Convergence: Architecture as integrated spatial design

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Let [the architect] be educated, skilful with the pencil, instructed in geometry, know much history, have followed the philosophers with attention, understand music, have some knowledge of medicine, know the opinions of the jurists, and be acquainted with astronomy and the theory of the heavens.

— Vitruvius, Ten Books on Architecture[1]

Vitruvius' seminal work, thought to have been written around 15 BC, gives the earliest comprehensive account of the role of the architect and the nature of architectural practice. In his discussion on education, Vitruvius states that architects need to have a wide body of learning, but cannot be experts in all matters. But he adds that this, too, is not necessary, since any activity is split into two parts: activity and theory. While specialist knowledge is essential to engage with the activity itself, the theory of an activity often shares similarities and points of departure with the theories of other activities, so an expert in one can readily understand the workings of others.

Jonathan Gales, Megalomania, film still, London. Unit 15: Uncertainty (tutor: Nic Clear), Bartlett School of Architecture, University College London, 2011

Architectural education still requires the understanding of a wide range of knowledge and expertise, and while the list of today's skill set has some obvious differences to that outlined by Vitruvius, there are a few notable constants: the ability to communicate through representation; an understanding of form and aesthetics; and a knowledge of history and theory, law and economics. If architecture has since encompassed many other disciplines, it is equally true that many other disciplines have also encompassed architectural skills and practices. The spatial and notational skills of architecture can be found in film and television, computer games, virtual and augmented reality, and web and multimedia design. Architecture is also embedded in installation and land art, as well as performance, interactive and media arts. These practices require an ability to generate, develop, represent and execute spatial and temporal ideas – skills that have been the core of architecture since its inception. The practices of art and design are converging, and the point at which they seem to coalesce is architecture.

Software

One of the ways in which design practices are coming together is through the use of digital tools. While traditional orthographic forms

of representation have been used in design and production environments in similar ways to architecture, digital design and manufacture create huge overlaps in the skill bases of a wide range of outcomes. The 3D software that an architect might use to develop or visualize a project is the same used by a filmmaker to create an animation, or a games designer to create a game environment; it might also be the same software used by a graphic, web or product designer (such as the 3D modelling software Rhinoceros). Even within the construction industry, owing to the rise of building information modelling software (BIM), architects, engineers, project managers and surveyors are not only working on the same project with the same software, but also sharing information within the same modelling environment.

Today's generation of designers are defined as much by their software skills as they are by the titles of their professions. The transfer of skills across software is a basic condition of this paradigm. Despite differences in interface design and some of the logistical parameters of the various packages, the majority of available applications are based on similar methodological epistemologies in their structures. The point about software is not that students simply engage with it to represent their projects, but that they understand it as part of a system that enables them to develop a set of skills that are transferable across a wide range of disciplines, utilizing their spatial skills to maximum effect. Because architectural education is still unique in the diversity of knowledge that students are expected to acquire, they are perhaps better placed than students in other design practices.

Students in architecture schools should be encouraged to be just as familiar with film editing and post-production software, games software, scripting and computational coding, and programming cybernetic systems as they are with CAD and BIM software. What is important in encouraging the learning of software skills (I resist the use of the word 'teaching'), is to create an environment in which students can 'play' with a number of applications, preferably in small groups, where they can help and encourage each other to push the tools – and, even if they make mistakes (which they should), use this to begin to understand the core principles of these tools. Once these skills are developed, they can be applied to a wide variety of other packages.

Vipin Dhunnoo, Game Space, pre-production diagram, Greenwich Maritime, London. Unit 15: Time Machines (tutors: Nic Clear, Mike Aling, Simon Withers), Department of Architecture and Landscape, University of Greenwich, 2013
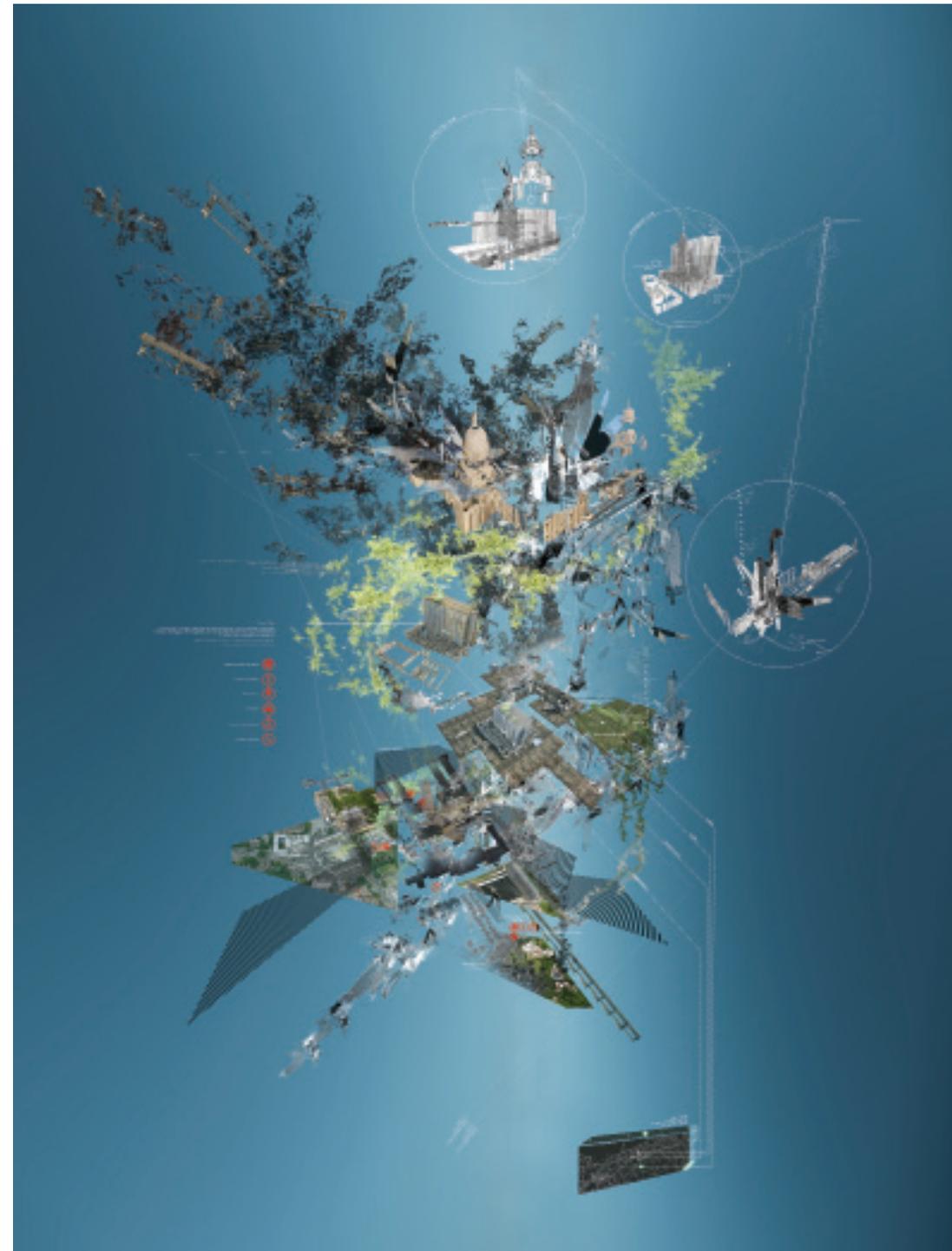
The use of small groups and emphasis on peer support and collaboration within a version of the 'watch one, do one, teach one' approach, is often highly preferential to a more formal classroom scenario, which can render highly uniform and stereotypical outcomes. Additional support in terms of understanding the broader context of architecture, from manufacturing processes to historical precedents, and legislative and legal frameworks to contextual and urban strategies, still needs to be delivered. But even much of that can be plugged into the digital design process in the form of 'intuitive models', based on direct experience.[2] Within the digital design environment, the two activities of doing and theorizing can take place within the same system.

Chris Kelly, RUBIX: Impossible Spaces Augmented Reality Environment, film still, Docklands Light Railway, London. Unit 15: Time Machines (tutors: Nic Clear, Mike Aling, Simon Withers), Department of Architecture and Landscape, University of Greenwich, 2013


Hardware

While architecture is to be found everywhere, the profession faces greater uncertainty in its traditional arena of the built environment. Changes in the commissioning and realization of buildings have meant that the architect's role as the head of the building team is no longer standard practice. In many large projects, changes in procurement methods necessitate that project managers and surveyors are in control, and the financial and technical complexity of such endeavours means that buildings are more likely to be valued for their investment qualities than for aesthetic considerations. In some cases, the architecture is simply the clipped-on surface to an otherwise generic product, and the architect is little more than a stylist.

One of the realities of the current state of the profession is that many younger architectural practices have had to embrace the need to branch out into other design areas, utilizing the breadth of the skill base they acquired during their education to its maximum potential. Practices that 'subsidize' their architectural work by designing furniture and products, engaging in rendering or animation, working as art directors or set designers, designing video games, websites or graphics, exhibitions and interactive media are perhaps as common as those who simply design buildings. Multi- and interdisciplinary ways of working provide creative opportunities to question the traditional model of what an architectural student does when he or she leaves college, and open |up the possibility of architecture as 'integrated spatial design', in which the boundaries between disciplines is actively blurred.

If the idea of the architect as lead professional in the designing of buildings is becoming an anachronism, the need for architects to understand how to operate in broader and more collective ways, with the ability to work and support others, must be developed. Architectural education has to embrace these wider possibilities without watering down its core activities for those who wish to become professional architects. But since the traditional role of an architect can vary from a sole practitioner to someone working in a global office as part of a larger team, even then a wide set of possible skills has to be catered for.

Networks

One of the most important aspects of contemporary design culture is the maximizing of the way in which work and ideas are disseminated
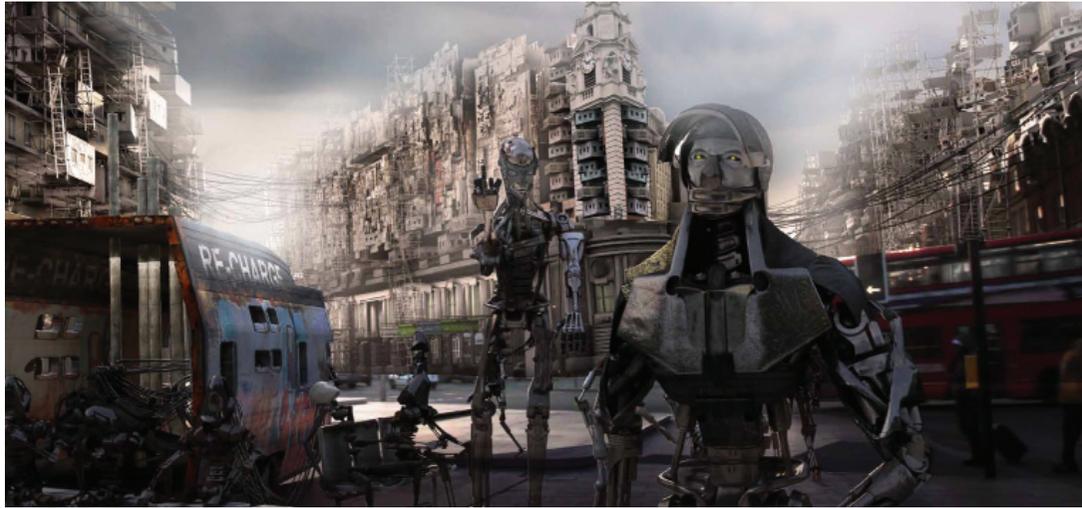
through online media, thus providing a public space that links academia and the architectural profession to other disciplines. From the start of their education, students should be encouraged to post and share their work. The main benefit of this is that they begin to feel that their work is part of a dialogue within a wider design community, and to operate in collective, collaborative and supportive ways that will become essential as they move from being students to design practitioners. It is no coincidence that these considerations are the basic principles behind various 'open-source' approaches, which will become increasingly significant within the design community.

The emergence of online resources – whether websites, video hosting, blogging or social media – has given students opportunities to present their work in ways that were unimaginable only a few years ago. Students can be one click away from seeing their work picked up in the mainstream. In recent years, a number of my students, particularly Keiichi Matsuda and Kibwe Tavares, have had their work go 'viral' as a result of their projects being online.[3] Matsuda has gone on to receive international recognition in the field of 'augmented reality', while Tavares's Masters project won both the RIBA Silver

Kibwe Tavares, Robots of Brixton, film still, Brixton, London. Unit 15: Uncertainty (tutor: Nic Clear), Bartlett School of Architecture, University College London, 2011
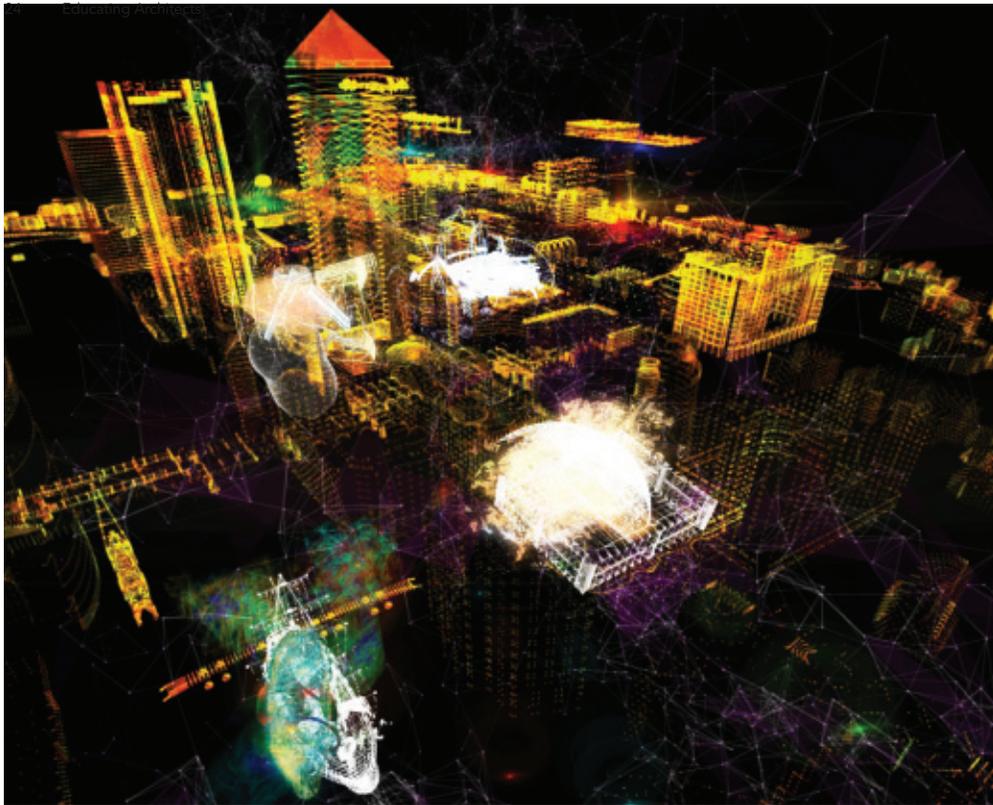
George Thomson, The Resort, film still. Unit 15: Architectures of the Near Future II (tutor: Nic Clear), Bartlett School of Architecture, University College London, 2009

Medal for best postgraduate architectural student project and a special animation award at the Sundance Film Festival. He has also recently (2013) completed a film, *Jonah*, for Film4. At the same time, blog sites such as BLDGBLOG, Strange Harvest, Architecture and Other Habits and Dezeen cover a wide array of subjects and are useful conduits for speculative and idiosyncratic material – more so than mainstream journals, which tend to be industry focused.

Education

Architecture is a fantastic education; it develops a rich and valuable set of skills. Perhaps one of the problems with much current architectural education is that there is too much of an emphasis on students going into the profession, where those skills can often be unappreciated or completely wasted. The reality is the majority of students entering architectural education will not become professional architects. Architecture schools should not see this as a threat, however, but as an opportunity to capitalize on the growing importance of architectural ideas and skills outside the traditional practice of designing buildings. The profession has much to gain from an expanded sense of

Vitruvius believed that there were three departments of architecture – the art of building, the making of timepieces, and the construction of machinery – so contemporary architecture should include all disciplines in which architectural skills are clearly demonstrated. Architecture is well placed to capitalize on its rich history and claim its rightful part in the making of all future spaces, whether actual, augmented or virtual.

A good school of architecture develops students who go on to become competent professionals; a great school of architecture develops students who go on to become whatever they want to be.

Keiichi Matsuda, Augmented (hyper)Reality, film still. Unit 15: Year of the Depend Adult Undergarment (tutor: Nic Clear), Bartlett School of Architecture, University College London, 2010

architectural education, and should treasure and encourage the freedom and speculation of academia, for it is within the spaces of education that the architectural profession can think and develop new skills and ideas.

Education cannot emulate the profession, nor should it simply be beholden to it. It has a duty to critically engage with the changing values, ideas and practices of the profession and set them within the context of the wider changes of society. This implies the need to develop political models to address expanding populations, ethical use of resources and the uneven distribution of wealth and materials – subjects that the profession often tries to ignore. Architectural education may have changed greatly in the last 2,000 years, but the challenge remains the same: to educate students to enable them to generate, develop, represent and execute spatial ideas – some of which will become designs for buildings, although many will not. Just as

Neil St John, Augmented Reality Carnival, film still, Canary Wharf, London. Unit 15: Time Machines (tutors: Nic Clear, Mike Aling, Simon Withers), Department of Architecture and Landscape, University of Greenwich, 2013