods, such as street collections (with coin-boxes), sign-up sheets, time-consuming events, sponsorships, and costly physical shops selling second-hand items. Additionally, digital platforms provide non-profits with the chance to reach a broader audience, raising awareness about their values and charitable endeavours. Finally, the optimistic trajectory of digital platforms also demands a conscientious acknowledgment of their darker dimensions. Furthermore, the integration of machine learning, big data analytics, infrastructure services, and AI will introduce new threats or challenges that are not yet fully comprehended. Addressing these challenges requires not only multifaceted research approaches and robust theoretical frameworks but also strengthening regulatory structures, implementing ethical guidelines, transparency measures, and actively engaging diverse stakeholders. This approach ensures that digital platforms can provide benefits while maintaining privacy, security, and societal values.

Further readings

Bonina, C., Koskinen, K., Eaton, B., & Gawer, A. (2021). Digital platforms for development: Foundations and research agenda. *Information Systems Journal*, *31*(6), 869–902.

Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). *The business of platforms: Strategy in the age of digital competition, innovation, and power* (Vol. 320). Harper Business.

George, G., Merrill, R. K., & Schillebeeckx, S. J. D. (2021). Digital sustainability and entrepreneurship: How digital innovations are helping tackle climate change and sustainable development. *Entrepreneurship: Theory and Practice*, *45*(5), 999–1027.

Kolk, A., & Ciulli, F. (2020). The potential of sustainability-oriented digital platform multinationals: A comment on the transitions research agenda. *Environmental Innovation and Societal Transitions*, *34*, 355–358.

Tiwana, A., Konsynsky, B., & Bush, A. A. (2010). Platform evolution: Coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research*, *21*(4), 675–687.

Trittin-Ulbrich, H., Scherer, A. G., Munro, I., & Whelan, G. (2021). Exploring the dark and unexpected sides of digitalization: Toward a critical agenda. *Organization*, *28*(1), 8–25.

23. Inclusive creative city

Rodrigo Ábnner Gonçalves Menezes and Ana Sílvia Rocha Ipiranga

Outline of the topic

In 2019, the relevance of the design in the creative economy of the Brazilian city of Fortaleza (the capital city of the state of Ceará) led it to be approved by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a Creative City of Design, through the UNESCO Creative Cities Network program (UCCN). Generally, the UCCN acts as a network that aims to promote cooperation between cities that recognize creativity as a strategic factor for sustainable development. Participating in this network will enable Fortaleza to develop a set of actions and projects related to the design segment by sharing its best practices and expanding partnerships with other national and international cities.

In addition to the title endorsed by UNESCO, Fortaleza presents problems common to cities in the Global South related to high levels of inequalities and various forms of marginalization. In this context, how can a city, based on its creative economy, organize innovative actions and projects to reduce such problems?

Menezes and Ipiranga, and Lacerda and colleagues agreed that questions about the organization of innovative projects for the city of Fortaleza should be guided by a critical reflection on urbanization, focusing on cities in the Global South. These discussions presented alternative proposals, highlighting the production of an urban space based on non-totalizing processes, which is still little recognized by the dominant categories in the literature on innovative urban management.

In conceptual theoretical terms, Menezes and Ipiranga considered that the innovative management of creative cities in the Global South is based on perspectives capable of seeing and deepening processes of inclusive organizing. For this study, the assumption was made: inclusive organizing based on culture-driven co-creation processes facilitates innovative city management. This assumption is relevant since achieving genuine inclusive organizing in a Global South context may be difficult if social inequalities are not considered. In that sense, this study aims to discuss the inclusive organizing of the creative city of Fortaleza in Brazil, through innovative city management based on culture-driven co-creation processes.

Conceptual overview and discussion

In the context of city management, Czarniawska states that the connections between the various public and private actors who participate in these management processes create action nets. These action nets transport the flow of processes through micro-practices that act in organizing urban spaces. The city organizing can be understood from the perspective of these action nets, which analyze how actions connect to each other. This makes it possible to reveal what is being done and how these deeds connect to each other in the same context. By connecting to each other in a logical order of interpretations, these collective actions contribute to innovative city organizing.

On the other hand, the creative economy plays a fundamental role in organizing the city's economic and cultural infrastructure. This economy encompasses music, theatre, and visual arts segments, offering goods that become part of a network of meanings and symbols. These activities produce consumer cultural goods in which creative work is the main element for the generation of intellectual property. In Brazil, the symbolic and cultural aspects of the creative economy follow two paths that unite the issues of economic and sustainable development, involving actors, including micro and small creative businesses.

Discussions about organizing creative cities have the fundamental role of reflecting and offering innovative solutions to the problem of urban marginalization that characterizes cities in the Global South. Although classic conceptions of creative cities recommend management concerned with attracting creative professionals from all over the world, these seem to contribute little to inclusive urban organizing, often increasing processes such as commuting and/or even gentrification.

In a creative and inclusive city, art, culture, and science must be central to organizing the economic and social urban infrastructure. Menezes and Ipiranga define an inclusive creative city as one that cultivates new trends in art and culture and promotes creative sectors, organizing a local capacity to find innovative

solutions to the problems of people who live in cities.

In this context, organizing urban practices must foster the population's creativity. Such organizing should also offer relational spaces based on culture-driven co-creation processes and support producers and other actors in innovative management of the city. Sasaki stipulates six conditions for these processes to be activated:

1) An urban economic system in which not only artists and scientists can freely develop their creativity but also other groups can engage in flexible and creative production, resisting eventual threats from the global market.
2) The city has universities, research institutes, and professional training schools that support artistic and scientific creativity, in addition to cultural facilities such as theatres and bookstores and nonprofit institutions that support individuals and creative activities.
3) Balanced development processes between industry and cultural life, production, and consumption, encouraging new industries in well-being, medical services, and art.
4) Preservation of the urban environment to improve the creativity and sensitivity of citizens.
5) Creation of mechanisms for social participation to guarantee the creativity and versatility of its citizens.
6) Organization of a qualified team to deal with financial issues related to promoting creativity.

To enhance the connection between space and social, economic, and cultural integration in a creative city in the Global South, it is essential to move beyond conventional industrial production methods. Culture-driven urban practices, driven by innovative co-creation processes, should aim to tackle the challenges of creating inclusive creative spaces. In this sense, culture-driven co-creation practices should focus on fostering the creativity of people who live in the city, offering inclusive, relational spaces to support cultural producers among the other actors participating in these action nets.

By relating the connections and translations between the shared practices discussed by Czarniawska regarding the organizing of inclusive creative cities, the influence of culture-driven practices by co-creation processes stands out in this process. Wåhlin and colleagues stated that the main characteristic of co-creation practices is the engagement of a diversity of actors with decision-making and negotiation power, participating and assuming the culture as the main factor in the innovative organizing of urban practices.

Figure 23.1 represents the theoretical-empirical framework. The dotted lines in the three circles represent the interactive process of inclusive organizing of creative urban spaces that culminates in the innovative management of a creative city of the Global South.

Application

This topic presents empirical evidence of inclusive organizing through innovative city management based on culture-driven

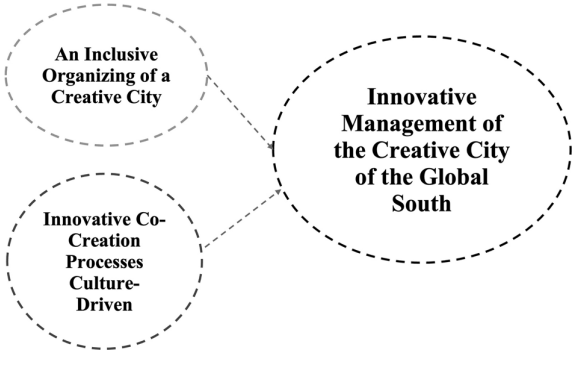

Figure 23.1 Theoretical-empirical framework: innovative management of the creative city of the Global South

co-creation processes in the creative city of Fortaleza, located in the Global South.

To become a UCCN member, Fortaleza needed to carry out a cultural analysis looking at the past to understand how the city was organized and what referential elements are present in the collective unconscious performed by the citizens' memories. These memories shape individuals as singular individuals and are crucial in defining a city's identity. This analysis can be seen in the UNESCO application form, which emphasizes the importance of design in the city's history and cultural and economic heritage. This historical cultural evidence influenced the processes of organizing Fortaleza as a Creative City of Design.

The action nets responsible for submitting the UNESCO application form were formed by a group of institutional actors that had to fulfill all the application requirements. The top eight presenters on the following list lead these initial efforts. After being awarded the seal of "Creative City of Design" by UNESCO, actors began to develop projects for the newcomer creative city of Fortaleza.

1) Ceará Design Association: a design association that aims to promote and deal with issues related to the design segment in the state of Ceará.
2) FECOMERCIO: a federation that deals with the trade of goods, services, and tourism in the state of Ceará.
3) SENAC: an organization responsible for promoting business education.
4) SEBRAE: the Brazilian service to support small companies.
5) Iracema Institute: a non-profit association that aims to promote cultural, art, and sustainability projects in Fortaleza.
6) Fortaleza City Hall.
7) State of Ceará Government.
8) Urban Centres for Culture, Art, Science, and Sports (CUCAs): education institutions located on the outskirts of the city's Creative District.
9) Independent professional designers.
10) Citizens and community leaders.
11) Universities professors and researchers.
12) Creative economy entrepreneurs.
13) Consultants and other actors who participated in projects related to different sectors related to the seal.

Furthermore, it is observed that the organization of the Creative District occurred with the participation of actors at more intermediate levels and at a micro level of action linked to the cultural field of design. University researchers, small and medium-sized businesses, non-profit organizations, citizens, and city government representatives took part in filling out the application form. Evidently, the actors' representatives from these institutions and organizations were actively involved in the culture-driven co-creation processes throughout the implementation and the actual phases of the UNESCO Fortaleza Creative City Design Project.

Consider the area surrounding Fortaleza's Creative District as an example of an inclusive organizing process driven through innovative urban management based on culture-driven co-creation processes. Here, various initiatives are being orchestrated to support the city's creative economy. This Creative District, which encompasses vulnerable communities such as Poço da Draga, Graviola, and Morro do Ouro, was a key element in obtaining the UNESCO seal. Between the limits of this urban context, divided spaces, rich and poor, intersect, typical of cities in the Global South. In this sense, the creative city of Fortaleza organizes culture-driven co-creation projects by considering design as a vector of economic and social development based on two main axes: education and guidance.

Regarding the education axis, a portfolio was built to promote inclusive organizing through the city's creative economy; highlighting, for example, the work carried out with the Graviola community, where a group of women was trained to develop different entrepreneurial activities in the fashion design segment. Also noteworthy are the projects aimed at the creative economy developed by the inhabitants of the Poço da Draga community, such as (1) Composting Poço, aimed at the development of sustainable solid waste composting actions; (2) the Dragaleria, aimed at organizing exhibitions of old and contemporary photographs to safeguard the community's memory; (3) the Pro-Poço Movement, promoted by residents who organize themselves for the cause of belonging to the community; and (4) the Poço of Culture which aims to develop artistic and cultural training practices, as well as socio-educational activities for the population of the Poço da Draga community.

Regarding the guidance axis, culture-driven co-creation processes were highlighted through the Digital Youth Program to expand more inclusive local design thinking, especially among the younger population living in vulnerable spaces in the city. For this purpose, the Social Design Laboratory was organized, with one of its objectives being to articulate actions to solve social problems through design. These programs involved: (1) fundamental education for training secondary level students in computational design languages; (2) markets to open up opportunities in work in technology and design; and (3) games aiming to offer training courses in the area of digital games.

This set of projects aimed at youth in vulnerable situations is related to the Young Innovation Institute, which aims to promote social transformation by modernizing learning, innovation, and sustainability, enabling young people to access citizenship, technology, art, culture, sport, the environment, and a creative economy. On the other hand, the experiences developed in Graviola and Poço da Draga communities were expanded to eight city neighborhoods through the Sewing the Future project, which brings opportunities to people in vulnerable situations. The action offers a shared and free structure, suitable for those who do not have a sewing machine and intend to develop textile design, clothing, and fashion activities, providing productive inclusion for the population and transforming art into income. These axes followed the paths of the creative economy practiced in a country in the Global South like Brazil to organize local capacity by including and training new micro and small creative entrepreneurs in these processes, ultimately creating innovative solutions for problems of people living in the city.

Critical summary

Thinking about the near future, for the implementation and continuity of the set of projects mentioned here, the organizing Creative District of the City was incorporated into the Multi-Year Government Plans of Fortaleza, which consider the management of resources for implementing cultural policies. In the macro sense, processes of organizing new governance practices were evident in Municipal, State, and Federal Cultural Councils, especially after these forums were abolished in the last Brazilian government between 2019 and 2022.

Despite the uncertainty surrounding the future of planned projects aimed at inclusive organizing of Fortaleza as a creative city, achieving genuine inclusion may be challenging. However, it is important to note that no particular government owns the UNESCO designation. Instead, it serves as recognition of the city's creative and cultural potential.

Finally, Fortaleza demonstrates a shift towards more innovative urban management, focusing on co-creating sustainable cultural, educational, scientific, artistic, and creative practices. This effort aims to foster inclusive spaces across various territories within the city's creative design district within the Global South.

Further readings

Czarniawska, B. (2008). *A theory of organizing*. Edward Elgar Publishing.

Lacerda, C. C. de O., Ipiranga, A, S. R., & Thoene, U. (2023). A critical organizational history of city margins in the Global South. *Qualitative Research in Organizations and Management, 18*(1), 22–45.

Menezes, R. A. & Ipiranga, A. S. R. (2022). Inclusive organizing through creative economy: UNESCO Fortaleza creative city of design project [Paper presentation]. ANPAD XLVI Annual Meeting, online. https://anpad.com.br/uploads/articles/120/approved/f8580959e35cb0934479bb007fb241c2.pdf

Menezes, R. A. & Ipiranga, A. S. R. (2023). A theoretical model for analyzing the inclusive organizing of creative cities [Paper presentation]. SCOS – Standing Conference on Organizational Symbolism, Paris.

Sasaki, M. (2010). Urban regeneration through cultural creativity and social inclusion: Rethinking creative city theory through a Japanese case study. *Cities*, *27*, S3–S9.

Wåhlin, N., Kapsali, M., Näsholm, M. H., & Blomquist, T. (2016). *Urban strategies for culture-driven growth: Co-creating a European capital of culture*. Edward Elgar Publishing.

24. Inclusiveness in research and innovation settings

Riina Bhatia and Nina Rilla

Outline of the topic

Gender inequalities persist in science, technology, and innovation (STI) fields, often making research and innovation content non-inclusive and biased. This entry explores the distinction between quantitative equality and qualitative inclusion in the context of research and innovation (R&I). It highlights the significance of qualitative inclusion and presents practical measures to enhance inclusiveness in R&I. It argues for the need to address these issues by promoting qualitative inclusion in R&I. The integration of qualitative equality approaches into R&I institutions and research projects is proposed as a means to identify and address exclusion and gender bias in STI.

Conceptual overview and discussion

The increasing importance of innovations and technologies in addressing global societal challenges necessitates diverse, comprehensive, and often radical or revolutionary solutions. Novel solutions are required, not only to create economic growth but also to solve vicious problems such as climate change or poverty. However, the limited perspective of STI on societal dimensions hinders its ability to effectively respond to these challenges. Gender inequalities persist in STI fields, resulting in non-inclusive and biased research and innovation content. The historical construction of science, technology, and masculinity reinforces gender insensitivity within STI, necessitating a shift in the normative culture.

Although this bias is acknowledged, previous attempts to enhance gender sensitivity in R&I content have predominantly focused on quantitative equality, neglecting social, cultural, and normative aspects. The focus has been on the quantitative impact of gender for innovation efficiency or increasing the numbers of women and female leadership in research and innovation. The prioritisation of quantitative equality over qualitative inclusion has continued the STI fields to exhibit gender bias and exclusion.

Quantitative gender equality follows the understanding of gender neutrality, which focuses on achieving equal opportunities while not considering the gendered nature of structures, organisations and institutions. In fact, Wajcman outlines that quantitative equality approaches in STI fields are insufficient, as the problem of gender inequality and insensitivity of science and technology 'does not lie with women', but in fact how 'technoscience and its institutions can be reshaped to accommodate women'.

Following the feminist critique of science, it is argued that addressing gender insensitivity in R&I requires confronting and transforming the prevailing culture of hegemonic masculinity within STI fields. This entails challenging male normativity and positionality, which not only marginalises women and other groups but also limits alternative perspectives on masculinity. This narrow perspective not only affects the recruitment and retention of female and minority research personnel but also restricts the questions asked, data collected, and societal impacts considered.

To foster inclusiveness, qualitative equality approaches should be integrated into R&I institutions and research projects. This approach involves identifying, understanding, and analysing how gender bias operates within R&I processes, outcomes, and dissemination, as well as how, for example, reviewers of research proposals assess aspects of gender equality and inclusivity. Research funding plays a pivotal role in promoting the gender dimension in R&I content.

Application: instruments for inclusivity

Research funding is a vital policy instrument for driving change in research and innovation practices. The European Union Horizon Europe research and innovation funding programme has aimed to incorporate gender in multiple areas since 2022, including the Gender Equality Plan (GEP) of participating organisations, integration of gender dimension in R&I content, and improving gender balance in research teams, expert groups, and evaluation committees. Among these, only the GEP is currently a mandatory criterion to access Horizon Europe funding, but its focus is primarily on quantitative equality. This mismatch demonstrates that current and past gender interventions in the EU's

research policy and framework programmes (i.e., Horizon 2020 and Horizon Europe) have primarily focused on advancing quantitative gender equality within research fields.

Enhancing qualitative inclusion through formal methods has been limited. Interventions and approaches of qualitative equality, like gender mainstreaming in R&I institutions and organisations, consider broader gendered structures and cultures that contribute to gender insensitivity in organisational settings. The gender mainstreaming addresses, among other things, lack of a gender dimension and lack of intersectional gender understanding in R&I content. For instance, the Canadian Institute of Health Research has been at the forefront of promoting qualitative inclusivity in research funding by requiring applicants to integrate sex and gender into research design, methods, analyses, interpretation and dissemination. Training is provided to applicants and reviewers on how to achieve this, and a justification is required if sex and gender analysis is deemed inappropriate.

Similarly, the EU Horizon Europe's voluntary requirements include addressing organisational culture and integrating the gender dimension into R&I content. These aspects offer important pathways to enhance gender and inclusiveness in research and innovation. To improve societal responsiveness of science and research, gender and inclusion requirements should be made mandatory.

Furthermore, ensuring qualitative inclusion entails making qualitative gender assessment a mandatory component of research proposals and improving the capabilities of reviewers and research personnel to assess gender, inclusivity, and intersectionality. Funding organisations can reinforce qualitative gender assessment by incorporating it as a mandatory element in research proposals and offering appropriate training for reviewers and applicants. Establishing a pool of gender and inclusion experts to assess research proposals can also ensure the quality of the review. Moreover, comprehensive guidance and capacity building should be provided at all levels of research to promote inclusivity assessments.

As part of research funding, agencies can require projects to conduct pre- and post-project assessments to ensure gender balance and encourage reflection on inclusivity and gender dimensions throughout the research process. These assessments should cover various stages, from formulating research questions and designs to analysing results and considering societal impacts. Mandatory positionality assessments (a standard practice in social science ethics), which press researchers to think critically how their socio-economic background, gender, ethnicity, race and age influence their research, can also be incorporated to enhance inclusivity.

Critical summary

While quantitative equality measures are crucial for enhancing the overall diversity of research teams, addressing qualitative inclusiveness in R&I requires additional measures. These measures include mandatory gender assessment in research proposals and funding calls, building reviewing capabilities at all levels of research and providing gender education and training for research personnel.

Challenges may arise, particularly in promoting gender education in core fields of science and technology. Research funding requirements should extend beyond gender balance in research teams to encompass assessments of qualitative inclusiveness in research and innovation content.

Further readings

CIHR. (n.d.). *How to integrate sex and gender into research*. Retrieved August 19, 2022, from https://cihr-irsc.gc.ca/e/50836.html

European Commission, Directorate-General for Research and Innovation. (2013). *Gendered innovations: How gender analysis contributes to research: report of the expert group 'Innovation through gender'*. Publications Office. https://data.europa.eu/doi/10.2777/11868

Harding, S. (1991). *Whose science/whose knowledge?* Open University Press.

Schiebinger, L. (2021). Gendered Innovations: Integrating sex, gender, and intersectional analysis into science, health & medicine, engineering, and environment. *Tapuya: Latin American Science, Technology and Society*, *4*(1).

UNESCO. (2021). *UNESCO science report: The race against time for smarter development*. Chapter 3: To be smart, the digital revolution will need to be inclusive.

www.unesco.org/reports/science/2021/en/women-digital-revolution
Wajcman, J. (2010). Feminist theories of technology. *Cambridge Journal of Economics*, *34*(1), 143–152.

25. Innovation ecosystems

Paavo Ritala and Llewellyn D.W. Thomas

Outline of the topic

The term innovation ecosystem is increasingly used by management scholars and business practitioners to describe collectives of heterogeneous, yet interdependent, actors who jointly (co)create a system-level output. However, despite sizable scholarly work, the role of innovation within an innovation ecosystem is not always clear. In this entry, we first briefly review the key characteristics of the concept and then discuss different ecosystem conceptualizations, describing applications of each. We conclude with three approaches to innovation within ecosystems: innovation-as-outcome, innovation-as-process, and innovation-as-context.

Conceptual overview and discussion

In biology, an ecosystem is a biotic community and related physical environment with systemic interdependence between actors. More recently, the term has been adopted by innovation management scholars interested in a systemic view of innovation and actor interdependencies. Thomas and Autio suggest innovation ecosystems have three differentiating characteristics: they comprise *heterogeneous*, yet *interdependent* actors who jointly (co-)create a *system-level outcome*.

Differentiating characteristics of innovation ecosystems

Heterogeneous actors. Ecosystems are composed of heterogeneous actors who are hierarchically independent but who have specific ecosystem roles. The heterogeneity of actors often means that there is no clear ecosystem boundary as this varies by system-level outcome. This heterogeneity also means that ecosystems differ from industries as they are broader, including at times suppliers, distributors, outsourcing firms, producers of complementary products or services, technology providers, financiers, analysts, competitors, customers, as well as non-market actors, such as universities, public research institutions, and governmental organizations.

Interdependence. Ecosystem actors are linked through a variety of interdependencies depending on their role. Technological interdependence occurs when actors co-specialize, often around a specific resource, shared platform, or modular architecture. Economic interdependence arises when the value that each actor receives from participating in the ecosystem is dependent on the simultaneous availability of offerings by others, often expressed through the notion of complementarity. Cognitive interdependence develops when ecosystem actors align their understanding of the purpose and norms with other actors of the ecosystem to ensure ecosystem coherence.

System-level outcome. The system-level outcome (or outcomes) refers to something greater than any single actor can deliver alone. While a system-level outcome also characterizes supply chains and interorganizational (such as alliance) networks, those are often governed through bilateral formal contracts and tighter coupling. Ecosystems, instead, involve looser contractual structures, and from an innovation management perspective, lead to emergent outcomes that can include, for instance, an ecosystem value proposition, innovative business models, or new knowledge production.

Overview of different types of ecosystems from an innovation perspective

Initially, management scholars viewed innovation ecosystems as groups of firms that combine their complementary offerings into a new coherent offering, resulting in new types of interdependency risks and opportunities. Scholars focusing more distinctly on innovation initially considered the innovation ecosystem as the loosely connected set of complementary partners and other collaborators around an innovating focal firm. Others viewed innovation ecosystems as broader innovation domains, where different organizations co-evolve their capabilities around a set of technologies, knowledge, and skills, and collaborate and compete in developing new products and services. Over time, these and other ecosystem approaches have been given a variety of labels—not only innovation ecosystems—as discussed in the following.

Innovation ecosystems. Recently, the literature around the innovation ecosystem has started to consolidate around the idea of collective generation of a system-level output

targeted to create value for a specific audience. In his review of this structural stream, Adner defined an innovation ecosystem as 'the multilateral set of partners that need to interact in order for a focal value proposition to materialize'. Here, the ecosystem scope is (comparatively) narrow and non-location-specific, with the analytic interest on the focal firm and the supporting set of components (upstream) and complements (downstream) and their technological and economic dependencies that deliver an ecosystem value proposition. Examples of scholars investigating such ecosystems include focal firms in the semiconductor lithography equipment industry. The innovation here relates to the varying input combinations from differing upstream components and downstream complementors that together create new or improved (i.e., to different degrees innovative) ecosystem value propositions.

Business ecosystems. When the research emphasis is on the broader economic context which a focal firm must monitor and react to, innovation scholars have also used the moniker business ecosystem. These ecosystems comprise a community of actors with an analytic focus mostly on economic and cognitive interdependencies and tend to be characterized by role fluidity and emergent ecosystem value offerings. Business ecosystems are location-independent and can have a broad scope—for instance, Teece (2007) considers them to include 'the community of organizations, institutions, and individuals that impact the enterprise and the enterprise's customers and supplies… including complementors, suppliers, regulatory authorities, standard-setting bodies, the judiciary, and educational and research institutions'. Thus, for innovation scholars, business ecosystems are the (co-)evolving complementary and competitive relationships between actors and activities within an innovation-driven context.

Platform and technology ecosystems. Innovation scholars at times use ecosystems to emphasize the role of technological dependencies and connectivity across different technical interfaces and standards (i.e., a technology ecosystem), and specifically platforms (i.e., a platform ecosystem). Such ecosystems feature a network of location-independent complementors who create complements that enhance the system-level offering provided via a common interface or a platform. For this reason, many of the empirical examples include platforms and technologies such as gaming consoles and mobile phones. The analytic focus is often on technological interdependence, especially the coordination and maintenance of the necessary platform capabilities and standards to ensure interoperability and connectivity. The key is addressing a fundamental tension between the need for flexibility and variety and the need for integrity and standardization. Innovation often happens on the periphery, while the platform owner controls the core. The complementary actors—such as app developers or content providers—continuously innovate valuable complements offered via the platform.

Entrepreneurial ecosystems. Innovation management scholars use entrepreneurial ecosystems when they focus on the economic and cognitive interdependencies behind entrepreneurial opportunities and business model innovation within a specific locality. Empirical examples have included Silicon Valley, 'Silicon Fen' in Cambridgeshire, UK, as well as the Aalto University region in Finland. As Autio and colleagues argue, although resembling concepts previously explored by economic geographers and innovation researchers—such as clusters, knowledge clusters, industrial districts, innovative milieus, and regional and national systems of innovation—entrepreneurial ecosystems are distinct due to their emphasis on entrepreneurial agents and business model innovation, as opposed to product, service, or technological innovation. This is reflected in actors such as new venture accelerators, coworking spaces, makerspaces, start-up academies, university-entrepreneurship programs, crowdfunding, angel investors, business angels, and venture capital, all of which enable business model experimentation and knowledge spillovers.

Knowledge ecosystems and open innovation ecosystems. Knowledge ecosystems are used by innovation management scholars when research-based knowledge and associated applications constitute the system-level output, echoing the systems of innovation tradition. Such ecosystems focus on mostly cognitive interdependencies and the processes of joint knowledge search, creation, sharing, and transfer—all processes that incorporate the front end of the innovation process. Knowledge ecosystems primarily occur at a regional level of analysis and in pre-competitive settings and consist of universities, public research institutions, bridging and brokering

organizations, and for-profit firms collaborating to create new knowledge. Open innovation ecosystems also include a strong focus on inter-organizational knowledge flows, but also more broadly describe how a focal firm can utilize collaborative innovation with heterogeneous stakeholders across the whole spectrum of research and development and innovation.

Application

Extant scholarship has provided many empirical examples of the application of each type of ecosystem that helps to understand the scope and nature of innovation activities in ecosystems.

For innovation ecosystems, Adner and Kapoor, in what is considered a seminal paper investigating a semiconductor lithography equipment ecosystem, demonstrated the important role of technological interdependencies in innovation ecosystems. In particular, they found how greater upstream component related innovation challenges enhance the benefits that accrue to technology leaders, while greater downstream complement related innovation challenges erode these benefits. Many other studies have demonstrated how focal firms in innovation ecosystem can leverage technological, economic, and cognitive interdependences to facilitate joint innovation goals in ecosystems, while ensuring that each actor's individual innovation goals and incentives are met.

For business ecosystems, Snihur and colleagues investigated the emergence of Salesforce as a new CRM (customer relationship management) industry entrant and identified the phenomenon of a 'disruptor's gambit'. Specifically, a new disruptive company reveals its intentions early on through effective framing of its innovation to build cognitive interdependence in the emerging ecosystem, followed by rapid adaptation of its business model to enable technological and economic interdependencies that satisfy changing business ecosystem needs.

For technology and platform ecosystems, a well-known study by Wareham and colleagues investigates how platform ecosystems are governed to ensure that emergent innovation meets evolving market demand. For an enterprise software ecosystem, they show how technological, economic, and cognitive interdependencies exhibit three tensions that need to be resolved by platform governance: a tension between standardization and variety, a tension between control and autonomy, and a tension between collective and individual identity.

In a study on an entrepreneurial ecosystem located in Seattle, Thompson and colleagues found that the initial activities of distributed, disparate individuals and groups can rather suddenly coalesce into more coordinated, integrated, and durable patterns of social interaction. They demonstrated how, via interaction patterns, entrepreneurial ecosystems can create the methods, resources, and legitimacy required to support social entrepreneurs in developing their business model innovations. This study shows how innovation can grow emergently from grassroots movements into collective entrepreneurial efforts as the system-level outcome.

As an application of knowledge ecosystems, Järvi and colleagues (2018) studied the Strategic Centers for Science, Technology, and Innovation in Finland, and provided insight into the systemic nature of knowledge ecosystems. In particular, they identified two forms of organizing within knowledge ecosystems: prefigurative organization where participants are searching for a knowledge domain, and partial organization where participants search for knowledge within an identified knowledge domain. Examples of the application of open innovation ecosystems are further detailed in the chapter by Thomas and Ritala in this encyclopedia.

Critical summary

While there are different ecosystem constructs that innovation management scholars can apply, paradoxically there is limited focus on 'innovation'. We suggest that this is because the focus of many ecosystem studies have not been on innovation, particularly the innovation process, per se. To 'bring innovation back', we propose three approaches to appreciate the role of innovation in innovation ecosystems: innovation-as-outcome, innovation-as-process, and innovation-as-context. The first two approaches follow the classic distinction between the innovation process and outcomes, and the third takes a higher-level view of the innovation context. While not mutually exclusive, these approaches can be seen in outcome-oriented operationalizations such as 'innovation performance', in

process-oriented constructs such as 'innovation activities', and in innovation-enabling contexts and domains.

Innovation-as-outcome. Different ecosystem constructs have distinctive implications as to what exactly is 'innovative' in the system-level outcomes. For instance, for innovation, platform, and technology ecosystems the innovation-as-outcome materializes in the form of a new or improved value proposition which is based on the (varyingly innovative) inputs of the ecosystem actors. For business ecosystems, the innovation-as-outcome is less clear, although analytically it is usually the result of interactions among the different actors. In contrast, for entrepreneurial ecosystems, the innovation-as-outcome are the innovative business models and the new ventures that embody them. For knowledge and open innovation ecosystems, the outcome is new knowledge (in itself, a precondition for innovation).

Innovation-as-process. Innovation ecosystems have a strong process connotation, as they are often seen as co-evolving, interdependent, and adaptive systems. The process(es) of coordination (and relatedly, governance) are probably the most studied aspect of innovation ecosystems, regardless of the literature stream. These key processes (for all ecosystem constructs) are driven by role definitions and balancing of tensions between the technological, economic, and cognitive alignments that reflect actor interdependencies.

In innovation, platform, and technology ecosystem research, innovation-as-process considers how ecosystem actors work together to deliver the ecosystem value proposition. One approach has been to consider how ecosystem actors coordinate, align, and communicate with each other in the process of developing different complementary innovations that increase the value of the overall offering. Another approach has considered 'generativity', the emergent and uncoordinated process which leads to value creation via novelty of both individual innovative inputs and combinatorial innovation (especially prevalent in platform and technology ecosystems). For business ecosystems, innovation-as-process has usually been considered in terms of competitive and cooperative processes, such as disruption, framing, and legitimation. In entrepreneurial ecosystems, innovation-as-process can be seen in the increasing body of research into governance dynamics and processes. Knowledge ecosystem scholarship directly considers the process of joint knowledge search and creation, while open innovation ecosystem approaches examine how new ideas, innovations, and technologies are developed in collaborative and competitive processes.

Innovation-as-context. Innovation-as-context refers to the shared infrastructures, artifacts, resources, affordances, and other factors within the broader environment that promote innovation within an ecosystem. For innovation-as-context, 'innovation' arises within the emerging, co-evolving, and often non-linear ecosystem dynamics. The innovation-as-context—or perhaps better expressed, the ecosystem for innovation—lens is most prominent for scholars studying business, knowledge, open innovation, and entrepreneurial ecosystems, as studies in these streams focus on populations of organizations rather than specific technological configurations, which is more typical of research into innovation, platform and technological ecosystems.

A feature of the innovation-as-context approach is that innovation is an emergent property of a complex adaptive system, rather than a process that can be specified or an ecosystem-level outcome that can be identified. For business ecosystems, the innovation-as-context returns to Moore's original ecosystem metaphor from the 1990s that considered competitive and collaborative interdependencies within a particular context. Thus, for business ecosystems, the innovation-as-context view echoes some of the classic strategic context literature. For entrepreneurial and knowledge ecosystems, the innovation-as-context view focuses attention on how the various actors within the ecosystem interact in a particular locality. In this sense, the innovation-as-context view bears great resemblance to the classic innovation system or entrepreneurial milieu literature. As such, innovation-as-context reveals some of the intellectual roots of contemporary innovation ecosystem scholarship.

In summary, innovation ecosystems remain a fruitful area of inquiry and are a useful means of investigating networked and systemic innovation phenomena. We reviewed the fundamentals of innovation ecosystems and provided an example of how each type of ecosystem has been applied in management scholarship. Further, by demonstrating how innovation occurs in ecosystems as

an outcome, process, or emergent property of its context, we hope the entry helps scholars place their research into the appropriate ecosystem stream to facilitate the cumulativeness and coherence of this exciting topic.

Further readings

Adner, R. (2017). Ecosystem as structure: An actionable construct for strategy. *Journal of Management*, *43*(1), 39–58.

Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: How the structure of technological interdependence affects firm performance in new technology generations. *Strategic Management Journal*, *31*(3), 306–333.

Autio, E., Nambisan, S., Thomas, L. D. W., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, *12*(1), 72–95.

Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, *39*(8), 2255–2276.

Järvi, K., Almpanopoulou, A., & Ritala, P. (2018). Organization of knowledge ecosystems: Prefigurative and partial forms. *Research Policy*, *47*(8), 1523–1537.

Moore, J. F. (1993). Predators and prey: A new ecology of competition. *Harvard Business Review*, *71*(3), 75–86.

Snihur, Y., Thomas, L. D. W., & Burgelman, R. A. (2018). An ecosystem-level process model of business model disruption: The disruptor's gambit. *Journal of Management Studies*, *55*(7), 1278–1316.

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319–1350.

Thomas, L. D. W., & Autio, E. (2020). Innovation ecosystems in management: An organizing typology. In M. A. Hitt (Ed.), *Oxford Research Encyclopedia of Business and Management* (pp. 1–35). Oxford University Press.

Thompson, T. A., Purdy, J. M., & Ventresca, M. J. (2018). How entrepreneurial ecosystems take form: Evidence from social impact initiatives in Seattle. *Strategic Entrepreneurship Journal*, *12*(1), 96–116.

Wareham, J., Fox, P. B., & Cano Giner, J. L. (2014). Technology ecosystem governance. *Organization Science*, *25*(4), 1195–1215.

26. Less-hierarchical organizations

Perttu Salovaara and Frank Martela

Outline of the topic

Less-hierarchical organizations refer to forms of organization that 'radically decentralize authority formally and systematically throughout the organization', as defined by Lee and Edmondson. Such organizations tend to have fewer hierarchical layers and fewer bosses, and the remaining managers have less power over their subordinates. The main reasons for applying a more decentralized organizational model are to foster creativity and innovation, to be more flexible and adaptable, and to be a more meaningful, motivating and attractive workplace for employees. Managers, as individuals, rarely have the best expertise for innovative solutions. Hence, less-hierarchical organizing allows employees at all levels of the organization to contribute their ideas and knowledge to innovation and other organizational processes. Research from the 1990s identified several benefits of autonomous teams and networks over traditional manager-led teams. To harness these advantages organization-wide, newer research suggests that, beyond autonomy at the individual or team level, organizational structures and practices should be redesigned to facilitate innovation driven by employees. Traditional hierarchical management with bureaucratic practices represents structural choices that tend to inhibit the flow of ideas. To support serendipitous encounters between people and the free flow of ideas, the less-hierarchical organizations decentralize most managerial positions by redistributing managerial functions across different roles, teams, mandates and practices.

Conceptual overview and discussion

Regarding innovativeness, the literature recognizes many advantages associated with less-hierarchical, decentralized structures. At the heart of this is the ability of a self-organizing structure to respond to change, ideas and initiatives. This responsiveness relies on employees' intrinsic motivation, autonomous teams, and a more flexible and porous organizational design. When front-line employees encounter new customer needs and demands, they do not have to wait for permission from management but are empowered to react immediately according to their best judgement. This judgement, however, is not based on individual ability alone but on collective 'swarm intelligence' and strategy. Decisions that used to be made by managers are now made through collective decision-making processes. Ideally, the company's whole strategy can evolve organically as enough employees recognize a new potential or customer need and join forces to address it.

This literature asks where creative and disruptive ideas come from and how they can be scaled up to the organizational level. Innovation processes that combine creativity and market potential are composed of individual and collective outputs. Less-hierarchical, more democratic and flatter organizations are organized in a leaderless network and use collective practices rather than traditional managerial power. This allows more ideas to be generated and nurtured and the voice of a greater proportion of employees to be heard and activated in innovation processes.

Research on creativity tends to distinguish between divergent and convergent creativity, the former referring to generating new ideas through imagination, and the latter to selecting and refining initial ideas to fit the market best. While engaging large groups of people in the more divergent stages of creativity is easy, the convergent stages tend to require a small team to spend a lot of time comparing alternatives, which is harder to do in a large group. Less-hierarchical organizations, therefore, have an advantage over traditional organizations in the divergent stages of creativity. However, as they approach the convergent stages of creativity, these organizations need solutions to help them select the best ideas and strategic direction in a way that leads to clear decisions and commitment but in a way that people still feel they have had a say in that direction. This dilemma between participation and achieving clear choices has been recognized in the literature on participative and open strategy, leading to the insight that the ability to create direction together in an open way typically relies on some form of closure as part of the process. To avoid a lazy or overly democratic compromise, the less-hierarchical organizations have developed decision-making practices, advice processes and collectively agreed mandates to enable

the innovative process to continue effectively in convergence.

More generally, research suggests that the benefits that autonomous teams can achieve are more innovative, engaged, motivated and productive employees who are better able to solve complex tasks than manager-led teams. Based on the literature, the explanation is that employees are more free to realize their potential in an environment that allows for self-organization. It is suggested that, when intrinsically motivated employees feel empowered, they are more likely to produce their best and most innovative work. While tight managerial control limits innovation performance, even in a decentralized environment, sufficient structures are needed to allow divergent ideas to converge in a common direction. Organizations need to balance more exploratory and exploitative activities, with the latter focusing on exploiting current innovations and forms of competitive advantage. Structures in less-hierarchical organizations are not based on vertical authoritarian functions but on allowing a wide variety of connections between informal networks.

In arguing for the benefits of less-hierarchical organization for innovation, it is worth noting that most of the evidence is based on case studies. Quantitative comparative research that would prove these benefits is difficult to conduct. Factors such as industry, products, services, customers, market, organizational culture, employee motivation, and the interconnectedness of internal operations, among others, influence the optimal way to organize in any given circumstance. Thus, decentralized organizational models have much promise and potential for creativity, employee motivation, and well-being, but there is no one-size-fits-all solution.

Application

System-level structures and practices need to be in place to support more egalitarian ways of working. Here, we highlight two aspects: organizational design, which includes team structures, and collaborative practices, which infuse the system culture. Each element can be applied differently in practice, as described in the following case descriptions.

Organizational design and structure

Any organization is typically divided into subunits (division of labour) that must coordinate cooperation to achieve common goals. Organizational structure impacts performance: a design can, for example, create barriers or process steps for basic decision-making, allow for decentralized decision-making, and encourage or restrict serendipitous encounters and informal collaboration. The basic principle of organizational design is that it should match the environment in which an organization operates and thus support its purpose. Rather than a tree/pyramid organizational chart, alternatives to hierarchies are described and visualized as networks, grids, nested circles/cells, and rhizomes, and likened to flocks (birds) and swarms (bees). Organizations need to be aligned around common goals, and substructures must understand how their work fits the bigger picture. In less-hierarchical organizations, direction is provided by people (the swarm) observing the environment and responding to it.

A poorly designed system is suboptimal. For example, decentralized decision-making and information transparency work well together but produce suboptimal results when exercised separately. Similarly, allowing ad hoc innovation, team autonomy and independent decision-making but relying on process descriptions that require management approval for decisions are contradictory requirements.

Less-hierarchical organizations are vulnerable to the iron law of oligarchy. This law claims that any institution or organization, even the most democratic, will eventually and inevitably fall into the hands of an elite few and develop into an oligarchy. However, Diefenbach has refuted this iron law by stating that there are ways to design and sustain institutions that allow democratic organizations to resist becoming oligarchies. Although elite control is not an inevitable consequence (law), the threat of a small group taking over in a leaderless organization remains. To resist this, appropriate practices and social infrastructure must be designed at the system level to support decentralized action. As single tools or ways of working are insufficient to support a whole system, these practices mainly emerge as a bundle of co-occurring elements.

While hierarchy separates teams and units into more or less independent silos, a challenge that autonomous and self-governing organizations have to face is that decentralization can

also lead to reduced coordination between teams. In traditional hierarchical organizations, tasks are assigned by those with formal authority. In contrast, decentralized organizations are based on the principle that members themselves choose the tasks they prefer to participate in, as Puranam and colleagues describe the difference in their article on new forms of organization. Thus, members join different networks where they are expected to play multiple roles.

Case examples

Buurtzorg, a Dutch home care company with around 14,000 employees, is probably the most famous example of less-hierarchical organizational practices on a large scale. The company explicitly avoids any management structures beyond the team level. Each team of 12 nurses is given full autonomy to manage their operations and serve their clients in a particular neighbourhood, with the head office providing only necessary background support such as finance, web services and several coaches available on request. Operations are based on: (1) individuals being taught skills for self-organizing; (2) common practices at the team level for decision-making, conflict resolution, work allocation, etc.; and (3) a common IT system to track all patient interventions (a legal requirement in health care).

Morning Star, a tomato processing company in California with about 550 year-round and 2,500 seasonal employees and several plants, has no supervisor-subordinate relationships. In this self-managed company, each employee signs a 'Colleague Letter of Understanding' (CLOU) with several other employees. In the CLOU, people working on the same process outline their responsibilities (up and down the process stream) to each other. This model is based on two core values agreed upon initially by the founder and early employees: no use of authoritarian power over others and honouring your commitments. For the division of labour, the current roles are precisely described in the CLOU, but there are no fixed job titles, as people's roles can evolve and change.

Reaktor, a Finnish ICT solutions company with over 550 employees, has no supervisors. Instead, it builds its organization around autonomous teams working with customers and supportive structures to help them get the job done. The culture emphasizes autonomy and non-hierarchy, with supportive elements that include coaches and mentors and ICT solutions to help with various coordination needs.

W. L. Gore, an American clothing manufacturer with 12,000 'associates' (employees) worldwide, operates without traditional hierarchies in a flat 'lattice' organization. *The Lattice Organization – A Philosophy of Enterprise*, published by founder Bill Gore in 1976, describes an organizational design with no traditional organizational chart, chain of command or predetermined communication channels. Instead, it encourages direct communication between employees, and free-flowing information, serendipitous connections and the formation of informal networks characterize the model. The company allows experimentation and prototyping to promote innovation and uses open allocation, where teams are formed around new ideas, concepts, products and business opportunities. The independent, multidisciplinary task force teams have a high degree of autonomy, and team leadership is emergent: the ideas that gain traction are acted upon.

Collaborative practices

Collaborative practices are inter- and intra-organizational social interaction patterns and organizational (implicit or explicit) scripts. They can be formalized and implemented with dedicated online or offline tools or informal shared practices or routines that everyone follows. Such practices replace traditional managerial functions by providing a peer-based way of doing what managers typically do: decision-making, goal setting, feedback, conflict resolution, exception handling and work allocation. In this way, identifying functional practices for all the necessary problems acts as a substitute for managers, helping the collective to take care of the essential tasks. By distributing power to different practices and specific roles, collaborative practices promote equality rather than supporting authoritative power (thus resisting the threat of oligarchization).

Collaborative practices typically used by case companies and other decentralized organizations

Advice process for decision-making. At Buurtzorg, teams and individuals are

empowered to make decisions. The company has a strong client-centred culture: every decision and practice is weighted according to whether it contributes to providing high-quality care to clients. Decisions should not be made based on individual insights alone or lead to suboptimal results for the organization. An advice process is used instead to ensure the quality of decisions. It has three steps. Once someone recognizes a problem that needs to be solved, they must consult both subject-matter experts and those affected by the decision. The third step is to evaluate this input, discuss it in the original setting and make a decision. The initiators of the issue are responsible for assessing whether the decisions can be accepted and implemented in practice.

Target setting. Rather than expecting management to set the goals, decentralized organizations expect teams and swarms to have an innate urge to advance the organization's goals; that is why people joined the company in the first place. At W. L. Gore, for example, teams set their goals and ways of working to align with the common ways of organizing. At Reaktor, each team has short daily stand-ups where members update the others on their progress and the obstacles they face in achieving their goals. Additional communication structures and agile management practices, such as visual Kanban boards for tracking task progress and tools like Slack or other internal media, help to align the teams.

Flexible team roles and responsibilities (instead of job descriptions). At Buurtzorg, each team has certain key roles within the team, such as planner, housekeeper and mentor, which together ensure that someone takes responsibility for certain things the team needs to do (and which are often traditionally the responsibility of the manager).

Swarming. Reaktor emphasizes a make-it-happen culture. If you want to pursue a new goal or change some practices or structures, don't wait for someone else to do it for you: gather enough support from your colleagues and start doing it. Swarming is a tool for collective action. It is a principle that allows people to gather around things perceived as important. Anyone can easily start a swarm/cell if a need for action is recognized. The initiative can come from anyone who sees the need for a swarm. The initiator can, therefore, be an employee or the management of the company, but this is done in the spirit of peer-based inquiry, not as a command from above. A swarm is created organically and locally, and swarms are born, live and die at their own pace. In this way, the organization is guided by the expertise of the community.

Critical summary

Hierarchical structures are still dominant in business today and continue to flourish even in innovation-intensive sectors. Decentralized organizations require a comprehensive system design to deliver reliably in dynamic and time-sensitive situations. Without structures, processes, practices and culture, these organizations may struggle with innovation, scale and longevity; laissez-faire is not a functional organizational structure. Success in running a bossless organization requires careful design of structures and practices to provide direction and coordination without the need for managers. Self-management is still at a pioneering stage; we know from examples that it can work, but we do not yet know what factors are essential to make it work.

In contrast, management hierarchy is a well-known, proven system for solving coordination and cooperation problems and providing a framework within which people can make decisions. We are also becoming increasingly aware of its limitations. Company cultures tend to be dominated by (and people trained in) traditional management thinking.

Sustaining the decentralized model in today's business culture can be challenging. For one thing, expectations of strong leaders to provide direction and make decisions are widespread. Because traditions and national cultures perpetuate this discourse, it seems easy to fall back on familiar solutions, such as a more hierarchical organizational model, when companies face unexpected challenges. However, the demands of younger generations for more autonomy and meaningful working life and the need for greater capacity to innovate in the face of wicked problems are examples of disruptions to the dominant discourse.

The diversity of self-management and non-hierarchical models is difficult to subsume under one heading. The development of these models is an ongoing process: most companies are not there yet, as Salovaara and Bathurst define it, but the number of companies and other organizations aiming for a more innovative culture through

less-hierarchical organization is growing. More studies are needed to better understand how the pioneering organizations, with their alternative organizational designs, maintain their engagement, performance and innovativeness levels.

Further readings

Baer, M., & Frese, M. (2003). Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior, 24*, 45–68.

Diefenbach, T. (2019). Why Michels' 'iron law of oligarchy' is not an iron law – and how democratic organizations can stay 'oligarchy-free'. *Organization Studies, 40*(4), 545–562.

Lee, M., & Edmondson, A. (2017). Self-managing organizations: Exploring the limits of less-hierarchical organizing. *Research in Organizational Behavior, 37*, 35–58.

Martela, F. (2019). What makes self-managing organizations novel? Comparing how Weberian bureaucracy, Mintzberg's adhocracy, and self-organizing solve six fundamental problems of organizing. *Journal of Organizational Design, 8*(23), 1–23.

Puranam, P., Alexy, O., & Reitzig, M. (2014). What's 'new' about new forms of organizing? *Academy of Management Review, 39*(2), 162–180.

Salovaara, P., & Bathurst, R. (2016). Power-with leadership practices: An unfinished business. *Leadership, 14*(2), 1–24.

27. Moral orders of innovation

Luk Van Langenhove and Pasi Hirvonen

Outline of the topic

This entry focuses on the influence of normative expectations on innovation. Innovation is regarded as a shared responsibility among various actors, including industries, scientists, and governments, which establish policies aimed at promoting or stimulating innovation, and other stakeholders. Innovations may become necessary as a result of funders' self-interest or the desire to contribute to the public good. In any case, innovations are associated with normative expectations that form a complex network of distinct rights, duties and responsibilities. Applying the vocabulary used by social scientist Rom Harré, these expectations may be referred to as 'moral orders of innovation'. This entry provides a detailed explanation of moral orders and their relationship with innovation and offers a moral-order-informed perspective on innovation and innovation management research. Science diplomacy, which has gathered momentum during the past decade and engendered a novel perception of science as a key driver for societal progress, is presented as an example of the moral orders of innovation that examines the relationship between innovation and the social contexts of foreign affairs and international relations. As such, science diplomacy offers key insights into the role that innovation plays in national systems at the level of supranational and multilateral practices.

Harré introduced the concept of moral order in the context of the social sciences, and the paradigm was subsequently further developed by Luk Van Langenhove. A moral order is an organized system of rights, obligations, and duties that exist in society alongside the criteria according to which people and their activities are valued. According to Harré, society is made up of various moral orders, some of which are relatively stable while others are more volatile and only occasionally convened. In other words, while some moral orders may be highly universal in a given society, others result from locally constructed understandings of rights and responsibilities. Consequently, each culture encompasses multiple interacting and complementary moral orders. These moral orders are often invisible and comprise sets of rules and norms that shape what people can and will do in a given situation.

Science can be interpreted through two distinct moral orders: as a facilitator of state needs and as an instrument for the common good. The former is denoted as the sovereign science moral order, while the latter is science for the commons. Both orders encompass cultural, legal, institutional, interpersonal, and personal dimensions of rights and duties, forming a web of overlapping or distinct normative positions. The two moral orders of sovereign science and science for the commons are crucial for understanding the role that innovation plays in international relations. These moral orders are often invisible in innovation management as they consist of implicit rules, rights, and duties that shape what people can do and will do in a given situation. Nonetheless, moral orders play an essential role in innovation management as they ensure adherence to regulations and direct ethical conduct, establish trust, adhere to regulations, involve employees, and foster global cooperation, providing a foundation for responsible and sustainable innovation.

Conceptual overview and discussion

Scholarly research on innovation often focuses primarily on innovation's potential as a tool for driving business profits and enhancing a state's economic strength. However, several approaches have also aimed at fostering social innovation or promoting sustainable innovation, with an emphasis on utilizing innovation for the common good rather than pursuing it out of individual industrial or state self-interests. One approach to examining the interconnection of innovation and societal processes is to consider it in relation to the so-called moral orders that shape discourses on – and practices of – innovation and collaborative initiatives.

Moral orders shape the social environment in which individuals engage in actions and interactions that are mainly conversational in nature, involving judgements regarding appropriateness. As such, innovation is not only a practice but is also a position that is adopted in a moral order. For instance, an individual who occupies only the moral and physical spaces they are expected to occupy is exhibiting socially conformist behaviour.

Any action that places an individual in an 'improper' position is considered a socially deviant act. The categorization of an action as socially confirming or deviant depends on the meaning that is assigned to that action within a specific moral order and the assessor's awareness of justifications or excuses for it. Occupation of an 'improper' position in a moral order may result from either unawareness of the lack of entitlement to that position or a voluntary decision to occupy it. In this scenario, individuals may present justifications or excuses that, if acknowledged, can alter the prevailing moral order.

Innovation and innovativeness are influenced by various moral orders that range from global to local norms and prescribe appropriate or expected actions. These moral values may be categorized into five moral orders located along a general-to-specific spectrum. *Cultural moral orders*, the most general type, encompass shared cultural and societal rules, behaviours, and implicit directives. For example, greeting someone by shaking hands may be regarded as aligning with a cultural moral order. In the context of innovation, many societies value practical innovations that align with prevalent cultural norms. However, the appreciation for innovation varies according to cultural perspectives on innovativeness. For instance, cultures that do not sanction deviation from norms surrounding innovativeness and support the exploration of new possibilities may be more likely to foster innovation. The legal boundaries of innovation are delineated by *state-level moral orders*. Actions relating to innovations are governed by laws and regulations at the state or regional level. These laws cover aspects such as salaries and legislation concerning the development of medical innovations. Existing research has demonstrated that stricter laws regarding the dismissal of employees tend to boost innovation, particularly in industries for which innovation is crucial.

Institutional moral orders comprise the rules and norms associated with membership of various organizations and institutions. For instance, an organizational strategy that emphasizes innovation initiatives shapes the creation of a particular institutional moral order. Institutional moral orders that support employee initiatives may also promote employee-driven innovation in organizations.

Conversational moral orders are a specific form of moral orders that focus on interpersonal relations. They pertain to the rules and norms that govern interpersonal conversations, which may also influence the reshaping of the aforementioned moral orders. For instance, interactions between employees and managers are guided by conversational moral orders that shape what is considered appropriate behaviour in interpersonal interaction. Finally, *personal moral orders* reflect individuals' personal views on rights and duties that arise from internal dialogues. For example, a person may consider innovative behaviour important and may also evaluate who is and is not expected to participate in innovation processes.

Application: innovation and the case of science diplomacy

A moral order perspective on innovation offers a framework for understanding the role that science plays in catalysing societal advancements and innovations. The association of innovation with research has led to the perception of science as a key driver for societal progress. However, less idealistic perspectives on the role of science in innovation and the interests served by science as an innovative practice also exist. For instance, science may also be regarded as an innovative practice that serves various purposes beyond technological advancement. As technological innovations become increasingly crucial for commerce, states have begun to compete for technological dominance to boost their economic power. Today, states use diplomatic strategies to attract foreign scientists or emulate technological developments in a bid to outperform other countries. Science diplomacy refers to the interactions between the realms of science and technology and international relations, foreign affairs, and diplomacy, each of which has its own moral order. However, no consensus currently exists on the precise nature of these 'interactions' in the absence of any universally accepted definition of what science diplomacy entails.

The use of science to pursue military and economic power has positioned science as an ally of state interests. Science has become essential for ensuring a competitive advantage in innovation as well as for state security and national prestige. Scientific knowledge is frequently used to achieve private or national goals, including those that are commercial or military. While this is not inherently

problematic, scientists' involvement in, for instance, the development of nuclear weapons can raise ethical questions.

However, science has also played a crucial role in fostering collaborations between states, yielding insights and innovations that benefit humanity and serve the common interest. Scientific knowledge can be considered a public good in light of its essential role in addressing global challenges. Today, science is a driving force in sustainable development beyond individual state interests. Meanwhile, scientists have cultivated the notion that science is an international endeavour rooted in cooperation rather than competition. Many scientists regard science as a global enterprise based on shared values that promote international relations. This is demonstrated by the development of technologies that serve common global goods, such as supporting biodiversity and health or addressing global warming. Additionally, scientific cooperation may be used to establish dialogue between conflicting states. Against this backdrop, the concept of science diplomacy has increased in popularity. It encompasses two components: (1) foreign policies and activities with a scientific dimension, and (2) scientific policies and activities of an international nature. The development of science diplomacy has been shaped by cultural and moral values that emphasize science's role in addressing global and societal challenges during times of global crisis. State-level moral orders, policies, and political regulations relating to scientific practices and international relations form the basis for science diplomacy. Science diplomacy is shaped by an institutional moral order that promotes collaborative science and constructs bridges between scientific boundaries with the aim of resolving global and societal challenges.

From a moral standpoint, these variations arise from the underlying beliefs of individuals, communities, or societies regarding the interplay between science, technology, and the preferred societal structure. This standpoint may be explained through the lens of two moral orders: *the sovereign science moral order* and *the science for the commons moral order*. The moral order of sovereign science perceives science as an instrument for state concerns, such as technological sovereignty and economic competitiveness. This aligns with the realist school of thought, which considers science to be a driver of innovation and an enabling condition for the hard power of states. The moral order of science for the commons, by contrast, considers science to be an instrument for the common good, including the global challenges that humanity is facing. This perspective is aligned with the idealist school of thought, which views science primarily as an instrument of soft power.

Critical summary

Most of the literature on innovation has focused on its outcomes or the contextual factors that shape it. These perspectives highlight the fact that innovation involves various actors, including industry professionals and scientists in their labs alongside stakeholders and governments who take action through policies that promote or stimulate innovation. However, these perspectives afford less attention to the social and normative dynamics that shape innovation and innovation processes as well as the variety of rights and duties associated with them. Finally, research on how different institutions or states shape innovations to suit different purposes while constructing varying moral orders related to the relationship between science, innovation, and society remains limited.

In adopting science diplomacy as an example of moral orders in innovation, it becomes clear that further research is required to examine the processes and dynamics of how science diplomacy is organized and managed in relation to its surrounding moral orders. It will also be important to investigate how these moral orders are shaped and reconstructed in these processes. The relationship between moral orders should be viewed as a two-fold process: moral orders play a crucial role in shaping the social process of innovation while also determining who has the right or obligation to participate in this process. It is imperative that a balanced and objective approach to the relationship between moral orders and innovation be maintained. Finally, the development of innovative practices can also influence the moral orders that surround them. This duality is particularly evident in the context of science diplomacy, whereby moral orders both shape its development and are shaped by engagement in innovative actions.

Further readings

Harré, R. (1987). Grammar, psychology and moral rights. In R. J. M. Chapman & R. A. Dixon (Eds.), *Meaning and the growth of understanding: Wittgenstein's significance for developmental psychology* (pp. 219–230). Berlin Heidelberg.

Hirvonen, P., & Van Langenhove, L. (2021). Understanding academic entrepreneurship as fields of moral orders: Theoretical and methodological perspectives of positioning theory. In P. Eriksson, U. Hytti, K. Komulainen, T. Montonen & P. Siivonen (Eds.), *New movements in academic entrepreneurship* (pp. 236–252). Edward Elgar Publishing.

Ruffini, P. B. (2017). What is science diplomacy? In P.-B. Ruffini (Ed.), *Science and diplomacy* (pp. 11–26). Springer International Publishing.

Rungius, C., & Flink, T. (2020). Romancing science for global solutions: On narratives and interpretative schemas of science diplomacy. *Humanities and Social Sciences Communications*, *7*(102), 1–10.

Van Langenhove, L. (2017). Varieties of moral orders and the dual structure of society: A perspective from positioning theory. *Frontiers in Sociology*, *2*(9), 1–13.

Van Langenhove, L. (2019). Who cares? Science diplomacy and the global commons. *AQ – Australian Quarterly*, *90*(4), 18–27.

28. Multi-stakeholder settings

Tiziana Gaito, Sybille Sachs and Ramona Demasi

Outline of the topic

As humanity is confronted with 'wicked' issues like the loss of biodiversity, rising income disparity, and increasingly fierce competition for raw materials, the issues' complexity and related interdependences between stakeholders create an urgent need for innovative solutions. Practitioners and academics have thus proposed multi-stakeholder settings to spur innovation that tackles wicked issues. Following Moog and colleagues, multi-stakeholder settings bring stakeholders—that is, organisations (e.g., firms, non-governmental and intergovernmental organisations), social groups (e.g., local communities), and sometimes individuals (e.g., opinion leaders) who are affected by or can affect a focal issue—together as coequals who engage over a certain period of time to find innovate solutions for that issue. As Rühli and colleagues' research shows, innovation in a multi-stakeholder setting requires stakeholders to engage and learn from each other to reconcile diverging interests and values and create novel solutions. Therefore, innovation needs to be grounded on the basic assumption that multiple value perspectives (e.g., economic, social, and ecological) contribute to value creation. These settings enhance social learning and, thereby, facilitate the creation of innovative solutions, possibly for the benefit of all stakeholders.

Multi-stakeholder settings have become an increasing focus of stakeholder engagement research because they promote innovation through social learning. Kujala and colleagues' review of stakeholder engagement research describes multiple mechanisms for creating multi-stakeholder settings for developing innovative solutions to challenging issues. According to Bundy and colleagues, dealing with wicked problems includes examining the core values and strategic interests associated with stakeholder relations. The (mis)alignment of stakeholders' values and interests is critical in addressing challenging issues. Furthermore, stakeholders negotiate their subjective interpretations of focal issues with each other and resolve stakeholder conflict together. Stakeholder engagement consists of concrete practices related to informing, consulting, 'dialoguing', and making joint decisions with stakeholders in the context of focal issues. Dialogue is often seen as a way for stakeholders to interact in the context of wicked issues. While stakeholder dialogue helps engage with collaborative and affirmative stakeholders, there is little advice on engaging with more critical or silent stakeholders and managing intractable conflicts. In such a situation, it may be necessary only to pursue solutions to stakeholder conflict that allow stakeholders to protect their core values. Furthermore, most stakeholders are not included in the decision-making processes of other stakeholders concerning wicked problems, indicating that new forms of stakeholder governance are needed. Therefore, learning with and from them should involve stakeholder engagement practices that offer all kinds of stakeholders an opportunity to develop continuously.

Conceptual overview and discussion

Recent developments in stakeholder engagement research indicate a change in its conceptualisation from a primarily communicative approach to a learning perspective capable of helping develop innovative solutions to challenging issues in collaborative multi-stakeholder settings. However, how does collaboration in multi-stakeholder settings foster innovation? The need for collaboration suggests that informing and consulting stakeholders is not enough. Instead, collaboration suggests co-creation through inclusive, two-way dialogue that creates opportunities for joint learning.

While different forms and theories of learning exist, 'social learning' is claimed to be a key mechanism for enabling innovation through collaboration. Social learning occurs with stakeholders that interact through the observation of and interaction with issues and others and the processing of new information to convert it into appropriate action. Keen and colleagues describe social learning as an important driver of social change for improving human and environmental relations management. Their framework shows how stakeholders engage in reflection as they diagnose issues, design and test innovations and evaluate them for further improvement. Collins and Ison portray social learning as a mechanism that needs to occur in addition to informing, consulting, and participating—the

three processes generally promoted for communicating to and with stakeholders—to enlarge the scope of solutions to wicked issues.

While the beneficial impact of social learning on innovation has been stressed in environmental management, more research is needed to integrate the social learning perspective into multi-stakeholder settings. This integration can help explain how multi-stakeholder settings create innovations that address wicked environmental, social, and economic issues.

Application

The four steps described here detail innovation in multi-stakeholder settings from a social learning perspective, and they are described from the typical perspective of the inter-organisational level. At the same time, we are aware that the reality of multi-stakeholder settings can be composed of individuals, groups, and organisations. Rühli and colleagues' empirical research forms the basis for describing the collaborative, iterative process of participative stakeholder innovation (the dark grey areas in Figure 28.1). Keen and colleagues' transdisciplinary approach complements this process with the social learning perspective applied in environmental management to illustrate key social learning outcomes (the rounded forms in dashed lines in Figure 28.1). Gaito's interdisciplinary research about stakeholder engagement on the dark side adds insight into potential exit points during a multi-stakeholder setting (the rectangular forms in dashed lines in Figure 28.1).

Step 1: Identifying stakeholders and issues

The first step consists of defining the key challenges and the stakeholders who might be affected by the wicked issue. The golden rule is to include affected stakeholders as early as possible in the process. In bilateral discussions with stakeholders, the facets of the issues and the kind of innovation needed to deal with them are elaborated. This process also clarifies how the stakeholders are connected. Identifying the issue(s) and the relevant stakeholders is one of the biggest challenges in the entire multi-stakeholder setting, as wicked issues are embedded in a complex stakeholder network, typically including stakeholders from different sectors. Further, at this stage, the governance of the setting has to be defined: what are the rules for cooperative work, how is conflict resolved, and who will lead the process? In most cases, having a neutral facilitator is a precondition for success.

In this step, social learning happens through diagnosing, which refers to observing the wicked issue and critically reflecting on skills and experiences related to it. These skills and experiences can come from powerful or 'silent' stakeholders, such as a local community with a good understanding of the environment in which the issue is embedded. To enhance social learning, all stakeholders must contribute to identifying further stakeholders so that a broad range of social, environmental, and economic perspectives are brought together. In this, conflicted views should be regarded as a source of innovation and be explicitly included. To successfully move to the next step, stakeholders must all be aware of the need for the multi-stakeholder setting to build mutual acknowledgment of different understandings.

A major risk that can cause stakeholders to decide to exit the process is their insincere willingness to engage in the collaborative process. For example, stakeholders may decide to exit after gathering enough information for their own purposes. Those who perceive that others are not genuinely participating may quickly become suspicious and leave the process, too. Another major risk is that stakeholders refrain from participating because they fear change, as this may involve revising their perspectives.

Step 2: Recognising and exploring the issue and potential solutions

The second step consists of creating an overview of the stakeholder relationships and the potential opportunities and risks associated with issues from the stakeholders' perception. This process also makes the involved stakeholders more aware of their perceptions about the wicked issue(s). Stakeholders first have to understand their own opinions about the issues in their respective groups or organisations before they engage in exchange with other stakeholders. This is how a solid understanding—the baseline—of a wicked issue is created that can lay the ground for innovative solutions in the subsequent stakeholder dialogue. During different rounds

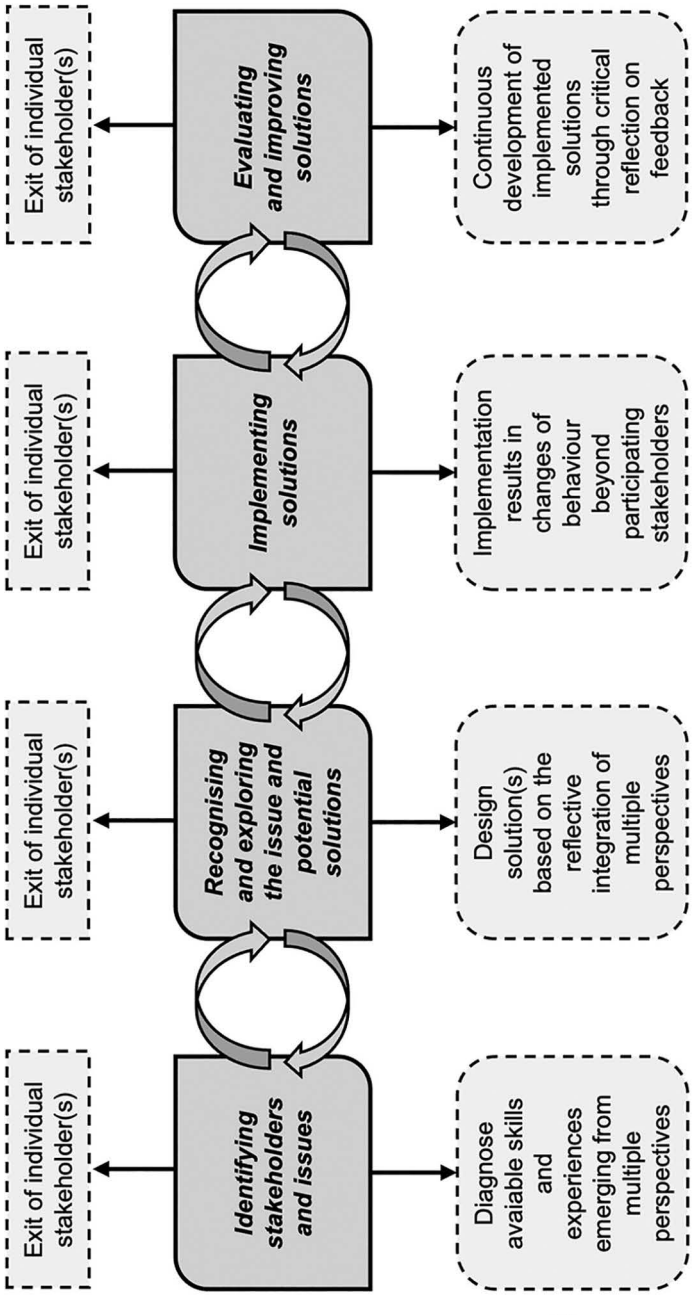

Figure 28.1 *Multi-stakeholder settings*

of stakeholder dialogue, the wicked issue is explored in detail, along with the potential benefits and risks that the stakeholders can contribute throughout the process of innovating in multi-stakeholder settings. To tap the potential of the stakeholders to provide innovative solutions, they should be open and not overly attached to their specific positions.

In this step, social learning happens through designing and building on the multiple perspectives, skills, and experiences identified during the diagnosis stage. To develop the baseline just described, stakeholders now meet—ideally in a neutral venue under the facilitation of a neutral third party—to engage in dialogue with each other. Social learning needs to occur through multiple loops of learning to obtain a profound understanding of the issue. So, stakeholders are asked to question actions, their perceived consequences, and the assumptions and values underlying the latter. Implicit assumptions and values must be explicit so stakeholders can better understand their and others' perspectives. Making assumptions and values explicit requires self-awareness and holistic reflection on what is needed for change, detached from engagement with 'rational' professional practices that may be prevalent in specific fields. When stakeholders have obtained a deep enough understanding of the wicked issue that permits the joint creation of potential solutions (e.g., policies, strategies, or concrete projects), they can decide on the forms of action and individual contributions and move to the next step. This presupposes clear decision-making rules that are transparent to stakeholders from the beginning.

Research on the 'dark side' of stakeholder theory suggests that mismatches of values and interests between stakeholders can trigger distrust and lead to the break-up of relationships. Facilitators need to be aware of the risks that may lead to exit. Warning signals that indicate risks may manifest, for example, in deadlock and frustration about progress, power games, or even explicit or implicit hostility. The sources of these warning signals are manifold and include diverging values, perceived hidden agendas, or feeling unheard. Facilitators must be aware of these sources and have adequate conflict resolution tools when warning signals manifest.

Step 3: Implementing solutions

The third step involves implementing innovative ideas and approaches to wicked problems identified during the second step of the stakeholder dialogue. The main challenge for the involved stakeholders is to implement their contribution to the innovative solution within the joint project of the stakeholder setting *and* the strategy, structure, and culture of their own groups and organisations. If the implementation process only includes the stakeholder setting, the solutions might not be sustainable. This double implementation process is most challenging if the stakeholder representatives have no decision rights in their organisation nor the possibility to engage their members in the implementation process. Furthermore, these processes are by nature change processes and affect not only the interests of stakeholders but also—and mainly—their values.

Stakeholders take appropriate steps to put their designs into practice. As mentioned, addressing wicked issues also requires changes in behaviour within stakeholders' organisations and their wider networks. This transfer is stimulated by specifying each stakeholder's role and responsibility concerning the immediate implementation of the solution and how they can achieve broader acceptance. Broad social learning is stimulated when stakeholders build networks and allow others to build relations to the environments where the wicked issue becomes apparent. This can happen, for example, by nurturing dialogue through platforms or by providing opportunities for people to spend time in these environments where they learn to respect and appreciate them. Further, organisational and institutional barriers can be reduced by specifically building links with key decision-makers and providing them with implementation manuals. As stakeholders collect data about successes and areas for improvement, they can gradually move to the next step.

A lack of clearly defined responsibilities and concrete activities poses a major risk during implementation. Especially when stakeholders are not aware of their responsibilities, their motivation for engaging in the process may decline. At the same time, when stakeholders perceive others as not engaging or making the agreed contributions, they may quickly lose confidence in implementing their

solutions. Therefore, continued support by a facilitator may be needed to build ownership and guide stakeholders in resolving misunderstandings when they occur.

Step 4: Evaluating and improving solutions

As a fourth step, the added value is described and reflected. Further potential learning steps related to the process are derived from this. The development of already implemented solutions is emphasised to ensure their continuity and continuous improvement. While newly acquired understandings of a wicked issue need to be institutionalised across stakeholders, stakeholders should remain open to the adaptation and inclusion of newly emerging stakeholders. Stakeholders can institutionalise spaces for continuous dialogue (e.g., regular workshops) to evaluate and critically reflect on outcomes *and* processes related to the implemented solution. Social learning is enhanced when critical feedback from a broad range of stakeholders is appreciated. An important aspect of continuous social learning is communication between scientists and practitioners as a potential source of further innovation.

While stakeholders work on continuously improving their solutions, unresolved conflicts may reappear, and new conflicts may emerge. To secure the long-term development of a solution to a wicked issue, stakeholders need to acquire skills to deal with diverging values and interests and induce social learning while engaging with each other.

Critical summary

Much of the research about multi-stakeholder settings looks at communicative practices as a way of identifying (innovative) solutions to joint issues. This means that research offers concepts and advice for practitioners ranging from deliberative tools for finding common ground and building consensus to more 'confrontational' tools for identifying joint solutions through contestation.

Less research has focused on social learning in multi-stakeholder settings. Studying the role of social learning in these settings is becoming ever more important because wicked issues risk intractable conflict—for example, due to climate change and social inequalities—and as increasingly polarised world-views become more embedded. Wicked issues are thus becoming more and more difficult to resolve. Social learning in multi-stakeholder settings offers the opportunity to widen the scope of potential solutions. This widening happens because, through social learning, stakeholders engage with each other to jointly bring forth something new rather than attempting to reconcile pre-existing options.

Specifically, more research is needed to explore and develop social learning practices that can be used to innovate through multi-stakeholder settings. These include practices for preventing intractable conflicts as they emerge and resolving seemingly intractable conflicts if they have already escalated. Social learning seems to play a key role in successfully handling the so-called 'dark side' of stakeholder relationships.

Research and practice could also benefit from more insight into the role of well-being in social learning. When individual stakeholder representatives feel good (e.g., they feel comfortable and enthusiastic about collaborating with multiple stakeholders), their motivation to engage in social learning in multi-stakeholder settings may be stronger. In contrast, when individual stakeholder representatives do not feel good (e.g., are uncomfortable or anxious about collaborating with multiple stakeholders), this may impair social learning outcomes. Therefore, more research is needed to explore how well-being affects exit points in multi-stakeholder settings.

Further readings

Bundy, J., Vogel, R. M., & Zachary, M. A. (2018). Organisation–stakeholder fit: A dynamic theory of cooperation, compromise, and conflict between an organisation and its stakeholders. *Strategic Management Journal, 39*(2), 476–501.

Collins, K., & Ison, R. (2009). Jumping off Arnstein's ladder: Social learning as a new policy paradigm for climate change adaptation. *Environmental Policy and Governance, 19*(6), 358–373.

Gaito, T. (2023). Rising from the darkness: Transforming intractable conflicts through stakeholder engagement. *Proceedings of the eighty-third annual meeting of the Academy of Management*, *2023*(1), 13008.

Keen, M., Brown, V. A., & Dyball, R. (2005). *Social learning in environmental management: Towards a sustainable future*. Earthscan.

Kujala, J., Sachs, S., Leinonen, H., Heikkinen, A., & Laude, D. (2022). Stakeholder engagement: Past, present, and future. *Business & Society, 61*(5), 1136–1196.

Moog, D., Spicer, A., & Böhm, S. (2015). The Politics of multi-stakeholder initiatives: The crisis of the forest stewardship council. *Journal of Business Ethics, 128*, 469–493.

Muro, M., & Jeffrey, P. (2008). A critical review of the theory and application of social learning in participatory natural resource management. *Journal of Environmental Planning and Management, 51*(3), 325–344.

Roloff, J. (2008). Learning from multi-stakeholder networks: Issue-focused stakeholder management. *Journal of Business Ethics, 82*, 233–250.

Rühli, E., Sachs, S., Schmitt, R., & Schneider, T. (2017). Innovation in multistakeholder settings: The case of a wicked issue in health care. *Journal of Business Ethics, 143*, 289–305.

29. Networked innovation

Katri Valkokari

Outline of the topic

The concept of networked innovation covers different forms of inter-organisational innovation, with a continuum of closed, contractually agreed arrangements to open, informally described partnerships and loosely coupled collaboration settings. In this entry, networked innovation is defined as *intentional collaboration arrangements around inter-organisational innovation process*, instead of a broad conceptualisation of various collaborative innovation constructs. Due to the nature of innovation, managing any innovation process is a multifaceted task, and for networked innovation processes in which there is a higher diversity of partners and their relationships and contributions, the challenge is obvious. Networked innovation requires collaborative practices that enable knowledge transfer, integration, or co-creation of new knowledge between involved actors. These collaborative practices should be created and clearly agreed upon together with the parties involved.

Conceptual overview and discussion

Since Chesbrough introduced open innovation, a conceptual chaos of different forms of inter-organisational innovation has emerged. Consequently, networked innovation is now related to other innovation concepts, such as innovation ecosystems and open innovation ecosystems. Here, the concept of networked innovation completes the discussion with a focus on collaborative practices within dynamic innovation relationships and the contractual arrangements required within them. More precisely, the definition of networked innovation considers both closed models, such as innovation projects, programmes, and alliances, and more open models, such as communities and crowdsourcing. Thus, the concept of networked innovation highlights intentional collaboration rather than the serendipity of opportunities gained through networking. In other words, it is important to highlight the difference between constructed and emerging networks and the relationships within them, although both intentional and emerging networks can be beneficial for innovation. Consequently, the starting point of *networked innovation practices* should be a specific shared vision defining the targets of the collaboration for innovation. Furthermore, the collaboration model and related practices within networked innovation should support these objectives. However, partners of networked innovation should define their own and joint boundary conditions before launching the innovation relationship(s).

Here, the collaboration practices and related agreements of networked innovation should consider at least: (1) the input, that is, background knowledge and resources of the involved actors; (2) the (joint) innovation process; and (3) access and utilisation rights of the innovation outcome(s). Thus, the firm-specific motivation for networked innovation can be several: obtaining access to external knowledge, pooling complementary resources, shortening the time of the innovation process through external knowledge or resources, sharing risks or costs, keeping up with current market developments, or exploring future opportunities of emerging at markets. Nevertheless, to build successful networked innovation relationships between multiple actors, the benefits and interests of the partners must be balanced. It is important to note that the networked innovation process is far from linear, as it consists of the intentional and emerging activities of the involved actors. As a result, the outcome of networked innovation is collaboratively created, and as the goals between partners have to be constantly realigned, the final outcome may be completely unrecognisable from the original goal. This is concurrently the challenge and the opportunity for networked innovation and requires a proactive approach and constant discussions between the actors, that is, collaboration practices.

Application

The practices of networked innovation between organisations are difficult to imitate and, therefore, could form a competitive advantage. The core of the concept is practices defining how a network of actors is participating in multiple collaborations essential to the transfer, integration, or co-creation of knowledge. Thus, this networked innovation process has several levels of openness, and it is seldom open to everyone. There is an agreement, written or otherwise, between

the involved actors, and many of them are involved in the innovation during its different phases. Furthermore, the participants, as well as their roles and responsibilities, may change during the process, which requires a proactive approach to contracting.

The size of the actors in the network influences the model of networked innovation. Smaller actors, such as small- and medium-size enterprises (SMEs) with limited resources, are more familiar with using external competences to expand their innovation capabilities than large actors. However, smaller actors often have unstructured innovation processes and immature internal capabilities, which often makes them weaker partners in collaboration with larger actors. Therefore, smaller actors typically have informal relationships to enhance their innovation processes, whereas larger actors more often make formal strategic alliances with multiple partners or utilise different innovation hackathons or competitions to explore different solutions or resources from the external innovation landscape.

Critical summary

In practice, networked innovation arrangements do not emerge fully formed, but they require an understanding that the flows of knowledge, either complementary or integrative, should be at the core of the processes and practices of such innovations. Similarly, the literature on networked innovation is somewhat biased, as scholars often stress that collaboration is a must without critically considering key questions, such as why, with whom, and how to collaborate for innovation. The collaboration in these networks could cover the knowledge transfer, integration, and co-creation activity between actors. In theory, networked innovation has many benefits, from cost savings and the shortened time required to commercialise the innovation to broader knowledge creation. However, it is often realised that getting ready for networked innovation is not a simple task, and then building actual innovation relationships takes much longer than expected.

Further readings

Paasi, J., Valkokari, K., & Rantala, T. (2013). Openness in developing inter-organizational innovation. *Prometheus: Critical Studies in Innovation*, *31*(2), 107–124.

Valkokari, K., Paasi, J., & Rantala, T. (2012). Managing knowledge within networked innovation. *Knowledge Management Research and Practice*, *10*(1), 27–40.

30. Open social innovation

Caterina Bettin, Ziyun Fan and Päivi Eriksson

Outline of the topic

Open social innovation (OSI) is a process in which multiple stakeholders from various sectors of society engage together in innovation processes, with the goal of tackling the grand societal challenges of our times. In OSI initiatives, various stakeholders, including lay members of the public, are invited to actively participate in the generation of solutions to complex societal problems by joining collaborative initiatives—frequently online—created by public institutions, private companies and non-profit organizations. Combining principles from open innovation, user innovation, and social innovation, OSI has been framed in the research literature as a promising mechanism to harness ideas, skills and resources of multiple actors, as well as to empower citizens and civil society at large by providing them with the opportunity to help innovate for the public good.

Conceptual overview and discussion

OSI involves collaborations among diverse stakeholders from different sectors of society, including public, private, and civil society, to address major societal challenges such as climate change, poverty, health crises, and social inequalities, and engage in creating innovative solutions to these issues.

The roots of OSI

As explained by Gegenhuber and Mair, the roots of OSI can be found in: 1) open innovation, 2) user innovation, and 3) social innovation. The open innovation approach draws attention to how private companies can access and incorporate knowledge and resources developed by external stakeholders (e.g. universities, research institutions, other companies, the customer base, etc.) and use them as drivers for internal innovation. Like open innovation, user innovation also emphasises the integration of external sources of ideas and expertise. Yet, the former is driven by the interests of companies and concerned with how they can extract value from external sources of innovation, while the latter actively involves end-users with specific needs that are not yet met by the market, and engages them in the development, modification and improvement of services or products that can better address their necessities. User innovation primarily centers those demographics in civil society that tend to be marginalized and overlooked (e.g. patients, members of disadvantaged communities, etc.). By including user-innovators in the innovation process, organizations in the private or the public sector can leverage their expertise and knowledge to produce more effective solutions, while end-users can benefit from innovative products and services that are better equipped to address their needs.

The goal of finding solutions that benefit the public is a shared principle between user innovation and social innovation. However, rather than focusing on often marginalized stakeholders interested in meeting their specific needs, the latter is mainly concerned with addressing global issues such as climate change, poverty, gender inequalities, education, and access to healthcare. To do so, social innovation initiatives typically involve a wide array of stakeholders (e.g. NGOs, third sector organizations, private companies, governments etc.) that join forces to develop solutions, services and products to address the most pressing societal challenges of our times.

OSI fuses the emphasis on tapping into external sources of innovation derived from open innovation with the recognition of the importance of involving the end-users in the innovation process, and with the concern for societal problems and the multi-stakeholder approach key to social innovation. The recognition that societal needs can be better addressed through collective action that includes members of the public makes OSI well-equipped to strengthen democratic practices through the promotion of a more engaged citizenship as well as the creation of solutions that have the potential to create systemic change.

Examples of OSI initiatives include: a) hackathons, such as #WirvsVirus, a collaborative effort in Germany that developed digital solutions to face the problems caused by the COVID-19 pandemic; b) citizens' platforms dedicated to specific issues, such as the Patient Innovation Platform, which enabled the sharing of innovative solutions developed by patients to help tackle the COVID-19

crisis); and c) crowdsourcing initiatives, such as the Save Our Oceans Challenge, which was focused on the environmental problems created by plastic pollution in the oceans.

Key features of OSI initiatives

A focus on grand societal challenges. Rather than solely pursuing the economic interests of individual stakeholders, OSI aims to create systemic change by addressing issues such as poverty, inequality, pandemics, access to healthcare, climate change, migration, economic instability, etc. As illustrated by Voegtlin and colleagues, the nature of these problems is multilevel and multifaceted. These problems transcend national borders and affect a growing number of people and communities. Given the magnitude and the complexity of these challenges, they cannot be tackled by the individual efforts of governments or organizations, therefore demanding joint efforts of multiple actors.

Multistakeholder and cross-cultural collaborations. OSI is characterized by the collaboration among diverse stakeholders that belong to a variety of sectors of society, such as governments, public agencies, NGOs, nonprofit organizations, private and civil society organizations, businesses, universities, research institutions and, most crucially, citizens. As explained by Gegenhuber and Mair, the coordination and the collaboration of this broad constituency of actors is facilitated by an OSI orchestrator, namely, an organizing actor with the expertise and connections needed to promote and support the open and participatory approach that characterizes the OSI process.

Open process. OSI initiatives are animated by the assumption that innovative solutions can be found outside of the traditional organizational confines, by bringing together a variety of actors from different backgrounds and tapping into their experiences and expertise. This is often achieved online through digital tools such as shared platforms, dedicated apps or websites.

Participatory approach. Key stakeholders in OSI initiatives are those who are directly affected by societal challenges, as their participation in the innovation process promotes solutions that are contextually relevant and responsive to their needs.

Democratic empowerment. OSI promises to strengthen democratic practices by emphasizing the engagement of the public in innovation initiatives dedicated to social improvement, ensuring that a variety of perspectives are considered. By doing so, OSI can help empower individuals and communities, including those that have been historically marginalized, as it provides an opportunity to share their experiences, ideas and solutions, thereby promoting a sense of agency and a more active engagement in decision-making.

Application: The Centre for Excellence on Partnership with Patients and the Public: an OSI initiative to address the big challenges in the health sector

The rising prevalence of chronic diseases, and the urgent necessity to redesign healthcare systems accordingly, is one of the most pressing challenges that healthcare systems are facing today. Patient partnership and, more specifically, the model of partnership that is fostered and promoted by the Centre for Excellence on Partnership with Patients and the Public (CEPPP) based in Montreal (Quebec, Canada), has been identified as a productive way to tackle this issue.

As explained by Karazivan and colleagues, patient partnership refers to an innovative approach to healthcare that emphasizes patients' practical knowledge of living with a health condition, including how to navigate the health system. In partnership, patients are considered integral and engaged participants in their own treatment, and the expertise deriving from the lived experience of a disease is considered equally important and relevant as the clinical knowledge of doctors, clinicians, and experts.

The innovative character of partnership lies in its understanding of the care relationships, which, according to Dumez and Pomey, constitutes an alternative to both the traditional medical paternalistic approach and the prominent patient-centered model of care. In the former, physicians hold the authority over diagnoses and treatments, while the latter, despite its focus on patients' choices, values, and experiences, still privileges professional expertise while overlooking patients' practical knowledge of living their life with a health condition. The shift to partnership addresses this issue by moving beyond merely caring *for* patients to caring *with* them, emphasizing

genuine collaborative relationships between patients and healthcare professionals.

Patient partnership, while originally developed in the realm of clinical practice and medical education, has been progressively expanding its scope. Through the initiatives orchestrated by the CEPPP, this model has been successfully implemented at all levels of the health sector in Quebec, including in health management, research, and service planning.

As an OSI orchestrator, the CEPPP engages with multiple stakeholders. It is supported by the joint effort of the Faculty of Medicine of the University of Montreal and the University of Montreal Hospital Research Centre (CR-CHUM, Centre de Recherche-Centre Hospitalier de l'Université de Montréal). The CEPPP consults and advises a variety of health organizations (e.g. hospitals, clinics, public institutions, and physician associations), providing guidelines and support to facilitate the introduction and the implementation of practices of patient partnership.

A key feature of the OSI approach of the CEPPP is that it does not merely promote partnership or support other organizations interested in implementing it; it actively practices partnership in its day-to-day activities. In other words, it fosters partnership *in partnership*, by including patients in its organizational structure and involving them in each project and activity. For example, its co-directorship model incorporates physicians, researchers, managers, and patients, while its core team comprises both professional project managers and patients, who collaborate in the execution of work activities and mandates.

One of the many activities of the CEPPP is to connect the growing number of health institutions, associations and research groups looking to implement partnership with the patients interested in joining these initiatives. One example of a solution developed by the CEPPP to facilitate this process is the Partner Portal, an information databank that aims to make the recruitment and matching of patients more effective and inclusive. This project was carried out in collaboration with the Research Chair in Partnership with Patients and Communities, University of Montreal, and the Quebec's Strategy for Patient Oriented Research Unit, an organization belonging to the public sector.

Following Gegenhuber and Mair's distinction between innovation intermediaries and OSI orchestrators, the CEPPP exceeds the role of a simple broker or matchmaker through its tailored coaching and the ongoing support it provides to patients participating in various partnership initiatives. These efforts ensure that patient involvement is meaningful rather than tokenistic.

The CEPPP provides an example of the commitment to systemic change and democratic empowerment that characterizes OSI. Its promotion, creation, and enactment of practices of patient partnership show the innovative manners in which an OSI orchestrator brings together a broad range of stakeholders—including patients and the public—with the goal to provide viable solutions to the crisis of the health sector.

Critical summary

OSI combines the principles of open, user, and social innovation to tackle the issues burdening today's society. The CEPPP, with its promotion of patient-partnership, constitutes an example of how OSI initiatives foster participatory and empowering practices with the goal to improve the provision of healthcare.

As OSI has been drawing increasing attention in academia and in the public discourse, its challenges have also come into focus. A first key issue pertains to the sheer amount of resources (e.g., financial, human, and of time) required to bring together multiple actors and keep them meaningfully engaged for the entirety of the initiative. A related issue is the difficulty of finding ways to measure societal impact, which would be highly beneficial to justifying continued support and funding.

A second thorny problem is related to the quality of participation. While OSI sets out to ensure equitable participation, this is a hard task to achieve in practice. For example, marginalized actors or communities may not have access to the necessary resources or technologies to make their voices heard. Moreover, the innovation process is often in control of dominant groups, ultimately holding sway over the type of contribution allowed in the process, thereby risking making the involvement of those less privileged tokenistic.

A third problem is related to coordination, and a fourth involves institutional resistance. While each stakeholder may have different goals, resources, and levels of commitment, it can be challenging to align the efforts and achieve common objectives. Resistance of

key institutions can manifest in various ways, such as regulatory problems and reluctance to adopt new practices. Overcoming these challenges requires sensitive handling, including new norms and policies.

Addressing these challenges is crucial for OSI to achieve its full potential in fostering participatory and impactful innovative solutions for societal challenges.

Acknowledgment

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Further readings

Dumez, V., & Pomey, M.-P. (2019). From medical paternalism to care partnerships: A logical evolution over several decades. In M.-P. Pomey, J.-L. Denis & V. Dumez (Eds.), *Patient engagement: How patient-provider partnerships transform healthcare organizations* (pp. 9–16). Springer International Publishing.

Fayard, A. L. (2023). Open social innovation. In J. Howaldt & C. Kaletka (Eds.), *Encyclopedia of social innovation* (pp. 67–72). Edward Elgar Publishing.

Gegenhuber, T., & Mair, J. (2024). Open social innovation: Taking stock and moving forward. *Industry and Innovation*, *31*(1), 130–157.

Karazivan, P., Dumez, V., Flora, L., Pomey, M.-P., Del Grande, C., Ghadiri, D. P., Fernandez, N., Jouet, E., Las Vergnas. O., & Lebel, P. (2015). The patient-as-partner approach in health care: A conceptual framework for a necessary transition. *Academic Medicine: Journal of the Association of American Medical Colleges*, *90*(4), 437–441.

Mair, J., & Gegenhuber, T. (2021). Open social innovation. *Stanford Social Innovation Review*, *16*(4), 26–33.

Mair, J., Gegenhuber, T., Thäter, L., & Lührsen, R. (2023). Pathways and mechanisms for catalyzing social impact through orchestration: Insights from an open social innovation project. *Journal of Business Venturing Insights*, *19*, Article e00366.

Martins, T. C. M. and de Souza Bermejo, P. H. (2015). Open social innovation. In Ć. Dolićanin, E. Kajan, D. Randjelović & B. Stojanović (Eds.), *Handbook of research on democratic strategies and citizen-centered e-government services* (pp. 144–163). IGI Global.

Rauch, M., & Ansari, S. (2022). From 'publish or perish' to societal impact: Organizational repurposing towards responsible innovation through creating a medical platform. *Journal of Management Studies*, *59*(1), 61–91.

Voegtlin, C., Scherer, A. G., Stahl, G. K., & Hawn, O. (2022). Grand societal challenges and responsible innovation. *Journal of Management Studies*, *59*(1), 1–28.

31. Open innovation ecosystems

Llewellyn D.W. Thomas and Paavo Ritala

Outline of the topic

The open innovation ecosystem broadens open innovation scholarship by enlarging the scope of inquiry from the focal firm's inbound and outbound knowledge flows to include a broad and diverse set of complementary innovation actors and their mutual interdependencies. In doing so, the open innovation ecosystem moves beyond the inside-in, inside-out, and outside-in modes of open innovation to incorporate an outside-out mode. While all ecosystem constructs are interested in how collectives of heterogeneous yet complementary actors jointly (co)create a system-level output, open innovation ecosystems are distinct in that they focus on how cross-boundary knowledge flows—also between actors not connected to the focal firm—result in new knowledge instantiated in innovations as their system-level output.

Conceptual overview and discussion

Innovation scholars have adopted the term 'ecosystem' when they have been taking a systemic view of innovation and actor interdependencies. Initially, scholars viewed innovation ecosystems as groups of firms that combine their complementary offerings into a new coherent offering, resulting in new types of interdependency risks and opportunities. Other scholars, focusing more on entrepreneurship, considered innovation ecosystems as broader innovation domains, where different organizations co-evolve their capabilities around sets of technologies, knowledge and skills, and collaborate and compete in developing new products and services.

Open innovation scholars consider the ecosystem as a loosely connected set of complementary partners and other collaborators involved in knowledge creation. One particular type of ecosystem of interest is the knowledge ecosystem, which Järvi and colleagues argue focuses on the collective processes of joint knowledge search, creation, sharing, and transfer—all processes that incorporate the (fuzzy) front end of the innovation process and which strongly reflectthe dynamics of open innovation. Knowledge ecosystems themselves echo the systems of innovation tradition in that they primarily occur at a regional level of analysis and in pre-competitive settings, and consist of universities, public research institutions, bridging and brokering organizations, and for-profit firms collaborating to create new knowledge.

Distinguishing open innovation ecosystems

While the *open innovation ecosystem* bears some resemblance to the other ecosystem constructs just discussed, it is distinctive. Open innovation ecosystems resemble what the literature describes as knowledge ecosystems in that they focus on knowledge flows among ecosystem actors, and the creation and transfer of knowledge in a loosely coupled context. However, what sets open innovation ecosystems apart is that they most often consider a specific *focal firm*, and the relationships of other actors in that ecosystem from the vantage point of that focal firm. In this sense, open innovation ecosystems are a natural extension to the classic open innovation literature that focused on the strategic question of the level of openness of a firm's innovation process.

We define an open innovation ecosystem as *a community of hierarchically independent yet interdependent heterogeneous actors around a focal firm who facilitate innovation through cross-boundary knowledge flows*. Thus, like all innovation ecosystems, open innovation ecosystems share Thomas and Autio's distinguishing characteristics of the innovation ecosystem, in that they are collectives of *heterogeneous* yet *interdependent* actors who jointly (co)create a *system-level outcome*.

The actors in an open innovation ecosystem are heterogeneous, as they can include any entity participating in the processes of open innovation within the whole spectrum of research, development, and innovation. As a consequence, actors range from universities, public research institutions, bridging and brokering organizations, open-source consortia, standard-setting bodies, and collaborating for-profit firms, through to specific individuals and the crowd. Open innovation ecosystem actors have specific ecosystem roles, which often have looser contractual structures than are normally present in some open innovation contexts, although bilateral formal contracts

and tighter coupling typical of alliance networks can also be present.

Interdependencies in open innovation ecosystems link actors depending on their open innovation role. The most common interdependencies in open innovation ecosystems are cognitive and economic. Cognitive interdependence arises when the open innovation ecosystem actors seek to align their technological and economic views, which may not necessarily shared. For instance, Randhawa and colleagues showed how firms use cognitive artifacts to build a shared understanding across heterogeneous stakeholders in an open innovation ecosystem. Economic interdependence often occurs when the value that each actor receives from participating in the ecosystem is dependent on others. For instance, Vanhaverbeke and Gilsing discuss many cases where economic interdependencies arise through a focal firm facilitating the sharing of intellectual property not only between itself and its ecosystem partners, but also among ecosystem partners.

Technological interdependence is less prominent in open innovation ecosystems, despite its importance in innovation ecosystems that involve co-specialization around a specific resource, shared platform or a modular technological architecture. This is due to the fact that technological interdependence is more often an emergent outcome from the cross-boundary knowledge flows within an open innovation ecosystem, rather than the starting point. This said, it is possible (and even likely) that technological infrastructures and digital platforms can facilitate cross-boundary knowledge flows and intellectual property sharing.

The system-level outcome in open innovation ecosystems is new knowledge generated by the ecosystem actors through cross-boundary knowledge flows, similar to knowledge ecosystems. However, while knowledge ecosystems are typically focused on creation and sharing of knowledge within a particular domain or among a set of actors without necessarily a clear innovation outcome, open innovation ecosystems are distinct in that the new knowledge is instantiated in new innovations. For this reason, open innovation ecosystems are typically analyzed as being more goal-oriented, focal-firm directed, and leading clearly to innovation outcomes, such as new technologies, products, or services. That said, open innovation ecosystems involve typical innovation ecosystem features such as collective goal setting, tensions over value creation and capture, as well as changes in the power positions and roles of actors over time.

Bridging open innovation and open innovation ecosystems

It is useful to return to the original conceptualizations of open innovation to explain how open innovation ecosystems apply in current scholarship. The original conceptualizations of open innovation focused on a focal firm that engages in innovation activities with its external environment. These original conceptualizations focused on three modes of knowledge flows that lead to innovation: outside-in, inside-out, and coupled.

Outside-in refers to the well-known activity of firms acquiring knowledge from their external environment, following Chesbrough's early insights that 'not all the smart people work for us.' For instance, such knowledge can be obtained through external knowledge search methods such as market intelligence, industry participation, and acquiring knowledge from partners. *Inside-out* refers to the transfer of knowledge by a firm to its external environment and potential subsequent monetization. Thus, inside-out considers how firms can spin-out their innovations into new organizations, license their intellectual property, or acquire indirect and future benefits from knowledge sharing via generative appropriability. Finally, the *coupled* mode refers to a firm's reciprocal exchange of knowledge with their open innovation partners, combining knowledge flows in both directions. The coupled mode of open innovation is most typical in bilateral or multilateral alliances, where knowledge flows each way and reciprocal learning mechanisms are developed.

Early open innovation ecosystem literature built upon these original open innovation concepts. The earliest applications (such as by Chesbrough and colleagues) of the open innovation ecosystem investigated the extent to which open innovation had been embraced within specific organizations, specifically considering inside-out, outside-in, and coupling. Taking a fairly broad view, the open innovation ecosystem was considered to comprise all the open innovation activities of a firm and its partners, while remaining aware of the broader competitive and cooperative dynamics. Interestingly, early studies also

explicated how the open innovation process inherent in the open innovation ecosystem evolved into a successful business ecosystem, defined as the broader economic context which a focal firm must monitor and react to (see Thomas and Autio for a more developed exposition).

This early scholarship into open innovation ecosystems led to an increasing recognition that there is a close relationship between the open innovation and ecosystem literatures. For instance, West and colleagues have discussed why ecosystems have become meaningful for open innovation scholars. They point out that network forms of collaboration, as well as the open business models typical of open innovation, can result in value creation and capture activities moving beyond the organizational level. They have also demonstrated parallels between the open innovation and ecosystems literature, finding several ways in which open innovation processes have been studied under different ecosystem conceptualizations.

Furthermore, Gutmann and colleagues have pointed out how open innovation scholars have started to pay attention to two other modes of knowledge flows which are relevant to open innovation: inside-in and outside-out. *Inside-in* flows refer to the internal innovation efforts, representing the crucial cross-functional and other intra-organizational knowledge transfer. While inside-in flows are essentially closed innovation, they are immensely important for an innovating firm, as outside knowledge is essentially coupled with internal knowledge processes and combinations across functions. However, of particular relevance to open innovation ecosystems are *outside-out* flows. Outside-out flows represent the knowledge flows that take place outside the firm boundary, but which are consequential to the firm. As noted by Vanhaverbeke and Gilsing, outside-out introduces new roles to open innovation beyond the focal firm, such as benefactors, instigators, and orchestrators. The actors in these new roles may not drive the innovation process itself, but instead shape the context around an innovation that might be conducted by some other party.

While outside-out flows have only been clearly conceptualized recently, scholars had already begun to consider the processes, mechanisms, and governance structures that drive such knowledge utilization. Of particular empirical interest has been intellectual property and standards. For instance, Vasudeva and colleagues (2020) considered how emerging technology standards and the relevant ecosystem actors collaborate and compete in those domains. We believe that these and other types of outside-out dynamics will become increasingly prevalent, characterizing the rise of open innovation ecosystems in various industries, especially around focal firms, organizations, or technological domains.

Application

An important application of the outside-out flow in open innovation ecosystems is the study by Gutmann and colleagues which investigated 16 internationally operating corporate venture capital (CVC) units. They showed that CVC lead outside-out innovation consisted of CVC units establishing cooperation *between* external partners through the orchestration of pooled and curated external knowledge. One practice that CVCs used to foster outside-out dynamics was to curate businesses by creating exclusive workshops, events, and/or platforms for matching startups and corporate customers, or connecting startups with other startup ventures. Another CVC practice for outside-out innovation was validating capabilities before due diligence by establishing cooperation with startups early on. This would consequently act as a proof of concept and evaluation of a potential investment. A third practice was to share deal flow by adhering to unwritten CVC etiquette rules on knowledge sharing. By presenting potentially interesting ventures to other CVC units, CVCs could generate goodwill and pave the way for benefiting from partnerships in the long term.

Another application of open innovation ecosystems is the case study by Randhawa and colleagues that considered the role of cognitive interdependencies. This case examined an incumbent organization that provided orthopedic medical implants, and its shift to mass customization enabled by 3D printing. While the open innovation ecosystem enabled the organization to harness external sources of value (outside-in), the authors specifically investigated how the open innovation ecosystem also constrained its ability to adapt its innovation strategy to pursue new opportunities. They found that the use of cognitive artifacts—such as roadmaps, stakeholder

network visualizations, and patient journey maps—was helpful to build a shared understanding across the heterogeneous ecosystem actors, and by extension, help the incumbent organization to explore and develop new open innovation models.

Critical summary

One of the challenges for scholars investigating open innovation ecosystems is that they have similarities with other ecosystem constructs, such as business ecosystems, entrepreneurial ecosystems, innovation ecosystems, knowledge ecosystems, and platform ecosystems. As noted, they all feature heterogeneous actors, actor interdependence, and a system-level output. This means that some earlier studies do not clearly identify that they are investigating open innovation ecosystems. Thus, open innovation scholars need to exercise care in utilizing earlier studies to ensure that the correct theory is being applied to the phenomenon they are investigating.

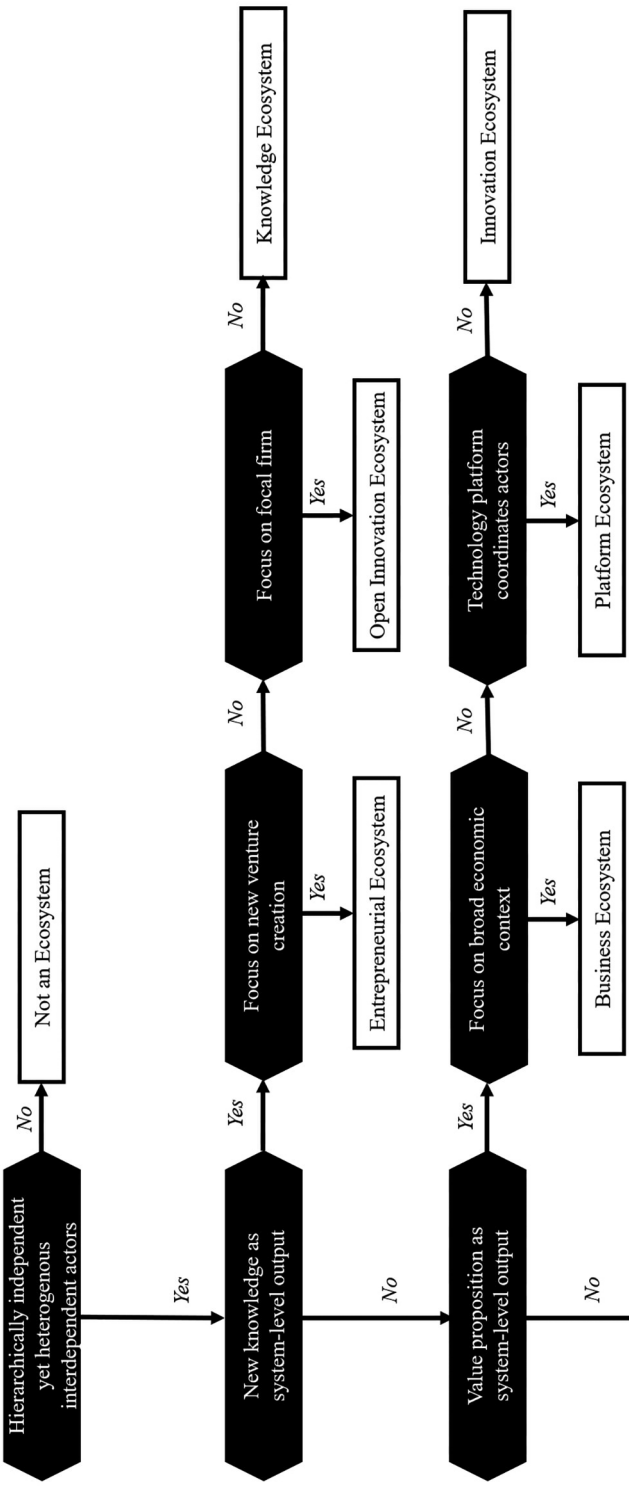
However, we believe that open innovation ecosystems are a distinct ecosystem type that will lead to deep insight. To highlight the differences between open innovation ecosystems and other ecosystem types, Figure 31.1 presents a useful heuristic to assist open innovation scholars in determining which type of ecosystem they are dealing with.

While innovation ecosystems, business ecosystems, and platform ecosystems have their system-level output as an ecosystem value proposition, the system-level output of an open innovation ecosystem is new knowledge. While entrepreneurial ecosystems and knowledge ecosystems both have knowledge creation as a system-level output, they are also differentiated, as open innovation ecosystems have this knowledge instantiated as innovation (as distinct from new ventures for entrepreneurial ecosystems) and have a specific firm as their focus (as distinct from knowledge ecosystems). Furthermore, entrepreneurial ecosystems and knowledge ecosystems are most often viewed as location-specific, while open innovation ecosystems are usually location independent (although there is no reason why they cannot have important local dynamics).

However, open innovation ecosystems are not independent of these other ecosystem constructs. As evidenced by the earliest research into open innovation ecosystems, they have never been considered distinct phenomena, but as integral antecedents to value proposition-focused ecosystems, such as business, innovation, and platform ecosystems. Indeed, the focus of open innovation on the alignment of firm business models is fundamental to understanding both the emergence of an ecosystem value proposition and the collective value creation and appropriation that typifies an ecosystem value proposition. More research is required to systematically link the dynamics and outputs of open innovation ecosystems with the emergence of the ecosystem value propositions of innovation, business, and platform ecosystems.

Open innovation ecosystems obviously have a particularly strong relationship with both entrepreneurial and knowledge ecosystems. By focusing on the instantiation of new knowledge into new ventures, entrepreneurial ecosystems are much more focused on the processes and actors involved in entrepreneurship rather than innovation more generally. While there is some early work considering typical entrepreneurial ecosystem actors such as accelerators, there are significant research opportunities into examining how open innovation ecosystems intersect with business model innovation and new venture formation. With respect to knowledge ecosystems, West and Olk have pointed out there is significant parallel interest across the two streams, and that knowledge and open innovation ecosystem scholarship appears to be converging. An interesting research direction includes investigating how location-specific knowledge ecosystems intersect with focal-firm oriented, non-local open innovation ecosystems.

In summary, the open innovation ecosystem extends scholarly understanding of open innovation by broadening the scope of inquiry over knowledge flows from inside-in, inside-out, and outside-in modes of open innovation to an outside-out mode. In doing so, the open innovation ecosystem extends the literature on innovation ecosystems by providing a rich theoretical lens to consider the knowledge interdependencies and flows among a set of actors who engage in cross-boundary innovation. For open innovation practitioners, the open innovation ecosystem provides an extended lens on how a firm manages its innovation process, and how it incorporates innovation dynamics within its ecosystem and between ecosystem actors.



Source: Adapted from Aarikka-Stenroos and colleagues.

Figure 31.1 *Open innovation ecosystems in context*

Further readings

Aarikka-Stenroos, L., Ritala, P., & Thomas, L. D. W. (2021). Circular economy ecosystems: A typology, definitions, and implications. In S. Teerikangas, T. Onkila, K. Koistinen & M. Mäkelä (Eds.), *Research Handbook of Sustainability Agency* (pp. 260–276). Edward Elgar Publishing.

Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Harvard Business Press.

Chesbrough, H. W., Kim, S., & Agogino, A. (2014). Chez Panisse: Building an open innovation ecosystem. *California Management Review*, *56*(4), 144–171.

Gutmann, T., Chochoiek, C., & Chesbrough, H. (2023). Extending open innovation: Orchestrating knowledge flows from corporate venture capital investments. *California Management Review*, *65*(2), 45–70.

Järvi, K., Almpanopoulou, A., & Ritala, P. (2018). Organization of knowledge ecosystems: Prefigurative and partial forms. *Research Policy*, *47*(8), 1523–1537.

Randhawa, K., West, J., Skellern, K., & Josserand, E. (2021). Evolving a value chain to an open innovation ecosystem: Cognitive engagement of stakeholders in customizing medical implants. *California Management Review*, *63*(2), 101–134.

Thomas, L. D. W., & Autio, E. (2020). Innovation ecosystems in management: An organizing typology. In M. A. Hitt (Ed.), *Oxford Research Encyclopedia of Business and Management* (pp. 1–35). Oxford University Press.

Vanhaverbeke, W., & Gilsing, V. (2024). Opening up open innovation: Drawing the boundaries. In H. Chesbrough, A. Radziwon, W. Vanhaverbeke & J. West (Eds.), *The Oxford Handbook of Open Innovation* (pp. 51–64). Oxford University Press.

Vasudeva, G., Leiponen, A., & Jones, S. (2020). Dear Enemy: The Dynamics of Conflict and Cooperation in Open Innovation Ecosystems. *Strategic Management Review*, *1*(2), 355–379.

West, J., & Olk, P. M. (2024). Open innovation, innovation in ecosystems, and innovation beyond the firm. In H. Chesbrough, A. Radziwon, W. Vanhaverbeke & J. West (Eds.), *The Oxford Handbook of Open Innovation* (pp. 287–307). Oxford University Press.

32. Open strategy

Eero Vaara

Outline of the topic

Traditionally, strategy work has been characterized by top-down approaches and hierarchical processes and practices. More recently, this tradition has been challenged, with calls for more widespread participation and innovative tools and practices. In particular, we have seen an increasing interest in open strategy, which means a radical departure from the traditional ways of conducting strategy work with its focus on transparency and inclusion. This entry will offer an overview of this new innovative approach and what it entails. It focuses on what it means in terms of participation and disclosure. The Wikimedia case is used as an example of its application. This leads to a more critical discussion about the challenges of this approach and what it requires from the people and organizations involved as well as a reflection of future research topics.

Conceptual overview and discussion

Traditionally, strategy work has been characterized by top-down approaches, but over time there have been increasing calls for more widespread participation. This is especially the case with open strategy, which – similar to related ideas of open innovation, open data, open access and open government – offers a radical reorientation in strategy work; it represents an almost 180-degree departure from the tradition of top management control in its call for widespread inclusion and transparency. Open strategy is usually defined by these two features: inclusion, implying widespread stakeholder involvement and engagement; and transparency, offering as much disclosure as possible in terms of how strategy work is conducted.

What this means in practice is another matter. For example, Vaara and colleagues have explained that there are at least three distinctively different ways to think about open strategy: as limited participation, as co-creation of strategies, and as deep engagement defining the rules of the game. The first approach offers the most limited perspective, implying, for instance, the use of crowdsourcing in strategy ideation. The second approach means genuine openness in developing new strategies as a collective effort; whereas the third approach can be seen as an ideal that is very difficult if not impossible to achieve – yet worth striving for. Stadler and colleagues offer a 'User's Guide to Open Strategy' in which they explain how open strategy thinking or methods may be used in different parts of a strategy process: strategy ideation, strategy formulation, or strategy execution. The key point is that in some circumstances open strategy methods and tools can be extremely useful but that this not always the case.

Application

Practical experiences and research in this area point to cases where open strategy has helped to revolutionize strategy work, especially in terms of engaging a number of stakeholder groups inside or outside the organization. One of the most famous cases is Wikimedia that has used open strategy methods for a number of years. The most recent and extensive process has also resulted in the Wikimedia Strategy Playbook that offers a detailed set of tools and methods for conducting open strategy work.

However, there are also special challenges characterizing open strategy work. For instance, Hautz and colleagues have elaborated on five key dilemmas. First is the dilemma of process points to a tension in involving more people and the effectiveness of decision-making. Second, the dilemma of commitment implies that engaging more people helps in creating commitment but may also lead to frustration as people's inputs may or may not be taken into consideration. Third, the dilemma of disclosure is all about the problems associated with sharing confidential materials. Fourth, the dilemma of empowerment implies that open strategy can empower people but may also frustrate them in terms of the added workload required. Finally, the dilemma of escalation implies that expectations about openness tend to increase over time, especially in successful processes, escalating the demands for those in leading these processes.

Thus, the more recent scholarship focusing on open strategy has provided critical reflections highlighting the differences between the promise of this approach and the practical challenges in living up to the ideals. For instance, in their analysis of the earlier strategy processes in Wikimedia, Dobusch and colleagues have shown that 'openness' is

always associated with 'closure' in strategy-making. More generally, there are also questions as to what extent the creation of shared understanding in strategy work involves control that goes against the very ethos of participation and openness. Efforts to foster participation may at times be seen as 'window-dressing' or even 'hypocrisy' if the people involved feel that their voices are not really heard. Furthermore, while the front-stage processes and practices may be open, this is not always the case with the back-stage processes and practices in strategy work.

Critical summary

There are several questions for future research in this area. In particular, the various practices used in leading open strategy work deserve special attention. For instance, it would be important to know more about the technologies used, as well as to understand how they enable or constrain participation or transparency. There is also a need to better understand the dialogical dynamics in these processes and connect such analysis to bigger questions about power and identity. For instance, even if there is promise of openness and inclusion, the social spaces and the practices of participation tend to place people in uneven positions. Overall, it seems that there is increasing awareness and appreciation of the context-specific challenges in open strategy work, and it may be that it is time to move on to increasingly specific analysis of particular applications.

Further readings

Dobusch, L., Dobusch, L., & Müller-Seitz, G. (2019). Closing for the benefit of opening: The case of Wikimedia's open strategy process. *Organization Studies*, *40*(3), 343–370.

Hautz, J., Seidl, D., & Whittington, R. (2017). Open strategy: Dimensions, dilemmas, dynamics. *Long Range Planning*, *50*(3), 298–309.

Seidl, R., Whittington, R., & von Krogh, G. (Eds.) (2019). *Cambridge handbook of open strategy*. Cambridge University Press.

Stadler, C., Hautz, J., Matzler, K., & von den Eichen, S. F. (2021). A user's guide to open strategy. *Harvard Business Review*, November 2. https://hbr.org/2021/11/balancing-open-innovation-with-protecting-ip

Vaara, E., Rantakari, A., & Holstein, J. (2019). Participation research and open strategy. In D. Seidl, R. Whittington & G. von Krogh (Eds.), *Cambridge handbook of open strategy* (pp. 127–140). Cambridge University Press.

Meta-Wiki. (2022). *The movement strategy playbook*. Wikimedia. https://meta.wikimedia.org/wiki/Strategy/Wikimedia_movement/2018–20/Reports/Movement_Strategy_Playbook

33. Public sector innovation

Sanna Tuurnas

Outline of the topic

Across Europe, countries are undergoing public sector reforms that emphasize collaborative efforts to address complex social problems within societies. Collaboration is essential for fostering innovative problem-solving among interconnected participants in networks. Unlike simple problems that can be solved by individual managers or professionals within single organizations, complex problems require a diverse range of assets and viewpoints across organizational boundaries.

Collaborative efforts are also crucial for creating more effective public services through co-production and co-creation with service users. Service users possess valuable knowledge about their everyday experiences and can think 'outside the box' when working alongside representatives from bureaucracies or service professionals. As noted by Hartley and colleagues, the public sector context, politicians and administrators also play a vital role in providing a realistic framework. Moreover, private company representatives contribute agile insights and specific technologies to seek solutions. Overall, collaboration among different stakeholders lies at the heart of innovation in the public sector.

Conceptual overview and discussion

Innovation in the public sector differs significantly from that in private companies, particularly due to its pluralistic nature. Public sector leaders, including politicians and managers, must consider various stakeholders and conflicting demands during the innovation process. The involvement of multiple actors, assets, and values is inherent in public sector innovation. Typically, stakeholders in public sector innovation include politicians, public administrators at different levels of government, service professionals (such as doctors, teachers, and social workers), citizens, civil society organizations, as well as private company partners. Integrating several stakeholders may create complexity and potential value tensions. The broad variety of actors can also be leveraged as a strength for public sector innovation.

Moreover, public sector organizations constitute a specific type of innovation environment as publicly accountable institutions. For instance, local governments can only allow a limited level of risk when it comes to financial support for innovation. Public accountability also means that collaboration with external partners should be balanced, neutral, and representative. Therefore, Österberg and Qvist have observed that public sector innovations tend to emerge in established partnerships and contract-based collaborations, potentially limiting innovation potential. Indeed, public sector organizations are not always prepared to collaborate with external stakeholders. For instance, Tuurnas and colleagues found that local governments often prioritize internal perspectives over external ones in their innovation efforts.

This lack of readiness for collaboration also presents a notable challenge when integrating external insights into innovation processes. It is also typical that the external assets are harnessed only as part of the innovation cycle, for instance in the beginning or at the end of the process. Agger and Sørensen highlight that, during collaborative innovation processes, diverse assets should be leveraged across every phase of the innovation journey. The premise is that collaboration should shape the entire process, from idea integration to identifying viable solutions, selecting the most promising ones, building and testing prototypes, and beyond.

In the realm of public sector innovation, co-creation has emerged as a powerful instrument. Across urban areas in Europe, various participatory experiments have been introduced, including living labs, digital labs, participatory budgeting, and neighborhood development projects. As highlighted by Torfing and colleagues, co-creation stimulates innovation by bringing together public and private actors with diverse experiences, perspectives, and forms of knowledge. In this problem- or task-focused process, these actors challenge and test each other's ideas about the problem and potential solutions, leading to mutual, expansive, and transformative learning. Co-creation also ensures a coordinated effort to implement new and promising solutions that arise from mutual learning, creative problem-solving, and prototype testing. In summary, co-creation stands as a core tool for collaborative innovation.

As for managing public sector innovation, it is crucial to leverage diverse assets across different phases of the innovation process. Ideally, as noted, the process begins by sharing ideas, integrating them, and determining suitable solutions. From there, it progresses to selecting the most promising solutions and testing prototypes. As emphasized by Agger and Sørensen, the collaborative processes aim to mobilize resources and diffuse innovation into practice by ensuring stakeholders are committed to implementing the new solutions they have co-created. Additionally, Perikangas and Tuurnas introduce the concept of meta-design to help managers structure and design an integrative innovation process, with a specific focus on digital co-production in community development projects as an illustrative case. Finally, a broad range of partners may also help to assess and share risks entailed in innovations. Here, the role of manager is to negotiate the accepted level of risk with all relevant stakeholders. This is also essential for securing bottom-up legitimacy of solutions created in a collaborative process.

Application

Urban development stands as one of thekey areas for public sector innovation. In urban contexts, including suburban areas, recognizing place-specific elements is crucial when initiating innovation processes. For instance, when aiming to enhance the livability of an area, it becomes essential to gather 'insider information' about local safety conditions and service quality. Residents may feel less safe in specific neighborhood spots, and young people might lack activities or places to socialize. These locally experienced challenges can significantly impact residents' quality of life and even affect housing prices or drive out private businesses.

To address these issues, a collaborative approach involving various stakeholders is necessary. Assets are required from residents, civil society organizations, local businesses, public professionals (such as teachers and social workers), and politicians. But how does this work in practice? Let's consider an example. In a mid-sized Finnish city of approximately 250,000 inhabitants, a group of public service professionals working in a socially challenged suburban area took the initiative to co-create innovative solutions for better liveability. Their goals included enhancing the sense of community in the area and creating new services to mitigate social problems.

The project group actively engaged committed stakeholders, particularly local civil society actors and businesses. Collaboratively, they organized various events, including an art exhibition hosted in a local grocery shop and local get-together gatherings involving housing foundations and the local church as key participants. These get-together events served to bridge and strengthen connections among local citizens, receiving positive feedback from the community.

Additionally, the initiative introduced a novel service model developed during its course. This model integrated resources from civil society organizations, local businesses, and various local public service providers, such as social care and cultural services. Specifically, social services clients with young children were invited to participate in diverse creative activities. During these events, they had the opportunity to discuss their problems and seek support from cross-sectoral teams.

Another example comes from a neighborhood development project situated in a smaller Finnish town with approximately 70,000 inhabitants. Similar to the previous example, the impetus for launching this neighborhood project stemmed from the area's high concentration of social challenges and the lack of meaningful services and activities for local residents. Given that the project unfolded during the COVID-19 pandemic, many activities had to transition to online formats. One innovative solution employed was Maptionnaire, a map application that allows users to pinpoint locations on a map. In this case, Maptionnaire was used to collect perspectives on the sense of unsafety within the neighborhood. By utilizing the application, project personnel could identify specific areas where safety conditions needed improvement. Additionally, the project leveraged various assets, including collaboration with universities and civil society organizations, to explore ideas for creating more meaningful activities in the area. The project also utilized different formal and semi-formal citizen boards to gather ideas for getting feedback and novel ideas for improving the neighborhood.

Overall, it is noteworthy that, despite good intentions and positive outcomes, residents and other stakeholders remained primarily as 'consulted' parties in the presented examples.

While external stakeholders were given opportunities to contribute ideas for the project or participate in certain activities, they were not systematically included throughout the innovation process. As is quite typical for such initiatives, there was no equal opportunity for collaborative design from the outset. As Tuurnas suggests, this pattern is common in many development processes in the public sector context. For project designers and managers in the public sector, the core ideas embedded in collaborative innovations serve as a key learning point for adopting new, open approaches of reaching out to external stakeholders.

Critical summary

The core challenges and dilemmas related to collaborative modes of public sector innovation revolve around equal opportunities and the representativeness of 'external' participants in government processes. These dilemmas are closely tied to the concept of 'usual suspects,' where more affluent and educated citizens often dominate co-creation activities. Consequently, public managers face the tricky task of ensuring that participants truly reflect the diversity of the citizenry. As Perikangas and Tuurnas point out, analyzing citizen inclusion involves assessing both access to the collaborative process and interaction opportunities during development. As for access, there is a need for variety of forums and platforms to create diversity. Additionally, attention to interaction dynamics and hidden power structures is crucial; residents may struggle to decipher the bureaucratic language used by government representatives.

Public sector innovations encompass a range of assets, but managers and facilitators must deftly navigate the delicate balance between openness and good governance. One challenging aspect of public sector innovation is ensuring that participants do not bring their ideological or religious agendas into the process. While public sector organizations value neutrality, managers cannot predict the rationales and expectations stakeholders may bring to collaborative processes. Österberg and Qvist' findings highlight that it is often easier to innovate within established partnerships to mitigate risks. Public sector innovation both drives and challenges good governance, and managers at all levels play a crucial role in balancing these principles with the need for innovative solutions. Moreover, change resistance in public organizations and fear of value conflicts have been recognized as key dilemmas for public sector innovations. As Agger and Sörensen note, the hierarchical control and red tape, as well as lack of competition and financial incentives, can hamper the willingness to innovate in the public sector context. Therefore, collaborative processes are needed disrupting existing organizational and professional practices and reliance of routines and conventional wisdom, and thus creating a new type of innovation culture.

To overcome the biggest barriers in public service innovations, it is essential to view public sector innovation processes holistically and systemically. While innovative managers, engaged staff members, and active external stakeholders play crucial roles, they are insufficient on their own to implement transformative changes. Supporting structures and an encouraging innovation culture are equally vital. Managing public sector innovation is a delicate balancing act and not an easy role to fulfill. Simultaneously, governments worldwide are in need of innovations. Therefore, skills, supportive structures, organizational culture, and political backing are essential for empowering managers to innovate effectively. As suggested by Perikangas and Tuurnas, meta-design serves as a valuable tool to provide a solid foundation for the collaborative innovation process.

Considering inputs and outputs in public sector innovations is crucial. While introducing collaborative innovation cultures to public sector organizations seems straightforward, increased collaboration also brings potential value conflicts and risks. So why bother? Voorberg and colleagues found in their systematic literature review that improved effectiveness of public services is the most recognized outcome of public innovations. However, other benefits like efficiency or increased customer satisfaction were less frequently detected. These findings suggest that collaborative modes of public sector innovation are not a panacea for all the complex challenges governments face in the current turbulent environment. A question arises: how often do public sector innovation processes merely increase costs and risks without significant gains?

Hartley and colleagues emphasize the need for developing evaluation tools for public innovations. As the authors note, public

innovations are dynamic, and their evaluation changes over time. Some innovations initially deemed failures may find new purpose in different contexts. Therefore, future research should focus on longitudinal analyses of both 'failed' and 'successful' examples of public innovation. Innovative approaches to evaluation methods would also enhance our understanding.

Further readings

Agger, A., & Sørensen, E. (2018). Managing collaborative innovation in public bureaucracies. *Planning Theory*, *17*(1) 53–73.

Hartley, J., Fuglsang, L., Rønning, R., & Geuijen, K. (2024). Debate: Whether and how public innovations create value. *Public Money & Management*, *44*(6), 443–445.

Österberg, E. & Qvist, M. (2020). Public sector innovation as governance reform: A comparative analysis of competitive and collaborative strategies in the Swedish transport sector. *Administration & Society*, *52*(2) 292–318.

Perikangas, S., & Tuurnas, S. (2023). Design for inclusive digital co-production. *Public Management Review*, *26*(6), 1731–1751.

Torfing, J., Sørensen, E., & Røiseland, A. (2019). Transforming the public sector into an arena for co-creation: Barriers, drivers, benefits, and ways forward. *Administration & Society*, *51*(5), 795–825.

Tuurnas, S. (2016). Looking beyond the simplistic ideals of participatory projects: Fostering effective co-production? *International Journal of Public Administration*, *39*(3), 1077–1087.

Tuurnas, S., Stenvall, J., Virtanen, P., Pekkola, E., & Kurkela, K. (2019). Towards collaborative development culture in local government organisations? *International Journal of Public Sector Management*, *32*(6), 582–599.

Voorberg, W. H., Bekkers, V. J. J. M., & Tummers, L. G. (2014). A systematic review of co-creation and coproduction: Embarking on the social innovation journey. *Public Management Review*, *17*(9), 1333–1357.

34. Service innovation and service design

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Outline of the topic

The concepts of *service innovation* (SI) and *service design* (SD) are increasingly addressed in academic discourse, and managers and experts also use them widely in the context of private, public and third-sector organisations. The research-based roots of these concepts extend across management, marketing, design, social sciences, economics and engineering. Together, they represent an interconnected understanding of how innovation and design contribute to the creation and transformation of services and service systems. Overall, SD is often conceptualised as the creative and facilitative mechanism through which SI can be developed. This understanding can be found in discussions on service development processes, but also in those that focus on broader transformations in service systems that extend beyond single services and single organisations.

Conceptual overview and discussion

Service innovation

The innovation literature indicates an acceleration of a shift from product innovation to SI as early as the beginning of the 1980s, connecting with the transition to the service economy. In this shift, manufacturing industries reoriented towards product-related services, sparking an interest in SI. In the research literature, SI was first treated as an economics concept that integrated elements of manufacturing and service theories, with an emphasis on outcomes from rather linear service development processes. This definition underscored SI as a mechanism for competitive advantage through delivery of new and improved product-service combinations.

Over the following decades, research attention has expanded from SI outcomes to processes and practices within a variety of service delivery contexts. Accordingly, SI was understood as a process that can generate value for a wide range of stakeholders, including customers, employees, business owners, partners and communities. This perspective pointed researchers towards viewing SI as experiential, impacting customers' value experiences, brand perceptions and value co-creation processes. During the 2010s, the SI literature devoted more attention to the problematics of linear service development models in global, fast-paced and networked service environments. The research focus shifted towards the study of SI within broader service systems, networks and ecosystems, highlighting active integration of customers and citizens in SI activities. A new understanding of SI as a strategic concept was introduced, according to which SI activities and outcomes were influenced by actors engaged in institutional work in and across organisations, aiming to facilitate diversity in value co-creation. More currently, SI has expanded to focus on business models, social offerings and behavioural changes within organisations and industries.

Service design

The SD concept emerged in the early 1980s and was equated with a practical tool known as Service Blueprint, the purpose of which was to ensure service quality within organisations. At that time, SD mostly referred to activities needed to improve existing services at the service interface, including the design of optimal service encounters, customer experiences and physical service environments. As an academic field, SD integrates elements of SI, service strategy and service implementation. Since the 2000s, SD has referred to 'service designers' as a distinct vocation with dedicated training. As the service sector has grown, design researchers have also started to explore how to apply design capabilities in service development. The practical SD scope has broadened with the rise of digital services, prompting service designers to create multi-interface services. By the mid-2010s, the objective of SD practice had shifted from enhancing intangible service offerings to creating conditions for value exchange between customers and organisations. This service system approach has steered service designers towards using multidisciplinary teams to innovate complex service systems and value networks.

Overall, the SD literature introduces it as a people- and future-oriented theoretical concept, and as a practice that emphasises action-oriented research, dedicated methods and analysis of change-oriented projects. SD has been suggested as being able to support

SI because of its adaptability to different contexts and ability to merge practical knowledge with both design science principles and SI's theoretical framework. The literature suggests that SD is based on creative, human-centred, iterative and holistic design methods. All of this should help bring service strategy and innovative service ideas to life by creating resources and infrastructures that support new forms of value co-creation, which in turn plays a role in fostering SI.

Despite the suggested transformative potential of SD, it has been argued that SD needs to be understood as a continuous process and an ingrained attitude across organisational levels to contribute to SI effectively. Challenges remain, such as organisations' tendency to utilise SD as an isolated, incremental new service development process while overlooking service systems' complexity, leading to superficial solutions that are difficult to implement. Researchers have advocated for more integrated service approaches, suggesting that less-integrated organisational contexts limit the scope for radical or revolutionary innovation. This highlights the need for a shift towards understanding broader service systems and related transformations in SI and SD research.

Service systems transformation

During the 2010s, SI and SD research alike introduced the need for a deeper understanding of how innovation emerges within service systems and ecosystems. This shared challenge of SI and SD has spurred collaborative efforts towards knowledge sharing and an integrated conceptualisation of service ecosystem design. Accordingly, service systems researchers have suggested that people, processes, technologies and institutional arrangements interact within service ecosystems, creating value for a broad range of actors involved. An argument has also been posited that service systems (in contrast to single services) have better abilities to adapt and transform in response to changes in their environment. However, it has also been noted that service systems of organisations, industries and societies are in constant flux and that efforts to control co-created design outcomes in a fast-changing, interconnected world are challenging.

The increased academic attention to *service system transformation* has led to the adoption of more holistic and complexity-addressing perspectives on changes in value creation processes in the service context. It has been suggested that transformation often requires involvement by all system actors, as change is only achievable through collective willingness. Furthermore, in the pursuit of service-related innovation, the literature suggests that it is crucial to recognise and redesign institutionalised structures that either facilitate or hinder transformation.

SD and the systemic perspective on SI

The systemic perspective highlights how SD practices, methods and tools are important when designing complex service systems. They can guide evolving service ecosystems into improved configurations and help alter institutional constellations. Recognised for action orientation, SD has been suggested as being able to facilitate change and transformation in existing service systems and value co-creation processes. It has also been suggested that SD's exploration tools are effective in promoting discussion and reframing challenges by aggregating various actors' perspectives for co-creating future visions.

In the literature, SD methodology is increasingly understood as a catalyst for more radical innovations. These methods are expected to support disruption of deeply ingrained beliefs, paving the way for exploration of radically new service futures. The argument entails that innovation in service ecosystems requires changes on multiple levels, with SD playing a critical role in encouraging actors to recognise, reflect and rethink their attitudes through participation in design activities. This process can lead to changes in individual assumptions, making actors more cognizant of their organisational or social contexts and more open to transformation.

By visualising and challenging prevailing assumptions, cultures and values, SD is viewed as building reflexivity and awareness among actors, laying the groundwork for exploring new possibilities and promoting transformation. Furthermore, it has been argued that SD's participatory approach can foster collaborative efforts in which everyone participates in the design process, positioning the designer's role as a facilitator of, rather than a controller over, the collective design process.

In the 2020s, the academic literature has begun to emphasise broader ethical considerations, such as diversity and inclusion, shifting the focus from new and improved services to organisational and societal change. This is believed to promote institutional change as a driver for more enduring service system transformations. SD researchers have called for paying more attention to continuity in practical SD processes and their embeddedness within organisations. They also suggest extending SD practices beyond isolated development projects within organisations. This approach underscores the importance of integrating SD as an enduring element of organisational culture.

Application

SI and SD within a finance sector company

A real-life Nordic finance sector company's SI journey, extending from the 1980s until the early 2000s, was propelled by the leadership team's strategic vision to forge new digital services. This period of time saw a wealth of resources used by the company for ideation on new services based on the utilisation of financial data, market insights, technological advances and innovations, and consultant reports. Service development unfolded at the company within the confines of traditional waterfall projects, orchestrated by a cadre of IT professionals, project managers and other experts who consulted for the business.

The service initiatives within the company were oriented predominantly towards leveraging technical capabilities and enhancing production efficiency. Governed by strict guidelines, sharp budget allocations and profitability calculations, a dedicated steering group meticulously monitored each service development project. Upon securing the steering group's approval for a service prototype, it underwent testing within the selected customer group. The transition to market readiness required marketing specialists' strategic involvement to spearhead the external launch and advertising efforts. Thereafter, the new service was introduced to the employees, who were trained on how to advocate for and sell it. Customers were expected independently to navigate and be assimilated into the new service's utility, with the help of promotional materials or through personal interactions with sales personnel.

In the early 2000s, amid escalating competitive pressures, the company pivoted towards amplifying customer satisfaction by refining customers' service experiences. Instruments such as customer satisfaction surveys were used to identify developmental efforts' focal points. This catalysed initiation of service concept development projects, which were steered by business unit leadership teams that had two main objectives: enhancing customer experiences and boosting sales.

In the mid-2010s, an SD concept caught the company's attention, leading to the hiring of a professional SD agency for support. The partnership with the SD agency led to adoption of new practices. Customers were now at the centre of the information-gathering phase, offering insights into challenges with existing services and experience-based suggestions in new service ideation. The design agency's methodology extended beyond customer insights, drawing from employees and other stakeholders to refine the development brief. With the refined target, the agency created and tested alternative service prototypes, employing real customer and employee feedback during a pilot phase. This iterative process, grounded in customer interviews and observations, aimed to eliminate non-value-adding elements, culminating in a service poised for implementation.

Despite the initial positive reception, the transition to implementation unveiled significant challenges, mostly due to the lack of employee involvement in the creative process. This disconnect, coupled with the project's isolation within a singular business division, impeded integration of the new service into the customer's value creation system, leading to its eventual obsolescence in favour of newer solutions.

In response to these challenges, the late 2010s saw the company embark on an internal development process overhaul that entailed hiring professional SD practitioners, establishing specialised design hubs and disseminating SD knowledge across the organisation through targeted training sessions. This strategy cultivated a cultural shift and enabled leaders to embrace uncertainties inherent in early development stages, allowing for customer feedback and diverse perspectives to sculpt future services.

Customers' involvement, from the inception of development projects to the launch of new services, facilitated a deeper

understanding of the customer service ecosystem and stakeholder dynamics. Development teams inclusively comprised customer-facing staff, team leaders, marketing and communication experts, IT analysts, legal and compliance personnel and business case controllers. This fostered a collaborative environment that engaged more directly with customer needs. This collective effort ensured that the business case – and, by extension, the service – evolved more dynamically with each development phase, from prototyping to piloting and final implementation.

This transformative approach produced services that were not only operationally ready from their inception, but also resonated with the organisational fabric, reflecting an improved understanding of customer needs and challenges. The participatory nature of development fostered a better sense of ownership among employees, while customers who had been actively engaged since the pilot phase became advocates for the new services within their networks. This synergy between internal and external stakeholders ensured long-term success and continual improvement in services, anchored in a mutual recognition of benefits.

However, the sustainability and evolution of this holistic, customer-centric approach that was driving systemic service transformations depended on top management's strategic emphasis on these initiatives. Without this leadership buy-in, even the most innovative and customer-aligned activities would have fallen short of the transformative potential.

Systemic services in higher education

Higher education organisations, such as universities, can be understood as service systems embedded into broader service ecosystems. When an SI, such as a new degree programme, is developed and launched, it needs to be integrated into the university's existing service system, as well as broader regional, national and international service ecosystems around it. The launch of a new PhD programme in real life at a Finnish university illustrates the systemic aspects of SI and SD.

In this example, the initiative to establish the new PhD programme was rooted in the university's strategic alignment as it aimed to address several global challenges. This strategic orientation led to the launch of a co-creation process that aimed to develop dedicated research communities around each challenge. This process marked a significant step forward in social innovation within Finnish higher education, leading to the establishment of more than 10 research communities, including an interdisciplinary research community focusing on innovation in the brain health context. This community brought together 24 research groups from diverse research fields, including medicine and biomedicine, innovation management, data and social sciences and law.

Designed to train a new generation of innovation leaders capable of bridging gaps among academia, industry and society, establishment of the new PhD programme relied on 30 external partners' support. These partners ranged from universities and companies to health organisations and patient organisations, playing a pivotal role in integrating the programme within broader regional, national and international SI ecosystems. The programme illustrates systemic SI around it, in which dedicated innovation service ecosystems significantly contributed to its development at different levels.

Implementation of the PhD programme required a comprehensive integration of programme-specific needs with administrative and academic services offered by the university and its faculties. Establishing an inter-faculty steering committee ensured the PhD programme's alignment between existing and new educational services offered at the university, and facilitated service integration that benefited the PhD programme. This approach exemplified a systemic SD perspective, in which the programme's integration required consideration of the complexities and interconnectedness of the entire university's service ecosystem.

In addition to the university's existing educational services, creation of new programme-specific services allowed PhD researchers to tailor educational experiences to their research interests and career goals. This personalisation of the educational pathway, underpinned by an interdisciplinary and cross-sectoral curriculum, represented a learner-centred approach within doctoral education. By emphasising problem-based learning projects that encouraged collaboration with external partners, the programme fostered an environment in which students could engage in real-world challenges, further

illustrating the systemic nature of the educational services provided.

In conclusion, development and implementation of a new PhD programme serves as an example of systemic SI and SD in the higher education sector. SI was achieved through a strategic reimagining of processes, extensive collaboration and co-creation across disciplines and societal sectors, and a commitment to integrating educational services within the broader ecosystems around it.

Critical summary

Research on SI and SD has indicated a paradigm shift from product-centric to service-oriented strategies to address current challenges across industrial and societal sectors. A critical observation across this research is the emphasis on systemic transformative approaches, highlighting the necessity for holistic thinking in the research, development, implementation and change in services. The systemic approach necessitates integration of diverse actors, stakeholder engagement and alignment of services with broader SI ecosystems.

While SI and SD's potential to address societal challenges has been recognised, critical analysis suggests that gaps exist between theoretical ideals and practical implementation, pointing to the need for increasingly adaptable frameworks and methodologies that can be used in more diverse organisational contexts. Challenges also remain in ensuring broader stakeholder engagement and navigating institutional structures' complexities for systemic service transformation.

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Further readings

Edvardsson, B., & Tronvoll, B. (2022). *The Palgrave handbook of service management*. Palgrave MacMillan.

Helkkula, A., Kowalkowski, C., & Tronvoll, B. (2017). Archetypes of service innovation: Implications for value cocreation. *Journal of Service Research, 21*(3), 284–301.

Koskela-Huotari, K., Patrício, L., Zhang, J., Karpen, I. O., Sangiorgi, D., Anderson, L., & Bogicevic, V. (2021). Service system transformation through service design: Linking analytical dimensions and service design approaches. *Journal of Business Research*, *136*, 343–355.

Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., Demirkan, H., & Rabinovich, E. (2010). Moving forward and making a difference: Research priorities for the science of service. *Journal of Service Research*, *13*(1), 4–36.

Patrício, L., Gustafsson, A., & Fisk, R. (2018). Upframing service design and innovation for research impact. *Journal of Service Research*, *21*(1), 3–16.

Prestes Joly, M., Teixeira, J. G., Patrício, L., & Sangiorgi, D. (2019). Leveraging service design as a multidisciplinary approach to service innovation. *Journal of Service Management*, *30*(6), 681–715.

Vink, J., Edvardsson, B., Wetter-Edman, K., & Tronvoll, B. (2019). Reshaping mental models: Enabling innovation through service design. *Journal of Service Management*, *30*(1), 75–104.

Vink, J., Koskela-Huotari, K., Tronvoll, B., Edvardsson, B., & Wetter-Edman, K. (2021). Service ecosystem design: Propositions, process model, and future research agenda. *Journal of Service Research, 24*(2), 168–186.

35. Social acceptance

Mariana Galvão Lyra

Outline of the topic

Social acceptance is commonly understood as the stakeholders' attitude towards the presence, installation or expansion of industrial plants, projects and new technologies. Therefore, the object of acceptance can vary, as well as who the stakeholders are and what their role and influence are as regards acceptance. As a dynamic process, social acceptance may take an active or passive form across different dimensions. Social acceptance tasks should be developed in tandem with the innovation management process to ensure that the ideation, as well as the technical, financial and social aspects of the project, are aligned and considered from the early stages. Industrial projects to advance emerging technologies are being deployed on a global scale, and the installation of such technologies has significant impact on different stakeholders and sectors of society. As the impacts of deployment are of concern to various stakeholders, the analysis of their perception, approval or rejection has gained vigour among business and society scholars and practitioners.

Conceptual overview and discussion

Concepts related to social acceptance aim to identify, map, predict, measure and respond to the inherent risks and transformations of projects and innovations involving stakeholders such as local communities, consumers, non-governmental organizations (NGOs) and local authorities.

The literature has evolved in two different streams: social licence to operate (SLO) and social acceptance. The former gained traction in the mining industry, with projects and companies as the object of acceptance, and evolved around risk assessments and the balance between harm and benefits to surrounding communities. Within this scenario, the role of stakeholders has usually been interpreted as less powerful and more passive in terms of influence. The latter stream developed in the energy industry and sought the acceptance of new/green technologies. Here, the role of local stakeholders is twofold: more passive when it comes to citizens and local communities' attitudes, but much more active when it involves consumers, and *prosumers*, individuals who both consume and produce energy. A good example of prosumers are solar panel owners, as they can sell the surplus energy produced by the panels to the grid and at the same time consume energy in their household.

With seminal literature originating in Canada, consolidated in Australia and then reaching European and Latin American scholars, SLO has been applied widely to the mining industry, but has also received attention in the context of forestry and wind energy projects, for example. SLO consists of three core components: trust, credibility and legitimacy. These aspects are interlinked: legitimacy is seen as a foundation for trust, which is also closely associated with the credibility of a project.

Groundbreaking research on social acceptance has broken it down into three dimensions: socio-political, community and market. The socio-political dimension refers to the general or macro level, shaped primarily by the attitudes of policymakers, in addition to the wider actor-network, including the public. Community acceptance has a local, territorial focus and it largely encompasses issues of social trust and procedural and distributional justice. Bridging these dimensions, market acceptance focuses on consumers, investors and intra-firm acceptance.

Such dimensions need to be thought through and considered as a premise from the planning stages. Doing so in the realm of innovation management, for instance, will refine the ideation stage and increase stakeholder participation in preliminary discussions, thus mitigating and reducing potential resistance in the market and implementation phases. Social acceptance is critical in the context of emerging technologies, where a knowledge gap typically exists between innovation providers (those with technical and technological knowledge) and organizational and societal stakeholders (those with limited or no technical and technological knowledge).

It is pertinent to note that innovation projects that aim to convert current energy systems into renewable ones depend largely on socio-technical transformations. Consequently, stakeholders should not only accept the projects or the technology, but especially the institutional changes that would accompany them. Seed investments, restructured markets, new policies and taxation systems and a new use of space for infrastructure

and logistics development are all needed to promote the necessary transformation that technology deployment requires.

Application

In practical terms, we can use the emergence of renewable energy innovations, such as wind power, to explore the dynamics of social acceptance. Broadly speaking, an innovation's acceptance requires actors and markets to embrace the socio-economic conditions necessary for its implementation and to accept the associated consequences for societal practices. Market efforts have evolved significantly over time. In 2023, wind power represented 55 per cent of all new power capacity in Europe, with an investment of €48 billion. Alongside that, socio-political transformations, such as the EU Wind Power Package, represent new policies that promote such innovation. However, wind power implementation has been slower than anticipated due to issues, mostly, regarding social acceptance. Many studies have focused solely on the technology and the passive role of stakeholders, neglecting the impact of social determinants on the process.

Energy and society scholars have suggested considering the following issues when empirically assessing the social acceptance of emerging technologies: age group, socio-economic status, political beliefs, environmental attitudes, perceived effects and intention to use. Additionally, Devine-Wright highlighted the role of positive emotional bonds between people and their surrounding environment, which may motivate active support or opposition. Alongside place attachment, the notion of perceived fairness, especially in terms of the distribution of risks and benefits for local communities, is highly significant in explaining public resistance to project development.

Research on social acceptance has shown that the initial overestimation of the willingness of key stakeholders and policymakers to make institutional changes for technology deployment has led to unmet expectations. The assumption that new entities would automatically invest in wind schemes proved inaccurate. Additionally, host communities raised concerns about noise pollution, landscape changes and impacts on birds and nests, for instance.

From the social acceptance point of view, ensuring local involvement, building trust and addressing community concerns are crucial for successful projects. When trust is established, cooperation, communication and commitment are more likely to follow.

Critical summary

Studies on the feasibility of emerging technologies rarely focus heavily on social acceptance. What is lacking from practice and literature is thus more robust engagement that encompasses the perceptions, inclusion and participation of multiple stakeholders, including policymakers, investors and the public. Such tasks need to be developed hand in hand with the innovation management process to ensure that all aspects of the project are aligned and considered from the preliminary stages.

Not only is it pertinent to underscore the level of awareness and participation of stakeholders, but also to understand the extent to which different stakeholder perceptions influence the deployment and diffusion of emerging technologies.

Historically, the motivation to secure social acceptance has led companies and projects to neglect stakeholders who might pose a risk and/or who are unwilling to participate in public hearings or further develop a relationship with the company. To date, the role of such fringe stakeholders from project design to implementation remains largely overlooked by industry and the academic community. It is imperative to incorporate the perspectives of marginalized stakeholders when evaluating social acceptance.

Further readings

Devine-Wright, P. (2011). Place attachment and public acceptance of renewable energy: A tidal energy case study. *Journal of Environmental Psychology*, *31*(4), 336–343.

European Commission. (2024). *EU wind energy.* https://energy.ec.europa.eu/topics/renewable-energy/eu-wind-energy_en

Gordon, J. A., Balta-Ozkan, N., & Nabavi, S. A. (2022). Beyond the triangle of renewable energy acceptance: The five dimensions of domestic hydrogen acceptance. *Applied Energy*, 324, 119715.

Wolsink, M. (2012). The research agenda on social acceptance of distributed generation in smart grids: Renewable as common pool

resources. *Renewable and Sustainable Energy Reviews, 16*(1), 822–835.
Wüstenhagen, R., Wolsink, M., & Bürer, M. J. (2007). Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy*, *35*(5), 2683–2691.

PART III:

CREATIVITY, DIVERSITY AND POWER IN INNOVATION

36. Affect and creativity

Caterina Bettin and Eeva Aromaa

Outline of the topic

Creativity and innovation are intertwined yet distinct concepts. Creativity is a multifaceted process of engaging with the world in ways that generate, transform, reinterpret, and reimagine forms, practices, or meanings. Innovation refers to the more concrete process of creating something new by reconfiguring existing elements and relationships into novel arrangements that bring meaningful change or value to a given context.

Over the past two decades, the broader field of management and organizational studies has increasingly questioned the notion of creativity as an exclusively human attribute. Instead, it has shifted its focus to its material, embodied, and sensory dimensions, conceptualizing creativity as an emergent capacity that involves and is shaped by both individuals and non-human actors.

In this entry, affects are understood as embodied and relational intensities; something that is experienced and expressed through the physical body and that cannot be completely grasped by rational thought. To explore affects is thus to draw attention to the embodied and sensorial responses ignited by encounters with other human and non-human actors, whereby all parties are affected and shaped by reciprocal relations. By considering the mediating role played by materiality in creative work and the sensorial intensities it contributes to generate, the perspective of affects offers more nuanced insights into the creative processes and how it can be better sustained and promoted.

Conceptual overview and discussion

In recent decades, the interest in affect theory has blossomed in research literature. Feminists, critical theorists, queer theorists, social geographers, and cultural critics have been treating affect as a legitimate topic of academic inquiry since the mid-1990s. The 'affective turn' has focused on the physical body and its interactions with the world as central to how reality is perceived and made sense of. This has prompted explorations of affects, conceptualized as the sensorial and beyond-rational experiences emerging in the encounters with other human and non-human entities. Otherwise put, affects are the embodied and relational outcomes of interactions that impact all the actors involved and that, in turn, are impacted by them.

The following fictional vignette provides a brief example of the relational, sensorial and emergent nature of affect in the context of a creative ideation session of a team. The common meeting room is quiet, its walls are white and empty. It is the first meeting on a Monday morning. One person is reading the briefing from the client with a monotone voice. Some team members are taking notes, heads down on their tablets; others are drinking too-bitter coffee from paper cups. The person reading the instructions on the task is finally done. Silence. Some heads surface from the tablets. More silence. Eyes start to gauge whether someone will say something. Eventually, someone puts down the paper cup and shares a first idea. It is raw and fuzzy. Yet, somehow it resonates with someone else, who suggests a small refinement. A third person chimes in, turning the tablet so that all team members can see a picture of the latest product launched by the competitor. Someone makes a funny but slightly inappropriate comment, and everyone laughs. Many speak now, often talking over each other. Fresh coffee is ordered, this time from the 'good' coffee shop downstairs. The room is now almost too loud. Blocks of colorful sticky notes are shared among the group, and they end up covering the good part of two walls. Everyone senses that the atmosphere has changed, from sleepy and lethargic to energetic and full of enthusiasm.

Due to the wide range of academic fields interested in the embodied, the emotional and the sensorial, it is not surprising that the literature on affect comprises multiple theoretical approaches. As outlined by Fotaki and colleagues, there are four main theoretical orientations that have influenced the study of affect in organizational scholarship. Given the paucity of research focusing on affect in innovation, these approaches can provide new insights to inform studies of the processes of organizing, managing, and leading innovation-related activities in their situated context.

The first orientation is the psychosocial one, rooted in psychoanalytical thought. Here affect is framed as an impulse that drives us to invest in specific symbolic social and cultural elements, forming emotionally charged bonds with them. For example, Fotaki's

analysis of how trust works affectively in the relationships between patients and the health care system in England can inspire explorations of how affects infuse creativity, working to keep employees and managers attached to (or detached from) innovation and entrepreneurial processes.

The second approach draws on Deleuze's interpretation of Spinoza and conceptualizes affects as forces independent from human subjects that connect and shape both human and non-human entities, moving them through a process of never-ending becoming. Innovation scholars can draw on Beyes and De Cock's suggestion to investigate colors as affective forces that impact on our bodily capacities and collective moods, providing a fruitful theoretical approach to theorize creativity and innovation.

The third orientation, namely the feminist new materialist, is also influenced by Spinozian-Deleuzian thought. Central to this approach is the problematization of the liberal humanist understanding of human subjects as autonomous, self-contained and rational agents. In contrast, new materialist feminists frame subjectivity as affective, relational and always-in-becoming, with endless potential to be transformed by virtue of one's capacities to affect others and entities, and, in turn, to be affected by them. This orientation can resonate with scholars interested in entrepreneurial and creative identities, as it advances a conceptualization of subjectivity as emergent from and constituted by an open network of meaningful relationships with other humans, materials, creative practices, and discourses.

Finally, the fourth approach highlights the politico-emancipatory potential of affect. Arising out of feminism, queer theory, disability studies, and activist work, this perspective provides insights into power dynamics, critically examining how affects can be engineered to sustain dominant regimes of normalcy. This orientation has helped foster discussions of how harmful organizational practices can damage our understanding of ourselves and those around us, while also providing fresh insights on how to enact resistance and reappropriate affects in a transformative and emancipatory manner. For example, van Amsterdam and colleagues' study of 'fat' women employees explores shame as the affective outcome resulting from interactions between prevailing health discourses and material aspects in the workplace (e.g. furniture and work clothes), outlining how it contributes to the regulation and marginalization of bodies that do not conform to what is considered normal in the workplace (e.g. being able-bodied, slender, etc.). Innovation scholars interested in more critical perspectives may find this approach helpful to explore the affects resulting from the relations between the prevailing discourses and the material infrastructures that sustain innovation processes (e.g. spaces, artefacts, technologies), casting light on how the affective dynamics emerging from these interactions contribute to the regulation and marginalization of specific actors, working to produce 'good' creative professionals and entrepreneurs, as well as 'acceptable' products and services.

Despite internal conceptual distinctions, discussions of affect have become more and more prominent in the management and organizational literature because of their ability to capture sensorially charged but more elusive textures of organizational life. Along the same lines, theories of affects have availed conceptual resources to discuss also questions of method by inviting researchers to pay attention to their capacity to affect and being affected by the research process. Gherardi's 'affective ethnography' is an example of how affect can be used to inform ethnographic work. This approach calls for an attunement to the sensorial intensities that are produced in the researcher's encounters with the empirical field, the data, the writing, etc. The goal is to account and explore the active role played by affects in shaping the research process and its findings, tracing how they shape them and, at the same time, are being shaped by them.

Application: affect in the creative industries

While explorations of affect have been carried out in a variety of empirical organizational settings (e.g. healthcare, higher education, non-profit organizations), particularly relevant to innovation scholars are studies of affect in the creative industries. These analyses challenge traditional views of creativity as an innate trait of solitary geniuses. Instead, creativity is seen as emerging from interactions between human and non-human actors and the affects produced in these interactions.

For example, drawing on Deleuze's notion of assemblage, Duff and Sumartojo analyze

a Melbourne artist's creative process. The artist emphasizes the key role of community and shared experiences in fuelling her creativity, but these were hindered by her studio's architectural arrangement, which did not facilitate connections with others. Frustrated, she sought the much-needed sense of connection and collaboration with her brother, also an artist but based in New York, through an always-open Skype window. This virtual extension of her studio eventually led her to find a new home with a dedicated workspace suited to facilitate remote collaborations via Skype.

By emphasizing the active role played by office spaces, laptops, and software and the affects generated by the encounters between materiality and the artist, Duff and Sumartojo reconceptualize creativity as an emergent and affective capacity to connect ideas, practices, innovations, materials, and techniques to generate something new. This capacity is broadly shared between both human and non-human actors, with the latter understood as also actively shaping creative practices by enabling certain capacities while limiting others.

The critique of human-centric and rationalist approaches to creativity is central also in Leclair's study of a fashion studio designing its new collection. Here, the creative process is understood as engendered in the sensorially charged encounters of the designers' body with fabrics, dyes, samples of garments, peer designers, etc. Beyond providing an account of the creative process as a chaotic and emergent phenomenon influenced by the material and spatial conditions of the environment, Leclair's study draws attention to how spaces and affects are manipulated to shape creative practices. Specifically, it argues that the affective atmospheres generated in the encounters between materials and bodies are inherently political, as they are strategically used to control and direct creative work, thus shaping how creativity is experienced and valued within organizational settings.

Overall, these two articles suggest that affective engagements with creativity offer innovation scholars a conceptual toolkit to expand their explorations. Going beyond the well-charted territories of the rational, the cognitive, and the human-centric, a focus on affect unlocks more distributed and relational understandings of how creativity and innovation are achieved in specific contexts. Connecting bodies, things, and practices that shape each other reciprocally, affects express new capacities while inhibiting others, impacting on the emergence of creative and innovative practices and processes or on the development of new products and services.

Critical summary

Engaging with affect calls for a shift in focus to the material, embodied, and relational aspects of organizing. It invites researchers to pay attention to the active role played by creative professionals as well as spaces, techniques, materials, and technologies in shaping creative and innovative outcomes, attending to how these actors influence and are influenced by the world around them.

While many academic fields have increasingly focused on the study of affect, this topic remains largely underexplored within the realm of innovation. Yet, studies discussing the role of affect in the creative industries demonstrate its potential to unsettle traditional and rationalist perspectives on creativity and innovation. This is because they question the centrality of human agency and the taken-for-granted notion that creativity is an inalienable attribute possessed by selected individuals with particular cognitive, aesthetic, or social skills.

Overall, the perspective of affects can inform innovation scholars' research in three ways. First, affect can be seen as a *topic of investigation*, informing more nuanced descriptions of creative practices and innovative products and services. Second, the perspective of affects can be used as a *conceptual toolkit* to rethink the interplay of dynamics of stabilization and change in a variety of contexts related to innovation and creativity. Third, affect can also become a fruitful methodological approach for innovation scholars, one that invites them to reimagine their existing practices *affectively*. This require an attunement to the embodied and sensorial dimensions of research, and an increased focus on the capacities of academic work to shape and, in turn, be shaped by the innovative and creative processes and practices that are to be explored.

Acknowledgment

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Further readings

Beyes, T., & De Cock, C. (2017). Adorno's grey, Taussig's blue: Colour, organization and critical affect. *Organization*, *24*(1), 59–78.

Duff, C., & Sumartojo, S. (2017). Assemblages of creativity: Material practices in the creative economy. *Organization*, *24*(3), 418–432.

Fotaki, M. (2014). Can consumer choice replace trust in the National Health Service in England? Towards developing an affective psychosocial conception of trust in health care. *Sociology of Health & Illness*, *36*(8), 1276–1294.

Fotaki, M., Kenny, K., & Vachhani, S. J. (2017). Thinking critically about affect in organization studies: Why it matters. *Organization*, *24*(1), 3–17.

Gherardi, S. (2019). Theorizing affective ethnography for organization studies. *Organization*, *26*(6), 741–760.

Gregg, M., & Seigworth, G. J. (2010). *The affect theory reader.* Duke University Press.

Hunter, C., & Kivinen, N. (2023). Introduction: Affect in organization and management. In C. Hunter & N. Kivinen (Eds.), *Affect in organization and management*. Routledge.

Leclair, M. (2022). The Atmospherics of creativity: Affective and spatial materiality in a designer's studio. *Organization Studies*, *44*(5), 807–829.

van Amsterdam, N., van Eck, D., & Meldgaard Kjær, K. (2023). On (not) fitting in: Fat embodiment, affect and organizational materials as differentiating agents. *Organization Studies*, *44*(4), 593–612.

37. Ageing and innovation

Stefanie Ruel

Outline of the topic

Instead of concerns for 'older' individuals as innovation users, this entry considers what we know about the nature of age and ageing in organisations as these concepts and contexts relate to innovation within work/entrepreneurship responsibilities. Age and ageing in organisations can be (re)produced within grand narratives and myths, essentialising and universalising the 'older' worker or entrepreneur into one stable, stereotypical understanding of this individual. Such constructions position this 'older' individual as incapable of being innovative or, more precisely, not able or willing to contribute to either incremental or radical innovative product creation and the accompanying innovative processes and practices. This age-dependent incapability stereotype is linked to certain prescribed ideas about what it means to be 'old' and to these 'older' individuals' possible rigidity in thought and age-dependent physical inabilities. Similarly, 'older' workers or entrepreneurs are often compared to their 'younger' counterparts, (re)creating an age-dependent individual as the norm against which innovation capacity is measured, ignoring other concepts such as education levels, motivation and employer characteristics. The tone and the approach taken by many age and ageing studies within the context of organisations replicate this determinism and contribute to the proliferation of negative connotations associated with the 'older' worker or entrepreneur, or speak to self-evidence for age and ageing in the workplace. This entry brings chronological, time-dependent assumptions to the reader's attention, inviting them to deconstruct such notions while also opening avenues of inquiry in the application of age and ageing in relationship to innovation in management and organisation studies (MOS).

Conceptual overview and discussion

The Western MOS scholarly literature is limited concerning the issue of age and the accompanying notion of ageing in the context of organising, managing and leading in the field of innovation as a creative force in work and productivity. While much of this limited literature can be separated thematically into societal, organisational and individual categories, the tone and the approach taken within many of these Western-based studies present deterministic, essentialising treatments of 'age as decline' and of 'fetishising youth' as Thomas and colleagues point out. Such grand narratives and age myths can and do universalise the 'older' worker and the 'younger' worker into stable, stereotypical understandings that recreate divisions that marginalise and ultimately result in discriminatory practices proliferating in organisations. These boundary-setting practices that attempt to resolve the organisational 'age problem' can lead to deep-seated negative and oppressive practices, notably when focused on driving innovation capacity while ignoring concerns such as education levels, motivation and employer characteristics that can all have an impact on innovation initiatives.

As Aaltio and colleagues tell us, there are interesting debates surrounding age and ageing and organisations that underscore a need for expanding our knowledge of the very nature of age and ageing. Calls to productive ontological and epistemological approaches to conceptual age and ageing are one aspect of these debates, such as 'active ageing' or 'successful ageing' (i.e., being physically fit, healthy, independent and current on recent knowledge). Cultural treatments of age, beyond the documented Western ambivalence towards its ageing employees, as Aaltio and colleagues point out, can also be called upon to accentuate various societies' approaches to productive constructions of age and ageing. For example, from an Indigenous knowledges perspective, Price and colleagues acknowledge that time is connected to age and ageing. However, Indigenous Elders recognise that their 'knowledges are not acquired exclusively in a linear way'. The continuum and processes of experiences in places that can be circular or interrupted drive Indigenous ways of knowing. At the same time, 'older' age does not have to bind itself exclusively to individuals recognised as Indigenous Elders. Emotions and feelings surrounding age and ageing can also be studied as an aesthetic force that brings 'older' and 'younger' workers/entrepreneurs together, as Ruel and colleagues' special issue addresses. There are also the non-uniform experiences of peri-menopause, climacteric, menopause and post-menopause

explored and shared via biopsychocultural, narrative-based and intersectional political economy approaches. Such a construction moves beyond age-dependent definitions of menopause for cis women and transgender and gender non-conforming (TGNC) individuals, as Brewis and colleagues' report addresses, and so can impact characteristics of the employment environment (e.g., temperature control individually available in one's office) and the menopausal worker's ability to contribute to employer-driven innovation capacity and productivity.

On the other side of the ontological and epistemological spectrum, we can and do see the nature of age and ageing intersecting with an individual's identity complexities (i.e., race, ethnicity, gender, sexual orientation, [dis]ability etc.) along with these individuals' discriminatory positioning within organisations and society. Notably, age and ageing are often constructed as legitimate means for social discrimination to occur. As Hearn and Parkin underline, gendered ageing can result in the triple jeopardy of ageism, sexism and 'lookism' for many cis women in the entertainment workplace. These constructions of age with identities in organising and organisations can be, nonetheless, moved away from the age-dependent state of being definitions and (re)created through a social constructivist lens or a materially-discursive approach with the third age (i.e., those who have active engagement in formal organisations, whether paid or unpaid) or the fourth age (i.e., those who are dependent, marginalised and potentially isolated in care homes) as most recently seen in Hearn and Parkin's book. Such an approach again moves away from the determinism of age and ageing while allowing for a view into discriminatory practices through social interactions and performance, or the materially discursive interplay with technological artefacts (i.e., non-human elements such as a walker) with ageing individuals (i.e., human elements) that are not necessarily chronologically age-based. There are then multiple reflexive subjectivities that are possible in the nature of age and ageing, and the accompanying organisational and society-based discriminatory practices that can ensue, that need to be considered in the relationship with innovation.

Folding in the notion of work and its corollaries of job, occupation and career(s), which are all broad concepts, also need to be unpacked in light of the intersection of age and ageing with organisations and innovation. In entrepreneurship contexts, some age assumptions can perpetuate the notion that only the 'younger' entrepreneur is the source of creative and innovative changes and disruptions, such as the generation of scientific patents or creative works by artists and writers. In comparison, the 'older' entrepreneur is often constructed as an individual who cannot exist in such a context beyond an economic need to sustain themselves in their remaining 'older' working years. However, as Klinthäll and Sundin found in Sweden's technical consultancy and artistic and literary work entrepreneurship contexts – both highly innovative and creative fields – there is a peak in the number of self-employed individuals between the ages 60 and 70. Furthermore, more than 45 percent of respondents in 2010 reported that they decided to go into entrepreneurship to realise their dreams or because their product was needed (i.e., opportunity entrepreneurship). In contrast to the economic need myth that appears to dominate innovative entrepreneurship fields, only 8 percent of these 'older' entrepreneurs reported going into entrepreneurship due to anticipated unemployment or unemployment (i.e., necessity entrepreneurs).

When the meanings of age and ageing are interwoven into these various concepts that represent 'work' and innovation capacity, the movement of 'older' individuals with-in and with-out organisations increasingly exposes them to a spectrum of power relations. For example, in the context of with-in 'work', Mothe and Nguyen-Thi consider human resource management (HRM) practices and processes concerning diversity based on age and ageing interacting with innovation. While they use some boundary-setting practices of 'young' versus 'old' workers, the construction of innovation as a social process acknowledges the need for diverse employees to participate and interact with each other, pulling on various identities and cognitive dimensions to influence an organisation's innovation performance. Mothe and Nguyen-Thi focus specifically on age polarisation and variety and the relationships with technological innovation (i.e., product and process). They investigate the HRM practices of development, teamwork, information sharing, financial incentives and work-life balance acting as potential moderators in this relationship between age and technological innovation.

In their quantitative-based study, the authors found that technological innovation is related to age diversity and that these HRM practices moderate this relationship. In particular, age diversity is significantly associated with product innovation but not process innovation, with the HRM moderating effects of information sharing impacting product innovation but not process innovation. At the same time, teamwork did appear to act as a moderator for process innovation and age variety. In the context of with-out organisations, ageing individuals may circulate between paid and non-paid work, commonly called 'non-working'. Such voluntary work can be an avenue for 'older' individuals to engage with work after the North American and European prescribed retirement age of 65. Hearn and Parkin's individual experiences, shared through their respective autoethnographies where they self-identify as being respectively within the third and fourth age, underscore the potential for organising innovation processes in voluntary work contexts while navigating discriminatory practices surrounding them and sometimes impeding their creative contributions to organisations.

Application

The grand narratives and age myths that universalise the 'older' worker into one stable, stereotypical positioning of being non-productive, non-innovative of ill-health and who should/must 'retire' can overtake the call for critical interrogations of age and its accompanying concept of ageing. Age can be historically, culturally, materially and socially defined as being dynamic and changeable. How to surface such critical, anti-essentialising meanings and discourses around age beyond stable Western, gendered and heteronormative-dominant chronological, time-dependent assumptions remains, for the most part, an unanswered question in MOS ageing and innovation studies.

Moving away from these deterministic constructions of age has been given some limited measure of a voice. We see this from Aaltio and colleagues' edited book and Thomas and colleagues' journal publication; however, much work remains since, as Hearn and Parkin tell us, 'the meaning and identity of age is still mysterious'. Ruel and colleagues' special issue underscores some of these struggles that scholars face with the visible and the invisible aspects of age, ageing and the accompanying relationship with innovation capacity in organisations. The articles in this special issue bring into focus the possible productive fluidity or less-fixed social and material constructions of age, and how they may interact with innovation processes and products with-in and with-out organisations. The methodological frameworks, such as a study of discourses, power or the materially-discursive (de)constructions of age/ageing and innovation, open doors to explorations beyond binary ontological and epistemological constructions (i.e., 'young' versus 'old', hetero-normative versus non-hetero-normative, men versus women, creative youth versus non-creative elders, etc.) of the worker/entrepreneur. Bringing such a multifaceted, age-sensitive lens by embracing, for example, a social constructivist lens pushes us to consider these critical interrogations and deconstructions of age as they relate to innovation.

Perhaps controversially for some, another application of the conceptual age and ageing frameworks with innovation is the socially and culturally productive deconstructions of death and post-death, or navigating the power of absence, that Hearn and Parkin address eloquently. With their enumerated possibilities for productive death deconstructions, we can move away from gerontological research focused on bio-medicalised age, ageing and medicalising death, healthcare and the associated terror and fear-of-death concerns that permeate much of the literature on death, age and ageing. For example, the 'dead' person, 'dead' product, 'dead' career, 'dead' organisation, 'dead' entrepreneurship venture can continue to exercise power over the living via grief and grieving processes. Productive and oppressive expressions of these processes can propel the living forward into the future to seek out those technological or process innovations or, in contrast, hold that living in limbo, neither moving forward nor backward, unable to create or innovate. In other words, we can be in a state of being that exists with the living and with the 'dead', and we can experience post-death in and among organisations and in acts of organising beyond a predefined essentialised age.

Critical summary

While negative stereotypes and myths surrounding ageing and innovation contribute

to recreating meanings that marginalise the 'older' worker/entrepreneur, various lenses and approaches can work productively within a critical anti-ageist standpoint. More work must be done to untangle categorisations that position these 'older' workers/entrepreneurs as incapable or unwilling to contribute to innovation, broadly speaking. Beyond diversity concerns, inclusive practices and processes built on undoing discriminatory barriers must also be part of the organisational lexicon within MOS age and ageing studies. The reader is invited to take such an anti-essentialist stance concerning age and ageing, to move beyond a binary static axis of being 'old' versus 'young', and, in the process, contribute to new ways of knowing regarding ageing and innovation.

Further readings

Aaltio, I., Mills, A. J., & Helms Mills, J. (Eds.) (2017). *Ageing, organisations and management: Constructive discourses and critical perspectives*. Palgrave Macmillan.

Brewis, J., Beck, V., Davies, A., & Matheson, J. (2017). The effects of menopause transition on women's economic participation in the UK. Research Report for the U.K. government. https://menopauseintheworkplace.co.uk/wp-content/uploads/2020/04/menopause_report.pdf

Hearn, J., & Parkin, W. (2021). *Age at work: Ambiguous boundaries of organisations, organising and ageing*. Sage Publications.

Klinthäll, M., & Sundin, E. (2017). The older as entrepreneurs: A diversified group-illustrated through entrepreneurship in technical consultancy and artistic literary work. In I. Aaltio, A. J. Mills & J. Helms Mills (Eds.), *Ageing, organisations and management: Constructive discourses and critical perspectives* (pp. 277–300). Palgrave Macmillan.

Mothe, C., & Nguyen-Thi, T. U. (2021). Does age diversity boost technological innovation? Exploring the moderating role of HR practices. *European Management Journal*, 39(6), 829–843.

Price, S., Hartt, C., Yue, A., & Pohlkamp, G. (2017). We the Inuit: Fluid notions of age and non-corporeal actants. In I. Aaltio, A. J. Mills & J. Helms Mills (Eds.), *Ageing, organisations and management: Constructive discourses and critical perspectives* (pp. 17–41). Palgrave Macmillan.

Ruel, S., Aaltio, I., Römer-Paakkanen, T., & Ozkazanc-Pan, B. (2022). Guest editorial: Meanings, contexts and future of ageing studies: Intersections of age and ageing with organisations. *Qualitative Research in Organisations and Management: An International Journal*, 17(2), 161–170.

Thomas, R., Hardy, C., Cutcher, L., & Ainsworth, S. (2014). What's age got to do with it? On the critical analysis of age and organisations. *Organisation Studies*, *35*(11), 1569–1584.

38. Atmospheric creating and innovating

Margot Leclair

Outline of the topic

Recognizing the role of materials and bodies in creative and innovative processes is crucial for understanding how affect is generated and embedded in such processes. The interplay between materials and bodies infuses the atmosphere with emotions and sensations, transforming the creative body into an indispensable component within a multifaceted environment. Whether it is the tactile sensation of an artist's brush on a canvas or the resonance of musical instruments in a studio, the affective dimensions of these interactions permeate the creative space, shaping the outcomes. By adopting an atmospheric approach, we can uncover the complex connections between individuals, materials, and the environment in which creativity thrives. Organizations, in particular, provide a fertile ground for exploring such atmospheric constitution of creativity. The physical spaces, objects, and social interactions within an organization contribute to the atmospheric qualities that stimulate creative processes.

Conceptual overview and discussion

A growing movement in organizational creativity studies recognizes the need for a relational ontology that transcends traditional boundaries between people and objects. This perspective sees creativity as an emergent, embedded, and distributed phenomenon. Geography, and its concept of atmosphere, brings light to these relational aspects. By embracing atmospheric thinking, the material, affective, and spatial origins of creativity are brought together. The interplay between those elements encompasses the concept of atmosphere. Atmospheres, as spatial formations where affect emerges, provide insights into the productive interplay between objects and space within organizational contexts. An atmospheric approach allows us to explore the intricate connections between affect and creative work, indissociable from innovation. Creativity thrives in atmospheres rich with affect, where encounters between materials and bodies generate a palpable energy that propels the creative process forward. Whether in a fashion studio, an artist's workshop, or a musical rehearsal space, the atmosphere plays a pivotal role in shaping the creative output. The atmosphere (understood as the concept encompassing affect, space, and materials combined) is thus always present during the process of creating and innovating in time and space.

An atmospheric approach also enables us to uncover the darker and more critical aspects of creativity, examining the intimate connection between embodied experience, sociomaterial norms, and practices. It acknowledges that creativity and innovation do not exist in isolation but are entangled in sociomaterial contexts and shaped by contingent factors. In the current era that Reckwitz calls "aesthetic capitalism", where aesthetics and affective elements play a significant role in shaping organized life, understanding the politics of atmospheric creativity becomes essential. Organizations increasingly employ aesthetic strategies to engage consumers and create affective experiences. Processes of affective ordering and the aestheticization of everyday life impact not only the products and services offered but also the organizational dynamics and creative practices within. An atmospheric perspective sheds light on the intertwined relationship between creativity, aesthetics, affect, and the sociomaterial fabric of contemporary organizations.

Application

In the fashion industry, for instance, designers engage in a variety of activities that incorporate artefacts, experimental approaches, and collaborative gestures, all aimed at eliciting affective reactions and fuelling creative work. The fabric becomes a focal point through which designers channel their activities. The arrangement of pieces, the exploration of textures, and the sewing trials all contribute to organizing affective experiences, infusing creativity into the very fabric of the collection.

In a case study that focuses on a French high-end fashion house, Leclair identifies three main dimensions that characterize creative work in studio.

1) *The Happenings of the Material*. Fabric plays a central role in the design process, with designers drawing inspiration from the materials they work with. Fabrics such as silk or linen are seen as each

having their own evocative power, guiding the design process. Leather and rubber do not react in the same way to the sewing machine. The designers engage with fabrics through sensory experiences, such as touching and smelling. The study emphasizes the unpredictable and personal nature of affective reactions to materials.

2) *Bodies in Performance and Nothing Considered as Definitive.* Designers' creative process involves experimentation and performance. They try out different combinations of fabrics and designs, often involving their own bodies to assess the garments' fit and appearance. The process is dynamic and characterized by openness to change and adaptation. Designing is seen as a continuous and unfinished process, influenced by affective reactions to the work in progress (dyes, fittings).
3) *Spatialized Affect(s): An Enveloping Milieu and Its Broader Influences.* The studio environment is described as an affective constellation, where designers engage in creative work. The studio's spatial configuration and sensory elements create atmospheres that affect the designers' work. The study also acknowledges external influences, such as what is "hype" (industry trends) and when (fashion calendars), which indirectly shape the creative process.

This study highlights the interconnectedness of materiality, bodies, and atmospheres in the fashion design process. It demonstrates how atmospheric qualities within the studio and external influences play a role in shaping the creative work of designers. Similar atmospheric dynamics can be observed in other creative domains as well. Poets and musicians channel their activities into the happenings of sounds, painters into the happenings of colours, and choreographers into the happenings of their dancers' bodies and movements. The atmospheric connections to environments and contexts may vary across different creative realms, but they all depend on affective and spatial elements.

Critical summary

Thinking about the atmosphere undermines the prevalent idea that creativity can be reduced to a casual or playful activity, or that it hinges solely on trendy workspaces adorned with vibrant colours and recreational amenities. While it does acknowledge the role of an open and stimulating environment in fostering creativity, it also underscores the significance of the specific spatial and temporal context in which creativity takes shape. The potential of atmospheric thinking as a way to explore the spatial and affective dimensions of material encounters yet remains underinvestigated in organizational and innovation scholarship. Prior research on the intersection of creativity and affect primarily focuses on humans, referring to an affect-based ontology of human practice. Yet, examining creativity and innovation solely from a human-centric viewpoint lacks sense. As explained earlier, the creative process is non-linear and perpetually occurs through performative actions between human bodies and material things in constant interplay. To fully grasp the concept, one must consider the various non-human factors and influences that shape it. By acknowledging the atmospheric interplay between materials, bodies, and external influences, we gain a richer understanding of the creative and innovative processes. This perspective calls for further exploration and research to fully comprehend the situated nature of atmospheric creating and innovating across various creative industries and organizational contexts. Embracing the dynamics of atmospheric creativity and innovation also raises political concerns. It offers an opportunity to understand the regulated landscape of modern creative and innovative pursuits in our visually driven society. For instance, shaping an atmosphere not only establishes standards for the pace and excitement surrounding specific creative innovations, as in start-up environments, it may also sideline individuals and ideas requiring more contemplation and time for development.

Further readings

Anderson, B. (2009). Affective atmospheres. *Emotion, Space and Society*, *2*(2), 77–81.

Bell, E., & Vachhani, S. J. (2020). Relational encounters and vital materiality in the practice of craft work. *Organization Studies*, *41*(5), 681–701.

Jørgensen, L., & Holt, R. (2019). Organization, atmosphere, and digital technologies:

Designing sensory order. *Organization*, *26*, 673–695.

Leclair, M. (2023). The atmospherics of creativity: Affective and spatial materiality in a designer's studio. *Organization Studies*, *44*(5), 807–829.

Reckwitz, A. (2017). *The invention of creativity: Modern society and the culture of the new*. Polity.

39. Creative environments

Mika Pantzar

Outline of the topic

According to Jon Gertner, the 20th century can be characterized as the Great Age of American Innovation. Innovation became increasingly characterized by industrial laboratories, an expanding division of labor and the increasing role of scientific knowledge. Biographies of famous inventors of computers, such as John von Neumann, Claude Shannon, Norbert Wiener, and Herbert Simon, highlight the relevance of enabling and permissive environments. Bell Labs and the Institute for Advanced Study (IAS) are recognized examples of how the requirements and nature of the creative environment changed during the 20th century. Both institutes have played a central role in the early development of digitization.

Bell Labs, founded in 1925 by AT&T and Western Electric, was one of the most successful and famous successors of Edison's laboratory. It is currently part of Nokia. In the scientific field, the new era was manifested in the IAS in 1930. The founder Abraham Flexner argued forcefully that the most important scientific discoveries and technological innovations are driven more by curiosity than utilitarian thinking. His 1939 article 'The usefulness of useless knowledge' was titled accordingly. Marconi's radio or Edison's light bulb could not have been born without the seemingly useless playing with new ideas of previous generations. IAS identifies itself still today as 'one of the world's leading centers for curiosity-driven basic research'. Since 1930, it has served as a model for protecting and promoting independent inquiry, prompting the establishment of similar institutes around the world, and underscoring the importance of academic freedom worldwide.

Conceptual overview and discussion

From independent inventors of workshops to scientists of industrial laboratories

At the beginning of the 20th century, few recognized the differences between scientist, engineer, and inventor. Thomas Edison, 'the Wizard of Menlo Park,' when emphasizing that he was an 'independent inventor,' stressed the difference between engineering and science-based specialized disciplines. Edison preferred to hire novice researchers rather than experts in one discipline. He was also more interested in finding out how to make functional products than in proving the scientific basis of the technology he developed. Inventors discover things; scientist wants to know how and why they work. For sure, Edison recognized the need for materials research when thinking about what kind of wire works best in a light bulb. His inventions were based on previous decades' scientific discoveries about the properties of electricity. Edison knew the physics of electricity, but did not bother to report his own findings in scientific publications. Being almost deaf, he did not attend scientific meetings. As an empiricist, he did not need scientific theories to support him. In notable contrast, the next generation of innovators such as Shannon (at Bell Labs) and von Neumann (IAS) were mathematically oriented theorists to whom Bell Labs and IAS provided a new kind of environment allowing much freedom.

Edison protected his own inventions with patents. Shannon and von Neumann did the opposite. They shared their results and findings as widely as possible, almost not caring about copyright. The entire philosophy of organization they worked in was based on open discussion between sciences and mutual encounters between prominent researchers. Openness was very important to Bell Labs. Facing constant threats of state monopoly, the telephone company founders ensured research results funded by their surplus would not be restricted to their ownership. The research results made possible by the financial surplus must not remain only in the hands of the owners. So, for example, the idea of the transistor was freely available to everyone right from the start in the late 1940s.

From self-taught to broadly trained in creative environments

As the 20th century progressed, self-taught generalists like Edison were replaced by scientific generalists like von Neumann and Shannon, whose abilities were based on broad and deep academic expertise in quantum physics as well as early genetics and the latest brain research. As the fashionable philosophy of that time – logical empiricism born in the 1920s – argued, mathematics and logic could integrate seemingly separate

disciplines. Transitions from, for example, the field of mathematical biology to emerging computer science became possible. Both von Neumann and Shannon drew ideas from everyday life, extensive readings, and hobbies. Metaphors and analogies created space for scientific imagination and mathematically formulated thought games. It is said about play that it is fun but useless tinkering. Shannon's career in Bell Labs, especially, tells the opposite. Various gaming machines were a step towards machine intelligence. With a mechanical mouse or a chess-playing robot, useful ideas about, for example, language translation or the optimal use of telephone lines were developed. Shannon himself stated, however, that he was more interested in exciting problems than in their solutions. When thinking about the possibilities of electronic brains, the game of chess was used as a reference by many others than Shannon and von Neumann. For example, the Englishman Alan Turing (1912–1954) and the Americans Norbert Wiener (1894–1964) and Herbert Simon (1916–2001) made references to the heuristics of the familiar game.

Researcher's freedom

For Edison, the freedom of the inventor was important, and he felt that the scientific way of working bound him too much. In his last years, Edison suffered from the obligations that came with the growth of the organization founded by himself. Edison prioritized the realities of production over the aspirations of the burgeoning consumer society. Because of this contradiction, his financial successes never matched his technological achievements. With time, Edison's modest workshop had turned into an industrial laboratory with strict requirements and bureaucracy. The disciplined industrial laboratory no longer offered Edison the same freedom as the first workshop where it all began. His laboratory became, however, a model for the early research organization established by corporations such as General Electric and Bell Telephone.

Bell Labs, owned by telephone companies, and the more academically oriented IAS offered the talented researcher opportunity to focus rather freely on curiosity-driven projects. The supervisor's task was not to supervise, but to enable also seemingly useless projects. Deep thinking required time and play. Or, as the famous philosopher John Dewey suggests, the origin of thinking is some perplexity, confusion, or doubt. Shannon's exceptional expertise allowed him to leverage his freedom from bureaucratic constraints. He was late for meetings, played chess during the workday and rode his unicycle through the corridors of his unit. He juggled balls at work and even derived a mathematical formula for how many balls can be at the same time in the air.

At Bell Labs, experimental engineering work and basic research met each other every day. Equally important was the long-term cooperation and surprising encounters between, for example, materials technology, chemistry, and physics researchers. The corridor-like architecture designed by Eero Saarinen was deliberately aimed at random encounters. IAS operated with the very same principles, focusing more on theoretical work. Some contemporaries criticized it for wastefulness, too little achievement and too much freedom of research. This was not a problem to von Neumann, and therefore he refused Norbert Wiener's invitation to come to MIT to develop the computer into a finished technical product. At the end of his career, Shannon recognized that his almost unlimited freedoms caused criticism among his colleagues at Bell Labs. Partly because of this, he moved to the more academic context in his last working years. However, he continued his technical experiments in his home workshop.

Bell Labs: idea factory of the modern era

Jon Gertner (2012) titled the world-famous Bell Labs as 'the idea factory of the modern era.' In the labs, today known also as the 'Nobel incubator,' lucky coincidences and 'long memory' has played an important role. If one wants to change the world with inventions, there is no point in chasing quick profits. Many of today's inventions have originated from Bell Labs: radar, transistor, solar panel, laser, communication satellite. At the beginning of the 20th century, it was not at all clear that one day the world would be unified through the telephone. Even the idea of building a telephone network spanning the US continent seemed far-fetched. There were enough technical challenges. How to protect telephone poles from the weather? How to make the sound travel a long enough distance flawlessly to exactly the right place? Both

questions required careful and time-consuming research and wild speculations by Bell Labs engineers.

As Gertner has argued, research carried out was often characterized by the fact that there was no idea whether, for example, lasers could have practical benefits in the future. Also, a solar panel that was far too expensive for everyday use looked like a rather pointless invention. However, with the advent of communication satellites, old inventions proved to be indispensable. A satellite orbiting the Earth needs solar power and a laser connection. The large organization had a long memory, which allowed old ideas, for example cell positioning, to get new uses with the development of mobile phone networks. Allowing for chance and patiently waiting for results is a prerequisite for innovation and development. If, for example, Edison and General Electric had not invested so heavily in centralized electricity systems, we could perhaps live in a world where, instead of centralized electricity production and distribution, consumers would buy their weekly utility electricity from battery charging stations.

When developing early computer and artificial intelligence around the middle of the last century, American giants of innovation, such as von Neumann, Wiener, Shannon, and Simon, implemented the idea of 'the usefulness of useless knowledge' in their own ways. The computer could look very different today if resources had not been focused at the beginning so much on the development of encryption technology during the Second World War. Mathematizing symbolic information or arguing that a computer could be more than a calculator were radical statements in their time. In the minds of the public of the 1950s, and for example in cartoons of that time, the storage of symbolic information and the transfer of information between computers, not to mention social media, was a distant utopia. For instance, in the 1950s British *Rick Random* comic strip, computers exist but information was still stored on microfilms on an archive planet. In Finland, early computers were called 'math machines.' From the early 1960s, the Finnish term for the term computer has been 'knowledge machine' (*tietokone*). Possibly there is no other language where computer refers directly to knowledge.

Thanks to von Neumann and Shannon, the early development history of digital technology emphasized the principle of openness, even though the computer was in many ways a child of advanced science and military industry emphasizing the 3C principle: command, control, and communicate. Still today, the principles of openness are debated, for example in the development of the internet of the early 1990s or in the open source philosophy. Today, the movement of information and its storage form the core of capitalism, and the idea of artificial intelligence today is different from the 1950s idea of problem-solving artificial intelligence. However, basic research driven by curiosity is the foundation of current digital world and artificial intelligence.

The worldviews of early innovators

The histories of legendary innovators tell about the birth and spread of world-changing ideas in the first half of the 20th century. As the century progressed, inventions were increasingly realized in industrial laboratories. As industrial laboratories became the norm, scientific values of openness and publication gained crucial importance. The great inventions strengthened a scientific-technical worldview, which today can be criticized for the lack of understanding of the delicate relationship between man and nature. Significant innovators and 'innovation factories' did not advance only technology or science. They also created interpretative frameworks that structure the world. At the turn of the 20th century, Edison and his close friend Henry Ford thought that the world could be managed as systemic entities. These system analogies originated in mechanics, acoustics, and electricity. Electricity continuously flows and cannot be stored. According to Thomas Hughes there was an irony of creative persons such as Ford and Edison, who stubbornly followed technical engineering logic from the early periods of their enterprises. The recipes that worked well at the beginning should have been replaced when the companies grew. The ideology, today known by the name Taylorism, put the system first and compelled human beings to comply to the needs of the system, thus subordinating human beings to the needs of huge machines. 'In the past man has been first; in the future the system must be first' was an extreme manifestation of this modernistic view. Whether it was about entire electricity and telephone systems, employees, or factories, the same laws of system management were thought to apply in the early 20th

century in the Anglo-American world. With emerging values of consumer society restricting freedom of human choice, this was not necessarily the wisest direction.

A few decades later, von Neumann's game theory, on the other hand, reinforced the dichotomous and individualistic worldview of the Cold War. The different parties compete with each other, and the winner is the one who acts cunningly and most selfishly. Shannon and Wiener's information theory, in turn, produced the notion that humans are basically information processors. Emphasizing the unity of the sciences, the cybernetic system theory quickly spread to business management, communication research and medicine as well. For example, in the marketing and customer research of the 1950s, the consumer began to be seen exclusively as an information processor. Information theory influenced many sciences and, for example, pioneers of anthropology, such as Margaret Mead and Gregory Bateson participated in the discussion about human information processing and artificial intelligence, as well as the famous polymaths of science, von Neumann and Simon. During the Cold War, the alliance between political goals and scientific research intensified. In the 1950s, interdisciplinarity and belief in collective learning was particularly strong in the United States, where one of the declared tasks of science was to find an alternative to the mass spirituality and non-intellectualism of communism and fascism.

Critical summary

Critically, it can be stated that the heroism of many inventors is based on the work done by others, and idea factories allowing much freedom. Behind the freedom of every great man are dozens of people, a lot of specialized know-how, institutions, and infrastructures. In the post-war United States, influential science administration's visionary leaders and popularizers such as Vannevar Bush and Warren Weaver contributed significantly to the careers of both von Neumann and Shannon. Shannon had a strong intuition. It was his wife Betty Shannon who formulated the problems into a finished mathematical form. Similarly, many of Edison's assistants were actual inventors. Edison was criticized for not giving credit to his subordinates behind the origin of the inventions. He also pressured his employees to write laudatory articles about himself.

Further readings

Bhattacharya, A. (2021). *The man from the future: The visionary life of John von Neumann*. Penguin.

Flexner, A. (2017). *The usefulness of useless knowledge*. Princeton University Press.

Gertner, J. (2012). *The idea factory: Bell Labs and the Great Age of American innovation*. Penguin.

Hughes, T. P. (2004). *American genesis: A century of invention and technological enthusiasm, 1870–1970.* University of Chicago Press.

Israel, P. (1998). *Edison: A life of invention*. John Wiley & Sons.

Shannon, C. E. (1948). A mathematical theory of communication. *Bell System Technical Journal*, 27(3), 379–423.

Soni, J., & Goodman, R. (2017). *A mind at play: How Claude Shannon invented the information age*. Simon and Schuster.

Wiener, N. (2018). *Norbert Wiener—A life in cybernetics: Ex-prodigy: My childhood and youth and I am a mathematician: The later life of a prodigy.* MIT Press.

40. Creative teams

Pasi Hirvonen

Outline of the topic

Team creativity and team functioning have increasingly become the focus of organizational research in recent decades. From an innovation management perspective, creative teams are of particular significance, serving as one of the social arenas in which innovation is fostered. Conceptually, creativity may be defined as the process by which novel ideas are generated, whereas innovation denotes the implementation of novel ideas with the aim of creating value. To ensure effective management, it is imperative that the social dynamics of creative processes in teams be understood. Within this framework, teams are defined as dedicated and enduring collectives of interdependent individuals engaging in interactions, united by a shared goal or purpose within an organizational context. Creativity encompasses the production of a unique product or the realization of an innovative idea as well as the unpredictable social processes that arise during the creative team's collaborative efforts.

Recent significant changes in the structure of the workplace, with the former bureaucratic organizational framework becoming replaced by a post-bureaucratic, flexible, and collaborative approach, have underscored the importance of teams as the cornerstones of business and organizational life. In this context, teamwork is often regarded as a solution that supports the creation of flexible and collaborative organizational structures. Decision-making and the generation of new ideas are increasingly enacted by teams, with the teamwork ethos producing outcomes surpassing those that isolated individuals might achieve. Furthermore, an understanding of the dynamics of creative teams is also required in light of broader economic, cultural, and historical developments. Interest in creative activities has increased significantly—for instance, the growing competitiveness of global markets, faster production cycles facilitated by advanced communication and information technologies, and the desire for creative industry products due to increased leisure and wealth—which has sparked greater interest in creative team activities.

Most studies of creative teams to date have employed an individualistic approach, with less attention to teamwork's socio-cultural dimensions. The former approach involves the formulation of largely normative generalizations regarding effective teams' impactful behaviour, such as the identification of the requirements for creative teamwork. By contrast, the socio-cultural approach emphasizes the social processes that shape creative teams and the emergence of team creativity as a social and interactional phenomenon. In addition to a brief overview of the individualistic approach, this entry presents a socio-cultural approach as an alternative means of understanding creative teams. The conceptual overview and discussion will be followed by an application of the socio-cultural approach, focusing on the emergence of team creativity as a social and interactional phenomenon.

Conceptual overview and discussion

The definitions of creative teams offered in scholarly literature are often ambiguous: while some refer to creative teams, others refer to team creativity. Research on creative teams has focused on collaboration among actors from different creative disciplines—in particular, advertising and marketing, arts and culture, and entertainment. Meanwhile, management and organizational research has primarily focused on team creativity. Specifically, researchers have examined the dimensions of management that can ensure teams' creativity and creative functioning. Examples of these dimensions include team creativity in technology and software development, design and innovation, and health and well-being contexts. Common to both the creative teams and team creativity perspectives is the conviction that team creativity is based on collaboration in pursuit of a common goal. Herein, creative teams and team creativity are used synonymously. As such, our purpose is not to determine which teams are and are not considered creative, but rather to shed light on the process by which creative teams are formed, and to offer a non-traditional management perspective that is distinct from the conventional managerial and leader-centred approach.

Scientific literature on creativity and creative teams is still relatively young. In research literature, creativity is often defined in terms of the socio-historical development of creativity research. During the 1950s and

1960s, creativity was perceived as an individual personality trait or attribute. In light of the increasing importance of cognitive psychology in the 1960s and 1970s, creativity was conceptualized as an outcome of individual cognition. From the 1980s and 1990s onwards, the definition of creativity broadened through a socio-cultural perspective to include above all a social process, driven by human interaction. These approaches may be roughly divided into an individualistic and a socio-cultural interpretation of the functioning of creative teams.

The individualistic approach represents a prescriptive perspective on creative teams and emphasizes the analysis of the key elements and starting points of creative teams. Its aim is to analyse the common and generalizable factors that enable, predict, mediate, or shape creative teams' functioning. This approach aligns with a view of innovation management that emphasizes the operative and strategic work that managers of creative teams perform, such as project management or product development. Thus, this approach also focuses on the management of creative teams. Research on the management of creative teams from an individualistic perspective has highlighted these teams' key leadership characteristics and managerial processes of creative teams. From the individualistic perspective, often driven by experimental or statistical research, the key characteristics of creative teams include the members' professional diversity, task control, initiative types, team size, and available resources. This approach also seeks to identify contextual factors that influence teams' creativity. The key contextual factors relating to creative teams' performance are organizational leadership and management, organizational climate conducive to creativity, resource adequacy, knowledge and support for learning, and the spatial and physical environment. For example, organizational cultures that emphasize high levels of competition, performance measurement, and public evaluation might also exert a negative impact on team creativity.

The socio-cultural approach adopts a descriptive perspective that seeks to understand creative teams from within, approaching each team as a unique social reality. Socio-cultural interpretations of creative teams begin with an examination of the teams' day-to-day activities, with a particular emphasis on the relationships and interactions between team members. As such, this approach aligns with a view of innovation management that emphasizes the primacy of social processes in management. Compared to the individualistic approach, the socio-cultural approach emphasizes the examination of creative teams' social processes. Often informed by qualitative research methods, the descriptive approach challenges the issues raised by the prescriptive approach by highlighting the social processes that drive creativity-conducive behaviours between team members in their natural settings. For example, professional power relations between team members contribute to shaping how team members can participate in creative processes. The socio-cultural approach to creative teams highlights the need to understand and describe the social dynamics that govern the day-to-day implementation of these elements. Team creativity is therefore considered to be a collaborative effort that is achieved through joint action rather than merely the end result of individual inputs, as the individualistic approach might suggest.

The adoption of the socio-cultural approach to creative teams has given rise to the notion that creativity is an emergent process. The social emergence perspective on creativity starts from the critique that structural or prescriptive models are not able to explain social processes such as the creative activities of teams. The social emergence perspective emphasizes not so much the outcome of creativity but the social process during which creativity is generated and how it occurs. Creativity emerges and develops during interactions between people. In terms of innovation management, the emergent perspective assumes that the interactions involved in team creativity cannot be mapped in advance by reducing them to a set of rules, as the prescriptive perspective would have it, but that an emergent understanding of creativity requires a descriptive approach.

Application: collaborative emergence and creative teams

Leaning on a socio-cultural understanding of creativity, Keith Sawyer has combined the study of team creativity with social emergence. Sawyer emphasizes the pragmatics of language use as a point of departure for team creativity, examining how language is used in teams and how something new and

creative may be constructed through the use of language. In the case of creative teams, he calls activity of this nature 'collaborative emergence'. Although he has mainly examined collaborative emergence in the context of creative teams in arts, such as improvisational theatre groups and jazz bands, the key perspectives of collaborative emergence may be utilized to understand creative teams across various contexts. Sawyer has summarized the premises of collaborative emergence as comprising three interdependent processes: the unpredictability of action, retrospective interpretation, and equal participation.

Unpredictability of action

Viewed from the perspective of collaborative emergence, a degree of improvisation typically forms the starting point for collaboration and interaction in all creative teams. In other words, when the creative work begins, the team members do not yet know what direction the work will take and how the team will ultimately implement its ideas. The creative team's work is guided by freedom and unpredictability rather than strict scripts and goals. Creativity in teams does not emerge in a linear manner but rather as a back-and-forth and improvisation-like activity that is subject to directional shifts. The creative process itself requires team members to be prepared to encounter new problems and questions that may arise, and this ultimately leads to creative activity.

In practice, the team's creative activity is realized at the level of interaction, which is based on moment-to-moment contingency. This means that the team members' activities are dependent on one another and on the activity framework that the team members produce together for their activities at any given time. Ritual-like, carefully scripted forms of collaboration or collaboration controlled by one actor, such as a chairman, are less likely to result in collaborative emergence. Sawyer provides several examples of creative teams, such as improvisational theatre groups and creative design teams in the animation industry to highlight how improvisation-like activities result in collaborative emergence. Improvisation and the creation of space for spontaneity in cross-disciplinary teams might be beneficial in overcoming the barriers imposed by strong disciplinary boundaries.

Retrospective interpretation

The emergence of collaborative creativity in creative teams cannot be reduced to the actions or talk sequences of individual team members. The operation of creative teams is based on moment-to-moment contingency, which means that the actions of team members gain meaning only when others respond to them. Therefore, the direction of collaboration in creative teams is determined by how the meanings of the interaction constantly change as others orient themselves towards them in different ways. For instance, the creation of proposals or ideas by creative teams may attain meaning retrospectively as a result of interactions that occur among the team members. In this sense, the outcomes generated by creative teams are not merely the result of individual suggestions or a sum of different intentions; rather, the meanings of creative teams' outcomes can evolve over time as all team members contribute their own interpretations and understanding. In the context of creative teams, retrospective interpretation entails embracing diverse perspectives, embracing the potential for serendipity, and recognizing that creative outcomes can evolve over time.

According to Sawyer's terminology, retrospective interpretation in creative teams is intersubjective in nature. Sawyer emphasizes that intersubjectivity should not be understood in this context as the sum of the shared mental states of team members. Instead, intersubjectivity should be understood as a coordination process of individual contributions related to joint action rather than as the pursuit of consensus. For example, the process of decision-making within a team may be conceptualized as a form of retrospective interpretation rather than as a series of predefined evaluations and conclusions.

Equal participation

In collaborative emergence, all members of the creative team are afforded the opportunity to participate in the team's creative process. Each team member is expected to fulfil an equal role through which they contribute to the team's operation and creative outcomes. From the perspective of equal participation, the creative team does not have a leader who guides the progress of topics and collaboration; rather, team activity contexts include small-group collaborations, brainstorming

meetings, and discussion groups and seminars. Furthermore, self-managing creative teams represent a form of teamwork that prioritizes equal participation and empowers team members to participate in team creativity. Each member has the potential to participate equally in the team's activities, which allows collective phenomena, such as the topic of creative activity, transitions between topics, and mutual decisions, to arise in the dialogue between team members. Nevertheless, the potential for participation in creative team activities must encompass a range of participation modes.

Critical summary

Most studies of creative teams to date have adopted an individualistic and prescriptive approach, generating a vast corpus of research outlining creative teams' key factors and general features. The socio-cultural approach has called for a critique of prescriptive perspectives, emphasizing how teams' creativity is not merely reducible to individual factors. Rather, creativity is an emergent process that takes place in interactions within creative teams. However, creative teams do not function in a vacuum. Emergent properties occur more frequently in organizations that are rich in connections between people and systems, with no specialization of tasks to specific parts of the organization, difficulty in understanding the organization as a set of parts, and complex interactions between parts. Managers of creative teams are therefore required not only to ensure that there is room for the three interdependent processes of collaborative emergence but also to oversee the construction of organizational structures that support collaborative emergence.

Recent decades have witnessed increased interest in the collaborative emergence of creative teams. This approach aims to address the limitations of the individualistic perspective, which has dominated discussions about creative teams in management and organization studies. While the collaborative emergence perspective offers a valuable alternative to individualistic and descriptive interpretations of creative teams, it has received relatively little attention in these fields. For instance, few studies have examined how different normative orders shape social emergence and the retrospective interpretation and equal participation it calls for. Moreover, recent scholarly work on creative teams has advocated for an interdisciplinary approach that transcends the dichotomy between the individualistic and socio-cultural approaches. Rather than juxtaposing these approaches, they should be regarded as complementary. Both approaches offer valuable insights into the dynamics of creative teams, with interpersonal interactions serving as the nexus in which both the individualistic and socio-cultural elements of creative teams emerge.

Further readings

Glăveanu, V. P. (2020). A socio-cultural theory of creativity: Bridging the social, the material, and the psychological. *Review of General Psychology*, *24*(4), 335–354.

Kaufman, J. C., & Sternberg, R. J. (Eds.) (2019). *The Cambridge handbook of creativity* (2nd ed.). Cambridge University Press.

Sawyer, R. K. (2021). The iterative and improvisational nature of the creative process. *Journal of Creativity, 31*, 1–6.

Sawyer, R. K., & DeZutter, S. (2009). Distributed creativity: How collective creations emerge from collaboration. *Psychology of Aesthetics, Creativity, and the Arts*, *3*(2), 81–92.

Sawyer, R. K., & Henriksen, D. (2024). *Explaining creativity: The science of human innovation* (3rd ed.). Oxford University Press.

41. Creativity

Laura Lucia Parolin and
Carmen Pellegrinelli

Outline of the topic

Creativity is mainly defined as the individual process of producing something new that is recognized by a community of experts. The conventional definition of creativity involves expressing a unique idea marked by originality, novelty, or distinctiveness. To be creative, an idea must be recognized for its value and appropriateness. This definition has also been adopted by organizational creativity (OC), a recent field of research within management and organization studies (MOS), focusing on employees' creativity as a sub-area in organizational behaviour and research on creativity and innovation studies. Shalley and Breidenthal (2021) note how almost all OC articles published in top management journals from 2014 to 2020 propose slight variants of this definition.

In recent years, however, more holistic, systemic, processual, and sociomaterial conceptions of creativity have emerged in several branches of social studies (i.e., science technology studies, creativity studies, innovation studies, and MOS). These authors highlight how the connection between the production of novelty (creativity) and its implementation (innovation) is not linear but complex. It requires conceptualizing creativity not as an idea, an individual, or a product's characteristic, but as a complex and multifaceted emerging and situated phenomenon.

Conceptual overview and discussion

The mainstream conceptualization of creativity in MOS often identifies it as the first conceptual step of innovation. Creativity has been commonly indicated as the ideation component of innovation, while innovation embraces both ideation and implementation. For this reason, creativity's conceptualization in MOS remains abstract and related to the world of ideas and mental invention.

However, a more nuanced conception of creativity helps to blur the neat boundaries between creativity and innovation, pointing out how they are relational processes involving knowledge, practices, and sociomaterial resources. Fagerberg (2005) maintains that innovation is not a random invention but a novelty that combines different knowledge, skills, abilities, and resources to impact the environment. Montonen and Eriksson (2013) conceptualize innovation as a practice performed by innovation practitioners in a web of actors, activities, knowledge, and material artefacts. Like many others in innovation studies, these ways of conceptualizing innovation do not imply pre-existing ideas, inventions, or eureka moments before an implementation phase. Instead, they highlight how innovation emerges from processes and practices where the entanglement of knowledge, skills, activities, and resources gives rise to novelty.

Creativity must also be reconceptualized if there is no such phenomenon as mental imagery of later implemented innovations. As several authors propose, creativity does not have to be conceptualized as a personal attribute or mental activity but as a process in which novelty emerges. Processual conceptualizations of creativity have appeared over the last decades in the literature of science and technology studies, psychology, organization, and the new sociology of art.

A processual conceptualization of creativity also arises within creativity studies to contrast the deterministic definition of creativity. Historically, creativity has been defined by psychometric and cognitive studies of the 1950s in the USA. Such a definition proposes a mentalist view of creativity, which later spread to different areas of study, including MOS. In setting out a more distributed and holistic conception of creativity based on sociocultural psychology, Glăveanu proposes to overcome traditional creativity studies, where creativity is seen as embedded in individuals, mental processes, or products. According to the author, it is necessary to put culture and the social back into creativity to account for the creative phenomenon's contextual, relational, and situated aspects. His distributed creativity has recently become a relevant approach in creativity studies.

Some traces of new ways of conceptualizing creativity are also emerging in MOS. Fortwengel and colleagues highlight the emergence of several processual OC studies. They claim that, in opposition to variance-based mainstream methods that analyse OC by scrutinizing the effect of an independent variable on a dependent variable, the processual approaches stress empirically evolving features of the creative phenomena and integrate temporal progressions of activities as

foundations of their explanation. For example, Hjorth and colleagues explore the relationship between organizational creativity, play, and entrepreneurship. They interpret creativity as something that arises, overflows, and bursts into the organization's becoming. Creativity, play, and entrepreneurship are related to the creative processes and how they emerge within organizations. The authors propose exploring the conditions that favour play, creativity, and entrepreneurship through processual approaches instead of looking at these phenomena 'in vitro'. They suggest paying attention to the affects of the body and our sensory capacity in the actual activities where creative emergence arises. This new processual trend of studies considers creativity and OC not something to measure but to consider processually. Viewing OC through a processual lens means studying the temporal progressions of activities as the basis for explaining and understanding the creative phenomenon. It implies recognizing and narrating all the passages and elements that bring to the creative emergence.

Within the body of processual studies on OC, the practice lens has recently been gaining ground to account for the processual creative phenomena and their distributed, sociomaterial, and relational nature. Practice theory and practice-based approaches focus on the importance of situated activity and performance in all aspects of social life, highlighting the routinized and performative character of action depending on tacit knowledge and implicit understanding. Contributing to this emerging frame, Pellegrinelli proposes to look at creativity and OC through the lens of the epistemology of practice, a recent stream within practice-based studies. This lens expands the practice-based OC understanding by focusing on what creativity does (epistemological question) instead of what creativity is (ontological question). The epistemology of practice, also called posthuman practice theory, entails a shift from humanistic approaches to practice that emphasizes humans as the primary source of agency toward posthumanist approaches, which emphasize the processes of connection, where the agency of humans and nonhumans is equally mobilized. Practitioners are no longer considered the source of action but the effects of sociomaterial practices in which they are involved. They become practitioners because of their encounters with human and nonhuman elements that participate in the process. If practice-based humanistic approaches allow us to see how creativity emerges within routinized activities and professional knowledge, the epistemology of practice enables a processual, collective, affective, and material view of OC and creativity.

The epistemology of practice depicts creativity as a complex multidimensional phenomenon where many human and nonhuman elements and dimensions intersect to stimulate and produce creative emergence. This means that every creative process emerges as a variation or transformation within the recurrences of a specific practice. The quality of this transformation depends on the encounters the participants perform, which are also connected to the practical, tacit, sensible professional knowledge/knowing of the participants (humans and nonhumans) involved in the process; the dimension of power and potentialities the participants embody and mobilize (sociomateriality); and the common orientation of the practice (object of practice), that is, the emerging direction they negotiate to achieve the desired outcome. Reading processual OC through the lens of the posthumanist practice theory entails disentangling how these dimensions (knowing in practice, power/potentialities, and object of the practices) of the humans and nonhumans participating in the creative practice unfold in situated encounters to produce something new.

Application

Understanding creativity and OC with the epistemology of practice lens sheds light on the emergence of novelty within creative practices. For example, it explains the contribution of humans and nonhumans in developing new products in creative industries, research and development departments or any other place (within and across organizations) where novelty emerges within specific practices.

A case from theatre is presented here to illustrate the explanatory power of this posthumanist practice theory approach to creativity and OC. Theatre is an exciting arena for studying creative practices because it is a professional field where the materiality of human and nonhuman bodies matter, and meanings and contents are negotiated in a complex creation process based on specific professional practices.

To understand how a theatre scene emerges, Parolin and Pellegrinelli ethnographically explore the production rehearsals of a specific theatre play. The analysis shows that, while the emergence of creative output, especially in the arts, is mainly considered as spontaneous insight into the participants' minds, it is a collective accomplishment that mobilizes shared professional knowledge.

To conduct a study with the epistemology of practice, it is possible, like other practice-based approaches, to perform two movements: zooming out and zooming in. Zooming out helps to focus on describing the work practices mobilized by the professionals conducting the process. For example, in this case, it implies describing the theatre company's recurrent way of working on new plays and scenes. The theatre company, composed of four professionals, stages independent children's plays using real-time drawings. It frequently stages theatre plays without a completely predetermined dramaturgy, mixing different scenic languages, such as text, images projected with an overhead projector, drawings, actors' movements, and several artefacts.

The second movement, zooming in, requires instead focusing on the occurrences within specific practices where the novelty is produced. It entails entering the laboratories – or studios – which fabricate the creative outputs and following the situated local interactions. For example, analysing how one of the first scenes of the theatre play is crafted, the researchers focus on specific practices of the production rehearsals implied in the creation of the scene, like the *characterization of the characters*, the *proposal of actions and movements in the space*, the *contribution of the artefacts in telling the story* (drawings on an overhead projector), the *suggestion of new lines of text* and the *support in each other's initiatives*. These professional practices allow the group to get into an open process of testing and re-testing in the rehearsal space, with very few elements fixed from the outset until the process reaches a sort of stabilization and the scene emerges. As in any creative studio, such as a crafts laboratory or research and development department, in the rehearsal room, situated encounters between human and nonhuman entities occur and are tested. Each encounter reconfigures the collective process of creation and transforms the participants. It is the place where unexpected becomings and transformations take place. Therefore, the scene's emergence consists of human and nonhuman encounters within the theatre company's work practices.

These encounters are situated occurrences, but they also depend on several dimensions entailed by the practices that must be considered in exploring creative emergences. The first dimension is knowledge and knowing-in-practice. This dimension implies historical, practical, and tacit professionals' knowledge, including sensible knowledge and the capacity to attune, feel, and affect each other. For example, it concerns the director's capacity to conduct the process, the ability of the actors to move in the space, and their capacity to characterize, improvise, and attune to each other. The second dimension entails the power and positioning of humans and nonhuman participants involved in the collective creativity process. This dimension describes how the differences between participants' agency depends on their positioning in the community of practice. For example, it considers different roles of humans in the social entity (e.g. director and actors, newcomers and oldcomers, and their gender positioning). It also considers how encounters affect humans and nonhumans according to their potentialities and positioning. Some artefacts in the rehearsal room play a determinant role by acting as mediators in the process, addressing what was foreseen in a new way and bringing unexpected outputs. For example, the overhead projector and white screen onstage participate in creating a scene where the characters are shadows with different dimensions to highlight the physical differences between an adult and a child. The third and last dimension corresponds to a common orientation toward the object of practice in the collective organizational creative process. It shows the crucial role of the common orientation assumed by the participants toward constructing the theatre scene. The common orientation guides and orients the chain of practices and micro-practices involved in the creative process.

Through the lens of the epistemology of practice, it is possible to interpret creativity and OC as processes that emerge in the recurrence of creative practices. This conceptualization entails following the unfolding of the potentialities of knowledge and power in encounters where creative novelty emerges, tracing how its contents and directions are

continuously negotiated. Within the creative studios, the chain of encounters continues until a shared stabilization of the novelty (e.g. in a scene or product) is reached. Each partial stabilization of an encounter brings new knowledge and power into play to the following rounds of encounters. Therefore, the processual progress of the OC lies in the continuous succession, play, and overlapping of encounters and dimensions of the creative work practices.

Such conceptualization of creativity and OC helps to explain how creative practices work within and across organizations. It sheds light on the sociomaterial dimension of creativity, an aspect not considered by traditional OC but also poorly considered by the new processual OC literature. It allows us to account for the role of all human and nonhuman participants in the creative process and their specific contributions. Coherently with recent debates in innovation studies, this conceptualization does not detach creativity from the actual practices and places where the creative challenges occur. It refuses to consider creativity as an individual and mental phenomenon, looking instead at the professional practices in which creative emergence occurs. Creativity through the lens of the epistemology of practice blurs the boundaries between creativity and innovation, showing how both can be considered as emergences of situated encounters.

Critical summary

In recent years, MOS scholars have started to look at creative outputs through a processual lens, emphasizing the temporal progression of activities as the basis of understanding the creative phenomenon. A more holistic, collective, and sociomaterial view of creativity is emerging in opposition to the traditional consideration of creativity as a human/product characteristic or a mental activity and problem-solving.

Within the processual approaches to creativity and OC, a conceptualization based on the epistemology of practice offers a fresh view of what creativity does. It illustrates the role of materiality, taking account of the contextual, relational, material, situated, and distributed aspects of the creative phenomenon. The epistemology of practice enriches the processual OC with a relational and sociomaterial understanding of creativity. It can be considered not an individual characteristic or a mental process but a collective material process to which each human and nonhuman participant contributes.

The proposed conceptualization of creativity helps to grasp creative emergence in professional practices beyond the arts. It provides an essential understanding of how creative practices work, highlighting also that creativity is a complex phenomenon that is challenging to control. Nevertheless, future studies may address how to facilitate and enhance creativity and OC by focusing on the elucidated dimensions of creative practices. For example, stimulating the participants' practical and sensitive knowledge within the process while acknowledging their agency and providing increased opportunities and time for experimentation, negotiation, and interactions between humans and nonhumans could facilitate collective creativity within the organizations.

Further readings

Duff, C., & Sumartojo, S. (2017). Assemblages of creativity: Material practices in the creative economy. *Organization*, *24*(3), 418–432.

Fagerberg, J. (2005). Innovation: a Guide to the Literature. In Fagerberg, J., Mowery, D. C., & Nelson, R. R. (eds), *The Oxford Handbook of Innovation*. Oxford University Press.

Fortwengel, J., Schussler, E., & Sydow, J. (2017). Studying organizational creativity as process: Fluidity or duality? *Creativity and Innovation Managemen*t, *26*(1), 5–16.

Fox, N. (2015). Creativity, anti-humanism and the 'new sociology of art'. *Journal of Sociology*, *51*(3), 522–536.

Glăveanu, V. P. (2010). Paradigms in the study of creativity: Introducing the perspective of cultural psychology. *New Ideas in Psychology*, *28*(1), 79–93.

Hjorth, D., Strati, A., Drakopoulou Dodd, S., & Weik, E. (2018). Organizational creativity, play and entrepreneurship: Introduction and framing. *Organization Studies*, *39*(2–3), 155–168.

Montonen, T., & Eriksson, P. (2013). Teaching and learning innovation practice: a case study from Finland. *International Journal of Human Resources Development and Management*, *13*(2–3), 107–118.

Parolin, L. L., & Pellegrinelli, C. (2020). Unpacking distributed creativity: Analysing sociomaterial practices in theatre artwork. *Culture & Psychology*, *26*(3), 434–453.

Pellegrinelli, C. (2023). *Extending processual practice-based organizational creativity: A case from theatre.* [Doctoral dissertation, University of Lapland]. https://lauda.ulapland.fi/bitstream/handle/10024/65652/978–952–337–389–1.pdf?sequence=1

Pellegrinelli, C., & Parolin, L. L. (2022). A dynamic view of organizing: An integrative approach. In *Organisational Cognition* (pp. 168–197). Routledge.

Shalley, C. E., & Breidenthal, A. P. (2021). Conducting rigorous research on individual creativity. In *Handbook of Research on Creativity and Innovation* (pp. 12–27). Edward Elgar Publishing.

Thompson, N. A., & Byrne, O. (2022). *Imagining Futures: Theorizing the Practical Knowledge of Future-making. Organization Studies, 43*(2), 247–268.

42. Dark innovation

Ryan MacNeil

Outline of the topic

Dark innovation refers to any phenomenon that is hidden, obscured, or 'written off' by collectively held beliefs about innovation. The term has been used to show how common biases about innovation—like the pro-innovation bias and the neoliberal bias—keep people 'in the dark' about a wide variety of other innovation forms, processes, and consequences. This includes the 'dark sides' of innovation, where harm is done to people and planet, like innovations that advance criminal and terrorist organizations, human/environmental exploitation, and black-market products (e.g., illicit drugs). It also includes a variety of potentially positive innovation phenomena that are considered taboo or devalued because they violate cultural norms, like some forms of non-market user innovation and public innovation. However, dark innovation is not a finite category that can be fully mapped or explored. Rather, it is an agenda or challenge; it is a call to deconstruct assumptions about 'what counts' in innovation research, policy, and practice. In this way, the term 'dark innovation' is primarily used as a metaphor—alluding to the dark matter problem in physics—to point out that a great deal of innovation activity cannot be observed or measured using current methods. In short, innovation tools and techniques were built with only certain forms of innovation in mind. Everything else is dark innovation.

Conceptual overview and discussion

The term 'dark innovation' was coined by Ben Martin to label the first of his grand 'challenges' for innovation studies. He argued that many potentially interesting phenomena are missing from innovation research, and he understood this challenge by allusion to dark matter. Physicists know that dark matter exists. It was mathematically confirmed in the 1930s. However, dark matter remains unobservable today with even the most advanced scientific instruments. Martin argued that many potentially interesting innovation phenomena are similarly known to exist but unobservable with the research instruments currently deployed in innovation studies. His examples were intangible and service innovations, regulatory and institutional innovations, and innovations for social change. Martin noted that such innovations are overlooked because research is almost entirely focused on technology—and manufacturing-based innovations—primarily through the measurement of research and development activity and patenting. For Martin, the dark innovation challenge is a matter of improving measurement instruments to better detect all the innovation happening in the world.

Definitional debate

Notice that Martin was not using the adjective 'dark' to point out any specific negative or 'bad' aspects of innovation. However, others have written about the 'dark side' of innovation. For example, this was explored in a special issue of the journal *Industry & Innovation*. None of the editors or authors in that issue used the term dark innovation, but they were using the word 'dark' to focus on the many underexplored negative consequences of innovation. Papers in the special issue considered problems like the waste produced by the solar power industry and the way digitization has been deskilling the accountancy profession. Although research in that special issue focused on unintended negative outcomes, it also acknowledged that innovation can be intentionally harmful (e.g., the atomic bomb). One contribution also considered the grey areas in innovation research, policy, and practice. Overall, the editors and authors of this special issue were calling for more recognition that innovation is not always good for people and planet. From this perspective, the term 'dark innovation' should include all the harms that are ignored when people only think positively about innovation.

Benoît Godin and Dominique Vinck directly confronted this pro-innovation bias with their edited collection, *Critical Studies of Innovation*. They noted how present-day ideas around innovation assume it is always good. This not only leads people to ignore or downplay 'bad' innovation. It also means that people overlook instances where it might be better *not* to innovate. This concept of 'novation' has been examined by several scholars and spawned an open access journal of that name. The edited collection by Godin and Vinck also considers why private sector innovation is thought to be better than public sector innovation, why user innovations are still systematically ignored in favour of

producer-led innovations, how some practices are considered 'innovative' but are merely fads/imitation, and how some innovation is outright illegal (e.g., Napster's advances in file sharing). Godin and Vinck pulled these disparate critiques of the pro-innovation bias together to initiate a broader research agenda around critical studies of innovation.

Building on that agenda, the book *Observing Dark Innovation* argued that dark innovation is a product of all the assumptions built into mainstream innovation studies. These include the pro-innovation bias, various neoliberal biases, gendered assumptions, and many other conscious and unconscious choices about which innovation phenomena are worthy of scholarly attention. These choices shine light on some innovation activities and outcomes while casting others into the dark. Returning to the dark matter metaphor, it becomes easy to see that many of these choices might be outside the hands of individual researchers and inside the 'scientific instruments' that are used to understand innovation.

Example

The best-known example of this comes from the study of user innovation. The phenomenon of user innovation has been extensively examined since the earliest work of Eric von Hippel. However, user innovation is still set aside by many scholars and policy makers. Fred Gault has pointed out that the decision to ignore user innovation (and many other innovation phenomena) is built into the design of standardized innovation surveys. The conventional way to count new innovations is to begin by asking a business whether anything new was introduced 'onto the market'. However, many forms of innovation—most notably user innovation—are brought into use without any formal market transactions (and without the establishment of a business). In his book *Free Innovation*, Eric von Hippel recounts the especially poignant examples of the Bluetooth-enabled glucose monitor and the 3D-printed prosthetic hand. Both designs were developed by users and shared openly in online user communities. Innovations like these can freely circulate through society and bring about key changes without being introduced onto the market. And yet, the standardization of survey designs has excluded phenomena like this from nearly all government and academic studies. It is now widely accepted that user innovation exists, but disciplinary norms position it outside of most observations.

Implications

This is why the book *Observing Dark Innovation* argued for a different perspective on Martin's dark matter metaphor. It agreed with Martin's earlier claim that dark innovation is a problem of missing observations. It also agreed that the scientific instruments used for innovation studies are central to this problem. However, it disagreed on the necessary research agenda. Martin argued that the answer to the dark innovation challenge lies in constructing new and improved research methods. And certainly, innovation surveys should be redesigned to account for known unknowns, like user innovation. But a more direct path to understanding dark innovation might be to study the limitations of dominant innovation research methods. In this way, the most important future contributions to innovation studies might be ones that raise consciousness around the assumptions that are embodied in the tools and techniques of innovation research, policy, and practice. This is exactly the direction the dark matter metaphor leads, thanks to insights from the philosophy and sociology of physics.

Karin Knorr Cetina noted that the physicists searching for dark matter are obsessed with understanding the limitations of their instruments. Her ethnographic study of high energy physics revealed that little time is spent trying to 'detect' new phenomena compared with the tremendous effort invested in understanding how and why instruments behave as they do. Later, Karen Barad—who is both a bonafide theoretical physicist and an acclaimed feminist philosopher—brought attention to the sociomaterial entanglement of all knowledge making practices. In *Meeting the Universe Halfway*, Barad advanced both quantum physics and feminist philosophy by showing that knowledge is an interrelationship between the 'things' being observed and the sociomateriality of the related observational practices. Scholars must be attentive to the assemblage of things and ideas around any knowledge claim. For Barad, this means that new thinking can be best achieved through 'diffractive methodologies'—practices that bring together different perspectives

or disciplines, break down binaries, and bring attention to difference.

Much of innovation research, policy, and practice is a search for new differences. Some might even say that the subject matter of innovation studies should be difference—or 'novelty'. But, ironically, most research on innovation has become normalized and disciplined. Econometrics dominate, as do certain empirical phenomena—mostly gizmos and gadgets, software, and biotechnologies. Innovation studies are also gendered and heavily grounded in Anglo-American socio-economic experiences. Increasingly rigid cultural norms and material practices are reproducing a narrow sense of 'innovation'—leaving important phenomena in the dark. Indeed, Jan Fagerberg and his colleagues argued that the future of innovation studies depends on resisting rigid disciplinary norms. Addressing the dark innovation challenge means opening innovation studies to difference.

Application

In physics there is a concerted effort to understand why dark matter remains hidden. However, hardly anyone is concerned with the (de)construction of dark innovation. There are two broad ways to engage with this concept. The first is to develop or deploy new tools and techniques focused on gaps in knowledge about innovation. The second is to problematize and deconstruct the assumptions embodied within existing innovation tools and techniques; to ask how dark innovation is enacted in the first place.

Improving methods

The first approach to dark innovation—proposed by Martin—is to redesign common measurement instruments and identify forms of innovation that are systematically absent from innovation studies. This is exemplified by Fred Gault's excellent work on the problems of innovation survey design. This overall approach to dark innovation follows what Sandberg and Alvesson have called a gap-spotting logic. It requires some hints or hunches about where innovation activities or outcomes are hidden or obscured. Conveniently, many forms of 'dark innovation' are visible to the naked eye but not to innovation research, policy, and practice. Naturalistic methods, including field studies and personal experiences, are therefore more promising starting points than any existing dataset. Insights from such work can then be used to incrementally improve the positivist and quantitative research methods that are preferred by the discipline. However, it has been argued that this approach cannot produce an understanding and radical revision of the paradigmatic assumptions that create dark innovation. For that, researchers must use what Sandberg and Alvesson have called a 'problematization' approach. They pointed out that gap spotting maintains path dependence in a field of study, whereas disruptive insights are more likely to arise from work that identifies and challenges underlying paradigmatic assumptions.

Observing Dark Innovation would have been a very different book if it had followed a gap-spotting logic. It would have simply revealed some cases of public innovation in goods. This still would have been a contribution to critical studies of innovation. Leading scholars of public innovation had definitively stated that innovation in goods only happens in the private sector. The established norm was to assume public innovations are all intangible (e.g., services). But, *Observing Dark Innovation* was written in an empirical context where public organizations regularly develop new tangible technological goods (i.e., ocean science instruments). Framed as a gap-spotting study, that book would have asked a research question like 'Do public organizations produce innovative goods?' This could have been answered by simply presenting some statistical evidence alongside the incrementally improved survey questions that allowed for those observations. All that would have had very little impact. There were already multiple published anecdotal examples of public innovation in goods (e.g., GPS), including instances of public innovation in scientific instruments. It was important to notice that these examples are almost always mentioned in passing and then set aside as abnormal and not worth further study. The idea that public organizations do not produce goods is therefore not a gap in the literature, it is a problem. This form of innovation is noticeable, but not with conventional instruments and not without breaking some well-established disciplinary norms.

Deconstructing assumptions

This is why *Observing Dark Innovation* proposed a second approach to the dark innovation challenge. This approach involves problematizing dominant research methods and the related systematic assumptions about innovation. In that book, the research question became 'Why do we struggle to observe dark innovation?' In response, the book shows that neoliberal assumptions are reproduced through innovation models, histories, metanarratives, classification systems, boundary definitions, and statistical practices. These tools and techniques were reworked so that preference was not automatically given to private sector businesses and to technologies sold in the market. Alternative methods were imported from other disciplines, and new methods were developed (e.g., autoethnostatistics). However, much more work remains in identifying and challenging other biases, assumptions, and norms. And there are still many more questions to be asked about the valuation and discursive processes that shape innovation research, policy, and practice.

From this perspective, dark innovation is not a finite category that can ever be fully explored. No perfect assembly of methods can ever reveal all forms of innovation. This is partly because any one set of methodological choices will bring some innovation phenomena into focus while blurring others. Scholars like Karen Barad have shown that different method assemblages bring forth different understandings—and it is worth appreciating these differences. Furthermore, no advancement in social science methods will ever capture all future instances of innovation. It is not possible to design instruments that will detect radical innovations that can not yet be imagined. Here, insights from the field of future studies may be helpful. Consider that the 'holy grail' of innovation management might be the ability to predict and produce the unexpected. But, ironically, the tools and techniques of this field are designed to predict, produce, or observe 'things' that are within the realm of current understandings and appreciations. Existing tools and techniques generally only provide for incremental advancement. This suggests opportunities to think differently about the elusiveness of radical innovation by further understanding the enigma of dark innovation.

Critical summary

The dark innovation research agenda is a recognition that many forms of innovation are not normally observed or observable. It asks how and why some forms of innovation are privileged over others. It is a call for the deconstruction of the ethico-political assumptions scripted into the normal tools and techniques associated with innovation research, policy, and practice. Working from an understanding of current ontological, epistemological, and methodological limitations, dark innovation researchers develop new research approaches and/or engage with research instrumentalities from other fields. In this way, 'dark' is not being used as yet-another adjective to create yet-another subcategory for innovation studies. It is simply a mental tool for rethinking the ways innovation is defined.

Further readings

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.

Coad, A., Nightingale, P., Stilgoe, J., & Vezzani, A. (2021). Editorial: The dark side of innovation. *Industry and Innovation*, 28(1), 102–112.

Gault, F. (2020). *Measuring innovation everywhere*. Edward Elgar Publishing.

Godin, B., & Vinck, D. (2017). *Critical studies of innovation: Alternative approaches to the pro-innovation bias*. Edward Elgar Publishing.

Knorr-Cetina, K. (1999). *Epistemic cultures: How the sciences make knowledge*. Harvard University Press.

MacNeil, R. T. (2024). *Observing dark innovation: After neoliberal tools & techniques*. Bristol University Press.

Martin, B. (2013). Innovation studies: An emerging agenda. In J. Fagerberg, B. R. Martin & E. S. Andersen (Eds.), *Innovation studies: Evolution and future challenges* (pp. 168–193). Oxford University Press.

Sandberg, J., & Alvesson, M. (2011). Ways of constructing research questions: Gap-spotting or problematization? *Organization*, 18(1), 23–44.

von Hippel, E. (2017). *Free innovation*. MIT Press.

43. Emotions in innovation development

Birgitta Sandberg, Leena Aarikka-Stenroos and Ilkka Kettunen

Outline of the topic

Emotions have been acknowledged to often drive innovative behaviour and shape innovation-oriented sensemaking and are, therefore, relevant to be understood and utilized in innovation development (i.e., in the process of transforming novel ideas into successful applications). Here, we apply a cognitive appraisal perspective to emotions that regards emotions as emerging from our cognitive appraisal of events, individuals, issues, or situations and that are often expressed physically. This perspective has become prominent in the field of the psychology of emotions. By definition, emotions are typically short-term feelings that arise because of something and are expressed in behaviour, whereas moods (the states of mind) are subtler, without a definite object and tend to last longer. In this chapter, the primary point of interest lies in emotions, since they have a clearer link to both triggers (i.e., it seems to be easier to influence emotions than moods) and outcomes (i.e., their importance to innovation development seems to be more apparent). Emotions in innovation development can vary from the positive to negative, and their impact can occur on an individual or a group level.

Conceptual overview and discussion

Diversity of emotions

Emotions are inclined to impact judgements when people face complex tasks and the need for extensive information processing. Their role is further emphasized in ambiguous and uncertain situations, when new information needs to be assimilated to make accurate judgements and good decisions. This description seems to fit particularly well the context of innovation development and it seems that the role of diverse emotions in innovation development should be both acknowledged and studied further.

The diversity of emotions originates from different basic emotions that are segregated based on various categorizations and tend to follow the division between positive and negative emotions – positive emotions being pleasant and agreeable and negative emotions being unpleasant and disagreeable. In business sciences, Laros and Steenkamp divide emotions into eight basic ones, of which four are positive (affection, contentment, happiness, and pride) and four are negative (anger, fear, sadness, and guilt). These basic emotions may be further divided into subcategories. For example, happiness can be further divided into enthusiasm, hopefulness, joyfulness, optimism, and relief.

Past research has shown that distinct emotions are inclined to initiate different types of behavioural outcomes. Current knowledge of emotions and their outcomes in the different tasks of innovation development suggests that positive emotions may build resources, ignite group flow and creative collaboration, and are important in terms of the performance of innovation development. However, negative emotions, particularly highly intense ones involving anger and frustration, may also enhance creativity. For example, dissatisfaction with an existing problem can act as a trigger for creative problem-solving. Consequently, there is an urgent need to better understand diverse emotions, their triggers, and their outcomes in innovation development.

Dynamics of emotions

Emotions tend to evolve in social interactions when a group of individuals interacts extensively during a given time frame for innovation development. By their very nature, emotions are constantly evolving, and, in a single situation, an individual can rapidly and even simultaneously experience different intensities of one emotion as well as even opposite emotions. Furthermore, emotions are contagious: positive emotions expressed by one individual in a group tend to spread as they fuel more positive emotions in others, whereas expressed negative emotions may lead to more diverse emotional responses in others, as past research has evidenced.

In addition, identical triggers may provoke different emotions, as individuals interpret triggers differently. The implication of this is that, even though group members are often exposed to the same events, the emotions originally experienced by individuals based on those events may not necessarily be

the same. Through social interaction and the reappraisal of triggers, emotions are likely to become increasingly similar within a group. Moreover, individuals constantly compare their own reactions with those of others who are relevant to them, and social pressures toward unity tend to make the emotions converge. Thus, research shows that shared individual emotions can become collectively experienced emotions (i.e., transform into group emotions). However, there is a lack of empirical studies examining how individual emotions turn into group emotions and how group emotions trigger individual emotions in innovation development.

Application: emotions in the early innovation development process

Since existing knowledge on diverse emotions and their dynamics in innovation development is scarce, an inductive, qualitative, and longitudinal case study approach was adopted to explore both emotion diversity and dynamics in innovating. The case focused on the early innovation development process (i.e., a process including idea generation and conceptualization activities), since previous and relatively scarce studies examining emotions in innovation development indicate that, especially at that stage, people experience strong, mixed emotions influencing their behaviour and decision-making. The case consists of a project aiming to design intelligent learning environment equipment, conducted in a northern European medium-sized firm. The project was run by a team of three industrial designers – the most experienced of whom was appointed as the design manager. Two or three assistants, the company management team comprising the founder or owner, sales and marketing teams, and other managers were involved, allowing us to examine both individual and group emotions related to innovating.

The data were gathered in real time through the early innovation development process, which lasted over 10 months. Thus, the case description relies on a versatile data set consisting of diary data, interviews, videos, memos, notes, and photographs. The data were analyzed inductively, with the focus placed on identifying and classifying diverse emotions from the data by interpreting both the explicit and implicit expressions of diverse emotions, their dynamics (in time and at the individual level as opposed to the group level), emotion triggers, and outcomes in innovating. Hence, this section addresses the full range of diverse and dynamic emotions seen in the early innovation development process.

Triggers of diverse emotions

The diversity of positive and negative emotions existed throughout the full front-end process, and all basic emotions played a role at the front end. Some basic emotions, however, were clearly more accentuated than others. Contentment and happiness – especially enthusiasm – were the most common positive emotions, and anger and fear were the most common negative ones.

Three categories of emotional triggers were identified in the studied front-end innovation project. Emotions seemed to be frequently evoked by work-related events, usually accomplishments (or the lack of them), by the overall goal of the project, or by meetings with the management of the company. On some occasions, the employees' work itself created emotions, particularly positive emotions, especially when the designers could draw sketches. Furthermore, emotions were evoked by individuals involved in the project; often these individuals seemed to trigger negative emotions.

Diversity of emotions

The start of *idea generation* was characterized by diverse – and even reverse – emotions. At the very beginning, when preparing for the ideation, the design team members and the design manager were all very enthusiastic about the project; after all, it was their opportunity to work on a dream project. However, there was also some nervousness related to the unclear information given to them by the company's management regarding what was expected of them. During the idea-genesis phase, the design manager accidently upset and frustrated the design team members by joking in front of the firm's management team that his team had not yet accomplished anything. Thus, the team started to generate ideas with low spirits. However, they became enthusiastic again as the work progressed. Their flow was productive, and the team created 600 ideas in all. Next, the team needed to screen the ideas and filter out more than 96 percent of them. This was exhausting work, and the designers were bored with the long

hours of screening work. The design manager and the whole team were also discontented, because they did not receive enough feedback from the management. This caused worry in the design team, and the idea-screening phase ended with 20 ideas to be taken forward, largely based on the design team's own selection process.

In addition, *conceptualization* started with the concept generation phase, which was a time of enthusiasm among the design team members. Difficulties in the beginning were mostly solved; the project advanced, and the designers felt they were doing what they knew best. When they later needed to select concepts to turn into products and compete with each other in front of the management team, emotional tensions, such as contentment mixed with embarrassment, were evident among the designers. However, the concept finalization stage (i.e., the time spent fine-tuning the selected concepts before handing them over to the firm's own development and production unit) can be characterized as a euphoric time period for the designers. The design manager felt relieved but recognized some feelings of helplessness, since the concepts they had become attached to were, from that moment on, in the hands of others.

Dynamics of emotions between the individual and the group

When examining the dynamics of emotions between the individual and group levels, two types of dynamic patterns emerged from the data: *emotional convergence* and *emotional divergence*. These dynamic patterns conceptualize how emotions emerge and evolve between individuals and the group due to emotional contagion. The following episode displays them both. On the day he was about to oversee the idea-genesis phase, the design manager felt mainly enthusiastic. When the designers arrived, Designer B was very angry at the design manager and openly confronted him about having accused them of being unproductive. Here, we witness emotional divergence and clashing emotions. The design manager felt embarrassed and apologized to the designers. However, Designer A also began to sulk, which indicated that he was angry with the design manager. Thus, the anger seems to have been contagious. The idea-genesis phase, which was supposed to have been creative and fun, began in silence. Nevertheless, the work itself generated enthusiasm and happiness for both the design manager and the designers. Over time, positive emotions spread to the angriest designer, Designer B, and these positive emotions *converged* into a positive group emotion, and the whole design team was in a good mood again.

Outcomes of emotions in innovation

Our analysis of the outcomes of emotions shows that positive outcomes dominated, originating from positive emotions, such as contentment and/or happiness. The main outcomes of positive emotions were *positive interaction* (such as interaction expressing support, encouragement, or appreciation) and *experienced productivity.* Interestingly, on some occasions, positive outcomes also originated from negative emotions (e.g., frustration evoking the desire for constructive justifications or anger promoting independent decision-making).

In terms of the negative outcomes of emotions, the most common outcome was experienced *lack of productivity* triggered by negative emotions – namely, fear or sadness. We also identified other negative outcomes, such as *decreased or negative interaction* (i.e., interaction expressing disapproval, sarcasm, or cynicism), originating from anger. It is notable that, in this case, only once did a negative outcome originate from a positive emotion: a designer stated that he was so excited about the project that he had difficulty sleeping.

Critical summary

This entry has discussed the diverse emotions in innovation development and presented a case focusing on the early innovation development process and depicting the triggers that evoke emotions, the dynamics of individual- and group-level emotions, and the outcomes that follow the emotions. By revealing how diverse positive and negative emotions emerge, vary, and shape the innovation process, this entry contributes to the emerging knowledge on emotions in innovation development. Instead of providing a rational, decision-making approach to innovation, it extends the understanding of innovation from a novel angle: emotions. Furthermore, it explicitly shows both the spectrum and dynamics of diverse emotions felt and expressed during innovation development,

thus answering the call for longitudinal views on changing emotions.

This entry supports the initial findings by Akgün and colleagues on the role of positive emotions in development and places negative emotions under scrutiny. It shows how emotions can considerably advance or hinder the progress of innovation development: positive emotions seem to act as important catalysts in innovation development, whereas negative emotions play a rather more repressive role. It is noteworthy that this chapter indicates that emotions are mostly self-reinforcing; however, emotions and their outcomes can also be contradictory and unexpected (e.g., negative emotions creating positive outcomes). Thus, these dynamics add much more complexity to the phenomenon and create challenges for innovation development.

Furthermore, the empirical application highlights the interplay of individual- and group-level emotional processes during the front-end innovation process, and increases our understanding of the complex relationship between emotions at different levels, thereby answering the call from Ashkanasy and Humphrey to take into account the interrelatedness of emotional variables at the different levels of an organization as well as the call from Menges and Kilduff to analyze how individual emotions turn into group emotions. In fact, interaction is a key element in emotional convergence and the formation of group emotions. Group emotions seem to emerge when individual emotions are shared informally among individuals going through the same experiences. Additionally, emotional contagions and emotional transfers take place within the team and cross boundaries between the team and the firm.

This chapter also suggests some relevant *managerial insights.* An increased understanding of emotions may help innovation managers and team workers identify and handle relevant triggers; consequently, they can better manage delicate creative moments and mitigate conflicts. This can, thus, increase development efficiency. Changing emotions require managers to continuously monitor the emotions of team members and the emotional climate of the whole team. In addition, managers and teams could develop procedures to provoke positive emotions that may fortify the advancement of innovation development. However, a lack of information, unclear assignments, and the resulting confusion are essential characteristics of the early innovation development process. These points can easily turn into catalysts for negative emotions. Therefore, it is also important for members of the innovative team to be aware of the probability of negative emotions arising and to accept them as part of their work. Furthermore, the value of negative emotions in the innovation process should also be acknowledged.

By focusing on one successful project and collecting longitudinal data, this study was able to capture the dynamics and complexities of emotions during innovation. Nevertheless, it is evident that a single-case study has limitations. The studied innovation project addressed generating radical innovation for both customers and the firm. This context should be considered when evaluating the transferability of the results. In reality, few existing studies on emotions in innovation development tend to focus on radical innovations, in which the emotional rollercoaster is often accentuated due to high ambiguity and uncertainty. Consequently, there is a lack of research on emotions in incremental innovation development.

Furthermore, this case was set in a northern European context. Other culturally distant settings can offer different observations on emotions among individuals and groups. Although this study focused on basic emotions felt across the world, cultures differ in terms of the frequency, self-assessment, and desirability of specific emotions. Thus, further studies in different cultural contexts are encouraged. We are only now beginning to understand the role of emotions in innovation development. Hopefully, this entry will inspire further studies on this complex but significant issue.

Further readings

Akgün, A. E., Keskin, H., Byrne, J. C., & Gunsel, A. (2011). Antecedents and results of emotional capability in software development project teams. *Journal of Product Innovation Management, 28*(6), 957–973.

Ashkanasy, N. M., & Humphrey, R. H. (2011). A multi-level view of leadership and emotions: Leading with emotional labor. In A. Bryman, D. Collinson, K. Grint, B. Jackson & M. Uhl-Bien (Eds.), *Sage*

handbook of leadership (pp. 363–377). Sage Publications.

Laros, F. J. M., & Steenkamp, J-B. E. M. (2005). Emotions in consumer behaviour: A hierarchical approach. *Journal of Business Research, 58*(10), 1437–1445.

Menges, J. I., & Kilduff, M. (2015). Group emotions: Cutting the Gordian knots concerning terms, levels of analysis, and processes. *Academy of Management Annals, 9*(1), 845–928.

Rank, J., & Frese, C. (2008). The impact of emotions, moods, and other affect-related variables on creativity, innovation and initiative. In N. M. Ashkanasy & C. L. Cooper (Eds.), *Research companion to emotion in organizations* (pp. 103–119). Edward Elgar Publishing.

44. Foucauldian power and resistance

Hadar Elraz and David Newman

Outline of the topic

This entry examines a Foucauldian conceptualization of power and resistance within the context of digital mental health innovation. Innovation can either pertain to the ongoing improvement of a pre-existing product or the creation of a new product, service, or business model. From a Foucauldian perspective, innovation is necessarily intertwined with power insofar as it necessitates both management and employees negotiating the meaning of change. The innovation discussed here involved the creation of a new digital mental health management tool. This innovation emerged out of grassroots-level interactions within a social enterprise that employs individuals with mental health conditions (MHCs).

Conceptual overview and discussion

From a Foucauldian perspective, the dynamics of power and resistance are constantly present within organizations. Research conducted by Thomas and colleagues on change innovation with senior and middle managers in a workshop held as part of a cultural change programme at a telecommunications company illustrated the constant dynamic between power and resistance to change within organizations. When senior managers attempted to impose change upon employees, the latter expressed resistance by challenging and negotiating the meanings of change innovation held by senior managers, thus co-constructing the meanings associated with change. While change innovation is often imposed from above, it can also be driven from below. Within the context of (ill) health and, more specifically, MHCs, Foucauldian notions of power and resistance help to unpack the ways in which societal stigma emerges and imposes itself upon people with MHCs, which, in turn, makes them subject to the power of medical professionals. More recently, nascent forms of resistance to this power have emerged in social movements and advocates. However, there have hitherto been rare instances of mental health training being designed at the grassroots, that is, from the perspective of individuals with MHCs. In Foucauldian terms, this means that individuals with MHCs are empowered to create their own training, rather than managers or health professionals imposing this upon them, which, in turn, expresses resistance against longstanding mental health stigmatization. This is discussed more concretely here in the context of digital mental health training within mental health management.

Application: change innovation and the power-resistance dynamic

The following empirical case serves to illustrate how to operate with the power-resistance dynamic in such a way that engenders positive change within the context of designing and initiating mental health training. The empirical case study is based on a collaboration with a social enterprise in the north-west of England.

To support the development and design of the tool, preliminary research on mental health management in the workplace was conducted. The empirical data collected provided new insights into how people's mental health was affected by the lockdowns and the shift to remote working during and after the COVID-19 pandemic.

The tool was developed and designed with these circumstances in mind, recognizing the challenges associated with social isolation, compassion fatigue, burnout, and stigma as well as working remotely. The lived experiences of the employees with MHCs directly shaped the content, including, among other things, body-mind wellbeing, compassion fatigue, burnout, and mental health stigma. These participants deemed it important that the tool's visuals, graphics, and stories were positive and focused on individuals' strengths rather than their weaknesses. In this respect, both the development and design of the tool illustrated the countervailing discourses and hegemonic ideas associated with MHCs: stigmatization. The tool was designed around the topics that the participants deemed to be most relevant to their own mental health and wellbeing challenges and by so doing empowered their own individual experience. This was done to counteract the way in which learning tools are ordinarily designed by mental health professionals or in traditional e-learning courses, which require the participants to complete all sections in a specific order.

This led to the design being grounded in the notion of a wellbeing garden, which

connected to the themes of nurturance, growth and the healthy maintenance of one's wellbeing. This idea of a peaceful wellbeing garden also stands in marked contrast to both the pressures that many of us face at work and the power dynamic between employees and management.

The e-learning tool was collaboratively developed by researchers and service users and was funded by the Economic and Social Research Council. The entire project testifies to the empowerment of a population who have experienced a long history of suppression and disempowerment. As such, this digital innovation model demonstrated how these individuals were able to resist social stigma and the medicalized view of MHCs and disease by designing a learning tool based on the metaphor of a wellbeing garden.

Critical summary

The Foucauldian conceptualization of power and resistance and change through innovation demonstrates how grassroots mental health management training development can serve to promote and enhance innovation within the workplace. In the case presented here, this was done via a digital innovation within mental health care for specific actors who needed an innovative change to better manage their mental health and wellbeing and stigmatization. Future research could consider the need for resistance when encountering the weaker power positions of marginalized groups, as this could provide fertile ground for further innovation and progress as well as related research programs.

Further readings

Bardon, T., & Josserand, E. (2018). Management innovations from a Foucauldian perspective: Time to take action. *M@n@gement*, *21*(4), 1244–1263.

Clegg, S. R., Pitsis, T. S., Rura-Polley, T., & Marosszeky, M. (2002). Governmentality matters: Designing an alliance culture of inter-organizational collaboration for managing projects. *Organization Studies*, *23*(3), 317–337.

Foucault, M. (1965). *Madness & civilization: A history of insanity in the age of reason*. Vintage Books, Random House.

Foucault, M. (1980). *Power/knowledge: Selected interviews and other writings 1972–1977*. Vintage Books, Random House.

Thomas, R., Sargent, L. D., & Hardy, C. (2011). Managing organizational change: Negotiating meaning and power-resistance relations. *Organization Science*, *22*(1), 22–41.

45. Gender and gendering

Ulla Hytti

Outline of the topic

Traditionally, innovation research is silent on gender. As innovation research focuses mostly on innovation outcomes, processes and systems, it lacks an explicit focus on individuals (innovators), making gender hidden in the majority of innovation studies. However, studies adopting a 'gender-as-variable' approach assume a binary view to focus mainly on differences between men and women in innovation activity. Some studies investigate (women's) everyday innovations, innovations in care work, or analysis of policy from a gender perspective. Through these works, the gendered understanding of innovation becomes evident. Recently, gender research in innovation has evolved towards understanding gender dynamics, that is, femininities and masculinities, as part of the innovation processes. Finally, the feminist perspective has the potential for change in order to foster a more inclusive innovation discourse and practice. This entry focuses on depicting these different conceptualizations of gender and related streams of research in innovation studies.

Conceptual overview and discussion

Alsos and colleagues suggest that the innovation literature is characterized by gender blindness, masking how masculinities and men have been prioritized in innovation and hiding how innovation is fundamentally gendered. However, there is an emergent focus on gender in innovation studies. Historically, the most common stream is the gender-as-variable (sex) approach, often with a focus on differences and similarities between men and women in innovation. These studies typically recognize men and women as part of cisgender and focus on differences in innovation activity in businesses owned by women or men, or on differences between men and women in patenting or research commercialization in the university context. The gender-as-variable perspective has been criticized, both for ignoring transgender and gender-non-conforming individuals and for reproducing women's underperformance by emphasizing how women are less innovative and participate less in innovation than men. However, the perspective has been fruitful, for example, when investigating innovation policies. The gender equality myth can quickly be dismantled when demonstrating how innovation funding or support services are targeted primarily to men innovators, men-owned businesses and male-dominated industries. Consequently, these studies enable identifying structural factors that exclude women from innovation. For example, only a fraction of all venture capital funding is targeted to women, even in the Nordic countries, despite these countries being praised for their gender equality. It is important too that future research includes transgender and gender non-confirming individuals.

Besides the 'gender-as-variable' perspective, other alternative approaches to gender are deemed necessary to understand innovation as a gendered concept and to show how masculinity, science and engineering and innovation are intertwined. Research offers evidence of how male and masculine connotations of innovation continue to be reproduced in different ways while also being context biased and ethnocentric. Innovation is gendered by conceptualizing innovations as products and technology that take place in manufacturing despite efforts to broaden the innovation concept to cover also service industries and public sector organizations. When innovation takes place in the latter domains, it has different gender meanings and can thus represent a threat rather than an opportunity to unleash innovation potential.

Taking a process perspective to gender enables investigating the processes in which the relationship between gender and innovation is challenged and transformed. Understanding gendering processes enables one to analyse not only how women are constructed as absent and men as visible in innovation processes but also reveals how these gendered stereotypes in innovation processes, policies and networks can be challenged. For example, existing research has illuminated the gendered processes of innovation by raising questions of visibility and legitimacy and showing how an 'invisible' and 'unrecognized' woman innovator can take action and gain legitimacy. By gendering the product, a female innovator can reclaim her position as a legitimate actor. A process perspective helps researchers to examine how the discourse of

innovation is created and recreated throughout gendered innovation processes, as well as how gender is produced and reproduced in innovation discourses. Gendered innovation processes and the gendering of innovation practices are 'sticky' – difficult and slow to change – which calls for a better understanding of the inherent power structures in innovation work.

To conclude, while some advancement in innovation research has taken place when it comes to gender, the innovation literature would benefit from a more thorough theorizing on gender. Specifically, it is important to have gender studies that do not build solely on the gender-as-variable and the binary perspective essentializing women and men but contribute to understanding the gendered construction of innovation as well as the gendering practices of doing (and undoing) gender in innovation. Furthermore, to advance research in gender and innovation, it is possible to draw on the studies of masculinities and femininities on the one hand, and feminist scholarship on the other hand, to reimagine innovation anew from a feminist perspective. I will discuss two examples of these approaches next.

Application

Pecis contributes to understanding how innovation processes are gendered by showing how specific forms of masculinities and femininities are constructed, enacted and resisted. Her analysis challenges the binary and dichotomous reproduction of men and women and of masculinities and femininities and focuses on how gender is done, undone and redone continuously in everyday social interactions. This draws attention to how *all individuals do gender* and how femininities or masculinities are not properties of women or men and are never fixed or essential. Masculinities and femininities are simultaneously constructed in innovation work and destabilize the specific form of masculinity as the norm. The empirical findings of the study show how women innovators conflate a specific form of femininity with competitiveness, emotionality and dexterity in innovation. It is a form of femininity – rather than masculinity – that is enacted in daily innovation practices. Both women and men create discursive positions to resist the association of femininities/masculinities in innovation. Research participants in both male- and female-dominated contexts challenge and establish the connection between being a woman and participating in innovation processes. This is informative on how *gendering and innovation are intertwined*: innovation participants operate from gendered frameworks, creating tensions throughout the process. By providing a gendered account of innovation that takes into account the fluidity and interactions between femininities, the study highlights how innovation practices embed multiple forms for masculinities and femininities.

Pecis and Berglund approach innovation as a context to counterforce the individualizing perspective in innovation. To do so, they rely on feminist studies of innovation in a dialogue with critical race theorists to reveal how innovation is shaped from the margins. As such, they contribute to the intersectionality research agenda in innovation. Intersectionality allows for challenging binary thinking by promoting an understanding of how different identities at the intersections of race/class/gender/sexuality – and related systems of oppression, domination or discrimination – overlap and contribute to positioning individuals as the 'other' excluded from innovation. The *intersectional lens enables grasping the multiple inequalities of groups of people* in subordinate positions. The argument is that it is not sufficient to view all women as a homogeneous group; rather, one needs to understand the plurality of the experiences of women in innovation. Intersectionality challenges the neoliberal, postfeminist narrative that all women should and can take part in innovation if they just made the effort. Instead, the intersectional approach enables recognizing the inequal structures in innovation, hindering the ability of 'all women' to do this work. Pecis and Berglund approach intersectionality both as structural (to understand who occupies positions at the margins and those at the centre) and as political to innovate race/gender relations from the margins. As such, they suggest envisioning innovation anew to *open spaces for feminist resistance and for reimagining innovation radically in a feminist way.* Innovation is political and radical, and in this way the feminist ambition of shattering gender oppression, sexism and racism can be re-envisioned as forms of innovation. In an organizational context, gender-equality measures could be understood as organizational innovations to disrupt the ongoing understanding of innovation. Alternatively,

focusing on gendered social innovation can offer a more inclusive approach to innovation, thereby democratizing it.

Critical summary

Innovation is gendered. This can be seen in what is considered to be an innovation, where innovations can be found and who can be an innovator. While innovation research is still largely silent on gender, there is an emergent research stream on gender and innovation. However, existing research to a large extent focuses either on examining the differences between men and women or on understanding the opportunities and challenges of (cisgender) women as innovators.

Further research is needed about the complex ways of doing and undoing femininities and masculinities in innovation work to grasp the complexity and flexibility of these positions. Besides focusing on the experiences of women, we need further research on how men (and non-binary individuals) in different positions and contexts experience innovation activities and what kinds of masculinities and femininities innovation work invokes. Feminist approaches can be helpful, both to reveal unequal structures and also to open up spaces for feminist resistance and reimagining innovation in radically new ways.

Further readings

Alsos, G. A., Hytti, U., & Ljunggren, E. (Eds.) (2016). *Research handbook on gender and innovation*. Edward Elgar Publishing.

Butler, J. (1999). *Gender trouble: Feminism and the subversion of identity* (10th ed.). Routledge.

Messerschmidt, J. W. (2018). *Hegemonic masculinity: Formulation, reformulation, and amplification*. Rowman & Littlefield.

Pecis, L. (2016). Doing and undoing gender in innovation: Femininities and masculinities in innovation processes. *Human Relations*, *69*(11), 2117–2140.

Pecis, L., & Berglund, K. (2021). Hidden in the limelight: A feminist engagement with innovation studies. *Organization*, *28*(6), 993–1017.

46. Gender, empowerment and social innovation

Kristin S. Williams

Outline of the topic

The study of empowerment is complex, conceptually underdeveloped, and operates across many subfields including sociology, psychology, social work, neurosciences, and organizational studies. It has strong ties to social justice and achieving personal agency and power. Feminist empowerment has been taken up by some fields, including social work, psychology, and anthropology, but there have been few interdisciplinary approaches. In innovation studies, empowerment is generally conceived from the perspective that social innovation can drive society changes and empower various actors, including those who typically experience oppression. Feminist engagement with innovation studies is limited.

Conceptual overview and discussion

To understand women's empowerment, we must first understand the term 'woman'. The term woman (or women) may include female-identifying persons, women who do not identify with binary gender categorization, transgender, cisgender, or intersex individuals. Thus, the term woman is bound up in social and political discourse as relating to biological sex, gender identity, and sexual orientation. It is therefore both a biological, and social category but not explicitly either. Inclusive language and pronoun choice is a way to exercise agency and voice.

Empowerment has been theorized in research and practice as an interactive process with practical applications. It is considered central to the improvement of the human condition, often revealing environmental, social, economic, or political inequities. However, empowerment lacks conceptual clarity. It can be defined as a process of increasing personal and interpersonal power and influence, achieving both personal and collective efficacy. Understood as a processional concept, it involves progress against a stated goal in which personal power is increased and thus involves self-efficacy, knowledge, and competence. Feminist models of empowerment also consider achieving personal goals alongside self-esteem and resilience. Some feminist models of empowerment see power as embedded in social relationships, social networks, and supportive groups, therefore linking it to collective, as well as personal, behaviour. In a collective model, empowerment becomes attached to larger social systems, community building, and relational action, including consciousness-raising.

Feminist engagement with innovation is concerned with social advances and discoveries that reconceptualize the relationship between gender and innovation with the goal of advancing the understanding of innovation from more marginalized perspectives. This focus brings an appreciation for specific identity groups and their context. Such approaches hope to address how systemic oppression is enacted in innovation contexts. Specifically, feminist analysis offers insight into how structural and institutional arrangements maintain or subvert taken-for-granted subject positions. Additionally, a feminist lens brings focus to industry and innovation which might otherwise ignore women. Innovation to drive women's empowerment is yet another sphere to examine, whereby women as advocates, changemakers and leaders critique and change industry that reproduces or reinforces gender inequality, and steer innovation in a direction that serves women.

Application

In the context of feminist research, models of empowerment are seen to reduce the distance between researcher and participant and contribute to a better understanding of subjective experiences and lived realities. In a practical context, empowerment translates to capabilities and capacities, and the reduction of structural barriers to independence and participation. As a result, empowerment is seen as paving the way to labour participation and economic potential, particularly for women.

Applying a gender lens to social innovation to promote women's rights and equality is emerging, and the International Centre for Research on Women is one of the few organizations to produce scholarly research about how social innovation can empower women. Women's empowerment and social innovation intersects in three areas: technology use, changing social norms and economic empowerment or resilience. Each of these

intersections emphasizes progressive social change to address a radical and challenging concept, namely, how to achieve gender equity.

Gender equity is directly related to poverty reduction, particularly in the Global South and Africa. Female agency, empowerment, and equality are all seen as potential solutions to poverty and privation. However, these ideas also need to consider historic and ongoing gendered disadvantages and the lack of widespread fundamental human rights, including healthcare, asset ownership, self-determination and more. Women are not an 'untapped resource'; they are historically and systemically exploited and oppressed. Social innovation can function as a bridge to create change as a form of inclusive innovation, but to serve gender equality and women's empowerment, it can also be represented as basic innovations that benefit women and women's well-being, such as health, nutrition, income and/or quality life.

The collective and relational models of empowerment have the potential to improve both personal and collective well-being, and enhance participation in social, economic and political systems. Supportive networks can organize, advocate and educate. Such efforts can develop vital capacity in communities and organizations and challenge injustice. However, the empowerment of women must first acknowledge the ongoing constraints of traditional social and gendered norms (e.g., gendered roles and unpaid labour), persistent structural barriers (economic, social and political), discriminatory systems and the broad and continued exploitation, poverty and violence women face daily worldwide. With an appreciation for situated knowledge and context, the empowerment of women can equate to the capacity for a different and more improved position and a change in the perception of what women can be and do.

Critical summary

Investing in women is the key to stimulating economic growth but also global equality. Women are not afforded the same standards of physical and mental health, access to education, competitive or equal compensation, nor do they participate equally in a variety of sectors, or governance or leadership roles. Despite hard-fought movements for equality, voice and agency, the prevalence of sexual and gender-based discrimination and systemic barriers remain. The United Nations reported that women only occupied 28 per cent of management roles worldwide in 2019. In 2020, the UN reported that women were significantly underrepresented in pandemic-related leadership roles, occupying only 25 per cent of national parliaments and 36 per cent of local government. Feminist engagement with innovation and innovation studies has the potential to lead to more focus on conditions which inhibit or enable women. Innovation to serve women's empowerment has the potential to drive social change, from basic human rights to women being significant players in innovation and industry.

Further readings

Cattaneo, L. B., & Chapman, A. R. (2010). The process of empowerment: A model for use in research and practice. *American Psychologist*, *65*(7), 646–659.

Chant, S. (2016). Women, girls and world poverty: Empowerment, equality or essentialism? *International Development Planning Review*, *38*(1), 1–24.

Hickel, J. (2014). The 'girl effect': Liberalism, empowerment and the contradictions of development. *Third World Quarterly*, *35*(8), 1355–1373.

Pecis, L., & Berglund, K. (2021). Hidden in the limelight: A feminist engagement with innovation studies. *Organization*, *28*(6), 993–1017.

Wilson, R. J., Abram, F. Y., & Anderson, J. L. (2010). Exploring a feminist-based empowerment model of community building. *Qualitative Social Work*, *9*(4), 519–535.

47. Harmonious passion

Rita Järventie-Thesleff

Outline of the topic

This entry presents the concept of harmonious passion in the context of creativity and innovation, and illustrates how harmonious passion interacts with autonomy to influence creativity. The concept of harmonious passion builds on people's strong inclination towards an activity that they like, find important and internalize autonomously into their identities. Harmoniously passionate individuals are creative because they feel personal enjoyment in their work and believe that they have free choice in pursuing their work-related activities. Organizations are increasingly seeking to create conditions to stimulate individual creativity since creativity can be considered as the seed of innovation. This entry will focus on the role of harmonious passion as a catalyst for creativity and innovation management. Liu and colleagues describe harmonious passion as a construct that can shed light on the motivational mechanism that links environmental autonomy support and individual autonomy orientation (being self-determined and self-willed) to individual creativity at work. As a practical implication, they suggest that managers could facilitate the development of harmonious passion both by including autonomy orientation as one criteria in their recruitment processes and by strengthening the unit- or team-level autonomy support – especially for individuals with weaker autonomy orientation. In this entry, an empirical case of a Nordic fashion magazine is used to illustrate the application of harmonious passion to foster creativity.

Conceptual overview and discussion

Creativity, the generation of novel and potentially useful ideas, constitutes a field of scientific research with important applied implications for innovation management, the process from ideation to implementation. In the 1960s, both laypersons and researchers seemed to think that creativity is something that depends on special qualities of unusual persons. According to Amabile and Pillemer, this individual-centered definition of creativity was gradually challenged into the 1970s. It was argued that even the work performance of 'geniuses' depended on their social environment and that the motivation of creative individuals could also fluctuate and influence their performance. Today, it is argued that creativity is both an individual and a social activity.

Harmonious passion and autonomy

Vallerand and colleagues developed a *dualistic model of passion*, and argued that the nature of passion can be twofold: *harmonious and obsessive*. Passion can be defined as a strong interest and attachment to a certain activity, and hence a passionate person spends a lot of time and energy on the activity and perceives the activity as meaningful to oneself. Harmonious passion is a result of a process of autonomous internalization of an activity – meaning that the activity has been independently and voluntarily adopted as an important part of the individual's identity. Obsessive passion in turn means that a person feels a compulsive need to participate in the activity and in a way the activity has taken control over the person and their identity.

Liu and colleagues build both on the dualistic model of passion and the self-determination theory and contend that harmonious passion can promote creativity in an organization. The self-determination theory (SDT) developed by Deci and Ryan looks at people's behavior and motivation: what makes people act, think and develop. It considers people to be mainly active, self-motivated, curious and eager to succeed, but the theory recognizes that people can also be passive, mechanized and alienated. SDT focuses especially on studying the interaction between people's inherent active nature and the social environments that can either support or hinder this nature. This interaction can result in two types of motivation, namely autonomous and controlled motivation. An autonomous environment can support people's experiences of themselves as initiators of their own activities, their ablities to choose the desired outcomes and means to achieve them. Autonomous motivation, in turn means that a person behaves with a full sense of will and choice.

Liu and colleagues argue that harmonious passion translates organizational autonomy support from both unit and team level, and individual autonomy orientation into a person's creativity at work. They suggest that a harmonious passion–creativity relationship is based on two reasons. First, harmonious passion as an autonomous internalization of

external activities will lead people to perceive more autonomy, which in turn facilates creative performance. Second, harmonious passion generates positive affect, excitement and energy that can drive people to pursue novel solutions. Harmoniously passionate people both like the activities they perfom and internalize them into their identities.

Traditionally, motivation has been described as intrinsic or extrinsic. Intrinsic motivation (IM) refers to engagement in behavior that is inherently satisfying or enjoyable, and extrinsic motivation (EM) refers to a drive to behave in a certain way based on external pressures or rewards. Liu and colleagues contend that, compared to the creativity-supporting effect of a person's intrinsic motivation or contextual autonomy support alone, the concept of harmonious passion offers a more nuanced understanding of the motivational mechanism that links social context to individual creativity. Harmonious passion enables us to shed light on the nature of interaction between contextual autonomy support and individual autonomy orientation in producing harmonious passion – and subsequently creativity. Hence, the emergence of individual harmonious passion is influenced not only by the nature of organizational autonomy support (at the unit and team levels) and employee autonomy orientation, but the interaction between them.

Application

A short empirical illustration is provided here of how harmonious passion can be applied in fostering creativity in a fashion and lifestyle publication. The illustration shows how interaction between contextual autonomy support (from both unit and team level) and individual autonomy orientation supported the construction of harmonious passion, which in turn played a pivotal role in the journalists' creativity.

Modum has been published for over 30 years. Throughout its history, its style has been opinionated, with a distinct social conscience – maintaining an attitude of opposition within its genre. It is directed mainly to readers under 35 years of age that are interested in the latest trends, well-being, lifestyle, and contemporary societal phenomena.

The role of the editor-in-chief and unit support for autonomy

The editor-in-chief at *Modum* was responsible for human resources and administrative issues. In the recruitment process the brand–employee fit played an important role and hence the job interviews focused on evaluating how well the applicant represented the *Modum* brand. The company wanted to recruit eager, passionate and talented yet relatively inexperienced young journalists that were given lots of responsibility and autonomy from early on, but who were also expected to work hard.

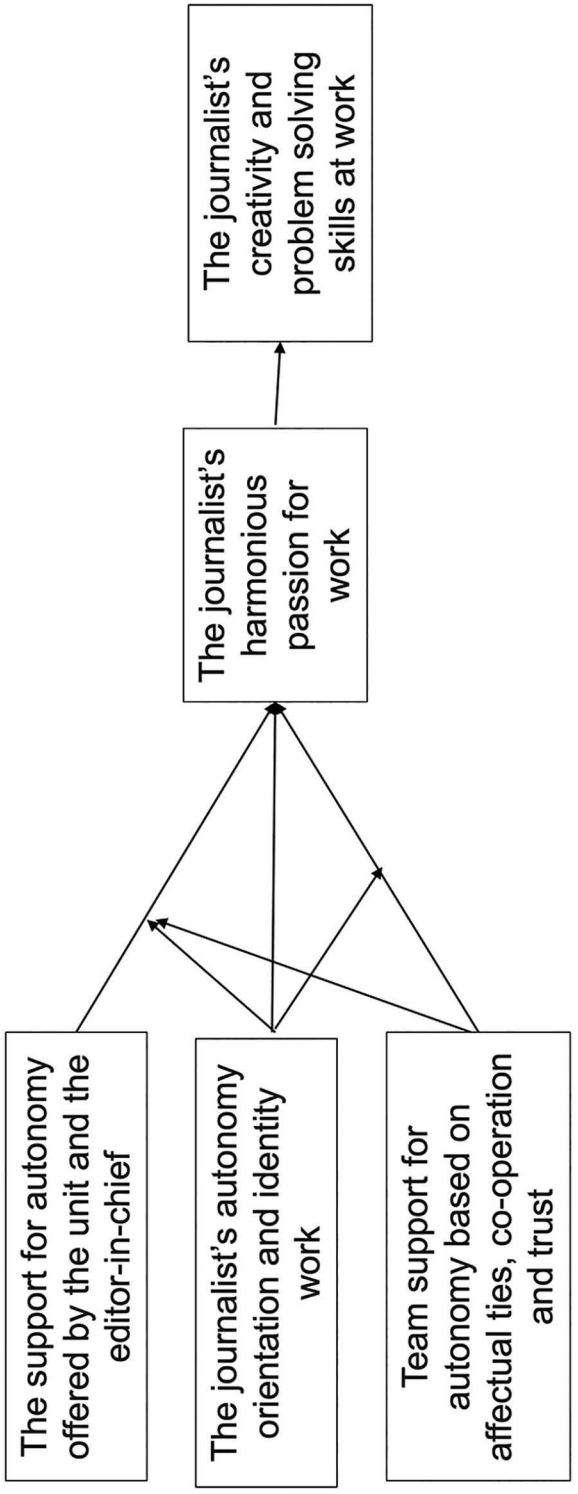
Internally, the editor-in-chief tried to act as an enabler and a coach. The magazine provided contextual support for autonomy and encouraged journalists' own autonomy orientation by, for example, organizing biannual retreat days, organized in nice places outside the office. The purpose was to enhance ideation and internal cooperation among the young journalists. The agenda included joint discussions, brainstoriming and ideation about diverse article types, as well as sketching an overall agenda for the coming six months. These retreat days were very popular among the journalists and resulted in a stormy sea of innovative ideas that were later on refined into detailed plans.

However, simultaneously, the financial situation of the magazine was tight and the editor-in-chief tried to improve efficiency by creating some new routines and processes. Among other things, a new hierarchical layer was introduced and some additional work-related responsibilities were assigned to the journalists.

Journalists' autonomy orientation and identity work

Producing the magazine was a combination of individual and collaborative work. Each article in the magazine could always be linked to the journalist who wrote the story, yet at the same time each article needed to correspond to the chosen style and spirit of the magazine. The journalists were motivated to write good stories and interested in constantly becoming better in their work.

Although for most of the members in the editorial team the work at *Modum* represented their first permanent job, they usually had a lot of previous experience working independently as freelancers or as bloggers. They considered



Source: Adapted from Liu and colleagues.

Figure 47.1 Mediation of harmonious passion in Modum

themselves lucky to be able to work for *Modum,* the magazine they valued, but they did not rule out the possibility to change jobs, since it was a typical way to advance in the publishing industry.

The journalists' autonomy orientation was high and they loved their work. They believed in themselves and in their own skills either as producers of texts or as creators of the visual look. They wanted to contribute to producing each issue of the beloved magazine as well as possible, and their work constituted an important part of their identities.

Team support for autonomy based on affectual ties and co-operation

The administrative reforms that had increased both hierarchy and workload caused some dissatisfaction. However, while the support to autonomy offered by the unit was perceived to decrease, the team support for autonomy continued to be exceptionally strong. The team spirit in the editorial office was based on very high trust and respect among colleagues. Their mutual relationship was very loyal, and colleagues were considered both friends and mentors. The members of the editorial team believed that everybody was committed to continuous improvement, learning and willingess to go the extra mile. The production of a high-level publication – issue after issue – represented a joint effort, which in turn produced a strong sense of belonging.

Furthermore, the team-level autonomy support was based on the fact that the journalists were linked to each other with strong affectual and emotional ties. The team members told how they formed a small, close-knit, ambitious working community that they really enjoyed. The members of the team shared a similar sense of humor. They felt that they were able to crack a stupid joke without fear, and be true to themselves without a need to exercise any self-censorship. The excellent teamwork materialized in generating and building on others' ideas. The ideation or brainstorming seemed to be unplanned and unpremeditated, taking place as much over a cup of coffee in connection with informal discussions as in weekly editorial meetings.

Harmonious passion for work and creativity

At *Modum*, the team-level and unit-level autonomy support interacted with individuals' autonomy orientation in producing harmonious passion and hence in supporting individuals' creativity at work. At the unit level, *Modum*'s recruitment and selection practices favored people who had a tendency towards being self-willed and self-determined and who expressed their enthusiasm for the magazine. But, over time, the introduction of a new intermediate organizational level and the assignment of new work-related tasks and obligations seemed to decrease the perception of unit-level autonomy support. However, the members of the editorial team formed a tight-knit, mutually supportive, enthusiastic group of young professionals with a very good team spirit. This team-level autonomy support seemed to compensate for the perception of a decreased unit-level support for autonomy. Hence, harmonious passion was nurtured by the interaction between organizational autonomy support (more from the team than from the unit level) and employee autonomy orientation.

The harmonious passion experienced by *Modum*'s editorial team members supported the creativity of both individuals and the entire team. The journalists constantly came up with new, innovative perspectives for their articles, they worked closely with the art directors to develop *Modum*'s distinct visual image and they enhanced the interactivity of the website in order to continuously improve the magazine and to strenghten its competitiveness. The team members identified strongly with their work and the magazine. They argued that, "We are the Modum brand" and when a new issue of the magazine came out of print they exclaimed, "We made this ourselves!"

Critical summary

Organizations should be increasingly seeking for ways to stimulate individual creativity, since creativity constitutes an important source for innovations. Harmonius passion is a useful construct to comprehend the motivational mechanism that produces creativity and innovation at work. Since an autonomy-supportive environment plays a significant role in the emergence of harmonious passion, it would be interesting to shed additional light on the connection between joint, shared or dialogical leadership and harmonious passion.

Vallerand and colleagues highlight the dark side of passion and argue that obsessive passion can lead to stress and even burnout.

Obsessively passionate people must work hard to feel good about themselves and to avoid shame. They have difficulties in limiting work only to officially agreed working hours or days and hence work constantly. Obsessively passionate people may also have difficulties in maintaining a balance between different areas of life, which in turn can cause an increased risk of depression.

Also at *Modum* some employees expressed signs of increasing obsessive rather than harmonious passion. For these individuals the team-level autonomy support seemed no longer to be sufficient to compensate for the decreasing unit-level autonomy support. To understand such a change in passion, it would be important to better understand the processes and mechanisms that can turn harmonious passion into obsessive passion and vice versa.

Further readings

Amabile, T. M., & Pillemer, J. (2012). Perspectives on the social psychology of creativity. *Journal of Creative Behavior 46*(1), 3–15.

Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology 49*(1), 14–23.

Liu, D., Chen, X. P., & Yao, X. (2011). From autonomy to creativity: A multilevel investigation of the mediating role of harmonious passion. *Journal of Applied Psychology 96*(2), 294–309.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78.

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., Gagné, M., & Marsolais, J. (2003). Les Passions de l'Âme: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*(4), 756–767.

48. Intersectional lens to innovation

Shreya Mishra

Outline of the topic

The concept of intersectionality highlights that individuals with multiple marginalized identities, such as race, gender, religion, class, etc., experience systemic discrimination and oppression differently due to the intersection of these social categories. It emerged as a critical framework highlighting and questioning the narrow approach of the legal system that limited access to justice to those with marginal intersectional identities. In comparison, innovation is a dynamic word interpreted in multiple ways, as it may have economic and societal gains. Fundamentally, innovation happens through the successful implementation of new ideas that solve the problems of the larger population. Both intersectionality and innovation aim at change and progression.

This entry calls for scholars in intersectionality and innovation to collaborate and explore the systemic issues in innovation ideation, process, and management. It builds on the premise that innovation is not just a competitive advantage; instead, to have broader implications, innovation at any level should be dealt with responsibly. This entry argues that taking an intersectionality lens will prove to be fruitful in suppressing the ill effects of a market-oriented approach to innovation. The entry proceeds by discussing the concept of intersectionality and innovation and discusses the aspect of responsibility in innovation. Post that it delves into how to apply an intersectional lens to ensure responsibility in innovation. Finally, it concludes with a critical summary mentioning the prime research gap and future directions.

Conceptual overview and discussionAccording to Crenshaw, intersectionality is understood in three ways. The first is *structural intersectionality.* One of the central tenets of structural intersectionality is that ostensibly neutral institutional practices and policies have disparate effects on individuals, thus perpetuating more significant inequalities. Therefore, structural inequality is reflected in the everyday lived experience of the individuals. Second is *political intersectionality,* which compels us to consider whose perspectives are marginalized in discourses and whose voices receive privileged attention. More often, in political discourses, the voice of the elite shadows the voices of the marginalized. Third is *representational intersectionality*, which examines how people with intersectional identities are represented in visual imaginaries. Portraying images of individuals from different minorities or marginalized groups may lead to further isolation of such groups of individuals.

While intersectionality emerged as a concept from the legal framework, it took a life of its own and transcended into other knowledge domains. Today, intersectionality has branched into a paradigm, a theoretical framework, a methodological approach, and a paxis endeavour. It is used as a perspective of study in multiple disciplines, including sociology, psychology, political science, education, business and management, etc. The intersectionality scholars such as Cho and colleagues have acknowledged this ever-growing tree while reminding us that, at the roots, intersectionality remains a way of thinking that looks at a problem from the lens 'of sameness and difference and its relationship to power'.

In simpler terms, people considered the same or similar by those in power are part of the dominant group and get privileged treatment. While those who are considered different from those in power experience subordination and oppression. The key is to remember that the manifestation of 'differentness' is dynamic, as the intersecting identities of social categories result in varied experiences of subordination and oppression. Intersectionality enables us to understand the struggle between power and identity, which can then be used to reduce the power imbalance in systems, policies, rules, regulations, and practices.

On the other hand, innovation happens across the gamut of products, processes, services, and technologies, ranging from small scale to revolutionary, aimed at altering the way of living. While true, this explanation highlights that innovation is seen from a market-oriented mindset. However, innovation is for people and society; hence, the discourse on innovation should be about them rather than the products, services, and technologies. To uphold the latter view, scholars, practitioners, and policymakers have called for being responsible for and with innovations.

The emergence of responsible innovation (RI) and responsible research innovation

(RRI) are prime examples of innovation for society and by society. The former is rooted in academia, aiming to innovate for an uncertain future and taking collective responsibility for such innovation. The latter emerged as a policy framework in the European Commission to ensure ethics and accessibility of innovation by encouraging higher public engagement in innovation discourse.

Nonetheless, Owen and Pansera explain that innovation is still approached from a market-driven society in this discourse. They argue that innovation should be seen as a 'socially constructed process of knowledge aimed at creating some sort of value often but not always within a market ideology'. Going by this logic, we can find strands of similarity between intersectionality and innovation, both of which have evolved as a school of thought for the betterment of society.

Application: intersectionovation

In line with this discussion, Owen and Pansera present three critical areas which need further probing: 1) innovation systems that are responsible, 2) political ideology of innovation that upholds responsibility, and 3) institutionalizing responsibility in practising innovation. These will be discussed hereafter through the lens of intersectionality.

Structural intersectionovation

Innovation systems are networks of four key actors: governments, academia, industry and the public, and their collaborative actions in the innovation process. Exploring how these stakeholders promote innovations is necessary since they are not free from prejudices and power that may influence the innovation outcome. The lens of structural intersectionality may help in this regard. At the core, structural intersectionality pertains to the subjective experiences of individuals with multiple social identities. However, Cho and colleagues emphasize that structural intersectionality is more about power than identity. Since systems of innovation have the power to decide what is innovated, who can innovate, and who benefits from the innovations, they may intentionally or unintentionally reinforce oppression due to embedded prejudices within the systems.

Moreover, among the four institutions, some institutions will have a higher degree of power over others, depending on the context, like the country. Considering such complexities, a structural intersectionality lens that deals with power will help identify the faultlines within the innovation systems. Such exploration will allow the academicians, practitioners, and policymakers to rectify failures in being responsible for innovations and support the larger society through them.

Political intersectionovation

Innovation is driven by market orientation and acts as a competitive advantage for organizations and governments. If market forces and competition drive innovation, it can be said to have a political bent of capitalism. While one cannot deny that market forces and competition are imperative antecedents to innovation, this also raises the question of ethical conduct in the innovation process. Thus, taking a responsible stand towards innovation is necessary since innovation is critical to sustain and deal with grand challenges. For this reason, Owen and Pansera call for a clear political ideology for innovation that supports its vital role in the growth of economies and the sustainability of mother earth. While this paradox cannot be resolved, a political intersectionality stance may help. While intersectionality is not a political ideology, political intersectionality underscores which voices receive less attention in the political discourses due to the multiple marginalized identities. Using this perspective will enable the agency of innovation to identify who is being undermined in the innovation process and who remains dominant. This recognition shall further allow collaborations and alliances among the various underrepresented groups in the process of innovation and its management.

In other words, adopting an intersectional political stance shall achieve equilibrium in the innovation ideation, process, and management. Such political ideology will require one to look beyond the traditional need for innovation as a competitive advantage and synergize the needs of the various innovation stakeholders.

Praxis of intersectionovation

According to Owen and Pansera, the third point of concern is the institutionalization of responsible innovation. In simple terms, they raise the matter of how being responsible can be regularly practised to be innovative. For

doing so, they advocate a pluralist culture and effective change agents that can question and disrupt the status quo within the innovation discourse. Responsible practices require openness and accessibility of innovation, adherence of ethical norms and reflexivity of one's motivation and ignorance, being responsive to future changes and societal requirements, being inclusive, knowing the potential risk of innovation, gender representation, being transdisciplinary, and advocating science for all (the list is an outcome of integrating the aspects of RRI and RI as presented by Owen and Pansera).

Identifying a specific intersectionality lens to address this gap is unlikely due to the multiple aspects that must be adhered to in order to institutionalize responsibility in innovation. However, taking an overall intersectionality perspective may be helpful. As stated earlier, an intersectional perspective urges engagement in the dialogue of sameness and difference across disciplines. This sameness and difference occur due to pluralism and multiplicity of social identities. Considering the underlying phenomenon of sameness and difference in responsible innovation, one can recognize to whom the research is accessible and open and who is deprived. Second, one can also understand if the ethical norms are sacrosanct or they are conveniently ignored when certain groups compete as innovators or beneficiaries. Furthermore, the agencies involved in innovation can reflect on their own degree of sameness and difference with the groups being served through the innovation.

Moreover, building on the works of Collins, starting innovation as an intersectional project can be helpful for praxis, since innovations as intersectional projects will require multiple stakeholder perspectives. It will require involving communities with a variety of experiences, expertise, and resources. It shall thus mandate the innovators, practitioners, and policymakers to enforce a responsible approach. Wojciechowska suggests that a similar view has been advocating democratic innovation in the discourse of public policy.

In anticipating future changes and societal requirements towards innovation, an intersectional perspective will help as it informs one about the complexities of contextual changes. It shall further reinforce inclusivity and gender equality as they remain the primary outcomes of intersectionality. Moreover, intersectionally analysing who gains from innovations from a sameness and difference perspective can help in understanding its potential risks. Finally, promoting science education for all will need further intersectional deliberation of sameness and difference, which can unveil who has better access to science education and who often is deprived of the same.

Critical summary

Innovation is a key indicator for competitive advantage, hence corporates invest heavily into innovation of processes, services, and products. However, such investment also leads to gain for the corporate bottom line instead of gain to the bottom of the pyramid. To curb such issues, being responsible with innovations is critical. This calls for having an intersectional lens so that innovation reaches to the larger public.

Currently, the intersectional lens has been taken to increase diversity and gender equality in innovation. While it is a welcoming direction, it does not ensure responsibility in innovation processes. This remains a significant gap in practice, as well as academia. Intersectionality is broadly conceptualized as a problem of social identity; however, in the realm of innovation it needs to be dealt with from the perspective of power and how the understanding of sameness and difference can deinstitutionalize power and institutionalize responsibility.

Moreover, to ensure being responsible with innovation projects, taking a pluralist methodological approach of intersectionality may be fruitful. Such an approach allows integrating 'structuralist, humanistic and transformative and emancipatory paradigms' (Rodriguez and colleagues). Further, it will extract the nuance from interactions between individual and structural processes, revealing the fundamental problems that do not permit inclusion of multiple voices in the process of innovation. Thus this entry argues that a synergy between intersectionality and innovation is necessary. This will ensure that responsibility in innovation can be enhanced so that the larger society can gain from it.

Further readings

Barabino, G. A. (2019). Reframing innovation. *Technology & Innovation*, *20*(4), 361–366.

Cho, S., Crenshaw, K. W., & McCall, L. (2013). Toward a field of intersectionality

studies: Theory, applications, and praxis. *Signs: Journal of Women in Culture and Society*, *38*(4), 785–810.

Collins, P. H. (2019). *Intersectionality as critical social theory.* Duke University Press.

Collins, P. H., da Silva, E. C. G., Ergun, E., Furseth, I., Bond, K. D., & Martínez-Palacios, J. (2021). Intersectionality as critical social theory. *Contemporary Political Theory*, *20*(3), 690–725.

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review. 43*(6), 1241–1299.

Owen, R., & Pansera, M. (2019). Responsible innovation and responsible research and innovation. In D. Simon, S. Kuhlmann, J. Stamm & W. Canzler (Eds.), *Handbook on science and public policy* (pp. 26–48). Edward Elgar Publishing.

Rodriguez, J. K., Holvino, E., Fletcher, J. K., & Nkomo, S. M. (2016). The theory and praxis of intersectionality in work and organisations: Where do we go from here? *Gender, Work and Organization*, *23*(3), 201–222.

Wojciechowska, M. (2019). Towards intersectional democratic innovations. *Political Studies*, *67*(4), 895–911.

49. Radical creativity

Annika Blomberg

Outline of the topic

Creativity is discussed in many fields, from the creative arts to the technical sciences. In this entry, creativity is approached from the viewpoint of business and management literature, where it is closely connected to innovation. Some scholars consider creativity and innovation to be synonymous, while most scholars see creativity preceding innovation. In other words, creativity is typically considered an antecedent of innovation, in that creativity refers to the process of idea generation and exploration, while innovation also encompasses the implementation, application and commercialization of those ideas. This entry centres on radical creativity, which can be defined as creativity that challenges and transcends existing frameworks and conventions. Radical creativity is important for innovation and innovation management, as it enables us to approach issues in new ways, redefine problems or ask different questions, and break from traditional ways of thinking.

There is a variety of ideas, processes, products or aspects that can be conceptualized as creativity, and often, the extant research speaks about creativity without making explicit whether it is about small improvements or radical ideas. However, in much of the literature on creativity and innovation, creativity has come to refer to incremental improvements or innovation that builds on and reproduces extant structures and practices and is closely entwined with neoliberal ideologies of unlimited growth, productivity and increasing consumption. In light of the grand societal challenges we are facing, there is a need for radical creativity aimed at challenging those structures and practices. This entry, first, looks at the ideological bindings of the concept of creativity in contemporary literature, and then discusses the concept of radical creativity and how it could be applied in addressing societal challenges.

Conceptual overview and discussion

Creativity can be conceptualized in different ways, and scholars have provided numerous typologies of creativity – not to talk about innovation – each of them emphasizing different features of the phenomenon. Many typologies distinguish small, everyday acts of creativity from more groundbreaking creativity. For instance, Gilson and Madjar label them incremental creativity and radical creativity, while Gardner discusses revolutionary and evolutionary creativity. Incremental or evolutionary creativity refers to minor modifications and improvements to existing practices and frameworks, while radical or revolutionary creativity refers to creativity that differs substantially from existing practices. Whereas Gilson and Madjar posit that both forms of creativity are equally important, Gardner seems to argue for the superiority of revolutionary creativity, defined as something that challenges prevailing assumptions.

This entry centres on radical creativity that departs from the assumptions that prevail in much of the academic and popular literature. This literature tends to present creativity as a desirable capacity for individuals, organizations and societies, and, as posited by Bilton, this desirability derives from the assumption of creativity as 'manageable'. By manageable creativity, Bilton refers to creativity that has been defined in managerial terms as a business competence or commodity. Thus, by being creative, organizations can remain competitive and succeed, and individuals can increase their employability and value at work. This thinking posits creativity as a necessity, even a duty, in contemporary economies for individuals, organizations and societies.

When presented as a necessity for success and competitiveness, the concept of creativity follows a neoliberal logic that sees financial success, growth and competitiveness as the ultimate goals for companies and even for individuals and societies. Consequently, much of the innovation literature posits that organizations need to be creative to innovate, to remain competitive and even to survive. However, when creativity is conceptualized as a 'tool' for increased productivity, competitiveness and growth, what follows is that the concept of creativity comes to equal incremental creativity rather than radical or revolutionary. Incremental creativity refers to creativity that is somehow novel but represents relatively small improvements that take place within the existing structures and systems, and that reproduces dominant, often business-centric ways of thinking. Radical creativity, on the other hand, is creativity that differs substantially from existing practices

or that even challenges extant structures and systems.

Currently, it is increasingly agreed that creativity derives not from single creative individuals or organizations but rather takes place in interactions and relationships between individuals. This so-called sociocultural paradigm has offered a promising avenue for understanding creativity, as it abandons the idea of single heroic creatives and directs the emphasis on interactions and sociocultural conditions that enable and facilitate creativity. However, despite a different view of the locus of creativity, assumptions on the desirability and manageability of creativity often prevail, firmly rooting the concept in existing structures and systems.

The discussion of radical or incremental creativity connects with the paradox inherent in the widely agreed-upon elements of the definition of creativity. Most creativity scholars emphasize that creativity needs to be both novel and unique but also valuable, useful or appropriate. The problem is that, if the value, usefulness or appropriateness is assessed from the viewpoint of existing systems, structures and assumptions, there is a risk that it results in improvements in the 'business as usual' and maintains, even reproduces, dominant structures. This is problematic, as it is becoming increasingly clear that the 'business as usual' approach is insupportable for planet Earth. If the applicability of an idea is evaluated from the perspective of whether it manages to maintain the dominant assumptions of, for instance, unlimited economic growth and increasing production and consumption, more radical forms of creativity are simultaneously disabled or at least limited.

Therefore, we need to detach from the concept of creativity as a form of neoliberal necessity and embrace radical forms of creativity. These radical forms of creativity are needed to rethink and challenge many of the taken-for-granted assumptions in society, such as anthropocentrism, consumerism and infinite economic growth and the related structures and practices. Creativity that departs from the taken-for-granted assumptions and structures needs to be novel, but its usefulness, appropriateness or value should not be assessed from the viewpoint of existing frameworks of the society. Rather, it should be based on whether it is novel and manages to shake the status quo, challenge the predominant ways of thinking and doing business or even changing the rules of the game.

Application: green care

Next, a process model for radical creative organizing is presented, following a discussion of its applicability. Then, green care is discussed as an example of social innovation that contains elements of radical creativity.

Chiles and colleagues suggest an approach to creative organizing called dynamic creation, which consists of three processes: forming expectations of an imagined future, reshuffling combinations of resources and participating in disequilibrium market processes. The first process, forming expectations of an imagined future, requires the ability to create mental images of a desired future and empathy to imagine how it feels from another person's perspective. These subjective expectations of an imagined future can be built on a society that is quite different from that of today, and, through empathy, the needs of future generations can be imagined. The second process consists of reiterative processes of combining and recombining resources in ways that the novel solutions can be realized. This can happen through unique resources or through combining resources in a unique way. The third process, participating in disequilibrium in the market, refers to the process through which the present socioeconomic order is shaken and a new socioeconomic order is created. By introducing novelty and heterogeneity into the market, the market is pushed to a dynamic course that may never reach equilibrium.

While this suggested approach works within the idea of the market, although with the aim of destabilizing it, it can also end in a more radical way. To better align with the idea of radical creativity, the last step of dynamic creation could be redefining the purpose and meaning of the market, what is exchanged on the market, who the agents operating on the market are and what its operating logic is.

While the dynamic creation approach remains on a relatively abstract level, it illustrates how radical creativity can start from imagining a desirable future, which is the first step in transformational change. A desirable future emerges from hopes and expectations and influences actions and decisions along the way, enabling one to contribute actively to building a sustainable future rather than

waiting for its actualization. Empathy, on the other hand, enables broadening the perspective to a wider range of people and reflecting on one's actions from their perspective. Empathy is a crucial aspect of building a more sustainable society, as it encourages us to consider the consequences of our actions from the perspective of marginalized stakeholders as well as future generations. Combination and recombination of resources and ideas are at the core of all creativity, while, in the process of radical creative organizing, the end point could be the introduction of novelty and heterogeneity that radically challenges the market in question – or even the whole idea of market.

Next, another more practical example of social innovation from the viewpoint of radical creativity is considered. García-Llorente and colleagues suggest green care as an umbrella concept that encompasses activities that use and develop nature- and animal-assisted methods to improve human well-being while also taking care of animals and nature. The main fields of activity are animal-assisted therapy and activities and nature-assisted methods. Green care activities combine the already widely evidenced benefits of being in nature to established health-care services, such as therapy, rehabilitation or education. While green care and nature- or animal-assisted care services perhaps do not radically restructure current societies, many aspects of radical creativity are implicated in their development. Although green care functions within the existing logic of health-care provision, it is based on a closer and relational relationship with nature; thus, it may help to reconsider the human–nature relationship and the role of nature in human well-being. It also takes the well-being of nature and animals seriously and prioritizes the overall well-being of humans and nonhumans over profit maximization. While green care is based on an old idea – the well-being benefits of nature – it is combined in new ways with existing health-care services. The radical creativity of green care lies in the moving of health-care services from indoor to nature, in transgressing the human–nature divide by making nature and animals active agents in health-care processes and, eventually, in challenging the prevailing anthropocentrism of much of Western health-care.

Critical summary

In business and management literature, the concept of creativity tends to carry the burden of neoliberalist ethos and has become a productivity-driven concept. While it might have incontestable value, particularly for companies interested in expanding and increasing productivity while continuing their businesses as usual, it has come to refer to incremental creativity and exclude more radical forms of creativity. Therefore, to address many of the grand challenges we are facing, creativity needs radical rethinking. It has to be freed from the neoliberal discourse in which it is tied to productivity, growth and individuals as neoliberal subjects. There is a need for radical creativity, in other words, creativity that shakes the existing structures and systems and challenges conventional ways of thinking.

Consequently, the appropriateness, usefulness or value of creativity should not be assessed based on economic measures and its ability to generate profits and competitive advantage but rather by its capacity to challenge conventional ways of thinking and doing. Movements aiming at challenging conventional thinking, such as ecocentrism, anti-consumerism and degrowth, provide fruitful starting points for both radical creativity and innovations that aim at increasing the overall well-being and equality of humans and nonhumans and growth as measured in other than financial terms. However, radical creativity is not predictable, easy and nice but is rather unpredictable, often antisocial and accidental and requires unlearning, questioning and forgoing many things that may now feel natural and important. Therefore, politics and power issues included in the emergence and, particularly, the acceptance and application of radical creativity would provide fruitful avenues for future research.

Acknowledgment

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Further readings

Bilton, C. (2010). Manageable creativity. *International Journal of Cultural Policy, 16*(3), 255–269.

Chiles, T., Tuggle, C., McMullen, J., Bierman, L., & Greening, D. (2010). Dynamic creation: Extending the radical Austrian approach to entrepreneurship. *Organization Studies, 31*(1), 7–46.

García-Llorente, M., Rubio-Olivar, R., & Gutierrez-Briceño, I. (2018). Farming for life quality and sustainability: A literature review of green care research trends in Europe. *International Journal of Environmental Research and Public Health, 15*, 1282–1300.

Gardner, H. (1994). The creators' patterns. In M. A. Boden (Ed.), *Dimensions of creativity* (pp. 143–158). MIT Press.

Gilson, L. L., & Madjar, N. (2011). Radical and incremental creativity: Antecedents and processes. *Psychology of Aesthetics, Creativity, and the Arts, 5*, 21–28.

Kaufman, J. C., & Sternberg, R. J. (Eds.) (2021). *Creativity: An introduction*. Cambridge University Press.

Verger, N. B., Duymedjian, R., Wegener, C., & Glăveanu, V. P. (2024). Creative preservation: A framework of creativity in support of degrowth. *Review of General Psychology*, *28*(3), 268–281.

50. Reflective design

Ilkka Kettunen

Outline of the topic

This entry examines how the design process is described in the research literature as part of innovation activities. Design commonly is depicted as a rational and linear process, but newer approaches emphasize reflexivity as a key feature of design, referring to the reflection-in-action model of designing. This latter approach is complemented by the concept of pre-reflective design activity. Reflective thinking and action related to design, i.e., thinking through doing, offer a fruitful approach to innovation activities when information and objectives are unclear or conflicting, and the outcome cannot be envisioned clearly. Pre-reflective observation and imagination provide a model for how designers can reflect on their own actions consciously. However, designers also benefit from a rational model that helps structure scheduled creative activities. While the focus of this entry is on the reflective model, it is discussed in relation to the rational model. In this spirit, these two concepts are also used to describe various phases in the design process of an industrially produced consumer product.

Conceptual overview and discussion

According to Cross and Clayburn Cross, the designer's role in innovation activities is to develop new and unexpected solutions, tolerate uncertainty, work on the basis of incomplete information, apply imagination and constructive anticipation to practical problems, and use drawings and other modelling tools in problem-solving.

The design literature has outlined two models to conceptualize the meaning of design. The first is the rational model, which commonly is used to coordinate and manage various product development and innovation activities, particularly within larger companies. The second is the reflective (reflection-in-action) model, which is based on Donald Schön's ideas of design as an intuitive, dynamic and iterative process. The rational model depicts design activity as one phase of the innovation process, while the reflective model portrays design as an active process that encompasses the entire innovation path.

Rational design model

The design literature has provided several variations of rational design models in the context of new product development. These models involve progressing from goal-setting and defining problems to brainstorming alternative solutions, filtering and developing these solutions and testing them. Rational design models are normative in nature and aim to guide, control and manage the creative process within the confines of a scheduled product development timeline. Multidisciplinary product development teams and novice designers benefit from the clear instructions provided by these models that address the question of how to operate in a situation demanding open creativity.

Rational models have been criticized for not considering designers' intuitive thinking and the social interaction taking place within the design process. Overall, rational models are based on the idea of a predictable future towards which one progresses purposefully through predefined stages.

Reflective design model

Schön's book *The Reflective Practitioner* offers an alternative to rational models by presenting design processes as 'reflective action'. Schön's thinking is influenced by John Dewey's views, which suggest that habitual action and intellectual reflection occur simultaneously. In professional practice, thinking is described as happening as part of the process, not outside it. In this model, designers create a situation consistent with their current understanding, and the situation 'talks back' to them. In this way, designers produce their own action environments, to which they simultaneously react (reflection-in-action). For example, reflective dialogue occurs through sketching and building models. Such actions open possibilities for unintended consequences, including surprises. By reflecting, designers learn more about their design subjects and their own actions, thereby evolving as professional designers.

Schön's reflective perspective has been criticized for overlooking design activities' bodily and social dimensions, which are included in the various design activities conducted within organizations. While working, designers often engage in simultaneous conversations with others. Schön's ideas also have been criticized for being overly problem-centric, based on the idea that problem-solving

motivates designers. However, designers can work even if no identifiable problem exists. Also, the reflective model is descriptive and does not instruct novice designers on what to do in design work or how to proceed in creative problem-solving. According to the model, the designer must do something to enable reflection, but from where does the impulse, or pre-understanding, of one's design work come?

Pre-reflective thinking

Building on Dewey's ideas, Rylander Eklund and colleagues proposed that pre-reflective thought forms a continuum with reflective thinking, referring to Schön's concept of 'reflection-in-action'. Design practice now is viewed as regular participation in conversations with one's own actions and those of the other actors, combined with pre-reflective design artistry. Observation and imagination skills are viewed as central. It has been proposed that designers develop these skills through sketching and model-building, thereby seeking cues from the environment. Imagination relies on sensations, emotions and meaning, which together form something new. According to this view, the outcome of observation and imagination cannot be foreseen; therefore, designers then enter a state of uncertainty. Their focus turns to constructing meaning through sketching and model-building. Through action and repetition, these techniques can cultivate designers' adventurous attitudes, strengthening awareness of the environment and sensitivity to impulses.

Designers' reflections are not just introspective, but emerge in interactions with colleagues. As Tan and colleagues illustrated, outward-focused reflection brings together the perspectives of those collaborating in the design process, and in this way generates new social, political and emotional material. Collaborators learn together and form a collective view of what is desired. The purpose of this design-related social practice is to create a shared understanding among the parties involved in making innovation, i.e., to engage in sensemaking. According to Kettunen, this involves building camaraderie among parties, openly presenting sketches, facilitating joint composition and continuously narrating the ongoing design process. Simultaneously, critical reflection occurs on the design tasks assigned to designers.

Application: designing a clothes hanger

In this real-life example, a clothes hanger created by a designer has been commercially successful, enduring in the market for approximately 30 years. This indicates that the industrially designed product has fulfilled its defined task well. It is cheap and durable, and its functional form is timeless and culturally long-lasting. This everyday product serves countless people anonymously daily. The following describes how the clothes hanger's shape was formed through a rational and reflective (or pre-reflective) process.

The design brief was provided by the customer, who was the CEO of a consumer goods manufacturing company. The brief was simple: design a mass-produced, plastic, thin, inexpensive, stackable clothes hanger with a pants bar and skirt hooks. The manufacturing company accepted the design office's proposal, which allowed a designer to dedicate three weeks to the project.

Designers often work in teams, but the clothes hanger is such a simple product with straightforward functional requirements that it was assigned to a single, relatively inexperienced, but enthusiastic designer. The product innovation in this case was expected to be incremental, seeking small changes rather than more radical ones.

The design strategies comprised a linear process, a phased product development model and an innovation funnel model. In the latter, the designer first generated a large number of ideas for clothes hanger shapes and structures that might solve the design problem. This can be called the divergent phase. The assumption is that the more original-idea material that can be generated, the better. The entire idea mass-forms a solution space from which the most promising ideas are selected for further development in the convergent phase that follows.

Drawing without thinking

To get started with sketching, the designer drew existing clothes hangers and sought shapes, forms and structures from design and architecture magazines, as well as from pictures in car magazines. At times, he engaged in stream-of-consciousness drawing, letting the pen make marks on the paper without a specific goal. Next, the designer sketched dozens of clothes hanger designs using a bodily

and intuitive approach illustrated in Figure 50.1. He shaped without thinking, or rather was thinking through design. He had the project workspace to himself in peace. The tilted drawing table was set at a standing height so that the pen's stroke originated from his feet. In his hand were yellow (for preliminary shapes) and black (for refining the shape) coloured pencils. The designer listened to music, creating a strong and enjoyable workflow.

As the process progressed, divergent and convergent activities alternated. While the number of alternative-solution ideas decreased, their degree of refinement increased. From the dozens of quick sketches, the designer selected 20 of the most promising ones, from which he drew ideas into new concepts; then the designer, collaborating with the client, chose two models and used them to handcraft four prototypes – two versions of each model. From the version chosen by the client, the designer created a 3D model on which to base the clothes hanger's shape, which was milled into an aluminium prototype mould.

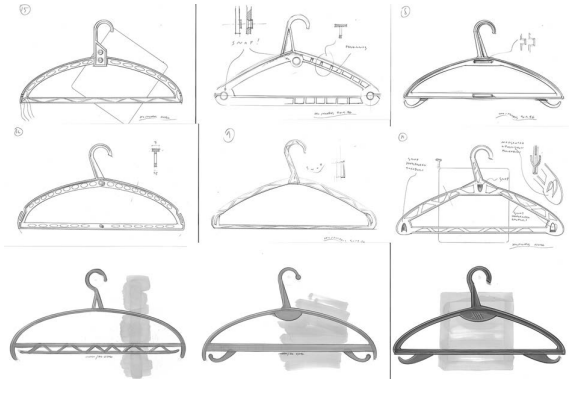
When the client was able to feel the prototype made from the actual plastic material through injection moulding, he adjusted the requirement of a thin hanger, so the hanger was made sturdier. The client was willing to give up on stackability even though it was initially one of the goals. A second test moulding with the corrected prototype mould produced satisfactory results. The design project was completed, and the client company bought an automated production tool.

The finished clothes hanger was roughly in line with the design brief, except for stackability. The product was not perfect, containing some small flaws: the product's cross-section was not optimal for the material and manufacturing method, and the hanger taken from the mould unexpectedly changed shape as it cooled, possibly into a more functional direction. Furthermore, the sharp inner corner could be a potential source of small breakage in the long term. However, these flaws were practically insignificant, as no one except the designer would notice them.

The product quickly moved into production and onto the market. The client company's CEO later commented on the production: 'We should have made a four-cavity mould (i.e., an automated injection moulding tool) instead of a two-cavity one already in the beginning of the project'.

Designer's reflection

Nearly 30 years after the project, the designer remembers his excitement while designing the clothes hanger. Designing an everyday consumer good felt like a meaningful task. Due to the product's functional and structural 'ease', he was confident in his ability to create a functional product. This confidence allowed for free ideation, happening almost without anxiety. The designer could focus on the beauty of the form, refining the lines and proportions without committing quickly to any one solution. Although the designer worked on the design project alone, colleagues in the design studio followed his



Source: Ilkka Kettunen.

Figure 50.1 Clothes hanger sketches

progress and commented on sketches and models. The client participated in the process by making choices from the designer's proposed alternatives.

The clothes hanger design process followed a rational linear process: define, ideate, prototype and test. The process description provided timelines and clear boundaries for the work, with no need to return to an earlier stage. Simultaneously, the process followed the funnel model, during which several ideas were selected and refined into the final functional solution.

Schön's reflection-in-action model describes the designer's experience of implicit professional artistry well, in which you converse with yourself and your own work. The designer examined a sketch he had drawn, which gave him a new idea that he tried to put on paper quickly. This created a productive positive feedback loop: the situation created by the designer spoke back to him, and he had to react to the environment he had created.

From the designer's perspective, adequate time was allocated for design work on this project, allowing for immersion into the subject through subconscious reflection. It also allowed for divergent and convergent processing of multiple alternatives and versions, and perhaps incubation as well. The methods used by the designer – sketching and making models by hand, and creating a 3D model on a computer – all contributed to the clothes hanger's final shape.

The designer's excitement and flow experience were related to pre-reflective action and designer-like artistry, in which bodily design activities can engage in observation and imagination, involving sensing, feeling, evaluating and decision-making. For a moment, the designer had the opportunity to explore shapes in environments, but the final form was built as a combination of clues from the environment and the designer's own history, education and work experience.

The description of the design process demonstrates how the rational design model provides a basic structure and strategy for the task and client service. However, the reflective dimension makes it understandable how a designer can work and live with an unfinished and unclear situation in design work. The pre-reflective model, in turn, values artistic and bodily making, meaning-making, sensitivity to observation and imaginative adventure in the design process.

Critical summary

The philosophical underpinnings of the design process can be divided into the realist and constructivist design paradigms. The rational model of design is based on the first paradigm, and it portrays design as a formal, linear and pre-planned causal problem-solving process. Design and product development are understood as cognitive activities in which predictive methods play a key role. The goal is to tame chaos and control the design process. However, the constructivist paradigm depicts design and product development as complex and postmodern social activities. In this inherently uncertain, changing and ambiguous situation, the exact goal is not known. It is accepted that one must embrace chaos, and the objective is to learn along the way. As Rylander Eklund and colleagues pointed out, design is sensemaking, in which the designer's sensitivity, embodied imagination and improvisation are crucial.

Central to the constructivist paradigm in design is pre-reflective thinking and action, which approach artistic activity. In the reflective model designer's or product development team's artistry and adventurous attitude develop through imitation, practice and repetition, and studio work enhances imagination and improvisational skills, feeding creativity. The strength of this 'designerly approach' lies in the variations of different problem-solving strategies and the coherent inclusion of their key elements. Compared with this, the rational model is normative and aims to provide clear instructions on what should be done at each stage.

At its best, the rational model inspires the product design team to move forward together boldly. However, even the first sketch drawn by the designer changes the situation. A clear and straightforward strategy disappears, and the designer and team must reflect on the new situation they have created in their work. Learning can occur if the designer or team succeeds in their reflection to the extent that they adapt their work practices to fit the situation. A unique process committed to each situation usually can be described more precisely afterwards.

Innovation requires new methods and practices whose novelty means they first appear odd and slow, particularly with a product development process designed to be efficient and manageable. Creative action requires the

designer and team to immerse themselves into the situation artistically and be sensitive to environmental impulses. The first challenge for design management is to find time, tolerance and support for the imagination and improvisation of design and product development teams. This can be difficult for companies that rely heavily on rational approaches in their broader innovation management practices.

Further readings

Cross, N. & Clayburn Cross, A. (1995). Observations of teamwork and social processes in design. *Design Studies*, *16*(2), 143–170.

Kettunen, I. (2014). Design as sensemaking: An autoethnography on the early phases of product development. Proceedings of NordDesign 2014. www.designsociety.org/publication/36292/Design+as+Sensemaking%3A+An+Autoethnography+on+the+Early+Phases+of+Product+Development

Rylander Eklund, A., Dixon, B. & Wegener, F. (2023). Pre-reflection-in-action: Rethinking Schön's reflective practice through the 'habits of design artistry'. *Design Issues*, *39*(4), 9–20.

Rylander Eklund, A., Navarro Aguiar, U., & Amacker, A. (2022). Design thinking as sensemaking: Developing a pragmatist theory of practice to (re)introduce sensibility. *Journal of Product Innovation Management*, 39, 24–43.

Schön, D. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Tan, L., Kocsis, A., & Burry, J. (2023). Advancing Donald Schön's reflective practitioner: Where to next? *Design Issues*, *39*(3), 3–18.

51. Resistance

Helena Fornstedt

Outline of the topic

Since the mid-1800s, the concept of innovation has increasingly been caught up in a capitalist pro-profit and pro-growth paradigm. In the economically inspired science, technology and innovation (STI) disciplinary fields, innovations' benefits are often assessed from the perspective of the innovating firm. Among the fields that concern themselves with innovation research, the fields of STI are the most populated and cited and could, therefore, be referred to as the mainstream. When the consequences of innovations are considered in these mainstream fields, this is usually done within the system boundaries of the innovating firm, user and GDP measuring state. Using these narrow boundaries and an analytical starting point where the innovating firm is in focus, the conclusion is often that innovation leads to a positive sum game. This tendency to see innovation as inherently good is referred to as the pro-innovation bias. When mainstream scholars view innovation in this light, human and non-human resistance to innovation inevitably gets caught up in negative association. Resistance, or barriers as it is sometimes called, can, for instance, take the shape of a lack of funding for research and development, consumers refusing to adopt an innovation, or regulations making it difficult to innovate. In most scholarly writings, innovation resistance is seen as a hurdle to the progress that innovation supposedly entails. Studies persistently promote continued innovation and have been preoccupied with identifying (and understanding) resistance in order to aid managers or others to overcome it.

Conceptual overview and discussion

STI innovation scholars often portray human and non-human innovation resistance statically. In their narratives, it appears to be without history or goal and only becomes salient when intercepting the innovation process. However, to better understand innovation resistance, it is beneficial to employ an onto-epistemological understanding of innovation beyond the STI fields. One such perspective, inspired by actor-network theory (ANT) and fitting within the field of science and technology studies (STS), will be presented here.

ANT is famous for its refusal to disassociate materiality from the social or the human from the non-human and instead sees them as perpetually intertwined in networks. Thus, the theory emphasises innovation's interconnectedness with its context and the continuous alterations the interactions bring about in the innovation. Following that reasoning, it makes sense to talk about innovation not as a static entity but as a constantly changing process. A process is understood here as a continuously changing collective of humans and non-humans moving in a certain direction; a direction that is also subject to alternations. In ANT, this is referred to as a programme of action. Invoking this perspective on innovation resistance enables an escape from the static view of resistance. In ANT, programmes working against a programme of action are called anti-programmes. While antagonism in mainstream innovation research is found in its portrayal of innovation resistance, ANT puts the antagonism in these opposing anti-programmes. Therefore, a slight change in wording is called for when employing ANT to avoid the a priori categorisation of antagonist/protagonist. The words 'innovation process' (instead of a programme of action) and 'other' process (instead of anti-programme) will be used here. This avoids an unnecessary antagonism and highlights that the identity of this 'other' is not merely relational to the innovation process.

While an innovation process involves several intertwined human and non-human actors that move in a specific direction, so does the 'other' process. The 'other' process can, for instance, strive towards less hazardous chemicals in lakes, preserving worker autonomy or diffusion of a technological artefact. Thus, it can be another innovation process. Innovation resistance can be viewed as occurring in the clash between these two processes (an innovation and an 'other'). This gives the analytical benefits of refraining from a priori ascribing higher value to either process. Acknowledging that a myriad of processes simultaneously attempts to shape the world aids the analyst in avoiding the linear view of STI, which holds that firm-based innovations are always progressive and beneficial. It also leads away from the widespread assumption that innovation resistance is a reaction against progress or a bump on the road towards it. Moreover, it avoids the simplistic view, sometimes employed by STI research,

that resistance derives from desires to linger with the status quo or stability. Instead, it highlights that resistance originates in clashes with 'other' processes going in other directions and attempting to shape the world in other ways. To view innovation and resistance in this light, denaturalises the view on innovation processes as linear and progressive, and reconnects both the innovating actor and the 'other' to structures of power and domination. This also means that resistance does not – as STS scholars have hinted – only occur when a marginalised group faces a dominant group's hegemony; instead, all actors (even dominant ones) are engaged in interplays of resistance and accommodation.

Following the STS/ANT perspective, innovation resistance is best understood as a sign that an 'other' has another story, another direction, another way in which it influences and shapes the world and that the innovation process is standing in its path. Innovation resistance manifests when an innovation process intercepts an 'other' process. This can give rise to dissociation between the innovation process and human and non-human actors previously partaking in it. One example is an 'other' process (consisting of hospitals, medical doctors, rules, political directives, overarching healthcare goals, etc.) enrolling an argument of not enough clinical evidence which disassociates an innovation process (consisting of a MedTech firm, medical device, sales personnel etc.) from its identity of evidence-based medical care, subsequently hindering the innovation process from enrolling more users. Moreover, innovation resistance is relational – it is viewed from the innovation process perspective. In parallel, from the 'other' process perspective, the innovation process engages in resistance. Following the same example, the 'other' could be a healthcare system enrolling a health technology assessment to disassociate itself from innovation processes that would lead to unnecessary costs or ineffective treatments. From the other's perspective, an innovation process seeking to introduce ineffective care could be seen as attempting to prevent the other's movement along the lines of cost-effective, high-quality healthcare. Therefore, how the resistance process is interpreted depends on the observer's identity and its interpretation of surrounding phenomena.

In STI, innovation is portrayed as invoking change in the context where it is introduced. Even though many STI scholars have noted that innovation does not remain the same after it has begun to diffuse and have observed users' influence over the process, they limit their focus to these users and rarely accentuate the reciprocity between the innovation process and the 'other' processes it meets. However, an analyst needs to note that all interacting processes (including the innovation process) influence each other, which is crucial to their evolution. Just as an innovation process shapes the world, so does the 'other' process. Therefore, the entanglement of these two processes shapes each other and their surroundings. When two processes intercept, they engage in processes of resistance and accommodation. The innovation resistance process (where actors are disassociated from the innovation process) restricts the innovation process's agency. This restriction forces the process onto new paths (i.e., accommodation). Accommodation includes: (1) enrolling new actors, such as a court ruling or a new employee, into the innovation process, (2) engaging in activities that, once again, enrol a resisting actor, and (3) rejecting previously enrolled actors. The accommodation might be met with new resistance. This interplay of resistance and accommodation shapes both the innovation process and the 'other' process. In that sense, there is also directionality in the resistance. Movements of innovation resistance are a crucial part of the struggle to participate in the social shaping of an innovation process.

In STI research, resistance from some actors has been portrayed as somewhat desirable for the innovating firm; for instance, resistance from knowledgeable clients is said to possibly lead to valuable improvement. Resistance from actors outside the preferred system boundary of STI (firm, user, GPD measuring state) is less so (for instance, worker rights have implicitly been portrayed as unwanted resistance to innovation). Resistance from such actors is rarely considered a learning opportunity by STI scholars; learning is instead often believed to come from prospective users. The (low) value ascribed to the resistance by the innovating firm has usually coloured STI studies of innovation resistance. A less firm-biased STS perspective enables the view on innovation resistance as potentially beneficial. Viewed in this more holistic light, resistance can be seen as a way for the excluded 'other' to (re)gain

influence over an innovation process by which it is affected. Innovation resistance can, thus, enable more stakeholders' participation in the social shaping of innovation processes; a participation that could contribute to moulding innovation processes into something deemed better or more suited for the context from the perspective of the resisting actor.

Following the ANT-inspired analysis, the innovation resistance that occurs in the clash between processes can safeguard something perceived as valuable from the point of view of the 'other'. Schumpeter describes innovation as creative destruction; thus, something is destroyed when an innovation process moves about. This decline or destruction is often overlooked in STI research. Resistance can be seen as an effort to preserve this something, that is, it can serve as protection from the influence of an unwanted innovation process. Consequently, innovation resistance often derives from 'other' innovation processes in the struggle for dominant design or when a new technological innovation enters a market challenging the already established innovations. When the study of innovation is made from the perspective of one innovating firm (which is often the case in innovation research, even when clients are surveyed or interviewed), the potentially desirable effect of the innovation resistance process for the resisting 'other' becomes downplayed. When the 'other' has been considered in STI and STS research, resistance occurring in interaction with clients and innovation systems has received the most attention, workers some and the more than human world extremely little.

Application

Many studies about innovation start with the idea that the innovation under study is objectively beneficial for the adopting party. An empirical case, outlined in full by Fornstedt, that moved away from this analytical starting point will be presented here. The case concerned a medical technological innovation process where the technology's ontological status was not determined during the time of the study; i.e., not even the science of medicine was ready to declare it as superior compared to other solutions. The innovation process involved an innovating firm, here called MedTech, and a low-tech innovation assumed to reduce surgical site infections (SSI). The innovation process aimed to increase profits and gain a competitive advantage by selling an antibacterial device to counties in the Swedish healthcare system. When attempting to spread in the Swedish healthcare system, the innovation process intercepted two 'others', and innovation resistance manifested.

The innovation process attempted to become a part of the Swedish healthcare system through public procurement. The Swedish healthcare system was engaged in a process to prevent, investigate and treat diseases and wounds. However, when these two processes intercepted each other, the healthcare process resisted the innovation process due to a lack of clinical evidence (as outlined in the example in the previous section). Thus, the resistance was neither irrational nor fear-driven but rather in line with the directionality of the 'other' process. As an accommodation strategy, MedTech enrolled researchers to conduct clinical trials that could point to the device reducing SSI. Thus, the resistance prompted an accommodation that shaped the innovation process. Once the innovation process included clinical trials of this sort, the resistance from some parts of the Swedish healthcare system subsided.

The resistance occurring in the interaction with the Swedish healthcare system was, in some sense, anticipated by MedTech. The sales personnel expected their prospective clients to make value judgements about the device and saw it as a learning opportunity. The innovation process did, however, also intercept an 'other' process it had not previously identified as relevant, namely the aquatic organisms process. That process strived to ensure a good life for aquatic organisms and thus eliminate the use of the antibacterial substance that coated the low-tech device and threatened their livelihood. When the innovation process intercepted the aquatic organisms process, resistance manifested. A list of substances to discontinue in the healthcare system was enrolled into the aquatic organisms process (the list contained the antibacterial substance) and subsequently enabled the disassociation between the innovation process and a prospective client within the Swedish healthcare system. This occurrence of resistance enabled a previously excluded actor to influence an innovation process by which it was affected. Thus, the resistance served the purpose of safeguarding the aquatic organisms process from an innovation process perceived as harmful. The interplay

of resistance and accommodation shapes all intercepting processes. How the interaction will play out partly depends on the power positions of the actors involved in the respective processes. The aquatic organisms process had a more advantageous power position in this empirical example. This contributed to the resistance, leading to the innovation process's becoming excluded from some parts of the Swedish healthcare system.

The three processes described in this case (innovation, healthcare system and aquatic organisms) are illustrative since none can be labelled villain, hero, victim or perpetrator. Rather, they all supposedly bring some kind of value, and the analyst can refrain from assessing if one process should be valued higher than that of another. Instead, the analyst can conclude that the value the process brings is contingent on the assessor and the point in time when the assessment is made. This effectively generates a less biased analysis than solely focusing on the perspective of the innovation process.

Critical summary

Much of the mainstream innovation literature around human and non-human innovation resistance has been conducted from the perspective of innovating firms. Innovation managers are customarily put forward as one prospective audience for the studies. Therefore, most mainstream studies of resistance to innovation have portrayed resistance to innovation in a negative light as something preventing the assumed beneficial consequences of the innovation process. However, the analysis of innovation resistance can be made less firm-biased through the employment of the onto-epistemological perspective of STS. Viewed through such a lens, the resistance manifests when an innovation process clashes with an 'other' process with a directionality different from the innovation process. This perspective avoids an antagonistic framing of resistance and gives a deeper understanding of the effect of resistance. A resistance process is not just, as mainstream scholars have implied, a temporal hurdle to overcome from which one can possibly derive some learning. Instead, interplays of resistance and accommodation are essential in shaping the innovation process. The shaping can make the innovation process better fit the context it attempts to enter. It can also lead to the inclusion of previously neglected actors and perspectives. Since innovation is famously termed creative destruction, resistance can be seen as a way for the 'other' to protect itself from innovation processes perceived as harmful or unnecessary. Very few studies on innovation resistance attempt to move away from the common pro-innovation, pro-firm starting point and consider the perspective of both the innovating and resisting actors. Such a perspective is, therefore, an interesting starting point for future research.

Further readings

Fornstedt, H. (2021). *Innovation Resistance – Moving Beyond Dominant Framings*. [Doctoral thesis, Uppsala University]. www.diva-portal.org/smash/get/diva2:1596886/FULLTEXT01.pdf

Godin, B., & Vinck, D. (2017). *Critical studies of innovation alternative approaches to the pro-innovation bias*. Edward Elgar Publishing.

Latour, B. (1991). Technology is society made durable. In J. Law (Ed.), *A sociology of monsters: Essays on power, technology and domination* (pp. 103–131). Routledge.

Latour, B. (2007). *Reassembling the social: An introduction to actor-network-theory* (2nd ed.). Oxford University Press.

Schumpeter, J. A. (2012). *The theory of economic development* (16th ed.). Transaction Publishers.

Soete, L. (2019). Science, technology and innovation studies at a crossroad: SPRU as a case study. *Research Policy*, *48*(4), 849–857.

Sveiby, K.-E., Gripenberg, P., & Segercrantz, B. (2012). *Challenging the innovation paradigm*. Routledge.

Walsh, S. (2023). Marx, subsumption and the critique of innovation. *Organization*, *30*(2), 345–360.

52. Workforce diversity

Marjorie Ngwenya

Outline of the topic

The literature on workforce diversity and innovation suggests that diversity enhances an organization's knowledge and perspectives. The inclusion of diverse perspectives and people is increasingly referred to as the critical success factor in diversity efforts. Research studies have highlighted a positive relationship between diversity in an organization's knowledge base and its innovation, through benefits such as enhanced creativity and decision-making. Therefore, organizations with diverse workforces are expected to enjoy higher levels of innovation and so achieve competitive advantage. Although there is no consensus on a single definition of innovation, evidence suggests that innovative companies grow significantly faster than less innovative companies. Managers can purposefully address the composition of their workforces and foster inclusive environments in order to reap the benefits of diversity.

Conceptual overview and discussion

There is no single, universally accepted definition of workforce diversity. As Ivancevich and Gilbert would argue, a narrow definition of diversity emphasizes race and gender. Roberson defines diversity as differences in the composition of people within a work unit. Such variations may include gender identity, socioeconomic status, age and ethnicity.

Organizations with diverse workforces are expected to enjoy greater levels of innovation and creativity than those that are heterogenous. Innovation can be defined in many ways. Fatur and Likar suggest that it is the development of improved products, services and technologies involving a complex application of ideas embraced by society, government and markets. Creativity on the other hand is indicated as a prerequisite for innovation. There has been considerable debate about the definition of creativity and some consensus that a key component of a creative product is novelty. Researchers also suggest that an antecedent of innovation is the creativity of individuals or teams.

Diversity and inclusion (DI) have become critical topics in organizational strategy with roots in affirmative action in 1960s United States. Public policy at that time encouraged employers to recruit from varied backgrounds to address racial inequality. The idea that a varied group of employees could enhance a business began to take hold during the 1970s and 1980s, influenced by changes in population demographics and the growing trend of globalization. Companies started to see the benefits of having employees of different races, genders, ethnicities and eventually sexual orientations and ages, among other traits. It wasn't until the 1990s that the phrase 'workforce diversity' really took root. Since then, especially moving into the 21st century, the concept has shifted from a mere legal requirement to a strategic asset for many businesses. Diversity management, the management of a demographically diverse workforce, has become an increasingly common aspect of organizational planning.

While diversity management has been an area of academic and business interest for over 40 years, inclusion is increasingly highlighted as the crucial ingredient in diversity efforts. Inclusion reduces the potentially detrimental effects of diversity, such as conflict and turnover. Inclusion ensures that all individuals are valued, respected and given equal opportunities to participate and contribute in the workplace. 'Inclusion' is often appended to the term 'diversity,' with DI becoming a conventional term in business.

Research has highlighted the positive impact of diverse and inclusive workplaces, including the idea that diversity in work teams promotes creativity and innovation. Cox and Blake suggest that effectively managed diversity within the workplace can offer a competitive edge in several ways, including by boosting creativity and fostering better problem-solving. Other researchers have concluded that a precondition for greater creativity in a heterogenous team is similar ability level of its members. Once a common base of competence is established, the team members' differences in attitudes and perspectives contribute to the group's creativity. However, for this benefit to be derived, it is important for team members to be aware of each other's differences in attitudes and culture.

Chaudhry and colleagues found that diversity and inclusion practices in the workplace significantly contribute to its innovative climate. Specifically, inherent diversity (including age, gender, physical disability and native language) significantly impacted

organizational innovation, while acquired diversity (measured by participants' religious beliefs, marital status, parental status and work background information) had an insignificant impact on organizational innovation. Their study identified that age and language differences among employees contributed significantly to organizational innovation compared to other differences. This study also supported the significance of inclusive practices (including fairness, belongingness, uniqueness and diversity climate) on organizational innovation.

Sung and Choi found a positive effect of age diversity on firm innovation in high-tech firms. Diversifying the age composition could be advantageous in such a circumstance by reducing competition and increasing knowledge sharing among similarly aged employees. They also found that gender diversity positively affects innovation for firms operating in turbulent markets.

Diversity in groups is beneficial because minority views can stimulate consideration of unapparent and alternative ideas. A variety of viewpoints and a reduced focus on adhering to traditional norms is expected to boost creativity levels. It is suggested that greater levels of diversity can reduce the tendency to quickly settle on the first solution that gains significant backing, leading instead to a more thorough critical assessment. Further, the ability to solve problems is strengthened by varied outlooks, a broader base of experience and a thorough examination of issues. Diversity makes groups more resilient to group think, but it may encourage conflict due to a divergence in perspectives. It is suggested that, when such friction is effectively managed, it can enhance creativity in problem-solving and decision-making, due to the variety of alternative perspectives generated and greater critical evaluation. Bassett-Jones suggests that, in order for companies to generate creativity for outperformance, diversity needs to go beyond the demographic or ethnic. Differences could include those of culture or intellectual capability. Organizations that encourage inclusive environments where every member can thrive and contribute their perspective are likely to secure a competitive edge.

Application

Several studies suggest that organizations hiring and integrating diverse workforces increase their levels of innovation. Firm managers should proactively manage diversity and consider how to alter the composition of their workforce, for example by age or gender, to derive the benefits of diversity. A sense of belonging to an organization has a positive relationship with the creativity and innovativeness of its employees. Firms may also consider introducing and maintaining inclusive workplace practices to create an innovative climate.

Organizations that embrace a diverse workforce and effectively integrate it into their teams tend to exhibit higher innovation and a greater willingness to adapt to change. They are often at the forefront of adopting new business models and creating innovative products or methods to thrive amid shifts in the market. This implies that diversity should be woven into the fabric of an organization's culture, free from the constraints of negative stereotypes and exclusion. However, it is also recognized that certain organizational traits naturally support an environment that is more conducive to innovation.

The impact of a company's demographic diversity on its value can shift significantly based on the specific demands of its technology and market environment. For instance, companies that are adapting to evolving market requirements might alter their gender makeup to harness the benefits of diversity. Similarly, technology companies could foster innovation by encouraging age diversity within their typically young and age-similar staff. However, in environments where demographic diversity does not align with market conditions, companies should prudently handle diversity-focused initiatives (such as diversity training and mentorship programs) to avoid creating an environment that could lead to discrimination or negative stereotypes about certain groups.

Critical summary

Research findings challenge the claim that diversity within the workforce automatically enhances business outcomes. The business case for diversity needs to be refined, with literature on the benefits of workforce diversity presenting mixed findings, providing meagre guidance for practitioners and researchers.

Several studies find little or no benefit of diverse workforces. For example, Chaudhry and colleagues found no support for the role of employees' gender, ethnicity or abilities on the innovative climate of a firm. Researchers suggest that the successful management and implementation of diversity initiatives and reaping their restaurant benefits are context-dependent. This requires firms to take a nuanced approach to addressing workplace diversity. Furthermore, the business case must acknowledge the costs involved in harnessing the benefits of a diverse workforce, including potential biases, miscommunications, conflict and the formation of subgroups.

A critical analysis of the extant literature reveals emphasis on a relatively narrow range of differences. Many studies focus on easily measurable, objective characteristics that stand in for more nuanced differences. Therefore, expanding definitions of diversity could improve our understanding and extend its applicability in various settings.

Further readings

Bassett-Jones, N. (2005). The paradox of diversity management, creativity and innovation. *Creativity and Innovation Management*, *41*, 169–175.

Bowers, C. A., Pharmer, J. A., & Salas, E. (2000). When member homogeneity is needed in work teams: A meta-analysis. *Small Group Research*, *31*(3), 305–327.

Chaudhry, I. S., Paquibut, R. Y., & Tunio, M. N. (2021). Do workforce diversity, inclusion practices, & organizational characteristics contribute to organizational innovation? Evidence from the U.A.E. *Cogent Business & Management*, *8*(1), 1–24.

Cox, T. H., & Blake, S. (1991). Managing cultural diversity: Implications for organizational competitiveness. *Academy of Management Perspectives*, *5*(3), 45–56.

Fatur, P., & Likar, B. (2010). Statistical analysis for strategic innovation decisions in Slovenian mechanical industry. *Strojniski Vestnik/Journal of Mechanical Engineering, 56,* (7–8), 489–496.

Gilbert, J. A., Stead, B. A., & Ivancevich, J. M. (1999). Diversity management: A new organizational paradigm. *Journal of Business Ethics*, *21*(1), 61–76.

Østergaard, C. R., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? The effect of employee diversity on innovation. *Research Policy, 40*(3), 500–509.

Roberson, Q. M. (2019). Diversity in the workplace: A review, synthesis, and future research agenda. *Annual Review of Organizational Psychology and Organizational Behavior*, *6*(1), 69–88.

Sung, S. Y., & Choi, J. N. (2021). Contingent effects of workforce diversity on firm innovation: high-tech industry and market turbulence as critical environmental contingencies. *International Journal of Human Resource Management*, *32*(9), 1986–2012.

53. Youth-driven innovation, engagement and empowerment

Kristin S. Williams

Outline of the topic

Innovation studies have largely ignored the potential of youth, despite evidence that youth engagement in a variety of endeavours has positive outcomes. Creating strategic entry points for youth and promoting empowerment in youth also promote intergenerational equity and sustainable development, key concerns of innovation studies.

Youth-driven innovation requires liberating youth's creativity through youth empowerment. Youth-driven innovation ranges from those innovations entirely led by youth, to innovations initiated by adults but engaging with youth. Youth-driven innovation can be incremental or radical, aesthetic or functional. Youth can also contribute to the diffusion of innovation.

Stimulating youth's capacity for curiosity and creativity builds capacity for innovative behaviours. Empowering youth, particularly through creative engagement (as a key first step to innovative behaviours), has been shown to foster youth-driven innovation with economic, social and cultural impact. With youth as architects of innovation, empowered by their talent, creativity and environment, evidence points to increased local activism, social cohesion, citizenship, solidarity and entrepreneurship.

Conceptual overview and discussion

Youth is not a uniform social category and may or may not denote a particular age range. Rather it tends to describe a social group that shares common characteristics, such as transitioning to adulthood, or transitioning from school to work. A key feature of this social category is that youth are in flux; they are developing – gaining capacity, awareness, skills and expertise – over time.

Current youth ages 15 to 18 are sometimes referred to as generational alpha, and they are already shaping the media, popular culture, brands and consumerism in contemporary society. They are a *digital-everything* generation and are completely immersed in technology. By the end of the 2020s they will be entering adulthood, the workforce and households of their own. The COVID-19 global pandemic drastically reset societal norms and further intensified this generation's interest in the world around them and their place in it. Additionally, the development of youth has been greatly impacted by the pandemic, including their relative preparedness to face the dynamic nature of future life. In the context of a comprehensive vision for youth development, scholars have argued for the importance of both formal and non-formal education to unlock creativity and inspire engagement in the economy, in social change and in innovation processes.

Empowerment in youth is a developmental life process. It promotes an increased understanding of the world and various positive roles that youth can undertake. It is also a dynamic and creative process and empowering experiences may vary by context. Given the important relationship between empowerment, creativity and innovation and social movements, empowering youth can have a broad and positive impact. Adults in care roles can also play a significant role in nurturing and facilitating empowerment in youth by reducing context constraints and encouraging exploration and experimentation.

The Convention on the Rights of the Child includes economic arguments for youth inclusion for improvements in education and health and livelihood. Empowered youth are more likely to be more creative, productive and engaged. Thus, models of empowerment can be drawn upon to consider how to engage youth in such processes and activities. Models of empowerment include concepts such as mastery, agency, self-efficacy, self-determination and self-regulation. However, where youth are concerned, it often includes a subset of goals that are personally meaningful and power oriented.

Additionally, youth face more structural barriers to empowerment and the ability to engage and experiment with creative and innovative behaviours. These include the practicalities of engaging, how to prepare youth to engage productively, how to convene youth together and how to mobilize their ideas. Other barriers include legal-age restrictions, lack of financial investment opportunities, and not being taken seriously. Social context may either promote or deter moments

of transformation that are possible through empowering experiences. In a recent study on youth engagement, Williams identified both enablers and barriers to youth engagement. In addition to supportive adults, enablers include technology, physical access, time, availability and a conducive or appropriate environment. Barriers include physical, mental or emotional ability and the need to feel included and accepted (and to belong).

Application

Empowering youth and fostering their engagement in creative and innovative behaviours may take the form of promoting youth led start-ups and businesses, providing a forum for youth to address pressing societal challenges creatively and collectively (such as poverty, access to education, the climate crisis or unemployment), or mentoring, sponsoring or otherwise supporting youth in a range of activities. According to NESTA (the UK National Endowment for Science, Technology and the Arts), youth-driven innovation often occurs in one of three domains: (1) the commercial or service domain, such as fashion, music, design or software; (2) the civic or political domain, which includes citizenship behavours and advocacy, and (3) the cultural, subcultural or countercultural domain, which includes both commercial and cultural facets.

Understanding and measuring empowerment requires a theoretical framework which appreciates how individuals assert control, use resources and change their environment and circumstances. Theorizing youth empowerment from a youth-informed perspective reinforces empowerment as a processional concept with clear stages of development. This process begins with youth learning about empowerment, and proceeds to a phase where they practise and develop confidence and competence in using power and being empowered. Williams (2024) identifies five stages of the empowering process, including: (1) youth becoming familiar with empowerment and understanding the basic traits and language associated with the concept; (2) youth identifying (and identifying with) empowered roles and empowered individuals in society; (3) youth practising empowerment in certain situations, such as work, school, home or community; (4) youth learning to be responsible with power and authority and gaining confidence and competence; and (5) youth being able to envision an empowered future self, able to achieve a range of desired goals.

In a follow-up study on youth engagement, it was revealed that today's youth are engaging in a range of activities which can promote creative and innovative behaviours and allow them to witness, experience and experiment with empowerment, including work, creative arts, elective learning, games, civil engagement, sports, social media, volunteering and various social activities. Additionally, this same study identifies key motivations for youth engagement, including social connection, a sense of accomplishment, altruism, a sense of responsibility, enjoyment, as well as social pressures and educational imperatives. Adults can play a critical role in supporting youth empowerment and engagement, including parents, caregivers, teachers, employers, healthcare providers and community organizations. These social networks not only present favourable environments for empowerment, experimentation and creativity, but also the potential for feedback, development, positive adaptation and knowledge mobilization.

Like innovation, empowerment involves progress, achieved over time, resulting in increased personal power and influence. Whereas innovation fosters novelty and improvement (either incrementally or disruptively), youth experience empowerment as a part of their own personal development and as part of their role in society. As youth mature, they acquire both the language and experience necessary to make sense of empowerment, empowering experiences and empowering responses. They can express their thoughts and feelings, including articulating the specifics of their experiences with empowerment and the personal meaning of such experiences. Emic perspectives from youth point to the need for empowering activities to be strongly linked to personal goals, to be personally relevant and to be future looking. Youth also wish their empowering experiences to resonate with a larger purpose (e.g., social innovation or sustainable development). Innovation studies point to the benefits of social inclusion as leading to better knowledge, processes and outcomes. Including youth in innovation processes would extend these benefits. For example, youth engagement in innovation processes may include involving youth as co-producers of content or

strategy, having youth involved in intentional innovation, or understanding how youth use systems and products to detect different drivers for development.

Equipping youth with both the opportunity and the support to engage with confidence in empowering activities (beyond intellectual learning) is critical. Once empowered, youth are capable of youth-driven innovation, where youth initiate potential solutions to a problem. As innovators, they have enormous untapped potential, including economic, cultural and social impacts. Youth can stimulate new demands on education, on the economy and on social services. They can drive or influence innovation of products and services and can often be a major force in innovation diffusion.

To empower youth and engage them in creative and innovative behaviours, NESTA suggests: (1) promoting youth-driven innovation with positive images in the media, (2) providing structures and supports to develop innovators e.g., toolkits, (3) providing access to supportive networks and mentors, (4) providing development to enabling adults, (5) providing space and place for youth to explore and be challenged and (6) recognizing and celebrating youth-driven innovation.

Critical summary

Positive psychology encourages the perspective that well-being is attainable when individuals can be nurtured for their unique strengths and virtues and engaged meaningfully. Happiness, hope, resilience and positive mental health in youth have a predictive relationship in youth ages 15 to 18. Adults in care roles should reflect on how to play helpful roles and enable youth empowerment and specifically minimize potential social constraints. Youth empowerment and engagement stimulates youth capacity for curiosity and creativity and builds capacity for innovative behaviours, including youth-driven innovation.

Further readings

Bastien, S., & Holmarsdottir, H. B. (2017). *Youth as architects of social change: Global efforts to advance youth-driven innovation*. Springer International Publishing.

Carr, E. S. (2003). Rethinking empowerment theory using a feminist lens: The importance of process. *Affilia – Journal of Women and Social Work*, *18*(1), 8–20.

Lenz, A. S. (2021). Evidence for relationships between hope, resilience, and mental health among youth. *Journal of Counseling and Development*, *99*(1), 96–103.

Masten, A. S., Lucke, C. M., Nelson, K. M., & Stallworthy, I. C. (2021). Resilience in development and psychopathology: Multisystem perspectives. *Annual Review of Clinical Psychology*, *17*(1), 1–29.

Ogamba, I. K. (2019). Millennials empowerment: Youth entrepreneurship for sustainable development. *World Journal of Entrepreneurship, Management and Sustainable Development*, *15*(3), 267–278.

Powell, K. G., Peterson, N. A., Treitler, P. C., Lardier, D. T., Rashid, M., & Reid, R. J. (2021). Measuring youth empowerment: An item response theory analysis of the sociopolitical control scale for youth. *American Journal of Community Psychology*, *68*(3–4), 1–15.

Rachman, A., Bulkis, S., & Hasbi H. (2020). Youth participation in the creative economy and community empowerment. *IOP Conference Series: Earth and Environmental Science*, *473*(1), 1–8.

Williams, K. S. (2024). Understanding youth empowerment: A youth participatory action research approach. *Qualitative Research in Organizations and Management: An International Journal*, *19*(5), 1–34.

PART IV:

RESPONSIBLE AND SUSTAINABLE INNOVATION

54. Circular economy

Marileena Mäkelä and Tiina Onkila

Outline of the topic

Related to the increased need to solve sustainability challenges in our societies, new concepts and models have emerged. One such concept is the circular economy (CE), which focuses on decreasing material and energy use and thus embracing sustainability in societies, systems, value chains and organizations. The main focus of the CE, to date, has been environmentally and economically sustainable systems. Recently, however, social sustainability has also been included in CE discussions, but so far only peripherally. The CE is also a contemporary theme for innovation management due to the profound changes and rethinking it requires. The core of the CE is circulation. Products, components and materials are kept in use for a longer period of time than currently. Often, the CE is comprised of reducing, reusing and recycling material and energy, the so-called 3R framework. This entry widens the perspective to the 10R framework (recover, recycle, repurpose, remanufacture, refurbish, repair, reuse, reduce, rethink and refuse) and its implications for innovation management. The 10R framework can be considered a stepwise illustration of increasing circularity from recovering and recycling materials towards rethinking the use of products. Different application levels of the CE require various innovation methods. At the base of the 10R framework, the focus is on the use of materials (recover and recycle), a business-as-usual approach and mainly linear economy applications. Innovations relate to technical efficiency improvements. In the middle, the lifespan of products or components is extended (repurpose, remanufacture, refurbish, repair and reuse). At this stage, innovations focus on changing consumption habits. At the top, the focus is on smart product use and manufacture (reduce, rethink and refuse). Radical innovations are needed to change entire consumption and production systems towards a CE.

Conceptual overview and discussion

The current economic model is a linear system of take, make and dispose, which means that massive amounts of resources (take) are used to produce massive amounts of products (make), which are then disposed of after only a short period of use (dispose). This single-use culture has created multiple global environmental problems, such as climate change, loss of biodiversity, pollution and resource deficiency.

One solution to these problems is the CE, which, as the name suggests, focuses on circulation. Products, components and materials are kept in use for longer than currently, and this is expected to lessen the need for virgin natural resources and manufacturing processes, and, therefore, decrease the environmental burden created in linear economic models. The concept is often described with the 3R framework, namely, reduce, reuse and recycle. Reduce entails a critical discussion around rethinking and redesigning products to prolong their lifespan. Reuse stands for keeping products in use for a long time by repairing and refurbishing them. Recycling, quite evidently, focuses on recycling components and materials to produce new products using the recycled materials and components instead of virgin raw materials. However, in this entry, the perspective is widened to the 10R framework (recover, recycle, repurpose, remanufacture, refurbish, repair, reuse, reduce, rethink and refuse), which elaborates on the various nuances of increasing circularity in a stepwise manner among both consumers and businesses. The 10R framework's contents and its applicability to innovation management are discussed further in the Application section.

Research on the CE and practical CE applications has boomed in recent years. Multiple literature reviews have summarized the vast body of literature. For example, Sarja and colleagues reviewed business implementations of the CE. They found it to be difficult because the CE is a systemic concept which requires changes in legislation, markets, technology and culture before it can yield business benefits. In another example, Mhatre and colleagues reviewed CE studies in the EU, concluding that recycling is the most commonly used CE strategy by European companies. Some reviews specifically on the CE and innovation have also been published. For example, Suchek and colleagues showed that the CE often requires business model innovations to do things differently from how they are done now and that CE innovations require strategic alliances and cooperation to enable

the needed capabilities. Naturally, technological innovations are also needed. Suchek and colleagues also noted that previous studies have focused on waste management innovations, and they called for innovations in the biological cycle. In another example, Herrero-Luna and colleagues found that innovations that reduce the environmental impacts of production and consumption are a prerequisite for the creation of new business models that may lead to circularity. This view was supported by the literature review on business model innovation for the CE by Pieroni and colleagues. Thus, these literature reviews on CE and innovations stress the need for different levels of innovation as a prerequisite for CE implementation.

Application: CE innovation management

The 10R framework, which outlines a wider view of the CE, is illustrated in Figure 54.1. The figure further extends what kinds of innovations different levels and aspects of the CE may entail. Stepwise, as circularity increases, more radical innovations from businesses are demanded. At the base (useful application of materials) are the current linear approaches of recycling material and recovering the energy content of products. In the middle, the focus is on extending the lifespan of products and their parts. The top of the framework is smarter product use and manufacturing. These levels are further discussed in relation to the needed innovations.

At the bottom of this framework, the CE applications (recover and recycling) are the business-as-usual approaches of the current linear economy. *Recover* proposes that only the energy content can be recovered as heat or electricity. *Recycling* means that the various materials in the product are separated and can be used as raw materials to produce new products. On the one hand, innovations mainly relate to technical efficiency improvements and questions such as which are the most (cost-)effective ways to collect waste and transport it to the waste incineration or recycling plant. On the other hand, waste separation by untrained lay people has proven inefficient because it mostly produces either low-quality separated waste or only mixed waste. The development of artificial intelligence and robotics could prove to be the most efficient way to separate valuable raw materials from energy waste.

In the middle of the framework, a step towards greater circularity includes ways to extend the life cycle of products (repurpose, remanufacture, refurbish, repair and reuse). *Repurpose* means that the product's components or parts will be used for a new purpose. Different types of artwork and handicrafts are illustrative examples. In *remanufacture*, the product's components are used for the same purpose. A typical example is using a desktop computer's components to build a new computer. *Refurbish* covers the means of making an old product suitable for use again. Old furniture can be repaired and polished easily by a professional carpenter or upholsterer. *Repair* means repairing a product to be in use for a long time. Typically, people regularly take their cars to a repair shop or their shoes to a shoemaker. In *reuse*, the products are kept in use as they are. Secondhand and charity shops sell various items from clothes to books and kitchen utensils. From the point of view of innovation, this is an interesting stage with various routes. First, many of these steps can be performed by individuals themselves. Then, it comes down to the individual's innovativeness, creativeness and abilities to perform these tasks. This enables a peer economy, where consumers sell products to other consumers. However, for several reasons, many individuals are not willing to perform these tasks, and then it comes down to companies innovating these as services. Here lies an interesting division. In some areas, such as repairing clothes, shoes and furniture, the companies offering these services are typically rather small (i.e. micro companies or entrepreneurs), whereas auto repair shops can be large companies or chains. Innovation here would be to invent a new business logic and innovate business models to support CE remanufacture, refurbish and repair services. All in all, at this level, innovation engages very different types of innovation among different actors.

At the top of the framework, the focus is on smart product use and manufacture (reduce, rethink and refuse). *Reduce* suggests reducing the use of raw materials in production, or renting products instead of owning a product that is seldom used. Here, *rethink* is understood as ways to increase the use of a product. Various applications of the sharing economy are examples of this stage. *Refuse* here has

Circular economy

Increasing circularity

Linear economy

Levels of R strategies and types of innovations	R strategies	Description of the content of the R strategy
Smarter product use and manufacture: Radical innovations targeting production and consumption systems	R0 Refuse	Make product redundant abandoning its function or by offering the same function with radically different product
	R1 Rethink	Make product use more intensive (e.g. by sharing product)
	R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
Extend lifespan of product and its parts: Innovations on consumer habits	R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function
	R4 Repair	Repair and maintenance of defective product so it can be used with its original function
	R5 Refurbish	Restore an old product and bring it up to date
	R6 Remanufacture	Use parts of discarded product in a new product with the same function
	R7 Repurpose	Use discarded product or its parts in a new product with the different function
Useful application of materials: efficiency-related innovations	R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
	R9 Recover	Incineration of material with energy recovery

Source: Modified from Kirchherr and colleagues.

Figure 54.1 *Different application levels of the CE in relation to innovations*

two approaches. On the one hand, via product innovations, certain separate products remain redundant, as the functions can be included in a single product. This includes consideration of questions such as how many separate devices smartphones have made redundant. On the other hand, refuse can also mean rethinking consumption habits with questions such as whether we need new appliances or new clothes because they are fashionable. Radical innovations are needed to change entire consumption and production systems. In many places, especially in Western countries, consumption is based on ownership. In the middle of the framework (i.e. extend the lifespan of products and their parts), the innovation focus is on service companies, and here, the additional focus would need to be on a product-as-a-service approach. Product ownership remains with the manufacturer, and customers only pay for access to the product. Some products are already typically leased, but this would need to become a more commonplace practice. At the least, in this stage, business innovations relate to designing products to become easily repairable. Currently, companies are focusing only on selling as many products as possible and replacing them quickly with new products, seldom worrying about the repairability or upgradability of the products. In the product-as-service model, this would be turned around. As companies would keep ownership, it would be in their interests to keep an individual product in use for as long as possible.

All in all, as illustrated earlier, to reach a true CE, innovations play a crucial role. The 10R approach shows increasing circularity in society in a stepwise manner, and it also illustrates that higher levels of the CE require radical innovations and changes in current consumption habits and production processes. The CE is not achievable with current practices.

Critical summary

Three aspects are highlighted as concluding points. First, the main emphasis on innovations should be in the upper part (strategies R0–R2) of CE application framework (i.e. on smarter product use and manufacture), since those engage in more radical changes in consumption and production patterns and thus make more profound changes towards sustainability. With a change of ownership from consumers to businesses, use times would be extended and the products more efficiently consumed; the products would not stay unused in homes, storage places or yards. This strategy also calls for more CE studies focusing on the sociocultural aspects of change. These levels of CE innovation are currently only rarely reached. Second, in the middle part of the framework (strategies R3–R7), more innovations are required to establish profitable businesses to support changes in the consumption and use habits of consumers. Currently, it is often economically wiser to replace a broken product with a new one instead of having it repaired. The increase in businesses in the service sector is sustainably sound. By creating new employment, it creates both economic and social benefits. It is also environmentally sound to use products for longer. Third, in the lowest levels of the framework (strategies R8–R9), it is critical to separate usable raw materials from materials that can only be used as an energy source. This calls for innovations to make waste separation more efficient. The main aim here should be to yield as many raw materials as possible for new products. Currently, CE practices in business mainly focus only on recycling and recovering. However, a strong focus on the lower levels of CE applications merely reinforces the recycling focus of the CE, missing the potential for systemic change.

Further readings

Herrero-Luna, S., Ferrer-Serrano, M., & Latorre-Martínez, M. P. (2022). Circular economy and innovation: A systematic literature review. *Central European Business Review*, *11*(1), 65–84.

Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, *127*, 221–232.

Korsunova, A., Horn, S., & Vainio, A. (2021). Understanding circular economy in everyday life: Perceptions of young adults in the Finnish context. *Sustainable Production and Consumption*, *26*, 759–769.

Mäkelä, M., & Onkila, T. (2023). Domination of managerial and technical frames—How the circular economy is reported in Finnish business. *Circular Economy and Sustainability*, *4*, 2909–2930.

Mhatre, P., Panchal, R., Singh, A., & Bibyan, S. (2021). A systematic literature review

on the circular economy initiatives in the European Union. *Sustainable Production and Consumption*, *26*, 187–202.

Pieroni, M. P., McAloone, T. C., & Pigosso, D. C. (2019). Business model innovation for circular economy and sustainability: A review of approaches. *Journal of Cleaner Production, 215*, 198–216.

Sarja, M., Onkila, T., & Mäkelä, M. (2021). A systematic literature review of the transition to the circular economy in business organizations: Obstacles, catalysts and ambivalences. *Journal of Cleaner Production*, *286*, 125492.

Suchek, N., Fernandes, C. I., Kraus, S., Filser, M., & Sjögrén, H. (2021). Innovation and the circular economy: A systematic literature review. *Business Strategy and the Environment*, *30*(8), 3686–3702.

55. Ecosocial education

Sami Keto and Raisa Foster

Outline of the topic

It is possible to interpret the ecological crisis as the result of a failed interaction between humans and other life. In the era of complex social and ecological crises, humans should be able to see the effects of their actions on the world around them, and,at the same time, the agency and justification of the existence of other life forms.

Ecosocial education is an educational field that questions the anthropocentric view of life and aims to reassess the relationship between humans and other species. Instead of itsown field, it may be seen as a subfield of environmental education. However, the specific focus of ecosocial education is acknowledging that humans are not the sole focus of the educational process and that learning should encompass all living beings' existence and experiences. Ecosocial education encourages a sense of empathy, respect, and responsibility towards non-human beings, fostering a deeper understanding of their needs, behaviors, and roles in ecosystems.

Ecosocial education offers novel, previously overlooked ways of perceiving reality, producing knowledge, and sustaining mutually beneficial relationships with diverse life forms. Thus, it can provide essential insights for innovation now that all sectors of society must participate in transformative actions to tackle climate change, nature loss, and air, water, and soil pollution that seriously threaten the vitality of ecosystems.

Conceptual overview and discussion

Theoretically, ecosocial education is based on the ecosocial approach, the entanglement of ecological and social perspectives. More specifically, ecosocial education is based on an understanding of ecosocialization and ecoindividuation, which are multispecies extensions of the educational tasks of socialization and individuation.

The theory of ecosocialization, drawing from ecological and phenomenological perspectives, refers to those socialization processes that occur in multispecies communities where numerous different life forms are in reciprocal relation. As a parallel process to socialization, ecosocialization occurs through the interaction of various agents, including humans and other species. Through this interaction, people acquire capabilities that enable them to participate in ecosocial communities while also changing personally.

Firstly, ecosocialization serves as a reminder that the human social community is always a multispecies one. Furthermore, it involves holistic and embodied participation in and as part of the world. Eventually, the concept of ecosocialization allows us to acknowledge the human capacity to form intimate and empathetic relationships with other living beings. Ecosocialization implies that humans are not separate from nature but an integral part of it, and that recognizing and understanding multispecies interactions are crucial for establishing ecologically sustainable communities.

Apart from socialization, education has a task of individuation. In other words, education incorporates individuals into a community and facilitates their development into unique individuals with distinct personalities. Similar to ecosocialization, the concept of ecoindividuation aims to foster an understanding of humans as individual beings who are intricately interconnected with other forms of life. However, the current obstacle to ecoindividuation, which refers to the sustainable development of individuality within an ecosocial context, is the prevailing individualistic or self-centered way of thinking. If individuals are seen as constantly competing against each other and focused on possessing and controlling others, interactions between people and the rest of life are prone to be marked by violence. The prevalent human-centric or anthropocentric interpretation of reality also contributes to the problematic framework within which individual development occurs today, a framework that is ecologically unsustainable and based on a flawed perception of the self. In the process of ecoindividuation, a person develops into a cooperative and responsible member of an ecosocial community, challenging the perception of oneself as an individualistic individual engaged in a battle against other forms of life.

Ecosocialization and ecoindividuation are processes that may happen without conscious effort or intentional educational interventions. Ecosocial education is a set of pedagogical ideas and practices informed by the recognition of these processes, and thus, its key

components are a critical re-examination of the anthropocentric worldview and attention to the senses and the body in participating in the world. Ecosocial education can be viewed in relation to posthumanist education, which is an educational area examining the relationship between humans and non-humans, including other species and inanimate matter. Ecosocial education focuses on the interaction between humans and other living organisms transpiring in a multispecies (eco)social community. By closely observing the phenomena occurring in the interaction between humans and other living beings, such as reciprocal interaction and empathy, ecosocial education also investigates the knowledge and understanding that emerges from those interactions.

Ecosocial education can help expand the innovation field's understanding of stakeholder thinking so that the significant stakeholders that drive and benefit from innovations are not only human individuals and communities but cover all life on Earth. Humans and nature are commonly perceived as entirely separate entities, leading to the belief that humans have the right to exploit nature without considering the destructive consequences and suffering they cause to others. A more systemic and reciprocal way of being can be cultivated through ecosocial education, which sees diverse individuals as mutually complementary parts that sustain life.

Application

Ecosocial education can be implemented in various settings, such as schools, colleges, universities, and informal learning environments. It often involves experiential and place-based learning strategies, including direct observation of non-human species in their natural habitats.

The starting points, principles, and goals of ecosocial education have been presented through five theses:

1) The human social community is always understood and encountered as a multispecies, i.e., an ecosocial, community.
2) Autonomy as an educational ideal is cultivated into a conception of humanity that recognizes diverse individuality and multispecies relationships of humans.
3) Participation in the ecosocial community is understood holistically: a person as a perceiving, sensing, feeling, desiring, and conscious being.
4) Cultivating interaction skills that enable ecosocial participation is essential to ecosocial education.
5) Art-based and contemplative methods have a unique ability to produce ecosocial participation, and therefore, their role is emphasized in ecosocial education.

Ecosocial education promotes the recognition that all knowledge production and sources of innovation are affected by the diverse relations and interactions that humans have with other species. This can be discussed through emergent knowledge building, which pertains to generating novel knowledge through interactions and collaboration among human individuals and groups with more-than-human communities. Emergent knowledge building is a decentralized process where knowledge is collectively created and shared instead of being dictated by a single individual or authority. It is often characterized by an open and dynamic approach, where knowledge continuously evolves and adjusts in response to new information and circumstances. In ecosocial education, it is recognized that interaction with the more-than-human world takes part in emergent knowledge-building and innovating.

The relationship and interaction between humans and other species are based on embodied participation in the more-than-human world. Thus, the application of ecosocial education focuses on arts-based, embodied, and multisensory pedagogy and practices, which can assist in innovating toward strong sustainability. Instead of novel technology, the innovations that may emerge from ecosocial education can be related to more sustainable modes of existing and operating in the more-than-human world.

So far, the theoretical literature on ecosocial education has focused on the relationship between humans and other species; thus, less research has been carried out on examining power dynamics and social inequalities between people. Further, only little empirical research has been done on ecosocial education. Therefore, it is impossible to say much about how the pedagogy of ecosocial education works in practice and how it could inform innovations in the context of more-than-human stakeholders.

Critical summary

Ecosocial education is a relatively new field of education, which has the potential to complement other close fields in education, such as environmental education, education for sustainable development, and posthumanist education. Furthermore, it can inform any field of human social life, aiming for transformative actions for more sustainable life orientation and innovation. Ecosocial education examines the phenomena in the interaction between humans and other living beings and explores the knowledge and innovation that may emerge from those interactions.

The implementation of ecosocial education faces challenges. The prevailing educational model, focused on standardized testing and narrow learning outcomes, may hinder the integration of ecosocial principles into curricula. Similarly, the business culture aiming to create shareholder value by maximizing the profits of the corporation's equity owners interrupts the creation of shared value for the common good of the whole society and the planet. Furthermore, the complex and interdisciplinary nature of ecosocial issues requires teachers, managers, and company owners to form a deep understanding of ecological concepts and pedagogical and management approaches, which may necessitate additional training and support.

Innovation aiming for creating shared value and common good for all lives thus requires a holistic understanding of how complex social and environmental issues are intertwined and how different interests and measures are connected. Furthermore, proactively responding to complex sustainability problems requires skillful interaction with diverse stakeholders, including humans, other animals, and ecosystems. Adopting ecosocial thinking in innovation means making sense of the world's complexities and the interdependent connections of various stakeholders and their actions by looking at them in terms of relations rather than splitting them into parts and under autonomous operations. The ecosocial approach to innovation extends beyond the anthropocentric worldview, and it can significantly increase the awareness that various innovation stakeholders always operate and communicate in mutual relations that create sustainable value for all.

Further readings

Foster, R., Zin, M., Keto, S., & Pulkki, J. (2022). Recognizing ecosocialization in childhood memories. *Educational Studies*, *58*(4), 560–574.

Keto, S., & Foster, R. (2021). Ecosocialization: An ecological turn in the process of socialization. *International Studies in Sociology of Education*, *30*(1–2), 34–52.

Pulkki, J., Varpanen, J., & Mullen, J. (2021). Ecosocial philosophy of education: Ecologizing the opinionated self. *Studies in Philosophy and Education*, *40*, 347–364.

Salonen, A. (2014). An ecosocial approach in education. In R. Jucker & R. Mathar (Eds.), *Schooling for sustainable development: Concepts, policies and educational experiences of the end of the UN decade of education for sustainable development* (pp. 231–233). Springer.

56. Enskilment

Jarkko Pyysiäinen, Pasi Heikkurinen and Jenny Rinkinen

Outline of the topic

Enskilment is defined as the process of identifying, acquiring, maintaining, transferring, and potentially also releasing, a set of skills required for the mastery of a particular (set of) task(s). Simply put, under the right circumstances, a dedicated engagement in these practices of enskilment advances the mastery of also more complex sociocultural tasks and skills, such as sustainable innovating, making the process of enskilment in the particular domain progressive. Advanced enskilment in innovation, for example, manifests as an ability to disclose new sustainable 'worlds', that is, to identify and realize novel, sustainable relations between practices, their objects and practitioners within a domain of activity. However, what constitutes skills in and for a particular domain of activity, and what is considered skillful action that manifests higher stages of skilled performance, is largely context-dependent and defined by domain-specific determinants. The criteria for enskilment, especially in complex sociocultural tasks and practices, are socioculturally embedded in the activities, deliberation, and judgement of the communities of practice. This emphasis on practice allows communities and organizations to cross situations and settings, making enskilment partly trans-contextual.

Conceptual overview and discussion

This definition builds on, as well as integrates, the views of Timothy Ingold and Hubert L. Dreyfus. It also draws on research on complex sociocultural skills, such as communication skills and entrepreneurial skills. This basic definition treats enskilment in sustainability innovation as the progressively advancing fluency in identifying intertwined environmental and social problems and practicing feasible solutions to them. To understand the relevance of this succinct and dense definition for innovation management, a better grasp of the theoretical and conceptual background of the conceptualization is necessary.

First, the definition is based on Ingold's view of enskilment as *the embodiment of capacities of awareness and response by environmentally situated agents* and as a process of practical understanding *where learning is inseparable from doing, and in which both are embedded in the context of a practical engagement in the world*. His view implies that the key to advancing skilled human action lies in a heightened sensitivity of human agents to the features and qualitative differences of the environments and action situations where they are embedded.

Second, the definition builds on the view of Dreyfus who considers skillful bodily activity, or skillful coping, as the consummate form of human intelligence and expertise. It is the basis, as Spinosa and colleagues put it, that generates and discloses human worlds. Correspondingly—and somewhat counterintuitively from the perspective of conventional knowledge engineering—intuitive judgment and non-deliberative, fluid situational responses are viewed as the hallmarks of higher forms of skilled action and expertise. Importantly for the definition advocated here, Wrathall encapsulates how enskilment in skillful coping advances in practice. It is the practical engagement and learning that lead practitioners to become increasingly sensitive and attuned to the world (including sustainability problems and solutions) so that the practical situation itself begins to solicit bodily responses and 'suggest' reasons for action. Hence, enskilment in skillful coping with the world transcends beyond forms of expertise that rely on mere rule-following or deliberative rationality. Dreyfus and Dreyfus emphasize that such an ability to make more subtle and nuanced discriminations, and to respond to situations intuitively, distinguishes experts from merely proficient practitioners.

An important corollary of the aforesaid holds that enskilment is a progressive sociocultural process that comes in degrees that fall into what Wrathall depicts as a hierarchical order of higher and lower forms of activity. He summarizes the Dreyfusian phenomenology of enskilment into a model that ascends from rule-based and deliberation-based, elementary forms of expert action to more advanced forms that follow the logic of skillful coping. Furthermore, in the fluid skillful coping, Wrathall distinguishes the following Dreyfusian levels of skillfulness: (1) *conventional expertise* where one is able to achieve a maximal grip, or approximate an optimal gestalt, of the domain of practice; (2) *mastery*, where one is able to disclose new possibilities

for continuing the practice in the face of conflict; and (3) *radical innovation*, where one is able to disclose a new world.

Moreover, novel skills are constantly—and quite routinely—acquired on the foundation of an already established skillful coping with(in) the world which allows practitioners to skillfully navigate through a myriad of everyday situations and tasks. Enskilment and skill-acquirement thus build upon an already existing foundation of skills and skillsets that, along with enskilment and novel skill acquisition, become increasingly fine-grained, enriched, and diversified. However, and importantly for the present treatise, progressive enskilment leading to more radically innovative forms of skilled action—that disclose new worlds—may at first look like failures in the eyes of the community of practitioners that relies on conventional ways and rules in doing things. This calls for a further elaboration regarding enskilment in the domains of innovation management and innovation for sustainability: what actually are the focal skills and processes of enskilment characteristic of such a complex domain of activity as innovation for sustainability, and how can they be applied therein?

Application: enskilment, innovation management, and sustainability

To make sense of enskilment in the context of innovation management in general, and sustainability innovation in particular, the focal tasks of innovation and sustainability innovation ought to be unpacked first. Then it will become feasible to discern what kinds of skills are needed to master the focal tasks of sustainability innovation. Along with the Dreyfusian and Ingoldian views of enskilment, as well as in line with the ideas of Spinosa and colleagues, it is possible to understand the task of sustainability innovation as being essentially about environmentally and socially sensitive world disclosing, which contributes to sustainable change (1) by embodying a particular marginal practice or anomaly in a product, service, method, or concept, and (2) by effecting change in extant practices and institutions to render them (more) receptive to the understanding(s) embodied in the novel and still marginal practice.

This two-fold description of the focal tasks of sustainable innovation suggests that practitioners desiring to innovate require skills that are suited for these tasks. Translated into the language of skills, one needs, first, to be able to perceive and recognize both the normal and marginal/anomalous practices characteristic of a (sub)world or domain of activity, *and* thereby to distinguish such marginal/anomalous practices that hold transformative potential vis-à-vis the corresponding community of practice. Second, one needs to be able to embody, materialize, or give a concrete expression to the new transformative understanding, so that the members of the community of practice can appreciate it. And, finally, one needs to be able to test and evaluate the reception of the effectuated embodied transformative understanding among the members of the target community, potentially to readjust it on the basis of their feedback, and then to disseminate or market the transformative understanding among the broader community—intelligibly, credibly, and effectively.

Furthermore, since this text addresses specifically the domain of *sustainability* innovations, it means that the innovation tasks ought to be carried out with the ultimate objective of effecting sustainable change as their defining criterion, as suggested by Bonnedahl and Heikkurinen. This serves as a reminder about the nature of sustainable innovation skills as distinctively abstract and complex. They require higher-level meta-skills, comparable to the meta-skills of entrepreneurial skills as analyzed in the works of Pyysiäinen and colleagues, or communication skills, analyzed by Hargie and colleagues. Similarly, the focal skills of sustainable innovation can be viewed as higher-level meta-skills that are distinct from more specific and concrete lower-level innovation-relevant skills, such as project planning, management, product development, or marketing skills. Since the hierarchical structure of skills is open-ended, distinct skills can become elements in larger complexes of skills and constitute higher orders in the web of skills. As higher-order top-of-the-pyramid skills (which cover and coordinate other more specific skills), the meta-skills of sustainable innovation integrate the lower-level skills into a larger and, by necessity, more abstract whole. This hierarchical 'pyramid of skills' can then be viewed as forming the totality of sustainable innovation-relevant skills.

Consequently, this conceptual elaboration distinguishes an ascending process of enskilment in/for sustainability innovation (see

Table 56.1), which consists of the three generic stages the devoted innovators pass through as their command of the practical domain matures. These stages are conventional sustainability expertise (Stage 1), sustainability mastery (Stage 2), and radical sustainability innovation (Stage 3).

The success of Stage 1 is determined by the degree to which a practitioner or an organization manages to continue its existence by pushing and controlling the aim of sustainability and the technical means to achieve it (e.g., more efficient production). Stage 2 is characterized by finding new ways to accommodate the organizational practices to the requirements of the eco-social crisis (e.g., adaptation and mitigation to climate change). Stage 3 is again about an organization engaging in the processes and marginal practices that disclose a novel world. In other words, conventional experts gradually increase their skills in the rather detached organizational practice of sustainability, whereas those who have progressed to mastery are able to make sustainability an integral part of the practice of an organization. Lastly, the radical innovator redefines conventional sustainability ideas and practices by igniting, carrying out, and enskilling themselves and others in marginal sustainability practices that may become mainstream—thus not only contributing to sustainability but embodying, effectuating, and transmitting sustainability transformation.

Critical summary

By integrating Ingoldian and Dreyfusian points of view, the text has outlined three stages of skillful innovation for sustainable change: (1) *conventional sustainability expertise*, (2) *sustainability mastery*, and (3) *radical sustainability innovation*. The success of Stage 1 of skillful innovation is determined by the degree to which an organization manages to push and control the aim of sustainability and the technical means to achieve it (e.g., more efficient production). While Stage 2 is defined by finding new ways to continue the organizational existence despite the eco-social crisis (e.g., adaptation and mitigation to climate change), Stage 3 is again about an organization engaging in the identification and enactment of marginal or anomalous practices that disclose novel worlds. In other words, conventional experts gradually increase their skills in the rather detached organizational practice of sustainability, whereas those how have progressed to mastery are able to make sustainability an integral part of the practice of an organization. Lastly, the radical innovator redefines conventional sustainability ideas and practices by igniting, carrying out, and enskilling themselves and others in marginal sustainability practices that eventually become mainstream—thus not only contributing to sustainability but embodying and even institutionalizing sustainability.

Innovation management is offered a focal role in solving environmental and social problems of contemporary societies by means of developing, as well as through supporting

Table 56.1 Three stages of enskilment in the context of sustainability innovation

-	Stages	Vision	Strategy	Examples
1	Conventional sustainability expertise	Managing aims of sustainability in practice	Revising existing practices to reduce unsustainability	Introducing product or policy for decreased unsustainability
2	Sustainability mastery	Advancing aims of sustainability in practice	Adopting novel practices of adaptive or mitigative potential	Developing business strategy or line of products for sustainability
3	Radical sustainability innovation	Creating aims of sustainability practice	Disclosing, supporting and institutionalizing marginal practices of sustainability	Effectuating sustainable change in practice (e.g., engaging in social movement or politics)

the advancement of, new products, practices, and processes—including novel ideas and approaches. This entry has defined *enskilment* in the context of managing innovation for sustainability. For further research, context-specific empirical studies are called for.

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Further readings

Bonnedahl, K. J., & Heikkurinen, P. (Eds.) (2018). *Strongly sustainable societies: Organising human activities on a hot and full Earth*. Routledge.

Dreyfus, H. L. (2014). *Skillful coping: Essays on the phenomenology of everyday perception and action* (M. E. Wrathall, Ed.). Oxford University Press.

Dreyfus, H. L., & Dreyfus, S. E. (2005). Expertise in real world contexts. *Organization Studies*, *26*(5), 779–792.

Hargie, O. (Ed.) (2019). *The handbook of communication skills* (4th ed.). Routledge.

Ingold, T. (2022/2000). *The perception of the environment: Essays on livelihood, dwelling and skill*. Routledge.

Pyysiäinen, J., Anderson, A., McElwee, G., & Vesala, K. (2006). Developing the entrepreneurial skills of farmers: Some myths explored. *International Journal of Entrepreneurial Behavior & Research*, *12*(1), 21–39.

Pyysiäinen, J., Halpin, D., & Vesala, K. M. (2011). Entrepreneurial skills among farmers: Approaching a policy discourse. In G. A. Alsos, S. Carter, E. Ljunggren & F. Welter (Eds.), *The handbook of research on entrepreneurship in agriculture and rural development* (pp. 109–128). Edward Elgar Publishing.

Spinosa, C., Flores, F., & Dreyfus, H. (1997). *Disclosing new worlds: Entrepreneurship, democratic action, and the cultivation of solidarity*. MIT Press.

57. Frugal innovation

Linda Annala Tesfaye and
Martin Fougère

Outline of the topic

Frugal innovation is a relatively recent concept which refers to innovative processes that use fewer materials and finances to develop products and services that are affordable, simple and adaptable, while not compromising quality or performance of the innovation. According to the Merriam-Webster dictionary, the word 'frugal' carries several meanings, such as 'careful in the use of one's money or resources', 'simplicity of lifestyle', and 'lack of wastefulness'. A key underlying idea of frugal innovations relates to making new products and services accessible to a larger number of users and consumers. This is achieved through a 'no-frills' approach where the product or service fulfils the exact needs of the end user, and nothing else. The assumed simplicity of frugal innovations allows for faster product and service development processes and prioritizes affordability as its main characteristic. Frugal innovations have become celebrated for their anticipated potential for reducing environmental footprints and increasing social inclusiveness of product and service innovations, contributing to UN Sustainable Development Goals more than conventional products.

Conceptual overview and discussion

The desirability of frugal innovations has typically been argued for through discourses of resource scarcity. Scarce resources are framed as contextual drivers for these simple innovations, while the consumers' needs and abilities to pay set the boundaries for affordability. In relation to frugal innovations, Mehta and colleagues have shown that scarcity can almost be seen as a positive force to the extent that it is argued to result in certain types of affordable technologies, market mechanisms and social innovations which are deemed suitable solutions to identified problems. In today's enthusiastic policy endorsements of frugal innovation, the underlying inequalities and power relations that lead to scarcity for the poor are largely silenced.

The idea of developing frugal, resource-scarce products, however, is not new, and can be traced back to the Appropriate Technology movement in the 1970s, which highlighted the need to develop environmentally sustainable, small-scale technological solutions for low-income contexts, and for people with differentiated needs. Such 'appropriate' solutions would reject the idea of universalist, linearly developing models of technology, and acknowledge the specificities of solutions developed for a certain time and space. Three decades on from the Appropriate Technology movement, a proposed market-based solution significantly contributed to the popularized rise of frugal innovations: the Base-of-the-Pyramid (BOP) approach. Along with the aim of consumerizing the global poor by developing products and services for 'the poor', the BOP approach also took an influential discursive step in framing 'the poor' as consumer-entrepreneurs serving the marketplace through their labour as value chain actors, producers and innovators.

Meanwhile, bottom-up discourses of frugal innovation have also been very influential. While these discourses are also in the name of 'the poor', the value systems behind the grassroots innovations depicted in them are different from those associated with profit-driven, market-based innovations, and many grassroots innovation movements can be seen as politically radical, attempting to challenge unequal knowledge regimes. The core idea is to address very practical problems faced by the poor in everyday life, with limited material resources. In contrast to the BOP approach, then, grassroots solutions are meant to empower local communities by letting them generate the solutions to meet their basic needs.

A third type of discourse which emerged more recently frames frugal innovation as a matter of co-creation *with* the poor – presenting itself as a synthesis of the top-down and bottom-up discourses, framed as '*for* the poor' and '*by* the poor' respectively. Thus, this discourse breaks with the particularisms of business innovations on the one hand and grassroots innovations on the other, and appeals to a more universal and vague notion of sustainable innovation where the business-driven and community-driven articulations of frugal innovation are merely elements that need to be combined through a partnership orientation (in line with Sustainable Development Goal 17) for better solutions to sustainability challenges.

Although frugal innovations are often associated with small-scale entrepreneurship and informality, their global reputation and potential have attracted large multinational corporations as well as management consultants to develop their frugal innovation capabilities. Transnational corporations such as Coca-Cola, Philips, Bosch, General Motors and 3M have adopted frugal innovation practices in their organizations and established research labs in various countries in the Global South such as India, Kenya, China and South Africa.

The idea of promoting resource-scarce innovations developed 'for the poor', 'by the poor', or more recently co-created 'with the poor', carries the potential of challenging the hegemony of resource-intensive solutions developed in 'the West' and privileging local needs and policy perspectives over global imaginaries. Despite its radical transformative potentials, the openness of frugal innovations has left the term susceptible to co-optation by powerful actors, as argued by Annala Tesfaye and Fougère. First, the hegemonic co-creation discourse around frugal innovations can lead to heightened extraction, exploitation and scaling up of 'creative sustainability value' from individuals or communities by businesses. Second, while governments celebrate affordable frugal innovations which are claimed to solve sociotechnical problems, they instead often bring about only temporary, individualized solutions that neglect underlying socio-economic inequalities. Third, the 'pacified', seemingly apolitical discourse on the scarcity of resources as a platform for innovations obscures wider socio-political dimensions of scarcity that allow for persistent inequalities in a world where we in fact could and should be able to allocate enough resources for all.

Application

The application of frugal innovations has been largely focused on user and consumer groups in the Global South. The design, product development, production and distribution processes are often characterized by partnerships between development organizations, non-governmental organizations (NGOs) and private sector actors. This is not surprising, since supporting the diffusion of technologies and technology transfer in developing countries has been among the key priority areas of international donors and NGOs since the 1960s. Over the decades, however, the paradigms guiding donor policies have changed their emphasis from technology-focused to market-oriented approaches. The frugal innovation framing epitomizes this change, aligning itself with the 'private turn' in NGOs' operations and financing at global scale. This change has been characterized by a focus on private sector involvement and entrepreneurship (social or otherwise), as well as the injunction to co-create innovations. That said, many frugal innovations have been and are developed by social enterpreneurs based on the needs of poor communities in ways conducive to improvements in well-being. A good illustration of many of these trends could be the example of co-created reusable sanitary napkins produced in Tanzania by WomenChoice Industries (a social enterprise) and Fida International Tanzania, for which the products were tested and developed jointly with end users.

Critical summary

While the genealogy of frugal innovation includes radical inspirations and movements, today frugal innovation discourse has largely been instrumentalized by powerful actors, and the discourse on co-creating frugal innovations *with* the poor is seemingly mainly securing new benefits for corporations and elites in both Global North and Global South, while promoting neoliberal entrepreneurialism as a panacea for the poor. A number of concerns about the power effects of contemporary discourses of frugal innovation have been detailed elsewhere, but here we briefly wish to stress two key concerns which relate to implications in the Global South in terms of (1) the overwhelming power of business corporations and (2) declining state efforts to curb inequalities.

First, when corporate-driven frugal innovations are framed as win-win solutions, there is a risk that they become yet another lever for business to exaggerate positive societal impacts – much like practices of philanthropy and explicit corporate responsibility – and thereby reclaim legitimacy in areas where their social licence to operate has been questioned due to undesirable impacts of their operations on local communities.

Second, when entrepreneurs and markets are expected to be the forces that bring solutions for challenges related to poverty, it

becomes easier for decision- and policymakers to assume that the state does not have a central role to play in fighting poverty. Such assumptions can be very harmful, as Global South states themselves increasingly legitimize the reduction of their welfare initiatives by arguing that the actual solutions lie in frugal innovation activities based on co-creation practices. Since economic inequalities tend to be heightened by the new entrepreneurial logic, there is much cause for concern in these policy dynamics.

Taking these two concerns into account entails a sensitivity to how the signifier 'frugal innovation' is deployed in public communication and in policy documents. In future research, critical approaches to discourse analysis will be particularly useful in further problematizing and unveiling the dark sides of celebrating frugal innovations.

Further readings

Annala Tesfaye, L., & Fougère, M. (2022). Frugal innovation hijacked: The co-optive power of co-creation. *Journal of Business Ethics*, *180*(2), 439–454.

Mehta, L., Huff, A., & Allouche, J. (2019). The new politics and geographies of scarcity. *Geoforum*, *101*, 222–230.

58. Human rights responsibility

Samentha Goethals

Outline of the topic

A constellation of standards and regulations have developed in the last 15 years constituting a global business and human rights responsibility (BHRR) framework. The BHRR framework has evolved from the 2011 United Nations Guiding Principles on Business and Human Rights (UNGPs), which set out that all business enterprises have an independent responsibility to respect human rights. This means that businesses should do no harm; they should not cause, contribute, or be directly linked to human rights harms through their core activities and relationships, regardless of their size and sector and whether they operate in a context where a state does not uphold its international legal obligations to respect, protect, and realize human rights. To operationalize the corporate responsibility to respect human rights, the UNGPs also provide that firms should conduct risk-based human rights due diligence (HRDD) and embed respect for human rights in their organizational culture. The BHRR framework is increasingly endorsed and enforced through national laws (e.g., among others, France Duty of Vigilance Law 2017, and Germany Supply Chain Act 2023) and regional directives (e.g., 2025 European Union Corporate Sustainability Due Diligence Directive) placing requirements on thousands of companies to conduct some form of human rights and environmental due diligence in their supply chains.

Although the BHRR framework should be the foundation of ethical and responsible business conduct and management, it is novel and remains under-researched as a principle and field of innovation management. BHRR and its HRDD operational mechanism have also challenged businesses and managers and required translation in business processes since human rights are traditionally the domain of state obligations. Yet, the implementation of human rights in companies' operations and value chains is ripe to drive responsible and sustainable innovations in the role of business in society as well as in management practice, strategy, and business models. This entry provides a conceptual overview and discusses the application, limits, and potential of BHRR and HRDD for innovation.

Conceptual overview and discussion

BHRR is a close but distinct cousin of corporate social responsibility (CSR). It was developed as a critical response to the perceived failure of CSR in addressing the adverse impact of business on society and the environment. The BHRR framework has evolved into regulation and a formalized public governance strongly influenced by business ethics and the moral view underpinning human rights. Unlike social and environmental issues covered in CSR, human rights derive from the inherent dignity of the human person. They are unconditional and cannot be selectively considered as external issues that matter to business and management and can enhance reputation. Rather, BHRR calls business attention to the impacts and risks that their activities and relationships present to people in and around their operations (e.g., workers and communities) as well as those using their products and services (e.g., consumers). To understand the scope of their potentially adverse impact and responsibility, businesses should at least refer to the human rights standards enshrined in the International Bill of Rights (i.e., the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights) and the International Labour Organization Declaration on Fundamental Principles and Rights at Work (i.e., freedom of association and the effective recognition of the right to collective bargaining; the elimination of all forms of forced or compulsory labour; the effective abolition of child labour; the elimination of discrimination in respect of employment and occupation; and a safe and healthy working environment).

In policy, ethics, and law, BHRR is defined as a negative responsibility. This means that the primary responsibility of business is to do no harm by ensuring that their activities, operations, and relationships do not cause nor contribute to infringing or limiting the rights of individuals and communities. This responsibility applies independently of whether a state where they operate upholds its international obligations. Yet, conceptualizing BHRR as a merely negative responsibility is misleading. To ensure that they do

not harm human rights, firms must take positive actions through conducting HRDD. As outlined in the UNGPs, HRDD originated from a combination of legal and managerial due diligence to enable firms to show and know that they respect human rights; also, it is a way to partially fend off legal claims of human rights violations. HRDD is a five-step risk-based mechanism requiring that firms *identify and assess risks of adverse human rights impact* that they may cause or contribute to through their own activities, or which may be directly linked to their operations, products, or services by their business relationships. Firms should then *integrate findings from impact assessments across relevant company processes* and *take appropriate action to mitigate, eliminate, and provide remedy* according to their involvement in the impact; *track the effectiveness of measures and processes* to address adverse human rights impacts in order to know if they are working; and *communicate on how impacts are being addressed* and show stakeholders – in particular affected stakeholders – that there are adequate policies and processes in place.

The aim of HRDD is to prevent corporate-related human rights harm by enabling a company to identify emerging social, political, and economic issues that change the context in which companies are operating and heighten the risk that they contribute to harm. HRDD thus entails an ongoing evaluation of the impact of a company's activities and relationships in its various and changing operating environments. It is therefore distinct from a one-off risk assessment conducted, for instance, as part of due diligence during a merger. By conducting HRDD a firm can get to know their human rights impacts to prevent and manage them at every level of its corporate value chain. Most significantly, HRDD shifts the emphasis of an impact assessment process from the perspective of the firm or an investor to that of people affected by their activities.

To date, however, there is no consensus on the effectiveness of HRDD in practice. For instance, firms commonly translate HRDD into existing CSR processes or mainstream risk management mechanisms such as codes of conducts and social audits. Typically focused on monitoring first-tier suppliers these fail to detect or prevent human and labour rights occurring further down in the subcontracted levels of the supply chains. As such, critics have warned that in its current application under soft-law regimes, HRDD is overly process-oriented and being used as a tool for cosmetic compliance protecting firms more than affected stakeholders. Rather, innovative approaches would be outcome-oriented, going beyond compliance. The process would be holistic and incremental, building on firms' relational responsibility. It would be used to evaluate a how a company's own decisions, strategies, and taken-for-granted business model enables or exacerbates existing conditions for persistent human rights harms in their operations, supply-chains, and the contexts where they operate. The goal of HRDD would be that firms move beyond negative responsibility toward taking affirmative responsibility to contribute to structural reforms to eliminate the risk of future harm.

Application: human rights due diligence

Incremental innovation through HRDD

The basic operational process of HRDD involving the identification of risks to stakeholders affected by a firm's activities as well as the mapping of its activities and relationships that can have negative impact on stakeholders require a host of new technologies. Human rights risk assessments, social auditing, and certification that a product is free of child, forced, or prison labour, transparency reporting and human rights performance benchmarking are all common tools. The innovation here lies not so much in the technology but in the focus on human rights risks and impact of a company, that is the risks a company's operations present to stakeholders rather than the external social or environmental risks confronting the company. Furthermore, human rights provide an overarching lens encompassing more than common labour or environmental risks. For instance, among others, rights to access remedy, to privacy, to be equally represented before the law, to education, to health, to a decent livelihood, to a clean and unpolluted environment, or again freedom of movement, freedom of opinion, freedom from discrimination, require attention under BHRR.

AI and blockchain technologies have the potential to help companies manage and report large volumes of data difficult to gather from the constellation of actors in global value chains. The use of these technologies in

HRDD is only beginning in contrast to their use in environmental impact assessment and reporting where data is said to be 'easier' to quantify. Digital social media reporting and monitoring of newsfeeds can also help companies, auditors, non-governmental organizations, and trade unions to understand and trace labour rights issues reported by workers in supply chains. Social media could also be a way to bolster the voice and engagement of workers and other affected communities with companies. They can provide tools to investors to know more about the portfolio companies on which they can use their leverage to mitigate and remedy harm. Several auditing firms and companies are also using social media platforms to keep aware of emerging risks, as well as ways to provide workers and communities with independent ethical lines to raise issues and grievances.

The data collected from a firm's diverse stakeholders and rights-holders can provide added information to triangulate and verify the findings of audits conducted on its behalf. It can also limit the risks of human-rights-washing. Taken together these technologies can enhance traditional risk assessments, social auditing and transparency reporting by revealing blind-spots about practices that may be hidden from auditors or may not be reported because they are not covered in the audits. Practices that lead to poverty wages, undermine health and safety, limit collective bargaining and negotiation with employers, reproduce gender-based discrimination and violence, or contribute to environmental pollution and competition over resources could be identified and questions probed into business models. These technologies could also reveal the origins of products in subcontracted and informal layers of supply chains that are not usually audited.

Overall, the diversity of data gathered through these novel technologies can better inform the measuring of social and environmental impact performance as well as the benchmarking of companies by civil society organizations. They could also be used to achieve decent labour conditions and increase the bargaining power of workers and suppliers by providing information that can be used to negotiate fairer prices and lead times on orders, working hours, and wages. Likewise, both companies and communities affected by their operations could also have access to crucial information regarding a firm's use of natural resources and emissions that negatively impact communities' right to water and a clean and unpolluted environment.

The use of these technologies, however, only amounts to an incremental innovation in HRDD. It does not address the root-causes of harm including the structures and imbalanced power dynamics in global value chains. Failing so, these technologies are also limited in terms of enabling meaningful engagement with affected stakeholders, nor do they offer pathways to remedy and grievance for affected rights-holders.

Innovation through deep integration of BHRR

Other innovative processes have been proposed and are starting to be implemented to achieve a deeper integration of business human rights responsibility through HRDD. These include, for instance, the *embedding of human rights responsibility* in a firm's culture and across functions, *meaningful stakeholder engagement*, the *provision of grievance and remedy mechanisms*, and the use of *company leverage and collaboration with stakeholders*. The critical innovation in these processes is that they emphasize the human and relational dimensions of HRDD. They go back to the primary goal of HRDD that is to prevent risks to people, particularly vulnerable rights-holders. Moreover, they recognize that firms' responsibility derives from their social connection to structural risks associated with global supply chains and associated business models. Furthermore, they recognize the role and agency of business to effect change in their organization, operations, strategy, and relationships with a focus on outcomes that benefit rights-holders. Knowledge of what exactly is required from firms and how they should engage in these stakeholder and structural injustice-oriented processes remains scarce due to their novelty, political dimension, and transformative scale.

A basic if significant area of innovation management concerns the process of translating and embedding respect for human rights across functions so that it is integrated in the organizational culture. This means that knowledge of human rights must become part of the fabric of firms rather than being relegated to an office without strategic importance and decision-making power. Beside external and internal experts, managers and

employees must also be educated in human rights to inform ethical decision-making, and better address human rights by being able to listen and evaluate grievances and report on them.

Meaningful stakeholder engagement is a cornerstone of major global governance frameworks, such as the Sustainable Development Goals, the UNGPs, and the OECD Guidelines. This qualitative process involves local communities as well as decision-makers in business and investors along the value chain to assess the adverse impact of a project or a company's activities. The challenge of meaningful stakeholder engagement lies in implementing it as a bottom-up process focused on affected stakeholders' perceptions and needs rather than a top-down impact assessment driven by the corporate organization. Meaningful stakeholder engagement with workers and communities affected by a company's activities offers several advantages and calls for innovation in the way a company relates to its stakeholders and integrates their needs as part of its sustainability processes. For instance, it can reduce the risks of institutional investments harming the lives and ecologies of communities, help investors avoid critique that leads to divestment, and thus generally inform their decisions on the sustainability of the project according to its benefit to the community and their territory.

As provided under Pillar 3 of the UNGPs, when firms identify that they have caused or contributed to adverse human rights impact they are required to provide effective remedy to affected rights-holders. Access to effective remedy is a human right, and therefore a duty of states and a responsibility of business under the UNGPs. There are different forms of remedy that a company can provide to affected rights-holders before courts become involved. They range from restitution, compensation, rehabilitation, and satisfaction to guarantee of non-repetition. Effective remedy should be accessible, affordable, adequate, and timely. The provision of effective remedy is a field of innovation involving the creation of new formalized means for individuals and groups to raise concerns about a firm's impact on human rights. Processes can range from an ethics line run by a third party to working with a mediator or creating a new office dedicated to engagement with stakeholders and responding to claims and complaints in good faith. That function requires a team educated in human rights that is empowered to gather information, listen to concerned parties, assess the claims, and offer a remedy. A grievance mechanism allows for businesses and affected parties to directly communicate instead of forcing the latter to choose between costly legal arbitrations or passive acceptance.

An outcome-oriented and holistic approach to HRDD could also reveal the social connection of lead firms to structural injustices and challenge the status quo of business relationships with their suppliers. Oftentimes human rights harms related to activities in supply chains result from strategies and practices that come from lead firms. This includes strategies such as sourcing from countries or suppliers that have low social, labour, and environmental standards, setting purchasing prices that do not account for living wages and undercut decent and safe working conditions, or imposing short lead times for voluminous orders for which workers will have to work longer hours. HRDD requires that a lead company and investors use their leverage over their suppliers and investees to change practices that can cause or contribute to harm. That leverage, however, is not merely a regulating role wherein the investor and lead firm require compliance and devolve responsibility down the supply chain. Rather, it is understood as a form of partnership and collaboration between investors, lead firms, suppliers, as well as competitors. Information about what is expected in terms of human rights responsibility can be discussed and goals set between partners. Then, at the level of supply, issues causing or contributing to harm can be raised and solutions found with lead firms and investors that empower suppliers to respond to and prevent harm by changing practices and innovating.

Critical summary

The prism of BHRR and each step of HRDD present opportunities for incremental innovation by business and in management such as the development of new technologies to identify, gather data, measure, and report on both the negative impact of companies as well as the mitigation processes they put in place in response. Other processes, such as meaningful stakeholder engagement and providing grievance mechanisms to affected stakeholders, are other fields of deeper innovation in company's processes and strategies.

Furthermore, by focusing attention on the risks that companies' business models, operations, and relationships can have on people, BHRR has the potential to lead to radical and perhaps revolutionary change as it gets embedded throughout organizational functions and leads to transformation in business cultures and models. Current risk-based and compliance-oriented HRDD approaches, however, have fallen short of such transformative potential.

Further readings

Bright, C., & Buhmann, K. (2021). Risk-based due diligence, climate change, human rights and the just transition. *Sustainability*, *13*(18), 10454.

Maher, R., & Buhmann, K. (2019). Meaningful stakeholder engagement: Bottom-up initiatives within global governance frameworks. *Geoforum*, *107*, 231–234.

McVey, M., Ferguson, J., & Puyou, F. R. (2023). 'Traduttore, traditore?' Translating human rights into the corporate context. *Journal of Business Ethics*, *182*, 573–596.

UNHRC (2011). *Guiding principles on business and human rights*. www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf

Van Buren III, H., Schrempf-Stirling, J., & Westermann-Behaylo, M. (2021). Business and human trafficking: A social connection and political responsibility model. *Business & Society*, *60*(2), 341–375.

Wettstein, F. (2021). Betting on the wrong (Trojan) horse: CSR and the implementation of the UN guiding principles on business and human rights. *Business & Human Rights Journal, 6*, 312–325.

59. Impact investing

Saga Eriksson

Outline of the topic

Traditional investment instruments and conceptions of fiduciary duties for financial institutions (where investors are required to act in the best interest of clients) focus heavily on the primacy of financial returns. As discussions over corporate purpose have evolved beyond a narrow view focused on profits through the corporate social responsibility (CSR) literature, so has discussion around innovative finance instruments and their necessity for addressing global challenges such as climate change. This stems from a recognition of the limited capacity of government and philanthropic funding to address the scale of finance needed for broad social transformation, leading to examination of the role of private funding mechanisms traditionally less active in financing social entrepreneurship. Impact investing has emerged as a concept bridging the gap between investment focused on returns and philanthropy focused on impact. Impact investors focus on generating positive social and environmental impact alongside financial returns, and take a patient, long-term approach to investments. It is a new way of channelling the resources of financial markets towards major societal challenges. This can focus either on global challenges such as climate change, or for example the provision of critical goods and services to low-income populations.

Conceptual overview and discussion

In the literature, impact investing is defined as investment seeking to create positive social or environmental impact alongside financial return. This definition is widely used both in literature as well as by entities such as the Global Impact Investing Network (GIIN). While impact investing is often grouped together with other positive investment strategies such as socially responsible investing (SRI) and environmental, social and governance (ESG) investing, it differs from these strategies in a crucial way. The key difference is that impact investing seeks to achieve clearly defined and measurable impact, rather than focusing on avoiding harm through excluding categories of investment, common in both SRI- and ESG-focused strategies.

SRI and ESG investing seek to generate financial returns consistent with an investor's values and may thus exclude investments in particular industries such as the fossil fuel industry. However, a divestment strategy does not imply a causal link between the investment and social value creation. SRI and ESG investments, as well as traditional investment strategies, are also more focused on the risks of investments, whereas impact investing seeks new solutions and opportunities to address current and future challenges. Merely value-aligned investment is not considered by most to count as impact investing. Impact investment arises from the need to move beyond the dichotomy of profit-making and social and environmental problem-solving to offer a way of raising capital in private markets that can address broader societal challenges. The need for private finance in turn arises from a recognition that such challenges are too large to be financed by state budgets or philanthropy alone.

Views and evidence differ as to whether impact and returns can be achieved together, and whether creating impact inevitably means some sacrifice of financial return. Most definitions of impact investing extend to include both concessionary and non-concessionary investment, i.e. investments that sacrifice some financial return, and investments that expect to earn the market rate of return or more. There are also investors who have demonstrated a willingness to forego financial gain and settle for below-market-rate returns to achieve social impact. The innovation of impact investing is in its flexibility and compatibility with existing investment models and instruments in not completely abandoning financial returns, while broadening the definition of investment value to extend to social and environmental aspects, as outlined in Sarmento and Herman's edited *Global Handbook of Impact Investing: Solving Global Problems via Smarter Capital Markets.*

On what can be considered impactful, Brest and Born outline three elements. The first, which has been increasingly emphasized in recent years, is additionality. This focuses on whether the creation of social value would have happened without the investment or not. To have additionality, the investment should result in increased production of socially beneficial outputs by the company invested in, which would not have been possible

otherwise. This requires impact investments to be directed towards financing projects that have not managed to attract traditional finance. Beyond additionality, investments need to address intentionality and causation. Intentionality implies that impact needs to be a key part of investment design, while causation requires for the investment to be connected to a particular outcome. Attention on monitoring, as well as measuring and reporting progress towards the stated goal of the investment, are key parts of impact investing and contribute towards demonstrating additionality, intentionality and causation.

As highlighted by Fernandez-Leenknecht (2020), impact investing has historically focused on small-scale project finance, and has sought to address lack of capital for projects in their growth stage. Investing in, for example, start-ups or emerging markets has offered a clearer case for additionality through providing access to capital on more favorable terms than would otherwise be possible for such entities. This is due to the risk-return profile of such projects not necessarily being attractive to traditional investors.

Literature such as by Cole and colleagues finds evidence to suggest that impact investors can build new industries and markets, and that they are more likely to accept a greater level of risk, as well as be more patient with their investments. A focus on social and environmental aspects ahead of shareholder gain and profits has meant social enterprises have struggled to raise funding in private markets and have had to rely on government and charitable sources of funding constraining their growth. Impact investing is a way to lower the cost of capital for such enterprises by being willing to look beyond only financial goals and bring in new sources of funding in addition to government and philanthropy.

Literature has identified several barriers which have prevented the traditional finance sector from engaging with impact investing, focused on legal requirements and investment culture as key factors. Wood and colleagues (2013), for example, note that the traditional way of measuring the risk/return profile of investments and the construction of investment portfolios has not favored the consideration of social and environmental factors. In addition to this, minimum commitment size and maximum ownership limits restrict the kinds of investments certain institutions can undertake, with not all impact investment opportunities able to meet these specifications. Without precise risk and return metrics for social investments many projects remain outside of the universe of what is considered 'investable' by the finance sector.

Another key factor complicating impact investing by certain investment institutions is their fiduciary duties, requiring especially institutional investors to act in the best interest of clients. This means avoiding speculative or unduly risky investments and investing in a suitably diverse portfolio. The traditional conception of fiduciary duties, centered on financial returns, has presented issues for the consideration of social aspects, both as to whether fiduciary law protects non-financial interests and whether seeking environmental or social impact benefits third parties over primary investors who investment firms are acting on behalf of. The consensus appears to be that, while investing for social impact is not prohibited under fiduciary law, social performance cannot be subordinated to financial returns, restricting the types of projects that can be pursued if financial returns cannot be guaranteed.

Application

Innovation in the finance sector, both in terms of the types of investments offered and how the sector is regulated, have emerged since the 2008 financial crisis. The post-crisis austerity policies undertaken in many countries created limits on state budgets and thus the public sector's capacity to finance social goods. The scale of challenges faced by economies, such as addressing the climate crisis, have left more social innovation competing for the same limited pool of grant funding, while creating a need for new sources of funding to be developed. The impact investment movement has developed as a response to social and environmental challenges to provide new sources of funding for entrepreneurs. In terms of the relationships between impact investing and innovation, impact-oriented funding can be innovation itself in changing how the finance sector operates and expanding the universe of projects that the finance sector deems investable. Innovation can also come in the form of directly funding innovative projects and firms, with impact investors often among the first ones to invest in new industries.

While impact investors work across a variety of sectors, examples of projects financed

in recent decades focus on microfinance provision, community development finance, and clean technology investments. The type of finance instrument offered ranges from debt instruments such as loans and guarantees, to equity investments. A key element of impact investing is monitoring how the invested-in enterprise or project is delivering on the goods and services towards which the funding has been given. Investors undertaking impact investing are interested in more than just capital provision and look to improve the way the invested-in firms or projects operate.

One of the issues faced by the field is that impact is harder to define and measure than financial returns. While there is established practice for aligning financial goals, measuring impact is not standardized, which creates uncertainty. To demonstrate additionality and causation, impact reporting is used to assess the results of investments; however, lack of comparable and credible data to support this reporting presents challenges for the field. Therefore, innovation is also needed on this front to create better mechanisms for standardizing and measuring impact.

The mechanism through which investors primarily impact on invested companies is usually divided into exit and voice. The former implies ceasing to invest in entities while the latter is focused on engagement including activities such as shareholder activism. In a review of sustainable investing, Marti and colleagues also introduce a third mechanism, characterized as field building. This encompasses a more indirect way of creating impact through trying to influence the field in which the invested company is engaged. The strategies investors use to engage with companies can thus be another avenue through which innovative approaches in the finance sector are introduced. As Tjornbo and Westley (2012) highlight, for social innovation to be successful, investees need personalized support from financiers for scaling up innovation, flexibility in how money is spent and personalized evaluation tools to be able to measure impact. This means more flexibility and innovation are also needed in how investors engage with companies.

Critical summary

Impact investment still makes up a relatively small part of the overall investment landscape, and even though there has been rising attention on and discussion of ESG investing, impact investment has been more at the periphery. Berk and van Binsbergen (2021) show that ESG divestment strategies, i.e. leaving out environmentally or socially harmful investments from portfolios have not had a huge impact on the cost of capital for these firms, raising the question of what role impact investment could play in channeling finance away from unsustainable activities and towards sustainable ones. Impact investing does not conform to the traditional logic of how the finance sector operates as it integrates goals beyond financial returns. However, issues remain with regards to how the social return of impact investment can be quantified and measured. While much of the research still centers on what potential for return different and innovative investment strategies can produce, there is more scope for research that more fundamentally challenges the primacy of financial return as the only value investors hold. The approach has tended to focus on repackaging social investment in a way that would make it conform to the logic of traditional capital market expectations; however, perhaps a broader rethink of the market itself is needed for it to better respond to different kinds of investment opportunities.

Further readings

Agrawal, A., & Hockerts, K. (2021). Impact investing: Review and research agenda. *Journal of Small Business & Entrepreneurship*, *33*(2), 153–181.

Berk, J., & van Binsbergen, J. H. (2021). The Impact of Impact Investing. *Stanford University Graduate School of Business Research Paper, Law & Economics Center at George Mason University Scalia Law School Research Paper,* Series No. 22-008, 2–43.

Brest, P., & Born, K. (2013). When can impact investing create real impact? *Stanford Social Innovation Review*, *11*(4), 22–31.

Cole, S., Jeng, L., Lerner, J., Rigol, N., & Roth, B. N. (2023). What do impact investors do differently? *Harvard Business School Working Paper,* (24–28), 1–73.

Fernandez-Leenknecht, T., (2020). Impact Investing and European Wealth Managers: Why Impact Investing Will Go Mainstream and Evolve to Suit European Investors. In Sarmento, E. D. M., & Herman, R. P. (Eds.), *Global handbook of impact*

investing: Solving global problems via smarter capital markets towards a more sustainable society, 1123–1153. John Wiley & Sons.

Marti, E., Fuchs, M., DesJardine, M. R., Slager, R., & Gond, J. P. (2023). The impact of sustainable investing: A multidisciplinary review. *Journal of Management Studies, 61*(5), 2181–2211.

Moore, M. L., Westley, F. R., & Nicholls, A. (2012). The social finance and social innovation nexus. *Journal of Social Entrepreneurship*, *3*(2), 115–132.

Sarmento, E. D. M., & Herman, R. P. (Eds.) (2020). *Global handbook of impact investing: Solving global problems via smarter capital markets towards a more sustainable society*. John Wiley & Sons.

Tjornbo O., & Westley, F. (2012). Game Changers: The Big Green Challenge and the Role of Challenfe Grants in Social Innovation. *Journal of Social Entrepreneurship, 3*(2), 166–183.

Trelstad, B. (2016). Impact investing: A brief history. *Capitalism & Society*, *11*(2), 1–14.

Wood, D., Thornley, B., & Grace, K. (2013). Institutional impact investing: practice and policy. *Journal of Sustainable Finance & Investment, 3*(2), 75–92.

60. Innovation and the base of the pyramid (BOP) context

Ahmad Arslan and Pia Hurmelinna-Laukkanen

Outline of the topic

More than 5 billion people live in conditions which have been termed as BOP – base of the pyramid – by Prahalad and Hart in 2002. Difficult circumstances, including limited basic facilities and economic hardships, characterize the BOP context, challenging everyday life and even survival. BOP is rarely the first context to address when innovation is studied, but innovation is a visible part of the lives of those representing BOP. Highlighting this phenomenon and distinguishing it from, for example, innovation emerging from natural disasters or some other crises of a more sudden nature, some researchers specifically coined the term *jugaad innovation*, which is a form of frugal innovation undertaken in settings and circumstances with severe resource shortage. Examples of innovation driven by scarcity include reusing discarded parts of different electronic equipment and automobiles for a new purpose and overcoming infrastructure challenges like lack of continuous supply of energy by developing innovative localized solutions. Innovation emerging within the BOP population segment has also been considered from the point of view of *social innovation*, linking innovation within the BOP context with *social value creation*, which can manifest itself in a range of ways, such as construction innovation for affordable housing, mobile money and FinTech, and e-health access. Hence, it is fair to argue that innovation and innovation management manifest at macro and micro levels in the BOP context, with tangible academic, practical, and policy implications. This entry offers a conceptual overview of some specificities of BOP context and innovation, along with specifying their interlinkage in the light of the extant research.

Conceptual overview and discussion

Since its emergence in 2002, BOP as an academic concept has been evolving, and is particularly linked with research streams on poverty alleviation, human development, and social responsibility. Scholars have defined BOP in several ways. However, in all these definitions, elements of economic marginalization, lack of access to resources, involvement in the informal economy, and poverty (deprivation) are present. Over the years, the conceptualization and manifestation of BOP argumentation in extant literature has evolved from considering consumption to addressing the vulnerabilities, development, entrepreneurship, poverty alleviation, and empowerment of the socioeconomically marginalized population segment. In fact, when first introduced, the BOP concept had a strong consumption focus with the core idea that the poor can be a notably profitable market. Building on this starting point, innovation in BOP context has primarily been studied and implemented in relation to the innovative solutions developed by firms, particularly multinational enterprises (MNEs), to serve this population segment. Examples include consumer products being packed in small and affordable sachets rather than large bottles or jars, and creative affordable services, including financial ones.

Over time, and especially during the last decade, the BOP concept has become increasingly studied in relation to poverty alleviation. While business and profitable returns are still emphasized, attention has increasingly turned to social value creation and not-for-profit innovation. Dembek and colleagues provide an overview, showing how concepts like social value creation, and inclusive capitalism logic have become highlighted in extant research. From this perspective, innovation and innovation management become even more vital, as the co-creation of business and entrepreneurial models that generate social, economic, and environmental value require innovation at multiple levels and from multiple stakeholders. In some recent works, scholars have stressed that innovation in BOP contexts from this perspective has been linked to creative service offerings using FinTech and InsurTech, among others, which help in overcoming financial barriers to economic empowerment and entrepreneurship development. Co-creation of social value is understood as a dynamic process where large firms (including MNEs), relevant civil society organizations (CSOs), and BOP entrepreneurs (and residents) interact to generate value, for example, in the form of affordable

housing solutions, e-health access, or smart infrastructure (like energy or transportation) solutions.

While the understanding of what kind of innovation is generated and by whom has been widening, there still are some blind spots and poorly understood aspects in the discussion on the interlinkage between BOP and innovation. Nuances and opposite forces, such as understanding how empowerment within BOP can actually lead to exploitation of indigenous innovators and generate inequality, are gradually taken under closer scrutiny by the scholarly community. For instance, so far, scholarly discussion and practical implementation mainly focuses on developing and emerging economies of Africa, Asia, and Latin America. Gradually, it has been realized that the BOP concept is not limited to these economies only. For example, Gold and colleagues highlighted that it also exists in developed (primarily Western) economies. Aspects related to economic deprivation, poverty, societal alienation, and lack of employment and entrepreneurial opportunities are visible in the BOP population segment in the developed economies. At the same time, the BOP context in developed economies tends to differ from the developing and emerging economies; exposure to extreme poverty or hunger may be more limited or not applicable. Considering this, and the fact that market conditions in developed economies are characterized by saturation and intense competition, the manifestation of innovation for BOP entrepreneurship and economic uplifting is also bound to be different. However, as this specific topic has not been studied in depth academically, the relevant insights are currently limited.

Application

Existing literature acknowledges several distinct categories for the application of innovation in BOP contexts. As mentioned, the starting point was to develop innovative products and services for the BOP population segment, which entails approaching innovation with BOP residents as consumers. From this perspective, the selling firms' (mostly MNEs') focus on packaging (e.g., small affordable packages), redesign (to distinguish from a similar product or service in the premium category), and business relationships characterized by arm's length transactions with the BOP population segment were mainly the aspects initially discussed in extant research. The role of CSOs or non-governmental organizations (NGOs) and other stakeholders was minimal from this perspective, and BOP residents were considered to be only able to give feedback regarding the kind of products or services they need or use, rather than become partners on the innovation journey.

More recently, it has been acknowledged that BOP representatives can be active and fruitful partners for value co-creation. Commitment and communication have been expanded, and the role of CSOs and NGOs has become more prominent as facilitators for relationship development. Innovation from this perspective has moved towards economic upliftment of BOP residents, whether in the form of incorporating them in organizational value chains or supporting their entrepreneurial ventures. A relevant aspect of this approach has also been channeling frugal innovation capabilities of the BOP population segment for scaling and value appropriation. Skills development and knowledge sharing between different stakeholders to strengthen innovation and innovative capabilities for BOP has emerged as a visible part of this approach. Keeping in view the emphasis on sustainable development goals (SDGs), an increasing number of MNEs are moving away from traditional CSR logic towards value co-creation and a social value-creation logic in the BOP context, as it offers mutual benefits, alongside reputational advantages previously linked to CSR. Finally, agility and resilience of BOP (especially entrepreneurs and innovators) driven by their continuous exposure to high uncertainty has been recognized to provide avenues for both radical and incremental innovation, which can strengthen an organization's operations in the current VUCA (volatile, uncertain, complex, and ambiguous) world. This opportunity is increasingly being recognized by MNEs as well as local firms, and, consequently, there is a rise in alliances among these actors for social innovation activities.

Critical summary

Most of the extant BOP research in relation to innovation has focused on developing and emerging economies, considering the BOP population segment as consumers of innovation. Peculiarities of industries, sectors,

and subsectors have been mostly neglected. Hence, there is a need to undertake more exploratory research on the innovative potential of and implications for BOP in the developed (Western) economies. More attention is needed to the multiplicity of the overall BOP context and innovation within, including aspects such as entrepreneurial development and economic upliftment of the BOP segment population. More specific and in-depth studies on sectors such as agriculture, artisanship (handicrafts), micro-manufacturing, logistics, and services in developing and emerging economies in relation to BOP innovation are expected to both enrich theoretical understanding and offer tangible practical and policy implications. Finally, Industry 4.0 technologies have changed the innovation landscape completely. How technologies such as 3-D manufacturing or the Internet of Things can manifest themselves in BOP-innovation interlinkage in multiple contexts is an area that needs further exploration. Acknowledging BOP as a source and foundation of valuable innovation is one step toward better understanding how solutions can be found for problems from grand challenges to those of individuals.

Further readings

Arslan, A., Buchanan, B. G., Kamara, S., & Al Nabulsi, N. (2022). Fintech, base of the pyramid entrepreneurs and social value creation. *Journal of Small Business and Enterprise Development*, *29*(3), 335–353.

Arslan, A., Ruman, A., Hurmelinna-Laukkanen, P., & Ali, T. (2021). Varieties of capitalism and the base of pyramid population segment in affluent economies: Discussion on entrepreneurship financing and skills development. In S. Gold, M. G. Arnold, J. N. Muthuri & X. Rueda (Eds.), *Base of the pyramid markets in affluent countries: Innovation and challenges to sustainability* (pp. 91–106). Routledge.

Dembek, K., Sivasubramaniam, N., & Chmielewski, D. A. (2020). A systematic review of the bottom/base of the pyramid literature: Cumulative evidence and future directions. *Journal of Business Ethics*, 165, 365–382.

Gold, S., Arnold, M. G., Muthuri, J. N., & Rueda, X. (Eds.) (2021). *Base of the pyramid markets in affluent countries: Innovation and challenges to sustainability*. Routledge.

Prahalad, C. K., & Hart, S. L. (2002). Fortune at the bottom of the pyramid. *Strategy + Business*, *26*(1), 2–14.

Tesfaye, L. A., & Fougère, M. (2022). Frugal innovation hijacked: The co-optive power of co-creation. *Journal of Business Ethics*, *180*(2), 439–454.

61. Innovation beyond growth

Mario Pansera, Javier Lloveras and Mariano Fressoli

Outline of the topic

Growth advocates usually resort to science, technology and, above all, to innovation to claim that endless economic growth is not only needed and desirable but also materially feasible. Science is often invoked as the source of a progress which, through the salvific role of technology and innovations, has the potential to stretch planetary limits and avoid environmental disaster. This entry examines how the present modes of science, technology and innovations are built on the questionable assumption that economic growth is always good and desirable. Science, technology and innovations are, however, socially constructed in a way that reflects the dominant values and worldviews of the context in which they emerge. In order to imagine a post-growth world, we also need to reimagine the role of science, technology and innovation in society.

Conceptual overview and discussion

The argument that the pursuit of prosperity is tantamount to the pursuit of infinite economic growth could be dated back to the post-WWII era. This period coincides with an unprecedented development of science and technology that, among other things, delivered a sustained stream of new products and services, material and processes that established the foundations of consumer societies. This sense of constantly accelerating technological progress fed collective imagination to such an extent that many people in the 1950s were convinced they would be driving flying cars in a matter of a few years.

Nevertheless, already in the 1960s, environmental movements began to denounce the dangers inherent to the uncontrolled use of science and technology to increase industrial and agricultural productivity. Rachel Carson's book *Silent Spring*, for instance, raised concerns about the increasing use of pesticides and chemical fertilizers in modern agriculture. In 1972, a team of MIT researchers led by Donnella Meadows published a highly influential report titled *The Limits to Growth*, which constituted the first systematic critique of the growth ideology from an ecological perspective. Drawing on systems thinking and a rough estimation of the biophysical *limits* of the Earth, the team concluded that continuing the pursuit of compound economic growth would inevitably lead to ecological overshoot and, eventually, a grave systemic collapse. The report was received with polarized views and animated a fierce debate between advocates and critics. On the one hand, many environmental scientists and members of the emerging green movement rapidly embraced the conclusions of *The Limits to Growth*. On the other hand, most economists sought to discredit the argument that economic growth could not continue for ever due to the existence of ecological limits. These attempts to discredit the notion of limits to growth typically highlighted the role of science and technology to overcome any constraints arising from the biophysical boundaries of the planet. The prominent economist Robert Solow, for example, commenting on the Meadows report in an interview stated that: 'Technology has to be the main part of the solution. To the extent that we talk in terms of any moral obligation, it's our obligation as rich countries to find ways for the rest of the world to develop economically with a proper respect for the environment.' Indeed, most contemporary economists assumed that technological innovation will always straddle the material benefits associated with an ever-expanding economy on the one hand and the temporary constraints to the latter posed by the natural environment on the other.

Historically, the liberal (and neoclassical) economic tradition of which Solow is a notable exponent has nevertheless paid little attention to the concept of innovation. In this regard, neoclassical economists typically reduced Innovation and technical change to the status of an external variable, that is, an exogenous factor that is externally given rather than one emerging from within the economic system. Organizations were assumed to have perfect and complete information about the best technology available at any given moment, as well as the means and freedom to acquire that same technology whenever needed. Joseph Schumpeter's seminal work, which dates as far back as the 1930s, challenged these assumptions. He demonstrated that the real engine of capitalist expansion is technological change (aka innovation), which continuously revolutionizes the way goods and services

are produced and delivered, thus introducing dynamism and instability into the context of a competitive free market economy. As per this theory, the capacity to innovate (i.e., to exploit technological change into the market) is embedded into people and organizations. He individuates the main agent of this process as being the visionary entrepreneur who is actively and incessantly looking for competitive advantages to overcome rivals. Later in his life, Schumpeter modified this position following his observation of the new wave of innovations that ensued after the end of the Second World War. He considered that the research and development departments of big corporations had become the new core of industrial innovation, driven by the incipient culture of mass consumption and enabled by the advances of big private or state companies in heavy industry. Arguably, the most important corollary of Schumpeter's work for the neoclassical tradition, however, was challenging the assumption that economic growth is exclusively based on capital accumulation.

Building on this, successive scholars then attempted to include innovation in neoclassical analysis. In the 1950s, for example, Robert Solow introduced technical change into the production function, claiming innovation to be a major reason for gains in productivity. Further research attempted to prove that economic growth was due to investments in human capital, which had spillover effects on the economy through the continuous creation of endogenous innovation. These models, aiming to explain how a capitalist mode of production faces the law of 'diminishing returns,' concluded that technical change enables capitalist economies to constantly optimize and scale up factor productivity (i.e., labour and capital; natural resources). This reasoning is commonly known as 'endogenous growth theory' or 'new growth theory.' Such theories acknowledge that, since the second half of the 20th century, capitalist economies have addressed the problem of diminishing returns through a continuous differentiation of products and, more importantly, the creation of genuinely new goods, services and markets (i.e., what is generally meant by the term innovation). In this view, economic growth is the result of endogenous – and not external – forces. Consequently, investment in human capital, innovation and knowledge are considered crucial contributors to economic growth.

The neoclassical positions were further refined over the last decades and complemented by a variety of different theoretical frameworks emphasizing the complex and systemic nature of innovation. Innovation systems, triple helix or evolutionary economics, to name a few of the most influential schools of thought, highlight in different ways the importance of creating networks and interaction between public and private institutions that produce environments favourable to innovation. The ensemble of these theories has been mobilized to provide counter-arguments to the uncomfortable conclusions of the *Limits to Growth* report. Despite their different nuances, all the lines of thought share two underpinning assumptions: a) innovation leads to growth and this is per se a good thing; and b) there are no intrinsic limits to growth because any biophysical limit can be overcome by science, technology and innovation. Today this view has crystallized into conventional wisdom for most governments and international institutions. The discourse of innovation has even crossed borders and become hegemonic within the discourse of economic development in the Global South.

Boosting and managing innovation has become a vital capability for private but also public institutions. National and regional governments compete to design ever more attractive programmes to boost innovation capabilities, and the European Union research programmes devote a sizeable portion of their budget to foster innovation among its members. Several implicit and explicit beliefs of both a descriptive and a normative nature present themselves within this innovation mania. These include but are not limited to: 1) technological innovation and change leading to more societal benefit than harm and risk; 2) innovation creating more and better-paid jobs; 3) higher efficiency in technical systems, implying the decreased use of natural resources and, thus, additional sustainability; and 4) the primary roles of citizens being those of producers, consumers, receivers of welfare, voters and subjects of governance. These four assumptions underpin, in turn, two deeper beliefs: technological determinism and productivism. First, technological development is linear and inevitable, provided that we create the conditions to trigger it (technological determinism), and, second, innovations give rise to economic growth, economic prosperity (at some level) and the creation of jobs: all

of which is a good in itself (productivism). It is not difficult to see that this perspective leaves no space for alternative socio-technological imaginaries on growth and development because any possibility of a democratic and participative debate about the future we might desire as a society, community or group of individuals is effectively monopolized.

Application: innovating within limits

Scholars have shown that technical change, far from being a neutral and autonomous process, reflects the values, ideologies and worldviews of the society in which it evolves. Moreover, technological progress is a path-dependent but non-deterministic historical process. This means that technological evolution might not necessarily follow a steady evolutionary progress forward, but is rather more likely to proceed in a succession of leaps forward and periods of stagnation. In this view, science, technology and society (STS) studies show that multiple paths of technological change are possible and often coexist in time, although over time one of them might become hegemonic due to complex political, cultural and socio-economic dynamics. Once a certain technological path becomes dominant, it undergoes a process of naturalization that creates the fictitious belief that it is the only viable way of doing things, an inevitable progress of human ingenuity. However, what appears to be an inevitable development is often the result of convergent interests, asymmetric power relationships and in many cases systems of domination and violence. In a nutshell, technological determinism and productivism fail to exhibit the fact that innovation is a socially, culturally and politically constructed process. Innovation is fundamentally about the politics of contending hopes and expectation and these are inherently plural and conditional. In other words, what counts as a good novelty for innovation is plural because several contrasting pathways are typically equally valid. In summary, technological determinism denies the inherent plurality of innovation and its variegated and diverse possible outcomes, while the productivist position neglects the political questions around it, e.g., who decides what is good or bad. Who wins and who loses when an innovation is introduced? By which mechanisms of power? These questions are rarely posed in innovation projects. These dynamics are also evident in the way technology has been used as an instrument of colonial domination in the Global South, silencing or erasing pre-existing ways of doing things and ways of living. The discourse on the inevitability of technological change (and thus the superiority of Western technology) have often been used instrumentally to impose changes in the productive systems of the colonies (and former colonies) exclusively favouring the colonial powers.

The second problematic assumption is that innovations lead to economic prosperity, the creation of new jobs; new and more efficient products and services; and that this novelty is a good unto itself. Robust empirical evidence demonstrates that more innovative economies show higher growth rates. What is unclear though is whether the wealth creation enabled by innovations is fairly distributed among all social sectors. Evidence suggests that economic growth boosted by innovation can indeed increase social asymmetries and levels of inequality. Innovation can reinforce unequal dominant positions in a market, limit the access to certain resources and social goods to specific groups, or quickly disrupt traditional ways of doing things (e.g., Walmart vs small local shops, agrobusiness vs traditional agricultural practices). Regardless of wealth distribution (or the lack thereof), the idea that innovation creates many and better jobs is itself highly contested. If, on the one hand, technical change has eliminated the need for intensive manual labour within many industrialized countries' workforces, then mechanization is simultaneously destroying more jobs than those that innovations are able to create in other sectors. Innovation does increase labour productivity, but when said productivity increases are appropriated in the pursuit of profit alone, they do not suffice to provide any corresponding wellbeing gains. The International Labour Organization reports on global wages prove this point effectively insofar as they underscore how the labour productivity index observed over the last three decades and the additional wealth created by it have not been accompanied by a corresponding real wage index growth.

A final key point that serves to situate the discourse of innovation within a debate on post-growth societies is the fact that technological development can become uneconomic or counterproductive. Put in other words, the

damages that technological innovation causes may be more significant than the benefits it brings. This idea was already put forth in the 1950s by Jünger and Ellul, who arrived at the pessimistic conclusion that human beings are destined to be enslaved by technology and technological modes of thought. This pessimism was challenged in the 1970s by opposite views that called for repurposing the direction of technological change toward a development favouring social justice, freedom and ecological equilibrium over economic growth – see the notions of 'liberatory technology' of M. Bookchin, the 'ecology of tools' of Andre Gorz and 'appropriate technology' of F. Schumacher. In the same period, the eclectic thinker Ivan Illich explicitly analyses the threats of uncontrolled economic expansion fuelled by technological advances in his book *Tools for Conviviality*. Illich argues that uncontrolled technical change can lead to an overgrowth of tools beyond the boundaries of and incompatible with a sustainable society. He specifically points at six main threats of overgrowth: (1) biological degradation, uncontrolled technological development can destroy ecosystems (e.g. climate change); (2) radical monopoly, a condition in which an individual with no access to a certain technology is excluded from social life (e.g. cars and highways, mobile phones etc.); (3) overprogramming, users' failure to understand and manipulate technology (e.g. closed code, copyright etc.); (4) polarization, increasing inequality caused by innovation; (5) obsolescence, the necessity to keep buying new products; and (6) frustration caused by the realization of several of the six threats simultaneously. In opposition to these threats, Illich proposed his notion of convivial technology e.g., technologies that preserve or enhance ecosystems, enable users' autonomy and control, disrupt unequal power relationships, and are robust and durable.

Critical summary

Science and technology are often mobilized to make overly optimistic forecasts about future rates of growth. As shown in this entry, these arguments rely on the alleged capacity of technical innovations to stretch the physical limits to growth imposed by nature. More recently, the ecomodernist project restated the crucial role of technology (including a contested labelling of nuclear power as sustainable technology) to decouple human welfare from environmental impacts. The latest research in ecological economics suggests that absolute decoupling is an unlikely possibility in the near future despite significant investments in green technology. No matter the number of future investments in clean energy, the efficiency gains achieved by the introduction of innovative technology risk being sacrificed in pursuit of further economic growth and any consequent rebound effects.

STS studies suggest that science and technology are socially constructed sociopolitical processes. In the post-WWII world, industrial societies have put STI at the service of economic growth and capitalism expansion, but this is by no means the only – let alone preferable – way to frame technology or its role. STI can also serve to achieve socially useful outcomes that are disentangled by the imperative of growth. This requires foregoing technological determinism and productivism in order to imagine forms of innovations that are not underpinned by the imperative of valorization. An innovation conceptualization based on values and practices that combine creativity with care, repairing and maintaining have the potential to unleash a new configuration of post-growth STI systems.

Further readings

Ellul, J. (1964). *The Technological Society*. Penguin Vintage.

Gorz, A. (1980). *Ecology as politics*. South End Press.

Illich, I. (1973). *Tools for conviviality*. Harper & Row.

Jünger, F. G. (1949). *The Failure of Technology: Perfection Without Purpose*. Washington, D.C: Henry Regnery Company.

Leach, M., Rockström, J., Raskin, P., Scoones, I., Stirling, A., Smith, A., Thompson, J., Millstone, E., Ely, A., Arond, E., & Carl Folke, P. O. (2012). Transforming innovation for sustainability. *Ecology and Society, 17*(2), 11.

Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, W. (1972). *The limits to growth: A report to the Club of Rome*. Universe Books.

Pansera, M., & Fressoli, M. (2021). Innovation without growth: Frameworks for understanding technological change in a post-growth era. *Organization*, *28*(3), 380–404.

Pinch, T. J., & Bijker, W. E. (1984). The social construction of facts and artefacts: Or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science*, *14*(3), 399–441.
Stirling, A. (2008). 'Opening up' and 'closing down' power, participation, and pluralism in the social appraisal of technology. *Science, Technology, & Human Values*, *33*, 262–294.
Winner, L. (1980). Do artefacts have politics? *Daedalus*, *109*(1), 121–136.

62. Leadership for biodiversity: a radical management innovation

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Outline of the topic

To address the global decline of biodiversity, transformative – i.e. paradigm-breaking – change to reform global economic systems is needed. This calls for innovation in governance, business and consumption practices. The prevailing paradigm of economic growth and overconsumption, disconnected from nature, accelerating biodiversity loss, needs overhauling. In an ecologically sustainable future, biodiversity-protective actions have been mainstreamed in private, corporate and governance realms, resulting in the thriving of all species. Yet, transformative change does not occur by itself. In order to be enacted, it calls for leadership. This entry develops a conceptualisation of biodiversity-respectful leadership.

Responding to calls for actor-based perspectives on innovation, the developed leadership framework can be considered a radical management innovation. As compared to innovation management, which focuses on means of management that enable various kinds of innovations, a management innovation is an innovation type that introduces new management practices, processes or structures that further organisational goals. This entry extends the traditional definition of a management innovation from an organisational realm toward also including planetary and societal realms. The developed leadership framework can be considered a radical management innovation given that it supports the transformative, i.e. disruptive, change toward biodiversity-respectful governance, business and consumption practices. Furthering actors' top-down and bottom-up leadership, this leadership framework seeks to inspire biodiversity-respectful initiatives and, thereby, emergent, novel and creative micro-, macro- and meso-level innovations toward ecologically sustainable futures.

Conceptual overview and discussion

The biodiversity crisis

The intertwined combination of human-induced biodiversity loss and climate change not only represents an ecological disaster but, at heart, an existential crisis, a crisis of humanity. As one symptom of the biodiversity crisis, up to a million species risk extinction within the next decades.

Biodiversity refers to the variability of life in all its manifestations. It can be studied at several overlapping levels. Genetic diversity refers to the biological variation that occurs within species. Species diversity, in turn, refers to the richness and variability of organisms examined at the level of species. At the third level, there is ecological diversity, i.e. the variability of the communities formed by different species living in the same area and the ecosystems they form together with the non-living nature.

The pervasive human-driven decline of biodiversity is caused by direct drivers, such as massive changes in land and sea use, unsustainable direct exploitation of species, climate change, pollution and invasive alien species, as well as indirect drivers, such as overconsumption, a rising global population and the asymmetric distribution of wealth. Put bluntly, humanity's current lifestyle, relying on continuous economic growth, increasing corporate profitability and overconsumption, is destroying the natural ecosystems on which the wellbeing and mutual survival of all species depend. The COVID-19 pandemic offered a taste of the future if immediate action to remediate the situation is not taken.

Important international reports on the decline of biodiversity and its critical implications for the future of humanity have recently been published. For example, in 2019, a thorough global assessment of biodiversity and ecosystem services was published by IPBES (the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), reviewing over 15,000 scientific publications on the state, causes and implications of biodiversity decline and the actions needed to change course. In 2021, the IPBES pandemics report evaluated the links between pandemic risk and reduced biodiversity since the COVID-19 pandemic began. Also in 2021, the mutually supportive goals halting biodiversity decline and climate change were emphasised by the joint report of the IPCC (Intergovernmental Panel on Climate

Change) and IPBES. The Dasgupta review, in turn, outlined the central role of the prevailing economic system in causing biodiversity decline. Finally, the many values of nature and their determination were discussed in the 2022 IPBES value report.

Combined, these reports, together with other recently published large reports on biodiversity, call for transformative change to halt biodiversity loss in the short-to-medium term, shifting toward nature-positive approaches in the long term. While such paradigm-breaking change requires innovation in governance, business and consumption, prior literature has placed scant attention on these actors, i.e. governments, companies and consumers. Notwithstanding, there is insufficient action toward the required transformative change. Put differently, there is a dearth of leadership toward addressing the biodiversity crisis. In seeking answers to this conundrum, the following section reviews prior leadership theory.

A crisis of leadership theory

Traditional leadership theory seems poorly fit for addressing the biodiversity crisis. To begin with, traditional leadership theorising focuses on organisations as closed systems, thereby not addressing questions beyond the organisational realm, be it stakeholders, societal demands or environmental questions, including climate or biodiversity crises. Moreover, traditional leadership theorising has focused on business as usual, thereby assuming profit maximisation for shareholders as the primary responsibility of business leaders. This assumption becomes amenable to critique at a time when business activity drives biodiversity decline. Solutions to address the biodiversity crisis need to adopt views of leadership that consider alternatives to the traditional business model of profit maximisation. In addition, traditional leadership theorising assumes leadership to be enacted by individuals in managerial and/or decision-making roles/positions (i.e. business executives and societal decision-makers). Thus, the focus has been on individuals in managerial positions, their attributes, and their relationship with their followers, i.e. why they have become leaders and how they exercise their leadership. To conclude, traditional leadership theories appear as part of the problem causing the biodiversity crisis.

Notwithstanding, recent leadership theorising offers promising insights to address the biodiversity crisis. In light of corporate scandals at the end of the 1990s, value-based leadership theories emerged, including authentic, servant, ethical and transformational leadership. While their roots and theoretical origins date from the 20th century to the ancient Greek philosophers, these theories gained popularity at the turn of the 21st century. In parallel, alongside the rise of corporate responsibility and influenced by stakeholder theory, responsible leadership theory emerged. Similarly, with the rising significance of sustainable development and the United Nations' (UN) Sustainable Development Goals (SDGs), sustainable/sustainability leadership theories gained ground. In contrast to research on responsible leadership largely focusing on business, the sustainable leadership literature is multidisciplinary, including education and health, bearing some connection to business. Responsible and sustainable leadership theories draw from authentic, servant, ethical and transformational leadership theory. Further, both call for multi-level theorising on leadership to include individual, organisational and societal levels of analysis. Even though these levels of analysis can be conceptually separated, in practice, they are intertwined. Despite these calls, critical reviews of these literatures posit the dearth of research actually adopting multi-level perspectives.

Taking a critical stance, neither biodiversity nor the biodiversity crisis have been addressed in leadership research. In a broader perspective, leadership research is scantly connected with natural sciences. Notwithstanding, leadership theories lack an in-depth appreciation of the natural environment. For one, classic leadership theorising does not address the natural environment, as it is solely focused on the profit maximisation motive of business. For another, the natural environment is implicit in responsible leadership theory, while mentioned in sustainable leadership theory via contemporary crises such as climate change. Third, the concepts of environmental leadership, green transformational leadership and ecocentric leadership offer rays of hope, though not detailed in their appreciation of the concept of the environment. Environmental leadership emphasises the need for environmental values cutting across all organisational functions. In green transformational leadership,

transformational behaviour is based on environmentally friendly business operations, i.e. the manager's ability to influence individuals and mobilise organisations to achieve long-term environmental goals, while guided by environmental values. Ecocentric leadership, in turn, argues for nature to be placed at the centre of decision-making. Nevertheless, a leadership framework addressing the biodiversity crisis is needed.

Application: biodiversity-respectful leadership

The problem appears two-sided. While calling for transformative change, biodiversity research does not focus on actors, nor their leadership. At the same time, leadership research does not address biodiversity, and is, in part, indirectly causing biodiversity decline. In sum, there is need for a leadership framework addressing the biodiversity crisis.

In this section, a biodiversity-respectful leadership framework is developed. Responding to the lacunas in biodiversity and leadership research, the framework offers an integrative, interdisciplinary perspective on leadership to address the biodiversity crisis. As such, it is a radical management innovation geared toward engaging actors to enact the transformative, paradigm-breaking change required to address biodiversity loss.

Planetary level

The first defining principle of biodiversity-respectful leadership is recognition and respect for all forms of life, be it bacteria, plants, animals or our own species. This, in essence, represents a philosophical shift in assumptions, norms and values. First, it represents a departure from prior human-centric leadership theorising. Further, it departs from prevailing business and management theories, which consider nature as a free resource. In a historical perspective, Western civilisation's disconnect from nature can be found at the roots of this misalignment. There is a need to shift from the prevailing dualistic ontology – separating humans from nature – toward a relational ontology – where humans are considered a part of nature.

The biodiversity-respectful leadership framework builds on environmental philosophy and environmental ethics in its theorising on nature and the subjectively shaped and historically evolving relationship between humans and nature. Further, it is inspired by ecological realism and a multi-species perspective to sustainability, which consider that the wellbeing of all species needs to be respected.

Going forward, humans need to reconsider and realign their relationship with nature and its species. There is a need to shift from an extractive relationship built on a sense of superiority toward nature to one where humans respect other species. This calls for radical innovation as regards assumptions, values, norms and practices in the relationship between humans and nature.

Societal level

The second defining principle of biodiversity-respectful leadership is a focus on economic and societal systems respecting all forms of life. This departs from the prevailing human-centric paradigm, focused on economic growth.

There is a need for economic and societal models taking nature's and all species' wellbeing as a starting point, while respecting Earth system boundaries. This calls for radical innovation. Examples of such innovative economic models include doughnut capitalism, conscious capitalism, capitalism 2.0, degrowth and regenerative society. On a positive note, global targets toward reversing biodiversity loss and nature-positivity were set for 2030 and 2050 in the European Union's Biodiversity Strategy for 2030 and at the 15th Conference of Parties to the UN Convention on Biological Diversity in Montreal (2022), to be followed up by national target-setting. This exemplifies visionary leadership.

Organisational level

Companies are critical actors as regards halting biodiversity decline, due to their largely harmful impact on the natural environment. Therefore, the third defining principle of biodiversity-respectful leadership is a focus on business models respecting all forms of life. This departs from the prevailing human-centric business paradigm, focused on profit-maximisation. Going forward, there is need for business models taking nature's and all species' wellbeing as a starting point, while respecting Earth system boundaries. This calls for systemic approaches, understanding how biodiversity conservation affects

strategy, business models and supply chains. Further, there is need to scale these solutions globally, across sectors. Examples of such innovative business models include sustainability 3.0, circular economy and regenerative business.

Developing such business models calls for radical innovation and leadership. There are promising signs, as early movers are leading the way. For example, studying Finnish primary food producers, we observe that producers respecting biodiversity understand the connection between their business and biodiversity. They have adopted an active approach toward biodiversity protection, building on a moral and ethical desire to protect nature. Comparing companies' approaches, in our work, we have further identified maturity categories detailing how biodiversity is addressed by Finnish food sector companies. The few forerunning companies actively address biodiversity loss: their business model revolves around biodiversity protection.

Overall, though, a bleak picture of companies' actual deeds toward preserving biodiversity emerges from studies across countries. Biodiversity protection and restoration is rarely incorporated into companies' operations, environmental management and corporate social responsibility strategies and programmes. While there exist some initiatives for respecting biodiversity, efficient conceptual tools for understanding the relationship between business decision-making and biodiversity decline remain amiss. Reporting on biodiversity in companies' annual reports remains scarce, generic and unsystematic. At best, companies engage in symbolic activities toward biodiversity protection.

A problem lies in the difficulty of grasping what biodiversity entails. This leads to the difficulty of perfectly measuring and reporting on biodiversity. Consequently, the management of biodiversity becomes difficult, nigh impossible, based on measurement- and reporting-centred approaches. Going forward, a shift in business toward appreciating biodiversity as valuable in itself is needed. This represents a radical attention-based innovation vis-à-vis the prevailing approaches relying on measuring and reporting. To be enacted, there is a need for management innovation to develop systemic approaches toward biodiversity-respectful business.

Similarly, a lack of understanding of biodiversity hampers managers' efforts to address it. Instead of a focus on biodiversity via numbers and metrics, there is need to educate decision-makers toward a philosophical perspective on biodiversity, the root causes of biodiversity loss and the systemic nature of the required transformative change. Biodiversity essentially refers to a respect for life, which, in itself, warrants lifelong reflection.

Individual level

The fourth defining principle of biodiversity-respectful leadership is that it can be enacted by anyone. This departs from traditional leadership theorising, which views leadership as amenable only to individuals in formal positions of power. Biodiversity-respectful leadership builds on responsible and sustainable leadership theories, which consider, instead, that leadership can be enacted by anyone.

For one, such leadership can be enacted top-down by individuals in formal positions of power and decision-making in public, private or non-governmental organisations, i.e. politicians, civil servants or managers. Research on company response and biodiversity governance shows such elements of leadership to be gradually emerging. For another, such leadership can be enacted by an individual lacking a formal power position, be it in consumer-citizen or professional roles, i.e. anyone. This is termed bottom-up leadership. While research has studied consumers' attitudes and behaviours toward biodiversity protection, it remains silent as regards the role of employees.

In summary, a conceptualisation of biodiversity-respectful leadership as enacted top-down by formal leaders and bottom-up by informal leaders operating in private and professional roles appreciates its hybrid nature. Even though an individual bears a formal professional leader role, one nevertheless remains in an informal consumer-citizen role in private. Biodiversity-respectful leadership is therefore a call for everyone, whether in formal or informal power positions professionally, to take a stance toward protecting biodiversity, while also developing such leadership in one's private roles. This calls for radical innovation in the realms of personal growth and sustainability agency.

Critical summary

The bulk of leadership theorising sustains the prevailing economic system relying on economic growth and profit-maximisation. Such norms deserve critique in an era of global biodiversity loss, largely owing to the detrimental impact of economic and business activity on biodiversity.

Biodiversity-respectful leadership offers a radical actor-based management innovation toward enacting the transformative change required to tackle the biodiversity crisis. To this end, the framework calls for radical innovation with respect to: (1) realigning humans' relationship with nature, (2) developing economic systems and business models respecting Earth's boundaries and (3) appreciating life as a foundation of thriving planetary ecosystems.

Such innovation does not occur by itself; it is done by actors. This entry is a call for the reader's agency in developing such innovations and one's biodiversity-respectful leadership in professional and private realms. All players, from the United Nations to governments, local authorities, companies and non-governmental organisations, as well as individual consumer citizens, across the globe need to take leadership toward tackling the biodiversity crisis. This is the personal growth opportunity of the 21st century. The planet is calling. Do you hear its call?

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Further readings

Birkinshaw, J., Hamel, G., & Mol, M. (2008). Management innovation. *Academy of Management Review*, *33*(4), 825–845.

Dasgupta, P. (2021). *The economics of biodiversity: The Dasgupta review.* HM Treasury.

Díaz, S., Settele, J., Brondízio, E. S., Ngo, H. T., Agard, J., Arneth, A., ... & Zayas, C. N. (2019). Pervasive human-driven decline of life on Earth points to the need for transformative change. *Science*, *366*(6471).

Ergene, S., Banerjee, S. B., & Hoffman, A. J. (2020). (Un)sustainability and organization studies: Towards a radical engagement. *Organization Studies*, *42*(8), 1319–1335.

Panwar, R., Ober, H., & Pinkse, J. (2022). The uncomfortable relationship between business and biodiversity: Advancing research on business strategies for biodiversity protection. *Business Strategy and the Environment, 32*(5), 2554–2566.

Portugal, E., & Yukl, G. (1994). Perspectives on environmental leadership. *Leadership Quarterly, 5*(3), 271–276.

Rupprecht, C. D., Vervoort, J., Berthelsen, C., Magnus, A., Osborne, N., Thompson, K., ... & Kawai, A. (2020). Multispecies sustainability. *Global Sustainability, 3*(e34), 1–12.

Teerikangas, S., & Välikangas, L. (2012). Engaged employees! An actor perspective to innovation. In T. Pitsis, E. Dehlin & A. Simpson (Eds.), *Handbook on organizational and management innovation* (pp. 54–97). Edward Elgar Publishing.

63. Local experimentation

Eva Heiskanen and Kaisa Matschoss

Outline of the topic

Innovation studies have traditionally focused on the development of new technologies. Less attention has been devoted to the innovative work involved in adopting and adapting generic technologies in real-life environments, which often takes the form of local experimentation. Such innovation entails application, adaptation and combination of existing knowledge and interactive learning among market players. Local experimentation plays an important role in evolutionary accounts of innovation, especially in the research stream of strategic niche management, which focuses on how new solutions emerge in local niches, that is, spaces that are protected from market pressures and incumbent advantages. Yet, local experimentation entails learning by people for whom new knowledge production is often not the main focus. Hence, learning from experimentation can be slow, and relies on knowledge spillovers, that is, informal and somewhat haphazard transfer of knowledge.

Conceptual overview and discussion

Innovation does not occur only in the development of technologies, but also when they are used, which often takes place in the context of local experimental projects. Following Asheim and colleagues, such innovation can be termed "synthetic", as it entails application of existing knowledge to real-life environments. It is less about the development of completely new products and more about the innovative work required to take new technological solutions into use and make them work in real-life environments. Such modifications are important for making technologies applicable in new environments: for example, making a generic technology like solar photovoltaic a viable way for households to produce their own energy. This kind of innovation usually involves interactive learning among various types of technology users, including households, service providers and regulators.

From an evolutionary economics perspective, such innovation is a result of local experimentation, which Ansell and Bartenberger categorize as purposive or accidental. Purposive experimentation occurs in the search for solutions to local needs and desires, whereas accidental experimentation occurs simply because people do things differently in different places. This local diversity contributes to variation in technological trajectories. Some of these variants are selected and retained in the range of technological solutions used by members of society: they become innovations. Citizens often have an important role in such experimentation, which has led to the use of more sustainable technologies and solutions. For example, solar panels, wind power, recycling and car-sharing have all originally benefited from local experimentation by citizen groups, which has later contributed to industrial-scale solutions.

This viewpoint on innovation has been developed in the research stream of strategic niche management, as exemplified by Raven and colleagues. This research stream focuses on how new, more sustainable solutions emerge in local niches, i.e., spaces that are protected from market pressures and the path-dependent advantages of established technologies and incumbent actors. Strategic niche management investigates the conditions for such local experimentation to be purposive and effective in generating innovations that are selected and retained on a wider scale, and thus grow to challenge established technologies. This line of research has shown that local experimentation allows the developers of alternative solutions to develop competences, learn about user needs and expectations and find users and producers for new solutions. It also helps them to gain experience of social and environmental impacts and adapt solutions to existing regulations and infrastructure. Moreover, experimentation in niches helps to identify and develop the cultural meaning of new technological solutions. It has also been argued that applying generic technologies in new and different environments allows for a widening of the technological trajectory via the creation of diverse configurations for different kinds of users and environments. For example, different types of electric vehicles or biogas plants can be created for diverse ownership structures, geographical conditions, and institutional settings.

Learning is central for the expansion and embedding of the results of local experimentation. We define learning in this context as

the development of new practices and routines through the accumulation and interpretation of experience. In local experimentation, learning is, however, complex for several reasons. First, local experimentation involves diverse actors and interests, where learning is not the main interest, since participants mainly seek local solutions and immediate improvements. Because of this, lessons can be forgotten, and failures buried. Second, only participants learn from experiments through immediate experiences: others usually learn from participants' experiences through gradual, often random information spillover, unless there are some organized forms of knowledge sharing. Since local experimentation has given rise to many useful innovations, it would be important to find ways for sharing and accumulating the lessons learned. In the following, we outline some ways in which lessons from local experimentation can have broader societal impact.

Application

We illustrate the role of local experimentation in deployment-related innovation through an example of experimentation for the deployment of solar photovoltaic (PV) panels in downtown Helsinki. Solar power is expected by the International Energy Agency to become the largest single energy source globally by 2050, if we are to manage to transition to a climate-neutral energy system. This will require vast amounts of land; hence rooftop installations are to be encouraged as far as possible in order to preserve land for nature. Finding space, acceptance, and potential owners and willing users for all these panels (billions of square metres) requires significant innovation. Our application presents a case of innovating to adopt solar panels in an urban high-rise environment. It serves as an example of the innovative work required to integrate new technologies (such as solar) into the built environment and into existing administrative structures.

The context of local experimentation was a city-driven project called Climate Street, described in more detail by Laakso and colleagues and Juhola and colleagues. The project had the aim of using a particular street in the city centre – a centrally located pedestrian street with many bars and restaurants – as a site (a protected niche) for trying out and demonstrating various local solutions for climate change mitigation. The purpose of this initiative was to find scalable solutions for the entire city and enable the city officials to learn how to support local climate action. Several different ideas and technical solutions were tested, including ideas for reducing food waste and promoting plant-based food, devices for monitoring energy and building usage, and a competition for climate-friendly heating of restaurant terraces, alongside solar panel deployment. The idea was to use "rapid prototyping", i.e., small and quick experiments enabling the city to learn more about which solutions would work, under which conditions, and why.

Within the Climate Street initiative, we focus here on experimentation for deploying solar panels in a downtown area. Solar panels are a mature, off-the-shelf technology, with rooftop applications in Finland rendering an internal rate of return (IRR) of about 4–8 per cent to their owners. However, their adoption in inner-city areas entails certain complexities, which are not specific to Helsinki alone. First, solar panels in Europe are mostly placed on the roofs of single-family homes, or on the ground, in areas where there is limited shading. Planning and designing a system for an apartment building in a tightly built city block is more complicated, and architects and installers are still learning about these kinds of projects. Second, apartment buildings (blocks of flats) in the inner city are usually mixed-use buildings, with residences and offices, as well as shops and restaurants on the ground floor. This makes decision-making about investments complex, since there are several kinds of owners in each building, including owner-occupants and absentee owners, with different interests. Third, the city centre has several buildings that are listed for their historical value, and thus retrofitting is tightly regulated. Finally, as in many other European cities, city planning and building regulators are concerned about preserving the cityscape, and there are strict requirements concerning the appearance of building facades, including roofs.

The Climate Street team supported local residents in learning about the opportunities of solar panels by producing a model procurement process in a housing company (the Finnish version of a condominium association). The team produced reports including an installation options manual, financial calculations and a template for tendering

offers from companies. The Climate Street team also brought in an individual who had personal experience of installing solar panels in an apartment building in another district to share his experience with residents. The process provided the board members of the housing companies with concrete advice, but also personal support and confidence. As a result, the first residential solar panel installation in downtown Helsinki was made, six months after the start of the process. One of the grounds for this decision was that relatives of the original builders of the house continued to live there and wanted to respect the pioneering spirit and technological enthusiasm of the original founders of the building.

Both city officials and residents learned from this process. Technical learning entailed detailed planning of how to size and install panels on the roof, calculations of costs, benefits and risks, as well as visualization of aesthetic impacts. The solar power potential for buildings on the street was calculated, offering a publicly available template for other buildings. The planning document was paid for by the project and made public for other housing companies and architects to peruse. Organizational learning on how to prepare, present and make decisions on solar PV installations in housing companies was also initiated, and disseminated in several newspaper articles. Concerns, such as how to remove snow from the roof after installing panels, were alleviated. Several other housing companies in the area developed an interest in installing solar PVs once it was proved feasible in the context of the Climate Street project. Based on experienced gained in the project, a popular guide for housing companies on investing in solar PV was developed. Permission issues were clarified during the project, and routines for permitting were developed, including principles for installing PV on buildings listed as historical sites. Many of the lessons were later integrated into Helsinki's subsequent project called Energy Renaissance, where city officials provide, among other things, free counselling for housing companies. However, revising local building regulations was not easy for officials tasked with guarding the built heritage, and it remains an ongoing process. Regulatory reform is a difficult process, which can gain initial justification from the temporally and spatially bounded context of local experimentation.

This application example has attempted to illustrate how local experimentation by ordinary people (such as municipal civil servants) is central to the energy transition, which entails a shift to more decentralized, renewable energy sources. The need to adapt technologies is particularly visible for technologies that are used in the built environment, such as local renewable energy production. Innovation in this case entails developing certain technical skills, such as sizing and planning an installation that is suitable for its site. Yet more important aspects of innovation include finding users and providers for relatively novel solutions such as solar PV retrofits and solving organizational issues of collective decision-making and financing such solutions. Moreover, placing innovative technical solutions in existing urban environments often requires finding compromises and stretching and reinterpreting existing regulations. Once this work has been done, the path is smoother for others to follow.

Local experimentation is central for adopting and adapting innovative technologies in real-life environments. Such experimentation allows for building up competence for making the technology useful, but also for exploring its economic, environmental and social consequences, as well as adapting to and shaping regulatory requirements. However, learning from local experimentation – beyond the scope of those directly involved – can be slow and uncertain. One isolated instance of experimentation is often insufficient to solve all the obstacles and hindrances, and a systematic pathway of learning is required. This also ideally entails sharing of experiences, successes and failures, as well as solutions found beyond the narrow group of participants, and beyond the geographical scope of one building, city or country.

While there are countless scientific and technical publications, including patents, on production methods, there are few dedicated outlets that document this kind of innovation related to the adoption and local adaptation of new technologies, rendering it relatively invisible. Indeed, local learning about the deployment and use of new technologies is tacit in nature, and thus often highly localized in geographic terms. According to Lorenzen, the transfer of this kind of tacit knowledge, including the related norms and beliefs, requires overlapping "strong" and "weak" ties, i.e., a rich overlapping matrix of

relationships between users, businesses and regulators, which usually only occurs locally. Proximity allows participants to monitor each other's behaviour and to learn, i.e., develop new knowledge, skills and practices, through such monitoring. Thus, instead of patents and scientific publications, this kind of knowledge often spreads through face-to-face communication, social and local media, and study visits, for example. It can be later codified in guides, as has been done by the city of Helsinki, but this is only the tip of the iceberg. Rumours spread in local restaurants about changing attitudes in the city planning office or (un)successful examples can be equally important for directing the attention of technology adopters (and potential adapters) who are not professionals. The importance of this kind of face-to-face communication inspired the authors of this entry to experiment in supporting this type of informal learning by organizing "after work events for energy pioneers".

Critical summary

Innovation by users, including citizens, has had an important role in the emergence of technologies that today constitute global commercial markets, such as the recycling industry and solar and wind power. However, user innovation continues beyond early stages when generic technologies are adapted to new environments. Our application has exemplified one such example of deployment innovation through local experimentation: the application of solar panels to inner-city residential buildings.

Learning via local experimentation is a way to develop the application of new technologies in the diverse environments in which they are used. Local experimentation is often initiated by non-professional innovators: cities, individuals, communities, or non-governmental organizations – i.e., technology users rather than developers. It is driven more by local needs and aspirations than by profit motives. The results of such experimentation are rarely reported in scientific publications or traded as such in the global marketplace. It is thus justified to ask whether it is genuinely experimentation or innovation.

We would argue that initiatives do have characteristics of experimentation and innovation when they involve genuinely uncertain outcomes and learning by doing. They are innovative when technical and organizational solutions to problems of application are discovered, sometimes even codified, and these are crucial for the technology to become useful and used in a specific type of environment.

Since innovations originating in local experimentation by non-professionals are only partially spread through the market, their scalability beyond their site of origin requires the publication of openly available data and guides. Moreover, scalability depends centrally on social networks in which tacit aspects of lessons learned are shared among technology users, as Neij and colleagues have shown. Governments can promote the use of results from local experimentation by requiring and facilitating open reporting of what was shown to work, under which conditions, and the reasons why it worked. They can also support the transfer of tacit knowledge by organizing platforms for the sharing of all kinds of experiences, including less successful ones, among local experimenters and technology users.

Further readings

Ansell, C. K., & Bartenberger, M. (2016). Varieties of experimentalism. *Ecological Economics*, *130*, 64–73.

Asheim, B., Coenen, L., & Vang, J. (2007). Face-to-face, buzz, and knowledge bases: Sociospatial implications for learning, innovation, and innovation policy. *Environment and Planning C: Government and Policy*, *25*(5), 655–670.

Heiskanen, E., Happonen, J., Matschoss, K., & Mikkonen, I. (2022). Learning from failures: Encouraging lesson-sharing in the Finnish energy transition. *Energy Research & Social Science*, *90*, 102676.

Juhola, S., Seppälä, A., & Klein, J. (2020). Participatory experimentation on a climate street. *Environmental Policy and Governance*, *30*(6), 373–384.

Laakso, S., Heiskanen, E., Matschoss, K., Apajalahti, E. L., & Fahy, F. (2021). The role of practice-based interventions in energy transitions: A framework for identifying types of work to scale up alternative practices. *Energy Research & Social Science*, *72*, 101861.

Lorenzen, M. (2007). Social capital and localised learning: proximity and place in technological and institutional dynamics. *Urban Studies*, *44*(4), 799–817.

Neij, L., Heiskanen, E., & Strupeit, L. (2017). The deployment of new energy technologies and the need for local learning. *Energy Policy*, *101*, 274–283.

Raven, R. P., Heiskanen, E., Lovio, R., Hodson, M., & Brohmann, B. (2008). The contribution of local experiments and negotiation processes to field-level learning in emerging (niche) technologies: Meta-analysis of 27 new energy projects in Europe. *Bulletin of Science, Technology & Society*, *28*(6), 464–477.

64. Non-human stakeholders

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Outline of the topic

This entry explores the inclusion of non-humans – such as nature, animals and ecosystems – as stakeholders in innovation management. While previous research has focused on human stakeholders in innovation processes, the role of non-human stakeholders has been largely overlooked. This entry argues that considering current sustainability challenges, acknowledging and including non-humans as stakeholders is both crucial and urgent. By including non-human stakeholders, innovation management can develop solutions that address social and environmental problems in a way that supports the well-being of both humans and non-humans. The entry relies on three practical examples that help illustrate how the voice and agency of nature and animals as non-human stakeholders have been recognized and integrated into innovation management processes. Lastly, it acknowledges critical conditions for ethical and inclusive advancement of non-human-driven innovation management.

Conceptual overview and discussion

According to Freeman's classic definition, stakeholders refer to individuals and groups that affect or are affected by the achievement of organizational outcomes. While typically the term stakeholder is used to refer to human individuals and groups, stakeholder research has also discussed the inclusion of non-humans in the stakeholder model considering their strategic and moral importance for organizations. Although the idea of non-human stakeholders remains a topic of debate within stakeholder theory, numerous researchers have highlighted the interdependent relationships that undeniably exist between organizations and non-human entities, emphasizing the importance of acknowledging and considering these relationships in organizational decision-making, strategizing and innovating.

Throughout history, non-human nature has played a clear role in innovation management as a source of inspiration and knowledge for inventions and innovation. The study of nature, which involves observing, learning and creating knowledge from the structures, processes and systems found in the natural environment, has become well-known by the term 'biomimicry'. According to Benyus, this concept offers a new way of viewing and valuing nature, shifting attention away from the idea of merely extracting resources from the natural world towards the idea of what can be learned from it. There are numerous examples of how nature has served as a source of innovation in changing societies and modern lifestyles. For instance, while the development of solar cells has been inspired by how photosynthesis in plants efficiently converts sunlight into chemical energy, studying how desert plants conserve and distribute water has led to advancements in water-efficient irrigation systems. In a similar way, inspiration has been found in other non-humans such as animals. The Wright brothers, for example, studied the flight of birds to develop the first successful aeroplane. Since their invention, wing designs and flapping mechanisms have all been influenced by the observation and study of flying animals. Exploration of animal movement, which is known as 'animal locomotion', has played a key role in driving groundbreaking innovations in technology, engineering, robotics and biomechanics.

There are also darker examples of non-human-inspired innovations, which have typically drawn inspiration from systems of animal exploitation. One example is the case of the moving assembly line introduced by Henry Ford, which found inspiration from the dis-assembly lines of animal killing and dismembering in Chicago's Swift and Company meatpacking house. In studies discussing the dark side of non-human-inspired innovations, nature and animals are discussed in terms of passive objects that can be observed, studied and imitated to advance human purposes. In doing so, little attention is given to the active role that non-humans can play in innovation processes or how these innovations advance aspects other than instrumentalized human benefit. In a way, this instrumentalization is not surprising, as ignorance towards non-humans has been commonplace in the broader fields of management and organizations studies. This ignorance stems not only from a poor understanding of non-humans and their capacities, such as voice and agency, but also from the belief that these capacities

are typically seen as exclusive to humans and essential for conveying and fulfilling their interests and needs.

However, recent stakeholder research deviates from such assumptions by suggesting that non-humans have a voice, albeit one that is qualitatively different from that of humans. Kortetmäki and colleagues have discussed that the question is not whether non-humans can speak, but rather a question of humans' capacity to listen to and interpret the communication of non-humans. In a similar way, Tallberg and colleagues demonstrated how affective knowledge gained through embodied experiences can inform understanding of the interests of non-human animal stakeholders. Thus, these studies have challenged the mainstream assumptions of stakeholder theory, according to which all stakeholders should communicate and reason equally.

Moreover, recent contributions have challenged the traditional assumptions and anthropocentric bias embedded in conceptions of agency. In traditional thinking, agency has been exclusively attributed to human stakeholders based on definitions that stress intentionality and cognitive capacity. Contemporary research indicates that agency can be understood more broadly, encompassing an entity's ability to take action. For example, the agency of a forest relates to its ability to change its density in response to climate change, while a fox is seen as having agency in how it is able to assimilate into urban areas. In addition, Heikkurinen and colleagues have advanced a relational view of agency in which it can also be attributed to actors other than humans.

The inclusion of non-human agency in management and organizational theorizing has thus already been acknowledged, but this entry goes a step further by suggesting that non-humans should be considered as active stakeholders in innovation processes. The entry's argument draws upon recent non-human perspectives on stakeholder theory that have been developed by Tallberg and colleagues and Kortetmäki and colleagues, among others, along with the cultural marketing approach to co-creation developed by Peñaloza and Mish. These frameworks extend the boundaries of stakeholder theory and co-creation beyond humans to include nature, animals and other non-human agents.

Application

Nature as a co-creator in service innovation

Most people have probably heard about the Nordic hotels made of snow and ice, but likely few know that Icehotel in Sweden was the first of its kind. This hotel is located about 200 kilometres above the Arctic Circle in the small locality of Jukkasjärvi, next to the Tornio River. Although the story of the hotel can be traced back to the 1940s when some members of the local community started developing tourism services in the village, the first main operations of the company date to the 1980s, when it offered canoeing and river rafting, which were very popular activities among visitors. At that time, the company was mainly focused on the summer season, as the winter was not considered suitable for tourism due to the coldness and darkness during this period. Nevertheless, in 1986, there was a serious river accident in the Tornio River, which had a negative impact on tourism activities in the area. The sudden decrease in sales forced the owners of Icehotel to rethink their business ideas and innovate. Despite the need to come up with new services, they all agreed that the Tornio River is a key stakeholder in their business and, as such, it should be included in any future service concept.

In 1988, one of the owners of the company used the opportunity to travel to various winter destinations to look for ideas that could be implemented in the winter conditions of northern Sweden. One of his stops was Hokkaido in Japan, where he visited a winter ice-sculpting festival where some of the artists had built the church of Jukkasjärvi from ice to honour his visit. From the festival, he got the idea of using ice from the Tornio River to make buildings and sculptures. In 1990, Icehotel had its first building made from ice and snow, launching a learning process with successful and failed trials. For instance, the first building, which was built on the ice of the Tornio River, faced challenges with the arrival of the spring. Due to the weight of the building and the melting of the river ice, meltwater pooled on top of the frozen river and started to leak onto the floor. As a result, the ice buildings started to be constructed on the bank of the river. This event demonstrates the river's agency in influencing design and construction decisions. The adaptation in question was made to address practical challenges

related to melting ice, highlighting the river's impact on the physical design of the hotel.

There was another particular event that ultimately led to the present idea of a hotel built from ice. A friend of the company called one day with a request to organize a conference in Jukkasjärvi. Unfortunately, the hotel was not able to accommodate the group, as it was fully booked. Nevertheless, the friend suggested that the group could sleep in the ice building. Although the suggestion sounded foolish to the company and they tried to persuade them to give up on the idea, the company finally accepted and agreed to make all necessary arrangements to fulfil the request. Eventually, the group slept in the snow building and even got a diploma for sleeping in such extreme conditions. They were not only satisfied with the experience – they were also the first guests of the Icehotel, as it is known today. This short story illustrates the role of the Tornio River as an agent actively influencing the co-creation of value, enabling and limiting the business operations and innovation processes of Icehotel. As García-Rosell and colleagues demonstrate, the owners of the company seem to have developed collaborative ways of knowing and being with non-humans that allowed them to consider and include the river when developing their services and business practices.

Overall, the Tornio River has demonstrated agency through its influence on the development path of the local community, socio-economic practices and the business activities of Icehotel. By affecting and shaping the company's operations, it prompts adaptation, creative thinking and innovative practices. While the Tornio River may not communicate in the same way humans do, it possesses characteristics that can be interpreted as a form of voice. Recognizing the agency and listening to the voice of the Tornio River played a key role in helping Icehotel understand its relationship with the river and foster a sustainable innovation process.

Non-humans as co-creators of business model innovation

Since 2017, sled-dog tours have surged in popularity, becoming the top tourism attraction for international visitors to Finnish Lapland. Across the region, there are approximately 50 husky kennels, with housing populations ranging from a dozen to 500 dogs. Alaskan huskies dominate as the preferred sled dog breed due to their exceptional pulling abilities. It is estimated that approximately 10,000 sled dogs perform work in this part of Finland, serving as integral contributors to the local economy by generating millions of euros and actively influencing the image of northern Finland as a Nordic tourism destination. The steady growth of the sector was abruptly halted by COVID-19, which brought dog sledding operators to a complete standstill and directly impacted the lives of thousands of huskies. Unlike human employees, sled dogs could not be laid off, thus presenting a significant challenge. Due to the essential needs of animals, such as feeding, care and attention, reducing operating costs for a kennel was not straightforward. In Lapland, huskies faced the risk of euthanasia as a measure to cut expenses and navigate through the crisis.

As soon as the media began reporting on the sled dog situation, sharing images and videos of the animals, husky kennels became the focal point of public attention, both nationally and internationally. They not only faced criticism for considering euthanasia, but also received support from various stakeholder initiatives. These included food companies donating supplies, private individuals making financial contributions, local neighbours volunteering to walk and exercise the dogs, and tourists pre-purchasing services. In response to these emergency actions, sled dogs, through their agency, instincts and emotions, initiated the development of a certification programme focused on animal welfare for monitoring and assessing the living and working conditions of sled dogs in Finland. Although discussions about animal welfare certifications had been ongoing for years, it was not until the disruption of the tourism industry that kennels, certifying organizations, researchers and others were ready to start working on the development of a certification aiming to evaluate the welfare and living conditions of animals performing work in tourism.

Embodied connections between humans and animals emerged as central to the imminent threat of mass culling of sled dogs, whether through media representation or direct interactions on site. Through their non-human agential capacity, sled dogs influenced the development of an animal welfare certification scheme, thus fostering a more ethical business model. Despite not being directly involved in certification development

workshops and meetings, the strong bonds between sled dogs and entrepreneurs played a crucial role in shaping the criteria necessary to ensure the welfare of the dogs. As argued by Tallberg and colleagues, non-verbal communication, embodiment and affectivity are pivotal in fostering human–animal relations and understanding the needs of sled dogs. Entrepreneurs in the sled-dog business contributed this knowledge to the certification development process in close collaboration with researchers carrying out research on animal welfare in tourism. As a direct consequence of this process, in 2021, animal welfare criteria for sled dogs employed in tourism were integrated into the Green Activities certification, marking the first tourism certification of its kind in Nordic countries.

Non-humans as co-creators of social innovation

The global COVID-19 pandemic, which emerged towards the end of 2019, rapidly unfolded, prompting widespread societal measures to identify potential carriers of the virus. In the weeks and months following its emergence, countries faced challenges in implementing swift and extensive disease screening and testing protocols. The crisis spurred medical experts to quickly innovate reliable methods for detecting viruses. This directed attention to dogs, whose innate ability to detect diseases through scent has long been recognized. Dogs have been trained and utilized for detecting drugs and explosives, as well as in search and rescue operations. In the realm of medical detection, dogs play a significant role as assistance animals, such as alerting for drops in blood sugar in people with diabetes, or detecting specific diseases like Parkinson's, malaria or various cancers. Training dogs to recognize specific targets relies on their ability to detect particular (bio)markers of the disease and respond by, for instance, barking or lying down when exposed to these markers.

In a Finnish study, Kantele and colleagues discovered that dogs effectively learned to identify the distinct odour signature linked with COVID-19 stemming from the novel coronavirus. Given that training the dogs did not demand extensive commitments of time, and that the dogs' ability to detect COVID-19 surpassed that of many available medical tests, numerous countries started launching programmes to train dogs for this purpose. Relying on the skills of dogs underscores the significance of recognizing canines as valuable team members and collaborators in pioneering new and innovative product developments for health purposes during times of crisis. Furthermore, it sheds light on agency and communicative capabilities beyond the language of non-human animals, which surpass the imagination of human beings. The case of dogs detecting COVID-19 underscores their adeptness in swiftly learning and executing intricate tasks through their keen senses, innate ability to interact with their environment and interpretation of bodily behaviour.

The incorporation of dogs into disease detection strategies not only provided a pragmatic solution but also signified a profound shift in our perception of animal intelligence and its active role in shaping value within the healthcare sector. This collaborative approach not only draws attention to the potential for human–non-human cooperation and interspecies communication in the governance of global crises but also challenges traditional notions of knowledge as solely rooted in human experience. It underscores the significant contribution of non-human stakeholders in creating knowledge that is pertinent to human well-being. Furthermore, as society confronts future global challenges, the utilization of dogs in COVID-19 detection serves as a compelling example of how non-human entities can play a crucial role in fostering resilience and driving innovation in the face of adversity. This illustrates the importance of embracing diverse perspectives and leveraging the capabilities of non-human actors to navigate complex issues effectively.

Critical summary

This entry has described the different roles of non-human stakeholders in innovation management, including non-humans as inspiration and sources of innovation as well as their involvement as co-creators in various types of innovation processes. While research on non-humans as a part of the innovation process is starting to emerge, more attention is needed to unveil the relevance and roles of non-human stakeholders in innovation processes. Critical topics requiring further research include non-human voice and agency in innovations, as well as the development of new approaches

that respect non-human stakeholders without instrumentalizing them within innovation processes. The notion of the non-human voice involves recognizing and incorporating the perspectives and contributions of non-human entities, while investigating their agency entails understanding their capacity to actively influence outcomes. As demonstrated in the cases discussed in this entry, non-human voices are qualitatively different from human voices, and thus it becomes a question of humans being able to understand and create knowledge through their interaction and bonds with them. Additionally, developing non-instrumentalizing approaches emphasizes ethical engagement with non-human stakeholders, acknowledging their intrinsic value and interests. Research in these areas is crucial for fostering more inclusive, ethical and sustainable innovation practices.

Lastly, it is imperative to note that non-human agency has received scant attention in management and innovation research. When non-humans are recognized as active co-creators and sources of innovation, and when humans depend on their capacity for interaction and causation for the success of innovations, non-humans do demonstrate their agency. Acknowledging non-humans as stakeholders with agency and possessing a form of voice can foster more inclusive and respectful approaches to involving them in innovation processes. This shift not only broadens the understanding of innovation but also promotes more ethical and holistic approaches to problem-solving. It also creates avenues for innovation that are valued not only for their benefits to humans, but also for their positive impact on animals, nature and the overall well-being of the planet.

Further readings

Benyus, J. (2002). *Biomimicry: Innovation inspired by nature*. Harper Perennial.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.

García-Rosell, J. C., Haanpää, M., & Janhunen, J. (2019). 'Dig where you stand': Values-based co-creation through improvisation. *Tourism Recreation Research*, 44(3), 348–358.

Heikkurinen, P., Clegg, S., Pinnington, A. H., Nicolopoulou, K., & Alcaraz, J. M. (2021). Managing the Anthropocene: Relational agency and power to respect planetary boundaries. *Organization & Environment*, 34(2), 267–286.

Kantele, A., Paajanen, J., Turunen, S. Pakkanen, S. H., Patjas, A., Itkonen, L., Heiskanen, E. Lappalainen, M., Desquilbet, L., Vapalahti, O., & Hjelm-Björkman, A. (2022). Scent dogs in detection of COVID-19: Triple-blinded randomised trial and operational real-life screening in airport setting. *BMJ Global Health*, 7(5), Article e008024.

Kortetmäki, T., Heikkinen, A., & Jokinen, A. (2023). Particularizing nonhuman nature in stakeholder theory: The recognition approach. *Journal of Business Ethics*, 185(1), 17–31.

Peñaloza, L., & Mish, J. (2011). The nature and processes of market co-creation in triple bottom line firms: Leveraging insights from consumer culture theory and service dominant logic. *Marketing Theory*, 11(1), 9–34.

Tallberg, L., García-Rosell, J. C., & Haanpää, M. (2022). Human–animal relations in business and society: Advancing the feminist interpretation of stakeholder theory. *Journal of Business Ethics*, 180(1), 1–16.

65. Organizational capabilities for responsible innovation

Jilde Garst

Outline of the topic

To innovate responsibly, an organization needs to absorb knowledge of the values and norms in society and integrate these values into the design of its innovations. This requires not only specific skills at the team level but also capabilities at the organizational level. Three organizational capabilities have been identified as: a) value receptivity in which the organization actively searches for new insights into the values and norms; b) value reflexivity as the internal reflection on value priorities and translation; and c) value articulation as the level of diffusion of values, norms, and design requirements in the organization. Developing these capabilities supports an organization in guiding its innovations to societally desirable and ethically acceptable outcomes.

Conceptual overview and discussion

In the traditional innovation management literature, when a firm wants to be innovative, scholars often point to a firm's capabilities to adapt to changing customer and technological opportunities. The capability to absorb knowledge from its external environment on these matters is stressed as an important organizational capability for a firm to survive. However, while this kind of knowledge is important for traditional innovation, is it enough to ensure that the firm's innovations 'do good and do no harm'? How do we ensure that both the innovation process and its outcomes are seen as societally desirable and ethically acceptable? Scholars in the field of responsible research and innovation (RRI) argue that, to safeguard a responsible innovation process, a firm will need to absorb a different kind of knowledge and thus will require other organizational capabilities than described in traditional innovation management literature.

What is considered societally desirable and ethically acceptable is captured by the values and norms in a community. To innovate responsibly, a firm has to absorb knowledge about these values and norms. These values and norms are best understood in a value hierarchy with, at the top, the value that is then translated into a norm for a specific context and further specified into a design requirement for a particular product. To illustrate, when the value 'health' is applied to food products, a norm could be 'product should not contain too much sugar' and a design requirement for a specific soft drink could be 'max 5 grams of sugar per 100 ml of product'. Similarly, if the value 'animal welfare' needs to be captured in the design of a chicken husbandry system, a norm could be 'enough living space' and the design requirement '1100 cm^2 usable area per hen'.

Although these translations from value to design requirements seem straightforward, developing such a hierarchy for a design is a difficult task. Values and norms are complex to understand, can differ depending on the context, and are dynamic over time. In this process, innovators will run into value conflicts, because stakeholders do not agree on how the value should be translated to specific norms and design requirements or because design requirements of multiple values are not compatible and cannot be combined in one design. To guide engineers to integrate multiple values in an innovative design, scholars in the field of value sensitive design (VSD) have developed a three-step framework. First, in a conceptual investigation, the design team will discover the values that are relevant to their design through conversations with stakeholders, monitoring the public debate, and engaging in philosophical reflection on these values. Second, in value translation, the selected values are translated into norms and design requirements by technical investigation and inclusive deliberation with stakeholders. Finally, in the value verification step, the design team and its stakeholders assess whether the values are successfully embodied in the resulting value hierarchy and design.

While academic research and innovation might be conducted by an isolated team, commercial innovation often involves the entire organization, and thus the design is influenced by the values and norms of an organization. The field of organizational studies provides insights into how an organization's value system captures a shared understanding of values and their prioritization. This value prioritization guides decisions on organizational goals,

resource allocation, and policy development. For example, if in a food company the value 'health' is indicated as less important than values such as 'affordability' and 'enjoyment', then the company is less likely to invest in innovation projects to make its products healthier. Which values a company prioritizes are determined by the personal values of its executive management, which are diffused in its organization through formal management decisions and policies. However, individuals – both internal and external – can also voice concerns about discrepancies within the value system of the organization and contradictions between their personal values and the organization's value system. The level of normative myopia – the tendency of executives to suppress beliefs that are incongruent with their own – will determine whether these concerns can change informal and formal decision-making and thereby, the organization's value system.

Application: value-sensitive absorptive capacity

To be a responsible innovator, a firm needs to reflect on the values integrated into the design and be open to divergent views, both internally and externally. However, this requires specific organizational capabilities. With their value-sensitive absorptive capacity framework, Garst and colleagues synthesize insights from both VSD and organizational studies literature in three organizational capabilities: a) value receptivity, b) value reflexivity, and c) value articulation.

Value receptivity

When an organization has a well-developed value receptivity, it actively searches for new insights into the values and norms that are important for its innovations. This receptivity consists of monitoring and engaging with its external environment. In traditional innovation management, external sensors are mainly focused on the firm's commercial environment: its customers, business partners, and competitors. Responsible innovation requires firms not only to broaden the scope of their environmental scanning to other societal actors but also to proactively invite these actors to deliberate with the firm on the values and norms relevant to their innovations. A proactive stance is required as these actors often do not have a channel to voice their views. However, there are exceptions, such as how a petition from the environmental and animal-rights communities pushed the ice cream company Ben & Jerry's to include vegan flavors in their assortment.

Value reflexivity

These external insights will feed into the internal conversations to reflect on which values are important and how they should be defined in norms and design requirements for a firm's innovations. This value reflexivity consists of the organization a) being aware of how values are integrated into its current designs, b) reflecting on how its overall value system informs these configurations, and c) exploring how new insights challenge this value system by asking for reprioritizing and redefining of values in the organization. While these internal reflexivity exercises can happen on an ad hoc basis, creating platforms and allotting time for these conversations allows an organization to facilitate this organizational capability in the long term. Although new product development seems the obvious time and place for reflection, these reflections are observed by researchers during other business activities, for example in negotiating supplier contracts, assessing existing product portfolios, and evaluating the launch of a new product.

Value articulation

The last capability is about the internal communication and diffusion of values, norms, and design requirements. In value articulation, organizations need to balance consistency to allow for building a common understanding of the company's values and exceptions-to-the-rule to stimulate experimentation with new configurations that challenge the existing value system of the organization. Consistent value articulation is often ensured through formal standards for innovations – e.g., the maximum tons of CO_2 allowed to be emitted by a new production line – or through the indicators to measure the product's success – such as the score to be received in consumer tests or the number of sales. However, not all values are translated to formal rules, some are only articulated through informal norms. The values with informal norms are often perceived by employees as less important and are easier traded off or compromised

when they are incompatible with formalized standards. To allow for experimentation with new configurations, an organization not only needs to invest in research on design requirements for new values but also allow flexibility in its standards for existing values. Garst et al. provide an example of how a food company balanced consistency with flexibility: formalized standards for taste test results and sugar content of new products were in place but also a procedure to ask for permission for exceptions to these rules. In this way, the company's management could manage the number of exceptions, while at the same time allowing for experimentation.

Critical summary

While the VAC framework provides an overview of the organizational capabilities needed for responsible innovation, questions remain. What happens if an organization receives mixed signals on what values are important? How do we respond to disagreements between a company's commercial stakeholders and its wider societal actors? While RRI scholars acknowledge that value conflicts exist, the capabilities needed for navigating these conflicts are not specified. In their answer to these conflicts, they point to continuous inclusive deliberation, therefore implying that consensus will be reached eventually. However, corporate sustainability scholars have shown that sustainability challenges are experienced differently by each person, leading to persistent disagreements on how to prioritize values. Insights from political theory and corporate strategy are required to complement the responsible innovation literature and develop responsible innovation strategies for navigating this dynamic and paradoxical environment.

Further readings

Garst, J., Blok, V., Branzei, O., Jansen, L., & Omta, O. S. W. F. (2021). Toward a value-sensitive absorptive capacity framework: Navigating intervalue and intravalue conflicts to answer the societal call for health. *Business & Society*, *60*(6), 1349–1386.

Garst, J., Blok, V., Jansen, L., & Omta, O. S. W. F. (2022). From value sensitive design to values absorption: Building an instrument to analyze organizational capabilities for value-sensitive innovation. *Journal of Responsible Innovation*, *9*(2), 196–223.

Kraatz, M. S., Flores, R., & Chandler, D. (2020). The value of values for institutional analysis. *Academy of Management Annals*, *14*(2), 474–512.

Nissenbaum, H. (2005). Values in technical design. In *Encyclopedia of science, technology, and ethics* (pp. ixvi–ixx). New York: Macmillan.

Stilgoe, J., Owen, R., & Macnaghten, P. (2013). Developing a framework for responsible innovation. *Research Policy*, *42*(9), 1568–1580.

Swanson, D. L. (1999). Toward an integrative theory of business and society: A research strategy for corporate social performance. *Academy of Management Review*, *24*(3), 506–521.

66. Public procurement for sustainability

Ville Valovirta and Matti Pihlajamaa

Outline of the topic

By virtue of its large economic volume, public procurement can play a significant role in driving the development, adoption, and diffusion of sustainable innovations. Public procurement expenditure accounted for 14.9 per cent of gross domestic product (GDP) in OECD countries in 2020. By setting environmental requirements for goods and services and by purchasing the development of new environmentally friendly solutions, the public sector can reduce its environmental footprint and promote the sustainable transformation of markets. The need for developing and adopting new solutions is significant, as policy goals for mitigating climate change, resource scarcity, and biodiversity cannot be met with conventional solutions and technology alone.

The traditional focus in mainstream public procurement practices has been on cost efficiency and the lowest bidding price, leaving little room for favouring green products. Over the years, procurement approaches allowing environmental considerations in tendering have been developed and consolidated. These include the use of environmental criteria, labelling and certification, and life-cycle costing. More recently, public procurement has become a tool for promoting the development and demonstration of new sustainable products and services through public procurement of innovation. By facilitating the adoption of innovations in the markets, public procurement is increasingly considered to play a major role in transitions towards sustainable societies.

Conceptual overview and discussion

Based on the maturity of available technologies in the supply market, two distinct modalities of innovation procurement can be discerned: adaptive and developmental.

Adaptive procurement

Adaptive procurement concerns the adoption of newly developed, cleaner products already available in the market. By using environmental tendering criteria such as greenhouse gas emissions, energy efficiency, or recycled content, more environmentally friendly products can be favoured in procurement. In the case of newly developed products, certifications might not be available yet, but functional and performance-based requirements can be used. In evaluating products, it is essential to consider all stages of the product life cycle, covering manufacturing, distribution, operation, and use, as well as disposal and end of life.

Another approach for adaptive procurement is the valuation of the total cost of ownership of the procured good over its life cycle. The higher purchasing price of clean technology is often compensated by lower costs during its use through smaller energy or materials consumption. By taking into account the costs incurred during use, the procurer can carry out cost-effective acquisition. This approach is particularly applicable for the acquisition of various types of durable goods and investment assets, such as vehicles, devices, machines, buildings, and facilities, which have significant environmental footprint during their period of use.

A related approach concerns the use of performance-based contract incentives. The procurer pays for results (e.g., availability) under a service contract instead of the transfer of ownership of a physical product or asset. Performance-based contract incentives are a particularly valuable approach to fostering circular economy solutions by incentivizing the service provider to optimize asset utilization over its lifetime and minimize the creation of waste.

All the approaches for adaptive procurement mentioned here can be used to facilitate sustainable innovation through two complementary mechanisms. First, by setting requirements for a product's functioning and environmental performance, the procurer may provide space for innovative products without specifying particular technologies. Second, the emphasis on environmental goals prioritizes sustainable products and services, providing them with opportunities for market penetration.

Developmental procurement

The second modality, developmental procurement, is about contracting for the development of a solution that does not yet exist at the time of procurement or requires considerable adaptation to user needs. When markets do

not readily provide a product or service that meets the user's high environmental requirements, the public sector can initiate a process for purchasing innovation. Hence, developmental procurement is about demanding a solution that needs to be developed first. By doing so, public procurement can drive innovation and promote the green transition of the market. Various approaches have been used, including pre-commercial procurement, innovation contests, design contests, and innovation partnerships, each assigning public procurement a specific role in the innovation process. Some cover only the development stage, while others also commit to deploying the developed solution for operative use by the procurer.

Public procurement of innovation is typically carried out in several stages to validate results before committing to proceeding forward. An essential step in the development is piloting and demonstration, which provides the buyer with valuable information about technical reliability, performance, and costs. The supplier company, in turn, receives feedback from users and an opportunity to adapt the solution to the requirements of a real-world operational setting. Successful sustainable innovations typically require systemic change, i.e., linking with surrounding infrastructure, information systems, regulatory requirements, and user practices, thus requiring collaborative validation with multiple partners. Particularly when several complementing technologies need to be trialled to find out if the complete system works – e.g., low carbon asphalt in road construction or recycled content in textiles – small-scale procurement can be used before more extensive deployment.

In order to meet ambitious environmental policy goals such as carbon neutrality targets, it can be helpful to formulate a service-specific procurement strategy. The essence of such a strategy is to manage the transition of a specific category of procured products and services related to a public service from development to piloting, adoption, and upscaling. Examples of such strategies are the procurement of zero-emission bus fleets in public transportation and the incorporation of recycling requirements in the procurement of medical supplies by hospitals. A service-specific procurement strategy implements environmental policy goals through procurement by managing the transition from the developmental stage towards adaptive and mainstream procurement.

Through its significant purchasing power, the public sector can aim to direct the evolution of markets towards a more sustainable future. Combining public procurement budgets with their regulatory power, the governments may create purchasing commitments for environmentally friendly products. A case in point is the Federal Buy Clean Initiative, which is a commitment of the United States federal government to source only low-carbon construction materials for the most carbon-intensive materials: steel, concrete, asphalt, and glass. The commitment is accompanied by grants and technical assistance programmes to assist federal agencies in fulfilling these procurement commitments. With its $650 billion procurement budget, the U.S. federal government is the largest purchaser in the world and can be expected to influence significantly the direction of the market towards sustainability.

Application

Green procurement has been applied in a variety of sectors. Due to its large economic significance and environmental footprint, building construction has been subject to efforts to improve energy efficiency, reduce carbon footprint, and introduce circular solutions through procurement. The impacts of public purchasing may also spill over to private sector activities. A study conducted in California by Simcoe and Toffel demonstrated that, when environmental building standards are applied in public sector construction procurement, they may diffuse to private sectors, thus fostering the adoption of a common environmental standard.

Another sector where public procurement may play a significant role is infrastructure procurement. Construction and maintenance of public roads, parks, bridges, and tunnels is resource-intensive and provides opportunities for the utilization of recycled, reused, and low-carbon materials. In the Netherlands, the national infrastructure agency uses environmental requirements in contracting. Contractor companies are required to be certified based on their management proficiency in terms of carbon reduction. Application of these criteria has been estimated to account for close to half of achieved emissions reductions by contractor firms.

Introducing new clean technologies and transitioning the market towards their wide-scale diffusion is pertinent in the field of transportation. Procurement of vehicles and services involves opportunities for using public procurement strategically to shift towards lower emissions technologies. In various countries, bus procurement and public transport service contracting have utilized tender requirements for driving the uptake of biofuels, biogas, battery-electric, and hydrogen technologies and associated infrastructure. A similar transition is taking place in off-road machinery as several cities have initiated low-emission procurement for construction sites. Public procurement may reduce the risk of investing in clean technologies in these markets by creating initial demand and aligning expectations.

Another example of public procurement having a market-transforming role can be found in the area of waste management and bioenergy. In Sweden, a public energy utility carried out a procurement using functional specifications to acquire the development of a new solution based on generating bioenergy from biowaste and processing the residue into bio-based fertilizers. The procurement process contributed to making the institutional conditions more favourable for innovation development by removing regulatory hurdles. This way, public procurement may contribute to market formation for novel sustainable products and processes.

An interesting case where public procurement has catalysed sustainable transition can be found in maritime transportation. Public procurement of short-distance car ferries has been used in Norway to trigger innovation, demonstrate performance, and create an offtake market for low-emission technologies. The public procurement market of coastal ferry connections has provided an 'advanced niche market' for the transformation of a new innovation ecosystem development for battery-electric and hydrogen-driven vessels. As advanced customers, public procurers may demand innovation, which can have a more significant impact on the surrounding markets.

Other examples of sustainable procurement of innovation can be found in a variety of product categories, including food, chemicals, textiles, packaging, furniture, and electronics. Great expectations are also put on information and communication systems and digital tools to optimize the use of energy and materials, facilitate circularity in the value chains, and improve user awareness of their consumption choices.

Critical summary

The significance of public procurement in fostering sustainable innovation is increasingly recognized. However, empirical studies on this topic remain sparse. Although some forerunners excel in implementing advanced procurement practices, the majority of public organizations struggle with effectively incorporating both innovation and sustainability into their operations. As a result, several aspects of this area demand additional research.

Questions arise regarding modifications needed in organizational procurement practices to enhance sustainability transitions. Traditionally, sustainable procurement has been inconsistent, focusing on specific products and services. It often relies solely on tendering criteria. Consequently, alternative procurement methods are overlooked, and sustainability is not consistently prioritized across all procurement categories. This has resulted in only marginal impacts on innovation and broader societal transformations.

In certain sectors, a single public organization can significantly influence the market. However, in most cases, collective efforts from multiple procurement units are essential to create the incentives needed for companies to develop and offer innovative solutions. Thus, altering market demands significantly may necessitate collaborative strategies across organizations and establishing a unified vision for desired advancements. Engaging in knowledge-sharing dialogues between buyers and suppliers can also provide beneficial insights. Therefore, there is a growing consensus that public procurement for innovation should transition from being seen as merely an operational organizational function to a strategic one, with an emphasis on interactive governance. Yet, there is a dearth of research on how to actualize this paradigm shift in public organizations and institutionalize sustainable and innovative procurement practices more broadly.

The motivations behind promoting sustainable and innovative public procurement are not universally agreed upon, highlighting areas for future research to elucidate these

ambiguities. Past studies have suggested that public procurement plays a role in facilitating the development and diffusion of sustainable innovations. However, whether public procurement is the most cost-effective instrument to pursue sustainability transitions has been called into question. Public organizations often face a multitude of procurement targets, which may sometimes conflict. These range from cost minimization to promoting environmentally friendly solutions and facilitating innovation. In certain instances, these objectives align seamlessly. However, they often necessitate compromises, further muddling the formulation of a clear procurement strategy. It is plausible that the approach to public procurement needs to be tailored according to the unique attributes of specific industries.

Variables such as the public sector's relative purchasing power, the innovation capacity within the firm base, and other environmental and innovative policies should be taken into account. Implementing a standardized set of procurement practices across various industries might produce unintended negative outcomes. For instance, stringent environmental criteria could inadvertently push unsustainable production to alternate markets rather than bringing about genuine changes in firms' operations. In such cases, alternative tools like environmental regulations might yield more favourable results. The scenarios under which public procurement is an effective policy mechanism remain largely uncharted, thus inhibiting its full potential.

Finally, this entry underscores a prevailing focus in discussions on public procurement of innovation: the emphasis on environmental sustainability, especially concerning carbon emissions. However, this narrowed perspective overlooks other vital environmental facets, such as biodiversity, which have received scant attention in procurement discourse. Beyond environmental concerns, there is a noticeable absence of discussions around social sustainability dimensions. Aspects like diversity, inclusivity, and inequality are seldom deliberated upon in the context of public procurement.

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Further readings

Alhola, K., Ryding, S., Salmenperä, H., & Busch, N. (2018). Exploiting the potential of public procurement: Opportunities for circular economy. *Journal of Industrial Ecology, 23*(1), 96–109.

Bleda, M., & Chicot, J. (2020). The role of public procurement in the formation of markets for innovation. *Journal of Business Research, 107*, 186–196.

Edler, J., & Georghiou, L. (2007). Public procurement and innovation: Resurrecting the demand side. *Research Policy*, *36*, 949–963.

Edquist, C., & Zabala-Iturriagagoitia, J. (2012). Public procurement for innovation as mission-oriented innovation policy. *Research Policy, 41*(10), 1757–1769.

Kadefors, A., Lingegård, S., Uppenberg, S., Alkan-Olsson, J., & Balian, D. (2021). Designing and implementing procurement requirements for carbon reduction in infrastructure construction: International overview and experiences. *Journal of Environmental Planning and Management*, *64*(4), 611–634.

Krieger, B., & Zipperer, V. (2022). Does green public procurement trigger environmental innovations? *Research Policy*, *51*(6), 104516.

Rainville, A. (2021). Stimulating a more circular economy through public procurement: Roles and dynamics of intermediation. *Research Policy*, *50*(4), 104193.

Simcoe, T., & Toffel, M. (2014). Government green procurement spillovers: Evidence from municipal building policies in California. *Journal of Environmental Economics and Management*, *68*(3), 411–434.

67. Radical sustainability from the Global South

Riina Bhatia

Outline of the topic

Innovations and technologies are set to play a key role in sustainability transformations; that is, a radical transformation to a more socially and ecologically sustainable society. Yet, perspectives on sustainability transformations and how to reach them vary greatly. Mainstream Western approaches prioritise green growth and technological innovations for decarbonisation and biodiversity conservation. However, alternative understandings of innovation and technology are gaining ground, particularly in response to the question of whether economic growth can be decoupled from CO_2 emissions and material consumption. This entry explores alternative perspectives on innovations, highlighting concurrent streams of sustainable innovations emerging from post-development and post-growth movements in the Global South, which challenge the dominant Western models of sustainability and sustainable development that are heavily reliant on technological optimism and innovations for profit. In fact, alternative understanding on technologies and innovations are based on principles of conviviality, pluriverse and grassroots to create a more sustainable and inclusive society and approach innovations from more-than-technology perspectives.

Conceptual overview and discussion

The escalating climate crisis and environmental destruction underscore the urgency of addressing the unsustainable practices of overconsuming societies. Consequently, the pursuit of economic growth has been widely criticised, leading to debates about the need for a shift from GDP-driven growth to green growth, or more radically to a well-being driven steady state and even degrowth economies, generally referred as post-growth. The argument for post-growth transitions follows from an understanding of social metabolism, where economic growth as a material process extracts natural resources and energy into products, services, buildings, food, energy and mobility, which are all needed for (capitalist growth-based) societies to function. In overconsuming societies this social metabolism exceeds planetary boundaries, and such alternatives for it are sought.

Mainstream socio-technical visions for sustainability advocating for green and inclusive growth with investments in sustainable innovations such as renewable energy and low-carbon technologies are problematic for two main reasons. First, although technological innovations are crucial for decarbonising societies and transitioning to less fossil-intensive energy sources, they fail to address increasing demand for natural resources needed for high-tech solutions and resulting rebound effects. Second, investments in research and development have historically been justified by economic growth. This is a problematic premise for sustainability solutions, as growth makes it even harder to decouple emissions and material consumption.

Alternative understandings of innovation and technology from the Global South provide a critique of Western development and sustainable socio-technical visions (such as sustainable development goals and ecomodernism), highlighting the need for systemic perspectives on capitalism as the root cause of environmental destruction and social inequality. In fact, post-developmental and post-growth innovations from Global South present an alternative to the hegemonic Western-style sustainable socio-technical transformation by providing a perspective on capitalism as the root cause for environmental destruction and social inequality. Alternatives arising from the Global South emerge from development critique where deterministic (sustainable) techno-optimism as a solution to sustainability challenges is disregarded. These alternatives are grounded on strong relational (meaning that everything is co-constituted in and through relations) and socio-natural ontologies (meaning that society and nature are seen intrinsically inseparable), presenting views to new understandings of sustainable innovations from post-colonial perspectives, and emphasising more-than-technological solutions, e.g., social innovations. They have mostly emerged from indigenous cosmovisions and peasant groups, and represent a radical transformation away from Western, deterministic, capitalist development. While these alternative understandings of innovation and technology have some differences, they

are characterised by principles of reciprocity and interconnectedness, more-than-human relationships, place-basedness, inclusivity, ecological sustainability and commons/community types of organisation and ownership models.

Application: the Matrix of Convivial Technology

The Matrix of Convivial Technology (MCT) by Vetter is a technology assessment tool from a post-growth perspective. It is based on the principles of degrowth, that is the planned descaling of social metabolism, and it emerges from post-developmental critiques to technological determinism and the Western development paradigm. The MCT is a tool for radical transformation, and it highlights that societies and technologies shape each other reciprocally. Ivan Illich's concept of convivial tools has inspired this literature.

The MCT helps to overcome dichotomies over techno-optimism and pessimism, and is based on five dimensions; relatedness, accessibility, adaptability, bio-interaction and appropriateness, which help to assess technologies' sustainability from a holistic perspective. *Relatedness* refers to how technologies relate to the surrounding environment and more-than-human actors and how they shape relationships between people, but also whose knowledge has been utilised in technology development. *Accessibility* refers to the ability to use or build technologies and access to material and immaterial resources needed. Here, questions on who owns and produces technologies are important. *Adaptability* refers to the ability to adapt technologies to rising needs, but also the ability to avoid certain technologies. Autonomy to decide whether or not to use certain technology and still be fully part of society is seen as important. The *bio-interaction* dimension examines the ecological impact of producing technologies as well as the ecological impact of its use. Convivial technologies aim to be environmentally less harmful and respect the ecological cycle. *Appropriateness* examines the place-based materials and skills to decide whether some technology makes sense and helps to address local needs.

Pluriversal and grassroots technologies

Pluriversal technologies, discussed by Velasco-Herrejón and colleagues, emphasise the importance of embracing ontological and epistemological diversity by involving the inhabitants of different socio-cultural territories into the co-design, co-production and co-ownership of technologies. Pluriversal technologies are based on five different dimensions which help to examine that technologies are both inclusively designed, accessed and used. First, *the philosophical dimension* is underlying to all other components. Pluriversal technologies are based on relational or strong socio-natural ontology and epistemological pluralism, which emphasise different ways of knowing and producing knowledge, as well as reciprocity, collaborative forms of work and mutual respect. The *environmental dimension* focuses on human–nature relationships and ownership structures. *The socio-political dimension* encompasses key elements of governance and political thought based on communalism, social justice and equity, while *the economic dimension* encompasses core economic principles, ideas and practices based on collective work, community ownership and redistribution. Lastly, the *spiritual dimension* addresses individuals' relationship to time, spirituality and human fulfilment.

Grassroots innovation in the Global South perspective can refer to identification of innovative ideas, practices and technologies based on indigenous and local knowledge in marginalised communities. In the Global South, this usually relates to land struggles, reproduction of livelihoods and cultural identity. They rise from post-capitalist and post-developmental perspectives and are based on indigenous cosmovisions. As such, innovations emerging from the bottom-up are based on radically different premises than Western growth-based innovations and offer an alternative to growth-driven innovation and technology development.

Critical summary

Alternative understandings of innovation and technology arising from the Global South can be understood as new ideas embracing ontological and epistemological diversity, and highlight co-design, co-production and co-ownership of technologies. They provide an alternative to mainstream sustainable

innovation as they are based on relational ontology and pluralist epistemology, relational human–nature relationships, common ownership, autonomy, adaptability, accessibility, needs-based innovation and socio-political justice, and discard techno-optimism to solve sustainability challenges. Alternative models from the Global South, such as convivial technologies and grassroots innovations, challenge the ideology of technological solutions and progress embedded in Western capitalist economies and take a systemic perspective into developing communal, needs- and place-based innovations. They provide an alternative to innovation for profit and offer pathways to transformative change towards sustainability that embrace multiple levels of society, culture and cosmology into innovation processes.

Further readings

Kerschner, C., Wächter, P., Nierling, L., & Ehlers, M.-H. (2018). Degrowth and technology: Towards feasible, viable, appropriate and convivial imaginaries. *Journal of Cleaner Production*, *197*, 1619–1636.

Maldonado-Villalpando, E., Paneque-Gálvez, J., Demaria, F., & Napoletano, B. M. (2022). Grassroots innovation for the pluriverse: Evidence from Zapatismo and autonomous Zapatista education. *Sustainability Science*, *17*(4), 1301–1316.

Pansera, M., & Fressoli, M. (2021). Innovation without growth: Frameworks for understanding technological change in a post-growth era. *Organization*, *28*(3), 380–404.

Velasco-Herrejón, P., Bauwens, T., & Calisto Friant, M. (2022). Challenging dominant sustainability worldviews on the energy transition: Lessons from Indigenous communities in Mexico and a plea for pluriversal technologies. *World Development*, *150*.

Vetter, A. (2018). The matrix of convivial technology – assessing technologies for degrowth. *Journal of Cleaner Production*, *197*, 1778–1786.

68. Refugee economic integration

Samentha Goethals

Outline of the topic

Refugee economic integration has gained significant attention in recent years due to large-scale forced displacements caused by conflicts, climate change, poverty, and resource scarcity. The traditional state-centred global refugee system is shifting towards a shared-responsibility and development-driven approach, as outlined in the 2018 United Nations Global Compact for Refugees. This approach aims to address the limitations of humanitarian aid and enable refugees to access economic opportunities, fostering self-reliance instead of dependence on international assistance. In this context, businesses have emerged as key actors in supporting refugee economic integration through innovative strategies. This entry explores the conceptual framework, application, and critical aspects of innovation management in the field of refugee economic integration.

Conceptual overview and discussion

Refugee integration encompasses a multifaceted, long-term process where individuals seeking protection become fully integrated participants in their host societies. Economic integration, a crucial aspect of this process, enables refugees to engage in formal economic activities, attain economic security, and contribute to their host communities. The private sector, encompassing diverse entities like financial institutions, multinational corporations, and social enterprises, interacts with refugees in various capacities, such as employers, employees, borrowers, and consumers. Furthermore, by aligning their values with diverse workforce requirements, businesses contribute to societal goals while benefiting from the unique skills and perspectives that refugees bring. Thus, businesses that actively engage in refugee economic integration through innovation management can contribute to positive change, creating opportunities for both refugees and themselves.

However, existing governance frameworks in host countries often restrict refugees' freedoms and opportunities, leaving them in limbo and high precarity with limited access to legal work. Refugee employment is often hampered due to invisible, multi-level, systemic barriers. Responsible business conduct is crucial in navigating the structural and relational challenges faced by both refugees and employers. Innovative approaches in business core activities require a deep comprehension of the institutional, organisational, and individual factors that contribute to refugees' vulnerability in the employment process. At the institutional level, these factors include immigration regulations, recognition of foreign qualifications and education, and the socio-political climate. At the organisational level, they include employers' perceptions, suboptimal employment, discrimination in recruitment, reliance on labour brokers, access to support organisations, and self-employment. Individual-level factors entail individual demographics, host-country language skills, social networks, psychological responses, and motivation. Overcoming such barriers demands the development of refugee-centred ethical processes and initiatives, including innovations in human resources and multicultural management to ensure successful integration.

Application

Businesses have actively pursued innovative strategies to promote refugee economic integration. Notable examples have been documented in the Middle East, Kenya, Uganda, Germany, and Bangladesh, which are host to major international refugee populations. For instance, traditional partnerships between businesses and international organisations focused on humanitarian responses have fostered research and development in technologies to provide solid shelters and electricity (e.g. IKEA Foundation Better Shelter), sanitation units (e.g. Veolia Foundation), and water purification (e.g. P&G Foundation) in refugee camps. Financial businesses have also developed banking services such as online bank accounts and cards with iris recognition technology for refugees in camps to safely receive, access, and keep aid funds, personal capital, and wages (e.g. Mastercard digital financial services).

Businesses can also support the economic integration of refugees through innovation in their core activities. For instance, businesses can identify and support refugee entrepreneurs and social enterprises by including them and their products in supply chains (e.g.,

IKEA Social Entrepreneurship and Jordan River Foundation). Social and mission-oriented enterprises have also emerged as innovators in overcoming barriers to refugee employment. NaTakallam, for instance, leverages the freelance digital economy to provide language services and employment opportunities to refugees. By developing a platform that connects language students with registered refugee tutors, NaTakallam enables skilled refugees to earn a decent income and enhance their skills, even in countries where legal work is restricted, including Lebanon and the Middle East more broadly. Yet again, others have engaged in lobbying governments to allow refugees to work while raising awareness about refugee social and labour integration with their consumer base. This includes engaging in strategic activism, where companies advocate for policy changes that allow refugees to work legally. Notable examples include Chobani and Ben & Jerry's, both of whom are known for their activism in refugee employment in the United States and in Europe. Additionally, some garment brands have collaborated through initiatives like the Fair Labour Association to lobby governments, seeking to enable Syrian refugees to work legally in Turkey. Some of these brands also developed new human resources, auditing and training processes as well as engagement with their Turkish suppliers to respond to the humanitarian crisis and ensure the fair recruitment of adult Syrians refugees across all tiers of their supply chain. These actions help address both humanitarian concerns and supply chain risks associated with forced labour and child labour.

Critical summary

Innovation management plays a vital role in driving refugee economic integration, offering both opportunities and challenges for businesses. By integrating refugees into their core activities, businesses can access a highly skilled talent pool and benefit from their problem-solving abilities and unique perspectives. The intersection of innovation management and refugee integration presents a promising avenue for businesses to support economic empowerment, foster social cohesion, and drive sustainable development. However, understanding the complex relationships among businesses, refugees, host countries, suppliers, and other stakeholders is crucial to navigate the vulnerabilities arising from the increasing barriers to the human rights to seeking asylum, freedom of movement, and free employment around the world. By embracing responsible business conduct and strategic activism, businesses can play a transformative role in facilitating the economic integration of refugees in such context.

Further readings

Betts, A., Bloom, L., Kaplan, J., & Omata, N. (2017). *Refugee economies: Forced displacement and development*. Oxford University Press.

Goethals, S. (2025). Development response to forced migration: A framework for business shared responsibilities. In T. Olsen, J. Schrempf-Stirling & H. Van Buren (Eds.), *A research agenda for business and human rights* (pp. 57–74). Edward Elgar Publishing.

Guo, G. C., Al Ariss, A., & Brewster, C. (2020). Understanding the global refugee crisis: Managerial consequences and policy implications. *Academy of Management Perspectives, 34*(4), 531–545.

Szkudlarek, B. (2019). *Engaging business in refugee employment: The employer's perspective*. University of Sydney Business School. https://ses.library.usyd.edu.au/bitstream/handle/2123/21513/Engaging%20business%20in%20refugee%20employment.pdf?sequence=2&isAllowed=y

United Nations (2018). *Global compact on refugees. Resolution (A/RES/73/151)*. www.unhcr.org/5c658aed4.pdf

69. Responsible research and innovation

Lucien von Schomberg

Outline of the topic

The concept of responsible research and innovation (RRI) represents a paradigm shift in how to approach technological development and scientific inquiry. It stems from the recognition that science and technology have profound impacts on society, thus instilling an ethical imperative to ensure that these impacts are positive and contribute to a better future. Frameworks of RRI have gained traction in both academic and policy circles, with particular relevance in fields such as biotechnology, artificial intelligence, nanotechnology, and environmental science. Though these frameworks may vary, there is a broad consensus among scholars about the need for a form of governance that steers research and innovation toward societally desirable outcomes. Such governance involves fostering a sense of shared responsibility and mutual responsiveness among a wide range of actors, including innovators, policymakers, industry representatives, and civil society groups.

Conceptual overview and discussion

RRI has gained increasing significance over the years, evolving from its introduction as a cross-cutting issue in *Horizon 2020 (2014–2020)*, the European Union's (EU) Framework Programme for Research and Innovation, to now being an operational objective of the strategic plan for *Horizon Europe (2021–2027)*, the latest EU Framework Programme for Research and Innovation. This concept has also occupied a central place in national research councils – notably in the United Kingdom, Norway, and the Netherlands – to launch their own initiatives to promote RRI. In addition, RRI has gained global recognition, extending its influence on countries like the United States and China, where it has been integrated into their respective national plans for science, technology, and innovation.

Although RRI as a concept was developed 10 years ago, attempts to institutionalize ethical and social dimensions of science and technology trace back to the late 1960s, when risk identification and analysis first gained prominence. This movement gained momentum in the early 1970s, particularly in response to the challenge of nuclear waste disposal, which prompted initiatives toward nuclear disarmament. In the 1990s, public debates surrounding issues such as genetically modified organisms and nanotechnology in food products also brought the ethical dimensions of science and technology into focus. As a result, in early 2000, the European Commission adopted a communication on the use of the precautionary principle, emphasizing the importance of informing the public and policymakers about known risks and areas of uncertainty. This reinforced various approaches and frameworks to govern science and technology, integrating ethical and social considerations. These included technology assessment (TA), science and technology studies (STS), and research on ethical, legal, and social implications (ELSI) or aspects (ELSA) of emerging technologies.

RRI builds upon its predecessors but emerges as a reform in several ways. Firstly, it specifically steers research and innovation toward addressing 'grand challenges' such as climate change, water scarcity, loss of biodiversity, and food security. In doing so, RRI shifts from traditional evaluative assessments of emerging technologies to an approach founded on collective responsibility among stakeholders. This approach is underpinned by an ethics of construction, in contrast to an ethics of constraints, emphasizing not only what innovation outcomes should be prevented but also what outcomes should actively be pursued. Moreover, by focusing on the innovation process, RRI advocates for the inclusion and commitment of all stakeholders to make the outcomes of innovation more manageable and purposeful. Operating under the principle of science with and for society, it posits that research and innovation can only meet the needs and aspirations of society if all actors participate throughout the entire process. Finally, RRI exceeds conventional economic incentives and addresses market failures to ensure that innovation processes genuinely yield societally desirable outcomes.

Application

One example of how RRI can be put into action is through the concept of open science, which advocates for research to embrace principles of transparency, inclusivity, and interdisciplinary collaboration. It promotes the early sharing of knowledge and data in collaborative

partnerships. In addition to granting open access to data and publications, this emphasizes the importance of ensuring accessibility and responsiveness among all participants in research and innovation systems. Open science involves engaging a wide range of actors in the co-production of knowledge, extending beyond the traditional academic realm to include collaborations with citizens and non-experts. It serves as a catalyst for change, influencing behaviours and practices, and prompting reforms in the reward and incentive systems within research organizations. These reforms, exemplified by initiatives like the Open Science Policy Platform, challenge established norms and practices within institutions like universities. Open science advocates for the recognition and reward of not only the quantity and quality of research publications but also diverse research behaviours and practices that promote open and collaborative knowledge co-creation.

Another example of implementing RRI involves the design and set-up of social labs. These labs act as collaborative hubs, bringing together a diverse array of stakeholders, including academia, businesses, research institutions, funding organizations, policymakers, civil society, and the general public. They provide a flexible, experimental space free from rigid project plans and expectations. Social labs are unique in their capacity to foster co-creation within a practical, real-life context, enabling participants to collectively address societal challenges. For instance, the NewHoRRIzon project, funded by Horizon 2020, established 19 social labs, each dedicated to a specific challenge. These labs ensured consistent and ongoing engagement of a variety of stakeholders, effectively enabling public engagement and putting RRI into practice. The implementation of social labs reflects the transformed relationship between science and society envisioned by RRI, where both innovators and societal actors are empowered to contribute to research agendas and voice their perspectives throughout the entire innovation process, from beginning to end.

Critical summary

While RRI offers a compelling vision for more ethically grounded and socially responsive research and innovation, its implementation faces challenges. The tension between normative ideals and practical implementation remains a significant hurdle. The integration of RRI into existing research and innovation systems often falls short of its ambitious goals, as it can be instrumentalized to meet funders' requirements without driving meaningful change. Additionally, there is a risk of greenwashing-like practices where RRI is used to rebrand existing structures and activities without substantial reform. Finally, there is a need to address the politics of innovation, including questions about democratizing the innovation process, the inclusion of marginalized voices, and the distribution of power. These issues call for ongoing reflection and reform to ensure that RRI achieves its full potential in steering research and innovation toward more responsible and socially beneficial outcomes.

Further readings

Marschalek, I., Blok, V., Bernstein, M., Braun, R., Cohen, J., Hofer, M., Seebacher, L. M., Unterfrauner, E., Daimer, S., Nieminen, M., Vinther Christensen, M., & Thapa, R. K. (2022). The social lab as a method for experimental engagement in participatory research. *Journal of Responsible Innovation*, *9*(3), 419–442.

Owen, R., von Schomberg, R., & Macnaghten, P. (2021). An unfinished journey? Reflections on a decade of responsible research and innovation. *Journal of Responsible Innovation*, *8*(2), 217–233.

von Schomberg, L., & Blok, V. (2023). It takes two to tango: Toward a political concept of responsible innovation. *Journal of Responsible Innovation*, *10*(1), 2264616.

von Schomberg, R. (2013). A vision of responsible research and innovation. In R. Owen, J. Bessant & M. Heintz (Eds.), *Responsible innovation* (1st ed.) (pp. 51–74). Wiley.

70. Social enterprises

Filippe Barros

Outline of the topic

The world has faced significant challenges in achieving sustainable development. In this context, social enterprises address these challenges through their business models. These organizations aim to create social and environmental value while remaining financially viable. Therefore, they must innovate their business models to balance these goals and the demands of stakeholders. Because of this, it is essential to understand business model innovation in the context of social enterprises, and how this relates to the challenges of managing these organizations.

Conceptual overview and discussion

There is no consensus on the definition and characteristics of a social enterprise. Depending on political, economic, and social contexts, these organizations may have different legal structures, decision-making processes (which may or may not be participative), profit policies (which may or may not include profit reinvestment), among other characteristics. Overall, these organizations aim to address social and environmental issues.

The business models of social enterprises differ from those of non-governmental organizations, which aim to create social and environmental value but rely on philanthropic investment or donations to fund their activities. They also differ from traditional companies, which may invest in sustainability-related issues but are not primarily focused on social and environmental value creation. Ultimately, the business model of social enterprises seeks financial viability through market mechanisms while aiming for social and environmental value creation.

The business models of social enterprises reflect their value proposition and how they create and capture economic, social, and environmental value. In this sense, innovating the business models means that social enterprises are rethinking and creating ways to produce the intended outcomes, considering how and for whom their products or services are offered. For example, a social enterprise might provide accessible housing renovations for low-income populations through an innovative credit system and partnerships with suppliers. Alternatively, the social enterprise could develop a new delivery service for people without a legal address in low-income areas in collaboration with local organizations.

However, business model innovation in social enterprises can be challenging, considering the different expectations of stakeholders regarding economic, social, and environmental outcomes. These challenges, also referred to as tensions, emerge when social enterprises seek to address stakeholders' demands by integrating economic, social, and environmental activities and outcomes in their business models. Tensions can lead to trade-offs in value creation and capture, and affect the performance of social enterprises. Additionally, addressing these tensions requires proper management strategies. For instance, the organization's communication should convey the relevance of social and environmental value creation as well as the economic aspects of the organization, to various audiences, such as investors and local communities.

The literature offers various perspectives that can enrich the discussion about the relationship between business model innovation in social enterprises and the challenges of integrating economic, social, and environmental outcomes. For instance, Weerawardena and colleagues stated that business model innovation can create tensions, while Davies and Chambers considered it as a means to address these tensions. Additionally, Tykkyläinen and Ritala described how these tensions affect business model innovation.

Based on this, it can be inferred that the relationship between business model innovation and the challenges of integrating economic, social, and environmental outcomes in social enterprises are bidirectional: business model innovation can both cause and resolve tensions, while tensions can influence how social enterprises innovate their business models. Therefore, these challenges can be the antecedent, substance, or outcome of business model innovation in social enterprises.

Application

The literature has addressed the challenges in business model innovation within social enterprises, including recent calls in papers such as those by Weerawardena and colleagues. Additionally, practitioners discuss how social

enterprises can innovate in their business models to integrate economic, social, and environmental outcomes. One example is the C Model, proposed by four organizations in Brazil: Inovação em Cidadania Empresarial, Fundação Grupo Boticário, Move Social, and Sense Lab. This model aimed to integrate business perspectives with the intended social and environmental outcomes in business models, with contributions from social enterprises and business incubators.

The C Model combines the business model canvas with the theory of change method to guide social entrepreneurs in integrating economic, social, and environmental value creation, distribution, and capture. This approach can be adopted by social entrepreneurs and supporting organizations (e.g., business accelerators, incubators, and investors) when creating or revising strategies for achieving social and environmental outcomes while ensuring financial viability through market mechanisms. To do this, the C Model emphasizes collaborative construction, considering the perspectives and expectations of stakeholders. To implement the model effectively and innovate their business models, stakeholders and representatives of social enterprises should engage in discussions and workshops. In the following section, the structure of the C Model is presented.

From context to a vision of impact

The starting point is the context and the social or environmental issue that the social enterprise aims to address. At this stage, it is important to delve into discussions about people's motivations for engaging with the social enterprise and the underlying causes of the targeted issues. Once a better understanding of the issue is achieved, the next step is to define who benefits from the outcomes. Finally, the vision of impact must be considered, which means the broader and systemic outcomes brought about by the social enterprise when addressing the issues.

Intervention and the causal relationship between outputs and outcomes

After discussing the problem and the vision of impact, the next step is to identify how the intervention can generate outputs and how these outputs are connected to short- and medium-term outcomes. In other words, it is time to delve deeper into the social enterprise's macro activities (intervention), the quantifiable products generated by these activities (outputs), the initial outcomes from these products (short-term outcomes), and the intermediate outcomes (medium-term outcomes) that reflect the changes the social enterprise is producing. It is important to consider the causal relationship between the intervention, the outputs, and the outcomes.

Business flow

Business flow relates to how the social enterprise will achieve financial viability. This involves identifying and exploring market opportunities to support the intervention and generate the intended outputs and outcomes. The discussion about this part of the C Model must address which market opportunity the social enterprise will embrace, who the customers or clients are, the value proposition, the revenue streams, and the expected financial results.

However, since there is a connection between business flow and vision of impact, the C Model encourages key discussions about how the market opportunity relates to the context and the problem, how the customers or clients relate to whom the outcome is intended for, and how the value proposition relates to the intervention. At this stage, divergences may arise regarding which market opportunities best address the social or environmental problem. Additionally, discussions on the target profile and intervention may occur, since the value might be created differently in business-to-consumer (B2C), business-to-business (B2B), or business-to-government (B2G) business models. For example, a social enterprise aiming to improve the quality of basic education through adaptive learning could focus on the B2G market, offering services to public schools and serving those who cannot afford private education, which may yield fewer financial results and more risk. Alternatively, the organization could focus on the B2B market, selling services to private schools, which could provide better financial results. This decision, when made collaboratively between social enterprises' representatives and stakeholders, and considering the previously discussed vision of impact, could prevent future misalignment.

Organizational capacity

Lastly, it is important to detail how the business will operate. This involves discussions about the team, partners, activities, resources, and costs. The costs can affect financial results, and social entrepreneurs should consider social and environmental issues when defining the elements of the organizational capacity. For example, a social enterprise that supports artisan groups by selling their products may decide to train these artisans in necessary skills to include them in the value chain. This decision may enhance social value but also increase costs. Therefore, discussing these issues at this stage can mitigate future conflicts.

Critical summary

Social enterprises must innovate their business models by (re)defining their value proposition and the way they create and capture value. Integrating economic, social, and environmental outcomes when innovating their business models can be challenging for social enterprises. The C Model offers an approach to guide social enterprises through this innovation process, considering the integration of economic, social, and environmental outcomes and the perspectives of stakeholders in a collaborative manner.

Involving stakeholders in the innovation process can help social enterprises address existing and future challenges, and develop strategies to achieve financial viability while maintaining social and environmental outcomes. However, managing tensions within social enterprises will demand constant innovation, potentially leading to new products, services, processes, and management practices. Therefore, business model innovation must be a core aspect of the organization's culture, constantly evolving to mitigate unwanted outcomes, rather than a fixed tool that only provides a static approach.

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Further readings

Davies, I. A., & Chambers, L. (2018). Integrating hybridity and business model theory in sustainable entrepreneurship. *Journal of Cleaner Production, 177*, 378–386.

Hota, P. K. (2023). Tracing the intellectual evolution of social entrepreneurship research: Past advances, current trends, and future directions. *Journal of Business Ethics, 182*, 637–659.

Tykkyläinen, S., & Ritala, P. (2021). Business model innovation in social enterprises: An activity system perspective. *Journal of Business Research, 125*, 684–697.

Weerawardena, J., Mort, G. S., Salunke, S., & Haigh, N. (2021). Editorial and research agenda: JBR special issue on business model innovation in social purpose organizations. *Journal of Business Research, 125*, 592–596.

71. Stakeholder engagement

Heta Leinonen, Annika Blomberg and Johanna Kujala

Outline of the topic

Stakeholder engagement is a relevant topic for innovation management as innovations are no longer seen to take place in formal innovation processes inside a single organization, but rather in interaction with various stakeholders. Within innovation literature, the so-called open innovation paradigm is most clearly connected to stakeholder engagement. This paradigm emphasizes the permeability of organizations' boundaries and the transfer of innovation from the organization (e.g., spin-offs) and to the organization (e.g., licensing), as well as the co-development of innovations with the organization's stakeholders.

The concept of stakeholder engagement refers to the various processes and strategies that organizations undertake in their stakeholder relations and activities through which an organization engages stakeholders in its operations. In recent literature, researchers have dedicated increasing attention to studies on stakeholder engagement in the context of innovation. Stakeholder engagement can create multiple benefits for the focal organization, for the stakeholders involved in the innovation process, and for society at large. Through engaging its stakeholders – for instance, customers, communities, collaborators, and even competitors – organizations access complementary or new, relevant knowledge, become more aware of their environment, and can combine resources and gain synergies.

This entry is based on Kujala and colleagues' literature review targeting leading academic journals in the business and society, management and strategy, and environmental management and environmental policy fields. From a sample of 90 scholarly articles on stakeholder engagement, 16 articles include an innovation-related approach and thus serve as the basis for the discussion in this entry.

This entry offers a conceptual overview of stakeholder engagement and its relevance for innovation management, particularly from the perspective of sustainable innovations. Furthermore, it provides an analytical framework for engaging stakeholders in the innovation process, together with practical applications. It concludes with a critical summary.

Conceptual overview and discussion

According to a common understanding in the recent literature, stakeholder engagement is important for innovation management. Stakeholder engagement has been found to generate additional knowledge for innovation activities, facilitate the recognition and exploitation of new opportunities, and provide directions for future development. Pantano and colleagues have argued that stakeholder engagement is a significant factor in connecting the organization's innovativeness and the actual strategic innovation outcome. Engaging stakeholders beyond the focal organization's immediate boundaries is necessary to capture information, create knowledge, learn, and finally, take ideation to new dimensions.

Innovation is facilitated by relationships with various stakeholders, such as customers, suppliers, competitors, universities, government regulators, and local communities. Employees in particular have gained special attention in the literature on stakeholder engagement and innovation management. For instance, Pantano and colleagues have examined how employees need information on innovation projects and support from an innovative, motivating, and enabling organizational culture representing the shared assumptions and guiding principles of the members of the organization. By boosting the innovativeness and performance of the employees, the organization can make use of employees' previous knowledge and experience in the innovation process. Engaging stakeholders beyond the immediate ones can also provide opportunities for innovation.

Stakeholder engagement has been found to be particularly important for the promotion of environmental responsibility and sustainable innovations, which are considered both necessary and urgent in relation to the worrying state of the planet. Scuotto and colleagues have argued that, when stakeholders engender a sense of environmental responsibility, the stakeholder engagement capacity of an organization correlates positively with sustainable innovations. Stakeholder engagement can provide environmental knowledge and capabilities that are a prerequisite for organizations to produce sustainable innovations. In addition to engendering a sense of responsibility

and providing knowledge and capabilities, stakeholders can have a variety of roles in sustainable innovation processes, as posited by Goodman and colleagues. These roles are often collaborative and proactive, meaning that they include joint decision-making and dialogue between the organization and its stakeholders.

Pucci and colleagues have argued that organizations with proactive sustainable behaviour engage different stakeholders at different points in time to develop innovation. Further, the most important innovation is not the actual innovation outcome, but the sustainability culture, which can be defined as a culture that values and considers sustainability in its actions. A sustainability culture is the result of a process consisting of challenges related to identity creation, legitimization (i.e., creating a shared understanding of sustainability and identifying the boundaries of sustainability), and enhancement (i.e., promoting the sustainability culture and developing standards). To answer the challenges, different stakeholders are engaged, and different engagement mechanisms are used in different phases of the process. While sustainability culture requires the engagement of various stakeholders, it can also be spread to wider constituencies, and, through this spreading, steps towards more sustainable societies are taken.

The drivers of stakeholder engagement are manifold and can relate to the co-development of resources and capabilities (e.g., knowledge and process management practices), pressures from the external environment (e.g., legislation), and the search for competitive advantage (e.g., cost reduction and differentiation), as suggested by Todeschini and colleagues. The aim of getting to know stakeholders' sustainability interests and expectations and receiving information about the environment are also regular motives for stakeholder engagement. The lack of a clear and common understanding of sustainability issues in a specific context is also an important driver to engage with stakeholders when developing sustainable innovations. Local stakeholders can offer knowledge and understanding of local sustainability issues, and engaging with multiple stakeholders can be a means of formulating a shared understanding of sustainability. Finally, stakeholders' shared values and capabilities support stakeholder engagement in the context of innovation.

To sum up, stakeholder engagement is crucial to innovation, particularly sustainable innovation. Collaborative and proactive stakeholder relationships facilitate the development of innovation, and stakeholder engagement can also encourage stakeholders towards innovativeness and sustainability.

Application

As stakeholder engagement is crucial for a successful innovation process, Grama-Vigouroux and colleagues have proposed a framework for developing and implementing a sustainable innovation process with a stakeholder engagement approach. The framework reflects the view that sustainable innovation is a context-dependent, dynamic, and non-linear process with many insecurities. The framework consists of five elements that can have either a positive or negative effect on the development of stakeholder engagement and the innovation process: (1) the knowledge element, (2) the collaboration element, (3) the organizational element, (4) the strategic element, and (5) the financial element. The combination of the five elements both enables a comprehensive and coherent approach to the innovation process and serves as a consulting tool for practitioners.

The knowledge element relates to internal and external knowledge management activities, such as the identification of stakeholders and knowledge sharing that promote stakeholder engagement. For the organization to become more innovative, it is crucial to have access to the knowledge of its stakeholders, implement a knowledge infrastructure, and have high absorbency. While the identification of stakeholders is a key success factor for sustainable innovation, innovation management also depends on the types of stakeholders involved in the innovation process and also on their benefits and usefulness to the innovation project.

The collaboration element includes the organization's ability to strengthen shared meanings and values, stimulate mutual understanding, and identify opportunities for working together. Collaboration encapsulates choosing the right stakeholders in terms of, for instance, trust, capabilities, and investment capacity. Different procedures can be used in the selection of stakeholders. For example, a crowdsourcing platform is one way to seek and find a well-cooperating set of

stakeholders for innovation projects. In addition to choosing the stakeholders, Goodman and colleagues add that broadening stakeholder engagement as well as understanding the various roles of stakeholders (e.g., initiator and educator) in the innovation process can provide new opportunities for innovation.

The organizational element relates to the necessary skills to lead innovation projects and implement stakeholder engagement. In particular, the way employees are engaged has an impact on the cooperation, motivation, and commitment of the stakeholders on a large scale. In addition, especially when working with a wide range of stakeholders in complex networks, stakeholder engagement may face challenges, for instance due to differences in innovation management practices or organizational structures. For example, rigid organizational structures can stifle the creation of sustainable innovations and limit employees' personal sustainability goals.

The strategic element represents the innovation strategy of an organization and the motivation of the management to become involved in innovation projects. A clearly articulated and communicated innovation strategy combats fear, increases openness, and triggers innovation. The existence and recognition of the innovation strategy are important success factors in engaging stakeholders. Conversely, through stakeholder engagement, organizations can build effective innovation strategies.

The financial element draws attention to financial resources and funding, as they also have an impact on innovation projects. For example, inconsistent and inadequate financial resources can complicate access to knowledge and thus hinder stakeholder engagement and innovation, while the stakeholders' investment capacity supports stakeholder engagement in the context of innovation.

In addition to presenting the aforementioned elements, in their study, Grama-Vigouroux and colleagues compared two small European industrial firms: Curana, a Belgian manufacturer of bike equipment and bike accessories, which, thanks to stakeholder engagement, has had successful innovation practices since the early 2000s, and Norelem France, a manufacturer of machinery parts struggling to increase the level of openness in its innovation process. In all, the findings of the study showed that the companies used the five elements in different ways, even though the main goal of both was the same: to innovate quickly to stay ahead of the competition. The key differences between the companies related to the innovation strategy and the depth of stakeholder engagement in it. Curana was exercising a strategic approach that enabled it to use and combine the five elements in a consistent way, maintain an extensive stakeholder network with a wide variety of skills and technologies, and avoid the negative effect of, for instance, exploitative behaviour and misalignments through analysing the behaviour of stakeholders, open communication, transparency, and the equal distribution of advantages. As a result, Curana was recognized as the innovation leader in its industry. On the other hand, Norelem had difficulties in formulating its innovation strategy, which also influenced its stakeholder engagement: instead of choosing the stakeholders based on their importance for the innovation process and alignment with the innovation strategy, Norelem ran temporary ad hoc projects with its stakeholders and consequently failed to develop strong stakeholder relationships of strategic importance.

From the perspective of sustainable innovation, the company's sustainability culture and the CEO's vision seem to play a significant role: if they promote sustainability, it is likely that the employees understand and value sustainability innovations and are able to engage with stakeholders to absorb the necessary knowledge and ideas from them. To enable the knowledge acquisition, Curana organized collegial meetings across organizational boundaries and between different organizations. Through the meetings, the CEO had a great opportunity to introduce his personal values to other members of the company and throughout the stakeholder network. Curana's CEO was personally involved in the development of the innovation strategy and led the stakeholder network that was of strategic relevance for innovation. In essence, having a well-formulated innovation strategy and engaging those stakeholders capable of supporting the strategy are of the utmost importance for successful innovation management. When the innovation strategy and company culture favour sustainability, the organization is well-equipped to create innovations that promote social and environmental sustainability.

Critical summary

Stakeholder engagement facilitates innovation processes and is a necessity for the transformation of organizations and societies towards sustainability. Engaging stakeholders in a collaborative manner and building long-term, trustful relationships with them has been found to be conducive to innovation, as they enable the development of complementary capacities and new combinations of resources.

Stakeholder engagement is especially crucial for sustainable innovations, as it can increase the motivation and inspiration to innovate in a wide variety of organizations as they face increasing societal and legislative pressures. Opportunities for sustainable innovation can be developed through holistic and critical considerations of the organization's production and value chains as well as through engaging a variety of stakeholders. Stakeholder engagement is a means of getting information concerning stakeholders' sustainability interests or expectations and remaining sensitive towards the environment in which the organization operates. In particular, engaging marginal, secondary, or disparate stakeholders, or those stakeholders who have a concern for social or environmental sustainability, can provide opportunities for sustainable innovation.

The innovation management literature highlights that the innovation process is uncertain and may lead to success or failure. This is especially the case as innovations emerge from the interaction between the organization and its stakeholders, and such processes are inherently non-linear and often unpredictable. Attention should be paid to examining how stakeholder engagement enables both radical and incremental sustainable innovations to solve or mitigate problems related to environmental or social sustainability, as argued by Goodman and colleagues. Due to unpredictability, incremental innovation can generate a radical impact, while radical innovation efforts may fail to generate any longstanding impact.

Consequently, although the topic is currently receiving increasing interest, more research is needed on stakeholder engagement in the innovation context, particularly in the sustainable innovation context. Future research could take a broad but context-specific scope on how stakeholder engagement enables and supports sustainable innovation. Similarly, future research could explore the role of stakeholder engagement in envisioning and working towards a sustainable future. Further, research might explore how sustainability cultures or new, revolutionary business models successfully transform, for instance, entire economic, social, and political systems. What could the aims, practices, and fundamental ideas of innovation management in such a revolutionary future be like, and what is the role of stakeholder engagement in it?

To conclude, although engaging various stakeholders may increase the unpredictability of innovation processes, it also provides new opportunities and incontestable benefits for the focal organization and its stakeholders, as well as for society at large. However, as the current state of our planet is worrying, it may be that even radical innovations, let alone incremental ones, are not enough to correct the path. Therefore, future research could and should reconsider many concepts that are taken for granted in both the innovation management and the stakeholder engagement literatures, such as the idea of measuring value mostly in financial terms or the idea of continuous economic growth. More attention should also be directed at how organizations can create sustainable innovations that increase the overall wellbeing of societies through engaging a variety of stakeholders, including those with a marginal voice.

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Further readings

Goodman, J., Korsunova, A., & Halme, M. (2017). Our collaborative future: Activities and roles of stakeholders in sustainability-oriented innovation. *Business Strategy and the Environment, 26*(6), 731–753.

Grama-Vigouroux, S., Saidi, S., Berthinier-Poncet, A., Vanhaverbeke, W., & Madanamoothoo, A. (2020). From closed to open: A comparative stakeholder approach for developing open innovation activities in SMEs. *Journal of Business Research, 119*, 230–244.

Kujala, J., Sachs, S., Leinonen, H., Heikkinen, A., & Laude, D. (2022). Stakeholder engagement: Past, present, and future. *Business & Society, 61*(5), 1136–1196.

Pantano, E., Priporas, C. V., Viassone, M., & Migliano, G. (2020). Does the stakeholder engagement result in new drinks? Evidence from family owned SMEs. *Journal of Business Research, 119*, 185–194.

Pucci, T., Casprini, E., Galati, A., & Zanni, L. (2020). The virtuous cycle of stakeholder engagement in developing a sustainability culture: Salcheto winery. *Journal of Business Research, 119*, 364–376.

Scuotto, V., Garcia-Perez, A., Cillo, V., & Giacosa, E. (2020). Do stakeholder capabilities promote sustainable business innovation in small and medium-sized enterprises? Evidence from Italy. *Journal of Business Research, 119*, 131–141.

Todeschini, B. V., Cortimiglia, M. N., & de Medeiros, J. F. (2020). Collaboration practices in the fashion industry: Environmentally sustainable innovations in the value chain. *Environmental Science & Policy, 106*, 1–11.

72. Sustainable value creation

Riikka Tapaninaho and Norma Rudolph

Outline of the topic

Value creation is a central part of innovation management and is typically considered through various perspectives and contexts, such as value co-creation, open innovations, business model innovations, social innovations and shared value creation in innovation ecosystems. Innovation management and processes involve various stakeholders that together cooperate for change, rendering innovation management a highly relational activity which occurs at the individual, organisational, network and societal levels. This entry introduces the concept of *response-ability*, discussed by Bozalek and Zembylas. The relational perspective they describe is helpful for examining value creation and innovations. In the context of complex and urgent sustainability challenges, different kinds of organisations, including companies, together with their stakeholders must find ways to create multidimensional value that innovatively fulfil and integrate economic, social and ecological dimensions of sustainability. In innovation management terms, this means a shift from dominant, incremental innovation strategies to more rare, radical or even revolutionary strategies with greater potential for sustainability. Via the lens of response-ability, this entry discusses how organisations, especially companies, together with their stakeholders can create more just and sustainable value through their innovations.

Conceptual overview and discussion

Companies that orient towards sustainable value creation abandon the narrow economic value creation view and examine how their products and services could contribute to solving urgent sustainability issues, such as social inequity, biodiversity loss and planetary damage. As Dyllick and Muff argue, these companies often adopt an outside-in perspective, aiming to create value for the common good, including society and the planet. Value creation is directly linked to the kind of value and for whom and in what way it is created. This is often discussed through the concept of a business model (i.e., how a company creates, delivers and captures value). To analyse a company's business model in relation to value creation for sustainability, Laukkanen and Tura present a sustainable value creation framework that brings together environmental, social and economic sustainability aspects to be considered, for example, in the context of developing novel and innovative business models related to the sharing economy. Furthermore, as Freudenreich and colleagues posit, value creation for sustainability is tightly coupled with creating value with and for a broad range of stakeholders. As an example, Lüdeke-Freund uses sustainable entrepreneurs that perceive sustainability innovations as business opportunities and unmet expectations within the markets and then develop their business models accordingly to create well-being for the natural environment and humanity, including multiple stakeholders in society.

As the examples of sustainable value creation imply, sustainability requires a systemic and relational understanding of business and value creation, focusing on value-creating stakeholder relationships within socio-ecological systems. The systemic phenomenon, sustainability, demands understanding how a system and its parts intra-act and change, with special attention to relationships between the parts of the system. For example, in the case of sustainable entrepreneurs presented by Lüdeke-Freund, the particular socio-technical context (e.g., public policy) of the entrepreneurs has impact on how sustainability can or cannot be considered successfully in innovations and business models. In a similar vein, according to Laukkanen and Tura, a sharing economy business model may not necessarily lead to sustainable value creation including all sustainability dimensions and could even destroy value on some dimensions. Hence, a systemic and relational perspective to business highlights that everything is connected, requiring simultaneous and holistic consideration of multiple aspects related to value creation.

A distinction between a relational and a more technocratic perspective or paradigm can be made to illustrate the difference and impact of such approaches on sustainable value creation and innovations. According to Walsh and colleagues' literature review, the dominant, technocratic paradigm often focuses narrowly on some isolated and

fragmented parts of the system. This might lead to partial optimisation and create value for few while destroying value for others connected to the system. In contrast, the emerging relational paradigm entails a shift in thinking to understand the whole system, including the relationships between its parts. Here we move from seeing a world made up of things, to seeing a world that is open and made up primarily of relationships. It tells us that a deeper-level reality exists beyond what we can articulate. Most importantly, relationality moves away from limited binary options to a more complex range of possibilities. This paradigm shift engages those companies seeking value creation and innovative relationships, in nurturing an ability to go beyond the often dualistically constructed outcomes and closures. They are willing to stay open to the ongoing generation of collective perspectives and understandings. They understand that well-being is created through creating value and well-being for all. Ultimately, companies that engage in sustainable value creation are challenged to better understand their interconnected relationships with their stakeholders, as well as the surrounding societal and natural environments. Consequently, the key question arises: how to understand these multidirectional and multispecies relationships in the socio-ecological contexts where the companies operate?

The concept of response-ability can be deployed here to understand how humans relate to each other as well as all other planetary species, including plant life. Grounded on feminist new materialist and posthuman theoretical perspectives, response-ability conveys a view that everything comes into being through intra-active relationships and co-responding. This view emphasises the material connection between the entities that, in fact, are co-constituted in response, in touch with each other and, therefore, inseparably entangled. Hence, instead of an individual, human focus, this view promotes collective knowing, being and doing.

In the context of sustainable value creation, response-ability offers an opportunity to explore capacities to understand the role of humans and their activities, including businesses, in relation to the biosphere. In effect, response-ability is founded on sensibilities and/or practices that facilitate understanding relationships with others, such as attentiveness, politeness and curiosity, rendering each other capable, openness to encounters, and iteration or ongoingness. *Attentiveness* refers to the capability to notice and pay attention to the details of the entangled relationships with others through our senses (e.g., touch, smell, vision) in order to evaluate the responsiveness in that relationship. *Politeness and curiosity* call for an ability to stay open and respond politely towards all without any assumptions about how the other would respond or act and in this way give space for surprise and unintended consequences. Curiosity also allows us to access different knowledge systems, such as indigenous and tacit knowledges that are relevant for value creation and innovation in the context of sustainability. Response-ability also underscores the need to *render each other capable*, hence, the parties within the dynamic relationships affect how the competencies of each party are either increased or decreased. *Openness to encounters* means that, ultimately, we come into being in responding to each other, and care for others can only take place in openness to these encounters. Finally, *iteration* and *ongoingness* highlight the understanding that response-ability is an ongoing process in which truly trustful and fruitful relationships with each other can develop and ultimately foster the flourishing and collective capability as the best possible way.

Application: response-ability in practice

The application of response-ability can be done at various levels in organisations. It can be followed at the individual level and at the organisational level within value creation and innovation processes to approach sustainability issues in business. Applying response-ability directs attention to all relationships, inside and outside the company, including human and more-than-human. The first step is to acknowledge that a company's value-creation relationships involve multiple species with multidirectional effects. To better understand these relationships, the identification of these relationships as well as each individual's ability to be open and willing to explore those relationships become relevant. Attentiveness, curiosity and politeness represent guiding principles to explore the relationships further: what is happening in these relationships, how the others naturally behave, what is important or relevant to them, how we affect each

other, what I can learn from others, what I can bring to the relationship. Curiosity and aspiration to profoundly understand others patiently and without making knee-jerk responses challenge the efficiency thinking typical of our time but can allow novel approaches to emerge. As already well known, urgent sustainability issues necessitate cooperation of multiple stakeholders to bring together different perspectives, knowledges, capabilities and competences. The response-ability approach takes one step further by directing attention to how each actor can increase the competence and capabilities of others on a continuous basis. As a result, companies together with their stakeholders become 'more than the sum of their parts' and can come up with novel solutions that have potential to create societal and ecological well-being.

One example of the continuum from technocratic to relational paradigms can be taken from mining company behaviour. Previously, when operations ended, mines were closed and left without taking care of the extensive planetary and social damage caused by their extractive activities. Now, there are laws and requirements to repair the damages. However, mostly, they apply a technocratic approach that looks at the partial solutions, which is not enough to repair the area to the state in which they found it before mining started. For example, restoration requirements might be limited to landscaping the destroyed area with solutions that are actually poor in terms of biodiversity. As another example, mining companies might build insect hotels and bird nests or plant trees only to compensate their activities, without understanding the functioning of the whole ecosystem. These technocratic approaches with the isolated focus on only specific parts of the system are not sufficient for sustainability. In contrast, sustainable solutions would aim to repair the biome to its original balance, requiring a holistic and relational approach. In effect, the relational approach emphasises careful understanding of the ecosystem before mining begins and/or how it has evolved during the active mining period. The knowledge and solutions lie within the relationships with the stakeholders including the local community, as well as with the plant and animal species within the ecosystem. Response-ability as an approach guides the company to understand deeply the specifics of the ecosystem including the multispecies and multidirectional relationships, which in turn can result in novel, innovative solutions that ultimately generate or regenerate social and ecological well-being.

Critical summary

While the need and urgency for business contributions to sustainability have been discussed over decades, it is often only incremental changes that have been achieved through value creation and innovations. One of the missing pieces of the puzzle centres around our understandings and constructions of both business and sustainability and how we relate to the surrounding socio-ecological systems, including the more-than-human. There are increasing numbers of examples of sustainability efforts both in theory and practice that go beyond the prevailing paradigms in order to transform current ways of living and doing business. By adopting relational paradigms and cultivating capabilities to respond to others and let others respond, collective flourishing and emerging transformative or even revolutionary innovations can emerge.

Acknowledgement

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Further readings

Bozalek, V., & Zembylas, M. (2023). *Responsibility, privileged irresponsibility and response-ability: Higher education, coloniality and ecological damage*. Springer Nature.

Dyllick, T., & Muff, K. (2016). Clarifying the meaning of sustainable business: Introducing a typology from business-as-usual to true business sustainability. *Organization & Environment*, *29*(2), 156–174.

Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. (2020). A stakeholder theory perspective on business models: Value creation for sustainability. *Journal of Business Ethics*, *166*(1), 3–18.

Laukkanen, M., & Tura, N. (2020). The potential of sharing economy business models for sustainable value creation. *Journal of Cleaner Production*, *253*, 120004.

Lüdeke-Freund, F. (2020). Sustainable entrepreneurship, innovation, and business models: Integrative framework and propositions for future research. *Business Strategy and the Environment*, *29*(2), 665–681.

Tapaninaho, R. (2022). *Stakeholder value creation at the intersection of business and sustainability* [Doctoral dissertation, Tampere University].

Walsh, Z., Böhme, J., & Wamsler, C. (2021). Towards a relational paradigm in sustainability research, practice, and education. *Ambio*, *50*, 74–84.

PART V:

NEW THEORIZATIONS, PHILOSOPHIES AND METHODS

73. ANTi-history

Christopher M. Hartt

Outline of the topic

ANTi-History (AH) is a postmodern historiographical approach. The central idea is that there can be more than one history. Which history is told or believed is a function of actor networks (people of things assembled – actor-network theory). These histories may conceal important people or ideas which have led to innovation. A simple example could be the idea of time and motion studies which had been attributed to Frank Gilbreth. Lillian Gilbreth was given credit for her contribution (in the 1960s) over 40 years after Frank's death. Masculinist discourses appear to have given him most of the credit, as do the *Cheaper by the Dozen* movies. The 1948 movie suggests that she carried on his work when the traces of the past demonstrate her pivotal role. It is quite likely that innovation in industrial engineering was delayed by researchers limiting their study to his work.

In AH, history is considered a plural construction of a possibly singular past (events which most likely occurred). Often, certain narratives are privileged by actor networks. People are the obvious actors, but they often play a small role in the choice of narratives. Published memoirs for example are key actors; historians often rely on them for the account they repeat. Memoirs tend to record events in the manner consistent with accepted norms (such as the male researcher in the above, or the white physician in the story of heart surgery). Other stories do not fit with the non-corporeal actants (beliefs, values, ideas) of the time or accepted by the actor network.

The past is understood through traces (often found in archives). These traces are curated by persons (sometimes archivists), placed in storage, saved, or lost. The result is a collection which is mediated by human and non-human actors acting under the influence of non-corporeal actants. Doing history as an AH scholar evokes the methods of ANT to map the acts of knowledge creation of past narratives by following actors (human, non-human, non-corporeal) through their paths in the traces and with the traces to reassemble the construction of the history/histories. A human actor followed might be an archivist or the patron of an archive (CEO of the company for example). A typical non-human actor could be the building the traces are kept in; it may limit storage or have environmental issues which lead to the loss of traces. If one was working on data from the 1970s, the computer media of the day might cause loss of traces. The non-corporeal actants represent the expression of power and influence of the network on the choices. For example, the employment records of a female or black employee might not detail how they worked on an innovation project, just that they had a general support role, thereby hiding their contribution from the record.

Conceptual overview and discussion

AH is sometimes accused of denying the scientific approach to history. This is a common criticism of constructionist approaches to knowledge. To acknowledge the post-realist ontologies, one accepts that knowledge is relational. We know things because they exist in the context of other things. The relations among things give them boundaries and meaning. Latour (an originator of ANT) has often been blamed for the destabilization of science. One simple question which may open up this idea is, "Did the virus which we believe causes polio exist before the vaccine did?" It seems very likely that it did, however its meaning only exists in relation to the test. Until then it was not connected to the disease (or anything else). Both the virus and the vaccine get their meaning from each other.

Although Latour describes ANT as ahistoric, much of the early work is in the history of science and innovation. He describes the telling of the story as very different from the record of events. This leads to the need to study the role of the social in the production of knowledge. Historiography as a scientific approach to the science of history must explore the social context in which accounts are (re)produced. AH looks to surface the social context which orders the selection and assembly of traces of the past into an account. AH sees history as plural, performative, political, negotiated, and most likely propositional.

AH privileges the empirical by searching data, the traces of the past, and permitting them to assemble themselves through the cartological approaches of ANT. As these actors, people, things, and ideas assemble they expose possible histories and the nature of assemblages which have led to published histories. AH asks the question, how did these traces

assemble into this history? Assuming history is performative, historiography must open the black box leading to the performance.

This inclusion of context, performance, antenarrative, assembly, politics, and tropes; lends AH to many forms of analysis. Micro-history, rhetorical history, and non-corporeal actant theory as applied to history are among the myriad forms of scholarship which recognize the truth-claims of AH in their roots. The intersection of AH with postcolonial theory and emancipative historiography have been particularly fruitful. When studying a past innovation we must look for the oppressed groups and unpopular ideas hidden in the traces of events.

Application: ANTi-history as method

AH is a way of looking at the past that focuses on how the social context in which a text is embedded affects the construct of an accepted truth-claim. Traces represent associations within the socio-past and therefore are not the past, but a history believed to be true by the actor-network associated with it. AH looks at the performance of actions as political acts, negotiations, enrollments, and translations to understand how the past is assembled via embedded influences.

Although describing occurs, AH is not a description of the past. AH follows actors via the traces of their mobilizations to map networks which persist in accepted histories, often when the human actors are deceased, organizations have folded, and other corporeal actors (non-human) have become obsolete. As ANT is often described as theory, method, and possibly an ontology, the lines are blurred as to where belief begins and method ends. Suffice it to say that a belief in empirical data and social construction of truth-claims are at the heart of both ANT and AH.

In both, we look to find actors (human, non-human, non-corporeal). In AH, inscriptions represent punctualized actors; histories as inscriptions of a mobilized actor-network from a starting point for the research. Micro historians take this idea and expose specific segments of the inscriptions as a problem. Often these segments are analyzed by exposing traces which surface an event or a person in a manner not included in a widely accepted historical inscription. AH practiced in this way is not revisionist but rather pluralizing. The established histories represent privileged accounts. AH surfaces missing pieces. This is achieved by following the actors in the various networks found in the traces. Early work was prosecuted by traveling to archives and digging through banker boxes of material. In 2023 we still do this, but we can also access significant volumes of traces digitally. It is all archival.

AH suggests that we look at archival materials to piece together the socio-past of a certain place, event, or narrative. This means looking at the different actors involved and how they interact with each other. AH emphasizes the importance of looking at the empirical evidence rather than relying on theoretical assumptions. It also suggests that the methods used to study the past should be based on the empirical analysis of the past. This means that the theory should be developed from the empirical evidence, not the other way around. AH researchers put their faith in creativity to construct methods and interrogate the motives for preserving certain traces in an archive while discarding others. Through these methods research may be able to surface silences.

Silences are relatable to voices which are unpopular (communists during the Cold War) or low-power segments of society, including women, people of colour, 2SLGBTQI persons, and the impoverished, indentured, or criminal. Privileged are the voices of the ruling class, the CEOs and political leaders. The most likely written-out participants of history include those who suffered under the Doctrine of Discovery. It seems scholars in colonized lands embrace the emancipatory nature of AH.

As a result, much of the work done around the world using AH is connected to postcolonial narratives and theories. This is because colonial traditions often erase alternate voices and make the colonizer seem like a hero. Correspondingly, much of the local history before being colonized is lost or purposely deleted by the colonizers. Oral history of the subaltern was suppressed in the movement to *civilize*. Writings in non-European languages were treated with disdain and with the same regard as the Taliban had toward the Buddhas of the Bamiyan Valley. The relics, writing, and other traces of past cultures were sometimes stolen and placed in museums but often discarded or destroyed. Even when history was known, it was/is often dismissed as non-transcribed (even when written records

exist). Continuing beyond first contacts are traditions which feminize the indigenous and therefore write them from history in much the same manner as women are frequently left out of European history. AH helps to bring back these voices and create a more diverse and pluralized history. Many authors, particularly in South America but also in many other places, have applied AH methods to valorizing a silenced history.

Critical summary

AH seeks to surface alternate histories, thereby denaturalizing the accepted, disrupting historiography, and emancipating those who have been written out. Durepos has recently reminded us that historiography should be remade periodically. AH is one method for such remaking. It reminds the authors of history and the consumers of history that every set of events is experienced by many, and the story of those events is also told differently by each actor. These plural perspectives are often distilled by authors who themselves are socially constituent in an actor network, resulting in an account which serves that network and may write out the experiences of others. Ultimately, history is plural, and AH seeks to emancipate that plurality. When considering the history of an innovation, consider the "hidden figures" and invisible actors which made the innovation possible.

Further readings

Durepos, G., & Mills, A. J. (2011). *ANTi-history: Theorizing the past, history, and historiography in management and organizational studies.* Information Age Publishing.

Faria, A. & Cunha, J. F. (2022). Decolonizing business history: The case of Unilever historiography. *Cadernos EBAPE. BR*, *20*, 118–134.

Ipiranga, A. S. R., Chaym, C. D., & Gerhard, F. (2016). Relatos sobre o organizar do sócio-passado em uma patente brasileira de biotecnologia. *RECADM*, *15*(2), 133–147.

Luna, C. P. & Barros, D. F. (2023). *An ANTi-history about transgender inclusion in the Brazilian labor market.* Emerald Publishing.

Stutz, C. (2018). History in corporate social responsibility: Reviewing and setting an agenda. *Business History, 63*(2), 175–204.

CHRISTOPHER M. HARTT

74. Arts-based methods

Hanna Lehtimäki and Elina Riivari

Outline of the topic

Arts-based methods refer to various ways of using, analyzing, and appreciating arts and art-making in learning. Arts-based methods include reflection, skill transfer, apprehending tacit knowledge, and fostering an experience of presence and connection. Arts-based innovation pedagogy refers to learning specific competencies, such as topic understanding and analysis, innovation competencies like creativity and critical thinking, and humanist competencies, such as empathy. Arts-based methods are well-suited for innovation pedagogy. In this pedagogy, the arts are introduced to encourage seeing and thinking differently, exploring novel ways of asking questions, and tapping into emotions as a source of knowledge. They engage students in learning and provide both individual and collective reflection, dialogical learning, and awareness of oneself as a contributor to change. Arts-based learning occurs within groups and networks. These methods can be applied in student-centered and experiential innovation pedagogy in higher education. They can be applied to learning various contents of organizational and management innovation. Arts-based innovation pedagogy presents challenges to lecturers' pedagogical skills and to the institutional environment, support, and culture.

Conceptual overview and discussion

Antonacopoulou and Taylor note that the use of arts in pedagogy has been embraced in learning about organizations, change management, leadership, and strategic management, to name a few areas of organizational innovation. The use of arts-based methods has become popular as innovative, participatory, aesthetic, and sensuous approaches in learning. Lehtimäki and Silvast add that arts-based methods are widely recognized for their ability to engage students in experiential learning, student-centered learning, and personal development.

In innovation pedagogy, arts-based methods support the development of creative skills and the implementation of humanist competences, such as empathy, in problem-solving. The term refers to learning that occurs in groups and networks and aims to develop both content-specific competencies, such as topic understanding, and innovation competencies, such as creativity and critical thinking.

Benefits of arts-based methods in innovation

Arts-based methods offer many potential benefits for learning about innovation and creativity. They inspire personal reflexivity, collective reflection, dialogical learning, and self-awareness as contributors to change. Arts-based methods deepen learning by eliciting emotions, addressing perceptions about the self, sensitizing individuals to various perspectives, strengthening self-image, and fostering appreciation for the learning process.

Arts-based methods support deep learning about theoretical concepts and constructs related to innovation. Through arts-based methods, students not only acquire key concepts but also learn to experiment with these concepts and explore their own attitudes and emotions when facing changing conditions and creativity. Arts-based methods help students reflect on their personal preconceptions, while also facilitating collective and organizationally focused processes of reflection. This reflexive learning promotes a personal sense of empowerment, self-confidence as a future leaders, and self-acceptance.

Arts-based methods involve the aspect of having fun and being creative while learning. As a collective activity, arts-based methods foster a positive group spirit, an acceptance of making mistakes, and an embrace of playfulness. Arts-based methods stimulate lively, insightful, and thought-provoking dialogue in the classroom, where students engage in sharing their personal experiences and highlighting issues they consider relevant to innovation and change. Arts-based methods cultivate leadership for change, making students better prepared as future professionals who appreciate innovation management in organizations as a learning process. Learning to design and execute innovation experiments facilitates change within organizations.

Challenges of arts-based methods

There are also challenges to the use of arts-based methods in innovation pedagogy. Some of these challenges are related to the pedagogical skills of the lecturer, while others are tied to the institutional environment. Arts-based methods require specific pedagogical

skills. Most importantly, the lecturer needs to be deeply committed and personally inspired by the use of arts-based methods in learning. Often, these methods are unfamiliar to students, so the lecturer must create a safe environment for them, handle the uncertainty expressed by students, and be ready to improvise when questions and potential surprises arise in students' reactions. Students expect reassurance regarding the relevance of exploratory learning methods and key insights from the lecturer.

It is crucial for the lecturer to place emphasis on creating an appreciative and nonhierarchical learning atmosphere through language use, personal presence, and active, open-minded participation. However, despite their participatory role, the lecturer is not considered an equal discussion partner in the eyes of the students. It is important to recognize that, as a representative of the broader educational system, the lecturer holds a position of authority due to their role in setting institutional learning objectives, selecting course readings, managing the course's flow and quality, and evaluating and grading student performance.

The use of arts-based methods involves an implementation of educational experimentation. As discussed by Cunliffe and Easterby-Smith, it is crucial to consider the institutional and political context of the institution where learning takes place. In the context of the institution, conducting an educational experiment can entail significant risk-taking. Therefore, it is vital that the institutional context supports arts-based methods as a means of engaging with students and learning. It should recognize the value of using these methods in innovation pedagogy and support the exploratory approach in teaching students of innovation management.

Application

The following are brief examples of selected arts-based methods. The list is not exhaustive but illustrative of the various ways in which arts can be used in learning about innovation management.

Visual arts and literature

Visual arts (e.g., painting, drawing, photos) and literature (e.g., novels, poetry) can be used to illustrate complex problems in leadership and innovation. Group-discussions can enrich understanding, as group members may have different views, and dialogue can highlight diverse perspectives.

Dance

The use of movement draws attention to presence, listening, emotions, self-expression, and collaboration as elements of organizational learning. Sharing experiences and engaging in discussions will deepen the learning experience.

Music

The use of music, rhythm, and sound can help in learning about organizational change. Producing sound together in a group and analyzing the production process together deepens the understanding of change in organizations.

Theater

Theater and acting can be used to create an enacted narrative on innovation strategy. Acted scenes can focus attention on the core themes of innovation strategy and facilitate discussion and collective reflection on learning the topic.

Critical summary

Existing research has shown that innovation can also be learned through more traditional pedagogies. As arts-based innovation pedagogy expects different ways of thinking and learning, it might not be the best fit for everyone. For example, arts-based learning includes not only positive emotions and embodied experiences. However, the literature on innovation pedagogy demonstrates that arts-based methods are widely accepted as viable approaches to learning. The use of arts-based methods is expanding due to the availability of digital and mobile tools and applications. For those who are interested in seeing and thinking differently, it offers ways to incorporate various art forms into learning assignments to promote critical thinking, insightful discussions, shared learning, and reflection.

Further readings

Antonacopoulou, E. P., & Taylor, S. S. (Eds.) (2019). *Sensuous learning for practical judgment in professional practice. Vol.*

2: Arts-based interventions. Palgrave Macmillan.

Cunliffe, A., & Easterby-Smith, M. (2004). From reflection to practical reflexivity: Experiential learning as lived experience. In M. Reynolds & R. Vince (Eds.), *Organizing reflection* (pp. 30–46). Ashgate.

Leavy, P. (Ed.) (2019). *Handbook of arts-based research*. The Guilford Press.

Lehtimäki, H., & Silvast, H. (2019). Using student-led arts-based methods in Finnish higher education to foster leadership for change. In S. Taylor & E. Antonacopoulou (Eds.), *Sensuous learning for practical judgment in professional practice. Vol. 2: Arts-based interventions* (pp. 255–276). Palgrave Macmillan.

Lehtimäki, H., Taylor, S., & Galvão-Lyra, M. (Eds.) (2023). *Art and sustainability transitions in business and society: Theoretical insights and engagement*. Palgrave Macmillan.

Taylor, S. S., & Ladkin, D. (2009). Understanding arts-based methods in managerial development. *Academy of Management Learning & Education*, *8*(1), 55–69.

75. Corporeal ethics

Alison Pullen and Carl Rhodes

Outline of the topic

This entry introduces corporeal ethics as a politically productive way of thinking about ethics and considers its implications for innovation. Corporeal ethics constitutes a new and vital approach to the ethics of organization that attends to how ethics is grounded in an embodied experience that occurs prior to rational calculation and responds openly and generously to the needs of others through the interpersonal and collective movement of bodies. In organizations, such ethics manifests in social relations that resist power's tendency to dominate and emboldens the possibility of joyous encounters between people. Corporeal ethics is the basis for responding to the injustice of inequality through the organization of ethics in the context of political action. It implies that the fundamental act of caring for other people through material and embodied relations can animate human life. From such animation, ethics becomes translated into politics that demands that we care for each other more and act on it in the pursuit of justice. This politics can arise through activism, assembly, and democratic participation. It can also occur in workplaces and organizations as people strive together for better lives and struggle against oppression, inequality, and injustice.

Corporeal ethics can inform innovation by considering the social, relational, and interpersonal dimensions of the innovation process and their implications for well-being and justice. With corporeal ethics, innovation is cast as an interhuman political activity that can produce more or less fair effects and outcomes, highlighting the importance of registering and accounting for how both the ethical and the political is imbued in innovation. Innovation is also relevant to corporeal ethics in that the political responses to injustice themselves require innovation to create real action that drives change towards justice. Such ethics are not pre-given but arise through creative and innovative responses.

Conceptual overview and discussion

To consider ethics as corporeal attests to the idea that the original impulse that moves us to act for the benefit of others without prior or primary consideration of ourselves arises as an affective and embodied feeling. The desire for such action does not result from rational calculation, moral deliberation or ethical reasoning. It is a more fundamental and affirmative response to other people's needs. Corporeal ethics begins pre-reflectively and before one's ego. This ethics can manifest in productive actions such as caring for, protecting, and helping others. It can also inform actions that preserve one's well-being and ability to act for others, for example walking away from destructive relationships or disengaging people whose actions result in hurt or harm.

Within the organization studies literature, studies of corporeal ethics have variously addressed topics such as gender and organization, difference and inclusion, women's embodied labour, and entrepreneurial subjectivity. These projects share a political sensibility that engages with the material effects of embodied and affective experience at work. This sensibility enables a more engaged, compassionate, resistant, and pluralistic ethics that counters strong organizational tendencies towards control, homogeneity, discrimination, and domination. Corporeal ethics does not propose a universal solution or submit to a desire for one. In its place, there are possibilities for an ethics that is social, relational, and embedded in its local contexts and situational particularities. Moreover, this concern with the ethics of the body engages with materiality, the fleshy substance of the human body, as well as its relation to the material of the world and of non-human bodies. As such, corporeal ethics focuses on the particularity of embodiment that occurs before any consideration of a codifiable reason-based ethics or general principles.

Rather than being universal, corporeal ethics is the domain of the embodied human activity suffused by affect, intimacy, and the non-rational. That, by Western standards, these categories are culturally feminine is part and parcel of their neglect in the masculine, gendered organization. Corporeal ethics offers an alternative to the commonly rationalized ethics that we find dominant in both the theory and practice of organizations. Corporeal ethics turns our attention to how people's conduct and interaction in organizations might be ethically informed in the context of, and in resistance to, the masculine rationality of dominating organizational

power relations in which they find themselves. This includes power relations that would seek to render ethics itself in a rational-masculine form.

Application

To date there has not been any research directly focused on the connections between innovation and corporeal ethics. Nevertheless, research on corporeal ethics in organizations yields important insights into understanding the ethics of innovation. Karen Dale and Yvonne Latham have developed corporeal ethics in relation to research in an organization that supports the social integration of people with disabilities. They draw special attention to embodiment as it relates to race, sex, physical ability, and age, as well as how forms of difference that are outside of the organizational norm become common sources of oppression and discrimination. The corporeal ethics that Dale and Latham identify is rooted in a responsibility to overcome inequalities written on the body by organizations themselves. The uptake of this ethics is political, Dale and Latham argue, in that it contests and disturbs organizations in actual encounters between people and their (different) bodies. The relation between different bodies is similarly evident in the innovation process as people work together to develop new ideas for material outcomes. This suggests that innovation can too create embodied forms of oppression in way that are not always considered by those involved.

Drawing on the work of Judith Butler, Melissa Tyler addresses corporeal ethics as it relates to diversity and inclusion in organizations. Tyler draws attention to how inclusion can be read as a 'normative regime' that members of organizations are compelled to conform to for diversity and difference to be incorporated organizationally. Difference is thus codified and managed, with some forms of difference recognized and others marginalized, in effect limiting the necessary forms of difference required for innovation. Tyler's position is that ethical relationships are based on material interconnection and the embodied vulnerability this entails. This relational conception of ethics jars with approaches to inclusion premised on the codification of difference and the attendant power relations they produce. According to Tyler, inclusion must be ethically reimagined to move beyond organizational regulation and towards a more embodied relational practice.

Care needs to be taken not to imagine that corporeal ethics in organization occurs only in individual interactions but can also be collective in spirit. Sheena Vachhani and Alison Pullen clarify that corporeal ethics is very much a matter of embodied solidarity. As they aver, ethical resistance to sexism in organizations is not just in response to personal experiences of sexism and includes collective resistance that organizes through solidarity. Through such solidarity, embodied compassion and care for others develop into a social sensibility that provides a means to mobilize resistance against sexism. Given existing debates over sexism in innovation, Vachhani and Pullen's work provides a valuable guide to how that sexism can be resisted and overcome.

Critical summary

Corporeal ethics reflects a celebration of difference and being positively moved by intercorporeal relations with others. This is not an ethics that guarantees righteousness or appeases ethical anxiety but rather one that embraces human interaction in all its ambiguity and complexity. Corporeal ethics in organizations can be thought of as a horizon that calls one towards it, yet at which one never fully arrives. It is embarking on such a perilous but necessary journey that is required if ethics is to remain alive in the lives of people who encounter each other in organizations.

Corporeal ethics destabilize how organizations can reproduce practices that negate differences and result in oppression, discrimination, and inequality. In allowing for the importance of corporeal ethics for organizations, forms of ethically grounded resistance and critique can challenge self-interested organizational power and privilege. The contribution of the corporeal approach emerges from ethics in organizations that are collective, other-focused, and generous. This ethics is fundamentally based in embodied affect, yet practically materialized in ethico-political acts of positive resistance and revitalization.

Studies of corporeal ethics point to how the ethical can be conceived of and practiced in innovation. On the one hand, innovation that occurs in organizations can be expected to face the same ethical problems and dilemmas as in any other form of organizational

activity such that corporeal ethics can be present. On the other hand, innovation itself can be imagined as a means through which to respond to the demands of corporeal ethics, for example innovating to deal with the forms of oppression, discrimination, and inequality that corporeal ethics surfaces.

Further readings

Dale, K., & Latham, Y. (2015). Ethics and entangled embodiment: Bodies–materialities–organization. *Organization*, *22*(2), 166–182.

Diprose, M. (2002). *Corporeal generosity: On giving with Nietzsche, Merleau-Ponty and Levinas*. State University of New York Press.

Kenny, K., & Fotaki, M. (2015). From gendered organizations to compassionate borderspaces: Reading corporeal ethics with Bracha Ettinger. *Organization*, *22*(2), 183–199.

Kinnunen, V. (2022). Corporeal ethics in the more-than-human world (Rosalyn Diprose). In C. Hunter & N. Kivinen (Eds.), *Affect in organization and management* (pp. 92–107). Routledge.

Pullen, A., & Rhodes, C. (2014). Corporeal ethics and the politics of resistance in organizations. *Organization*, *21*(6), 782–796.

Pullen, A. & Rhodes, C. (2022). *Organizing corporeal ethics: A research overview*. Routledge.

Tyler, M. (2019). *Judith Butler and organization theory*. Routledge.

Vachhani, S. J., & Pullen, A. (2019). Ethics, politics and feminist organizing: Writing feminist infrapolitics and affective solidarity into everyday sexism. *Human Relations*, *72*(1), 23–47.

76. Critical sensemaking

Eeva Aromaa, Albert Mills and Jean Helms Mills

Outline of the topic

Critical sensemaking (CSM) is a method of analysis that is based on a combination of various scientific philosophies and methodologies, including postmodernism, interpretism and critical theory. In the context of innovation management, CSM analysis can be applied to the study of new product and service development and management, from a critical standpoint. For instance, a researcher might choose to analyse the processes of organising, managing and leading innovation-related topics and activities in organisations. In particular, CSM offers the tools necessary for analysing issues of power, such as how power, as a multidimensional phenomenon, constitutes and is constituted by individual sensemaking and how the consequences of power lead to marginalisation, empowerment and resistance in organisations.

Conceptual overview and discussion

CSM has its initial roots in the works of Karl Weick, whose pioneering work on sensemaking shifted the understanding of organisations as composed of processes instead of structures. Weickian sensemaking examines organisations as systems shaped by an individual actor's meaning construction, which is constituted by seven properties – identity construction of the sensemaker, cues that she or he draws on to make sense, a focus on plausibility rather than accuracy in sensemaking accounts, retrospective attachment of a sense to something after the event, an ongoing need to make sense of the environment, the social aspect of engaging in collective sensemaking and enactment of a particular sense with regard to a situation. In his early work, Weick defined sensemaking as that which takes place in peoples' minds and produces cognitive maps that shape individuals' social activities and organisations. Furthermore, in his book *Sensemaking in Organizations*, sensemaking is understood as a social phenomenon happening in interaction between people. This evolution gradually led to an emphasis on the role of speech, language and discourses as constructors of meaning, which in turn made space for the emergence of the CSM approach.

However, Weick's sensemaking approach has been criticised for approaching individual agency as a power-free, cognitivist meaning-making process. CSM, in particular, was developed by Helms Mills and her colleagues to enrich Weickian sensemaking by accounting for the various contexts in which sensemaking occurs. With its origins in feminism, CSM helps a researcher analyse critical issues in organisations, such as how less powerful actors are marginalised or how they resist oppressive structures and practices. Notably, due to its feminist origin, CSM offers multiple tools for analysing power as a complex phenomenon. As a result, CSM analysis includes both structural and post-structural elements to reveal the issues of power in social processes. In current CSM studies, power is theorised as a multifaceted phenomenon that has both productive and restrictive effects on the actors in organisations. In CSM, power operates through both structural (i.e., formative contexts and organisational rules) and post-structural (i.e., discourse) elements. The elements that shape the micro-level sensemaking of organisational actors are introduced here.

Formative contexts shape individual sensemaking through the institutionalised and imaginative structures of organisation and society. In the literature, formative contexts are defined as deep-seated pragmatic assumptions about everyday life. There are multiple levels of context that simultaneously shape individual meaning construction. At a particular moment, an individual makes only some of them visible in her sensemaking account. Moreover, contexts embed multiple elements of power, such as discourses and rules. Therefore, they serve as both enabling and restrictive structures for individual meaning construction, shaping the possibilities of performing agency. In other words, contexts offer different possibilities for different actors to make sense of the past, the present and the future.

Organisational rules are understood as both formal and informal loose structures that enable, control and limit sensemaking possibilities. Rules are constantly developing and changing elements rather than stable entities. Formal rules encompass both written and unwritten requirements and expectations. They are commonly linked to the pursuit of organisational purposes, activities or goals

that are regarded as legitimate. In contrast, informal rules indicate silent norms of behaviour that tend to develop alongside formal rules and sometimes even in contradiction to them. While formal rules are most often laid down by those with power, such as CEOs and managers, other actors, such as employees, may enact informal rules that limit or resist the ability of managers to perform their power through employees' sensemaking. In organisations, both formal and informal rules are negotiated alongside everyday dialogue and decision making – for instance, in meetings. At times, rules are unintentionally misunderstood or intentionally resisted.

Discourses are often considered tools of knowledge and power. They shape sensemaking through dominant ways of thinking and knowledge. Notably, both formative contexts and the related organisational rules are products of and produced by discourse. Discursive power can be exercised by favouring a particular discourse within an organisation only if it does not conflict with a formative context. Effectively, such an understanding of discourse ties power to the local environment. Therefore, the formative contexts and rules of an organisation determine the kinds of discourses and meanings shaped by the other discourses that can be enacted in the particular organisation.

In addition to examining power as a structural phenomenon operating through formative contexts and organisational rules, as well as a post-structural phenomenon operating through discourse, power may also be understood as a multi-level phenomenon. At the macro level, power is manifested through the concept of cultural hegemony, where dominant worldviews manipulate the interests of subordinates and preferred ideologies become accepted, often in an unobtrusive way. Furthermore, at the meso level, power operates in organisations through established discourses and rules. Finally, at the micro level, power asserts itself through enacted meanings in sensemaking accounts shaped by macro- and meso-level CSM elements.

Application: using the lens of CSM to study academic entrepreneurship

CSM has rarely been applied in innovation management research. However, one such example is provided by Moilanen and colleagues, who adopted the lens of CSM to understand how a small group of scientists working in a Finnish university engaged themselves in making sense of their commercialisation interests and activities.

The study suggested that academic entrepreneurship involves not only seeking funding and organising both new and existing work activities but also navigating power dynamics among various actors. In the study, a junior scientist viewed academic entrepreneurship and its related commercialisation activities as meaningful while exploring career options outside the university after completing a PhD. However, it was noted that, due to the power dynamics within universities and research groups, junior scientists were not in a position to steer projects toward commercialisation. The CSM analysis revealed that junior scientists had limited influence on the sensemaking of senior scientists.

In contrast to the junior scientist, the senior scientists navigated the tense intersection of the discourses of academic research and commercial activities. In particular, they enacted the rules established by the academic research discourse. This discourse not only set the stage for their professional identities and choices, but also created a conflict within the group between adhering to academic values and engaging in more entrepreneurial ventures, as favoured by the junior scientist.

The study highlights how the prevailing discourse of academic research deterred senior scientists from undertaking the career risks associated with commercialisation, such as the fear of tarnishing their reputation by prematurely disclosing research findings for the purpose of advancing commercial gains. This caution stemmed from their identification with traditional academic practices, such as refusing to discuss research findings until they are soundly verified. This also illustrates how the senior scientists sensed criticism and exclusion with regard to their peers in terms of participating in commercialisation projects, reflecting a broader cultural, social and power dynamic within the academic community that prioritised traditional research roles over entrepreneurial activities.

Therefore, despite the lack of formal rules against engaging in commercialisation, the social norms and practices of academic research enacted by the senior scientists steered the group away from commercialisation efforts. This created a formative context that limited their openness to entrepreneurial

activities, as they made sense of the competing demands of their academic roles on the one hand and the potential for innovation and increased societal impact of their research on the other. The study demonstrates that the formative context restricted each scientist's sensemaking and agency, thus favouring conventional paths over entrepreneurial directions within the group.

Critical summary

CSM offers numerous opportunities to study and understand innovation processes and projects from a critical sensemaking-oriented perspective. As a method of analysis that is based on a combination of different scientific philosophies and methodologies, CSM analysis includes both structural (i.e. formative contexts and rules) and post-structural (i.e. discourses) elements to tackle the issues of power relations in various social processes. A good number of published works on CSM offer insights into the benefits and challenges of applying it to different research topics in various contexts. In spite of this, innovation-related CSM studies are difficult to find. For innovation researchers, CSM could be helpful in studying and theorising agency in innovation. Furthermore, it enables innovation researchers to approach power relations as a multifaceted phenomenon that has both productive and restrictive influences on the actors involved.

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Further readings

Aromaa, E., Eriksson, P., Helms Mills, J., Hiltunen, E., Lammassaari, M., & Mills, A. J. (2019). Critical sensemaking: Challenges and promises. *Qualitative Research in Organizations and Management: An International Journal, 14*(3), 356–376.

Helms Mills, J. (2003). *Making sense of organizational change*. Routledge.

Helms Mills, J., Thurlow, A., & Mills, A. J. (2010). Making sense of sensemaking: The critical sensemaking approach. *Qualitative Research in Organizations and Management, 5*(2), 182–195.

Hilde, R. K. (2017). *Making critical sense of immigrant experience: A case study of Hong Kong Chinese in Canada*. Emerald Publishing.

Mills, A. J., & Murgatroyd, S. J. (1991). *Organizational rules: A framework for understanding organizational action*. Open University Press.

Moilanen, J., Montonen, T., & Eriksson, P. (2021). The conflictual sense of commercialisation and academic entrepreneurship. *International Journal of Human Resources Development and Management, 21*(2–3), 165–177.

Unger, R. M. (1987). *False necessity: Anti-necessitarian social theory in the service of radical democracy.* Cambridge University Press.

Weick, K. E. (1995). *Sensemaking in organizations*. Sage Publications.

77. Curiography

Tarja Salmela and Anu Valtonen

Outline of the topic

This entry introduces curiography as an innovative way of doing research in the era of the Anthropocene. Curiography is an epistemological framework that applies and critically evaluates the philosophical potential of curiosity to practice academic inquiry. It challenges the anthropocentric legacy of ethnographic methodology by inviting its practitioner to move beyond dominating human-centric methods based on rationality. Curiography as a post-qualitative epistemological framework encourages innovative methodologies in order to become attentive to earthly relations and humans' place as part of the world we aim to understand through academic inquiry.

Conceptual overview and discussion

The era of the Anthropocene has pushed scholars across disciplines to develop new concepts and methods not only to understand the time of multiple crisis, but to act in it. In this setting lies a paradox. While human-centered inquiries have been identified to fail in recognizing human species' place on the shared planet as only one among multiple others, the necessity to acknowledge humans' significant role in contributing to climate change and its multiple manifestations requires centralizing the human when claiming its response-ability. The posthuman turn with its methodological threads has aimed to destabilize the dominant power structures and introduce the multiplicity, and peculiarity, of non-human agents as key actors in the organizing of society.

However, this destabilization process can succeed only partially when it is done with concepts that reinforce the status quo. To carry on with the current conceptual luggage, academic inquiries are at risk to merely add non-human agents into research agenda and continue to rely on human-centered methodologies to understand the world. This challenge is evident in ethnography as a methodology, carrying the humanist legacy with it, as inscribed in its prefix: *ethno-*. Valtonen and Salmela suggest that discussing curiosity as a starting point for epistemology introduces the element of surprise and indeterminacy that challenges rational academic inquiry without taking part in reinforcing dominant power structures. This allows us to move beyond distinctions, of what 'is', what 'is not' and what 'is more' that problematically characterizes most of the work influenced by the posthuman turn.

Curiography aims to overcome this problematic when coupling feminist new materialist thinking that places emphasis on the relationality of all matter with what St. Pierre has named post-qualitative inquiry. According to St. Pierre, post-qualitative inquiry aims to break through dominant conceptual orders with innovative new concepts that can reorient our thinking, thereby helping us to envision alternative futures – a central element also in the influential work of Donna Haraway and Vinciene Despret. In curiography, curiosity as an epistemology moves its practitioner from anthropocentrism through the philosophical potential of curiosity and unexpected making of worlds.

Application: Haraway's reading of Despret's curious practice and walking with multiple others

The work and thinking of Donna Haraway have been influenced by Vinciene Despret's work on animal behavior and what she has described as her cultivation of politeness. This is well reflected in Haraway's influential book *Staying with the Trouble* where she suggests, drawing on Despret, that a curious practice is a way to participate in thinking-with and living-with multiple others – making kin, in a polite way. With this, Haraway refers to the ways Despret is committed to an epistemological position which declares politeness as a virtue. With the virtue of politeness, Despret is to become curious of things necessary. In this process to *work with* and to *work for* are not to be distinguished from another, but they emerge simultaneously. They emerge by being fueled by polite curiosity, which does not deny the particularities of each knowing subject but demotivates the space for colonizing structures to emerge.

Despret's curious practice, Haraway's work on multispecies response-ability, and the fulcrums of curiography as an epistemological framework have informed Salmela and Valtonen's work of walking in Pyhä-Luosto national park in Finland as a way of engaging with the more-than-human world. In their work, the practice of walking with

multiple others formed the ground for an ethical re-evaluation of their relations with paths, places, and creatures that became part of the embodied experience of walking. Becoming curious of how the forest became-with the authors while walking the trail through their feet and engaging with an unexpected practice of singing, the curious practice created space for reflection of the stories that the forest had to tell. Polite curiosity allowed the emergence of new ways to listen and to take part in the storytelling that became collective. Being attentive and allowing such stories to emerge, and acknowledging that both humans and non-humans create stories and do it *together*, unites also Haraway's and Despret's views on epistemology.

In addition, curiosity entwined with care allowed Salmela and Valtonen to became aware of the processes that took place in the national park without the direct influence of humans but that were simultaneously entangled with human agency, as the park was protected through its legal categorization. The practice of walking-with thus opened new ways to understand the elements of response-ability of national park management in relation to 'nature', and how categorizations that create distinctions and power relations are not necessarily colonial by nature but have a deeper, complex meaning.

Critical summary

Curiography as an innovative, experimental, epistemological framework suggests the value of curiosity when practiced with politeness to overcome dominant power structures that guide academic inquiry. This has a heightened relevance in the context of post-anthropocentric research. Curiosity, when releasing its philosophical potential, can be a way to overcome the stubborn practice of maintaining dichotomies ascribed in efforts to introduce agents other than human into a research setting. This can inform the development of innovative methodologies that disrupt human-centricity in academic inquiry. However, curiosity is not enough on its own. Curiosity is always politically charged and can be practiced without the politeness Despret ascribes to its practicing. Curiosity can also be discussed in contexts where the question of multispecies relations and more-than-human worlding practices seem irrelevant. As such, curiography should always be contextualized and approached with care, as well as theorized through further practical experimentation.

Further readings

Despret, V. (2005). Sheep do have opinions. In B. Latour & P. Weibel (Eds.), *Making things public* (pp. 360–68). MIT Press.

Haraway, D. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Duke University Press.

Salmela, T., & Valtonen, A. (2019). Towards collective ways of knowing in the Anthropocene: Walking with multiple others. *Matkailututkimus*, *15*(2), 18–32.

St. Pierre, E. A. (2021). Why post qualitative inquiry? *Qualitative Inquiry*, *27*(2), 163–166.

Valtonen, A., & Salmela, T. (2023). Exploring earthly relations through curiography. In M. Calás & L. Smirchich (Eds.), *A research agenda for organization studies, feminisms and new materialism* (pp. 141–160). Edward Elgar Publishing.

78. Non-corporeal actant theory

Christopher M. Hartt

Outline of the topic

Non-corporeal actant theory (NCAT) is an exploration of the relationships among power regimes enacted through networks and the sensemaking of individual actors in the network. In innovation, past ideas tend to constrain the choices made in the future. Values and beliefs also limit choices explorers make (whether exploring ideas, organizations, spaces, or science). The result can be stuck research and the failure to solve problems. In the alternative, non-corporeal actants (NCAs) can also empower breakthroughs.

From the macro perspective, NCAs are shared values, ideas, beliefs, and concepts accepted by members of a network. From the micro view, each individual in the network makes sense of specific NCAs in relation to all other NCAs enrolled in the network. Hartt (2019) offers a method to surface NCAs and their role in decision-making which serves as a starting point for the researcher.

Conceptual overview and discussion

Much of actor-network theory (ANT) stems from work in hard science. Latour showed how the social aspects of the lab influenced the breakthroughs made and the stories told of how they come about. There are many reports of innovation stalled by unwillingness to violate or challenge accepted norms. The concept of quantum physics was held back by the avocation to Bohr's planetary model of the atom, just as Galileo was condemned by the Inquisition and placed under house arrest for suggesting the Earth was not the centre of the universe. It's possible that the many stories of accidental innovation are a means to conceal research which violated the dominant NCAs of the day. Actor networks hold significant influence which can inhibit innovation. The desire to keep doing things or believing things because that's the way we have always believed or done them is a strong controlling mechanism of any group.

ANT considers how people and things (including to some extent ideas) come together and/or join a network and interact to make decisions. Individuals (sometimes in small groups) are often the ones innovating, implementing, mobilizing, and transforming the outputs of actor-networks. As a result, an individualized expression of the actor network is present in each person or small group. The local or individualized understanding of the network's values, ideas, beliefs, and concepts inspires action. As such, these values, ideas, beliefs, and concepts have agency, the ability to act, exist; yet their existence is moderated by the individual and the other values, ideas, beliefs, and concepts that the human actor experiences. This creates a hybridized network of these values, ideas, beliefs, and concepts inside and outside the individual. As the interaction is beyond elucidation it cannot be concretely described in an inscription or other actor. It is without body (corpus); it is non-corporeal; but it acts and is therefore an actant, thus a non-corporeal actant.

NCAT valorizes values, ideas, beliefs, and concepts as network attractants of equal and often greater power than people or physical objects. Some controversy remains as to whether NCAs are necessary to prosecute an ANT-based analysis, but they have been found to make the task more achievable. The nature of translation in the interessement is made clearer by considering NCAs rather than pursuing a cyborg or hybrid actor carrying ideas, values, beliefs, or concepts. Dealing with each as a separate actor provides a cleaner means of exploring an actor-network.

NCAs are often the subject of policy statements or proclamations of a network; however, individual network members interpret these inscriptions applying their understanding of the NCA and therefore the corporeality (body) of the idea, concept, belief, or value is lost. The inscription reads that a value exists, but that value is ephemeral in the mind of each individual actor. The corpus of the inscription has been lost.

In the act or decision-making process, the individual enacts within a rationality bounded by their understanding of the social. This is described by Weick in sensemaking theory; the power of the social is key to critical sensemaking (CSM). NCAT incorporates the inputs of CSM theory and the outputs of ANT, describing the social to explain network decision-making. The outputs of a social are NCAs, which serve as inputs to choices made by individuals. In this dance back and forth, hermeneutically oscillating between the actor network and the individual, traces of the NCA can be surfaced via the choices of individuals

to act and the changes in the enrolment of the actor network.

Resolution of multiple NCAs could be a source of cognitive dissonance. For example, a human actor could be enrolled in an actor network (university) which valorizes journal publication while at the same time belonging to a community of scholars who wish them to contribute to books. How does the actor resolve the values of these two actor networks? In some cases, they may choose to exit (unenroll from) one or more of the actor networks. They may also try to enroll the ideas of one actor network into the other (sometimes by recruiting new human actors). If they choose to leave the 'book' actor-network after trying to influence the group to value journal publication, it is quite likely that this NCA will persist, and others will raise the idea even without the actor present.

This persistence of NCAs (even after the death of their proponents) is another key aspect of their importance. Often, formal organizations will make changes to leadership to change values and culture; however, the persistence of past ideas, values, beliefs, and concepts leads to failure of change. These NCAs remain active even when all human carriers have been unenrolled from the organization. These phenomena point to the importance of NCAT-informed analysis.

Application: research as dance

A process or at least a guide is required to find the traces of NCAs. ANT and CSM literatures provide techniques to surface NCAs from data accessible from archives, social media, or qualitative research. A hermeneutic oscillation between CSM and ANT efforts directs the research. Narratives can be found in network inscriptions; these can be interrogated through mapping the network. CSM points out sources of uncertainty and scripts which may be in play. The guided approach to NCAT as method follows seven moves. They are characterized as a dance because each move may dictate the move that follows; however, although the moves are ordinal in this list, the prosecution follows a more dance-like (modern or jazz) existence as moves may be repeated or skipped and repeated. For practicality, an author may wish to pretend to have been processual, following the moves in order.

Seven moves for surfacing NCAs

Move 1 Identify the action or decision (what innovation occurred or is occurring).

Move 2 Identify the human non-human (but corporeal) actors (who and what are involved at the time the process of innovation began).

Move 3 Surface the possible locations of sensemaking activities (where and how powerful actors are attempting innovations).

Move 4 Identify the sensemaking properties of the event. (How do we understand the problem; do we have a past practice or script?)

Move 5 Identify significant enrollments and de-enrollments of human actors. (As innovation occurs, have some people joined and brought in or been attracted to new NCAs; have others left?)

Move 6 Identify the NCAs enrolled and de-enrolled. Describe changes in sensemaking apparent in the network after the enrollments and de-enrollments. (Do we believe or value something new which has enabled the innovation; have we jettisoned something?)

Move 7 Identify persistent NCAs linked to de-enrolled human actors. Surface the influence of previous networks and future networks in the production of identity and therefore sensemaking. (Are the jettisoned ideas waiting nearby to reassert themselves if the innovation does not work immediately?)

These seven moves provide the opportunity to surface NCAs which remain in the network after their human champions have unenrolled. NCAs that persist after the departure of those who introduced them, and after contra-NCAs have been enrolled, are plausible sources of power and influence (key factors in CSM). When NCAs influence sensemaking, they have agency. This dance was first choreographed for histories and historic decisions to surface the source of conflicting narratives. Over time it has been applied to ongoing decision-making. The advent of social media has provided a rich source of data from which NCAs can be divined. In the past, we had to look for archived material, which could be held in secret until many years after the event. Today, we can see the discourses, narratives, and NCAs exposed in public forums. Moves 6 and 7 occur in real time, forcing much of the nonlinearity of dance back through moves 1 to 5.

New ideas, beliefs, values, or concepts are supported. As the network encounters other

networks cross-enrollments are negotiated. As per meme theory, ideas are traded across actor networks and distort extant NCAs, rendering them less corporeal with each encounter. Change continues, NCAs morph and recombine, initiating new networks and changed decisions and resurfacing persisting NCAs which take opportunities in change to influence and regain force.

When innovating, it is critical to be aware of each of the seven moves which have occurred. Many times, innovations have been abandoned before they have had a fair opportunity to demonstrate their value because persistent NCAs have reasserted themselves and moved an organization back to the old way. Often, these failures are the result of unwillingness to accept the new idea. When Xerox developed the graphical user interface, it left the idea languish because it felt it was too expensive to implement. It permitted others to see the code as it thought it a toy. Steve Jobs turned that toy into the icon-based system that built Apple. Xerox went back to what it knew, photocopiers.

In the alternative, NCAs such as inclusivity and diversity can be enrolled in actor networks to overcome long-standing problems. By enrolling these ideas, organizations may find new ways of innovating based on the values and life experiences which previously excluded people bring to the decision-making process. Enrolling new NCAs is a key aspect of innovation and change. Disruption relies on contrary and unloved NCAs.

Critical summary

The ongoing nature of organizations and individuals is change, oscillating with persistence. NCAT and the methods engendered in the research provide a means of discovering and explaining the black box which connects the actions of individuals with the actor-networks into which they are enrolled. The interessement provides the milieu in which actors are enrolled, but the NCA is necessary to visualize how the social has agency in the decision-making of the one or few who act. New NCAs are introduced through the contact with networks and individuals while extant NCAs persist via the nature of sense-making and our fetish for scripts. As Weick describes, scripts provide us with convenient shorthand to resolve dilemmas. We look to the new and we look to the old. When trying to open the black box behind any decision, the researcher must seek out the new, as well as the old, ideas, values, beliefs, and concepts influencing the decisions made by individuals and the acts they undertake and influence others to choose. NCAT and the seven moves provide one tool for opening these complex opacities.

Further readings

Auvinen, T., Sajasalo, P., Sintonen, T., & Takala, T. (2022). Ghostbusters! On the narrative creation of (absent) leader characters. In F. Hertel, A. Örtenblad & K. Mølbjerg Jørgensen (Eds.), *Debating leaderless management: Can employees do without leaders?* (pp. 227–244). Palgrave Macmillan.

Hartt, C. M. (Ed.) (2019). *Connecting values to action: Non-corporeal actants and choice*. Emerald Publishing.

Krishnamurty, K. (2016). Institutions as actants: Translating meritocracy from American to Indian business education. *Academy of Management Proceedings*, *2016*(1), 15027.

Price, S. T., Hartt, C. M., Yue, A. R., & Pohlkamp, G. G. (2017). We the Inuit: Fluid notions of age and non-corporeal actants. In I. Aaltio, A. Mills & J. Helms Mills (Eds.), *Ageing, organisations and management* (pp. 19–40). Palgrave Macmillan.

Sinha Roy, R. (2023). *Victimisation experiences of users of gay dating platforms in India: An exploratory study* [Doctoral dissertation, Queensland University of Technology].

79. Phenomenological doubt

Antonio Strati

Outline of the topic

This entry illustrates and discusses the phenomenological conception of doubt shaped in the 1980s regarding the aesthetics of photography by the Czech philosopher Vilém Flusser. The concept of doubt has been widely debated in philosophy and has been strongly connected to scientific thought and modern society, especially with its Cartesian conception. The phenomenological conception of doubt underlines – together with other philosophical traditions such as the pragmatism of the American Charles Sanders Peirce – that the Cartesian intellectual and cognitive view of doubt is largely questionable because doubt is not only mental, nor is it a pure state of mind. Doubt, instead, is an aesthetic experience, felt in one's body and in one's heart, and is made up of passion, torment, pleasure, skepticism, curiosity, poetic intuition, and irritation. More recently, the concept of phenomenological doubt has also been introduced in organization studies to highlight the relevance of the multiplicity and the equity of viewpoints to avoid ideological understanding of organizational life.

Conceptual overview and discussion

In general, doubt is seen as a mental act, as a thought, as an intellectual question. Phenomenological doubt takes due account of the intellectual level of the doubt but shifts the center of gravity of the concept of doubt from the mind to the whole body. Phenomenological doubt is bodily felt and is a phenomenologically lived individual or collective organizational experience, a carnal co-perception through the sensorial knowing which is concrete intersubjectivity of the flesh, according to the French phenomenologist philosopher Maurice Merleau-Ponty. The Italian director Federico Fellini cinematically theorizes the importance of the beautiful confusion that doubt arises for innovation and creative processes through his film *8½* realized in the early 1960s. Let's take a closer look at this point because it will lead us to the phenomenological experience of doubt.

Oneiric and existential doubting in the Fellinian beautiful confusion

Beautiful Confusion was the first title – then abandoned – of Federico Fellini's film *8½*, in which he shows us the doubting experience of a film director, Guido, who represents Fellini's alter ego. Guido – the director masterfully interpreted by the Italian actor Marcello Mastroianni – has already acquired great importance in international cinematography. Now he's in doubt whether or not to make another film; he's not sure if he has anything new to say by doing it. He doesn't know what film to make, what cinematographic poetics to express, with which actors, in which scenarios. He has doubts about everything; the scenography he is writing, his own creativity, the reception of film critics and the public. He desires to interrupt the film, but he also desires to realize it and show with this film the doubting experience bodily felt, rather than just intellectually thought.

It is the Cartesian tradition that considers the act of intellectual doubting a fundamental basis of the 'cogito, ergo sum', underlines Vilém Flusser in his essays on doubt. The Cartesian 'cogito, ergo sum' is grounded in a chain of doubts, to the point of doubting that we doubt, to the point of nihilist desperation that our intellect will be able to put us in touch with reality. To get in touch with the experiential flow of our life, affirms the Czech philosopher, we need to take into account the polyvalent nature of doubt and its absurd and bodily being rather than logical and intellectual, in a word, its phenomenological being.

Doubting in Flusser's phenomenology

Doubts are phenomenological, observes Vilém Flusser, only if they are doubts hostile to ideology, that is, only if they are not doubts hinged on a single point of view which is believed to represent the perfect viewpoint from a scientific, religious or cultural perspective. Phenomenological doubt assumes its own form in the context of a multiplicity of points of view which are, in principle, of equal importance.

Flusser fine-tunes the distinction between phenomenological doubt and ideological doubt in his reflections on the philosophical aesthetics of photography. For him, photography must be seen as a performative act, as the gesture of photographing. When taking a photo, the camera – whether it is a professional or amateur device or a smartphone

– is subjected to a series of movements that change the framing of the photograph, and that are more or less accentuated. These gestures reveal that, in a few moments, several different points of view have framed the photographed subject; different points of view due to the succession of doubts experienced by the photographer; doubts that are not of a scientific (or religious) nature. These doubts are instead due to discovering the multiplicity and equality of viewpoints through which to frame the subject being photographed.

The doubts revealed by the photographic gesture are post-ideological because of their multiplicity and their equality. The photographic gesture, however, remains circumscribed within the possible horizons that the technological apparatus of the camera offers. Stated differently, the gesture of photography is performed within the camera program. The doubts, therefore, are phenomenological because they are intrinsically hostile to ideology and, at the same time, they are also, inescapably, programmed acts, despite the continuous search for freedom of the gesture of photography.

Application: innovating organization theory and management learning

Phenomenological doubt can be an opportunity to innovate organizational research and management learning by disrupting the order of doing research, by playing with philosophy to sharpen the understanding of organizational life, and by blurring science, art, and poetics of the imagination in management learning.

Disrupting the order in doing research

Phenomenological doubt, with its emphasis on the multiplicity and equity of viewpoints, encourages the organizational scholarly community to use doubt generatively and to investigate the embodied signs of doubt. This exhortation is grounded not only in phenomenological philosophy but also in the pragmatist philosophy of doubt, as stressed by Karen Locke, Karen Golden-Biddle, and Martha S. Feldman in a recent essay. The crucial point is not to close the doubt under the principles of research efficiency and correct analysis.

Playing with philosophy to understand organizational life

Phenomenological doubt is introduced into organization studies by Strati to further underline the importance of philosophy for innovating organization theory. Drawing on Flusser's phenomenological attention to the gesture of photography, the gestures of researching organizational life are placed under the lens of phenomenological doubt and therefore the possible interactions between organization studies, on the one hand, and philosophy, on the other, are considered from multiple perspectives of equal importance, rather than from a single point of view.

Blurring science, art, and poetics of imagination in management learning

Building on phenomenological doubt, Pierre Guillet de Monthoux, Matilda Dahl, and Jenny Helin return to question reason in organizational experience. They explore in phenomenological terms both the issues of crafting scientific objects and the poetics of imagination of the French philosopher Gaston Bachelard to emphasize that art and poetry could be invited creatively into business school.

Critical summary

The most interesting aspect of the phenomenological doubt is above all its being experiential and corporeal, rather than merely mental and analytical. Another interesting aspect is the fact of highlighting the multiplicity of points of view, all equally valid and interesting, by which we can innovate our way of looking at organizational phenomena. The third aspect of extreme interest is its having been configured thanks to the aesthetic philosophy of the image and visual language and, therefore, questioning the domain of the word, written or spoken, in the conceptions of doubt in modern and contemporary societies.

Phenomenological doubt, on the other hand, finds its main limit precisely in the technological-material apparatus in which it operates. This is a limitation that is intrinsic to its conception. Returning to the gesture of photography, it is the camera software algorithms themselves – as well as the quality of the camera lenses and of the other materials of which the camera is made – that represent the horizon of possibilities for realizing

the multiplicity and equality of the photographer's points of view. In other words, it is the materiality of doubting that constitutes its intrinsic and unavoidable limit.

Further readings

Fellini, F. (1963). *8½*. Cineriz and Francinex.
Flusser, V. (2000). *Towards a philosophy of photography*. Reaktion Books.
Flusser, V. (2014). *On doubt*. University of Minnesota Press.
Guillet de Monthoux, P., Dahl, M., & Helin, J. (2023). Bachelard's backdoor to happy business school phenomenology. In F.-X. de Vaujany, J. Aroles & M. Pérezts (Eds.), *The Oxford handbook of phenomenologies and organization studies* (pp. 330–348). Oxford University Press.
Locke, K., Golden-Biddle, K., & Feldman, M. S. (2008). Making doubt generative: Rethinking the role of doubt in the research process. *Organization Science*, *19*(6), 907–918.
Strati, A. (2022). Do you play with philosophy? *Organizational Aesthetics*, *11*(1), 142–158.

80. Posthumanist aesthetics

Antonio Strati

Outline of the topic

This entry presents the concept of posthumanist aesthetics in the context of the relationships between organizational theory, aesthetic philosophy, and innovation. Since its origins in the first decades of the 18th century, aesthetics has highlighted the corporeality of knowing and acting, as opposed to merely mental and rational knowledge. Aesthetics is based, in fact, on the activation of perceptive-sensorial faculties and on the experiential character of sensitive-aesthetic judgment, as well as on metaphorical and poetic understanding.

Posthumanist aesthetics is in continuity with the philosophical aesthetics of the origins due to the insistence on sensible knowing and aesthetic judgment. It highlights our bodily predisposition of aesthetic feeling to hybridization and metamorphosis. In this way, our sentient corporeality connects in action with the materiality of artefacts and with other corporealities – as happens with our virtual corporeality due to information and telecommunications technologies or with the corporealities of the nonhuman animal, the plant world, and the Earth.

The posthumanist conception of aesthetics develops in the broader philosophical and social theory context ranging from Gilles Deleuze's metaphysical philosophy to Bruno Latour's actor-network theory, post-feminist epistemology, and more-than-human theories. In organization studies and management theory, research on organizational aesthetics has been problematized, refined, and sophisticated by posthumanist aesthetics and provides sensorial knowing, aesthetic judgment, and metaphorical imagination for innovation.

Conceptual overview and discussion

Unlike the humanistic aesthetics symbolized by the purity of the aesthetic canons that artistically define the male corporeality of the Vitruvian Man of the Renaissance by Leonardo da Vinci, the posthumanist aesthetics emphasizes the magmatic nature of human corporeality: our flesh is not only sentient but also prefigurative. That is, our flesh refines its welcoming faculties to prepare our carnality for the contaminated experience. Posthumanist aesthetics therefore focuses on our experiential and aesthetic involvement, which never remains external. It highlights the somatization that extends our corporeality and the metamorphosis of our corporeality.

Posthumanist aesthetics underlines our bodily predisposition to welcome virtual and non-virtual organizational flux, sociomaterial practice, artefacts, and the otherness of other animal species and nature. These characteristic traits stimulate organizational scholars and students to investigate sociomaterial innovations in organizational life. Posthumanist aesthetics provides a new awareness to the researcher on organizational aesthetics and management philosophy in order to understand and manage innovation in organizational life. This is principally because it invites organizational researchers, philosophers, and ethologists to further explore the everyday metamorphosis of our sensible knowing and aesthetic judging on our hybrid organizational experiences; but, also, because it decentralizes our corporeality in the process of hybridization of our aesthetic experience and problematizes the anthropocentrism of humanist aesthetics.

Art and innovative landscapes of posthumanist aesthetics

The posthumanist turn in aesthetic philosophy is generally referred to as the Western art scene of the 1990s; and the Post Human exhibition curated by Jeffrey Deitch between 1992 and 1993 in Athens, Greece, is believed to have coined the term posthuman. The works exhibited at the Athens exhibition were no longer just about redefining art, but also about redefining life. They proposed posthumanist poetics that critically highlighted how, through the combination of biotechnology and computer science, the human was in a process of translation into the posthuman concept of self.

Over the following three decades, posthumanist art was enriched with installations, sculptures, and body artworks such as the performance art of Marina Abramovic. They constituted a corpus of diverse – and dispersed – artistic experiences and works that underlined the desire for increasing freedom from anthropocentric dominion in interaction with other nonhuman animals and with nature in general, as well as with technological innovation. In this regard, French artist ORLAN's

Carnal Art manifesto critically conceptualizes how profoundly technical and organizational innovation in information technology is invading human bodies.

The *invaded corporeality* is combined with *replicated corporeality*, that is, with the robot that increasingly resembles us. The latter constituted one of the main posthumanist themes and characterized much art, from fantasy and science fiction literature to cinematographic works, to animated films with computer-generated avatars, to immersive interactive experiences in museums based on augmented reality, as well as, more recently, the recording of a Beatles song.

In fact, for the Beatles song 'Now and Then', artificial intelligence was used to lift John Lennon's voice from the original cassette recorded nearly 50 years ago and learn what Lennon's guitar sounded like. The sounds of Lennon's voice and his guitar were manipulated, programmed, redesigned, and re-created for this song. This shows the process of decentralization of the human in the recording of John Lennon's voice and guitar. However, this is only technical freedom from anthropocentric dominion, because, paradoxically – and aesthetically – we recognize Lennon's singing and playing in the song. That is, we acknowledge it symbolically and celebrate it both culturally and economically.

Listening to 'Now and Then', we may feel surprised and delighted. Or, conversely, we might experience feelings of discomfort and make aesthetic judgments such as macabre and grotesque when we remember that Lennon was murdered several decades before. In any case, our aesthetic sense of hearing does not tell us that Lennon's singing and playing are a successful combination of a recorded cassette and artificial intelligence work. Thus, to what extent can we be confident in our aesthetic judgment and sensible knowing? This interrogative resonates as a classic regarding aesthetic understanding and goes back to the philosophies of Plato and Aristotle and the poetry of Homer. It shows that classical aesthetic dilemmas can remain crucial to posthumanist aesthetics.

This is even when we feel involved in the materialization of an apparently impossible song and in the innovation capacity of information technology and biotechnology which – together with the inventiveness of managerial innovation – make it happen.

I will further illustrate this innovative panorama that posthumanist aesthetics highlights in the next section by discussing the imaginary aesthetic experience stimulated by the desire to enjoy a regional culinary specialty.

Posthumanist aesthetics and hybrid organizational experience

Let's consider the case in which we are in Siena as a visiting professor and wish to immerse ourselves in the cultures, tastes, and atmospheres of its gastronomic traditions. Imagine the sound of the voice of a Sienese colleague telling us something like, 'You can't leave Siena without tasting pici with wild boar!' Our imagination is stimulated to fantasize about the ordinary aesthetic pleasure of the sensory experience of savouring this Sienese culinary specialty. The aesthetic experiential flow has begun in our corporeality and our flesh is preparing to welcome the pici with wild boar that are not yet in front of us.

To satisfy our fantasy, our desire is, first, to visualize this culinary specialty, to know where it is reputed to be specially cooked, and if we like the look of the restaurant or trattoria. Thus, we place ourselves in the virtual worlds of information systems and telecommunications technologies. In this immaterial world, we exchange data and information relating to our aesthetic desires and choices with the organizational worlds of the Sienese catering or city tourism promotion. That is, we immerse our digitalized aesthetic preferences in the variegated virtual world of different organizational aesthetics, according to the continuously updated innovations of software program applications and the hardware capabilities of the smartphone, as well as in the Sienese computerization of telecommunication systems.

Posthumanist aesthetics explores this metamorphosis of human aesthetic feeling and makes us aware of the paradoxes of our sensible knowing. For instance, something like what we noticed concerning the Beatles song happens with the image of the pici with wild boar that appears on the smartphone screen. Our sense of sight welcomes it as if it were a photograph. While this image is not – technically and organizationally – a photograph, but a stream of pixels that appears at our request and disappears when we turn it off We look at the pixels and see a photograph; we perceive

the flow of ephemeral electronic signals, and we acknowledge it as if it were a single permanent photograph. Furthermore, the image shown on the smartphone screen may have been realized using artificial intelligence. That is, it could have been produced inductively through virtually stored data relating to the aesthetic preferences of customers and manufacturers regarding this Sienese culinary specialty. It could have been realized without the sense of sight, without the photographic gaze.

In any case, once our pici with wild boar is served, we frame it with our smartphone and send this image documenting the pleasure we feel to family, friends, and social networks. We also appreciate the beauty of the architectural view of the Torre del Mangia and the Palazzo Pubblico in Piazza del Campo that we glimpse from our table. Then we smell the culinary specialty, explore it with our sense of sight, and we savour it with our sense of taste.

The pici with wild boar smells of homemade pasta seasoned with a ragù that tastes like wild meat. Smell and taste depend on the culinary art of those who cook the dish, especially since the pici themselves are handmade pasta, and thus they do not always have the same flavour. To form the pici, the strips of dough (wheat flour, salt, and water) are rolled up between the palms (or between the palm and the table), so they neither always have the same length, nor the same thickness, nor do they take the wild boar sauce always in the same way. The ragù is made with game and varies from wild boar to wild boar. The culinary specialty depends on the taste with which the selected raw materials are chosen, on the taste of those who prepare them and of those who cook them, and on the taste of those who – one imagines – will savour them. So, the pici with wild boar depends on the dominant aesthetic standards in restaurants and trattorias and, more generally, in the Sienese catering industry. That is, on organizational aesthetic canons which are transmitted by tradition, reinvented in the network of inter-organizational relationships of the Sienese restaurant industry, modified and innovated in the daily relationship with the taste of consumers: aesthetic canons that are configured in the course of implicit and explicit organizational negotiations of aesthetic preferences.

Sight, smell, touch, and taste are the perceptive-sensorial faculties activated to grasp the gastronomic qualities of this Sienese culinary specialty while hearing tells us the rhythm with which we are savouring it. Does this culinary specialty appeal to our taste buds? Do the flavours of flour, wild meat, olive oil, garlic, and tomato scented with laurel and rosemary respond to the characteristic tastes of our socio-gastronomic culture? Because the wild boar ragù sauce, even if modified and lightened to suit today's tastes, can still be too strong and disgusting. Furthermore, do we feel right eating other living beings who, fortunately for them, live in freedom? Tasting pici with wild boar highlights how the aesthetic is also discrimination and violence. This feeling, however, is not due to an aesthetic judgment, but to an ethical judgment, and shows the intimate link between the aesthetic dimension and the ethical dimension. In any case, to make both the ethical and taste problems disappear, wouldn't it be better if wild boar meat were cultured – that is, produced through the cultivation of wild boar cells in vitro – rather than wild?

Posthumanist aesthetics investigates the paradoxes and metamorphoses of our sensible and perceptive faculties and of our sensitive-aesthetic judgment in the hybridized socio-material landscapes in which we immerse our hybridized corporeality – as fingers do with honey. While the honey allows itself to be grasped by the fingers, the fingers remain entangled in the honey which creeps stickily between them, observes the phenomenological philosopher Maurice Merleau-Ponty, inspired by the reflections of another French philosopher, the existentialist Sartre. The posthumanist aesthetic understanding of organizational life shows that, like honey, what we seek to understand aesthetically by extending the capacity of our sensible knowing and managing at the organizational level is autonomously in action. It is elusive, mixed up of completely diverse corporeality and matter, and in a continuous flux that confuses our sensorial faculties and our aesthetic judging.

Application: posthumanist aesthetic awareness in medicine and design practice

Posthumanist aesthetics refines the aesthetic understanding of organizational life. It provides organizational scholars, consultants, and managers with a new awareness for comprehending and managing innovation

in organizational worlds, in medicine, for example, just to indicate a fundamental area of study, as well as in design practices aimed at freeing ourselves from anthropocentric organizational culture and symbolism.

Posthumanist aesthetics and medicine

Our corporeality in medicine is highly hybridized. It is indeed made of flesh, of perceptive faculties, and of sensorial judgment. But it is also made of the virtual translation of our body into digital materiality; that is, in the set of data and information that give virtual corporeality to our body, and make it configurable by algorithms and modelable through standard procedures. In the arts, more than a century ago, Giorgio de Chirico painted his famous mannequins to free Mediterranean metaphysical art from anthropomorphism by translating human corporeality into a thing; that is, in an active matter that follows its own paths.

The immediacy of the bodily experience that the doctor can have of us is hybridized by the digitalized body that the doctor can learn through data and information concerning our body. They can feel our heart beating, our blood circulating, and our breathing rhythmizing our body while the data collected through CAT scans, X-rays, laboratory analyses, and spirometry tests convey our corporeality in its quantitative, digitized, virtually comparable model; that is, in its being a thing. This also applies to the medical care for nonhuman animals, plant life, and the Earth.

Posthumanist aesthetics in design practices

Posthumanist aesthetics can inspire design practices that acknowledge intelligent systems as partners of humans. Drawing from the writings of Tim Ingold, among others, Laura Forlano emphasizes that posthuman-centered design practices can accommodate revolutionary change due to the growing power and diffusion of information technology. Such practices can also further explore post-anthropocentrism regarding artefacts of daily use, as well as trees, rocks, and nonhuman animals. That is, acknowledging in design practice that the human world is in interspecies connections and in a relational continuum with the natural, geographical, and ecological world, as Seray Ergene and Marta Calás illustrate. Indeed, although artefacts and artificial intelligence are predominant partners in design practices, it is also important to bring to light the biological and ecological dimensions of aesthetic experience in design practices. Starting from giving due consideration to sensible knowing and acting of nonhuman animals, underline Julie Labatut, Iain Munro and John Desmond.

More generally, posthumanist feminist aesthetic understanding can be taken into consideration when designing the sociomateriality of organizational practices, points out Silvia Gherardi. This thesis resonates in the arts with the feminist exploration of the body introduced by the performances of the 1960s and 70s and with the radical re-elaboration of the self in cyberfeminism and bioart, as Francesca Ferrando argues. And which must also be extended to art curatorial practices, Rosi Braidotti remarks, to challenge both the anthropocentric assumptions of museum curatorial practices and the Eurocentric humanistic universalism that characterizes them.

Critical summary

Posthumanist aesthetics refines and sophisticates the aesthetic understanding of innovation in organizational life. It focuses, in fact, on the sensitive and experiential dimension of hybridized fluxes of organizational interaction. Hybridization is due to the intertwined relationships between the continuous metamorphosis of human corporeality and the continuous innovation in bioinformatics technology, as well as the metamorphosis that occurs among other animal species and nature in general.

Posthumanist aesthetics has been explored in organization studies principally in recent years and in a fragmented way. Indeed, organizational theories and management studies have mainly given prominence to the ethical dimension of posthumanism, as well as to the feminist post-epistemologies that have explored it and, also, to posthumanist ecological and sociopolitical issues. Organizational theories and management studies have thus reflected philosophical research and study, in which posthumanist aesthetics are rarely researched and theorized thoroughly as the ethologist and philosopher Roberto Marchesini does with his book published in Italian in 2019.

In particular, in the literature on organizational aesthetics, the theoretical side of

posthumanist aesthetics has been privileged, leaving the empirical investigation of the posthumanist aesthetics of organizational innovation in the shadows. Despite these limitations, however, posthumanist aesthetics inspires and stimulates the study of relevant aspects of innovation in organizational life. This is because it focuses on knowing and acting that are based on pleasure or its opposite, on languor or disgust, on the shiver on the skin and the grip in the stomach. It focuses on sensible knowing, aesthetic judging, and metaphorical and poetic understanding of organizational innovation.

Further readings

Braidotti, R. (2019). *Posthuman knowledge*. Polity Press.

Donger, S., & Shepherd S. (Eds.) (2010). *Orlan: A hybrid body of artworks*. Routledge.

Ergene, S., & Calás, M. B. (2023). Becoming naturecultural: Rethinking sustainability for a more-than-human world. *Organization Studies*, *44*(12), 1961–1986.

Ferrando, F. (2016). A feminist genealogy of posthuman aesthetics in the visual arts. *Palgrave Communications*, *2*(1), 1–12.

Forlano, L. (2017). Posthumanism and design. *She Ji: The Journal of Design, Economics, and Innovation*, *3*(1), 16–29.

Gherardi, S. (2022). A posthumanist epistemology of practice. In C. Neesham, M. Reihlen & D. Schoeneborn (Eds.), *Handbook of philosophy of management* (pp. 99–120). Springer.

Labatut, J., Munro, I., & Desmond, J. (2016). Animals and organizations. *Organization*, *23*(3), 315–329.

Strati, A. (2019). *Organizational theory and aesthetic philosophies*. Routledge.

81. Process philosophy and innovation

Brad MacKay and Robert Chia

Outline of the topic

Both innovation and process philosophy share a common ontological root and hence an inevitable affinity. Both intimate the role of change, emergence and novelty. Innovation is primarily concerned with the introduction of novel ideas, practices, products and services that generate some tangible advantage and that consequently bring about beneficial changes in organizations, economies and society over time. Process philosophy shares this same interest in movement, change, emergence and novel renewal with an emphasis on the *becoming* of configurational entities and situations. It is a worldview that draws attention to the dynamic and ongoing nature of (self-) transformation in a precarious, uncertain and fluxing world. From this process worldview, ultimate reality is viewed as a continuous process of becoming so that 'states' of being are regarded as no more than transient staging points; temporarily arrested configurations of relations in an otherwise churning sea of flux and chaos. Implied in this process understanding of reality is the central role of innovation practices as reality-configuring and ordering activities. Understood thus, innovation is not a singular event. Instead, it is the ongoing practice of grappling, coping with and adjusting to situational demands and affordances.

In this entry, we explore the connection between innovation and process philosophy and examine how this relationship has the potential to reshape our understanding of innovation management to further unlock its potential. We maintain that ongoing adjustment of established practices is the key to realizing innovative outcomes.

Conceptual overview and discussion

Within organization and management studies, innovation is concerned with the process by which institutions and organizations reinvent and renew themselves in the face of uncertainty and amid dynamic and evolving environments. Innovation refers to the process of creating something new or novel, usually through creatively improving existing ideas, products, services or even habituated ways of doing things. It describes the processes by which novel concepts, ideas or practices are transformed into practical solutions that address specific problems, challenges and needs and that are ultimately advantage-gaining and/or value-adding in nature. It can originate from individuals, teams, organizations, networks or even entire societies seeking to overcome seemingly intractable problems or aiming to disrupt traditional norms, push the boundaries of what is possible and ultimately improve the way they compete, live, work and interact with the world around them in a fundamentally different yet sustainable way. While definitions and perspectives of innovation are, Baregheh and colleagues concede, as diverse as the rich and varied approaches addressing it, within the domain of organization and management studies, it is often studied as a succession of definitive activities happening in discrete stages and in a linear manner from creation and ideation, through to implementation, development and adoption.

This 'successional' way of viewing innovation assumes that the creative process involves a step-by-step, 'building blocks' approach to innovation. Such an understanding of the innovation process derives from a deeply held *substantialist* worldview in which ultimate reality is, as construed by Whitehead, as essentially made up of a 'succession of instantaneous configurations of matter.' Consequently, event happenings are also understood in discrete, substantive and atomistic terms. From this still-dominant worldview, innovation is then portrayed as a deliberate sequential activity; a means, tool, or thing, deliberately employed either in response to the challenges of an evolving environment or as a way of influencing it, to realize a pre-defined end. Either way, innovation is construed as something that begins with a pre-specified purpose and with a particular outcome in mind.

While notions of change, process and emergence are regarded to be at the heart of innovation studies across many disciplines, the privileging of the content of innovation, and of the discrete, successional activities involved, subjugates its more emergent dimensions and eschews a deeper understanding of what the actual process of innovation entails. While it does not deny the possibility of situated chance, luck and serendipity playing a critical role in innovation, nor that innovation

often emanates from collaborative endeavour, this substantialist approach nevertheless views the process of emergence in ahistorical, acontextual and successional, 'stage-like' terms. Process philosophy offers a different understanding of how innovation happens in practice through internalized socio-cultural predispositions.

The fundamental premise of process philosophy is that the world is not a series of discreet, substantial elements of matter that are essentially isolatable, stable and identifiable, nor is change linear, successional, step-like and externally imposed. Rather, reality is fluid, fluxing and essentially indiscriminate, and change is immanent, continuous, relentless and inexorable. Processes, therefore, are not simply about linking discrete events that happen in isolation but instead refer to the inextricably intertwined and interconnected nature of reality itself; process is reality! The phenomenon of emergence and becoming as such is integral to a processual reality.

From this process-philosophical worldview, the very notion of innovation itself suggests that the 'nova' is not just something new, but something new emerging *from* the old. Reality is continuous invention and innovation. It is always, as Bergson suggests, a 'progress of the past which gnaws into the future, and which swells as it advances.' It 'resembles a gradually expanding rubber balloon assuming at each moment unexpected form.' The past is immanent in the present configuration of things, yet what does ensue is always a surprise because of the specific prevailing conditions affecting its manifestation. The present contains a layered sedimentation of that which has been before, yet it nevertheless expresses itself in a uniquely novel moment. Novelty, and innovation, as James observes, 'does not arrive by jumps and jolts; it leaks in insensibly.' Understood thus, innovation is better construed as essentially immanent, progressive and 'processional' rather than linear, planned, discrete and 'successional'.

The emphasis is on the continuous *becoming* of novel approaches, practices, entities and situations from what previously was the case. Innovation, thus understood, alludes to the presence of an existential life force, a Bergsonian *elan vital* driving continuity in change and channelling and directing such efforts relentlessly towards the innovative expansion of degrees of freedom from physical and psychological constraints. As such, innovation is very much integral to the broader civilizing process; one inextricably associated with an advantage-gaining economy of effort and conservation of energy. This existential imperative to continuously seek out ways to economize effort and conserve energy is what underpins March's twin tendencies of exploitation and exploration. Innovative practices enable a civilization, society or organization to bootstrap itself to a higher and more efficient level of existence and hence, as Sahlins and Service highlight, to greater survival possibilities and independence from environmental constraints. This same argument applies to an organization's survival, growth and flourishing.

Process philosophy, Chia and Langley argue, is unequivocally committed to a 'strong' process view as understood in the management and organization studies literature. While a 'weak' view of process subsumes process to substance, successions, stage-like transitions and stable states, a 'strong' process view emphasizes novel becomings, emergence, situational serendipity and hence the inherent uncertainty and unpredictability of creative endeavours. Such a strong perspective on process suggests that innovation is a progressive and emergent phenomenon; not merely a distinct singular activity, but the result of an ongoing interaction between unfolding situations and internalized habituated practices. Consequently, innovation arises, oftentimes spontaneously, from the creative juxtaposition of seemingly unrelated practices and processes interacting within an emergent set of circumstances. Novelty arises not simply because of the creativity of an individual's or group's thinking or design, but because of the confluence and impact of collectively shared practices interacting with an ever-changing set of circumstances.

A strong process approach to understanding innovation privileges the emergent, uncertain, spontaneous and often unexpected and surprising dimension of innovation. There is an inevitable 'ballooning' effect in the innovation process because of 'unowned' changes, suggested by Rescher (1996), that happen of their own accord, independent of human intentions. Such changes serendipitously converge and result in wholly unexpected outcomes that themselves shape the direction of how an idea, product or service evolves.

A strong process view places socio-culturally acquired practices, predispositions and

sensitivity to situational nuances at the centre of the innovation process. Socio-cultural practices are the cumulative effects of historically shared, reality-constituting acts that make social life possible. This is because, from a process-philosophical worldview, ultimate reality is perpetually in flux and hence essentially unliveable. Civilizations, societies and organizations need some semblance of order and stability to collectively deal with situational exigencies confronted and to conduct social and economic exchanges. It is therefore such shared bundles of established socio-cultural practices that ensure the necessary patterned regularity needed for exchanges to take place. Socio-cultural traditions and practices are thus developed, transmitted and internalized to enable members of a community to habitually deal effectively with the exigencies of situations they inevitably find themselves in. And it is through such moment-to-moment habitual engagements with unfolding situations that innovating responses are serendipitously forged. From a process-philosophical worldview, this is how innovation happens in practice, through practices engaging with unfolding situations.

Application

The emergent, progressive, serendipitous, 'ballooning' nature of innovation from a process-philosophical worldview is reflected in the development of IKEA as it sought to creatively navigate the exigencies of its evolving environment. MacKay and colleagues have argued how the Swedish furniture company from its earliest days as a mail-order company in 1943 selling nylon stockings and pens, followed by furniture, survived, and grew, often through a process of happenstance and invention driven by necessity.

Showrooms were first created by IKEA as a response to a bruising price war that left it near bankruptcy soon after launching its first mail-order furniture catalogue in 1951 to demonstrate the difference in the quality of its product from their competitors'. Flat-packed furniture is credited to its former chief designer, Gillis Lundgren, who took the legs off a new leaf-shaped table to take it to a photoshoot out of frustration trying to fit it into a car. This embedded a geometric, functionalist and minimalist design approach to IKEA's furniture, democratizing access to high-quality furniture, which itself was an ethos socio-culturally imbued with its agrarian and egalitarian provincial Swedish roots from where the company had been founded. Finally, IKEA's 'self-service' model stemmed from coping with long queues and peaked customers as staff sought to cope with the unexpected popularity of its first 31,000-square-foot store-opening by letting customers retrieve their own products. The IKEA story is, of course, not unique.

Critical summary

There are numerous examples of innovation emerging progressively and often haphazardly through coping actions and serendipity rather than through discreet, planned, step-by-step, substantive activities. To focus attention on the material, substance and managed aspects of innovation to the exclusion of its emergent dimensions is to miss a deeper understanding of the nature of innovation. What the application of a strong process view of innovation rooted in a process-philosophical worldview directs attention to is the inherent uncertainty and unpredictability of human, organizational and societal evolution, and the often unconscious, socio-culturally informed coping actions that inadvertently lead to ballooning growth and which are only identified as 'innovative' retrospectively. Every action, interaction and practice are infused with innovation in what is a constant process of becoming.

Further readings

Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision, 47*(8), 1323–1339.

Bergson, H. (1911/1998). *Creative evolution*. Dover Publications.

Bergson, H. (1946/1992). *The creative mind: An introduction to metaphysics*. Citadel Press.

Chia, R., & Langley, A. (2004). The first organization studies summer workshop: Theorizing process in organizational research (call for papers). *Organization Studies, 25*(8), 1486.

James, W. (1909/1996). *A pluralistic universe*. University of Nebraska Press.

MacKay, B., Chia, R., & Nair, A. (2021). Strategy-in-practices: A process philosophical approach to understanding strategy emergence and organizational

outcomes. *Human Relations*, *4*(9), 1337–1369.
March, J. G. (1991). Exploration and exploitation in organisational learning. *Organization Science*, *2*(1), 71–87.
Rescher, N. (1996). *Process Metaphysics: An introduction to process philosophy*. State University of New York Press.
Sahlins, M., & Service, E. (1988). *Evolution and culture*. University of Michigan Press.
Whitehead, A. N. (1926/1985). *Science and the modern world: Lowell lectures*, 1925. The Free Press.

82. Science fiction

Elina Hiltunen and Aki-Mauri Huhtinen

Outline of the topic

Science fiction (sci-fi) is a method for imagining future worlds and societies where some technologies play an important role. Science fiction is well known to audiences from books by authors such as Jules Verne, Isaac Asimov, and George Orwell, and movies like *Minority Report*, *2001: A Space Odyssey*, and *Terminator*. However, science fiction can also be utilised in the organisational innovation process. For example, it could help to imagine new uses for certain technologies in the future, and thus to create new products and services. Science fiction also helps to extend the possibilities of new technological innovations and their possibilities into the far future. Some organisations like Intel and NATO are already using science fiction to imagine, innovate, and be prepared for the future.

Conceptual overview and discussion

Innovation activities are processes for creating the future at its best. Today's innovations can be future products or services. For innovating activities, imagining several futures is essential; it gives developers views of the potential forthcoming needs of the users. On the other hand, new ideas may emerge by designers familiarising themselves with various stories and images of the future.

Technology is one of the main drivers that is changing our world. Most products and services contain some technology in the future. For example, digitalisation and ICT have become essential parts of products and services over the last few decades. We are talking about the internet of things (IoT), or the internet of everything (IoE), as the internet is also connected to living beings. Today, even products that are not 'smart' utilise technological developments – at least material technology. Technology is also present in the product manufacturing processes. We could say that technology is everywhere, and more so in the future. Not all technological development is good, and it can also raise concerns. For example, using technologies such as deep fake or generative AI for disinformation spreading raises the question of whether all technology improves our lives.

Science fiction is a genre that focuses on technology and the changes technology brings in the future. However, science fiction does not just focus on thinking about the development of technology; it also combines a social perspective. How can a new technology affect people's behaviour? And how does it affect society? The possibilities of science fiction as a tool in the business world and military have been understood by some pioneering organisations, for example Intel, NATO, Nokia, Nike, Ford, and Boeing.

Science fiction works as an innovation tool for organisations in two directions. Existing science fiction material, for example movies and books, can serve as inspiration in development processes when designing new products. Many technological products used today were already featured in science fiction decades before. For example, Jules Verne envisioned a space rocket and a trip to the Moon almost 100 years before man first travelled to the Moon. It's not that Verne knew how to predict the future (that's impossible), but his books must have inspired humankind's pursuit of travel to the Moon.

On the other hand, producing science fiction stories in an organisation can help to innovate the different uses of future products and understand the meaning of the new product in people's lives in the future. It can also help to imagine new applications where new technology could be used.

Application

Brian Johnson has introduced a concept called science fiction prototyping (SF prototypes). According to him, the idea of science fiction prototyping is to envision the technologies in people's real lives in the future. The core idea of SF prototypes is to examine the technology and its effect on society. SF prototypes, such as short stories, comics, or movies, can take many forms. The idea of SF prototypes is to use scientific facts as the basis for the SF prototypes.

Johnson introduces a five-step model to create SF prototypes. The process includes outlining the sci-fi story to capture the idea behind it (what the story is about) and put it into the plot (what happens in the story). The five steps of Johnson's SF prototyping methods are:

1. Pick the science and build the world: Selecting the science or technology that is essential and inspiring for the prototype, building a realistic and believable future world for the story and setting up the people and location of the story.
2. The scientific inflection point: Introducing the science and technology that focuses on the prototype for the world and people's life. A special focus is on thinking about what kind of positive or negative effect the technology has on daily life.
3. Ramification of the science on people: Thinking of technology's effects on people and the world – for example, do people accept or oppose the technology?
4. The human inflection point: What has happened to the people in the story when experiencing the technology in place? Are there challenges with the technology? If there are, how can they be fixed? Are there some new ideas for the research or experiments?
5. What did we learn? Exploring the possible implications (including human implications), solutions, and lessons learnt from Step 4.

Johnson encourages the users of his prototype model to modify and diverge from it. He emphasises that SF prototyping aims to collaborate, iterate, and imagine the future together.

Critical summary

Science fiction is an innovative tool that helps organisations to think about technology, its future, and the effects of technology on society. It could also be used to simulate the use of certain technologies that would otherwise be too expensive or difficult to test. With science fiction, it is also possible to think about whether a certain technology could harm society. If there is a risk of this happening, it is possible to think in advance about how the unpleasant event in question could be prevented. Science fiction also has a communicative importance: it helps to open up the possibilities of technologies otherwise neglected by funding institutions or the general public.

A few innovative companies worldwide have already used science fiction tools in their operations. Even if the organisation does not use special science fiction tools, every organisation is influenced by science fiction through popular culture. It often inspires product developers. Many technological products have been featured in science fiction before they appeared on the market years later. Although science fiction is familiar to us from movies and books, it is also important to understand its value in organisations as a tool for innovation.

Further readings

Gibbs, A. (2017). Using science fiction to explore business innovation. PwC Australia. www.pwc.com.au/digitalpulse/science-fiction-explore-business-innovation.html

Johnson, B. (2011). *Science fiction prototyping: Designing the future with science fiction*. Morgan & Claypool Publishers.

Michaud, T., & Appio, F. P. (2022). Envisioning innovation opportunities through science fiction. *Journal of Product Innovation Management*, *39*(2), 1–11.

83. Scientific fabulation

Emily Höckert

Outline of the topic

Amid the multiple ecological crises at present, this entry approaches responsible innovation as a creative and collaborative process that recognizes the agency of other-than-human species. It introduces the genre of scientific fables that can stretch our imaginations and circles of care beyond human-centric understandings of well-being and knowledge. Unlike classical fables, this kind of transdisciplinary storytelling does not provide moral lessons or simple categories of good and bad, yet it seeks to hesitate, complicate, and make multiple voices heard. Importantly, scientific fables can offer us hope and strength to persevere with wicked problems with others.

Conceptual overview and discussion

Recent research has sought guidance from the environmental humanities to disrupt and expand the predominant understanding of stakeholders in responsible research and innovation processes. The environmental humanities engage with multispecies and more-than-human perspectives to draw attention to the relations and mutual survival of all living beings in times when our common well-being on this planet is under threat. Instead of describing climate change and biodiversity loss through lists of facts and figures, these streams of discussion call for more diverse ways of addressing common matters of concern about the accelerating ecological crisis. For instance, in her critique of the human-centric worldview, Donna Haraway encourages us to explore the transformative power of multispecies storytelling as a worlding practice and as a remedy for "earthly survival".

Scientific fabulation is a form of multispecies storytelling that seeks to enlarge our moral imagination beyond human beings. This genre was first used to describe Vinciane Despret's entertaining and thought-provoking book *What Would Animals Say if We Asked the Right Questions?* In the foreword of Despret's book, Bruno Latour welcomes the reader to enter a new genre of scientific fables, by which he does not refer to science fiction or false stories about science but, quite the opposite, novel ways of understanding how difficult it is to fully grasp what the animals are up to.

According to Latour, the book is an example of the new domain of scientific humanities that brings the resources of science and the environmental humanities together and puts them to work. While he refers here to Despret's work with animals, the genre of scientific fables recognizes the knowing agency of more-than-human actors in general. Latour calls Despret an empirical philosopher—more specifically, an *additive* empiricist. Like *subtractive* empiricists, *additive* empiricists are interested in facts and grounded claims, but, unlike *subtractive* empiricists, who aim to eliminate contradictions and decrease the number of alternatives, *additive* empiricists wish to slow things down to welcome multiple voices that express multiple understandings. In this sense, additive empiricists disrupt the linear, anthropocentric narratives of the past and the future and the idea of the human researcher and the innovator as conquerors of a kind.

Importantly, scientific fabulation is not about spotting and filling gaps in previous knowledge, nor about reducing the field of attention to prove a point. Instead, Despret's way of engaging in storytelling enlarges the imaginations and competencies of all the players, including herself, and proposes and enacts what was not there before. In line with the notions of radical and revolutionary innovation that avoid closed ends, Despret encourages us to create stories and make and reconstruct history in a way that "opens other possibilities for the past in the present and the future".

Application

Scientific fabulation builds on previous knowledge, offers new perspectives and awakens curiosity and care towards more-than-human relations. Instead of offering a new "formula", a clear map or guidelines for co-creating and further applying scientific fables, there are some dimensions that make them differ from the prevailing ways of telling tales:

1. Slowing down: Scientific storytelling challenges us to slow down and cultivate the art of attentiveness to different kinds of relations and entanglements in a more-than-human world. What does it mean to

expand the idea of responsibility beyond human interests?
2. Hesitating: Providing moral teachings, re-creating dualistic characters of good and evil and making others feel guilt seem to be counterproductive strategies in the midst of the ecological crisis. Through hesitation and wonder, scientific fabulation can help us recognize and address our shared fragilities in times of crisis.
3. Casting more-than-human protagonists: Instead of eliminating strangeness, it is important to strive to include multiple more-than-human voices in our research stories and innovation processes. What kinds of expertise do more-than-human beings have in innovating for changes and adjusting to them? How do innovation management practices recognize the well-being of more-than-human communities?
4. Rethinking plotlines: One of the multiple challenges of the current ecological crisis is that it disrupts the popular idea of a plotline with a beginning, a problem that occurs, a solution to the problem, and an end. This means that the genre of scientific fabulation seeks to leave the door open not only for future problems but also for innovation and improvisation to come.
5. Sparking hope: Scientific fabulation has the potential to enhance care and hope in more-than-human communities and thus support innovation-related activities and processes from this perspective.

Critical summary

The genre of scientific fables builds on the ancient traditions of storytelling and story listening and is therefore somewhat familiar to all of us. Unlike traditional fables, scientific fabulation calls for openness, curiosity, and wonder towards alternative ways of being in the world, and hence can offer a valuable way of producing knowledge in innovation processes. It merits mentioning that this way of creating and sharing knowledge forms an inherent part of many Indigenous worldviews. For instance, as Robin Wall Kimmerer, a member of the Citizen Potawatomi Nation, illustrates, thinking and storying with mosses—most likely among the oldest surviving plants on Earth—can offer us insights into the value of being slow and small. The genre of scientific fables can help us attune ourselves to different temporalities and seek guidance from the more-than-human incremental innovation processes that have been taking place on Earth for around four billion years. Importantly, sharing scientific fables can help us address the collective shock caused by environmental change and biodiversity loss and move on by living the ethical and ecological knowledge that is already in us.

Further readings

Despret, V. (2016). *What would the animals say if we asked the right questions?* University of Minnesota Press.

Höckert, E. (2020). On scientific fabulation: Storytelling in the more-than-human world. In A. Valtonen, O. Rantala & P. Farah (Eds.), *Ethics and politics of space for the Anthropocene* (pp. 51–71). Edward Elgar Publishing.

Kimmerer, R. W. (2003). *Gathering moss: A natural and cultural history of mosses*. Oregon State University Press.

Szymanski, E. A., Smith, R. D. J., & Calvert, J. (2021). Responsible research and innovation meets multispecies studies: Why RRI needs to be a more-than-human exercise. *Journal of Responsible Innovation*, *8*(2), 261–266.

van Dooren, T., Kirksey, E., & Münster, U. (2016). Multispecies studies: Cultivating arts of attentiveness. *Environmental Humanities*, *8*(1), 1–23.

84. Sleep

Anu Valtonen

Outline of the topic

In this entry, I envision novel imaginaries for the future with the help of sleep. The prevalent Western imaginary centralises reason, control, certainty and techno-rational and capitalist narratives seeking growth and profit maximisation in the name of progress and development. This imaginary has been identified as a major contributor to the profound crises on Earth and is therefore in dire need of replacement, as Calas and Smirchich, among others, have argued. I allow sleep to afford me a stance for speculating on and envisaging alternative futures that are more just and liveable for both humans and non-humans.

Conceptual overview and discussion

In recent decades, there has been an upsurge in popular and academic interest in sleep. However, sleep has often been subordinated to Western capitalist and managerial discourses. From these perspectives, the role of sleep is to maximise one's intellectual and corporeal capital and demonstrate one's superiority by staying wealthy and healthy. Managerially oriented studies on sleep, which have often drawn on neuroscientific and medical studies, have focused on exploring how the quantity and quality of sleep affects organisational performance and cognitive capacities, such as problem-solving, creativity and attentiveness. These studies have been used as a basis for arguing that good sleep is important to boost innovation, well-being and the performance of organisations. In brief, sleep has become another matter to be managed and controlled, with the help of sleep-tracking devices, novel organisational practices such as power naps or any other service offered by the proliferating sleep market.

This points to the persistent Western addiction to controlling, mastering, maximising and rationalising everything, including the world of sleep. Critical studies, which often stem from sociology, have drawn considerable attention to the ongoing capitalisation, commodification, technologisation and medicalisation of sleep. While critical scholarship has done valuable work in unpacking, criticising and politicising these prevalent discourses and practices around sleep, a question remains: do such critiques open up or suppress the theoretical and ethico-political potential of sleep?

In the spirit of affirmative critique, I suggest that sleep can open up an intriguing potential for creating and envisaging alternative ways of thinking and relating to the world. We are currently living under conditions of inherent uncertainty, and no one knows what will happen to the Earth. Therefore, we need to develop our abilities to address and live with the uncertainties, indefiniteness and inherent vulnerabilities of the Earth. Sleep may be of help in this attempt: sleep is situated somewhere beyond control, mastering and certainty and is associated with vulnerability, as Salmela and colleagues have discussed. Accordingly, sleep opens up different relations to the self, the Earth and its various inhabitants.

Such relations are filled with surprising, unexpected, floating and uncanny moments that the sleeper experiences. The sleeper cannot fully decide when to fall asleep or wake up. Furthermore, the sleeper is not always sure whether s/he is awake or asleep. The same pertains to dreams: one cannot decide beforehand what kind of dreams one will have, whether one will have any at all or whether one will remember them afterwards. While dreams take their ingredients from the waking world (familiar people, events, places, practices, artefacts and surroundings often appear to us in dreams), dreams do not follow the rational logic of wakefulness. Rather, the world of dreams is characterised by a messy mixture of surprising connections. In light of this, dreams have long been recognised as sources of creativity and innovation, and they also provide a rich arena for opening up and nurturing imaginary worlds.

Furthermore, sleep opens up intriguing temporal relations; instead of short-term, linear and busy timescales, sleep offers rhythmic, deep temporalities that value stillness and rest. Falling asleep and waking up are culturally associated with death and rebirth, and the rhythm of circadian sleep is intertwined with the cyclic rhythm of darkness and light, which is a fundamental rhythm in the evolutionary history of the Earth. Not only humans and other mammals but also all other life forms, from plants to insects, have some sort of rhythm of activity and rest. The recognition of this may create a sense of 'weness' between human and non-human creatures. As sleep assumes a moment of stillness,

it allows us to sensitise and attune ourselves to the presence of different creatures and their temporalities. Sleeping outdoors and admiring the starry sky provides an example of this.

Application: envisaging new futures

Storytelling is widely recognised as an important means of casting new futures, and dreams have the capacity to nurture alternative storytelling. Organisational scholar Helin has written from the perspective of the messy and ambiguous world of dreams; in doing so, she has demonstrated their potential to help us face, acknowledge and even value uncertainty, unknowing and the unpredictable nature of happenings. Dreams thereby provide a transformative site for envisaging a post-control society.

Furthermore, anthropological and Indigenous studies have indicated that many communities practise dream-sharing, which helps them to identify and cope with the challenges they face. Organisational scholars Gosling and Case have elaborated on this by using the social dreaming practices of Indigenous nations as an allegory. Many Indigenous nations have been forced to find new ways of living when their cultural and material practices have collapsed, and they have mobilised dreams to help them cope in such situations. In the same way, dreams might give us resources for dealing with a breakdown of anthropocentric assumptions and practices. Dreams (as forms of non-rational imagination) and social dreaming (as a collective method of envisioning futures) may provide valuable resources for opening up alternative visions for coping with Earthly crises.

There is potential in sleep for opening up a site for thinking creatively and critically about the current state of the world and the place of humans in it. Sleep assumes a pause; thereby, it affords a moment for relating to human and non-human others in ways that differ from the general patterns seen during the hectic daytime. Ethnographic studies have suggested that sleeping in nature-based settings helps humans attune and attend to the existence of multiple others; trees, birds, rocks, plants and the cyclic rhythm and pace of nature, deep time, darkness and light (including the absence of darkness caused by light pollution). Such experiences can nurture a wish to question the predominant human-centric, short-term and speed-oriented temporal frames and to develop alternative ones that would allow for more liveable conditions to be created for both humans and non-humans.

Critical summary

I have suggested employing sleep and dreams as valuable resources for opening up alternative imaginaries, which are needed in the face of severe crises caused by harmful, growth-oriented, capitalised life forms that are fuelled by the ideals of controlling, mastering and rationalising. Sleep enables us to move beyond these ideals and envision different relations to the self, the Earth and its various inhabitants, affording a distinct transformative vocabulary. This entry exemplifies how dreams may nurture alternative storytelling and the development of coping practices, and how sleep attunes us to particular life-affirming rhythms and temporalities, such as the circle of life, deep time and stillness.

Further readings

Calas, M., & Smirchich, L. (Eds.) (2023). *A research agenda for organization studies, feminisms and new materialisms*. Edward Elgar Publishing.

Gosling, J., & Case, P. (2013). Social dreaming and ecocentric ethics: Sources of non-rational insight in the face of climate change catastrophe. *Organization*, *20*(5), 705–721.

Helin, J. (2019). Dream writing: Writing through vulnerabilities. *Qualitative Inquiry*, *25*(2), 95–99.

Salmela, T., Valtonen, A., & Meriläinen, S. (2020). Accessing uncolonized terrains of organizations: Uncanny force of sleep and dreaming. *Culture and Organization*, *26*(1), 33–47.

Valtonen, A. (forthcoming). *Thinking with the sleeping body: A feminist reimagination of human–Earth relations*. Punctum Books.

85. Sociomateriality and embodiment of leadership

Arja Ropo

Outline of the topic

Materiality matters in individual and organizational lives. Increased engagement with material objects, such as technological devices, computer programs, algorithms, office architecture, and artefacts like water coolers, copy machines, and smartphones have been shown to influence people's actions in a leaderful way by focusing attention, pointing out direction, and energizing them. Unlike mainstream leadership research that views leadership as a human-human relationship, this entry introduces a novel conception of leadership as a sociomaterial phenomenon. Sociomateriality of leadership occurs and can be examined in and through embodied sensuous, felt experiences, emotions, and memories in the social and material environment. This approach to leadership opens up a new avenue to understand how aesthetics of leadership in a material world is a fundamental aspect of innovation and creativity. Furthermore, a sociomaterial and embodied view of leadership brings forth an ethical consideration of materiality, appreciation of the history, and understanding of the importance of emotional engagement in innovation management.

Conceptual overview and discussion

The phenomenon of leadership is predominantly attached to individual leaders and their influence on and interaction with the followers in context. Focus on qualities and behaviors of a leader-person or a top management team are central also in innovation leadership research. Hughes and colleagues provide a review of leadership approaches and mediating variables to produce creativity and/or innovation. It is worth noting that for them the concepts of leader and leadership are synonymous.

Recently within leadership and organization studies, leadership has been increasingly viewed as a post-heroic activity by many, as a plural practice. Even in these collectivist approaches, contention of leadership as a human-human relationship has commonly prevailed. Materiality and embodiment of leadership are typically reduced to the physical bodies of leaders and followers, and their relationships. However, in line with a broader material turn in organization studies, the leadership literature has also drawn focus to the 'thingness' and sociomaterial nature of leadership, suggesting that leadership can also take place in human-material relationships. This conception of leadership has potential to give new insights to innovation leadership theory and practice.

The entanglement of the social (people) and material in the production of leadership calls for theorizing knowledge differently, as embodied and aesthetic. This departs from the intellectual logico-rationality inherent in leader-centric theories developed in the North American tradition of organizational behavior (OB) with a strong psychological emphasis. The embodied and sociomaterial approach to leadership draws on the aesthetic organization theory originally developed by the Italian sociologist Antonio Strati and his colleagues. In aesthetic organization theory, sensory knowledge, embodied emotions, and felt experiences are acknowledged as legitimate forms of scholarly knowledge. Aesthetics does not refer here to beauty or art, but to a way of knowing, embodied epistemology.

Material objects or built environment do not, however, determine human action: they do not have an independent agency over people. In the practice of developing a new product or a creative service application for customers, sociomateriality of leadership entails the notion that there needs to be a human embodied engagement with the material through sensuous experiences, emotions, and memories. Crevani has described this engagement as 'fluid'. It is a process of becoming as a continuous movement of practices and activities in mundane interactions where material objects shape and are shaped by human engagement. From this perspective, leadership of creativity and innovation is about the process rather than about the outcome.

Application: leadership in spaces and places

Salovaara has produced a scholarly documentary film that describes how sociomateriality and embodiment of leadership occur in various organizational spatial settings that call for creativity: an actor in theatre, a shipbuilder at work, and electricians in an old dry-dock. The

following three empirical vignettes are presented as snaphots from the documentary to illustrate how people are engaged with their material environment and how they are led by it. One can notice from the vignettes that no formal leader figure is present and still it is clear that leadership is taking place. The subtitles reflect the core aesthetic sentiments of the actor, the shipbuilder, and the electricians: emotions, sensuous perceptions, and memories.

'The safest place is the stage': actor in the theatre

The actor in the theatre describes the coming opening night as a terrible feeling, with hardly any sleep and no final rehearsal. The stage looks crude and uninviting: dark floor, carelessly painted, deserted cabinets, ladders and wooden boards left here and there. The greenroom is messy with dated furniture, dirty coffee mugs and leftover theatre clothing. There are hardly any signs of what studies and designers keep telling us how creative and inspirational workplaces should look. However, the actor felt that everything was connected to the informal space because it was in the coffee room where everyone could hear what was going on. It was the rough interior, good memories, laughter and joking that gave the ultimate feeling of being safe. The excitement grew before the opening night, and even the actor's home did not feel like the right place to relax and prepare. He took a blanket, lay down on the dark stage – and instantly fell asleep. The anxiety and fear turned into feelings of comfort, safety, and even sacredness. It was not the fancy architecturally designed space where institutional theatres typically operate, but a ragged basement of an experimental theatre that elicited feelings of comfort and calmness. What was most remarkable was the emotionally felt atmosphere of the space and feeling of doing things together. This vignette points out that feelings and emotions are important in a creative work and how embodying the physical space can produce and enhance them.

'You need to feel how the water runs': shipbuilder at work

The shipbuilder's work is fundamentally shaped by their previous crafting experience and sensory knowledge of the materials, both the wood and the crafting tools, and the qualities of the assembly hall, especially its level of humidity as they smell the air and sense the wooden material under their fingers. They feel the shaped forms of the material in the movements of their hand by being in concrete touch with it, as their hand strokes along the side of the boat in the making. Their intense breathing aligns with the work process. One can see and hear how their chest and nose feel the air of the assembly hall. They acknowledge with a humble tone that even a careful planning and crafting cannot ensure a perfect outcome as the delicate wooden material 'lives' once the boat is moved from the assembly hall to the sea: it is literally a process of becoming, fluid and unpredictable that needs to be taken seriously and encountered with a humble mind. The sensuous touches and perceptions point to an embodied and interactive communication with the material. This kind of craftmanship is called for in advancing an innovative idea of a best-performing boat. The process and the outcome need to be loved and appreciated both by the producer and the customer.

'You would be a barbarian to ignore the history': electricians in an old dry-dock

Two middle-aged electricians walk towards an old electricity centre that is in an operational historic dry-dock originating from the 1750s. Old machinery is still there although some people wanted to dismantle it – fortunately it was saved, the electricians conclude. They take a moment to explore the site and reminisce about how the past way of planning electric panels forced the men to work in unsafe spaces and positions. Pride of craftmanship is intensely present when the electricians gaze at the beautifully installed cords that they refer to as a piece of art. They continue to talk about the old and present ways of doing electric jobs in the mainland and on the island where the dry-dock is located. It takes a sense of style to work in a centuries-old building, they assert. It is part of your education to know where you come from – and respect that, they conclude. One needs to be empathetic and protective towards old ways of working and materials. Seeing the outcome and appreciating the skills of their former colleagues encourage them to keep up the high standards of their profession. The vignette suggests that knowing, remembering, and respecting the past while creating

new ways of doing things is needed to sustain a civilization.

Critical summary

Collectivist, plural forms of leadership and practice-oriented approaches to leadership have been criticized for overlooking an intrinsic aspect of leadership – power. However, in organization studies on materiality, and in organizational space studies in particular, power is a key aspect of inquiry. There is a vast literature on how various material objects influence people's lives and actions, as managerial manipulation efforts, for example, through architectural workplace design and other spatial arrangements. Mary Parker Follett offers a meaningful distinction to understand power in two different ways, as power-over and power-with. Both traditional leader-centric leadership research and critical management and organization studies have mainly adopted the power-over view of influence, with minor agency given to other than the formal leaders and managers. The sociomaterial and embodied approach to leadership provides a power-with position to different types of organizational actors, both human and material. They constitute each other in an evolving process through felt emotions, sensuous perceptions, and memories. The material and social are co-constructed in complex entanglements. This sociomaterial and embodied view of leadership can enrich our understanding of creative and innovative processes.

Having aesthetics and embodiment as its theoretical basis, the sociomaterial approach to leadership carries an inherent ethical consideration. Both human and material life call for care and appreciation. As the human and material are mutually constitutive in the sociomaterial view, there is no excuse to harm either of them. Thus, a sociomaterial and embodied view of leadership takes a strong stance for preserving and respecting both the human and material qualities of organizational life and society.

Further readings

Crevani, L. (2015). Is there leadership in a fluid world? Exploring the ongoing production of direction in organizing. *Leadership, 14*(1), 83–109.

Hawkins, B. (2015). Ship-shape: Materializing leadership in the British Royal Navy. *Human Relations*, *68*(6), 951–971.

Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. *The Leadership Quarterly*, *29*(5), 549–569.

Ropo, A., & Salovaara, P. (2019). Spacing leadership. *Leadership, 15*(4), 461–479.

Salovaara, P. (2014). Video: Leadership in spaces and places. *Organizational Aesthetics, 3*(1), 79–79.

Strati, A. (1999). *Organization and aesthetics*. Sage Publications.

86. Sonar-o-Graphy

Vesa Markuksela

Outline of the topic

This entry introduces Sonar-o-Graphy (S-o-G), a methodological approach that combines technology and physicality to decode sensory more-than-human interactions. Rather than viewing sonar simply as a tool for finding fish, Sonar-o-Graphy intertwines the human (researcher) and the more-than-human (e.g., sonar, fish, boat, water, air). As the human body attunes to the resonances within this assembled mesh, it unlocks a sensual understanding of human–animal connections. The embodied sensitivity and sensual perception are elemental for organizational innovation processes, especially in idea generation, breaking free from the rule of conventional thinking and recognizing the role of the more-than-human in knowledge creation.

Conceptual overview and discussion

S-o-G harnesses the power of sonar technology, an acronym for Sound Navigation and Ranging. This technology functions by emitting sound waves into the water, allowing for the retrieval of information about submerged objects and events through the analysis of the returning echoes. Comprised of two integral components – an emitting transducer and a visual display – it was initially conceived for military applications during World War I. Over time, this innovation has undergone adaptation for widespread commercial use, notably in industries like fishing, where it has proven invaluable.

The S-o-G approach draws from more-than-human ethnography. It examines the interconnectedness of humans and more-than-humans and their mutual influences on social practices. In S-o-G, the researcher aims to study and understand the relationship between humans and the more-than-human world through embodied sensations mediated from more-than-human underwater by technology and to the human body.

Sonar technology facilitates the researcher's connection with fish and the aquatic environment in S-o-G. While Western culture emphasizes sight, resulting in the development of highly visually precise sonars, S-o-G delves into the generation of embodied sensations within the complex interactions among humans and the more-than-human realm, including technology, fish, and aquatic surroundings. The embodied sensory and more-than-human knowledge provided by S-o-G could be an asset to organizational innovation processes and idea generation. This kind of knowledge generation would help to break away from the habitual thinking and action patterns of conventional innovating.

Application

> The sonar's large screen shows groups of small fish accompanied by larger counterparts, probably pike. The unexpected stillness unsettles me, a sense of disturbance coursing through. Water temperature registers at +14°C, an ideal environment for pike, with prey in proximity. Despite the favourable conditions, the pike refrains from striking. The catch is almost in the pike's mouth; I almost taste the fish on the surface. The pike doesn't fidget with its fin. This abnormal behaviour triggers a cascade of ponderings: Why doesn't the pike strike? Why doesn't it just open its mouth and sink its teeth into the prey?... My stomach begins to growl with hunger... How does the pike experience this moment?... What would I do if I were the pike?... I compose myself, closing my eyes as my empathic imagination transports me to the water's depths alongside the pike. Gradually, it feels like a pike is swimming towards me ... and an internalized essence of the pike starts to manifest within me. In this submerged communion, the answers to my questions gradually unfold.

The fusion of sonar technology and a skilled researcher captures vivid underwater imagery and initiates a burgeoning connection with more-than-human. Through improvisation, S-o-G blends empathic viewpoints, cultural insights, and a liberating detachment. By envisioning the fish's domain from a distance, the researcher seeks to understand the nuances of its movements and sensations, aiming beyond mere precision in measurement. Deciphering non-verbal, embodied cues, one forges a sensory link and synchronizes itself with the fish's wavelength, tuning into its aquatic existence – one senses like a fish. This innovative perspective reshapes our understanding of the more-than-human relationship and offers a novel approach to generating knowledge for innovation management.

Flat ontology

S-o-G is a process of knowledge production based on a flat ontology. That is, multiple realities, knowledge, and existences can be a mixture but not a reduction of one. Similarly, it emphasizes symmetry by placing humans and more-than-humans on the same playing field and treating them equivalently. Entities and meanings are interconnected and co-constituted. The researcher's body is entangled with more-than-human bodies to produce knowledge while immersed in these configurations. Innovation management has used flat ontology, drawing from actor-network theory (ANT) and socio-technical system (STS) viewpoints to demonstrate how innovation occurs within networks of multiple actors, including humans and more-than-humans, all contributing equally to innovation. While ANT and STS focus on the distributed agency for innovation within relations, S-o-G extends these approaches by focusing on the sensory attunement of the (non)humans within these relations.

Sensual attunement to the agency of the more-than-human

S-o-G endeavours to understand fish and the aquatic environment by acknowledging the agency of more-than-human elements. This requires that humans (the researcher) become attuned to the interplay between technological mediation and the underwater realm, to the movements and rhythms of fish and the aquatic environment. This sensitivity enables the human body to resonate with the interconnectedness of human and more-than-human elements, fostering a sensory knowledge base. This knowledge unlocks the more-than-human relationship and could drive innovation, particularly in the ideation phase, by promoting a deeper understanding of the intertwined dynamics between humans and their environment.

The ideation phase of innovation is often limited by a tendency to stick to familiar paths and a fear of failure. Intertwining the human and more-than-human realms through embodied sensitization could provide a novel foundation for ideas. This process requires the ability to sense resonances in the connection between the human body and its more-than-human counterparts. However, this sensitivity is not just a result of this intertwining but also a prerequisite for perceiving these resonances and cultivating a sensuous understanding within the human form. Therefore, embodied sensitization serves as both an outcome and a requisite for capturing resonances and generating sensory knowledge within the human body amid its connection with the more-than-human.

Critical summary

S-o-G enhances our understanding of the more-than-human underwater world by merging sonar technology data with sensory-based knowledge. It observes physical-sensory practices of both humans and more-than-humans, bridging gaps with cultural practice knowledge. This fusion creates a foundation for empathic otherness and sensory connections, offering opportunities to transcend boundaries in more-than-human relationships. Synchronizing humans with the wavelength of more-than-human elements facilitates sensory-rich body language for effective communication. With a unique emphasis on human body-sensory attunement and resonance with more-than-human entities, coupled with empathic knowing, S-o-G unveils insights into the nature and limits of human knowledge. This innovative approach embraces complexity, fostering diverse perspectives. It goes beyond mere knowledge creation and involves the sharing and application of human and non-human knowledge through imaginative means. Such knowledge creation has the potential for application in organizational innovation and idea-generation processes.

Further readings

Maller, C., & Strengers, Y. (2019). Dynamic non-human in a changing world. In C. Maller & Y. Strengers (Eds.), *Social practices and dynamic non-humans: Nature, materials, and technologies* (pp. 1–22). Palgrave Macmillan.

Markuksela, V. (2023). Beyond the human: A sensory ethnographer's gaze on sportfishing practice. In P. Vannini (Ed.), *The Routledge international handbook of sensory ethnography* (pp. 263–273). Routledge.

Moberg, E. (2018). Enacting affirmative critique: Exploring the conjunctions and overlaps among actor-network theory and feminist new materialist methodologies.

Reconceptualizing Educational Research Methodology, 9(1), 29–42.

Pink, S. (2017). Technologies, possibilities, emergence, and an ethics of responsibility: Refiguring techniques. In E. G. Cruz, S. Sumartojo & S. Pink (Eds.), *Refiguring techniques in digital visual research* (pp. 1–12). Palgrave Macmillan.

Sieklicki, S., & Tanev, S. (2021). From description to action: Actor-Network theory and innovation management. *International Journal of Innovation Management, 25*(10), 1–18.

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