

# Dawkins' Theory of *Memetics* – A Biological Assault on the Cultural

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“The plain truth is that the “philosophy” of evolution (as distinguished from our special information about particular cases of change) is a metaphysical creed, and nothing else. [...] It can laugh at the phenomenal distinctions on which science is based, for it draws its vital breath from a region which – whether above or below – is at least altogether different from that in which science dwells. A critic, however, who cannot disprove the truth of the metaphysic creed, can at least raise his voice in protest against its disguising itself in “scientific” plumes.”  
(William James, 1880)

James' critique relates to the character of the applications of evolutionary theory, as he knew them, toward the end of the nineteenth century, rather than to Darwin's method or conclusions regarding species and the theory of natural selection. My discussion offers a kindred critique to the contemporary 'science' of *memetics*, whose currency we owe to the eminent sociobiologist Richard Dawkins. Dawkins published his “speculative” definition of memetics in the contemplative final chapter of his book *The Selfish Gene* (1976). That chapter is titled *Memes: the new replicators*, and introduces a new unit of currency for a proposed system of analysis of the objects of human cultural exchange, i.e., specifically, those things we conventionally refer to as 'ideas'. Dawkins states that: “Cultural transmission is analogous to genetic transmission in that, although basically conservative, it can give rise to a form of evolution” (Dawkins, 1976, p.203). As human culture is something that involves biological beings, Dawkins wants to be able to define cultural phenomena and development in terms of evolutionary principles. But, sensing that the characteristics of genes and their code substrate DNA cannot reasonably be applied to mental phenomena – ideas and beliefs etc. – he devises the concept of a *meme* (from the Greek word *mimesis*, meaning 'imitation'), which is a discrete unit of thought, so to speak (ibid., p.206). He suggests that a meme is directly analogous to a gene, on the basis that it has a key property which is the ability to replicate *itself* (ibid., pp.205-6).

In the following sections I will attempt to plot the historical emergence of the concept of a meme, and its system, memetics, during the penultimate decades of the twentieth century, and to consider the status of the latter as an empirical scientific discipline – in terms of its relationship (or lack of relationship) to the human sciences. We will also consider in particular the role played by analogy in suggesting compelling explanations for phenomena as diverse as human linguistic production on the one hand, and the mechanisms of gene-replication on the other. This includes a critique of the memetics paradigm in terms of its application of mechanistic principles learned from the empirical sciences to an analysis of ideas and cultural phenomena; and in terms of its refusal of history in the search for an all-embracing metaphor of human evolutionary progression.

### **1976 – The Emergence of Memetics**

In his preface to *The Selfish Gene*, Dawkins declares himself as an ethologist, and that the book's principle concern is with animal behaviour. He also reveals that the impetus for the book stemmed from the recent influx of new ideas into ethology from sources: “not conventionally regarded as ethological” (ibid., p.x). He names these influences as: “G.C. Williams, J. Maynard Smith, W.D. Hamilton, and R.L. Trivers” (ibid.), who are all evolutionary biologists (and emergent sociobiologists) with a shared concern in a critique of prevailing theories of *group-selection* (which generally affirms the importance of evolution based upon adaptation to the environment through the mutual interactions of phenotypes) in favour of *kin-selection*, and a strongly gene-centric understanding of evolution (ibid., p.205). The *Foreword* to Dawkins' book, written by Trivers, includes the statement:

“..Darwinian social theory gives us a glimpse of an underlying symmetry and logic in social relationships which, when more fully comprehended by ourselves, should revitalise our political understanding and provide the intellectual support for a science and medicine of psychology.” (ibid: pp.vi-vii)

Both of the above statements are in antipathy to Dawkins' elliptical statements elsewhere in his preface, that: “This book should be read almost as if it were science fiction”; and: “I have long felt that biology ought to seem

as exciting as a mystery story” (ibid., p.ix). Trivers’ concerns for “political understanding” and “intellectual support” reveal Dawkins’ emotive appeals to be euphemistic – after all, his principle concern is apparently to address those uninitiated into the debates of academic biology. Trivers’ statement reads more like a manifesto – as a prospective revision of the social role of academic biology towards *medical psychology*.

While evolutionary theory since Darwin had arrived at a convincing (though perhaps incomplete) algorithm to explain the interaction of organisms with their natural environments in terms of their individual survival and collective biological advancement, this left largely untheorised the relationships between genetic factors and cultural phenomena – involving language, ideas, beliefs, music, etc. How were cultural factors situated with respect to the processes of selective biological advancement? A highly civilised society must, we suppose, inhibit and retard the mechanisms of natural selection by removing the critical element of naked survival from the equation. As the term ‘culture’ – which normally acquires its definition in distinction from ‘nature’ – implies the practices and products of a highly evolved species, are cultural processes in some way continuous with evolutionary ones or not; and how do we go about plotting these relationships, in terms of their continuities, and also their discontinuities?

It is after all only as biologically advanced beings that the forms of cultural production with which we are familiar find their place, and the principles of *group-selection* were an attempt to explore this relationship – to what extent were beneficial behavioural phenomena (e.g., altruism, or cooperation) reinforced and propagated at the group level, through social interaction, rather than being wholly predicated on biology; i.e., through the more or less accidental inheritance of beneficial genotypes?<sup>1</sup> Should altruism, for instance, be considered as an instinct, which is passed on through genetic inheritance, or one which is learned through various cultural representations, or some combination of the two? One problem in this

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1. This distinction in principles according to whether one favours a deterministic, gene-imperative explanation, or one which acknowledges socially-enhanced development, is reminiscent of the nineteenth century debate between the philosopher William James and Darwin’s mentor Herbert Spencer (see James, 1880). For James this is a (cont.)

approach is that certain behavioural features (aggression, for instance) might appear to be advantageous in terms of the demands of naked survival, but rather disadvantageous in most human social contexts, and so to pursue this line of enquiry to its end would seem potentially to result in a series of similar antinomies – the classical argument of the relative influences of ‘nature or nurture’ in human development – and so to risk failing to advance our understanding of what a process of specifically cultural evolution might look like.

The renewed emphasis on *kin-selection*, which I mentioned as a characteristic of Dawkins’ and colleagues’ sociobiological approach, asserts inherited genetic factors as the dominant isolable causes in evolutionary process. I suggest that a key motivation for this re-alignment is that of the need to pare down causal principles so that only those that are recognisably biological in origin remain, in order to exclude from the equation the uncertain determinations resulting from the ‘sideways’ influences of cultural and social factors – in so doing, effectively preparing the cultural domain for its own dedicated analysis, in terms yet unformulated, in the hope of arriving at a possible algorithm which might define evolution anew, this time in its uniquely cultural aspect.

Such shifts in the biological episteme do not of course occur in isolation. In the post-war period, scientific discourse had tended to become dominated with developments in information theory – the new subject areas of

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philosophical rather than an empirical debate. In response to the question: “What are the causes that make communities change from generation to generation – that make the England of Queen Anne so different from the England of Elizabeth...?”, James makes the point that Spencer’s focus on the selective causality of principally inherited genetic determination has no empirical basis, but results from an *emotional attitude*, “a metaphysical creed...rather than a system of thought...” (ibid.). For James, there is no *primordial law of causation*, but rather a series of *different cycles of operation* in nature, which are relatively independent of one another and which are incommensurable in terms of any individual viewpoint. For James this underscores Darwin’s wisdom in attending to phenotypes in his formulation of the principles of natural selection. James identifies Spencer’s mistake in attending only to the *sufficient conditions* for natural phenomena (i.e., the latent genetic conditions which make them possible), rather than their *necessary conditions* (i.e., those incidents of impulse or accident which actually give rise to their occurrence).

Cognitive Science and Artificial Intelligence – in terms of the logical mapping of brain states in the form of neural networks. The empirical analysis of behaviour, in sociobiological terms, is fraught with practical difficulties – how to design controlled experiments involving real subjects in real situations, and further to actually implement such experiments objectively, is prohibitively complex. A staple of sociobiological research in the area defined as memetics has been its reliance on mathematical and computer generated models of behaviour and the transmission of ideas. Such models are seen to be inherently ‘efficient’ in approximating empirical criteria.

Memetics is an attempt to understand cultural phenomena – belief systems, the exchange (‘transmission’) of ideas, etc. – in terms of their simplest, copiable or replicable, forms. If an idea is shared, this suggests that it may have become so by spontaneous duplication (or ‘replication’, in terms of the analogy with genetics). If the idea appears sometimes with slight variations, then we should try to account for this. From a sociobiological perspective, it would be tempting to suggest that ideas are subject to replication, variation, and selection – that ideas and beliefs seem to be subject to a process that is perhaps analogous, in its simplest terms, to the processes that affect genetic material in the evolutionary systems with which we are already familiar.

### **A Seductive Analogy**

At least, this is how I understand the kind of thought processes that may have occurred to Dawkins in his early formulations of the concept of memetics. But to examine the original text from 1976 more closely, after finishing the final chapter one has the impression that Dawkins has not made excessively bold claims for his new theory, or rather, having initially made some considerably far-reaching claims (for instance: “[M]emes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation” – Dawkins, 1976, p.206), on the final two pages he hints that the theory is merely “speculative”. This is, after all, the first public airing of the theory, the germ of which Dawkins hints at on p.205, where he comments on the inadequacy of orthodox genetic theory (re: *kin-selection*) to: “square up to the

formidable challenge of explaining culture, cultural evolution, and the immense differences between human cultures around the world” (ibid., p.205).<sup>2</sup> What follows is a sort of intellectual ‘hand over fist’ as Dawkins, in his enthusiasm for Darwinism (“too big a theory to be confined to the narrow context of a gene”), and clearly aware of the limitations of genetic theory, given the inevitable doubts over its ability to furnish an objective explanation for phenomena having no specific relation to genetic processes, embarks upon the challenge of ‘explaining culture’ in terms merely analogous to those of genetics: “The gene will enter my thesis as an analogy, nothing more.” (ibid.)

The fulcrum of this analogy is that cultural phenomena, at least those identified as being ‘transmittable’, are now imbued with the capacity of *self*-replication. Like genes, memes act ‘selfishly’, seeking only their own propagation. But this *fecundity* is unwitting of its effects on the host subject – any consequential benefit or deficit to individuals is purely coincidental. Dawkins’ elaboration of memetics essentially flows from this conceptual identification. The difference in implication between the two sides of the analogy is that, whereas genes are only quasi-autonomous, in that they have independence of purpose but ultimately rely on a biological substrate – DNA – which is empirically extant; memes however are fully autonomous, and may “leap from brain to brain”, or from brain to text, apparently at will, while at the same time having no identifiable material existence.

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2. In fact there was a remarkably similar set of ideas put forward as early as 1959, by the British zoologist Peter Medawar (Medawar, 1959). Medawar speaks of two systems of heredity affecting human beings. The first is the *genetic system of heredity*, which forms the familiar context of evolutionary change. The second is the *non-genetic system of heredity* which Medawar identifies as “tradition” (for our purposes, read ‘culture’), and which he sees as a defining characteristic of human beings. Both systems he describes as being subject to “evolutionary change”. The first system is mediated by genes and cell mechanisms and is by nature *elective*; i.e., it does not receive instructions from the environment. The second system is mediated through the brain, which in its early stages is also *elective*, but grows progressively to accept *instructive* stimuli from the environment. Medawar describes each of these systems as “biological” – the first *endosomatic*, the second *exosomatic*. The more evolved brains are capable not only of receiving instructions, but also of passing them on. *Exosomatic* evolution occurs when there is a systematic change in the nature of instructions passed between generations.

This tends to bracket-out the factor of human agency as humans engage in the transmission of ideas, and for this reason tends to attribute the ‘will’ to the meme itself (elsewhere Dawkins speaks of a “meme’s eye view”). This is primarily a consequence of the adoption of figurative language in his initial musings over the theory, which Dawkins acknowledges (ibid., p.211). He attends to the question of the human element by noting that some ideas when transmitted are not copied identically and maybe subject to modifications – “mutations”, or “blending” (ibid., p.209). This raises the issue of copying fidelity and its implications for the stability of the concepts that memes represent: “The memes are being passed on to you in altered form” (ibid.). Does this imply that memes can no longer be considered as fully autonomous? Apparently not, as Dawkins reminds us that despite the appearance of infidelity or fragmentation in its transmission, the essential properties of the meme – its ‘code’ if such a thing could be identified – e.g., “the *essence* of [the idea of] Darwinism”, remain unaltered despite whatever superficial changes or colouring they may undergo in transmission (ibid., p.210). By virtue of the analogy with genetic inheritance, the normal pattern for meme transmission is that of direct copying – mutations, however frequent, are in principle exceptions to the rule.

For Dawkins the medium of transmission of a meme is not significant – the same meme may be transmitted by various means (albeit while attracting inconsequential variations along the way) – spoken words, written or printed text, diagrams, and, we infer, all kinds of visual representations including televisual material. In fact, the meme was since defined as textually and linguistically independent – a purely semantic, rather than a syntactic object (Dennett, 1995, p.354). This gives to memes the status of *pure information*.

Let’s try to represent this relationship provisionally in the form of a model (Dawkins does not attempt anything like this himself):

**( MEME ) > encoding > [ TEXT + MEME ] > decoding > ( MEME )**

I have represented the medium of transmission, as is conventional in communications theory, by the word “TEXT”, although this is not to indicate simply written text, but any form of symbolic encoded material (including

still and moving images); i.e., as it may be understood as existing outside of any mind. The coded form of TEXT is subject to media-specific rules and should not be confused with Dawkins' idea of the code implicit in the meme itself, as this code is supposedly unaffected during transmission, and in fact has only a notional existence derived from the analogy with DNA. The parenthetical MEMEs are to indicate memes as they supposedly subsist in the minds of individuals. All three occurrences of MEME are identical copies in their essential features – for the sake of clarity I have not represented the inevitable variations which accompany the meme's reception, because these supposedly do not affect the meme's core properties. This essence has in theory 'spawned itself' – the key feature of the meme being that of self-replication. Dawkins does not deal with the processes involved in encoding or decoding of memes into and from textual form, and these he assumes to be unproblematic. Therefore I have represented them as unidirectional arrows in the direction of transmission.

In the model above, in terms of the meme itself, we can say that there is a relationship of direct assimilation between encoding and decoding, and the relationship between the meme in the mind of the sender and in that of the receiver is a stereotypical one. We would normally consider a stereotype in terms of its frequency or commonality amongst a large number of people. This would be represented as a vertical duplication of the meme's occurrence perpendicular to the horizontal direction of transmission in the model. The model therefore reveals the meme paradigm as a *prototype-stereotype*. Importantly, in spite of the likelihood of idiosyncratic variations in any individual's reception of a meme, in Dawkins' elaboration of it the meme can only ever be a stereotype – a conclusion that perhaps recalls Trivers' projection of the "underlying symmetry and logic in social relationships" quoted above. If memes are indices of potential balance and harmony (through uncritical assimilation), this entails a fantastic promise of social control through the control of meanings.

An important point to notice is that the minds represented by the parentheses are not in actuality simply passive transmitters or receivers, but also possesses consciousness and intelligence – factors whose influence is not represented in the model, and which are neither required by the theory. If we suppose that someone is trying to communicate a stereotypical idea to



me – for instance: *Tomatoes are red* – before I accede to the stereotype there must be the possibility of reflection, during which I might consider: *Is there such a thing as a non-red tomato?* And, even though I am aware that young tomatoes are green, I might make a positive choice along the lines of: *Okay, for the purposes of argument let's say tomatoes are red.*

To try to incorporate these factors of consciousness and intelligence into a model, let's try another form of it – one that excludes, provisionally, the pure information concept of the meme, and replaces it with just 'idea'. If we exclude the hypothetical properties of the meme from the equation, the idea no longer has textual or linguistic independence, and in fact the characteristics specific to ideas as they exist in the mind is that they involve a structuration of neuronal material – a property that is not repeated in the textual medium represented by the square brackets. The model might look like this:

$$\{ \text{IDEA} \} < \text{encoding} >> [ \text{TEXT} ] >> \text{decoding} < \{ \text{IDEA}' \}$$

The first thing to notice is that minds that are not operating according to the memetic schema must be different kinds of mind from those that are; and so this is represented as a difference in the style of the parentheses. An idea whose specificity is a neuronal structure cannot exist in the same form in the textual medium, and so we infer that it is now transformed within the structure of the text itself. It is no longer assumed that ideas have any self-replicating capacity, and as it is not possible to determine exactly the form the idea takes in the mind of the receiver compared with that of the sender, we allow for potential dissimilarity by adding an apostrophe to the received idea – IDEA'. In this model the dominant direction of the transmission is indicated by the double arrowheads. However, to represent a certain amount of resistance in the mind (on both sides of the equation), such as is involved in the reflection: *I am aware that young tomatoes are green*; we represent this with the reverse single arrowhead.

Now consider this scenario: a person with colour-corrected vision shows a photograph of a fully-fledged tomato to a person who is colour-blind. In this case, the concept of redness attached to the tomato is perceived in one way

by the sender, but in a different way by the receiver, but both perceptions may satisfy each individual in terms of their concept of what redness is – it's just that in this case the receiver might not be able to judge the age of the tomato because he has difficulty distinguishing red from green. There is no inherent problem in describing this scenario in terms of the second model, as there is scope for this degree of fundamental variation in IDEA'. However, as the symmetry of the stereotype breaks down in the case of colour-blindness, we are unable to accommodate the scenario in terms of the first, memetic schema model.<sup>3</sup>

No one to my knowledge has previously made an attempt to describe the structure of meme transmission diagrammatically, and the concept is so intuitive that it does not really lend itself to such analyses. However, the model is telling in its simplicity, and the theory of a *meme* as a form of *idea* seems to be unworkable on first principles, as it fails in this particular example, whilst the theory is context-independent.

Although in theory a meme is textually and linguistically independent (a notion that should also be challenged on first principles), it is not *performance* independent. In the sense that language is actively enunciated, memes are *enacted* (by consent). In this sense the analogy with gene replication also breaks down – genetic replication is not a process of active imitation in this sense, as genes are only ever blind copies of one another. In its dependence on performance and active imitation, the assumed coherence and stability of the meme's core semantic properties seems to be highly

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3. In fact, it may not be the case that there is no workable stereotype in the case of colour-blindness – it is rather that the prototype for stereotypes established by the memetic schema model will not suffice in practical terms – for the reason that stereotypes too have syntactical dependencies. For instance, Hilary Putnam describes the content of a stereotype as determined by linguistic obligation, and requiring a minimum level of linguistic competence with regard to syntax and semantics. Stereotypes include *optional* details, and their inclusion or exclusion is dependent on purpose and context. Not all details of a stereotype are acceptable universally, and some may be simply incorrect. To use one of Putnam's examples: we do not need to know the shape of an elm leaf to acquire the stereotype of an elm tree, or to distinguish it from a beech. A stereotype is only ever an approximation of intended meaning, but its meaning is still determined syntactically – a property that is not equitable within any existing definition of memetics, such as we have it. (Putnam, 1975, pp.245-252).

problematic; and ultimately, there is no empirical test which will enable us to distinguish between relative copy infidelity and meme diversity. The elements of wish-fulfilment and volition involved in cultural assimilation have led to many interpretations of cultural change ('evolution', if you must) in Lamarckian, rather than Darwinian terms; i.e., that ideas, beliefs, etc., evolve by *elective* adaptation to the conditions of exchange – in a direction horizontal to the conventional vertical direction of inheritance.<sup>4</sup> In contrast, memetics, operating by a process assumed to be analogous to natural selection (requiring the involuntary assimilation of genotypes), brackets-out the elements of elective adaptation and performative alteration from the process, and will tend therefore to favour relatively stable and consistent memes for its exemplars. The fittest memes with the greatest longevity will be those with a high degree of identity between the model and its replica. The resulting tendency will be for any impulse towards change in cultural terms to be folded back on itself underneath the weight of unrealisable stereotypes.

### **Ideas as Mechanisms**

Indeed, if we can speak of culture in terms of evolution, and we can identify intellectual and functional advancement in these terms, then this almost certainly occurs for reasons other than the adoption of stereotypes. According to the theory, we don't select memes, they select us, and they have no intrinsically beneficial importance. Within the terms of the hypothesis, it is difficult to appreciate why a set of ideas and practices which results from replication and infection should have any more significance evolutionarily than one which is purposely chosen and consciously developed.

There have been two identifiable trends within the theory of memetics since Dawkins' invention of the notion; one of which emphasises memes as rather insidious *infectants*, and sees them as responsible for the spread of all kinds of 'deleterious' ideas and belief systems from Catholicism to Islamic Jihadism. On the other hand, a certain degree of intellectual support has been sustained around the central concept of the theory – that of imitation.

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4. See: Dennett, 1995, p.355; Heylighen & Chielens, 2008.

Imitation is what relates a meme to its copies; i.e., it supports the theory of memes as the effects of replication. The two trends are essentially founded on this central function (one not empirically established, but born purely out of the analogy with genetic processes); but their distinction is really a matter of emphasis. Despite memes' rather hazardous function in spreading 'thought contagion', there is a perceived healthy aspect to the function of imitation, which is that it explains the acquisition, particularly amongst primates and early humans, of the practices of tool use. The fact that certain animals, as well as primitive humans, had acquired skills in the use of certain tools, and that this appears to have happened prior to the development of language in humans, suggests (to Susan Blackmore, for instance) that such skills are acquired 'memetically'. For Blackmore (Blackmore, 1998), memetics is strictly dependent on active imitation, and she presents a limited classification of a meme to exclude mental phenomena such as perceptions, emotional states, or experiences, or the products of any form of social learning which does not involve imitative copying.

Blackmore defines imitation as "learning to do an act from seeing it done". She distinguishes this from social learning in the forms of classical and operant conditioning (involving goal-driven routines, stimuli, and rewards), and also from certain but not all kinds of contagion. Memes that result from imitation so defined are still likely to proliferate themselves epidemically, though this may be founded on the fact that it confers some evolutionary advantage on the individual:

"If we define memes as transmitted by imitation then whatever is passed on by this copying process is a meme. Memes fulfil the role of replicator because they exhibit all three of the necessary conditions; that is, heredity (the form and details of the behaviour are copied), variation (they are copied with errors, embellishments or other variations), and selection (only some behaviours are successfully copied). This is a true evolutionary process." (ibid., S5.3)

The first sentence here is an obvious tautology. Secondly, this theory is an hypothesis, and one based on fairly limited knowledge of the conditions of tool use in primitive humans. Thirdly, the idea that the *algorithm* of the method of use of a particular tool for a particular purpose takes the initial form of a *discrete information entity* (i.e., one that may be copied in the form, let's say, of a mental representation) is hardly an adequate

understanding of the processes in question. If this were the case, it would be possible in theory for *Cro Magnon* simply to observe his mentor in the use of a tool and this would be sufficient to acquire the skill, and replicate the action. But, as we all know, it doesn't happen this way at all. We only ever acquire such skills by trial and error, which includes a certain amount of, at least inadvertent, experiment. We don't adopt the skill of another until we have practised it uniquely for ourselves (and several times). This of course allows for the transformation of the algorithm – successively and by degrees – into something which may ultimately be unrecognisable in comparison with the original.

Blackmore (and memetics in general) acknowledges something of this tendency in meme transmission as one of its necessary conditions, i.e., in the function of variation – “they are copied with errors, embellishments or other variations”. But, as we saw in the previous section, the dominant function in meme transmission is that of *heredity* – it is the stability of the meme's core properties that ensure its longevity. Where variations outstrip heredity, the meme fails the test of survival – it loses its identity and becomes the ghost of a meme (and we can no longer plot its evolutionary path). So we can only interpret culture as ‘evolutionary’ in terms of the memes that have survived. We can no longer represent all the processes that have become completely transformed as being part of evolutionary process. So what kind of *involutionary* process do they constitute?

The idea that memes represent something like ‘little engines of cultural evolution’ (having a function analogous to DNA at the biological level) implies that where a meme has longevity, it will tolerate a certain amount of variation in transmission, and through repeated selection will become honed into its refined, canonical version. But this is an idealism – try to think of an example, and all you will come up with is a stereotype, which is not an adequate principle on which to base an analysis of cultural development, whether evolutionary or otherwise. The idea of ‘cultural evolution’ proposed by memetics is and can only ever be fundamentally ahistorical, because it privileges continuity over discontinuity – the transcendental properties of memes over the transformative potential of praxis.

I think that the assignment of imitation as the constitutive principle for memetics conveys a sense of quasi-scientific neutrality on the concept. Imitation is taken to imply a direct copying, without significant intervention, which supports the idea of the replicative function, and also supports the idea of memes as ‘infectants’. The suggestion is that humans are paying lip service to ideas (memes) and serving as mere hosts for their propagation, rather than taking possession of an idea and thereby remaking it, in some sense uniquely (or *indexically*). It is interesting to compare the Aristotelian concept of *mimesis*<sup>5</sup> – here imitation is not to copy directly at all, but a distinct literary and theatrical device (having something like the status of rhetoric as a device), which is to do with representing human action dramatically and with magnitude, as both distant (other), but with an exaggerated empathy, in order to encourage catharsis (healing). For memetics rather, imitation implies both mute copying and also epidemiology (disease). It is interesting that Blackmore’s restrictive use of memetics to refer to imitative copying in the acquisition of skills seems to be an attempt to find a positive aspect for the theory – to invoke a distinction from the emphasis upon the epidemic propagation of deleterious ideas – as if this might prove to be the saving grace for what otherwise turns out to be a completely pessimistic and rather toxic theory.

Dawkins however has fewer qualms about foregrounding an epidemiological focus. In spite of idiosyncratic variations, what makes memes so infectious (a more appropriate adjective, in the context of ideas, would be ‘emblematic’), is a certain transcendent quality. For instance, in the idea ‘Catholicism’, there are certain key associations which inhere in all instances; e.g., the centrality of the Holy Trinity, the proscription on contraception, the divine authority of the Pope, etc. In Dawkins’ version, memes are potentiated: “memes should be regarded as *living structures*, not just metaphorically but technically. *When you plant a fertile meme in my mind you literally parasitize my brain*, turning it into a vehicle for the meme’s propagation.” (Humphrey, N.K., quoted in Dawkins, 1976, p.207 – my emphases). A similar potency applies to all memes, independently of any consequential

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5. Aristotle, *The Poetics* (6), Bywater, I. (trans.), Project Gutenberg Ebook, 2 May 2009: (URL: <http://www.gutenberg.org/ebooks/6763> – accessed 09/12/2014).

benefit or deficit they may imply for the host. Dawkins is confident in his general ability to make moral distinctions between ‘good’ memes, e.g., ‘cooperation’, ‘charity’, the ‘benign’ ideas shared by scientists, etc.; and ‘bad’ or ‘doctrinaire’ memes, e.g., ‘God’, ‘religious faith’, ‘belief in life after death’, etc. By virtue of the analogy with biological processes (and only by virtue of this) there is no role left for conscious criticism in the reception and transmission of memes – there are only levels of susceptibility, and degrees of (secondary) variation. There is also implied the possibility of immunisation against deleterious ideas, as those enlightened with reason, rationality, and the benign ideas of science will be fortuitously inoculated against all forms of religious dogma. Since Dawkins’ elaboration of memetics there has been a symptomatic tendency to interpret phenomena of mass communication and popular belief in terms of epidemiology; so that the corrective panacea of Reason turns into an evangelical crusade against ideas-as-maladies.

“You may find elements of epidemiology in the spread of scientific ideas, but it will be largely descriptive epidemiology. The rapid spread of a good idea through the scientific community may even look like a description of a measles epidemic. But when you examine the underlying reasons you find that they are good ones, satisfying the demanding standards of scientific method. In the history of the spread of faith you will find little else but epidemiology, and causal epidemiology at that. [...] For scientific belief, epidemiology merely comes along afterwards and describes the history of its acceptance. For religious belief, epidemiology is the root cause.” (Dawkins, 1991, p.13)

In the light of this statement, it seems pertinent to ask: to what extent does the theory of memetics satisfy the “demanding standards of scientific method”? Where is the empirical evidence for the existence of memes as “living structures”? Doesn’t it feel more like a piece of science fiction, which obfuscates a deeper motivation towards a revision of the role of biology, and of sociobiologists in particular, in terms of “political understanding”, and towards the technical intervention of “medical psychology” into social theory? (see above, p.2). Elsewhere Dawkins admits that: “I do not know enough about the existing literature on human culture to make an authoritative contribution to it” (quoted in Dennett, 1995, p.361). If however he were better acquainted with the discourses of the human sciences, he might appreciate that science too is but an aspect of culture, and therefore

cannot assume an entirely neutral position in analysis of it (as biology might, for instance, towards diverse fauna and flora of the natural world), without also acknowledging its own historical and theory-bound contingencies. Dawkins' unproblematic extension of the empirical categories of natural science, by the bold use of analogy (yet devoid of any empirical validation), beyond the very boundaries which give those categories their critical definition, is simply too ambitious, if it is not intellectually dishonest.

While the attribution of selective hereditary causality may have an empirical basis in genetics, how can Dawkins justify its analogous attribution to items of religious faith ("epidemiology is the root cause"), when biology is yet to establish any certainty over the ontology of its objects in this case, i.e., those of memes themselves? Dawkins' identification of a "causal epidemiology" as the basis of religious faith presupposes a discrete mechanism operative within the content of religious doctrine itself. This mechanism, analogous to that of a biological virus, gives to the items of religious belief their potential as infectants. The believer has actually no active investment in the matter; s/he is just a passive victim, just as if one might passively contract influenza. The social conditions for the acquisition of religious beliefs; the particular historical and cultural milieu and the institutions which make the practice of religion accessible, rewarding, and compelling, are excluded as causal agents.

One might have more sympathy with Dawkins' view if he showed any indication of an empirical justification for such an absurdly reductionist assertion; but his reliance upon a purely speculative approach to this extrapolation of mechanistic principles into new territory prevents him from doing so. It is tempting to view Dawkins' project as a kind of postmodern parody of the misappropriation of scientific method – the chief element of satire being his self-propelled attempt to identify, willy nilly, a unique and isolable *vera causa* for patterns of cultural behaviour so complex, embedded, and enduring, that one can barely conceive of human civilisation independently of them.



## Causal Reductivism

The determined search for isolable causes in the understanding of natural phenomena has informed the methods of enquiry of the empirical sciences most emphatically since the beginning of the seventeenth century. Prior to this, certainty in the knowledge of natural phenomena had depended upon metaphysics, the deduction of particulars from general aphorisms, and the intuition of essences. In the Aristotelian worldview, it was inconceivable to acquire certain knowledge of natural processes simply by direct observation, independent of the application of intuition (Hull, 1973, p.20). In the seventeenth century, Francis Bacon sought to overturn this classical inheritance by formulating a new methodology aimed at arriving at certain knowledge of natural phenomena through methods of cumulative observation and induction.<sup>6</sup> It demanded a degree zero of intuitive affect – the problem with scholastic philosophy had been its over-reliance on “the naked forces of the understanding”, upon the exercise of syllogistic logic, and it had underestimated the value of unmitigated sensory perception in granting direct access to knowledge of natural phenomena:

“Now my method, though hard to practice, is easy to explain; and it is this. I propose to establish progressive stages of certainty. The evidence of the sense, helped and guarded by a certain process of correction, I retain. But the mental operation which follows the act of sense I for the most part reject; and instead of it I open and lay out a new and certain path for the mind to proceed in, starting directly from the simple sensuous perception. The necessity of this was felt, no doubt, by those who attributed so much importance to logic, showing thereby that they were in search of helps for the understanding, and had no confidence in the native and spontaneous process of the mind. But this remedy comes too late to do any good, when the mind is already, through the daily intercourse and conversation of life, occupied with unsound doctrines and beset on all sides by vain imaginations. And therefore that art of logic, coming (as I said) too late to the rescue, and no way able to set matters right again, has had the effect of fixing errors rather than disclosing truth. There remains but one course for the recovery of a sound and healthy condition – namely, that the entire work of the understanding be commenced afresh, and the mind itself be from the very outset not left to take its own course, but guided at every step; *and the business be done as if by machinery.*” (Bacon, 1620, Author’s Preface – my emphasis)

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6. Bacon, Sir Francis, *Novum Organum, Or True Directions Concerning the Interpretation of Nature* (1620).

The effect of this was to discredit applications of the mind and intuition in the pursuit of scientific endeavour, but in a way that disregarded the fact that scientific minds and methods of clinical observation do not actually preempt the exercise of intuition *a priori* in their approach to materials – mental operations do not simply follow perception, as Bacon would have it, but also shape it and provide it with its categories – a point well understood by Kant in his theory of *apperception*. Bacon’s revisionist methodology and its pervasive influence on empirical science came too early to be exposed to twentieth century phenomenological critiques of the culturally biased and theory-bound nature of ‘simple’ unmitigated perception.

In Bacon’s view, in order to educe certain knowledge of the operative causes in nature, it was necessary to enumerate all conceivable instances of a phenomenon experimentally, and then to extract by elimination those causes or conditions which resolved to be inessential to the phenomenon in question. What remains are the ‘root’ or canonical causes of phenomena, as defined through observational parsimony and experiment. The application of Bacon’s method of inductive elimination to empirical understanding was to inform much of the scientific endeavour of the next four centuries.

A major problem with the application of Bacon’s methods lies, however, in the difficulty of designing experimental regimes sufficient to represent the full range of instances of phenomena in their entirety. At what point does one stop enumerating instances, with the satisfaction that one has covered all eventualities? The establishment of scientific laws implies that certainty and predictability can be assumed of natural processes only when conclusions are derived through a process of untiring experimental observation. But in world of infinite possibilities where does one draw the line between certainty and mere probability?

“Both induction by complete enumeration and induction by complete elimination are possible only in a world which is divisible into a finite number of natural kinds and are deductive in nature.” (Hull, 1973, p.22)

The problem with Bacon’s methods is not that they are intrinsically wrong, but that they rely too heavily on selective positive proof; and after having reached a satisfactory proof of causality (incidentally by methods of observation whose objectivity is not infallible), they dismiss as insignificant

incidental/weaker causal relationships, and the genealogy of antecedent causes, as well as any possible relationship not predicated on the basis of the current state of scientific knowledge. The inheritance of Bacon's inductive methodology is the primary source of the accusations of 'mechanistic reductionism' frequently levied at the empirical sciences by the human sciences. Significantly, Bacon's methods were extended two centuries later to the liberal political economy of John Stuart Mill.<sup>7</sup> One can appreciate that the methods might have more predictive value in the context of economics and finance, where one is concerned more with questions of probability, than in establishing a representation of the entirety of causal relationships, which the methods are in fact calculated to exclude.

We have to understand this 'mechanisation' of scientific knowledge during the period from the seventeenth century to the present in terms of:

- i. The examination of nature in terms of its divisibility – what are its smallest identifiable component parts? Unless we can identify and study these we cannot know nature *absolutely*.
- ii. The examination of the individual parts themselves in terms of their compelling forces (causes); and which of these forces are the dominant and predictable ones? – both nature and society becoming understood increasingly in terms of dynamic/mechanical processes.

Neither of these examinations was possible or conceivable until after the seventeenth century, following the philosophical investigations of Newton, Leibniz, and Descartes. Both examinations were applied to nature (as composed of species/molecules/atoms), and also to society (classes/families/individuals) more or less simultaneously. It is important to recognise the primary shift in post-Enlightenment science from a philosophically- and ethically-based enquiry under the rubric of 'natural philosophy', towards a revolutionary instrumental methodology tied to the requirements of industry, trade, and colonial warfare. By highlighting the historical specificity of these changes – the social, industrial, and economic contexts that determined such radical shifts in scientific epistemology – we may reveal something of the contingency and transitivity of the mechanical

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7. Mill, John Stuart, *A System of Logic* (1843).

sciences, and their impermanence (whatever temporal form they might take) as absolute methods of explanation. It is telling also to consider the extent to which examples of contemporary scientific theory still rely implicitly upon intuitive understanding and metaphysical teleology in the formation of their concepts and hypotheses, in spite of science's explicit rejection of these from the groundwork of empirical observation. We might also gain a deeper insight into the vicissitudes of method, and causal reductivism, which inform Dawkins' unwieldy extrapolations from genetics to theology. A further observation is that while the various discourses of empirical analysis are busy with their examinations of nature, or of society, they will seek social and political legitimacy by constantly referencing each other's categories – by the use (and abuse) of analogy, for instance.

Richard Lewontin describes how Darwin himself claimed that he was originally inspired with the idea of evolution by natural selection after reading Thomas Malthus' *An Essay on the Principle of Population*<sup>8</sup>; which was an economic and political argument in favour of the social control of birth rates amongst the urban poor to forestall excessive population growth and social unrest. Malthus' treatise had inspired a virtual panic amongst the middle classes over the threat of an impending population explosion of the urban poor, to which Darwin's theory was, at least in part, a response. "What Darwin did was to take early nineteenth century *political* economy and expand it to include all of *natural* economy", (Lewontin: 1991, pp.9-10 – his emphases).

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8. Thomas Robert Malthus, *An Essay on the Principle of Population* –

1798: *An Essay on the Principle of Population*, as it affects the future improvement of society with remarks on the speculations of Mr. Godwin, M. Condorcet, and other writers. Anonymously published.

1803: Second and much enlarged edition: *An Essay on the Principle of Population*; or, a view of its past and present effects on human happiness; with an enquiry into our prospects respecting the future removal or mitigation of the evils which it occasions. Authorship acknowledged.

## Too Big A Theory?

Darwin, perhaps more than anyone else involved, must have felt the formative presence of his milieu on all sides – familial, religious, economic, botanical, zoological, geological, etc. The evolutionary theorist Stephen Gould has remarked for instance that Darwin’s inspiration developed in some degree as a conscious analogue to the economic theories of Adam Smith<sup>9</sup>. Darwin would probably have been the first to declare his indebtedness to a wide range of sources of support and inspiration. But the significance of his discovery is greatest in terms of what it meant for conventional religious belief – the theory of evolution by natural selection succinctly states that nature is mutable, rather than immutable, and the multiplicity of evidence that Darwin presented mainly reinforced the same point – species evolve, their ‘design’ is not fixed for eternity. Any further conclusions regarding species’ proclivity for mutations, or the interactions of phenotypes with their environments, follow from the application of inductive and deductive logic to the materials in question. The revelation then, though painstaking in the process, and turbulent in its acceptance, was in fact rather nebulous – that biological species evolve through the combination of *chance* mutations at the microscopic level<sup>10</sup>, and the subsequent tempering of those mutations by the environment.

When considering culture (as distinct from nature), the parallel question of mutability or immutability has no real consequence at all – culture is, and always has been, from a human perspective, fundamentally mutable (it is, if you like, the definition of mutability – “turning the log in the fire” in Roman Jakobson’s familiar association). In making an assertion that culture must be

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9. See: Gould’s *Challenges to Neo-Darwinism and Their Meaning for a Revised View of Human Consciousness*, in his *The Richness of Life*, pp.222-237. See also: S.S. Schweber, *The Origin of the Origin Revisited*, in *Journal of the History of Biology*, 10 (1977): pp.229-316.

10. ‘Chance’ here implies that such mutations occur without determination or direction towards any consequential benefit to the host. Genetic variation is generally understood to be ‘isomorphic’ (occurring in all directions equally, essentially *randomly*). Evolutionary enhancement follows as a consequence of selective reproductive advantage (natural selection) conferred upon organisms by virtue of genetic variations that happen, purely by chance, to be fortuitous with respect to an organism’s external environment, and hence to its competitive survival and ability to reproduce and pass on those variations.

understood in terms of evolutionary processes, effectively what is asserted is that, for an understanding of culture in evolutionary terms one need only apply a consistent logic to its artefacts (in the way that the logic of natural selection is applied to the products of genetic variation). But try applying a consistent logic to an understanding of Shakespeare, for instance, and it won't tell you anything much of importance at all. The activities and artefacts of cultural process are not reducible to the logical elements of a closed system, such as might be described by analogues of neural networks, or modelled by cybernetics, for instance.

The idea that culture might be defined appropriately in terms of evolutionary systems is based partly upon the recognition that when we consider aspects of culture, we cannot reasonably ignore the fact that we are biological beings (and therefore culture doesn't appear independently of evolutionary status). It is also in some sense a consequence of the observation that a highly developed civilisation appears to slow down, or even bring to a halt, the processes of biological evolution, but instead supersedes them in other ways, in particular through technological advancement for instance. So from a biologist's perspective it is perhaps intellectually more profitable to consider aspects of culture (including technology) in terms of their continuity with evolutionary processes, rather than in terms of their discontinuity and, by implication, their incompatibility with them.

In the foregoing discussion, I have tried to raise attention to certain inherent difficulties with this project of the grafting of a method of understanding arising out of genetics onto cultural phenomena by force of analogy, and why I feel this practice is inappropriate to the field of study. My position is that, even if there are identifiable continuities between biological and cultural processes, the discontinuities between them are so great as to render the practice intellectually insensitive and intuitively mistaken.

So, why doesn't it work? Firstly, there is a lack of empirical tools for examining the *noumenal* rather than the *phenomenal* aspects of culture. While biological observations of behaviour are predisposed to focus upon individual organisms in determination of pertinent causes, effects, and processes, they are unable to isolate an object corresponding to the *We* of the cultural dimension – there are *intangible* relationships that are causally

significant here. This perhaps explains Dawkins' reliance, in his formulation of memetics, on a heavily intuitive approach to the issue of shared meanings and beliefs; and why biologists have not in the forty-four years since the publication of Dawkins' theory been able offer any empirical evidence whatsoever to support their concepts of what a meme is. The fact that sociobiologists effectively excluded the criterion of *group-selection* from genetic significance suggests that they have confidence in the evolutionary algorithm only insofar as it affects theoretically isolated individuals.

Secondly, due to an essential lack of complete understanding, in neurophysical or neurochemical terms, of how mental processes are effected as structurations of neuronal material, the concept of a meme depends upon the notion of *pure* information or *pure* ideas; i.e., ideas as discrete entities, with linguistic and syntactic independence; yet at the same time they are capable of *embodying* language, and even having their own replicative potential; and, at least figuratively, their own volition. The essential formal connection of a meme with its respective medium is never taken into material consideration in this theory, which hence becomes an ideology of pure content, presupposing unprecedented liquidity in its transmission. In any credible science of information however, such a theory should be rejected on the basis of Maxwell's second law of thermodynamics, recognising that no information-bearing system can operate without a memory-storage overhead, and the consequent investment of energy. How may memes "leap from mind to mind" therefore, in the absence of a physical medium in which energy is duly invested, and hence without a structure or a code?

Thirdly, the grafting of evolutionary philosophy onto an understanding of the cultural dimension implies a simple linear trajectory of persistent advancement in cultural terms on the basis of the 'survival of the fittest *ideas*'. But this does not allow for the inherent pluralism of modern societies, or for the *schismatic* potential of cultural tendencies. The net result of the dominance of the 'fittest ideas' is to privilege those ideas reified as 'scientific', and to sanction an implicit tendency towards ethnocentrism and technocentrism.

So I fail to understand why Darwinism, with reference to its implicit algorithm of natural selection, represents such a potent explanatory force for Dawkins. For instance: “Darwinism encompasses all of life [...] It provides the only satisfying explanation for why we all exist, why we are the way we are. It is the bedrock on which rest all the disciplines known as the humanities.” (Dawkins, 2006, p.xiv). I am sure “the humanities” will have some objection here, but Dawkins is nevertheless unlikely to consult them over it. Not only can we now reduce all causes down to inheritable causes, but also, all the laws of nature and science (and now culture too) are explicable in terms of the simple fundamental Law of Darwinism. What is truly surprising is that none of the members of the scientific community who have been bitten by the meme bug seem to think it is even necessary to show empirical justification for this act of hypostatizing Darwinism, decoupling it from biology, and applying it corrosively to virtually any other discourse. The assumption is that as genetics is empirically established then the same principles can be applied elsewhere, by force of analogy, on the basis that everything human is grounded in biology. But this is empiricism turned into its antithesis – *pure intuitionism*.

The intuitive approach is clearly evident in Chapter 11 of *The Selfish Gene*, and it seems that Dawkins is prone to a level of escapism and soothsaying, particularly in the final chapters of his books. Having declared the theory of memetics to be “speculative”, he omits to include any proposal for how it might ever be anything more than that. As the theory is incompatible with any prior linguistic model, and as Dawkins maintains a wilful ignorance over the relevance of any referral to the human sciences, he effectively places it beyond criticism. The uncritical adoption of the theory by various members of the scientific community since 1976 indicates that it has now reached the status of a rampant mythology.

According to the theory, memes occupy minds, texts, and images etc., with syntactic independence, but with potential for self-interested replication, so that they are primarily parasitical on language and on the mind. As it does not participate in language, we cannot trace the meme’s history or its code. Dawkins does not deny this – he wants to exploit it. In a paper from 1991, he describes the mind as being a haven for memes seeking a vantage point for replication – children are described as “duplication fodder”, “like immune-



deficient patients”, in having less resistance to pernicious meme content. He makes a too-easy conflation between human brains, cell nuclei, and computer memory, in a comparison of their susceptibilities to parasitic memes, DNA parasites, and computer viruses, respectively (Dawkins, 1991, pp.1-2):

“Progressive evolution of more effective mind-parasites will have two aspects. New “mutants” (either random or designed by humans) that are better at spreading will become more numerous [...] We expect that replicators will go around together from brain to brain in mutually compatible gangs. These gangs will come to constitute a package, which may be sufficiently stable to deserve a collective name such as Roman Catholicism or Voodoo.” (ibid., p.8)

The ‘pernicious’ memes of Faith have their root causes in epidemiology and are to be supplanted, where possible, with the merely “descriptive epidemiology” of the virtuous memes of science: “The virus principle could, in theory, be used for non-malicious, even beneficial purposes.” (ibid., p.4). Dawkins does not prescribe any examples of beneficial or remedial memes, but he does consider analogous examples of computer viruses to be used for ‘positive’ ends, such as that of a “market-research warhead” virus, which might be released surreptitiously and reside secretly on a user’s computer, collecting statistical data on the user’s behaviour, to be fed back to the marketing company with no knowledge on the user’s part. I am sure I am not alone in finding the language of all this abhorrent – it concerns me that Dawkins’ first idea for the positive use of virus material should be one that assists in a marketing program, at the expense of the user’s privacy. It seems an over-zealous alliance of commerce with sociobiology to exploit the indiscretions of consumers through the use of market-driven mind-probes.

### **A Reminder from Linguistics**

What happens in the exchange of ideas is not a process that can be described or analysed mechanistically (this is human discourse, not cybernetics). Ideas are what ‘reside’ in minds – if we are to have an adequate understanding of them we have to understand them in that context (hence the necessary connection with neurological processes). When ideas are exchanged they are transformed – radically in terms of form, and socially in terms of content;

that is, they are *contextualised* – and there is no useful biological analogy here. Mechanistic principles such as the ‘transmission of ideas’, or ‘the idea that we implant in the learner’s head’, are just not appropriate to the field of linguistic communications as they impose conceptual limitations on the kinds of objects that are permissible within your schema – it’s like using a chainsaw to prune a rosebush. There are more sophisticated tools for this – structural linguistics, semiotics, and psychoanalysis; and biology should embrace these, if only tentatively, rather than trying to apply corrosive analogies indiscriminately.

The linguistic model of meaning is that of the *sign*. The model of the sign as it was first proposed by Saussure (Saussure, 1966 (1916)) describes a binary structure in which meaning is enacted through *signification*. Signification is the dynamic interaction of *signifier* and *signified* within the linguistic sign. Language, whether written or spoken, textual or aural, engages material signifiers with conceptual signifieds. For instance, the signifier ‘tree’ is a part of the sign that I elaborate by attaching to it my concept of the tree as a signified. The sign is a dynamic, fluid medium as the signifier ‘tree’ may suggest various conceptual signifieds – ‘oak tree’ (a stereotype); ‘family tree’; ‘tree of knowledge’; the particular tree outside my house; etc., according to context. The signified is not the *referent* – the definite object of reference (although they may coincide – ‘*this* or *that* tree’), but is the ideational component of the sign, formed in the process of reading (for instance, in the word *tree*, or in a drawing of a tree, I may conceive a conceptual signified without any necessary reference to an actual tree). Each individual reading of the sign therefore invokes a potentially unique signified, subject to linguistic convention. In structural linguistics there is no meaning without signification, and although the latter is conventional, it is contingent upon the instance of reading. Meaning therefore is not ‘given’ or pre-ordained in signs, but is always to an extent ‘up for grabs’. There is no pure content of meaning, such as is suggested in the notion of a meme, independent of a signifying structure and process. Structural linguistics is a truly scientific analysis of language based on models, which foregrounds the historicity of linguistic codes, and the material/textual nature of language. For memetics to acquire any semblance of legitimacy, it must first engage with linguistics and semiotics, and with the volumes of work already done in this area, at

least in the form of an acknowledgement and a debate. Instead, however, memetics seeks spontaneous legitimacy purely on the basis of an analogy with biological processes, which remains without any empirical basis in observation. This initial error stems from Dawkins' flagrant ignorance of any reference to the human sciences, in an intellectual impulse which can only be described as fraudulent.

In its ignorance of nearly a century of the scientific study of linguistics, memetics presupposes that ideas are like free-floating entities, without formal/textual specificities (i.e., without a history, and without a code). Individual memes are presumed to be autonomous from any particular instance of them; they are supposed to "leap from mind to mind". That is, the meme retains its essential properties, in spite of 'transmission' and selection/variation. In that sense the meaning is free-floating, as it is independent of any linguistic structure. This reminds me of Aristotle's concept of *entelechia* – the idea that certain kinds of primordial entities (including certain conceptual forms) exist as complete self-contained units of purpose or potential, as it were, unaffected by their environment. In comparison, Leibniz's concept of an *entelechy* suggests an object of divine substance, which entails its own self-contained universe, and is indivisible.<sup>11</sup> Unwittingly, memetics gives to memes the status of metaphysical absolutes – as autonomous entities in their own right – like biology's version of *The Singularity*, but metastasised.

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11. See for instance URL: <http://www.iep.utm.edu/leib-met/> on Leibniz's *Monadology* (accessed 04/01/2012).

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