

Rethinking the Concept of Social Construction from a Complexity Perspective

Dr. John A. Smith & Rania Hafez

University of Greenwich, Department

Abstract

This paper is an explicitly interdisciplinary critique of the limits of the concept of social construction and the analytic implications of breaking those limits. The proposition rests on the rejection of social phenomena as *sui generis*, in Durkheim's sense and the proposition that they are ecologically emergent outcomes of complex, multi-dimensional processes. The consequence is an epistemic commitment to Fuzzy Logic, deep ecology, a more biosemiotic approach to human understanding, including the prioritisation of survival and the emotions. It draws on Complexity Theory, Biosemiotics, Affect Theory, and a more biologically and emotionally rooted concept of the social.

Key words

Biosemiotics, hedonic and agonistic solidarity, path-dependency, systems far-from-equilibrium.

Introduction

So far as complexity theory is concerned with mutually-causal ‘open’ systems that exhibit self-organisation at macro levels, it must be a fundamentally ecological discipline. The basic assumption of ecological perspectives is that the dynamics of emergent phenomena are interlinked, networked, co-dependent. From this standpoint, there are no such things as *sui generis* social phenomena (in Durkheim’s sense). Put differently, ecological networks imply that *qualitatively different phenomena causally influence each other*. We accept that this questions the viability of sociology as a distinct discipline.

Fuzzy Logic

The first phase of interdisciplinarity clearly follows. So far as social construction – social phenomena in any sense – depend on non-social influences, factors, ‘actants’ – they can only be considered ‘social’ *to a degree*. We are therefore bound to confront what has been called ‘fuzzy logic’. This term is both descriptive and misleading. It suggests a sort of looseness when the reverse is actually the case. For example, agriculture is certainly a social phenomenon, hence the suffix ‘culture’. But it is not only a social phenomenon: soils, water, plants, livestock are at least as important. Otherwise we should be in the absurd position of claiming that famine, poor soils, plant and animals diseases were ‘actually’ socially-constructed. The acknowledgement ‘to a degree’ is more true, more appropriate, more accurate. As Kosko (1994) boldly puts it: “fuzz up, accuracy up”.

Fuzzy logic employs a modification of the familiar term ‘set’. Phenomena belong to fuzzy sets *to a degree*. That degree may be anywhere between 0 and 100% (more commonly 0 and 1). Consequently, a phenomenon may also belong to different fuzzy sets ‘to a degree’. A

winged elephant has scant, but some, membership to the set of elephants and the set of winged creatures and far more to the set of animals humans can ‘socially construct’ – that is, imagine. A mythical animal like the minotaur has rather more credible roots in both general sexuality and humanly constructed attitudes toward it. A dog is the product of domestication but it would be absurd to call a wolf a social construct. Nevertheless, as an ancestor of the dog it is a necessary but insufficient condition for the domestic dog. Following Kosko (1994) and Zadeh (1965) before him, we argue that setting, categorisation, naming in the everyday world are equivalent to the proposing of a fuzzy set. Middle class and working class are cogent sociological examples. So are postmodern, aged, poor, feminist, racist, fundamentalist.

It is instructive to consider the epistemological difference this makes. Consider Kant’s dictum:

Experience teaches us that a thing is so and so but not that it could not be otherwise.

(section B3)

Suppose that thing were a swan. A rather block-busting book has a derived title: *The Black Swan* (Taleb, 2008). It is intended to underscore the unexpected and unpredictable. If every swan you have seen so far is white, there is still nothing preventing the next being black. But this is only half the story. A three-legged swan would not properly be a swan. A dead swan is on the way to being a not-swan. This is what is intended by a fuzzy set: three-legged, not ‘proper’; dead: becoming something else. They belong to the set ‘swan’ to a degree. Black versus white, yes / no, are not epistemologically *adequate*.

The decisive step now consists in applying this reason to Kant’s criterion itself. The named set here is ‘experience’ which is defined by the predicate ‘teaches us that a thing is so and

so but not that it could not be otherwise'. It is also only true to a degree, as our exceptions show. More radically 'experience' is only marginally viable as fuzzy set. A more familiar but less well-articulated description is misplaced formalism. We call the critical project initiated by Kant 'critical formalism'. We shall suggest that it invades and limits much of the contemporary phenomenology loosely based on this or similar grounds. More of that below. For the moment we leave the question hanging: How many fuzzy sets in sociological usage (such as those mentioned above) are actually viable? How many are instances of misplaced formalism?

Complexity also concerns the emergence of order – or at least patterned dynamics – from *determinate* chaos. This term is exact but counter-intuitive. We are not speaking of abstract possibilities but the interaction of systems with qualitative characteristics generating emergent outcomes which themselves have consequent qualitative characteristics. Our favourite example is the social construct known as London. In particular we draw the reader's attention to the *demands* of clean water and waste management that resulted in Bazalgette's sewer construction in the mid-nineteenth century. If ever any social construct was social (and human) to a degree it is this one. There would be a strong case to say that the cholera bacterium played an immense role in the *necessity* of its construction, together with technological advances in microscopy, statistical analysis, and the recognition of micro-organisms.

Complex Systems Far-from-Equilibrium

More formally, complex emergence arises from the interaction of systems far-from-equilibrium. This is Prigogine's (1984) crucial and influential concept. In his work, the decisive factor is heat energy. An object may be understood as a system that given the ambient energy is

stable. A system close to equilibrium may exhibit periodic shifts but the ambient energy promotes return to equilibrium. Whereas:

Prigogine and Stengers argue against this traditional view. They envision entropy as an engine driving the world towards increasing complexity rather than death. They calculate that in systems far from equilibrium, entropy production is so high that local decreases in entropy can occur without violating the second law. Under certain circumstances, this mechanism allows a system to engage in spontaneous self-organisation. (Hayles, 1991, p.13)

As Prigogine (1997) puts it:

Near-equilibrium laws are universal, but when they are far from equilibrium, they become *mechanism dependent*. We therefore have to perceive the origin of variety in nature we observe around us. *Matter* acquires new properties when far from equilibrium in that fluctuations and instabilities become the norm. *Matter* becomes more ‘active’.
(p.64; our emphases)

We are clearly speaking of physical systems here. They are indifferent to or have no interest in relations of stability or instability. They are also a decisive part of the social environment so far as they interact with us. Therefore the concepts ‘climate’ or ‘disease’ have both physical and social dimensions; they belong both to the fuzzy sets of physical and social phenomena, but to different degrees. Further, the character of their belonging is subject to change. Following preventative immunisation, the incidence of measles, tuberculosis or polio myelitis belongs far more to the class of social phenomena (or hygiene management) than to the class of irrevocable physical constraints.

Determinate Chaos & the Living: Autopoiesis and Biological Constructivism

In contrast, living things have a very definite interest in not only stability but in what Maturana and Varela (1972, 1987) have influentially termed ‘autopoiesis’ - founding what is also called ‘The Santiago Theory of Cognition’. They are especially important to our current purposes because they generate a theory of *constructivism* at the bio-cognitive level. If we regard humans as strongly related to the biosphere, then social construction has both a social and a biological dimension. Stated in the terms above, implicitly such ‘construction’ has membership in the sets of physical, social and biological phenomena. This means that *social* construction – meaning human construction – is only part of the whole. Further, such a widespread phenomenon in the biosphere can hardly be itself described as a social contract.: it transcends any such limit.

Maturana and Varela’s *Autopoiesis & Cognition: The Realisation of the Living* (1972) is justly influential but austere in the extreme. A far more accessible account is given in their *Tree of Knowledge: the Biological Roots of Human Understanding* (1987). The subtitles are instructive. So are the dates. They show both neglect and revival. A number of accounts and interpretations are available including Hayles (1991), Capra and Luisi (2014), Smith and Jenks (2006), Byrne and Callaghan (2014) as well as subsequent commentary by Varela and others (1992). Each has its own focus but the key is concept is autopoiesis. The term means ‘self-structuring’ and in the context of living organisms this means the recursive or replicative renewal of the organism’s own structures. Amongst other structures *determined by the organism* is the means of its relationship to an environment: the organism’s own structure determines what counts in and as its environment. This is known as *structural coupling*. Here is Capra and Luisi’s (2014) account:

Every living organism continually renews itself ..[but] the organism maintains its overall identity or pattern of organisation.

The second type of structural change in a living system is that which creates new structures – new connections in the network. These changes, developmental rather than cyclical, also take place continually, either as consequence of environmental influences or as a result of the system's internal dynamics.

According to the theory of autopoiesis, a living system couples to its environment *structurally* – that is, through recurrent interactions, each of which triggers structural changes in the system... Living systems are autonomous, however. The environment only triggers the structural changes; it does not specify or direct them....

Because of this dynamic of structural coupling, we can call the behaviour of an animal intelligent but would not apply that term to the behaviour of a rock. (p. 255)

The last sentences are highly instructive. The 'behaviour' of a rock, or even of a system far-from-equilibrium, in Prigogine's (1997) sense, that is thermodynamically open and consequently able to evolve, change, take new forms is intrinsically different from autonomous living systems. The former are 'informed' by the qualitative characteristics of their components and by the 'new' configurations these make possible. Whilst the sum may be 'more than' the parts, that is, display emergent properties the parts are conserved.

The autonomy of the living, on the other hand, whilst partly dependent on non-living processes and also being a system far-from-equilibrium is at a *further* level 'informed' by its genotype-phenotype mapping. The informational function of this mapping is precisely to delimit the possibility of the more dire consequences of combination. This is why Maturana and Varela

are perceived to generate a *constructionist* rather than a determinist notion of adaptation. This is sometimes seized on by opposing ideological positions in neoDarwinism (see Smith & Jenks 2006, chapter 8) but, ideology apart, the notion of a 'softer' or more precisely, a non-correspondential form of structural coupling is absolutely necessary. Otherwise the autonomy or the *difference* of the living is threatened, literally with annihilation. Neither water nor rock are in quite the same position.

One might say that the living demonstrate intention, or predisposition, or programming, or are fated to pursue, or 'desire' survival (Columbetti, 2014). We prefer the more tautological formulation that the function of the living is survival. We do not imply any sort of vitalism here. The function of the living is a thermo-chemical possibility. One rather epistemologically important consideration follows. It is presented by Varela, Thompson and Roch (1993, 2000) and is somewhat different in tone from the work of his partnership with Maturana.

The first step is to switch from a prescriptive logic to a proscriptive one, that is, from the idea that what is not allowed is forbidden to the idea that what is not forbidden is allowed....This proscriptive orientation shifts our attention to the tremendous diversity of biological structures at all levels. (p195)

The second step is to analyse the evolutionary process as satisficing (taking a suboptimal position that is satisfactory) rather than optimising: here selection operates as a broad survival filter that admits any structure that has sufficient integrity to persist. (p.196)

We may call this the assertion of the principle of sufficiency and note that the decisive dimension is persistence – the persistence of a difference. This will have far reaching consequences.

A number of further issues follow. The first that we want to highlight is the necessary relationship between autopoiesis and operational closure: they are mutually necessary to the 'living'. Such recursive requirements are not exhibited by the non-living: the rock, in this example, is not bound by this type of persistence, though its own qualitative character persists. We prefer to think of this as a difference 'to a degree' though we concede that for others it might be an absolute distinction. Our reserve is grounded in the fact that both the living and the non-living are related thermo-chemical possibilities with their own qualitative characteristics. This is much the same as the assertion that organism and environment (as opposed to a 'barren' physical space) are intrinsically relational - though this again implies a distinction and a characterisation that others might treat differently (Lovelock, 1995; Kauffman, 2008).

However, this observation cuts both ways. If operational closure is a characteristic of the living organism *in* an environment then it is both present and contained rather than 'estranged' as the term closure or the more familiar notion of the Cartesian-Kantian subject might imply. Differently put, the closure is itself an outcome of a previous organism-environment relation. The decision as to what is inside and outside then becomes problematic even though each instance of actual closure makes sense. Similarly, reflecting our caution above the hypothetical 'advent' of the living is itself path dependent on the evolution of a 'closure' – or forms of closure – that precede the distinction. One might say that whilst cognition inevitably separates the organism from the environment because of the requirement of autopoiesis, the organism as a whole is decidedly 'in' the environment. If Maturana and Varela (1987) insist that to live is to know, then we must reply, to know is to be. The subject-object relationship is fuzzy, smeared, indeterminate.

Social Systems as Autopoietic

The key question we now face is how far the concept of autopoiesis can be applied to human social phenomena. The case *for* is led by the idea that humans are part of the biosphere: they have a distinct species being. One does not have to invoke a radical form of social construction, even 'discursive' construction to make the case against. Evolutionary psychology provides the concept of post-natal plasticity, especially evident in humans (Tooby & Cosmides, 1992). Moreover, the undeniable fact that humans are social animals, allied to plasticity, implies not autopoietic processes but more open-system dynamics. These may be said to resemble Prigogine's systems far-from-equilibrium but they are composed of a different field of phenomena and subject to different energetic and informational forces. At the same time, following Prigogine, the emergent phenomena are not arbitrary, but *patterned* or ordered outcomes.

We may now introduce a further concept from complexity theory and develop one mentioned above. The further concept is path-dependency. This simply follows from the notion of self-emergence and may be understood at the physical, biological and human levels. Respective examples might be landscape, ecosystem, patterns of income distribution. We can now clarify the concept of determinate chaos. So far as path dependency is characterised by *realised and unrealised* possibilities, determinate chaos accurately describes both ecological closure and opportunity.

The description of that 'poised' ecology now becomes crucial. For Durkheim, the component phenomena are social and *sui generis*. This is clearly a limited ecology. For Foucault, the components are primarily discursive. This we suggest is an even more limited ecology and certainly more limited than Marx's dialectical materialism. Cognition, technology and economic relations are routinely invoked by sociologists as constituents of this ecology.

What is marginalised, we suggest, is the social role of the emotions, though ironically the entire controversy surrounding post-Durkheimian, post-Marxian and post-Foucauldian *ethics* is unthinkable without them. Each in their own way describe the emotive tensions between the member's interest and those of the collectivity. To say the very least, any viable concept of social construction must take these constituents, their contestation and asymmetries into account.

The character, not to say the scale, of the enterprise becomes clear. The elegant but simple notion of social construction has been replaced by a multi-dimensional an extra-ordinarily tangled notion of complex emergence. Most of the phenomena concerned may be said to belong one set to a degree more than others but the fuzzy overlap is decisive. Our example above, London, shows this decisively but even as 'simple' a concept as a house is the outcome of economic, technological, biological, psychological and social interactions. And those are only the human dimensions. What of the flora and fauna that surround, exploit or are excluded by that construction? To say that a house is a *social* construct, then, may reflect current human domination but is hardly analytically sufficient.

Ecological Affordances

We are in danger of proposing that descriptions are impossible. That may be the case; we accept it. But this should not reinstate any concept of arbitrariness or indeterminate chaos. Whether we can or cannot describe is entirely secondary to the fact that outcomes will emerge. They may not be the ones we intend: given the complexity of 'actants' that is to be expected. But some outcomes will prove, however temporarily to be more ecologically robust than others.

The concept of ecological affordances occurs in the curiously neglected work of James and Eleanor Gibson's ecological approach to perception. James Gibson's *The Ecological Approach to Visual Perception* (1986) is breathtaking in its originality.

According to classical physics, the universe consists of bodies in space.....The terrestrial environment is better described in terms of a *medium*, *substances* and the *surfaces* that separate them..... The earth-water surface at the bottom of a lake is one such, the water-air interface at the top is another, and the earth-air interface is a third –the most important of all surfaces for terrestrial animals. This is the *ground*. It is the ground of their perception and behaviour both literally and figuratively. It is their surface of support.
(p.16; original emphases)

The key concept is grounded *possibility*. This Gibson terms 'affordances'. This is his wife's translation (Gibson, E., 2000):

Affordances are properties of the environment as they are related to the animal's *capabilities for using them*. They include not only objects but layout properties such as surfaces, corners and holes. Affordances are also offered by events, including social events... (p.14; our emphases)

Note the transformation of the more abstract phenomenology of both Maturana and Varela with the clearly economic emphasis of affordances and capabilities of use. This highlights a new edge to the principle of sufficiency discussed above. The openness of possibility is contrasted with necessity of survival, persistence and its opposites: death and extinction. In this sense, we want to emphasise the relationship between the 'advent' of affordance and the establishment of persisting need; that is, *interdependency* rather than autopoiesis. (Though it should be said that

Varela's later work on embodied cognition is grounded in the mutuality of organism and environment.)

The Gibsons' (Gibson, E., 2000) concept of information is also subtly different from that of Maturana and Varela:

The sources of the information are the events, object and layout of surfaces in the world. The correspondence of the information with these objects of the environment, is not one of similarity but one of specificity. The optical disturbances created by an approaching car, for example, do not resemble the car; rather they uniquely specify it and its path of locomotion in relation to oneself.... The possibility of perceiving a property of the environment directly without supplementation [re-presentation] exists when there is sufficient information to specify it *and* a perceiver who is attuned to that information. (p.18)

Where Maturana and Varela's organisms bring forth worlds, so too do the Gibson's but 'emphasising the perceiver-environment fit.' (ibid). We make take this further by introducing the concept of noise. It cannot be adequate to treat the perceiver-environment fit as autopoietic so far as noise is taken as an authentic phenomenon of the environment. This in no way limits the autopoiesis of the organism because noise itself describes a relationship. Just as information is 'for' so noise is 'for' – but crucially – it cannot specify itself for a perceiver, in Gibson's sense.

We can illustrate this with an extreme example. Imagine a fertile egg that contains all the autopoietic possibilities of its species. The nest is raided and the egg is eaten. So far as the embryonic creature is concerned, this is noise; albeit of an extreme kind. But 'noise' is not a

phenomenon of the extremes: it is ubiquitous. So far as we allow any post natal plasticity, any kind of learning, any kind of *exploration* noise is always a possibility. It may be the result of insufficiency of information, ignorance, lack of access, lack of an adequate sensor-‘interpretant’. The noise/information relationship is itself an outcome, not interior to autopoietic process, nor externally, ‘in’ the environment but suspended, or smeared, as it were, between them. Gibson (2000) calls this active information pickup.

We can differentiate two general kinds of active information pickup. Actions can be exploratory...or primarily performative. [The latter] depend on and confirm an already learned affordance. Of course they may also yield knowledge and spur exploration.
(p.21)

For Gibson, the latter happens when performance does not yield the expected, ‘learned’ affordance. This may yield ‘noise’: for example, the car won’t start but I don’t know why; or new information: because it’s not in neutral. To concede autopoietic influences here is fair: humans can drive cars. To call all the involved dimensions autopoietic is tantamount to denying that an external environment – *a world* – exists. This is a constant risk for phenomenological explanations. We should remember that Maturana and Varela do employ the concept ‘world’ (with qualifications) whilst biosemiotics uses the precise term *umwelt*, which they also call, rightly, objective. (see, e.g. Deeley 2003) These equivocations are necessary. They describe something suspended in the organism-environment relationship. Information and noise belong to the same ecology. Echoing our earlier point, it is one thing to assert that the organism, or the (human) community, construct ‘interior’ worlds but they also live in a world that is not of their construction. Then it must follow that every construction is singular and provisional whilst outcomes are affordances of ecological interactions. Of course, the separation is itself in

question – a limited model – when the reality is constantly eco-dialogic. Sociology as a discrete discipline violates that principle.

Realism and Social Construction

Elder-Vass' *The Reality of Social Construction* (2012) is a detailed and convincing argument that seeks to reconcile the apparent opposition between realism and constructivism. One could argue that the attempt is doomed so far as radical constructivism is concerned, a problem which Elder Vass acknowledges: "It is this radical variety that leads to the belief that social construction is incompatible with realism" (p.6). Yet one can (and Elder-Vass does) claim that social construction in the forms of an overarching concept of culture, including practical, linguistic and discursive subsets (p.31) is an undeniably real part of the human social world. To deny this would be tantamount to denying that the social exists (not as an exclusively human survival strategy) or that the biosphere's perceptual systems are 'virtual'. For example, one's sight is not virtual because one cannot see another person's face and back at the same time. This impossibility or 'difference' is itself real. It seems that Elder Vass is on to a winner. Yet there is some equivocation.

Elder Vass promotes the concept of norm circles and throughout the book successfully argues that these are emergent outcomes of human interpretation and action. This nod towards complexity theory, whilst mentioned (2012, p.18) is not developed. The crucial issues for us, is the discussion on Durkheim and collective representations (pp.39-40) We shall abbreviate it as follows:

[C]ritics have suggested that Durkheim sees collective representations as independently real by virtue of existing in some kind of group mind....[T]his is quite

implausible....[T]her is no known mechanism by which groups *as such* can have beliefs...[T]he beliefs themselves always reside in the individual heads of the members’.
(p.40)

Though Elder Vass resolves this in his own way – invoking practical outcomes – and ‘intelligibilia’ the whole wording of inside-outside is monumentally clumsy compared with, say, the ease that even very young children share, communicate and socialise. One could equally well ask: If the representations reside ‘inside’ how do they get ‘outside’? Our response must be: as outcomes they are neither inside nor outside but affordances that suspended and sustained by the relation itself. No doubt ‘intelligibilia’ resolve this issue to some extent but we instead see a wide open door beyond which lies a whole continent of issues: the biological, psychological, semiotic substrate that makes human culture possible.

We should not start with culture and its subsets but with the human as part of the biosphere (and semiosphere – a point we shall develop.) and socio-culture as a subset of the human animal. Reductionism? Decidedly not! Reductionism, if any, is the other way: the habitual reduction of humanity to culture, language, discourse which the ‘realist’ position shares with its ostensible opposites, because it does not step outside the disciplinary limits of sociology and philosophy. Put differently. It is still limited by that discrete and homogeneous set that founds sociology: social phenomena. That set is misleading: fuzz up, accuracy up. Any claim to ‘realism’ needs that! It also needs to concede that extreme ‘constructionism’ whilst actually denying it (such as Nazism or ISIL) is a socially viable outcome, according to the principle of sufficiency to persist outlined above.

A short note on restricted and general complexity

Morin (2008) makes a useful distinction between restricted and general complexity (for a fuller discussion see also Byrne & Gallagher, 2012). For our immediate purposes this can be reduced to question of mutual causality. Restricted complexity admits to ‘new’ outcomes (the classic example is oxygen and hydrogen producing water) but seeks to explain them in terms of first causes. This is not improper but as the term suggests is ‘restricted’. General complexity on the other hand carefully considers *mutual* causality. A clearly related example would be the participation of the phase states of the water cycle in climate systems. Our intention, then, in citing biosemiotics, psychology and semiotic grounds, is not to *reduce* sociology to sociobiology but to re-examine those grounds which have, arguably, been neglected post Descartes, post-Kant even post-Marx, post-Durkheim. Dare we also suggest – despite the ethics of emancipation they are also neglected by post-structuralism?

The (Possible) Contribution of Biosemiotics

Biosemiotics is a fertile and growing discipline. It is not incompatible with the positions of Maturana, Varela and the Gibsons, though they are not routinely cited as important. For our immediate purposes there are two key concepts: the theory of the sign; the notion of *Umwelt*.

We may contrast the dyadic sign theory that routinely informs Sociology: Saussure’s signifier and signified, derived from linguistics, with the triadic theory that informs biosemiotics. The former relation is famously ‘arbitrary’ though in practice it is more properly described as *conventional*. That means, could have been otherwise *but is not*. Perhaps, as we suggest above, Kant’s criterion stands in need of similar modification.

Triadic sign theory is derived from Charles Sanders Peirce. Deely (1990) put this as follows:

Being a sign is a form of bondage to another, to the signified, to the object that the sign is not, but that the sign nevertheless stands for and represents. (p.35).

The third component is the interpretant. It is important to semiotics that this interpretant is not simply human. That would be ‘to mistake the part for the whole’ in Seboek’s famous phrase (see Deely, 2003). Biosemiotics includes then, zoosemiotics and anthroposemiotics. It also claims, more controversially, phytosemiosis; more controversially still, physiosemosis and beyond that the semiosphere (see Hoffmeyer, 2010). These are beyond our immediate scope.

A clear difference now emerges. The signified/signifier relation is no longer arbitrary but one of belonging. We have deliberately not used the term ‘object’. Even though Deely uses it as ‘the object the sign is not’ he later retracts: “Objects [in the proper sense] *are* what the things become once experienced” (1990, p.55 original emphases). Objects, then, are constructs of the zoosemiotic *umwelt*. This is conceptually close to Maturana and Varela and ‘bringing forth worlds. We now confront the vivid and commanding world of (experienced) objects, though the brackets indicate conceptual redundancy. To call this field of construction, the *umwelt*, ‘conventional’ is to demean its immediacy and necessity for survival. Its ecological status is also immediately clear. It is an outcome, a possible outcome, even a necessary outcome. But *necessary* here means *necessary for*.

We now turn to the question of anthroposemosis and the assumed primacy of language. It is perfectly true that naming consists of the habitual representation of signified ‘things’ by arbitrary names, signs, signifiers. But arbitrariness then becomes bindingly conventional. Moreover, there is also a further habitual, or rather *repetitive*, precondition, namely the regular presence of the thing in the environment *in order to become* the object that is named. It is

sometimes said that literacy is parasitic on language (Riley, 1999). We can now also argue that language at its most basic level is parasitic on things. The expression is colourful but not without merit: both relationship and mutual effect are implied. Then, if we detach language from its environment, as discursive constructivism is apt to do, especially through invoking the arbitrary, it reverts from that essential thirdness which is the real-experienced object (in the strict sense) and becomes actually arbitrary, that is, meaningless. Such a conception of language could not be the basis, nor even an essential component, in human sociality, especially given that those societies are locked in an ecological struggle for existence. This is utterly unlike discursive constructivism.

Is this a return to a correspondence theory of truth? It gives it a tiny shade more credibility. It may be true to a small degree. But fuzzy logic has more to offer than that irritating rejoinder. We want to say instead, that to *name*, is to propose a fuzzy set. At the time of writing a squirrel is feeding from the bird feeders. Its presence demands naming as a continuing feature of human ecology. Perhaps 200 metres away are two large oaks. One can see 'squirrels' in them. Or more precisely there are several tiny patterns of light and shadow which can credibly be interpreted as squirrels. As members of a fuzzy set, that's OK. So is the red squirrel which one may or may not have seen, but is not visible or extant here. On the basis of fuzzy sets, these points are acceptable but not on the basis of correspondence. Whilst the phenomenon here may be trivial, the same structural-grammatical and logical considerations apply to sociological terms such as working class, women, children, criminals, madness; or more mundanely: dwellings, cities, roadways.

It follows from these fairly simple considerations that the ecological function of the sign is to inform, for survival or at least persistence. Whether animals can be said to 'classify' is

beyond our scope but they can literally be said to live through triadic sign relations. Information in this sense is neither out there nor in here but suspended in the viability of the ecological relations of the triad. Naming a fuzzy set, then, is functionally necessary to human ecology and existence but that does not guarantee that every specific proposal is ‘valid’ – only that the act of naming is a viable, because persistent, human characteristic. Moreover, validity is itself an *emergent outcome* that has temporal extent. This suggests a continuing ontological similarity at physical, biological and semiotic levels that can be approximated to emerging temporal order(s) in interacting systems far-from-equilibrium in Prigogine’s sense. These could also be seen as finite instances of autopoietic equilibria so far as the organism (or quasi-organism) can be defined as reproducing itself.

Affect Theory

Physical systems cannot ‘care’. It is from autopoiesis or something close to it that anything akin to preference or intention occurs.

Natural selection simply presupposes intentionality – a striving to use Darwin’s own term – that is not accounted for...The selective agency must instead be exerted by some definite agency and this entity is the lineage [which] maintains and continually updates a selective memory...for producing individuals capable of dealing with the future...This agential aspect of natural selection, however, is never admitted in the standard account...Biology cannot have it both ways, though and its continued need for semiotic terms to make the life world understandable seems to indicate that it should drop its Newtonian ballast rather than continue to reject the reality of natural semiosis.

(Hoffmeyer in Copley ed., 2010, pp.32-33)

Newtonian ballast here means something akin to simple physical causality. Elsewhere he says: “Nature gave rise to man and ‘is’ became ‘ought’ –all of its own accord” (Hoffmeyer, 1996, p.129). This seems to us to be at variance with his radically inclusive semiotic organicism. ‘Is’ becomes ‘ought’ immediately the self-interest (for want of a better word) of an organism evolves. One might make this semiotic-ethical event the autopoietic ‘closure’ of the first cells as Hoffmeyer argues elsewhere in that book (p.81).

Colombetti’s (2014) first chapter – *Primordial Affectivity* – cites Spinoza and Heidegger to show that affectivity is the ubiquitous ground of ‘purposeful’ being. She also cites Henry (1965, p.199): “Every thought is an affective thought..” (Colombetti, 2014) and:

...[A]ffectivity for Henry is not restricted to a passive phenomenon underpinned by a more fundamental level of ‘tension’ or ‘power’ but is itself ‘the primary character of everyday life..’ (p.11).

To (marginally) paraphrase her point: “every experience has its own affective tonality” (p.10). Her third chapter – *Emotional Episodes as Dynamical Patterns* - is of especial interest since it accords with the complexity model of emergent self-organisation. This point is crucial:

..what Thompson (2007:10) calls *embodied dynamicism*, namely the view that cognitive systems are not just temporal but also embodied and situated involving multiple simultaneous interactions brain, body and world. (ibid, p.53).

This touches on what Dennett (2003) has emphasised, namely simultaneity or what he calls *parallel* processing. That concept alone requires multi-disciplinarity.

To underscore that need, Turner and Stets (2005) completely undermine the idea that emotions are socially constructed whilst *at the same time* having the title, *The Sociology of the Emotions*.

The argument runs as follows.

[S]ociologists tend to underemphasise, if not ignore, the biology of emotional responses. Biology becomes, in essence, a ‘black box’ that sociologists *refuse* to enter. As a result sociological theories and research will always be incomplete... Sociocultural construction of emotions is certainly involved...but do not trump the neurology of emotions. Emotions are the result [i.e. *outcomes*] of a complex interplay among cultural, *social structural* and neurological forces. The goal should be to figure out how they are interconnected. (pp.9-10; our emphases and additions)

We want to emphasise that not only does the universality of human emotions preclude a simplistic version of social construction but instead forms the basis for that plasticity. Without that foundation, the *mutual causality* could not itself exist. This echoes Morin’s notion of general complexity (above) and once again underscores that reductions to ‘biological roots only’ or ‘social construction only’ are equally inappropriate to mutually co-determined outcomes. In this sense it is true that a socio-biology that emphasises the latter is rightly and routinely seen as unacceptable. But the reverse is also true: social constructionism in its most radical forms makes androids, unhumans. Moreover, Nazism and the like, shows us that such a possibility *can be socially realised*. This is no ‘academic’ point!

Turner and Stets set out a structured classification. The first of these is *Dramaturgical and Cultural Theories of Emotion*. They emphasise the “importance of culture in constraining how emotions are felt and expressed” (ibid, p.64) and that this constitutes a type of strategic

performance *for* others. Finally they note the tension or stress between is felt and what may be expressed. This classification and the next – *Ritual Theorising on Emotions* - they attribute to the legacy of Durkheim. The focus of the latter, however, is on sustaining solidarity: “it does point to an important set of dynamics that arouse or depress people’s more generalised levels of emotional energy” (ibid, p.99). We want to emphasise that energetic agency, that can vary in intensity and is entirely expressed for a social ‘theatre’. Both categories suggest the importance of emotional intensity as active, strategic forces in social construction. Both suggest a far deeper and more complex ontological substrate than ‘discourse’ alone. Discourse is involved, certainly, but not exclusively. That would be, and is, thoroughly Cartesian.

Turner and Sets next two categories *Symbolic Interactionist Theorising on Emotions* plus *Psychoanalytic Elements* deserve extensive consideration on their own. For our immediate purposes we can only consider the following.

For Mead all social behaviour involves *impulses* or states of disequilibrium with regard to the environment. (ibid, p.103; original emphasis)

This is important in that it suggests a commanding or compulsive need that is beyond but must be reconciled with social control. The implied process, then, is a continuous mutual but driven construction of self-and-other. Again the outcome for us is above all, *emergent* and constantly subject to ecological exchange. Like Prigogine’s systems far-from-equilibrium, these exhibit necessarily macro-level interactions. The actual-temporal self *is* those interactions. However, such an outcome is impossible unless the ‘self’ that is brought to bear has some qualitative character - in this case its socio-emotional potentialities, needs and control *repertoires*. Citing Shott, Turner & Setts list, ‘guilt, shame, embarrassment, pride, vanity and empathy (ibid, p.108).

Further, but less obvious and certainly less conscious ‘control’ theories arise from the discussion of Freud (p.151), in particular the notion of defence mechanisms. Contemporary learning theory (e.g. Illeris, 2007; Parker, 2005) also raises this dimension in the form of avoidance and identity defence. Though not identical, this can be associated with what we termed ‘noise’ in the forgoing so far as a filtering process operates to avoid – treat as noise – levels of input that lead to stressful disequilibria. Simple examples, evident in any classroom, are boredom, switching off, attention divergence. Whilst arguably not wholly conscious such processes can have enormous cumulative effect. If, as has been suggested (Illeris, 2007) these factors are adaptively present in learning and, more importantly, in failure to learn, the dimensions then go far beyond the familiar medical versus social models of special educational need, or more simply, poor educational outcomes.

The next two sections are *Exchange* and *Structural Theories of Emotions*. The first involves elements of reciprocity and justice but also notes that ‘the nature of the exchange...and the nature of the exchange ties...all shape the flow of emotions’. (ibid., p.214). The latter ends with this crucial comment:

Despite the fact that sociology is the study of social structure and its effects on individual thought, feeling, behaviour and interaction, there is considerable work to be done on how social structure and emotions are connected and how they operate. (p. 260)

We agree.

Turner and Setts then turn to evolutionary theorising on the emotions, We have developed that elsewhere cannot comment extensively here. However, we see the next section as

the general precondition of such specific considerations and as some response to their comment on the lack of understanding of the relations between social structure and the emotions.

The Social

The social is not a human invention. It is first a survival strategy identifiable throughout the biosphere. This is not best understood, we argue, as a reductive position. It would be better understood, we suggest, following Wilson (2012) that a holistic concept of human evolution is a multi-level one: “group and individual level combined” (p.290) which ‘explains’ or better, *exposes*, the conflicted nature of human motivation, the balance of need and reconstruction, the balance of innovation and risk. This should now be understood urgently at a planetary level. The sixth extinction (Kolbert, 2014) may be triggered by our success but may also engulf us.

Social animals are unthinkable as individuals. This is in a sense true of any species membership since that involves membership in the adaptedness of a specific group-niche. What distinguishes the social, however, is that the primary character of adaptation is to an first to an environment of conspecifics and then to the environment the group inhabits. Our contention is that the structure of the group is the key to, if not identical with, its affective dimensions. This has the potential to ground the inquiry that Turner and Setts demand on the relation of the two.

So called grid-group analysis (aka cultural theory or CT) was founded by Mary Douglas and interestingly developed (amongst others) by Thompson (e.g. 2008) It maps cohesion along the horizontal axis and ‘structure’ or rigidity of behavioural rules along the vertical. The affective and structural character of solidarity is given by one’s position in that space. For example, high cohesion and rigid rules will generate hierarchy and explicit ‘totalitarian’ patterns of domination and subordination - whilst rigidity without strong cohesion will engender fatalism:

keep quiet, get by, survive. Members are not necessarily fixed in position but may occupy different affective positions according to need and opportunity.

We prefer a simpler schema proposed by Michael Chance (1988) who classifies exactly two forms of solidarity in primate and human societies: agonistic and hedonic solidarity. Whilst somewhat neglected (note the date) the issue has received strong contemporary revival by TenHouten (2007).

In the agonistic mode:

[W]e are primarily concerned with self-security,..... being part of a group and,... acceptance by the group. We become concerned with rank, hierarchy, convention and maintaining good order... In this mode our concerns are predominantly self-protective and engage information processing systems that are specifically designed to attend, recognise and respond to potential threats to our physical self, status and social presentation. (Chance, 1998, p.2)

In the hedonic mode:

[W]e are more free to form a network of personal relations that typically offer mutual support. Then we can give free reign to our intelligence, our creativity.....because attention [is freed from] self-protective needs and can be used to explore....[and] process information in quite different ways (ibid)

In the agonistic mode communication is primarily from dominant to subordinate whether we are speaking of monkeys or managers and the primary impulse is to return or conform to the centrality of the dominant. Despite the high arousal of tension and aggression, there is also

systematic inhibition so that both ‘attack’ and ‘escape’ are in practice ‘reverted’ (ibid., p.4) Other recognisable patterns of affect occur, such as unprovoked aggression by the dominant member, perhaps to restate or test the stability of the system. Or again, members will position themselves carefully to maximise advantage and avoid disadvantage. Whilst these observations may be generated from observations of macaque monkeys, they are painfully, hilariously apt descriptions of badly-managed university departments.

Taking that analogy slightly further, the introduction of judgement measures – performance targets and criteria - operate in such a way as to legitimate both rank through ostensible ‘agreement’ and sanctions where the objectives are ‘objectively’ not met. The effect of such regimes on affective arousal, corrosive inhibition and curtailed exploration are widespread and obvious. Even a centralist manager will admit this but will be unable to resist the practical, inevitable, ‘reality’. If someone ‘above’ is not to blame for this inertia it will be the competitor, the world we live in. We will not insult the reader’s intelligence by suggesting that we are free of such affective-pragmatic prejudices.

In the hedonic mode, “except during moments of excitement *the arousal level of the individual is low – this is the hedonic condition* and is responsible for the flexibility of the hedonic mode” (ibid., p.7; original emphases). Now the spontaneous exploration of the environment becomes at least more possible because the affective state of the individual is not preoccupied with the expectations and risk of social structure. This lowered level of arousal also makes possible the *co-operative* exploration of environmental possibility. This is not to say that coercion does not take place, On the contrary, concessions must be made at every point in social interaction. It is the *level of arousal* that matters in both agreements to co-operate (and its costs) and reconciliation (and its costs).

It seems to us that this differential level of arousal and its dynamics that are best highlighted in Chance's formulations than Douglas'. Or to put it more simply: Reader, which mode do you prefer? How, then do you explain the growth of modern agonistic managerialism? We suggest that the simple answer is not that we are speaking of two distinct modes of solidarity but the available spectrum *for* solidarity and the related dynamics of affect. Further, we want to suggest that the place of social actions on the spectrum and their affective demands are highly unstable. Like Prigogine's systems far-from-equilibrium, sudden phase changes are likely according to both the external and internal demands placed upon solidarity. Seen in this way, 'unthinkable' actions such as ethnic cleansing and violent extremism suddenly become proximate to orderly co-operation. This in no way diminishes the healthy *desirability* of the hedonic. It simply means that the 'deciders' and outcomes are not necessarily under human or community control.

Conclusion

Our problematic conclusion is that 'sociology' must redefine itself as a multi-disciplinary field attending to the issues described above – and more that are beyond our immediate scope. The temporal extent of this requirement is double-edged. On the one hand this is clearly a long-term project in which the component disciplines must confront, define and probably, redefine each other. On the other, there is no reason why both theoretic and investigative projects cannot be conducted on a joint basis between scholars from different disciplines.

One may object to this precisely on the grounds of the complex (impossible) demands this makes on both (interdisciplinary) scholars and (multi-dimensional) phenomena. However, we are not suggesting that sociologists become 'absolute' polymaths nor that every phenomenon

is pursued, so to speak, to its cosmic origins and through every future possibility. Laplace's demon is not being invoked. We are rather invoking the much less ambitious (though no less problematic) concept of the fuzzy set: that we risk naming and descriptions of that kind.

On the one hand this stands apart from the critic like Socrates, who presumes ignorance. Kierkegaard calls this the concept of irony. We argue that this stance makes possible what we have called critical formalism as he foundations of a phenomenology of 'principled' disregard or diminutions of experience. This is how Kant's axiom works *idiomatically*.

On the other we have to risk located opinion and finite description. The problem, in effect, is not the making of the description but the principle of sufficiency and persistence discussed above or: the risk that untruths may appear viable. There are many ideological-political instances of this! It is crucial to see that both Socratic uncertainty and ideological certainty are closures that we cannot afford. Fuzzy rigour then becomes a living, pragmatic and ethical demand.

References

Byrne, D., & Callaghan, G., (2014). *Complexity Theory and the Social Sciences*. London: Routledge.

Capra, F. & Luisi, P., (2014). *The Systems View of Life*. Cambridge: Cambridge University Press.

Chance, M., (1988). *Social Fabrics of the Mind*. Hove: Erlbaum.

Colombetti, G., (2014). *The Feeling Body*. Cambridge MSS: MIT Press.

Deely, J., (1990). *Basics of Semiotics*. University of Indiana Press: Bloomington & Indianapolis.

Deely, J., (2003). 'The Quasi-Error of the External World' in *Cybernetics and Human Knowing*, Vol 10 no 1.

Dennett, D., (2003). *Freedom Evolves*. London: Allen Lane.

Durkheim, E., (1964). *The Rules of Sociological Method*. New York: Free Press.

Elder-Vass, D. (2012). *The Reality of Social Construction*. Cambridge: Cambridge University Press.

Gibson, J., (1986). *The Ecological Approach to Visual Perception*. New Jersey: Lawrence Erlbaum.

Gibson, E., (2000). *An Ecological Approach to Perceptual Learning & Development*. Oxford & New York: Oxford University Press.

Hayles, N.K., (ed.), (1991). *Chaos and Order*. London & Chicago: University of Chicago Press.

Hoffmeyer, J., (2010). 'Semiotics of Nature' in Cobley, P., (ed.) *Routledge Companion to Semiotics*. London: Routledge.

Hoffmeyer, J., (1996). *Signs of Meaning in the Universe*. Bloomington & Indianapolis: Indiana University Press.

Illeris, K., (2007). *How we Learn*. London: Routledge.

Jarvis, P., (2005). *Towards a comprehensive Theory of Human Learning*. London: Routledge.

Kant, I., (1975). *Critique of Pure Reason*, Kemp Smith, N, trans. London: Macmillan.

Kauffman, S., (2008). *Reinventing the Sacred*. New York: Basic Books.

Kolbert, E., (2014). *The Sixth Extinction*. London: Bloomsbury.

Kosko, B., (1994). *Fuzzy Thinkin*. London: Flamingo.

Lovelock, J., (1988 & 1995). *The Ages of Gaia*. Oxford & New York: Oxford University Press.

Maturana, U., & Varela, F., (1972). *Autopoiesis & Cognition: The Realisation of the Living*. Dordrecht: Kluwer.

Maturana, U., & Varela, F., (1987). *The Tree of Knowledge: the Biological Roots of Human Understanding*. Boston & London: Shambhala.

Morin, E., (2006). Restricted Complexity and General Complexity, Presented at the Colloquium "Intelligence de la complexité : 'épistémologie et pragmatique", Cerisy-La-Salle, France, June 26th, 2005". Translated from French by Carlos Gershenson.

Prigogine, I. [with Stengers, I.] (1997). *The End of Certainty: Time, Chaos and the New Laws of Nature*. New York: Free Press.

Riley, J., (1999). *Teaching Reading*. Cheltenham: Nelson Thornes.

Shott, S., (1979). 'Emotion and Social Life: A symbolic interactionist perspective. *American Journal of Sociology*, 84. 1317-1334.

Smith, J., & Jenks, C., (2006). *Qualitative Complexity*. London: Routledge.

Taleb, N., (2008). *The Black Swan: the Impact of the Highly Improbable*. London: Penguin.

TenHouten, W. A., (2007). *General Theory of Emotions and Social Life*. London: Routledge

Tooby, J., & Cosmides, L., (1992). 'The Psychological Foundations of Culture' Barkow, J. in Cosmides, L., & Tooby, J., (eds.) (1992). *The Adapted Mind*. Oxford: Oxford University Press.

Turner, J & Stets, J. (2005). *The Sociology of the Emotions*. Cambridge: Cambridge University Press.

Varela, F, Thompson, E. & Roch, E. (1992) *The Embodied Mind*. Cambridge MA: MIT.

Wilson, E. O., (2012). *The Social Conquest of Earth*. New York & London: Liveright.

Zadeh, L., (1965). 'Fuzzy Sets' *Information and Control* 8.