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WHO NEEDS MEMETICS? POSSIBLE DEVELOPMENTS OF THE MEME CONCEPT AND BEYOND

ABSTRACT: Until recently, the Memetic (Meme) Theory (and its sequels) has been one of the most widespread theories describing the transmission of cultural units on a neo-Darwinian basis. It seems that the study of culture is currently divided between traditional paradigms (ethnology, socio-cultural anthropology, etc.) and those inspired by biology (including memetics). The divide in the interpretation of cultural transmission seems to invoke a set of deeper questions concerning the cogency of the explanation of culture that are based exclusively on neo-Darwinian evolutionary mechanisms. Recent attempts to resuscitate memetics has lead us to a) survey the literature while seeking fatal drawbacks in the memetic model of cultural transmission; b) emphasize critical points of memetic theory (and similar neo-Darwinian based theories of culture), which circle around the topics of meaning and agency; and c) try to outline some possible directions which a biosocial approach of the study of culture may take. Finally, this essay considers the possibilities of a constructive synthesis of biosemiotic and biosocial approaches to culture.

KEY WORDS: Memetics – Cultural transmission – Biosemiotics – Cultural evolution

The open question is not whether there will be a Darwinian theory of culture but what shape such a Darwinian theory will take.

Daniel Dennett

INTRODUCTION

What makes humans behave the way they do? Are we ruled by learned behaviours and habits or are there some innate mechanisms and regular patterns, which, in the end, serve the interests of our genes? Are we fully determined either by culture or nature, or are we more or less free in our decisions? Different answers to these questions form different central paradigms in human behavioural sciences. In this article, we discuss a highly popular though theoretically anachronistic concept of memetics. While examining its theoretical framework and setting within a broader context of theories of human behaviour, we would like to point out some of its weaknesses and propose some possible ways which could be taken by biological (or biology-inspired) conceptualisations of culture and the study of behaviour in general.

Since Francis Galton (1883), the first person to express the nature-nurture divide in its clarity, the debate over whether biology or culture holds hegemony over human behaviour seems to continue until recent days. Theories on the motivations and mechanisms of (not only) human behaviour have changed significantly since the times of Darwin. Nonetheless, fierce struggles about the uniqueness of human behaviour as compared to other animal species accompany any subsequent explanatory shift, and have become one of the cornerstones of the divide between disciplines and even larger fields, biology on one side and humanities and social sciences on the other. In general, a tendency toward the assimilation of social theory and even humanities (including ethics, e.g.) within the biological, evolutionary framework can be traced back to Charles Darwin (1871) and the first generation of "Darwinians" (e.g., Huxley 1893) and has a long tradition throughout the 20th century. Among other features, the human capacity for cumulative culture and cultural evolution (e.g., Tomasello 2000) is usually considered one of the most significant traits which differentiates humans from other organisms.

Due to its complexity, it is no surprise that biological explanations of culture have become a sort of "Holy Grail" for the seekers of human nature. Even if chimps (and basically all other animals – recent or extinct) are physically extremely similar to humans, they, however, do not form *corps de ballet*, dance *haka*, have political programmes and workers' strikes, use alphabets, write or read books, fancy fashion, or invent steam engines and spacecrafts. Of course, there is abundant evidence for *cultural transmission* of behaviours in many other species (Byrne *et al.* 2004, Heyes, Galef 1996, Laland

2008); still, the dynamics, the *evolution* of human culture is evidently unique within the animal kingdom (Richerson *et al.* 2010, Tomasello 1999, 2000). As far as biological theories want to explain the existence and oddity of the human species, they cannot avoid the phenomenon of human cumulative culture and evolution.

There are basically at least two (or three) strategies to do so. The most common is to belittle the importance of culture upon human behaviour and evolution. Simply *avoiding* discussions of culture or considering culture to be a mere veneer on the surface of massive biological machinery has become a common strategy. Nonetheless, it is highly dubious to deny the importance of culture for understanding not only actual human behaviour, but also human evolution as such. Even though it is tempting to explain the emergence of human species by means of "normal" evolutionary mechanisms present in close (or even remote) species, you need not be more than an average observer to realize, while standing in central London or Paris, looking at bookshelves in a library, or watching Olympic boxing on cable TV, that you simply will not be able to find anything even remotely similar in nature – even if we eliminate the common anthropocentric bias in anthropology. Attempts to biologize (or, rather, neo-darwinize) culture, i.e., attempts to consider it a mere epiphenomenon of human biology, entirely seem to fail due to lack of concepts enabling us to capture meaning and context, both being crucial aspects of culture (see below).

This brings us to the second way of dealing with culture within biological theories. The interesting thing about human culture is the fact that it may rapidly change, even before our eyes. This has brought many thinkers, past and present, to the analogy of biological and cultural evolution (Cavalli-Sforza, Feldman 1981, Huxley 1955, Lorenz 1966, Lumsden, Wilson 1981, Sereno 1991, Scheidt 1930, and many others). This is exactly the case of the theory of memetics, which we are going to discuss throughout this article. Even though more advanced, elaborate and up-to-date theories of cultural transmission based on models originating in evolutionary biology and population genetics do exist (Boyd, Richerson 1985, Boyd, Richerson 2005, Richerson, Boyd 2005), the concept of "memetics" and "meme" is still present in evolutionary discourse, with a rising number of books published on the subject, even if the *Journal of Memetics*, a major platform for dissemination of memetics, collapsed in 2005 (e.g., Blute 2010, Dennett 2003, Distin 2005, 2011, Mesoudi 2011, and others mentioned throughout this article). Furthermore, even if we consider the relevance of these

more up-to-date theories, e.g., the concept of dual-inheritance theory, or DIT, we will not discuss it here at length. We use "memes" and "memetics" as a label for theories, which are based on two basic ideas: 1) there are more or less discrete cultural units, which 2) are transmitted, selected and diverge according to the Darwinian algorithm: variability-heritability-differential mortality, or, applied to cultural units, variability-fidelity of copying-differential extinction. Most of the recent literature herein cited and labelled "memetics" is explicit in its recognition of the original concept of memetics as presented by its founders such as Susan Blackmore and Richard Dawkins. It seems to us that we are facing an attempt to "exhume" or resuscitate memetics inside biosocial theories of culture, via a conscious strategy of avoiding the downgraded words "meme" and "memetics" (e.g., Distin 2011). Especially on the (geographical and theoretical) periphery of the biosocial approaches, memetic theory is simply taken for granted, understood as a revelation of scientific truth about culture. For example, in the Czech Republic the academic account of memetics covers one chapter in a evolutionary biology textbook (Flegr 2005, 2009) one collective monograph (Nosek 2004), two slightly uncritical review books, (Soukup 2010, 2011), the translation of Blackmore's *Meme Machine* book (Blackmore 2001) and Richerson's and Boyd's *Not by Genes Alone* (Richerson, Boyd 2012). Memetics has also, often in a very uncritical manner, become a topic of bachelors and masters theses, and coursework in Czech academia – see, for example, Knedla 2011, Lorenz 2005). Throughout human knowledge, memetics remains a topic to discuss seriously or rather a theory to rely on: e.g., art and literary studies (Barrett 2004), new media studies (Shifman 2011; the meme idea seems to be especially useful in describing the viral spreading of different internet entities), musicology (e.g., Jan 2007), theatre studies (Ingham 2008), religion studies (Bulbulia 2008), or even astrobiology (Carter 2012). This list is completely arbitrary and is meant only to show the versatility of the "meme", especially outside the field where it was born, i.e., biology-inspired theories of culture and cultural evolution.

The very idea of "memes" and science of "memetics" is based on an analogy with one specific conception of "gene" (which found a clear expression in the writings of Richard Dawkins) and one particular view of what "evolutionary biology" is all about, which has, in fact, been abandoned years ago within evolutionary life sciences as such (for an outstanding discussion of the gene definition, see, Ruse 2006; on the meme/gene

analogy, see, Blute 2010). Not that the well known analogy of genes and memes would be essentially wrong – what seems to be the problem is the Dawkinsian idea of a "selfish gene" as a source of evolutionary "agency" (see below). The idea of a meme is a mere application of this concept to the realm of culture. Not the analogy as such, but the source of it, the idea of "selfish gene" and its generalised application is becoming less and less acceptable within biology and its sub-disciplines (e.g., Noble 2008, 2011). Nonetheless, memetics and a variety of its successors became popular (mainly among people from outside biology) *due* to this analogy or comparison – often it was (and is) presented as a way to study culture in a positivist-scientific way via the use of models and enabling predictions, such that the study of culture can become a reliable and trustworthy partner for other scientific disciplines rather than being isolated and sunken, in postmodernist fashion, within a circle of self-relativisation and self-reflection. And so it has become a standard to grasp on every possible similarity between natural sciences and humanities (and social sciences), even those separated by decades of separate development, even those that are most dubious. One such similarity is the idea of units of heredity (mostly neo-Darwinian interpretation of genes) and units of culture.

CULTURAL UNITS AND THEIR TRANSITION

Culture can be seen as an internally-integrated system, whose smooth continuity is a result of an all-integrating cultural pattern (Kroeber 1963: 131). Other times, culture is described as a content-disjointed continuum of non-homogenous elements that create an interconnected transmittable "package". This "package", however, is in some theories composed of disjointed components and heterogenous elements held together as cultural tradition (Murphy 1989: 28, for a review of culture definitions, see, Fox, King 2002, Kroeber, Kluckhohn 1952, Kuper 1999; authors are aware of the trickiness of defining culture, but at this place, a deeper discussion is out of the scope of this study). The transmission of the tradition as a compound of interconnected disparate elements is often described as acculturation, or the acquisition of culture. It is obvious that some cultural elements are transmitted alone, without the corresponding "package" of tradition, across cultures and even civilizations (e.g., Linton 1936). Because of the notion that elements of the culture are stand-alone, a need for a hypothetical concept of a "cultural unit" arose. This "cultural unit" would

propagate itself heedless of its cultural environment that consists of packages of tradition.

The concept of the "cultural unit" has for decades been developed among cultural anthropologists, seemingly trapped in the ghetto of humanities and social sciences. In the 1970's, however, thinkers strongly influenced by population genetics and sociobiology arrived at the same concept of "cultural unit". At least some of the previous concepts of "cultural units" were already devised as interconnections of culture and biology such as "Culture-gene" (Lumsden, Wilson 1981), "Cultural Trait" (Cavalli-Sforza, Feldmann 1981), or "Cultural Variant" (e.g., Boyd, Richerson 2005, Richerson, Boyd 2005, which is based on an analogy with a different definition of genes). However, only this Dawkinsian-based version of the concept of the "cultural unit" named "meme" has since given rise to a hypothetical science of memes – "memetics". Although memetics is only one among multiple Darwinian theories of cultural transmission and evolution, as far as we know with one or two exceptions (Sperber 1996, Wimsatt, Griesemer 2007 and other publications of the mentioned authors), all of them share simple set of ideas, whereas not all of them consider them being as crucial as it would be in the case of memetics (e.g., the so-called guided variation, a concept developed within the Dual Inheritance Theory, admits the role of a "teleological", therefore non-darwinian factors in human cultures, Richerson, Boyd, 2005: 116 and further). First, culture can be divided into discrete units, at least in most cases. Second, these units are being transmitted (copied) from one individual to another; unlike genes this happens not only vertically but also horizontally, whereas, as in genes, the content of what is being transmitted does not influence the way it is transmitted, or, any influence that does exist is biased, based on the fact that human minds are evolved in a species-specific way. Third, the patterns of this transmission can be modelled upon mathematical models originally developed for and inspired by population genetics.

The criticism of memetics we are dealing with in this article can therefore be applied to at least parts of most of the recent biosocial theories of cultural transmission and evolution.

MEMES AS UNITS OF TRANSMISSION

"Memetics" as a term was spearheaded by Brodie (1996) and Lynch (1996). Memetics could be defined as a hypothetical attempt to describe cultural transmission

via the evolutionary model analogous to the popular Dawkinsian version of Hamilton's concepts. The father figure of the concept of memes is Richard Dawkins, a propagator of evolutionary biology who catalyzed a long tradition of overemphasizing the analogies between "cultural evolution" and a particular view on "biological evolution". In *The Selfish Gene*, he presents his theory in which he defines meme as a hypothetical "unit of cultural transmission", which is technically a replicator (Dawkins 2006 [1976]). In his book *The Extended Phenotype* (1982), he expanded his definition of a meme by differentiating meme itself (the information content, the information itself) and its phenotype (the expression of the meme by behaviour or through physical artefact). In his essay *The infected mind* (2003) Dawkins distinguishes two types of memes – the first one is prone to mutations and therefore exists in multiple variants (Dawkins 2003: 119), the second one is a self-repairing meme which has only few variants of itself (Dawkins 2003: 123).

Dawkins uses the meme as a unit of cultural transmission analogous to a gene. Both memes and genes are replicators which spread themselves through a population, sometimes mutating and sometimes stable, but always subjected to natural selection. Dawkins claims that genes created a "vehicle" (organic bodies) by which they transmit themselves into further generations. Memes, on the other hand, use the mind of the vehicle created by genes as their own "vehicle" of sorts. The coexistence of memes and genes inside one "vehicle" (any organism with the capacity for cultural transmission) leads to uncertainty about how to interpret this coexistence – whether as rivalry or as collaboration. Any replicator must meet three criteria to succeed: longevity, fecundity and copying-fidelity (Dawkins 2006: 194). There are three conditions required for evolution by natural selection to appear: 1) variation, 2) heritability, and 3) differential extinction. Phenomena fitting all three criteria will be subjected to the principles of natural selection. Thus, according to Dawkins, even non-biological entities will succumb to evolution. Unlike most genes, memes do not necessarily need to provide advantages for their vehicles in order to be transmitted (Dawkins 2006: 200).

Mememes are replicators that evolved as "copiers" of patterns of various cultural behaviours, or as "copiers" of cultural information content. And even though they are not propagated genetically but via imitation, they, according to memeticists, are subjected to memetic evolution (Brodie 1996). Mememes are propagated via the behaviour of their vehicle (their host), whose behaviour

they influence as much as genes do. Some memes are successful, some have a high rate of mutability, and others are rendered extinct.

Curiously, the relation between "old" and "new" replicators and their evolution proves to be unclear. It can be described either as co-evolution or as rivalry. Blackmore described this rivalry as genes being held on a leash by memes (Blackmore 1999: 32–36). Lewontin, Rose and Kamin (Lewontin *et al.* 1984: 11) in their widely-known criticism of sociobiological attempts to explain human nature and culture, claim that memetics is proof that even theories on cultural transmission can fall into the trap of biologizing the notion of complete submission to biological (or analogous) principles.

Sometimes this coexistence is described as "symbiosis", mainly in instances when memes are actively helping genes and memes are transmitted vertically, e.g., the meme for a "large family" (Dawkins 2006: 122). Children from large families will probably inherit the "large family" meme and then they themselves will have large families. The "small family" meme will eventually be marginalized because children from smaller families will become outnumbered by children from larger ones. Other times this coexistence is described as a "rivalry" (Blackmore 1999: 32–36, 185). The most common example used by memeticists to demonstrate memes that oppose genes is celibacy (Blackmore 1999: 138–139, Dawkins 2006: 198–199).

Memes can propagate and evolve in cooperation or opposition to each other and to genes. Genes determine the phenotype, however the phenotype cannot determine memes. The distinction between mutation and reproduction in memes is unclear. It is unclear whether variants of a meme are counted as standalone memes or (to use the analogy with genes) as alleles (alternative forms of the same gene). The question for the distinction between mutation and reproduction is also a question for the principles of cultural evolution. Can cultural evolution be Darwinian or Lamarckian or both at once (Rose 1998)? Blackmore gives a positive answer – she calls the Darwinian memetic evolution "Copy-the-instructions" and the Lamarckian one "Copy-the-product" (Blackmore 1999: 61–62).

Memetics, however, defines the human being by means of imperatives that are completely analogous to their biological counterparts. In a very similar way to how one can hardly "deny" or choose from one particular allele of a gene, so too one cannot influence the memes coming in and out of one's mind – first, there is no "self" of the whole organism (neither is there for genes); second, though there may be some randomness of

behaviour, there is no active choice performed by a subject. In memetics, man is comprised of a biological basis and a cultural superstructure, whereas both of them are deterministic in the sense of denying active choice (e.g., Blackmore 1999).

Further analogies with genetics tend to confuse things. Genes work only in a context. There is no single gene for a single trait (or, such examples are rather rare), as the trait is in most cases a result of "collaboration" of multiple genes. Memes are supposed to work in similar "teams" like genes, because teamwork helps with propagation of all the "team-members" (Dawkins 2006: 84–86). Only the most profitable "players" are allowed inside this memetic team. Profitable for the whole team that is, because the team replicates collectively together. These teams of memes replicated together are called "memeplexes" (Blackmore 1999: 19). However, the boundary between a single meme and a memeplex is fuzzy. Memeplexes do not solve the allele problem, because the problem with alternatives now concerns not single memes but memeplexes as the units.

Memeplexes fight for a limited space, space that can be used by only one such memeplex; so in theory there should be "memeplex monocultures". In practice it seems as if memetic theory has a problem trying to explain the existence of alternatives, for the existence of alternatives (cultural alleles) does not make sense in memetics. Memetic theory opts to ignore the plurality of cultural units (because the alternatives do not vanish as genetic alternatives do) to retain its logical cohesiveness. Therefore it seems that there are no "evolutionary stable strategies" in the realm of cultural units. If they would exist, we could anticipate the existence of a singular cultural allele for each trait – the opposite seems to be the truth for most recent "cultural alleles".

MODES OF TRANSMISSION – THE MEMETIC VIRUS

Memetic transmission seems to highlight the divide between the macro- and the micro- perspectives of cultural transmission. On the micro-level, transmission is an intricate social system comprised of micro-interactions. Mutation can happen at every step of the process of imitation. Memetics claims that in both micro- and macro-perspective distinguishable memetic laws will emerge. And it will be possible to describe the whole process of memetic transmission with these laws and thus it will also be possible to anticipate causalities (Gatherer 1997) similar to the laws of inheritance.

Memetics itself seems incapable of transcending the Neo-Darwinian model of memetic-genetic transmission as proposed by Dawkins. Even though, for example, the dual-inheritance theory proposes new models and modes of transmission which cannot be found in population genetics, these are basically only modifications of pre-existent genetic models (for an extensive discussion, see, Claidiere, André 2012).

Memes are also often compared to viruses (Brodie 1996: 157–186, Dawkins 2003: 128–145), replicators that exist independent of their own vehicles, but their transmission and propagation is horizontal and depends on their ability to infect these vehicles, parasite on them and use them for self-propagation (Blackmore 1999: 19, Dawkins 2006: 245–247). Memeticists claim that memes can propagate both vertically (via socialization of children) and horizontally. Hence, memetic transmission is often likened to a "contagion" (Blackmore 1999: 47, Brodie 1996: 55–64, Lynch 1996) and is described as similar to laughter or yawn infectiousness (note that in both of these examples the behaviour cannot be influenced by the subject, or rather, the subject is not even taken in account). This analogy reaches even further. In a way similar to viruses, which have to overcome the immunity system, memes have to overcome the memplexes already existing inside the vehicle's mind.

Dawkins (2006) presented examples of viral memes such as melodies, tag-lines, mottoes, one-liners, jokes, religion, fashion trends and fads. Either behaviour observation or interaction with a medium containing the meme (recording, book) can lead to imitation. Dawkins references examples of animals, especially birds, supposedly demonstrating memetic transmission.

Memeticists have even claimed that without memes, humans would have only certain ways of behaviour at their disposal – just the genetically wired-in behaviour such as reflexes and instincts, accessible as ROM (Read Only Memory). Memeticists claim that memes constitute human mind and consciousness – "Human consciousness is itself a huge complex of memes" (Dennett 1991: 210). Some memeticists claim that memes are also ROM and that it is impossible for their user to intentionally reprogram them (Brodie 1996: 60), the vehicle can only decide whether or not to adopt them. Mutation is only an error in the transmission as the transmission is implicitly presented (*per analogiam* to genes) as digital.

Memeticists claim that cultures comprise of memplexes, and describe the levels of culture as analogous to the hierarchy of biological organisms, from memes and genes to memplexes and organisms and

further to cultures and species. The analogy goes even further: natural selection in culture also concerns the basic units – memes (Blackmore 1999: 33–34, 181–182), analogous to genes (and not organisms) as the units of selection. Only memes "struggle" for the limited resources in human minds, not cultures or civilisations. The human role is reduced to a passive vehicle, inside which a furious competition rages between memes for place in memplexes. This memetic struggle for survival composes (as a by-product) cultures and civilizations.

AGENCY OF MEMES

We need to stress here that "agency" (in quotes) does not equal intentionality. Agency is descriptive of what appears to be the acting agent at a given point of time; it is closer to being a description of a situational role than a claim of inherent characteristics. Therefore, "agency" is not limited to sentient, conscious, and intentional sapients. When applied to the nature-nurture scheme, ambiguity emerges: both genes and culture can be credited with agency. Intentionality, however, can be ascribed neither to genes nor memes. The Darwinian universe works quite well mechanically, without any directedness or intentionality, with one exception – the emergence of evolutionary novelties. This is a necessary part of the evolutionary process, nonetheless, it is not its base. Even Darwin himself was well aware that his theory may well explain the *evolution* of existing traits, but not their *emergence*. Why, where, and how do they appear? Or, in other words, though the whole evolutionary process is basically mechanical and its members do not actually do anything on their own and they can only behave in prescribed ways, the very condition of evolution, generation of variability, is based on a sort of "agency", on a core of uncertainty that generates novelties.

There simply need to be some agent of evolution, which does not operate in a fully predictable way. Analogically, the Dawkinsian universe is based on the "agency" of genes (or, alleles). Though we witness a multitude of rhetorical strategies to assure the reader that they cannot behave in another way, we see them competing, struggling, developing strategies, forming alliances they – the genes – are presented as agents of evolution, unlike individuals, who are not (see also Denett 2003).

Memetics, as well, found a peculiar way of answering the question "Why memes propagate and spread?" The answer is simple. Memes do that because they can, they

are replicators and replicators cannot do anything else. The memetic transmission itself is driven by natural selection, and memes that succeed in transmission will prevail over those that did not. The exact principle of memetic propagation and transmission is not dealt with.

Thinking the memetic theory through has serious consequences and questions, for which memetics offers no convincing answers. Culture, comprising of memplexes, would be defined as a self-organizing system (Kelly 1994: 360). Such a system, comprising of self-propagating replicators, would have its own emergent agency. Memeticists tend to claim that cultural entities or artefacts are in fact driven by the non-conscious interests or impulses of memes (Dawkins 2006: 196, 200); they, not their vehicles, as in the case of the Dawkinsian vision of evolution, are agents of evolution. These "instincts" of memes command nothing other than self-reproduction. Where, then, the self-organization comes from?

For memetics, culture is not driven by the motives of humans, but by non-conscious "instincts" of its own particles, memes. No matter that the true Darwinian evolution has no agency and is essentially aimless. This passive fatalism with no space for human consciousness seems to stem from animated ultra-metaphors clumsily used to describe memes. In this case, it might be more fitting to talk about reification caused by unintentional heavy-handedness in expressions on the side of the authors.

Lynch claims that every thought has a "propagative profile" (Lynch 1996: 9), that is, its potential for successful transmission can be rated (Lynch 1996: 3–8). The Heaths (Heath, Heath 2007) describe the "stickiness" of certain ideas, meaning that certain ideas are memorable and interesting. Therefore, at least in memetics, it is not the content, but the form of a "meme" that makes it able to reproduce at a higher rate. Because of its form, not the content "Mary had a Little Lamb" will simply multiply better than, say, the theory of relativity or Wagner's Lohengrin.

A certain line of thought in memetics is perhaps best described as "selfish memetics". "Selfish memetics" is a determinist persuasion that humans are controlled by memes so it is impossible for them to act by their own decisions and by free will. "Selfish memetics" denies both humans and memes consciousness and intentionality. Unthinking nature controls humans via unthinking memes and genes. The answer to "Who profits?" is always "the memes do". Dawkins described memes as parasites hopping from brain to brain in order to achieve immortality (Dawkins 2006: 34–35). Blackmore radicalized existing views on memetics into

Dawkinsian "selfishness" and attempted to explain self and language through it. According to Blackmore, memes, again, disprove the existence of free will and individualism, and thus only memetics could possibly provide a way of explaining and foretelling cultural evolution (Blackmore 1999: 233–246). Dennett also refutes free will (Dennett 2003: 177–179) and claims that culture evolved by and via memes and their principles, without the possibility that man influences it. For "Selfish memetics" the study of cultural transmission is analogous to an epidemiology, while memes are viruses, as mentioned above.

It is possible to recognize memetic principles and utilize them for humans, however, it will serve memes and genes, anyone but humans themselves. In "selfish memetics", the human is led by memes to achieve goals (propagating memes) by means of other memes. Thus, transmission, in a sense, precedes the human individual.

There are memeticists who dissociate themselves from this "selfishness". Lynch (1996) describes memes as non-conscious thoughts that are unintentionally transmitted by humans and unable to control their own transmission. The successfulness of memetic transmission is decided by a meme's usefulness for some human population. Here, memes exist for humans, not vice versa as in "selfish memetics". Brodie calls this "Level 3" (Brodie 1996: 222) – it describes the condition where an actor chooses memes s/he allows himself to be programmed by. Unlike "selfish memetics", Brodie and Lynch describe the inner mental entities of active actors; these are simply empirically impossible to prove. This view is much closer to cultural anthropology, which claims that culture is comprised not by the sum of artefacts, but by the inner and empirically unprovable entities, such as mentalities (Lloyd 1990). "Selfish memetics", on the other hand, demands that units of cultural transmission be thought of as artefacts (Dawkins 2006: 190). The question again emerging here is whether physical artefacts can carry memes (cultural replicators) like DNA carries genes (biological replicators).

CRITICISM OF MEMETICS AND THE CONCEPT OF MEMES

Generally, the criticism of the concept of memes focuses on several points, some of which memeticists themselves admit, most of which have already been mentioned above:

- 1) Uncertainty about a medium, a carrier, on which it would be possible to store memes, like genes on

DNA. The problem of memetics that even memeticists themselves freely admit (Blackmore 1999: 54–55, Brodie 1996: 33) is the impossibility or inability to define the carrier of cultural information. DNA as an information carrier has its own code of biological functions, for memes this analogy proves to be insufficient – a carrier or a medium for memes can be anything man-made and it is unclear whether or not the media or carriers have their own cultural functions. Attempts at precise definitions of memes seem little implausible and based on a trite formula, such as Dennett's "smallest elements that replicate themselves with reliability and fecundity" (Dennett 1995: 344).

- 2) The problem of low fidelity of copying, which leads to very high frequency of mutations created by transmission distortion (see, e.g., Deacon 1999). To make the whole mechanism work, an essential similarity (or identity) of "memes" would be required. However, this seems also highly problematic. Identical genes copy from one bearer to another, with a minimum (but non-zero) probability of change. As we do not know what memes are, we cannot say whether they replicate (copy) identically – we cannot even say they replicate at all. It could also be that the nature-culture analogy in its neo-Darwinian interpretation (the gene-meme analogy being only one case among many) may be essentially overvalued (for a broader criticism of the analogy, see, Claidiere, Andre 2012, Weiss 2012).
- 3) The adherence of memetic theory to the assumption that the system of culture is subject to rules of natural selection. The vast number of variants and alternatives of cultural units seems to disprove the notion that natural selection is at work in culture. Selection should eliminate mutations and usually, there should be only a few alternatives. The contrary is being observed in the real world.
- 4) Memes are sometimes seen as substitutes for thoughts, whose only calling sign is transmission from one human brain into another, which is somehow believed to grant them their own "life". It is the alleged agency of memes, based not on their content, but on their form and on their way of transmission, which makes the concept problematic. In a very similar fashion, the gene concept, as it is in a quite simplistic way presented in the neo-Darwinian scheme, has been under criticism for several decades (see below).
- 5) The problem of the smallest unit, and its definition, which can be a meme. In fact, there is an "atomistic

bias" present in memetics, as there is in Dawkinsian gene-centred biology. And even if there were to be some further indivisible "atoms" of culture, what would be the "glue" that sticks them together into larger wholes? If those hypothetical units would be replicators, their "main goal" would be the increase of their own copies. Such combinations of memes that would prove themselves as useful for self-propagation and replication would prevail, others would perish. As Dan Sperber (1996) and others have pointed out, atomistic bias in memetics (and other theories) implies the fact that culture is separable into discrete, sharply defined units. Even though Darwinian evolution may still be in play even without well-defined units, the models would look essentially different.

- 6) The problem of interpretation and meaning. Memes are only one of the many terms for similar phenomena – e.g., Cultural traits, Patterns of culture, Culture-Gene. These concepts vary in whether they concern any transmittable cultural unit or only copyable information. Dan Sperber (1996) has pointed out that there is serious doubt about the essence and identity of such a "unit". Person A's representation of information usually differs from the representation of person B. Based on this assumption, one may ask whether the whole theoretical apparatus around "cultural transmission" is not in fact just an over-interpreted metaphor, as we do not know what is being transmitted. But what criteria decide their usefulness? In our view, it is qualitative criteria, i.e., the meaning of such units and their cohesion. Even more, meaning is not a *fixed trait* of such a unit – meaning can only be attributed by something (someone) else. Even if there could be a unit of culture which could replicate (copy, spread though exact imitation), the meaning of each may differ significantly. The passages of the Holy Bible dealing with Christ's sacrifice and especially the last supper ("Take and eat; this is my body") were in the past interpreted in a very different fashion by, say, inhabitants of central Europe and the Papuan highland. The words, encoded with high fidelity into a holy script, can, in fact, be interpreted in an almost unlimited number of ways, once a creative subject is present. One of the essential assumptions of memetics, namely that human minds are only more or less passive recipients not creative subjects, seems to be based on very poor evidence. What is decisive in culture is meaning, not only in evolutionary terms (habits of foraging, housing, hunting, knowledge of

healing and poisonous plants, etc.), but also in the sense of internal logic and conjoint meaning. Memetics seems not to take this, in fact essential, property of culture, into account.

Out of this (limited and incomplete) list of criticisms, we choose two basic topics that seem quintessential for the struggles over biosocial thematizations of culture. At the same time, they seem to be the crux of the misunderstanding between natural and social science, and they even seem to be critical spots of natural science, or to be more concrete – biology, whereas meta-theoretical critiques of how biology works usually aim in these two directions. They are agency and meaning, both of which are already mentioned in the text above.

ARE THERE REALLY "SELFISH GENES" IN BIOLOGY?

It has already been noted that there is a multiplicity of views on evolution and genetics, Dawkins' popularized concept of the "selfish gene" is itself a rather loud and media-exposed curiosity, and in itself, is seen as a reduced variant of Hamilton's theory. In their criticism of Dawkins' reduction, Deacon (1999) and many others (e.g., Lewontin 2000, see also Avital, Jablonka 2000 for an excellent critique of Dawkinsian memetics and an alternative approach; Noble 2008, 2011) claim that genes are neither active agents of evolution nor its moving force. Dawkins' interpretation of information transmission in biological systems is so reductionist that it causes genes to seem active. Dawkins' reduction inverts the whole process inside out. According to Deacon, it is Dawkinsian rhetoric that turns the passive helixes into active agents, whereas they are, in fact, passive information carriers that either are or are not involved in biochemical reactions, according to context. It is the context, within the whole system, that provides information and function to its units, which is a fact broadly acknowledged even within molecular biology (e.g., Lathe *et al.* 2000). The macrostructure explains the microstructure; however, due to Dawkinsian reductionism, this is reversed into atomism of a kind. The whole memetic theory seems to be built on the assumption that memes interact outside the whole system and that memes do not need context to carry information. This seems to indicate that the fatal fault of memetics is that it is too dependent on Dawkinsian reduction. The macrostructure interpretation indicates that cultures are mainly comprised of unifying structures of meaning ascriptions

akin to "mentalities", a view that is shared among social scientists (for a general review and criticism, see, Lloyd 1990). Memetics, on the other hand, utilizes the microstructure interpretation where the cultures are comprised of disconnected elements that are united only by their transmission as a part of the tradition.

MUTATIONS, BIOLOGICAL AND CULTURAL

Both micro- and macro structure interpretations seem to have a problem with the frequency of mutations. Biological natural selection has a frequency of mutations that is neither too high nor too low (Sterelny, Griffiths 1999: 333), or in other words, an entity needs to reproduce faster than it mutates in order to be a subject of natural selection. If that would apply to culture, we would probably see a lot of stable memes. Some of the best examples of cultural transmission, however, seem to disprove this. Urban legends (also mentioned as memplexes *par excellence* by Blackmore 1999: 14–15) usually exist in so many variants that the only trait they have in common is their plot, whereas the motifs change widely according to the version. Examples such as these lead to serious doubts about the principle of transmission of the units of culture. Is imitation really the principle of memetic transmission? Psychology offers interesting insights: imitation is not only what one tries to replicate, but also what one thinks (interprets) of what one is imitating (Bruner 1996: 201). Imitation explains the plurality of variants as errors in transmission, whereas interpretation, or, transformation explains plurality as alternative ways of mental grasp. "Selfish memetics" reduces people to unthinking vehicles among which memes are transmitted by non-conscious imitation. The difference between imitation and interpretation, or, as Maran (2003) puts it, imitation and representation, challenges the analogy between biological evolution and its presumed correlate in culture. Even if cases of a mere copying (imitation) may emerge, the majority of cases involves not transmission, but, in fact, transformation (Sperber 1996), whereas meaning is at each time reconstituted by an active subject. It is the creative, active subject that defines the meaning of each bit of culture. The one and the same entity (be it artefact, instruction, or representation) can be interpreted in an unlimited number of ways and vice versa, two distinct entities can easily be interpreted as one. We agree that imitation (copying) happens in culture (e.g., the use of fork and spoon), however, the "heritability" of most non-banal traits is simply too weak and so influenced by the subject (interpreted) that, in many cases, the natural selection

model cannot be used, or, cannot be used *per analogiam* to models of population genetics (see, e.g., Sperber 1996, Wimsatt 1999). Here, questions about the centrality of interpretation (Deacon 2004), the role of different modes of cultural transmission (Claidiere, Andre 2012), and the study of transmission biases (e.g., Wood *et al.* 2012) emerge with new urgency. Moreover, as Claidiere and Andre (2012) point out, in the case of culture, the transmission of cultural units *is not* a consequence of a causal set of rules (as it would be in the case of genes) but much rather the outcome of their *content*, i.e., their *meaning*, and instead of being defined as causal mechanisms (as in the case of population genetics), they are mere descriptions of how culture goes from one individual to another at a given place and at a given time. As Claidiere and Andre (2012) state, there are only several possible modes of transmission in population genetics that can ultimately be used with satisfactory or even good results. In culture, however, the basic condition of population genetics models is unhelpful, i.e., the rule that what is being transmitted does not influence the way it is transmitted, is not in play (see, e.g., the notion of regulatory traits in Acerbi *et al.* in press). Therefore, even if the modelling of culture transmission may have begun as an analogy to genes, it is time to go one step further. Not only have the way we look at genes, genetic causation, and their role in evolution changed significantly, in some interpretations toward the metaphor of reading, understanding and interpretation, it is also time (and most of the researchers dealing with the evolution of culture would probably agree) to admit that there are some special features in (human) culture, which are not present (or, more likely, very hard to spot) in other species. And it was the domain of culture where the discipline of semiotics gained its sensitivities for meaning and, in the past decades, moved beyond these limits.

THE SEMIOTIC TURN, BIOLOGICAL AND CULTURAL

The "meme of the meme" seems to be highly contagious; indeed, what it lacks in its current form, both as a hypothetical entity and as a theoretical tool, is meaning. This is the particular reason why researchers from within the humanities and *verstehende* social science are usually extremely sceptical and even hostile to any attempt to "biologize" culture with the use of memetics (or similar theories guided by the same presumptions). As any natural science, biology rather

lacks the sense for *meaning*, which, one way or another is the crucial feature of culture. Any sort of cultural product, no matter whether it is a "artefact, mentifact, or sociofact", to cite Julian Huxley's definition of culture (1955), is not determined by its function (a knife can be used as a lethal weapon, as a can opener, as a decoration or as a, say, cultic object) – what matters is its meaning, attributed time and again by the living subject (Hoffmeyer 2008, Kull, Emeche 2011).

As mentioned above, we do not see a problem in the analogy of nature and culture. What matters is what is taken as the source of the analogy. What would happen should we use definitions of culture from the humanities, semiotics in particular, as a primary source for the analogy, and try to look at "biology" through the prism of theories stemming from the fields of the humanities?

Biosemitics, a discipline on the margin of both biology and semiotics consciously trying to bridge the natural sciences and the humanities, demonstrates that it may be reasonable *not* to analogize nature and culture by more or less violently pushing culture (with all its complexity, internal coherence and, in particular, a heavy load of meaning) into the narrow form of *all-that-matters-is-selfish-genes* biology (which, in fact, is seldom present in recent academic biology as such). On the contrary – leaving the nature-culture analogy as it is, we, along with biosemiotics, would like to propose a reverse approach: namely, we would like to examine whether or not the seemingly unique features of culture are in fact and to some extent or at some level of recognition, present in natural phenomena.

The struggle around memetics can be thought of as a case of an unsuccessful attempt to biologize culture, and its critique could be applied more broadly to biology. Or, to be fair, to biology and its methods as seen by many researchers from the outside, as a mechanistic, shallow and in fact sapless discipline, which, under the cover of a proposed "consilience" (Wilson 1998) or creation of a "third culture" (Brockman 1995), is trying to invade and assimilate the last surviving enclaves of the humanities and social sciences. It is becoming more and more clear that the humanities, for centuries dealing with supposedly or truly human unique features, have developed theories, methods and sensitivities that can hardly be replaced by simple biology-based models without losing their explanatory power. But unlike the life sciences, they lack a common framework which is represented by the theory (theories) of evolution in biology and surrounding disciplines. A synthesis should be attempted in the atmosphere of respect, not disregard and ignorance. The second seems to be the case for

memetics. Many social scientists rightly state that memetics ignores everything that has been written concerning cultural evolution and cultural transmission in the framework of the humanities and the social sciences (see, Bloch 2000, Bloch, Sperber 2002). Bloch (2000) even writes about an interesting thought experiment where a sociologist, without the slightest knowledge of evolutionary theory and genetics, invents new terms for "units of transmission" in living beings and then tries to convince a biologist to use them.

The complexity of culture is striking. Its internal logic, which can under no circumstances be reduced to a mere side-effect, represents another level which makes it complicated, if not impossible, to explain culture as a mere epiphenomenon of biological evolution as seen by neo-Darwinism (as well as Wilson's sociobiology and most of its sequels). There must be something else involved. Which field and what subject, if not anthropology (more precisely, the sciences of human behaviour with all its struggles between various social and biological branches, and the human species with all of its oddities, biological and cultural) should be the first place to begin?

Seekers of human nature will not be successful with bare biological knowledge alone. This does not make culture in any way unnatural. As the methods of studying peptides differ from those of studying orchids as well as those of studying, say, Komodo dragons, the methods of studying culture necessarily differ from those of genetics. Theoretically, you could apply methods of biochemistry to a study Komodo dragons and you would get results. But something important is going to be missed if your interest is in Komodo dragons in general.

Semiotic criticism of memetic theory arrived at similar conclusion about the use of the model of biological evolution in culture. Kull (2000, also Deacon 1999, 2002) claims that culture, as a semiotic system, must be transmitted via semiotic means – i.e., by the process of translation, not copying. This is completely in parallel with the imitation versus interpretation discrepancy. A meme seems to be a sign without Peirce's triple structure of sign-object-interpretant. It is a degenerated sign whose only feature is the ability to be transmitted (Kull 2000), a sort of a mere cultural virus. Kull points out that in the memetic theory cultural units have lost their capacity to be understood, that is, mediated by translation. As pointed out by Maran (2003, for another semiotic treatise on mimesis and mimicking, see also Sonesson 2010) and in a slightly changed sense by Kleisner and Markoš (2005), there is no simple "copying" where meaning is involved, which apparently

is the case of culture. Following Maran's (2003) useful distinction, while imitation *sensu stricto* could be rather passive and performed without the active aspect of a subject, what we mostly find in culture (and some would add, even in aspects of non-human nature) is interpreting, representing, or mimesis. Mimesis, an active adaptation of what has been mimicked and performed each time by the subject's own means, is the main property we encounter when we look at cultures, past or present, proximate or remote. Interestingly, when Dawkins developed the term "meme", it was meant as an abbreviation of "mimem", a word derived from "mimesis". Sadly, this path was abandoned almost immediately, and the abbreviation "meme" for most people refers rather to "memory". In this memetic image of man, minds work only as passive storage of data, as a deposit of essences that, simply, were there before and will, when reproducing well, be there even after.

As noted previously, Darwinian orthodoxy often has problems with explaining the emergence of novel features, and this is especially true for "cultural neo-Darwinian accounts" such as memetics. Unlike in biology, applying the old preformist belief of *omne vivum ex ovo* to the realm of culture seems to be rather an obstacle and not a useful theorem to follow. Simply put, evolution in culture does not need to be step-by-step. New features can emerge at once, complete and without necessity to evolve according to the Darwinian algorithm.

With two simple examples (both being well known to cultural anthropology) it can be shown that there is no simple transmission, that there does not have to be any transmission at all (a process involving a sender and receiver, where the measure of success is the fidelity of this transmission) – only interpretation is involved, and no Darwinian selection is necessary (see, e.g., Taylor 2012).

It can be demonstrated that content emerges each time anew; e.g., the well known example of cargo-cults, and the mimicking of other biological species that can be found in many religious practices, but also in everyday life in all cultures. In memetic terms, both only emerge as fatal error. Still, they teach us a lot about the nature of new cultural content. In the beginning, there was no cultural content of such a meaning (in the first example, another human culture was in play, remote, misunderstood, and seen from one side; in the other, not even humans were needed). But to enter existence, what was needed was an active, creative subject.

The absence of an obvious "carrier medium" for memes sparks doubts about the rules of "transcription", which would be analogous to the code of DNA encoding

patterns. Even though nobody really knows what a meme physically is, memeticists seem to be under the impression that the memes people exchange are raw information, because memes are not mediated.

For memetics, manipulation with memes is like tapping into a data stream. If we consider this thoroughly, we realize that it would exclude the possibility of misinterpretation. This is unacceptable for the social sciences and humanities that often show that "man is an animal that does not have unmediated data" (Ignace Meyerson quoted in Bruner 1996: 198). Socialized humans inhabit a semiotic landscape populated by signs that reference meanings. In this context, Deacon presented his interesting suggestion that memes could be redefined as vehicles for signs. Signs refer to shared meanings, real or imaginary, where even imaginary entities exist objectively. As Deacon writes: "Genes and memes are not the locus of the replication process, nor are they somehow the functional unit of information. They are replicas not replicators" (Deacon 1999). So memes would be replicas of "vehicles for signs", only somehow damaged, and not referring to a shared meaning. Would it, then, be possible that memes evolved as "stray symbols" (see also Deacon 2002)?

CONCLUSION

It is probably safe to generalize Chomsky's statement about Neo-Darwinian interpretation of genetics to memetics. Chomsky claims that Neo-Darwinists explain almost everything by genetic determinism. Chomsky notes that Dawkinsian genetic theory manages to explain a wide range of facts with its seemingly all-explaining scheme (Chomsky in Horgan 2000: 179). This can, of course, concern memetics as well. Chomsky means that Dawkinsian genetics as well as "selfish memetics" offer unfalsifiable, unverifiable and unprovable explanations, and are, in essence, ad hoc fallacies. Such fallacies offer circular explanations based on inner axiomatics rather than based on the outer phenomena. In fact, most statements on memes from memeticists have the "Memes do X because that is what memes do" form. Memetics is clearly an attempt to describe and explain culture and its principles by just one, seemingly all-embracing, theory. The impossibility of falsification, fed by the vocal invitations of memeticists to "disprove us", seems to have stirred up the proverbial hornet's nest among social scientists. Social scientists consider memetics either a sophisticated joke, a jab at the humanities by neo-Darwinists, or an attempt to colonize

cultural anthropology by way of a neo-Darwinian explanatory scheme.

Accumulated counter-arguments and criticisms of memetics has led either to a general dismissal of the memetic theory by both social scientists and memeticists, or in some cases, an abandonment of the memetic vocabulary but maintenance of the founding presumptions as they stand within their own theories (see, Distin 2011). It is worth noting that in the final issue of the *Journal of Memetics*, a vigil or a requiem for memetics was officially announced wherein memetic theory was evaluated as a largely unsuccessful attempt to explain cultural transmission in analogy with genetic transmission (especially Edmonds 2005, further see Claidiere, Andre 2012).

We would definitely agree that "culture is merely the continuation of nature by other means". But note the *other* means. Instead of putting culture into the mould of Dawkinsian biology (as we have seen, such attempts usually fail, or are forgotten or abandoned, as in the seemingly promising case of memetics), maybe it would be stimulating for researchers dealing with behaviour to have a closer look at the microstructure of how individual meaning is established. In other words, how the process of reading, translation, and (eventually) transmission takes place. In this respect, human ethology could offer, at least in the case of meaning construction (which is essential for the understanding of any behaviour, irrelevant of whether we label it natural or cultural), the opportunity to look in the tradition of Jakob von Uexküll and Konrad Lorenz (see, Uexküll 2010, Lorenz 1996) for the way in which the human being makes sense of the (cultural or biological) world it inhabits. Both authors worked on the concept of a species- or (in the case of humans) group-specific "lived world" or *umwelt*, which constituted of signs, or "meaning carriers", and early ethological studies can be understood as an attempt to understand how this meaning is constructed. Even if both authors were constitutive for the science of ethology, this tradition has been abandoned by the mainstream of human behavioural science as too "soft" for being true science.

Another interesting field in the sciences of human behaviour would be the study of imitation as an interpretative process. Most of the recent studies on cultural transmission dealing with "transmission chains" (for a review, see, Mesoudi, Whiten 2008), following the memetic tradition of taking the fascinating human ability to understand what others say or do for granted, without closely examining exactly how this happens.

There are benefits to this clash of colliding paradigms, which is happening on the battleground of culture. The long-lasting argument about the nature of cultural transmission and evolution has led many to believe that the concept of agency is not fully compatible with or explainable within the context of the biologizing-the-culture paradigm. The very fact that the generalized concept of memes has found its "second life" as a way to explain various internet phenomena leads us to believe that the academic lifespan of the concept of meme has not yet faded away and perhaps it can be fruitfully revived. The meme concept seems to be an almost perfect nexus between the two opposing paradigms, when it is enriched by the concept of meaning. It becomes a sign (on the microlevel of "mimesis", understanding and interpretation) understandable for the humanities, semiotics in particular, while remaining operable within theories of cultural transmission and evolution, initially inspired by population genetics on the macrolevel. As mentioned above, the macrolevel of cultural transmission cannot be studied without a proper understanding of the microstructure. In contrast to genetic transmission, in culture *what* is being transmitted is not independent of *how* it is transmitted – i.e., even the macrolevel cannot be understood without involving some "soft" methods of the humanities, because the nexus between the *what* and the *how* is a meaning-creating, active subject. The question is, of course, to what extent can a model involving an active subject (in a form of a black-box) be acceptable science. Modes and ways of transmission of behaviours and beliefs have already been extensively studied in nonhuman organisms, including for example reflective and reflexive processes such as imitation, perspective-taking etc. They have even been successfully mapped phylogenetically (for a review, see, Hecht *et al.* 2012). This, however, addresses only the ultimate, evolutionary "*hows*". To look at the proximate "*whats*" remains a challenge (and even the "*hows*" still makes problems). We would be less convinced than Timothy Taylor in labelling memetics as the "New Phlogiston" (Taylor 2012). Although memetics and its cultural neo-Darwinist sequels represent a highly problematic theoretical concept, they have had results. Many researchers are further developing the Neo-Darwinian, selectionist theories of culture, both theoretically and practically; and this explanations work quite well for a specific set of human behaviours (for review, see, Mesoudi *et al.* 2004, Whiten *et al.* 2011). From the viewpoint of anthropology, however, where models of cultural transmission based on neo-Darwinian population genetics have been fiercely criticised by many

representatives of the field (see, e.g., Ingold 2000, 2007, Kuper 2000, Marks 2004, 2012, and many more), one of the main reasons for those attacks – namely its excessive simplicity and the reduction of active minds to passive recipients – would be removed. Following roughly the programme of "Darwinian biosemiotics" or "Evolutionary biosemiotics" (see, Markoš *et al.* 2007, Maran, Kleisner 2010) as developed especially in the biosemiotic communities in Prague and Tartu, and then re-applying this programme on human culture and the intricate intersections of human culture and biology, we would like to encourage a broader discussion among semioticians, anthropologists, and (human) ethologists. Within biosemiotics, the memetic theory, enriched by the notion of semiosis, is again becoming a topic of discussion (e.g., Recchia-Luciani 2012) The issue of culture seems to be a good place to meet, especially when this meeting occurs in an atmosphere of mutual respect and willingness to understand.

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