

Memes and cognitive schemas. Bridging the gap between memetics and social sciences

Summary

It seems that among many modern evolutionary theories of culture, memetics deserves special attention. In a nutshell, the feature that distinguishes memetics from other Darwinian theories of culture is the assumption of the existence units of cultural evolution, which are – parallel to genes – “selfish” replicators, i.e. they are the units of natural selection, whose primary aim is to multiply their copies. The main implication of the hypothesis of selfish memes is their independence from the biological interest of people who are their carriers.

However, despite the potential heuristic value of memetics, this standpoint meets a number of objections. It seems that the most fundamental objection refers to the vital question of what is and what is not a meme. One of the approaches to solve this problem is to understand a meme by a reference to the psychological concept of cognitive schema. Cognitive schemas are mental representations that consist of a structured and previously acquired knowledge about the world. Furthermore, cognitive schema theory explains how people process and give meaning to the information reaching them. In the light of what has been said, the main goal of the paper is to analyze viewing meme as a cognitive schema.

Keywords

memetics, meme, artefacts, culture, mechanisms of evolution, biological information

Memy i schematy poznawcze. Przerzucanie mostu między memetyką a naukami kognitywnymi

Streszczenie

Z grubsza rzecz ujmując, cechą, która odróżnia memetykę od pozostałych darwinowskich teorii kultury jest założenie o istnieniu, na wzór genów ewolucji biologicznej, specyficznych, „egoistycznych” jednostek ewolucji. Pomimo pewnej heurystycznej wartości memetyki, dyscyplinie tej stawia się szereg zarzutów.

Wydaje się, że najbardziej fundamentalnym jest ten odnoszący się do pytania o to czym jest, a czym nie jest mem. Jedną z propozycji rozwiązania tego problemu jest rozumienie memu poprzez odwoływanie się do psychologicznej koncepcji schematu poznawczego.

Słowa-klucze

memetyka, schemat poznawczy, D.C. Dennett, algorytm ewolucyjny

Introduction

It is of essence to notice that the subject discussed in this paper has a highly speculative character. Basically, this state of affairs is largely a result of the specific nature of the debate on the conceptualization of meme. The question of how to understand a meme is in fact a frequent subject of dispute among researchers interested in memetics. A meaningful illustration of this issue, is the fact that in the literature very diverse, and therefore divergent, understandings of a cultural replicator¹ are encountered². Moreover, memetics as a discipline, whose central postulate is the **existence** of autonomous units of cultural evolution, so to say, automatically implies a speculative nature of the inquiry. Such a bold postulate simply requires solid scientific foundations.

In addition, theoretical considerations on memes in relation to a cognitive schema are virtually *terra incognita*³. On the one hand, such circumstance suggests a relative novelty of the discussed issues. But on the other hand, this state of affairs causes some difficulties in linking together understanding meme as a cognitive schema with already acknowledged works of other researchers. At present, viewing meme as a cognitive schema is, so to speak, in a research vacuum. Meme as a cognitive schema lacks foundation in the well-established scientific works. The only notably exception is Henry Plotkin's article, in which he distinguishes between surface

¹ According to Richard Dawkins, replicators are: "The fundamental units of natural selection, the basic things that survive or fail to survive, that form lineages of identical copies with occasional random mutations [...]. They generally, [...], gang together into large communal survival machines or vehicles. The vehicles that we know best are individual bodies like our own. A body, then, is not a replicator; it is a vehicle" (R. Dawkins, *The Selfish Gene*. Oxford-New York 2006, p. 254).

² Vide D. Wężowicz-Ziółkowska (ed.), *Memetyczne koncepcje kultury i komunikacji. Teorie. Kontrowersje i konteksty*. Antologia. Katowice 2009.

³ While it is true that conceptualizing meme as a cognitive schema is a novel concept, very interesting, and in many respects is analogous to the concept discussed in this paper, work of French anthropologist Dan Sperber should be mentioned. Sperber is the author of the cultural epidemiology of representations theory. In a nutshell, according to Sperber's theory, culture is an emanation of "[...] the cumulative effect of countless process of inter-individual transmission [...]" of representations (Vide D. Sperber, *Explaining Culture. A Naturalistic Approach*, Oxford 1996, p. 3). And representations are, in general, understood as a functionally brain states. First and foremost, Sperber's theory is not a proposition whose aim is to reconceptualize the meme concept. On the contrary, he contrasts his cultural epidemiology of representations with memetics. His criticism focuses mainly on the comparison of memes to genes, as well as on transmission through imitation, which – in Sperber's opinion – are the distinctive features of memetics. However, this is a straw man version of memetics. Genetic analogy and imitation are not the inherent traits of memetic venture. In addition, it should also be emphasized that Sperber is a proponent of the massive modularity hypothesis, whereas D. C. Dennett, i.e. one of the leading memeticians, is in favor of the multiple drafts hypothesis, which stands in opposition to the previous one. Generally speaking, it can be said that memetics is kinda alternative to modularized mind hypothesis, because meme concept is in accordance with: "[...] what Sterelny calls «scaffolded learning» or a learning environment that supports rapid acquisition of the necessary information and skulls for survival and reproduction in a social setting" (A. Rosenberg, D.W. McShea, *Philosophy of Biology. A Contemporary Introduction*, New York 2008, p. 212).

and deep-level memes. For Plotkin deep-level memes are “[...] higher order memories and knowledge structures – referred to in the psychological theory of an earlier age as schemas, and more recently as frames, scripts, and memory organization packets [...]”⁴.

Another general remark to be made is that owing to a broad scope of the work, many analyzed issues will be merely mentioned, e.g. philosophically important and multifaceted issue of mental representations.

After these general introductory remarks, it should also be stressed that the main purpose of this paper is to show numerous parallels between memetics and cognitive schemas; which in turn illustrates the benefits of a research strategy whereby the recognition of similarities between perspectives of different and sometimes very distant fields of knowledge (in this case, it is cultural evolution and psychology) can mutually develop, as well as enrich these perspectives. However, the aim of this papers is to give a synoptic and a general review of conceptualizing meme as a cognitive schema in the hope of stimulating of the wider debate required to development of Dawkins’ concept.

The descriptive part

For the sake of clarity and systematization of the issue under consideration, two concepts crucial to this work will be presented, i.e. memes and the cognitive schema concept.

Memes

Generally speaking, a meme is postulated, in many respects, to be analogous to a gene – an unit of biological transmissiion, an autonomous unit of cultural transmission. The alleged usefulness of the meme is embedded in explaining (or simply, better understanding) the changes which take place in culture. In turn, referring to a more precise definition formulated by three Scandinavian researchers, which is only one of many definitions that appear in the works of the adherents of memetics: “A meme is a (cognitive) information-structure able to replicate using human hosts and to influence their behaviour to promote replication”⁵.

The trait, which is emphasized by the above definition is memes’, almost already proverbial, selfishness. It follows that, in response to the questions frequently asked by Daniel C. Dennett, who is a leading propagator of memetics, i.e. *cui bono?* (for whose benefit?), one should indicate a meme itself⁶. The ultimate goal of memes is therefore multiplication. In consequence, the wellbeing of their host (usually a human) is treated only instrumentally. Put bluntly, humans are good for memes as long as they are useful and exploitable for them.

However, this central for memetics assumption, as it can be concluded after having analyzed the work on it, has a Janus face. On the one hand, many researchers have noted that a selfish meme concept has a very promising heuristic potential⁷. As Australian philosopher Kim Sterelny

⁴ H. Plotkin, *Culture and psychological mechanism*, In: Aunger A. (Ed.). *Darwinizing Culture: The Satus of Memetics as a Science*. Oxford-New York 2001, p. 76.

⁵ H. Bjarneskans, B. Grønnevik, A. Sandberg, *The Lifecycle of Memes*. “Transhumanist Resources” 1997, <http://www.aleph.se/Trans/Cultural/Memetics/memecycle.html>. (Accessed 22 January 2015).

⁶ Vide D.C. Dennett, *Breaking the Spell: Religion as a Natural Phenomenon*, London 2007, p. 61–63.

⁷ Vide K.N. Laland, G.R. Brown, *Sense and Nonsense. Evolutionary Perspectives on Human Behaviour*. Oxford-New York 2002, p. 289-294.

claims: “As I see it, the crucial element of a meme-based theory is that the fitness of the memes themselves plays a crucial explanatory role”⁸. In other words, it seems that the hypothesis of selfish cultural replicators enables evolutionary perspective to satisfactorily explain many social phenomena which have hitherto been considered to be contrary – due to their negative effect on genetic reproduction – to the logic of Darwinism. The best known instances of such social phenomena are adoption, contraception, celibacy, or practicing extreme sports. In a nutshell, on the basis of memetics, such phenomena are simply conceptualized as memeplexes (i.e. the groups of cooperating memes) that strive to strengthen their replication. Nonetheless, on the other hand, the so-called meme-centrism, i.e. the selfishness of memes, is also considered to be the main cause of the relative ostracism of memetics in the discourse on cultural evolution. This state of affairs is largely a consequence of anthropology, which is implied by memetics. From the point of view of this discipline, a man is – to a large degree – devoid of creativity and self-determination: “If memetics is true, the belief that we can somehow stand outside the process and make conscious, independent, and objective judgments about truth and falsity is an illusion”⁹. It is by virtue of the determination of human mental life by these two types of selfish replicators, i.e. genes (that build the biological foundations of the human psyche) as well as memes (which are a medium for diverse ideas, belief system, worldviews, *etc.*). As Richard Dawkins, who coined the term “meme”, puts it, a man is merely a vehicle (or host) of survival for genes and memes¹⁰. Hence, one can venture to say that memetic degrading vision of a human is an important contributory factor in placing memetics outside the mainstream of contemporary debate on human culture, in which the primary role is played, among others, by Christian personalism, which stands in opposition to memetics.

However, apart from the controversial concept of a man, memeticians also meet other types of criticism. For instance, at this point, it is worth mentioning the problematic status of intentionality (or more generally: consciousness) in memetics, i.e. whether it has only an obsolete character, or perhaps plays a more important role in shaping human behavior¹¹. Means of memetic transmission is also a subject of hot debate among memeticians. For the majority of commentators memetic transmission should not be reduce to imitation (as Susan Blackmore suggests). Culture uses wider scope of ways of reproduction, e.g. imprinting, conditioning, learning, *etc.* So, Blackmore’s standpoint is an obscure simplification of the complexity of culture¹². Another contentious issue is the scope of the application of biological analogies in memetics¹³. In other words, this objection pertains to the validity of the gene – meme analogy. Nevertheless, it is worth noting that the proponents of the meme theory have currently abandoned simplistic extrapolation of genetic mechanisms to the functioning of cultural evolution¹⁴. In order to illustrate the role of genetic analogy in memetics, it is useful to invoke Wittgenstein’s famous

⁸ K. Sterelny, *Memes Revisited*, “The British Journal for the Philosophy of Science” no. 57, 2006, p. 155.

⁹ C. R. Hallpike, *On Primitive Society: And other Forbidden Topics*, Bloomington 2011, p.126.

¹⁰ *Vide* R. Dawkins, *op. cit.*, p. 272-278.

¹¹ *Vide* Ch. Buskes, *Darwinism Extended: A Survey of How the Idea of Cultural Evolution Evolved*, “Philosophia” no. 41, 2013, p. 683-689.

¹² *Vide* T. Lewens, *Darwin*, London-New York, p. 202-207.

¹³ *Vide* D.L. Hull, *Science and Selection. Essays on Biological Evolution and the Philosophy of Science*. New York 2001, p. 32-38.

¹⁴ *Vide* F.J. Gil-White, *Let the meme be (a meme): Insisting too much on the genetic analogy will turn it into a strajtnjacket*, In: Botz-Bornstein T. (Ed.). *Culture, Nature, Memes*. Newcastle upon Tyne 2008, p. 183-188.

ladder metaphor. Using the meme-gene analogy was serviceable (it was used for metaphoric climbing), because it helped memetics to gain some interest of scientific community, as well as to realize the simple fact that culture could be analyzed through evolutionary lens. However, at present, the analogy must be thrown away. On closer inspection, it appears that the meme-gene analogy jeopardizes Dawkins' units of selection, because it implicitly suggests that there are only minor differences between the evolution of memes and genes. As Gillian K.D. Crozier notices: "[...] caution is advised when adopting any close analogy between cultural and biological selection entities (such as traits and viruses) since these can place inappropriate constraints on cultural selection theory"¹⁵.

Above instances of memetics' theoretical problems illustrate that this approach is suffering from severe conceptual inconsistencies. James W. Polichak, who is one of the critics of the meme concept, even claims that: "Imprecision appears to be one of the hallmarks of memetic theory"¹⁶.

Nonetheless, from the point of view of the investigated topic, the most interesting issue in the criticism of memetics is the problem of meme's conceptualization¹⁷. Memetic literature provides a great deal of specifications of what should be understood as a meme, as well as in turn, what cannot be considered as a meme. In a nut shell, there are three main approaches of conceptualizing meme within memetics. Firstly, there is neuronal concept of memes. Within this concept, memes are instantiated in brain activity, i.e. in patterns of neuronal activity. Among others, Robert Aunger is a proponent of this concept¹⁸. In the second approach, meme is understood as an ostensive behaviors or artefacts. In other words, memes are some cultural observable phenomena¹⁹. The third type of meme's definition views cultural replicator in more abstract terms, this is so-called ideational concept of memes²⁰. Adherents of this approach conceptualize meme as information or abstract instructions (*inter alia* R. Dawkins, D. Dennett and S. Blackmore). So, again, memetics is primarily characterized by a pluralism of approaches and solutions to many memetic theoretical issues²¹.

Susan Blackmore, who is the leading promoter of memetics, illustrates problematic status of meme's definition by referring to the following examples:

A blob of pink paint is too small a unit for memetic selection pressures to apply – to be enjoyed or disliked, photographed or thrown away. A whole gallery of paintings is too large. The single painting is the natural unit for most of us and that is why we remember Van Gogh's Sunflowers [...]. Styles of painting, such as impressionism or cubism, can also be copied and therefore count as memes, but can hardly be divided up into units. A single word is too short to copyright and an entire library too long, but we can and do copyright anything from a clever

¹⁵ G.K.D Crozier, *Reconsidering Cultural Selection Theory*, "The British Journal for the Philosophy of Science" no, 59, 2008, p. 467.

¹⁶ J.W. Polichak, *Meme as Pseudoscience*, In: Schermer M. (Ed.), *The Skeptic Encyclopedia of Pseudoscience*, Santa Barbara, p. 667.

¹⁷ Vide C.R. Hallpike, *op. cit.*, p. 104-105.

¹⁸ Vide R. Aunger, *The Electric Meme. A New Theory of How We Think*, New York 2002, p. 329-332.

¹⁹ Vide D. Gatherer, *Meme pools, World 3, and Averroes's vision of immortality*, "Zygon" no. 33, 1998, p. 205-217.

²⁰ Vide M. Kronfeldner, *Darwinian Creativity and Memetics*, Durham 2011, p. 77-84.

²¹ John S. Wilkins proposes more inclusive approach toward meme's ontology. Namely, he states that: "Many memes reside as neural net structures in the central nervous systems of humans, but many also emerge at a higher cultural level. [...] Memes are also situated in a variety of larger semantic structures, behavioural regularities, and cultural substrates" (J. S. Wilkins, *What's in a Meme? Reflections from the perspective of the history and philosophy of evolutionary biology*, 1998, http://cfpm.org/jom-emit/1998/vol2/wilkins_js.html. (Accessed 2 February 2015)).

advertising jingle to a 100 000-word book. Any of these can count as memes – there is no right answer to the question – ‘What really is the unit of the meme’²².

Elsewhere in her work, Blackmore even claims that a precise definition of a meme is simply superfluous: “A replicator does not have to come neatly parceled up in ready-labeled units”²³. According to this British thinker, the only reasonable criterion for discriminating a meme is simply a replicative success. To put it differently, meme is a conceptual content – and it is no longer so important whether it is just a short popular proverb, or a heavy book – which can be (and *de facto* is) reproduced by the agents²⁴.

It seems, however, that the understanding of a meme presented by Blackmore, even despite a specific charm of this type of argumentation, inevitably leads to the trivialization of the meme concept. As Alex Rosenberg and Daniel W. McShea state: “We will have to be able to count the number of instances of a meme as reflected in the behavior [...] of the individuals that the tokens of a given meme type inhabit. For without such criteria of individuation, we will be unable to tell whether a meme has replicated or whether its fitness is increasing [...]”²⁵. Pragmatically speaking, memeticians should not give up their ambition to formulate a criterion for distinguishing, for example, between memes and their vehicles. Even a formulation of such working and tentative criterion will enable memetics to, at least, save the status of heuristically attractive research metaphor. And such research metaphors, as stated by D. Dennett in his latest book *Intuition Pumps and Other Tools for Thinking*, are crucial to scientific practice²⁶. In a word, they stimulate the emergence of new and innovative approaches that can transform into a productive scientific theory.

Therefore, an approach which attempts to define the concept of a meme by using categories and concepts of more methodologically developed disciplines may contribute to the improvement of memetics. One of the examples of this type of approach is viewing meme as a cognitive schema, which has been formulated in the field of psychology. Invoking the above-mentioned three main types of meme’s definition, viewing meme as a cognitive schema should be described as an ideational concept of cultural replicator. Thus it is rather an abstract strategy of conceptualization. However, this strategy does not exclude having by memes some kind of neural substrate.

Furthermore, it is worth to note that many authors have claimed that memetics utterly ignores results from social sciences and this situation is a major obstacle for its improvement. The eminent Canadian anthropologist C. R. Hallpike stated:

To understand the process of cultural transmission, then, we must take the inner workings of people’s minds into considerations, but just as memeticists are embarrassed by the structural properties of societies and belief systems, and avoid mentioning them as far as possible, they are remarkably silent about what goes on inside the mind²⁷.

Notwithstanding this, viewing meme as cognitive schema could help memetics to be better embedded in social sciences.

It should be also stressed, however, that viewing meme as a cognitive schema does not

²² S. Blackmore, *The Meme Machine*, Oxford-New York 2000, p. 54.

²³ *Ibidem*, p. 53.

²⁴ *Vide ibidem*, p. 53-55.

²⁵ A. Rosenberg, D.W. McShea, *op.cit.*, p. 216.

²⁶ *Vide* D.C. Dennett, *Intuition Pumps and Other Tools for Thinking*, New York 2013.

²⁷ C.R. Hallpike, *op. cit.*, p. 119.

exhaust all possible instantiation of memes. Therefore, meme seems to be a broader category than cognitive schema. In other words, cognitive schemas are only one types of memes. Nonetheless, this fact does not undermine the serviceability of discussed approach.

Cognitive schema

At the outset of the presentation of a cognitive schema, an interesting remark about this concept should be articulated. Namely, in psychological literature, the cognitive schema theory, or rather its key assumptions, appear under different names. Generally speaking, in the light of the significant institutional development of modern science and its characteristic pluralism, such situation should not be surprising. Hence, in the field of psychology, the cognitive schema concept is also known by such names as: scripts, themes, games, mini-theories, frames, hypotheses, plans or expectations²⁸.

Historically speaking, the researcher who defined the cognitive schema concept as it is now used in developmental psychology was Ulric Neisser²⁹. According to Neisser, a schema is: “[...] that portion of the perceptual cycle that is inside the observer, modifiable by experience, and somehow specific to what is being observed. The schema accepts information as it becomes available, and is changed by that information”³⁰. As it can be seen from the above quotation, Neisser narrowed the application of a schema to perception. Nonetheless, other researchers extended the usage of this category to social domain. Currently, psychologists distinguish persons’ schemas, self schemas, role schemas, and event schemas³¹. Yet, the fact remains that there is continuity between Neisser’s perceptual schema and the social psychologists’ schema. The main link between them is the category of “anticipation”. As Neisser claims: “[...], looking must involve the *anticipation* of information as well as its pickup. I suggest that it depends on certain crucial internal structures, or «schemata» that function as anticipations and as plans”³² (Neisser’s emphasis). Correspondingly, social behavior is conditioned by social schemas whose main function is anticipation³³. A concise definition of the modern concept of a cognitive schema was formulated by the authors of the textbook entitled *Psychology*. According to Miles Hewstone, Frank Fincham and Jonathan Foster, cognitive schemas are “[...] mental or cognitive structures that contain general expectations and knowledge of the world”. However, in order to present this concept more comprehensively, the fundamental properties of the cognitive schema have to be circumscribed³⁴.

First of all, one should not overlook the fact that the cognitive schema has an eminently social character (*resp.* biosocial character). It is interesting to note that the research field which nowadays largely contributes to the development of cognitive schemas is social psychology³⁵. Owing to its social dimension, the cognitive schema is not a rigid and closed mental structure. On the

²⁸ Vide E. Nęcka, J. Orzechowski, B. Szymura, *Psychologia poznawcza*, Warsaw 2013, p. 129.

²⁹ Neisser himself distinguishes his usage of “schemata” from Piaget’s and Bartlett’s understanding of this term (Vide U. Neisser, *Perceiving, Anticipating, and Imagining*, “Minnesota Studies in Philosophy of Science” no. 9, 1978, p. 97).

³⁰ *Ibidem*, p. 97.

³¹ Vide S. T. Fiske, S. E. Taylor, *Social Cognition: From Brains to Culture*, London 2013, p. 12-123.

³² U. Neisser, *op. cit.*, p. 92.

³³ Vide M. Hewstone, F. Fincham, J. Foster, *Psychology*, Oxford 2005, p. 374-375.

³⁴ *Ibidem*, p. 375.

³⁵ Vide *ibidem*, p. 375.

contrary, it should rather be considered as a flexible and interactive mental representation. In a word, cognitive schemas are modified in response to experienced social events. It follows that they are not separated from the environment, or speaking more figuratively “only in the head”, structures³⁶. More importantly, this particular trait of cognitive schemas could help memetics to reject the accusation that the meme concept simply ignores psychological results which state that learning is sensitive to environmental factors³⁷. Secondly, a very important category for this concept is the so-called prior knowledge. This category refers to the knowledge which has already been acquired and is characterized by relative consistency. Prior knowledge, within the cognitive schema theory, is a kind of skeleton, or to put it differently, it is a cognitive basis for a particular schema. It is due to the simple fact that the current structure of knowledge determines how to understand new coming stimuli. Strictly speaking, this assumption implies that schemas are generally stable (or even conservative). Such conservatism of schemas is associated with the fact that they are very difficult to modify. Curiously, it is a frequently occurring mechanism that the new facts (*resp.* data) that do not fit in any schemas are treated as an exception to the rule, not as a reason for the modification of a schema. In consequence, this mechanism contributes to even greater “petrification” of any given schema³⁸. For instance, as Daniel N. McIntosh notices: “[...] people may continue to believe «theories» learned in a church or temple class even when later faced with various types of contradictory or inconsistent information”³⁹.

Accordingly, in light of what has been said above, it is clear that the main function of schemas is mediation between the already acquired knowledge and the still ongoing learning. That is to say that schemas are characterized by “[...] ongoing dialectic in which the individual either assimilates new experience consistent with existing schemas or changes (i.e. accommodates) schemas to fit his or her experience”⁴⁰. And yet, in other words, cognitive schemas are a kind of overlay, matrices, or filters through which the environment is perceived by a sentient agent. Similarly, memes have the same function. According to Liane Gabora: “Memes are woven together in an internal model of the world or worldview, which their host calls upon to figure out what to do whenever a situation is too complicated for its hardwired instincts”⁴¹.

And last but not least, it is also worth mentioning that the theoretical foundation on which cognitive schemas are based is a cognitive miser theory. Broadly speaking, the cognitive miser concept assumes that an indispensable feature of any cognitive systems is striving for the economization of time and energy which are devoted to information processing. In effect, an agent is better adapted to the increasingly complex, in terms of information overload, environment. As C. Neil Macrae and Galen V. Bodenhausen write:

This metaphor [i.e. cognitive miser: aut.] of mind draws on the recognition that humans are rarely motivated to engage in the mental activity necessary to optimize their evaluations

³⁶ Vide M.B McVee, K. Dunsmore, J.R Gavelek, *Schema Theory Revisited*, “Review of Educational Research”, no. 75, 2005, p. 532-538. *Nota bene*, the above-mentioned authors state that Immanuel Kant’s epistemology is a precursor to the cognitive schema theory.

³⁷ Vide J. W. Polichak, *op. cit.*, p. 667-671.

³⁸ Vide M. Hewstone, F. Fincham, J. Foster, *op. cit.*, p. 378-379.

³⁹ D. N. McIntosh, *Religion-as-Schema. With Implications for the Relation Between Religion and Coping*, “The International Journal for the Psychology of Religion” no. 5, 1995, p. 3.

⁴⁰ M.B McVee, K. Dunsmore, J. R Gavelek, *op. cit.*, p. 536.

⁴¹ L. Gabora, *A Day in the Life of a Meme*, In: van Loocke P. (Ed.). *The Nature, Representation, and Evolution of Concepts*, New York 1997, p. 564.

of others. Rather, they do just enough mental work to get by, mental work that is simplified through the activation of category-based knowledge structures⁴².

Therefore, stereotypes are the most frequently mentioned issue in the context of the cognitive miser theory. It is also valid to speculate that stereotypes are the most obvious instances of assumptions of this research metaphor. Furthermore, on the basis of consideration of the cognitive schemas, stereotypes appear to be extremely psychologically gratifying, as well as pleasurable cognitive representations. It is tempting to suggest that it is due to their, *sit venia verbo*, compact nature, which requires agent's minimal cognitive effort⁴³.

The speculative part

For the sake of clarity it is favorable to discuss some aspects of the philosophically important, but so far overlooked, issue of the pluralism of mental representations, which are the examples of cognitive schemas. Because of the delimited scope of the work, the broad issue of the pluralism of mental representations will not be comprehensively analyzed in this paper. However, it is of essence to indicate the philosophical conceptualization of mental representation, which would be a kind of a bridge between the psychological concept of cognitive schema and the memetic perspective of cultural studies.

As it will be argued below, in order to fulfill this aim, one should invoke the work of the thinker who is a natural bridge for these two concepts, namely the philosophy of Daniel Dennett. This scholar is a prominent adherent of the extrapolation of evolutionism beyond biological research areas, which in turn is closely related to Dennett's large sympathy for memetics. Moreover, the main research area of the author of *Breaking the Spell: Religion as a Natural Phenomenon* is the philosophy of mind, in which - as it is widely known - mental representations are an important issue. Dennett's position, which is rather obvious, given his predilection for Darwinism, is in accordance with biological conceptualization of mental representations.

According to such understanding of this cognitive category, deliberations on a mental representation should primarily focus on its adaptive functions, instead of its nature⁴⁴. In other words, mental representations should be examined through the evolutionary standpoint, not the ontological one. Moreover, in accordance with his instrumentalist approach, Dennett states that mental representations' validity hinges on their serviceability for an agent in particular ecological circumstances. So, veracity, i.e. a strict correspondence with external world, is not their most important feature. Therefore, Dennett's position towards representation is substantially related to the so-called guidance theory of representation. A concise description of the guidance theory of representation is the following excerpt from the work of Michael L. Anderson and Gregg Rosenberg:

⁴² C.N. Macrae, G.V. Bodenhausen, *Social cognition. Categorical person perception*, "British Journal of Psychology", no. 92, 2001, p. 241.

⁴³ *Vide* H. Grzymała-Moszczyńska, *Religia a kultura. Wybrane zagadnienia z kulturowej psychologii religii*, Cracow 2004: p. 135. Incidentally, it should also be noted that schemas are examples of top-down model of information processing, i.e. from "I know" to "I know how" (*Vide* D. J. Schneider, *The Psychology of Stereotyping*, New York 2005, p. 120).

⁴⁴ U.M. Żegleń, *Treść i reprezentacje umysłowe*, In Miłkowski M., Poczobut R. (Eds.), *Przewodnik po filozofii umysłu*, Cracow, p. 231-232.

The guidance theory is an action-focused theory of representational content. According to the guidance theory, representational content is derived from the role a representational vehicle plays in guiding a subject's actions with respect to other things. What qualifies an element of experience as a representation is, strictly speaking, only that the element of experience be capable of providing a subject with guidance for its actions with respect to entities.⁴⁵

Without taking into account the nuances which are specific to each author dealing with issues of mental representations, it must be mentioned that a key component of the biological understanding of representation is the emphasis of the interaction that occurs between the organism and its environment. Therefore, Dennett states - in the spirit of evolution - that some representations are innate (*resp.* phylogenetic) and certainly occur also in animals (e.g. representations of hunger or thirst), whereas others are acquired through some kind of learning and are specific only to humans (e.g. an idea of Atlantis)⁴⁶.

In the face of the analyzed topic, it is important to state that Dennett, in the style characteristic of his philosophy of mind, applies a typically evolutionary mechanism of generation and selection - in this case, the generation and selection of the patterns of neural activity - to explain the higher frequency of a particular representation. However, it should be also noted that Dennett admits that this mechanism of generation and selection is a very general and abstract mechanism and it should be treated merely as a starting point for a more detailed research⁴⁷. Yet, this is not to say that this abstract - nevertheless regarded by Dennett as universal⁴⁸ - mechanism of generation and selection may be viewed as a stimulus for showing the correspondence between a meme and a cognitive schema. As a matter of fact, both of these concepts perfectly fit into the evolutionary framework. From Dennett's selective point of view, memes, as well as cognitive schemas, can be viewed as mental structures which compete with each other for replication, or to put it differently, for consolidation in the minds.

In regard with this, it is worth to invoke a social phenomenon that has been operationalized by memetics as well as by the cognitive schema, that is religion⁴⁹. From the point of view of the cognitive schema, religion (e.g. Christianity) is a complex and *quasi* hierarchical cognitive schema which consists of many subschemas. In the case of religion, *inter alia*, the following subschemas can be listed: the schema of god, a code of moral conduct, or ideas of life after death, *etc.*⁵⁰. It should be pointed out that the memetic conceptualization of religion is analogous. For memeticists, religion is a memeplex, i.e. a system of cooperating memes. By way of analogy, the memeplex of Christianity also comprises memes of infinite being, ethical guidelines and eschatological stipulations.

Darwinian process, as the contemporary philosophy of biology states, is inevitable when three conditions are met, i.e. variability, heritability and selection⁵¹. Among the proponents of the evolutionary approach to culture, there is still an ongoing discussion on whether memes

⁴⁵ M.L. Anderson., G. Rosenberg, *Content and Action: The Guidance Theory of Representation*, "The Journal of Mind and Behavior" no. 29, 2008, p. 84.

⁴⁶ *Vide* D. C. Dennett, *Consciousness Explained*, London 1993, p. 192-193.

⁴⁷ *Vide ibidem*, p. 193.

⁴⁸ *Vide idem*, *Dangerous Idea. Evolution and the Meanings of Life*, New York, p. 63.

⁴⁹ In the paper, the understanding of religion is rather traditional and uncontroversial. Namely, the term "religion", is used for naming, among others, Hinduism, Judaism, Buddhism Christianity and Islam. Hence, the great controversy of religious study - i.e. the definition of religion - is omitted in this work.

⁵⁰ *Vide* D.N. McIntosh, *op. cit.*, p. 2-3.

⁵¹ *Vide* Ch. Buskes, *op. cit.*, p. 665-666.

– or broadly speaking, cultural ideas – can be incorporated into the universal evolutionary algorithm⁵². At this point, it is difficult to clearly indicate the winning side of this dispute, or to estimate whose arguments prevail. However, accepting, at least at face value, the evolvability of memes, one should consider, in turn, whether cognitive schemas, at least tentatively, can be labeled as an evolutionary phenomenon.

Yet, one might just as well argue that cognitive schemas could also be considered through the above-mentioned inherent factors of evolution, namely variation, heredity and selection. The evolutionary approach toward cognitive schemas could be justified as follows.

First of all, the issue of inheritance should be discussed. As it was mentioned above, schemes are characterized by conservatism, which in this context should be understood as striving for stability. In the words of an expert in schemas, Daniel N. McIntosh: “During the constant barrage of incoming stimuli, the tendency is toward fitting or adapting the data to an existing (assimilation) rather than modifying the schema to the stimuli (accommodation)”⁵³. As a consequence, as Dan Sperber notes, the vast majority of mental representations are never transmitted or are merely a one-time ephemera⁵⁴. Thus, taking into account this characteristic of the schema and the fact of the ubiquity of human conformism, which is evolutionarily conditioned, it can be concluded that cognitive schemas are relatively faithfully transmitted. Take religious belief, for instance: children very often adopt parent’s denomination, whereas conversion to a different faith is a relatively rare case⁵⁵.

Secondly, there is the problem of variation, which is directly intertwined with the conservatism of schemas. Variation is intertwined with the conservatism of schemas, because – as one could rather anecdotally notice – cognitive schemas are characterized by **merely** striving for stability. In other words, the stability is not indispensable to schemas. In this respect, cognitive schemas are simply a subject to multicausal change. The metaphor which refers to such multicausal shaping of a particular phenomena is the so-called path dependence concept that – generally speaking – should be understood as an emphasis of the fact that history matters⁵⁶. In the light of this concept, the present shape of memes and cognitive schemas is simply determined by the biography and predispositions of their hosts. This can be illustrated by the platitude which states that it is naive to expect a seventy-year-old citizen of Belarus to be a vehicle of survival for memes, or have cognitive schemas of Sikhism. Of course, this possibility cannot be logically excluded, but in respect of social and geopolitical context, it is very unlikely. D. Dennett puts this idea in the following way: “[...] it cannot be «memes versus us» because earlier infestations of memes have already played a major role in determining who or what we are”⁵⁷.

And thirdly, the selection, which – one can venture to say – is the issue that best illustrates the parallel between the two discussed concepts, should be analyzed. Needless to say, the criterion of selection for biological evolution does not raise any controversy among scholars. It is – in general – the maximization of the number of offspring. However, in the field of cultural

⁵² Vide K.N. Laland, G.R. Brown, *op. cit.*, p. 199-203.

⁵³ D.N. McIntosh, *op. cit.*, p. 3.

⁵⁴ Vide D. Sperber, *op. cit.*, p. 99-100.

⁵⁵ Vide R. Dawkins, *Viruses of the Mind*, In: Dahlbom B. (Ed.). *Dennett and His Critics: Demystifying Mind*, Cambridge, p. 13-16.

⁵⁶ Vide P.A. David, *Path dependence: a foundational concept for historical social science*, In: Zumbansen P., Calliess G.-P. (Eds.), *Law, Economics and Evolutionary Theory*, Cheltenham 2011, p. 88-108.

⁵⁷ D.C. Dennett, *Darwin's Dangerous Idea ...*, p. 365.

evolution the criterion of replicative success is a widely discussed subject. From the point of view of biological evolution, or being more precise – from sociological angle, belief systems, including religion, are regarded as an adaptation which leads to an increase in the number of offspring⁵⁸. Additionally, a relatively common view in the context of evolutionary discussion about culture is also conceptualizing some indisputably biologically counterproductive belief (e.g. celibacy or contraception) as the so-called by-products of some other, more adaptive belief (e.g., group solidarity in the case of celibacy). Furthermore, on the basis of this polemic, an innovative nature of memetics truly manifests itself. As it has already been said, its innovation is founded on the autonomy of units of cultural evolution. In consequence, memeticians explain the phenomena of celibacy or contraception as memes which are striving for the maximization of their copies. To put it differently, memes of celibacy and contraception are primarily aiming for enhancement of their replication. It is worth to notice, however, that from the perspective of memetics, memes of celibacy and contraception are a Trojan Horse for the imperatives of biological reproduction⁵⁹. They simply endanger the ultimate goal of biological evolution. By the same token, it seems that an extrapolation of autonomous replication to cognitive schemas could be beneficial to the explanation of the occurrence of schemas that are unfavorable for their owners. For instance, the concept of a selfish cognitive schema could be helpful in explaining why Islamic suicide bombers – as it turns out – can win in competition with more desirable, from a biological point of view, schemas.

Finally, one should also not overlook another analogy between memes and cognitive schemas. This analogy pertains to the already mentioned assumption used in both of these concepts. Namely, memes as well as cognitive schemas have a huge impact on perception, in the sense of understanding the surrounding reality. They determine how a particular circumstance will be interpreted. For example, D.N. McIntosh, in his article about religion as a schema, mentions Christian Science religious movements. This is one of the Protestant denominations that stress the negation of the present life in its theological doctrine so much that the followers of Christian Science have been creating a cognitive schema, which completely excludes the experience of mourning after the death of a loved one. For them, death is not an important event⁶⁰. In a similar vein, D. C. Dennett writes: “[...] some memes definitely manipulate us into collaborating on their replication *in spite of* our judging them useless or ugly or even dangerous to our health and welfare [...]”⁶¹ (Dennett’s emphasis).

Final remarks

On the basis of the conducted comparison, it has appeared that - in spite of different provenances – both discussed concepts, i.e. a meme and cognitive schemas, share a number of common features. At the most general level of analysis, these two concepts, owing to the fact that they are a part of the human information processing research, share a cognitive nature. The aim of memetics as well as cognitive schema theory is to explain the acquisition and changes of ideas. Another relevant trait which binds memes and cognitive schemas together, is the key

⁵⁸ Vide E.O. Wilson, *On Human Nature*, Cambridge 2004, p. 172.

⁵⁹ Vide S. Blackmore, *Meme machine...*, p. 138–146.

⁶⁰ Vide D.N. McIntosh, *op. cit.*, p. 3– 4.

⁶¹ D.C. Dennett, *Darwin’s Dangerous Idea ...*, p. 363.

role of social environment in the development of the individual combination of memes and cognitive schemas. As a result, these two perspectives could be called an ecological approach⁶².

In addition, it is worth noting that the application of cognitive schema concept for a better understanding, or delimiting meme, contributes to a more physical, i.e. concrete, conceptualization of Dawkins' units of cultural transmission. Some problematic issues which are met by various attempts of the understanding of a meme, have already been mentioned in the work. Thanks to those problematic issues, some researchers, among others Stephen J. Gould, postulate to view meme merely as a metaphor, i.e. a concept which is devoid of the opportunity to develop into a more empirical, scientific form. However, it should be stressed that viewing meme as a cognitive schema implies some kind of correlation between the meme and brain's neural activity. For a simple reason that stereotyped, habitual reactions and behaviors of any organism (which are instances of cognitive schemas) simply must be neurally determined.

Moreover, some researchers, such as a French anthropologist Scott Atran, state that a meme should be regarded as a kind of trigger for some information and cognitive processes in the mind⁶³. Interestingly, the understanding of meme as a "trigger" is consistent with Dennett's works. Dennett also noted that it is not necessary for memes to have a direct brain correlation; they can solely influence the mind from the outside: "Human consciousness is itself a huge complex of memes (or more exactly, **meme effects in brains**) that can best be understood as the operation of a «von Neumannesque» virtual machine implemented in the parallel architecture of a brain that was not designed for any such activities"⁶⁴⁶⁵. Understandably, at this point, the question arises: whether such externalist view on memes (meme as an external trigger) can be reconciled with purely internalist understanding of cognitive schemas (schemas as mental representations)? Only *ad hoc* it can be noticed in this article that memes could be some kind of external factors, or triggers that exert certain influence on cognitive schemas. Thus, also externalist conceptualization of a meme could be integrated with the cognitive schema concept. Unfortunately, however, this issue is beyond the scope of the paper and should be conducted by another inquiry.

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⁶² Vide S. Wróbel, *Umysł, gramatyka, ewolucja*. Warszawa 2010, p. 465–467.

⁶³ Vide S. Atran, *In Gods We Trust: The Evolutionary Landscape of Religion*. Oxford-New York 2002, p. 236-240.

⁶⁴ D.C. Dennett, *op. cit.*, p. 210.

⁶⁵ It is also worth to mention that Atran's meme as a "trigger" has some similarities with Kim Sterelny's externalist conceptualization of meme as an artefact. Sterelny states that memes cannot be ideas simply because they do not fulfill one of requirements of being a replicator, i.e. copy fidelity. Whereas, Sterelny asserts, public artefacts are faithfully copied (*Vide* K. Sterelny, *op. cit.*, p. 159–162).

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