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Meaningfulness

The Growth of Knowledge

My Oxford philosophy tutor, who had a curious habit of crawling under the table while giving his tutorials, commented in a high British voice coming from under the table, 'It's all very well to talk about evolution, Mr. Boulding, but what evolves, what evolves, what evolves?' After 40 years I have at least a glimmering of the answer. What evolves is something very much like knowledge.

Kenneth Boulding, *Ecodynamics*, 1978: 33

What evolves?

In cultural evolution, what is it that evolves? The standard answer is some self-replicating information unit translated into analytic-cultural space. Richard Dawkins' concept of the 'meme', for example, offers the abstraction that culture is made of replicating units of information, enabling us to model cultural evolution as a process of differentially selective information-updating on stochastic priors and discrete choices (Boyd and Richerson 2005; Mesoudi 2011). But does this approach, centred around replicating units of information (as cultural particles), actually make sense as a theory of the growth of knowledge and the dynamics of culture?

We think the answer is no, and for a simple reason: namely the unit of cultural dynamics and of knowledge dynamics is, at least outside of stylized and abstracted analytic set-ups, rarely given and obvious. Instead, it is the very thing that is revealed, or that emerges from the dynamic processes. Our contention is that this unit is what seems to be evolving, or is what is contested in cultural evolutionary processes. We think of it not as a discrete packet of replicating information, or indeed as any gene analogue, but rather as some locus of

connections in a broader complex system (Kauffman 1995; Potts 2000). This unit, in other words, is not a unit of knowledge, or even of discrete information, but rather something different; namely *a unit of meaning* or of *meaningfulness*. This is a statement about a space of complex evolving connections that is closer in analytic form to semiotics than to genetics. In this chapter, we develop this notion of meaningfulness as the basic analytic unit in a theory of the evolutionary dynamics of culture and knowledge.

It is not contentious to define cultural studies as an inquiry into (or a deep reading of) contextualized meaning in the 'social text'. Cultural science has the same objective, but comes at it with an account of the forces that generate and construct meaning. Such forces are often politicized, in a radicalized perspective that is an atavistic feature of cultural studies, as Scott Lash (2007) explains:

Cultural studies has been perhaps primarily concerned from its outset with the question of power, and it is through hegemony – or its equivalent – that its analysts have understood power to be effective. . . . Hegemony means domination through consent as much as coercion. It has meant domination through ideology or discourse.

Cultural science however, is not built around a theory of power as prime mover in the construction of meaning, as 'hegemonic domination through ideology or discourse'. Rather, it sees meaning as the emergent product of evolutionary forces, not revolutionary ones (in the Marxist sense), which operate at the level of the storytelling deme, and about which knowledge forms. Cultural science does make room for a theory of rapid transformation but, following Lotman (2009), we call it 'explosion' and explain it via systems thinking rather than historical 'laws' (see Chapter 9 : 'Exinction').

Knowledge, culture and meaningfulness are distinct domains of evolution – each can be conceptualized and studied separately by holding the other two constant. Thus there are theories of how *knowledge evolves* (in evolutionary epistemology, Popper 2002; Campbell 1960). There are theories of how *culture evolves* (in evolutionary anthropology, Boyd and Richerson 1985; Mesoudi 2011). And there are theories of how linguistic *meaning evolves* (in topological semiosis, Lemke 1999). Cultural science is the endeavour to join these three into a unified theory of how culture evolves through the evolution of meaningfulness, shaping the evolution of knowledge, within and between groups (demes) that are themselves dynamic, scale free and ephemeral.

Something very much like knowledge

David George Ritchie was a late-nineteenth-century Scottish philosopher. He advanced some of the opening arguments of what we now call ‘universal Darwinism’ and was an early proponent of the idea of cultural evolution. He was well ahead of his time, for what came to be known as *consilience* did not seriously develop until a century or so later under the more pointed rubric of E. O. Wilson’s sociobiology (Wilson 1975, 1998). Ritchie recognized early the importance of evolutionary thinking in the ongoing development of the theory of culture and philosophy, and wanted to carve out an analytic space for it. Look at what he wrote:

But in asserting that human society presents many phenomena that cannot be accounted for by natural selection in its purely biological sense, I am not denying the truth of the theory, but rather extending its range. There is going on a ‘natural selection’ of ideas, customs, institutions, irrespective of the natural selection of individuals and of races. (Ritchie 1896: 170–1)

This is an unmistakable agenda to integrate the sciences and humanities through a unified evolutionary way of thinking. A hundred years later, Daniel Dennett, another arch-Aristotelian philosopher, published a classic exposition and defence of Universal Darwinism in *Darwin’s Dangerous Idea* (1995). Dennett opens with a riff on a speculative substance called a ‘universal acid’. Now, because it is an acid, and because it is universal, universal acid burns through everything: nothing can contain it. In a wonderfully vivid metaphor, he proposes that the theory of evolution is indeed such a universal acid: it’s uncontainable, and transforms everything it touches. Dennett’s point was that despite many attempts to resist and contain it, evolutionary theory has been a universal acid that burnt through one hardened dogma after another, inexorably transforming human knowledge of life, the universe and everything. Dennett’s observation about Darwin’s theory extends across the natural and life sciences through engineering, mathematics, computer science, social sciences, the sciences of the mind and more, revolutionizing fields of knowledge, one after the other. The universal acid metaphor indeed seems apt.

Yet, worryingly for Dennett’s thesis – with a few notable exceptions such as Dutton (2009) or Boyd (2009) – evolutionary theory has been widely resisted in the humanities. It has seemingly been contained, or even repelled. With the exceptions of the Foucauldian concept of biopower (Rabinow and Rose 2006;

Flew 2012: 49), biosocial approaches to feminism (Rossi 1977; Ellis 1991) and various approaches to posthumanism (Wolfe 2009), biosocial theorizing is rare in the typical humanities faculty, which is more interested in here-and-now power than in the nature/culture evolutionary nexus. To the extent that evolutionary thinking appears, it is likely to be portrayed as a target of attack, namely 'survival of the fittest' eugenics, for supposed anti-progressive thinking (compare our discussion in Chapter 1). Hence, despite the 'curiously parallel' nature of biological and cultural evolution, it seems that Richie and Dennett, to say nothing of Veblen and Wilson, Dutton or Boyd, among many others, have been empirically wrong in their optimistic sentiment about the universality of evolutionary theory in the domain of human knowledge.

So what gives? Does Dennett's universal acid burn through everything *except* for arts, culture and the humanities? Or is Dennett's conjecture still unrefuted because even universal acid takes some time to seep through (like the lurking Alien's acid blood in *Alien*)? Is culture now, belatedly, an evolutionary science too; or is it not, and never will be, because culture is about values (ethics) rather than facts (causation)? The study of culture and the knowledge domains of the humanities are among the last to be visited by evolutionary theory. We can think of three distinct accounts for this late arrival – that it was: (a) the most successfully defended; (b) furthest removed; or (c) trivial or metaphorical.

In (a) – 'best defended' – evolutionary theory is inappropriate in humanities and culture because alternative better theories have been proposed; specifically various strands of Marxism, Foucauldianism and postmodernism. In (b) – 'furthest removed' – it is because of human exceptionalism in nature, in that our higher consciousness and imagination places us so far beyond the effects of 'natural selection' that we ultimately make our own reality; these ideas travel under various guises of what is called 'constructivism'. In (c) – 'trivial application' – Dennett is wrong because the applications of evolutionary humanities touch but a tiny sliver of the true concerns of humanities interest and scholarship. Human culture is so deep and complex that theories derived from naturalistic explanations will be underdetermined in the realm of human culture.

Best defended

Proponents of 'best defended' point to the deep adoption and vigorous pushback of alternative accounts and narratives, and specifically the defence against the

more laissez-faire implications of so-called social Darwinism. Here evolutionary theory was defeated early in the game by the anti-social-Darwinism rampart against the supposed liberal political readings of evolutionary theory that was prophylactic against its alleged political toxicity.

Furthest removed

Proponents of ‘furthest removed’ allow that evolutionary theory might be relevant in some proto-historical accounts, but it is now an exceptionally weak force because we humans have developed to such an extent that such base forces no longer apply with any strength, or at least not at the upper ends of the spectrum where the best and brightest of human achievements are cast. Explaining how is another matter, although Norbert Elias’s (1939) theory of the ‘civilizing process’ is one influential attempt (see Chapter 4: ‘Malvoisine’). Defeating base instincts in thought and expression, so as to achieve ‘perfection’, is at the core of the Arnoldian high-culture argument. It argues that evolutionary theory may well be true of ‘them’, as we were, but not of ‘us’, as we now are.

Trivial or metaphorical

Proponents of ‘trivial or metaphorical’ argue that evolutionary theory can’t compete with, say, Continental Theory, or to put it another way, their conceptual frameworks are generated by the traditions of German-French philosophy, rather than the ‘Anglo-Saxon’ natural and empirical sciences. They do not deny its potential relevance, but emphasize that it simply does not deliver when confronted by head-to-head competition with the rich, compelling and intellectually exciting arguments from power, politics and social justice that come with the theorized critical readings of postmodernism. Such arguments will perhaps point to Richard Dawkins’ (1976) self-replicating ‘meme’, or to the arguments over various forms of unnaturalness in evolutionary psychology, as *prima facie* evidence of the shallow and crude offerings of a scientific approach as compared to the variegated richness and nuance of even low-brow instantiations of Critical Theory.

These are not unreasonable arguments and it is not our intention to disassemble them. In all three it is an article of faith in modern humanities research that evolution has been variously repelled, inoculated or rebuffed, where it has not simply been ignored (Boyd et al. 2010; Tallis 2011; for a counter-position see Carroll 2011).

The problem of cultural evolution

Yet we maintain that no such thing has actually happened: the evolutionary debate in the humanities *is still yet to occur*. This is not because of effective defence or superseding logic but, rather, because an evolutionary application to the study of culture is simply *a much harder problem than has previously been appreciated*.

The problem has been stylized along two axes as: (1) the search for the 'genes of culture' (i.e. basic micro-units of replication) about which to fix an evolutionary theory of culture; or (2) as the evolutionary foundations of culture arising from an evolved human nature, which constrains the set of behaviours that generate culture and explains culture as a kind of 'extended phenotype' (Dawkins 1982) or social technology. Often, approaches will proceed as a combination of (1) cultural genetics, and (2) the genes for culture (Boyd and Richerson 2005).

'Cultural genetics' is the argument that cultural evolution is emergent from biological evolution. That is a standard and uncontentious line of reasoning; indeed, it is a point argued by Darwin himself and by his later synthesizer Julian Huxley:

... the hitherto unexploited capacity whose fuller utilization not only made possible the rise of man to evolutionary dominance but initiated a new phase of evolution, was the cumulative communication of experience. The resultant sharable, transmissible, and progressively transformable tradition gave rise to a new type of entity or organization technically called cultural, and evolution in the psycho-social phase has been essentially cultural, not biological or genetic. (Huxley 1955: 7)

The upshot is the dedicated pursuit of the cultural equivalent of the gene, or the unit of cultural selection and cultural replication, which supposes the existence of some manner of 'cultural particle' (Findlay 1992; Laland et al. 1995; Pocklington and Best 1997; Mesoudi 2011). The study of cultural evolution will then concentrate on finding appropriate 'cultural replicators' in respect to which the human mind is a 'carrier' or 'vehicle' for such replicating cultural particles. Cultural genetics is then the search for the particles.

The 'genes for culture' argument is different; based not on the search for cultural particles per se, but rather for the units responsible for the ability to create and replicate them in the first place. Specifically, it is inquiry into the evolution of the neurological and cognitive capabilities to create, produce and socially reproduce culture through social learning. These cognitive capabilities

are the elements of cultural evolution. This is the province of literary Darwinism that builds on evolutionary psychology and evolutionary neuroscience. This line tends to pass from evolutionary theory of the mind (shaped by the 'environment of evolutionary adaptedness') directly through to human high culture (art, literature, text, film) without the intervening stage of concern with the broader domain of cultural anthropology or evolution of technology, knowledge, and other 'artifacts, mentifacts and socifacts' (Huxley 1955: 9). The search for the units of cultural evolution is to be found expressed in the human mind, carried by the human genome, and shaped in the human ancestral environment by powerful forces, supposedly 'hard-wired' in the Pleistocene.

Yet, there is little agreement about the appropriate unit of cultural variation, selection and replication. Evolutionary theorists have always proceeded to assume some manner of information-like 'cultural unit', come what may, and at the same time cultural theorists have avoided any such analytic notion, tending towards self-referential definitions (a round-up of these questions can be found in Harold Fromm's two essays in *The Hudson Review*, 2003). The problem surely lies with the difficulty of the question – as per Kenneth Boulding's tutor's query, quoted at the head of this chapter – in respect of 'what actually evolves' in the process of cultural evolution. It took evolutionary biology more than 50 years to get a clear handle on the locus of evolution – from Mendel's pea cross-breeding experiments to Erwin Schrödinger's notion of an 'aperiodic crystal' to the base-chemical and then information-theoretic idea of the gene. This was a long hard struggle to get at the idea of a self-replicating unit of *information* as the basic analytic unit of evolutionary theory, a breakthrough that combined population genetics with natural selection, and which came to be known as 'neo-Darwinism' or 'the modern synthesis' (Huxley 1942).

Yet, as difficult as that challenge was, the locus of *cultural* evolution was and remains an even harder problem (Huxley 1955). It even defeated Michel Foucault, whose lectures on biopolitics were, according to his own account, intended to 'show how the central core of all these problems that I am presently trying to identify is what is called *population*. Consequently, this is the basis on which something like biopolitics could be formed' (2008: 21). But before he could get to population, Foucault felt that he had to understand the 'regime' of 'governmental reason' and 'economic truth' first, and so the entire lecture series (and subsequent book) was preoccupied with neoliberalism and did not return to the genealogy of biopolitics (Flew 2012). Hence, 'population' remained a socio-governmental construct, not a bio-cultural one (i.e. demes). And that is

where it has stayed, even in the rigorous field of social theory, where Foucauldian biopower has drifted more towards *ethics* than to 'causal sequence'. Here's Nikolas Rose (2006), for instance, on the turn to 'bioethics':

On the one hand, our vitality has been opened up as never before for economic exploitation and the extraction of biovalue, in a new bioeconomics that alters our very conception of ourselves in the same moment that it enables us to intervene upon ourselves in new ways. On the other hand, our somatic, corporeal neurochemical individuality has become opened up to choice, prudence, and responsibility, to experimentation, to contestation, and so to a politics of life itself. (Rose 2006: 'Introduction')

This simple observation – that identifying and theorizing the units of evolution was a very hard problem in biology and is an even harder problem in culture – underpins our motivation to develop this work in cultural science, and inspires us to seek a new approach in order to furnish an answer.

For the past century or so, most of those who have sought to generalize the Darwinian approach into the realm of human society and culture have arrived, like Kenneth Boulding, at an answer that makes the cultural unit of variation, selection and replication 'something very much like knowledge'. The most abstracted version is the 'meme', but other proposed cultural replicators include habits, routines and rules. Yet these identifications are not quite right; what evolves in respect of cultural evolution, instead, is not so much gene-like information, or generic knowledge, but something closer to *meaningfulness*: a propensity to peel off new meanings out of existing semiosis, and the diffusion of these through cultural 'units' or demes. In other words, the 'replicator' is an action not a thing; and (like sexual reproduction), meaningfulness is the 'newness' that arises from collisions at the intersection of two or more systems.

Meaningfulness evolves

In cultural science it is meaningfulness that evolves, 'demically'. However, it is misleading to represent this as referring to 'units of meaningfulness', as if merely seeking to re-label 'basic cultural unit' with 'basic unit of meaningfulness'. Instead, our claim is ontological and seeks to develop the idea that cultural evolution is the *emergence* of meaningfulness from *webs of associations* and relations and also by negotiation and *use within a deme* and between demes. Importantly, this is not a thing, or even information per se, but a structure of associations in action. It is these dynamic demic associations that evolve.

Moreover, this occurs semiotically, with reference to what it is not (it's a structure of difference), requiring a 'they' against which the demic meaning of a 'we'-group can be produced. Structures of association are produced when *different* semiotic spheres interact; the web of meaning develops not by internal growth but by productive encounters (not always friendly) between different systems. Cultural evolution is neither endogenous (self-generated within each 'species' of demic knowledge), nor exogenous (supplied from the outside); it results from the continuous and scale free (or fractal) dynamism of myriad systems colliding, clashing and connecting in constant proximity. The model is Lotman's semiosphere, not Shannon's linear communication (which the 'meme' requires). Among the 'systems' that clash are those that we are considering here: *knowledge; culture; sociality; meaning*, which are co-constituted and co-evolved, interinaitmated (Richards 1936: 47–66) or folded (Vedres and Stark 2010); but also distinct, self-organizing and autopoietic, such that new information is generated by the encounter of each with an environment that includes the others, and the identity of each is determined by its bounded relations with others in the system. Thus, meaningfulness evolves and gains identity in a structure of associations with culture, knowledge and sociality.

Meaning and language; meaningfulness and culture

It is difficult to pin down what cultural studies 'is.' For example, in a recent comment to one of us, a senior social scientist suggested that it is more an 'attitude of mind' than a discipline.¹ Thus it is also hard to circumscribe domains of scope or exhaustive accounts of method. But it is nevertheless relatively straightforward to describe broadly what cultural studies is about; what it *does* (Storey 1996; Hartley 2003): namely an inquiry, itself generated as an irritant, provoked by unsatisfactory disciplinary arrangements inherited from the nineteenth century (Lee 2003), into the way in which *cultural meaning*, or even more broadly just *meaning*, is generated or produced through various social groupings, cultural practices or through the agency of broader institutions. Jeff Lewis (2002: 13) defines culture via a 'rather inclusive' approach as 'an assemblage of imaginings and meanings' that may overlap or clash, which operate through 'human groupings and social practices': that is, culture is meaningfulness *in use*; and that usage can be cooperative or contentious.

¹ Michael Hutter, informal conversation, WZB (2013).

Historically considered, cultural studies has also proceeded as an ideologically laden programme that has formulated its analysis with respect to the watchwords of subjectivity, gender, class, identity, nation, power and ideology, in order to develop this as a basis for social critique as a precursor to – or species of – political activism and political practice in the realm of discourse.² Cultural studies is unambiguously ‘out and proud’ as a product and discourse of the left (Dworkin 1997; Lee 2003; Hartley 2003). The programme is to study how meaning is produced in conditions of asymmetrical power relations, for example, through media representation, by and through various culturally impacting institutions (of class, gender, economic organization, etc.). Critique is conducted with a view to resistance to or reform of those same institutions.

The latter process extends to scepticism about the very process of producing meaning itself, leading to philosophical doubts about whether true meaningfulness can be achieved in language at all. Here, Continental philosophy in the German-French tradition signifies the extension of doubt not just to truth claims but to the very conceptualization of truth. Here is where a ‘Nietzsche’ deme (thought-group) parts company from a ‘Darwin’ one: philosophy diverges from science, even though both retain a rationalist method; the one applied to discourse, the other to phenomena outside of discourse. Continental philosophy pursued a rationalist disquiet about what language can claim about non-language, as well as what reason can claim through language (Lucy 2004). It was widely interpreted as ‘irrealism’ or unbelief in reality, otherwise labelled postmodernism, because of its axiom that ‘there is no outside-the-text’ (Derrida 1976: 158–9), but equally widely influential as part of a larger scale effort to democratize and politicize the production of knowledge itself. Thus, cultural science and Continental philosophy share the characteristic of trying to understand how meaning is possible in conditions of uncertainty, using language to analyse meaning; and it shares with science the characteristic of seeking the reduction of error in testable observations about causal sequence in phenomena.

Precursors to a science of meaning

Is there then a science of meaning? *Meaning* generally refers to the sense or significance of a word, phrase or utterance, or in general, of a sign. Charles Sanders Peirce (1868/1977) developed a taxonomy of signs, dividing them into icons,

² Cultural studies remains controversial in wider journalistic debate because of its political agenda: for instance here: www.spiked-online.com/newsite/article/cultural-studies-a-cancer-on-the-academy/#.UxA-Dl40_La.

indexes and symbols. Ferdinand de Saussure (1974) imagined semiotics as a science, although he did not live to develop it from synchronic (structural) to diachronic (evolutionary) status. He divided the sign into signifier and signified. Both these approaches focus on what ‘units’ there might be in the structure of language itself to support the extraction of meaningfulness from organized sequences or arrays of signs. But neither took the further step of seeking scientific explanation for the *uses* of such systems, from which meaningfulness arises.

For that, perhaps Valentin Vološinov (1929/73) was the first to produce a general ‘philosophy of language’ based on usage. His approach to language is dialogic, not based on the ‘smallest signifying unit’ of an abstract structure. It is from this tradition that we should be seeking explanations of meaningfulness; the same Russian Formalist tradition that included serial innovators in the study of meaningfulness such as Viktor Shklovsky (‘defamiliarization’), Mikhail Bakhtin (‘carnavalesque’) and, later, Roman Jakobson (‘functions of language’), Victor Erlich (*Russian Formalism*) and Yuri Lotman. For political reasons (inter-demic Soviet/Western conflict) this promising line of research was slow to influence international scholarship. Much of it was not translated till the 1970s, and by then it had become an arcane branch of literary criticism, caught up in the eddies of structuralism, deconstruction, and so on, rather than driving on from dynamics, sociality and use to a full evolutionary position on meaningfulness, which, however, as we’ve tried to indicate, is nascent, if not named, in Lotman’s work (Ibrus and Torop 2014).

We are left, instead, with the analytic tradition. From the perspective of the utterer, meaning is the intention or purpose underlying such a sign-using communication (‘what I really mean is . . .’); from the perspective of the hearer, meaning is whatever sense is made of the incoming signal (‘I hear you . . .’). Thus, it follows that meaning is not inherent in a sign, but is the product of the negotiated social relationship among sign-users, and dependent on context: meaning requires sociality. Semantics, or the theory of meaning in analytic philosophy, concerns the relation between words (text) or abstract ideas and reality. Plato conceived of ontological ideal types in which we conceive of the meaning of a word, say ‘circle’ as corresponding to this ideal type of circle. John Locke extended this notion of *ideational semantics* to ideal communication in which linguistic meaning is communicated when an idea is encoded, communicated and decoded, such that the same idea is re-presented from one mind to another. Later, Bertrand Russell, following J. S. Mill, developed semantics into a theory of referential semantics or signs. The key insight of referential semantics was to *detach meaning from minds*, as was central to John Locke’s empiricist programme, locating it instead in the

world with the objects of its referents. Shifting meaningfulness from agents to objects was a general *modernist* manoeuvre, fulfilling one sense of the idea of 'objectivity' (Hartley 2009a: 28). The meaning of a word or an expression is simply whatever that expression applies to, thus rendering the word or expression arbitrary but conventional, unlike Plato's essentialist conception.

Yet there was a basic problem with referential semantics, which was revealed by mathematical logic. Gottlob Frege and later Donald Davidson recognized that meaning required more than just ideational connection or referential mapping, but also a sense of *truth*. Frege pointed out multiple expressions could have the same referent without having the same meaning. By adopting Alfred Tarski's theory of truth, Davidson pointed out simply that a referent can *lie*: a logically, grammatically meaningful phrase can pretend to refer to something, but may be a deliberate deception: for example, 'The King is dead' is a logically formed and grammatical sentence, but it is not necessarily true; indeed, it may be a deliberate deception and its meaning may hinge precisely on its truth value. The idea that meaning could be completely understood in terms of reference is only true when all communication is true (Roberts 2008). Worse, it leaves the entire world of imagination, storytelling, drama and dreams – the universe of semiosis – out of account (Eco 1976), and leaves open the unsettling (postmodern) option that all communication is false.

Beyond ideational semantics, referential semantics and truth-conditional semantics is the domain of *meaning in use*. In the approaches outlined above, it was implicit that meaning referred to units of linguistic expression – or words in a language – wherein the relation of natural language to an ideal language (in the Platonic sense) was discussed in terms of a purely logical language. From this perspective, the meaning of meaning was in essence a question for analytic philosophers (such as Frege, Russell, Quine, Davidson).

Meaning in use

But the concept of meaning that pervades cultural studies is of *meaning in use*, not in respect of a natural language compared to a purely logical language, but rather of a natural language compared to all other language-like domains constituted by the construction of expressive 'texts', such as other media – films, songs, art, architecture, and so on, and indeed extending to all social behaviours, actions, interactions that can be variously encoded and decoded, hence 'social text'. In this model, meaning is contextual and intertextual. The meaning of a word, phrase or utterance is not simply what it refers to but its relation to others in the system, and to its 'correspondence'. 'Words mean things that they make us

think of' (Roberts 2008: 7) – the meaning is in the thinking, not the word only. It is the broader notion of meaning-in-use (rediscovered from Russian Formalism) that we take as our referent concept for cultural science.

We also need to demarcate meaning and meaningfulness. *Meaning* is the noun referring to the specific quality of having meaning, or the process of gaining a *recognized* value, salience, seriousness, importance or significance. Meaningfulness is the quality of making meaning in a *sociocultural context*. These do not quite amount to the same thing, as akin to the difference between *truth* and *truthfulness*. An agent can purposefully and honestly pursue truthfulness without necessarily producing truth (thus, news media can be truthful even when in error). Similarly, meaningfulness is a condition of communicative agency, not of the world beyond communication: it is the condition of seeking meaning in the context of sociality and identity (as per Recommendation 2 in Chapter 2: 'Externalism') in the process of interacting with the internal and external worlds of imagination, information and perception, but it is no guarantee of a particular meaning or any meaning at all. Thus, meaning belongs to language and discourse, but meaningfulness belongs to culture, demes and sociality.

It follows that not everything perceived will be *recognized* as meaningful, but will be filtered and restructured according to the sense-making system (e.g. language) in use (i.e. within a cultural context). Hence the structuralist axiom, borrowed from Heidegger, that 'language speaks us'. Meaningfulness is not really an analytic concept, but it is a central human and cultural notion, and closely related to the concept of *value* or *worth* (i.e. that which is meaningful is often also of value or has worth), and thereby of the motives for human action and interaction. We focus on meaningfulness (culture) rather than on meaning (language) because we ultimately seek to connect our analysis with a theory of actual human behaviour and choice in a social context (rather than analytic philosophy or deontic linguistics) and it is meaningfulness that shapes individual choice and social interactions by its connection to value within a deme.

A philosophy of plenty

We pursue a theory of the evolution of meaningfulness, as the evolution of the *quality of meaning across an interacting ('demic') population*. Mark Roberts (2008) proposes an evolutionary theory of meaning that is based on Donald Davidson's (1973) 'radical interpretation' theory of communication meaning. Roberts claims that radical interpretation works as an evolutionary correspondence theory of language in which mental representations of the world become more accurate

through time through the mechanisms of evolutionary variation and selection. Yet Roberts (2008: 29) also recognizes the central analytic problem, namely that although ‘a convenient unit, with a definite information content, the traditional gene, exists in biology, no such unit can be found in a theory of meaning’.

There is no ‘unit of meaning’ in an evolutionary theory of culture. But yet culture evolves as meaning evolves. How is this reconciled? Meaning is about the way we *reduce* the world to make choices in a world of plenty. This is closer to an economic interpretation of meaning, but one that describes a world of abundance rather than one of scarcity. Hartley (2003: ch. 1) dubs cultural studies a ‘philosophy of plenty’. The difference is significant: with scarcity, choice is about trade-off and opportunity cost; a choice is defined with respect to what you give up. But with the abundance of ideas and information, and in a world of ‘productive waste’ (see Chapter 8), choice remains, but its logic is different. In a world of scarcity, a rational agent ranks all options to compute the lowest opportunity cost outcome. But with abundance, or plenitude, this is individually impossible, but feasible when externalized. Instead, choice centres about what to pay attention to, which engages deme-created knowledge. Choice follows the line of meaningfulness, and the role of culture is to construct this meaningfulness as an externalized reference system within which individual meaningful choices can be made. Meaningfulness enables individuals to use the knowledge of a deme.

Knowledge evolves

Evolution means the growth of knowledge. A particularly stark way to think about this, despite modern squeamishness about ‘narratives of progress’, is to conceive of evolution as giving rise to higher-order, more complex or *emergent* levels of organization that continue ‘upwards’ to greater complexity. The futurist Ray Kurzweil (2005) speculates about the possibility of an emergent ‘singularity’ in which knowledge becomes a property of the universe. He reasons how ‘chemical knowledge’ (self-replicating macro-molecules) and ‘biological knowledge’ (genes, organisms) are the lower levels of what might be six epochs of technological evolution³:

1. Physics and chemistry (geosphere);
2. Biology (biosphere);

³ We show successive spheres of the Vernadsky/Lotman approach in brackets; suggesting that there are more ‘spheres’ to come.

3. Brains (semiosphere);
4. Technology (noösphere);
5. A merger of technology with human intelligence;
6. The universe *wakes up*.

Kurzweil's point is that knowledge builds on knowledge. It's a recursive production process in which the output of one cycle is an input into the next. This notion of a technological singularity, in which the growth of knowledge builds upon itself, giving rise to emergent levels of complexity, has been around for some time. It is a standard trope in science fiction; but science is catching up. Reality is about halfway along Kurzweil's runway. Such models paint a picture of human socio-technical progress as an evolutionary feedback process driving a series of emergent 'explosions' or 'take-off' events.

But this is not just speculation or science fiction: it is the mainstream working model in the philosophy of science. Karl Popper (1972) conceives of knowledge itself as growing through an evolutionary process of 'conjecture and refutation', which he saw as similar to the mechanisms of variation and selection. In *Conjectures and Refutations* (1963) he explains:

Science must begin with myths, and with the criticism of myths; neither with the collection of observations, nor with the invention of experiments, but with the critical discussion of myths, and of magical techniques and practices. The scientific tradition is distinguished from the pre-scientific tradition in having two layers. Like the latter, it passes on its theories; but it also passes on a critical attitude towards them. The theories are passed on, not as dogmas, but rather with the challenge to discuss them and improve upon them.

The idea of the growth of knowledge as an evolutionary process – whereby one generation's truths are the next generation's 'myths' – extended to the study of other domains of distributed knowledge. Friedrich Hayek had made a similar point about the market and price system, in which entrepreneurs were agents (like scientists),⁴ who proposed conjectures of what might produce value or profit, with the market system then acting as the selection mechanism. This idea is central to Austrian and evolutionary economics. For Hayek (1945) 'the economic order is a distributed and coordinated complex structure of knowledge'. Hayek's (1952) *The Sensory Order* made a similar claim proposing

⁴ This same argument was made by the psychologist George Kelly (1955) in *Personal Construct Theory*, which modelled ordinary human behaviour in any complex environment as if the person were acting 'like a Popperian scientist', proposing hypotheses about what is going on within a frame of explanation, and seeking verification or refutation of these conjectures.

a theory of the mind as a complex structure of patterns and conjectural pattern matching.

An evolutionary approach to the study of culture as a growth-of-knowledge process inevitably invites comparison with other models and frameworks of socio-technical, economic and cultural evolution. The contention of cultural science is that they are all of a 'Darwinian' family, each making more or less the same claims and following the same logic of variation-selection-replication, differing only in instances relating to how the evolutionary mechanisms work and assumptions about what specifically is evolving.

The fact of the matter is that evolutionary theories in social sciences have a long history that plainly predates Darwin's 1859 *Origin of Species* and traces most directly back to the work of the eighteenth-century Scottish Enlightenment of David Hume, Adam Smith, Adam Ferguson and others. They recognized that the existence of order in society did not necessarily require a grand planner but could spontaneously emerge by self-organizing processes. Evolution theory first developed, in fact, in the human and social sciences, as a way of explaining emergent sociocultural and economic order, and then later transplanted into the natural sciences. Cultural science repatriates a native concept.

Consider a few examples. In the 1960s and 1970s several interdisciplinary scholars developed theories of 'societal evolution.' These were endeavours to integrate open system-dynamic theories of societal, technological and ecological systems that integrated proto-theories of complex systems and co-evolutionary dynamics. The work of Nicolas Georgescu-Roegen (1971) is a singular contribution that introduced the entropy law (the second law of thermodynamics) to establish an 'arrow of time' in economic dynamics, setting up the logic that only the growth of knowledge can offset this otherwise inexorable collapse (entropy) of economic systems.

Another pioneer was Kenneth Boulding (1978, 1981). Boulding's central idea was that social and economic systems are ultimately made of knowledge, and 'what evolves' in the process of societal and economic evolution is knowledge. He drew on French philosopher Teilhard de Chardin's 'noösphere' (sphere of thought or knowledge) to refer to this domain, as a parallel of the biosphere. In 'Economic development as an evolutionary system', Boulding explains that:

What the economist calls 'capital' is nothing more than human knowledge imposed on the material world. Knowledge and the growth of knowledge, therefore, is the essential key to economic development. (Boulding 1977)

Joseph Schumpeter developed the theory of entrepreneur and innovation driven economic growth and development through the evolutionary mechanism of ‘creative destruction.’ In a famous passage Schumpeter (1942: 82) wrote:

Capitalism, then, is by nature a form or method of economic change and not only never is but never can be stationary. And this evolutionary character of the capitalist process is not merely due to the fact that economic life goes on in a social and natural environment which changes and by its change alters the data of economic action. . . . It must be seen in its role in the perennial gale of creative destruction. (1942: 82)

Modern evolutionary economics builds from Richard Nelson and Sidney Winter (1982), who integrated Veblen’s evolutionary theory of culture (institutions as habits and routines; technologies as knowledge) with Schumpeter’s evolutionary theory of firms, markets and technology, to create a model in which what evolves are the *habits and routines of firms*.

Technology evolves

Brian Arthur (2009) explains, from a complex systems perspective, what technology is and how it evolves. He builds this around three core principles:

- All technologies harness and exploit some phenomenon (technologies put ideas to work for human purposes).
- All technologies are combinations (that’s why technological advance accelerates).
- Components of technologies are also technologies (i.e. technology is recursive). This explains why as technology advances, markets increasingly resemble complex ecosystems.

For Arthur, the unit of a technology is the exploitation of some natural phenomenon that is then modularized, so as to be combined and recombined. Kevin Kelly (2010) represents technology as an ongoing supra-critical system that generates solutions to problems, wherein those solutions create new problems, which it then solves, creating new problems, ad infinitum (an obviously Popperian formulation).

Attention to modular components and the decomposability of complex systems (Simon 1962) inverts the standard question of ‘What is it made of?’ or ‘What is the unit of selection/variation/replication?’ Instead, in open systems, the central question becomes how these basic units or stable modules are

revealed or discovered by the system itself. We think that the cultural science problem of the evolution of meaningfulness in culture is more like this, in seeking to discover a stable locus of cultural connections that emerges to define a deme.

Social learning

In evolutionary theory of culture, it is also units of knowledge that are said to evolve. Edwin Tylor (1871), a pioneer of anthropology, defined culture as ‘that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society’. This argues that these elements are the units of culture; the mechanism by which they evolve is *social learning*. Luca Cavalli-Sforza and Marcus Feldman (1981) and Boyd and Richerson (1985) established the mathematical models and quantitative approach that defines modern work on cultural microevolution in terms of social learning. Richard Dawkins (1982) similarly argued that the realm of ideas and human culture did not require a separate explanation, but could be naturalized as an extension of biological evolution. For modern Darwinian anthropologists, such as Alex Mesoudi (2008, 2011), cultural dynamics is an evolutionary social learning process with variation and differential replication operating over the space of possible units. Mesoudi and others argue that this approach can provide a general framework for social science (Hodgson and Knudsen 2010).

A different tack is taken by a handful of Renaissance scholars, who have sought to introduce Darwinism into the humanities with a particular focus on ‘high culture’ of art rather than on broader notions of material culture in anthropology. Specifically, Dennis Dutton, Joseph Carroll and Brian Boyd build out from an evolutionary theory of the human mind in which evolved human universals (‘instincts’) shaped by natural and sexual selection form patterns that can be observed in literature, stories and aesthetic choices. The Dutton/Carroll/Boyd strategy does not seek to explain human culture per se from an evolutionary perspective, but rather seeks to develop the proposition that the elements of human culture (art, stories, literature; ‘mentifacts’) are the product of evolved human minds, and can therefore be explained using evolutionary theory. What they are arguing in effect is for the evolutionary explanation of the particular salience of aspects or patterns within human culture. We agree with this, but think rather that what they are really alighting upon is an account of meaningfulness (not minds).

Meaningful knowledge evolves

We don't disagree with the significance of social learning of units of knowledge. But our problem with these accounts of sociocultural and techno-economic evolution is that they do not explain how these cultural units – that subsequently replicate through social learning – get established in the first place. The cultural science approach is to argue that it is not knowledge that evolves per se (in an information theoretic sense), but rather meaningful knowledge (in a semiotic sense).

The cultural evolution of gentlemen (a short but instructive digression)

A key breakthrough that underpinned the British Industrial Revolution (1760–1830) was the invention and then large-scale production of the gentleman. The gentleman was a cultural innovation. It was made from recombined elements of the idealized British aristocrat – such as a sense of fair play and decency, *noblesse oblige*, and a disinterested pursuit of truth (. . . and pheasants) – mixed with models of integrity drawn from other chivalrous romantic cultures and from artistic tradition. But the concept of the new gentleman, post-Cervantes' *Don Quixote*, also combined more applied components that spoke to a secular and material focus with 'making and doing' (i.e. Francis Bacon's *fabricants* as well as *savants*) or what we now call an engineer. The result was the *gentleman scholar*, concerned with science and literature; the *gentleman adventurer*, concerned with romance, leadership and discovery; and the *gentleman entrepreneur*, concerned with business and innovation.

These gentlemen and gentlewomen were entrepreneurial drivers of culture and society and economy. How so? They created new demes from extant cultural combinations. Indeed, in many cases there were not individuals, but societies – the most seminal being the *Royal Society of London for Improving Natural Knowledge* (1660) and the *Lunar Society of Birmingham* (1775). Crucially, their status arose not from aristocratic 'blood' but from the fruits of entrepreneurial success – money. Charles Dickens caught the unsettling implications of that transformation in *Great Expectations*. The main character, Pip, is the very model of a modern invented gentleman.

This observation about gentlemanly cultural 'dememanship' (so to speak) is not novel to us. It was made by Deirdre McCloskey (2006), who put the point in terms of the more general concept of 'bourgeois virtues'. The emergence

of gentlemanly social norms amenable to a civil society also benefited a growing commercial society. As economic historian Joel Mokyr (2009: 387) explains, 'A new concept of gentleman arose, someone who did not behave opportunistically and could be trusted'. This was a broader cultural moment, as the winningly named Samuel Smiles (1859) writes in the first book of the future publishing mega-genre, called *Self-Help* that:

The true gentleman has a keen sense of honour, scrupulously avoiding mean actions. His standard of probity in word and action is high. He does not shuffle or prevaricate, dodge or sulk; but is honest, upright, and straightforward. . . . Above all, the gentleman is truthful. He feels that truth is 'the summit of being', and the soul of rectitude in human affairs.

The gentleman was a product of a new cultural form emerging from a hybridized recombination of extant forms that then spreading through a population by a process of social imitation, entrained signalling and sign mechanisms, with a renewed or reconstructed focus of meaning. This new cultural form became a platform upon which many of the commercial and technological and industrial features of the British Industrial Revolution subsequently depended (Clark 2007). The cultural innovation of the gentleman was a deme of externalized knowledge within which new knowledge was created.

The nature of culture and beyond biosemiotics

Paul Willis captures a central presumption of the cultural studies canon: that much of what we take to be natural is actually cultural, which is to say socially constructed.

It is one of the fundamental paradoxes of our social life that when we are at our most natural, our most everyday, we are also at our most cultural; that when we are in roles that look the most obvious and given, we are actually in roles that are constructed, learned and far from inevitable. (Willis 1979: 185)

The evolutionary canon reverses this, arguing that much of what we take to be cultural is actually natural, which is to say evolutionarily constructed. Cultural science seeks to intermediate this inquiry into the nature of culture.

The appearance of naturalness may be due to familiarity or mutual tacit consent. The work of politically oriented cultural studies since Barthes (1972), argues that culture is an ideological construction, for example, in the media,

popular culture and commercial-political activities that strategically deploy signs and symbols to ‘naturalize’ socially constructed meanings, subject-positions and social relationships of subordination and hegemony. A significant task of cultural studies is to identify, reveal, ‘demystify’ and critique such reified constructs – that is, to deconstruct them.

But an equally significant task is to connect ‘our’ frameworks of explanation with broader understandings of the world. Practically, this means engaging with evolutionary theory as the framework with the best claim to offering an account of human nature to underpin a science of human culture. At the analytic core of evolutionary biology is the notion of self-replicating information. It is widely held that to extend the genetic model of evolution to the study of cultural change it is necessary that cultural units are identified and analytically represented in such a way that they are analogous to biological units of selection. A foundation of cultural science is to explain why this is wrong from an evolutionary semiotic perspective.

Terrence Deacon (1999) has explained the concept of a meme as a degenerate concept of a sign, that is, without the full triadic structure proposed by C. S. Peirce, but instead, only with the ability to be copied and thus to replicate (Pocklington and Best 1997; Wimsatt 1999). Memetics is thus semiology with the most analytically and empirically interesting bits discarded. But a better angle on this is to reverse the argument and instead of using it as a critique of memetics – which was Deacon’s point – using it instead to develop the idea that semiotics can provide a general framework for the study of biology and life through the observation that the domains of life and the domain of sign systems are coextensive.

The approach that does this is called *biosemiotics* (Kull 2000; Kull et al. 2010). Kalevi Kull (1999: 386) indicates its scope and ambition:

Biosemiotics can be defined as the science of signs in living systems. A principal and distinctive characteristic of semiotic biology lays in the understanding that living entities do not interact like mechanical bodies, but rather as messages, the pieces of the text. This means that the whole determinism is of another type. . . . The phenomena of recognition, memory, categorization, mimicry, learning, communication are thus among those of interest for biosemiotic research, together with the application of the tools and notions of semiotics (text, translation, interpretation, semiosis, types of sign, meaning) in the biological realm. However, what makes biosemiotics important and interesting for science in general, is its attempt to research the origins of semiotic phenomena and together with it to pave a way of conjoining humanities with natural sciences,

culture with nature, through the proper understanding of the relationships between external and internal nature.

As evolutionary theory has come to focus on information replication and processing, with greater attention to sexual selection (which is largely about signalling and communication) compared to natural selection, and with the rise of epigenetics (Jablonka and Lamb 2005), generative grammars in complexity theory (Kauffman 2000), neural Darwinism (Edelman 1987), it is unsurprising that there has been a revival of interest in a richer communication-based and sign-based approaches to evolution. The rise of biosemiotics is not simply a further wrinkle in the neo-Darwinian model. It offers an entirely new view of evolutionary phenomena by emphasizing meaning, as Jesper Hoffmeyer (1996: 61) explains:

In the biosemiotic conception, the life sphere is permeated by sign processes (semiosis) and signification. Whatever an organism senses also means something to it – food, escape, sexual reproduction etc., and all organisms are born into a semiosphere, which is to say a world of meaning and communication. . . . The semiosphere poses constraints or boundary conditions upon species populations since these are forced to occupy specific semiotic niches i.e. they will have to master a set of signs of visual, acoustic, olfactory, tactile and chemical origin in order to survive in the semiosphere. And it is entirely possible that these semiotic demands to populations are often a decisive challenge to success. For perhaps more than anything else, organic evolution testifies to the development of ever more sophisticated semiotic means for surviving in the semiosphere.

He concludes (1995: 369) with a bid for ‘semiotic freedom’:

The most pronounced feature of organic evolution is not the creation of a multiplicity of amazing morphological structures, but the general expansion of ‘semiotic freedom’, that is to say the increase in richness or ‘depth’ of meaning that can be communicated.

Yuri Lotman’s (2005) concept of the semiosphere thus provides a foundational analytic concept to bridge us from cultural studies and evolutionary cultural theory to a more fully fledged cultural science. At the heart of what we take from the semiosphere is the concept of an *umwelt*. It is often taken to mean ‘environment’, but is better translated as ‘self-centred world’, which is a building block for a demic conception of knowledge. In the context of an early biosemiotics, Jakob Uexkull defined an *umwelt* as ‘constituted by a more or less broad set of elements called “causes of significance” or “marks” which are the only things that interest the animal’ (Uexkull 1973). For Uexkull, these marks were the significant things

in the environment that the animal paid attention to, and which thus constituted the animal's environment as perceived and communicated with, in the sense of the signs that it perceived and reacted to; in cultural science this is the signified and storied boundary of the deme. Knowledge is created and stabilized (generated and contained) within an *umwelt*.

The idea that Lotman picked up and developed, building on the work of Vernadsky (1938, 1943), is that when two or more *umwelts* interact this creates a *semiosphere*. Hence Lotman's contribution to this conception of animal-in-symbolic-environment is to recognize that animals, including human animals, also make signs of causes of significance, as well as perceiving and reacting to them, and that these productions then constitute the environment of other such animals.⁵ The concept of the semiosphere is that of a mutually constructed sign-space based on natural signs (animal behaviours and environmental cues) but which extends to artificial (produced or made) signs.

The space of the 'evolution of meaning' that we seek to investigate ranges across this domain. Our purpose here is not to set out biosemiotics as a lodestar in itself, but to turn it around again and suggest how this approach is an instance of what we mean by the reformed notion of the evolution of meaning within a deme. Meaning is not just something that we critically read into things, 'through a text deeply' as it were. Meaning is not just a referential signifier that can be 'interpreted' post hoc. Meaningfulness is constructed and communicated in a semiosphere. Meaning evolves in the semiosphere, and the semiosphere is made of interacting *umwelts*. The semiosphere is a competitive environment in which signs are engaged in a competitive 'struggle for attention' (Lanham 2006) in a world that is superabundant in such information and signs.

Two key factors distinguish evolution (of meaning) in the semiosphere from evolution (of genes) in the biosphere:

1. Signs can co-opt other signs;
2. New signs can be identified or created in situ.

Signs can co-opt other signs because the production of signs is made with signs, recursively. The process of creation may literally be combining signs into another sign, or in more roundabout ways by referencing other signs, by building upon them, negating them, parsing them, entraining them, and so on. This is a lot more like a group selection or multi-level selection process

⁵ An environment of mutually constituted produced signs is also central to 'costly signalling' in the evolutionary theory of sexual selection, for example, the 'handicap principle' of Zahavi (1977).

than an individual selection model (Sober and Wilson 1998; Runciman 2009). The meaning in a sign system is constrained by recombination, so a larger sign system space has more possible meanings than a smaller space (Yuri Lotman bells this particular cat with the concept of ‘explosion’). This same process may also give rise to further *emergent* units as particular systems of sign referents become self-generating or autopoietic (Maturana and Varela 1980; Potts 2000). New signs can be created, identified, discovered or revealed as additionalities to the system of signs, not necessarily displacing existing signs, but changing the relations among them. ‘The evolution of knowledge builds on the emergence and evolution of signs’ says Carsten Herrmann-Pillath (2009: 18). This is what makes an evolutionary semiotic culture productive; first of meaning, and then of things.

Meaningfulness and marriageability

Yuri Lotman’s concept of the semiosphere offers a systems model to analyse ‘the clash of systems’ as a condition for the existence, interaction, and sustainability of meaningfulness and creativity. Individuals on the ground may experience competitive and adversarial relations, even extending to life-or-death conflicts, as between predator and prey in an ecosystem. But these clashes may, at a higher level of integration, be seen as part of a structure for maintaining sustainability among different users of a given environment. Conflicts of this type may be ‘creatively destructive’ in the Schumpeterian sense, leading to greater diversity across the system as a whole.

A traditional structural-semiotic explanation of the ‘play of difference’ is confined to the operations of textual signs (Derrida 1976: 278–94). But Lotman’s system-semiotics is social. It derives thought (new ideas) not from mind or even from *langue* but from interlocution; text is always dialogue. Here, where system-differences between the textual and the social intersect, is where meaningfulness is most productive. Thus, the attempt must be made to link semiotic systems like language with social systems like cities, and both with knowledge systems like cultural theory, to ascertain how the interactions (clashes) within and among them can be seen as related and mutually causal. Apparently different phenomena – creativity, cities, complexity and ‘the clash of systems’ – may be seen as components of larger interacting spheres (Page 2011). Difference, dialogue, turn-taking, conflict, and so on, are not evidence of mutual incompatibility or

antagonism, as critical theory has tended to assume since Marxism, but rather are part of a global process of cultural productivity.

A good practical example of how the 'clash of systems' generates productivity out of difference is *marriageability*. Marriage is easily understood a near-universal cultural practice with wide local variations, that is both personal and economic. It requires the bringing together of different families, with the risk of incompatibility and conflict as well as the hope for cooperation and reproductive success, on which individuals, social systems and biological species equally depend. It is always caught up in other systems – religious, legal, economic – and in some places is more formal and rule-bound as a result.

However, marriage also requires an open system for optimum choice of partners. Indeed, for George Bernard Shaw, 'complete marriageability between all sections of the community' was the only test for 'practical as opposed to arithmetical equality' in society (Shaw 1937, v: 66–9). In the 1920s and 1930s when he wrote that, there were still highly marked class differences that separated 'high society' from their live-in servants, so this remark must have seemed provocatively socialistic – and was presumably so intended, written as it was in *The Intelligent Woman's Guide to Socialism and Capitalism*, which was addressed to Shaw's sister-in-law Mary (who was married to a peer, Brigadier General Cholmondeley).

Its egalitarian challenge remains a very good test for sociocultural equality and the open society, as current international campaigns against forced marriage and for gay marriage amply demonstrate. But any such equality is produced out of difference. The incest taboo requires marriageability to be looked for among non-kin, the very neighbours from among whom enemies are also selected (Leach 1964). The same overall 'universe of the mind' generates positive links (love; marriage; offspring), and negative ones (Malvoisine, warfare, death) from the same structure of relationships. It is this type of risk-laden 'clash of systems' that characterizes not only marriage and enmity but also the ground and the terms on which they are staged (cities and culture). In other words, at the level of populations, rather than individuals, difference generates productivity and sustainability.

Contesting cultural order

A major source of today's theoretical drifting is postmodernism's aggressive vocabulary of subversion, demystification, transgression, violence, fissures,

decentered subjects, fragmentation, dismantling master narratives, and so on. . . . (Patai and Corral 2005: 12)

For some, cultural studies is a political front line in the history of ideas and a bleeding edge of progressive academic social practice, as Patai and Corral (2005) intone. This line is often then aggressively naturalized, as for example by E. O. Wilson (1975: 4), who held that:

It may not be too much to say that sociology and the other social sciences, as well as the humanities, are the last branches of biology waiting to be included in the Modern Synthesis.

This is the contested and defended frontier of modern cultural theory, the ‘Maginot Line’ of C. P. Snow’s ‘two cultures’. In this world, cultural science is the endeavour to broker a constructive peace in this ongoing cold war over the analytical ownership of culture. The basic terms of settlement are that:

- Culture is not the issue, meaningfulness is;
- Meaningfulness evolves;
- Meaningfulness is complex and semiotic.

Evolutionary theories of information-based replicators only begin to get at the deep complexity of cultural evolution: there is a lot that they can learn from cultural studies. By the same token, the standard dynamic models of cultural studies are seriously flawed: they should be replaced by evolutionary and complex system models. Cultural science is the analytic mechanism by which we make this mutual accommodation.