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Some issues concerning applications of naturalistic paradigm to the study of religion¹

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Summary

Viewing religion as a product of evolution already has yielded a new and interesting hypotheses, which could help to integrate entire heritage of scientific study of religion. Nonetheless, there are some objections toward this program. First, despite the fact that evolutionary theories of religion are inherently interdisciplinary, its integration with sociological, anthropological and historical studies should be improve in the future. Second, phenomenological descriptions (that is individual religious experiences) are neglected by Darwinians. This fact could negatively affects explanatory potential of this approach. Finally, opponents of analyzed paradigm state that evolutionary hypotheses have still low level of confirmation. It stems from a small number of conducted empirical investigations on evolutionary roots of religion. Nevertheless, application of Darwinian tools to the study of religion remains a very promising scientific venture.

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Keywords

universal Darwinism, cultural evolution, adaptation, byproduct, memetics, cognitive schema

Introduction

It seems that religion as a highly diverse phenomenon (there are plenty manifestations of it) and interwoven complex of rituals, beliefs, and norms is an excellent subject for an examination of explanatory potential of a so-called universal Darwinism, which is – in short – an extrapolation of Darwinian theoretical apparatus to different than biological research areas. Admittedly, due to the fact that scholars hitherto are still far away from comprehensive understanding of religion, application of this both new and old² evolutionary perspective is very promising. Such optimistic assessment is based on the fact that evolutionary conceptual tools were already used in different than biological fields with great successes. In this context, it is worth to present an idea of American biologist David S. Wilson who coined very use-

² It must be said that, in the history of science we can distinguish different than here analyzed evolutionary theories of religion, namely those which were formulated at the turn of the 20th century by authors such as: J. Lubbock, E. Taylor, L.H. Morgan. In point of fact, those theories were triggered by overwhelming enthusiasm accompanying the first wave of biological evolution. Additionally, they differ from modern Darwinian projects in focusing on singling out a particular stage of evolutionary improvement, that is the so-called higher forms of religion (Nowaczyk 1989, pp. 3–30).

ful phrase: “the transformation of the obvious”. This expression “(...) illustrates the need for a theory to organize the facts that lay all around us” (Wilson 2008, pp. 23–24). A significant incentive for formulating “the transformation of the obvious” was Wilson’s observation of some similarities between present situation of evolutionary religious study and contemporary to Darwin condition of research on the source of diversity of fauna and flora. In Darwin’s days scientists also had an impressive amount of data, however, they did not have a theory that would be efficient to consistently explain them. Therefore Wilson’s intuition is to employ evolutionism as a theoretical framework for construct “(...) a comprehensive framework for *organizing* the facts about religion” (Wilson 2008, p. 23). Theoretically, the core question which arises in this context concerns the reasonableness of implementation of evolutionary apparatus to the study of religion.

By and large, this article outlines a novel methodological program in the study of religion, that is above-mentioned evolutionary theories of religion. The work will also consider some methodological issues of evolutionary venture that pertain to religiosity, namely its advantageous and disadvantageous. Proponents of evolutionary approach believe that this enterprise should further illuminate the origins and development of religion, because – in their opinions – evolutionary perspective is not only an interpretation but also it is an explanation. Thus a consideration of their main conceptual propositions is essential for the article. In order to fulfill indicated goals, the paper will introduce following leading theories in the field:

1. Explanations which appeal to biological mechanism and phenomena
 - 1.1. Sociobiology
 - 1.2. Cognitive science
2. Propositions which refer to cultural determinants
 - 2.1. Parasitic variant of memetics (R. Dawkins)
 - 2.2. Non-parasitic version of memetics (D. Dennett)

Moreover, the article will also discuss some instructive preliminary problems, such as: historical background of evolutionary theories of religion and certain disputable theoretical questions. Lastly, an outline of synthesizing coevolutionary perspective will be given.³

In light of what has been said, this paper, despite explicitly declared interest in religion, will disregard such classical philosophical problems as: the truthfulness (*resp.* untruthfulness) of theism, the rationality of religious belief, the reality of miracles, and tension between creationism and evolutionism. Again, the

³ Essentially, the main advantage of the above-mentioned categorization is emphasizing the chief characteristics of each theory, namely their invoking to a infosphere (culture) or a biosphere as a seedbed of religion's formation. Furthermore, those thematic blocks are sufficiently general to exhibit other critical features of the evolutionary theories of religion; that is, the assessment of religion's adaptive value (is religion functional, nonfunctional or maybe dysfunctional?) as well as its ontological status (is religion purely biological or cultural phenomenon, or perhaps it is a combination of those two layers of reality?).

central issue is to test the explanatory capacity of evolution in relation to religion.

Finally, it is also important to emphasize the autotelic⁴ value of the project. It seems irrefutable that the problem of the origin and utility (*resp.* harmfulness) of religion is one of the key questions in human history. This inquiry is no less important than questions of the origins of life, consciousness, or sexes.

Some preliminaries

Because of the high complexity of analyzed subject – that is a multidimensionality of religion and a relative novelty of Darwinian logic's extrapolation – **it appears** necessary to clarify the conceptual-historical basis of the evolutionary theories of religion.

⁴ In turn, instrumental purpose of the work is to systematize reflections on naturalistic operationalization of religion. Seeing that the whole program of evolutionary study of religion is very pluralistic it would be very useful, for example, to draw some well-grounded distinctions between them. What is also relevant, studying religion from the evolutionary point of view gives an opportunity to examine explanatory power of universal Darwinism. Thus it might be concluded that there is – to some extent – a feedback between those research projects.

Historical background

Historically, modern evolutionary perspectives on religion is anchored on the so-called third culture movement. It is important to note that the third culture is a postulate, or research trend of creative interaction that occurs between the humanities and the sciences. John Brockman, who is one of the leading proponent of this intellectual trend, wrote: “The third culture consists of those scientists and other thinkers in the empirical world who, through their work and expository writing, are taking the place of the traditional intellectual in rendering visible the deeper meanings of our lives, redefining who and what we are” (Brockman 1996, p. 17). In short, the third culture is a equally mutual collaboration among scientists, philosophers and – as put it Brockman – “traditional intellectuals”. The main aim of this conceptual venture is to bridging the gap between hard sciences and humanities, which is unfortunately time-honored separation.

Another intellectual direction, which is critical for historical basis of the evolutionary theories of religion is the aforementioned universal Darwinism. In point of fact, this research practice originate from the third culture movement. Purposes of those ventures are compatible, that is, to intensify extrapolation of scientific tools and ideas to the human universe. Nevertheless, the universal Darwinism is more specialized enterprise than the third culture, which is just very general intellectual program.

The person who coined the term “universal Darwinism”⁵ was British zoologist Richard Dawkins. Dawkins, in his famous book *The Selfish Gene* – which was crucial for popularizing gene-centrism, speculated about a hypothetical form of extraterrestrial life. His conclusion was: “(...) that all life forms evolves by the differential survival of replicating entities. The gene, the DNA molecule, happens to be replicating entity that prevails on our own planet. There may be others” (Dawkins 2006, p. 192). Dawkins’s suggestion triggered intensification (and also diversification) of research on the universal Darwinism’s explicatory efficiency. Additionally, this British scholar gave the universal Darwinism a fundamental conceptual sketch.⁶

Differentia specifica of this research practice is an extrapolation of evolutionary terminology and methodological tools to different than biological fields. Due to the novelty of the methodology, universal Darwinism is sometimes named as a second Darwinian revolution, which “(...) cannot be limited to any one significant event” (Cziko 1995, p. 325).

From the Darwinian metaphysics point of view, evolution is an universal algorithm that evokes an origin, duration and

⁵ This program is also called: generalized Darwinism, universal selection theory, or Darwinian metaphysics (Von Sydow 2012, pp. 205–220).

⁶ Another researcher who has made a huge contribution to the formation of the universal Darwinism was an American psychologist Donald T. Campbell. Campbell even earlier than Dawkins formulated the idea of natural selection as a universal economy that produces complexity in various domains (Cziko 1995, pp. 303–304).

modifications of very different systems. For instance: the immune system, synaptic connections, computer software, scientific theories, electronic products, cultural beliefs, languages. Proponents of this paradigm also include to above-mentioned list such phenomena like: animal and plant breeding, the production of more effective drugs, or the design of more efficient engines. Those phenomena are flagship examples of deliberate and planned human action (Cziko 1995, p. 304).

The evolutionary algorithm is constituted by three elements: replication, variation, and selection. Susan Blackmore, English psychologist, described as follows those three fundamental components:

(...) first there must be variation so that not all creatures are identical. Second, there must be an environment in which not all the creatures can survive and some varieties do better than others. Third, there must be some process by which offspring inherit characteristics from their parents. If all those three are in place then any characteristics that are positively useful for survival in that environment must tend to increase (Blackmore 2000, pp. 10–11).

The attribute of the evolutionary algorithm, which emerges from Blackmore's description is its inevitability. In other words, if there are certain conditions, the evolution is simply inevitable. In addition, American philosopher Daniel C. Dennett, who *nota bene* coined the phrase “evolutionary algorithm”, emphasizes an independence of three evolution's factors from the substratum of

natural selection. Thus the evolutionary algorithm, in his view, is a mindless, mechanical process (Dennett 2007, pp. 341–345).⁷

Despite the increasing popularity, the universal Darwinism has met with contestation. The basis for questioning its assumptions are divergences that exist between biological evolution and utterly dissimilar systems, such as: cultures, free markets, and the cosmos. However, this criticism is due to an erroneous conceptualization of the universal Darwinism. This is because the program is not constituted on resemblances or dissimilarities amongst particular ontological layer (e.g. culture, biosphere, or inanimate matter). The gist of the universal Darwinism is based on a generalization of certain regularities occurring in each of the ontological layer. It seems that the distinction between an analogy and a generalization was adequately described by Aldrich and his collaborators:

With an analogy, phenomena and processes in one domain are taken as the reference point for the study of similar phenomena or processes in another domain. Differences are regarded as dis-analogies. On this basis, for example, social evolution is clearly

⁷ Dennett, who is the great enthusiast of colorful language, is even the author of another instructive metaphor: “Little did I realize that in a few years I would encounter an idea – Darwin’s idea – bearing an unmistakable likeness to *universal acid*: it eats through just about every traditional concept, and leaves in its wake a revolutionized world-view, with most of the old land-marks still recognizable, but transformed in fundamental ways” (Dennett 1996, p. 63). Italic: Kowalczyk.

dis-analogous to genetic evolution, because of the very different entities and mechanisms of replication.

(...) Generalization in science starts from a deliberately copious array of different phenomena and processes, without giving analytical priority to any of them over others. Where possible, scientists adduce shared principles. Given that the entities and processes involved are very different, these common principles will be highly abstract and will not reflect detailed mechanisms unique to any particular domain (Aldrich et al. 2008, p. 579).

Thanks to such generalized approach – which means an extraction of common and highly abstract theoretical core of distinct processes – the universal Darwinism is able to avoid objections which pertain to biologization of different ontological orders, e.g. culture. In sum, the second Darwinian revolution is not a reductionism. From this point of view, it is impossible to reduce, for instance, economics to biology. Evolution is a key concept in biology, but it does not mean that it is inherently biological term. Therefore a theoretical basis of Darwinian metaphysics is not composed of ostensible substantial similarities between particular ontological layers.

It should be noted also that the universal Darwinism, due to its abstractness, should be perceived as a general theoretical framework for more detailed research projects.⁸ Any experimen-

⁸ One of the greatest biologist of the XX century Ernst Mayr used very similar category for describing theoretical framework, namely “historical narrative”. He wrote that: “The biologist has to study all

tal research program requires a theoretical framework. Interestingly, treatment of the universal selection theory as a general concept is consistent with the David S. Wilson's concept "the transformation of the obvious". Therefore, the Darwinian metaphysics as the transformation of the obvious is able to organize, contextualize and conceptualize a large amount of empirical data. However, it is not capable by itself to provide a holistic, comprehensive solution for a specific problem. Crucial for the discussion is the following statement made by David S. Wilson and William S. Green: "The best theoretical framework for understanding religion is one that can situate the big picture of religion within the even bigger picture of all human cultural systems" (Wilson and Green 2007, p. 22). Briefly, because of the universal Darwinism's generality it is possible to establish a broad conceptual framework of religion, without neglecting the specific issues associated with it.⁹ In addition, it is gratifying that the evolutionary framework can accommodate all

the known facts relating to the particular problem, infer all sorts of consequences from the reconstructed constellations of factors, and then attempt to construct a scenario that would explain the observed facts of this particular case. In other words, he constructs a historical narrative" (Mayr 2001, p. 64).

⁹ It should be mentioned that the most distinctive examples of the application of the universal Darwinism are: Lee Smolin's cosmological natural selection, Murray Gell-Mann's plectics (i.e. evolution of complex adaptive systems) as well as evolutionary psychology and memetics that compete with each other for the title of the main Darwinian theory of culture. For more information about the above-mentioned theories *vide*: Gell-Mann 1995; Smolin 1999.

naturalistic theories of religion. For instance, Emile Durkheim's social approach and William James's introspective standpoint could be viewed as complementary perspectives (Wilson and Green 2007, pp. 1–2).

Animal's religiosity and artificially induced religious experiences

One of the main presuppositions of evolutionary theories of religion is the assertion that religion is a purely biological phenomenon. In order to confirm this statement proponents of religion's evolutionary explanations indicate that drug intoxication or other artificially ways of induction of religious experiences as well as rudimentary manifestations of religiosity among animals (for example dog's sacrifice or heliotropism)¹⁰ are the argument for a biological origin of religion. Due to the scope of this work, only some of the most striking examples of such phenomena will be presented.

The argument in favor of biological roots of religion are manifestations of religiosity among primates. One of the most interesting examples of such behavior is, often observed by

¹⁰ Those two examples are very controversial. Nevertheless such phenomena can be found in the literature as examples of ritualistic behaviors, which can be understood as proto-forms of the ability of perceiving reality symbolically and, in consequences, religion (Wulff 1999, pp. 136–142).

the famous primate researcher Jane Goodall, chimpanzee rain dances. Scientists say that chimpanzees in response to the violent storms perform extremely energetic dancing and screaming. And it is considered to be the archetypal uranic cult (Szyjewski 2008, pp. 152–154).

A fascinating illustration of the primitive religiosity among primates – specifically eschatology – is also Koko the gorilla’s message. Koko when asked about what happens after death with gorillas, said in sign language that “They go to a convenient cavity of the way” (Szyjewski 2008, p. 140).

To summarize elements of religiosity among primates, here are the list of some which are interesting for ethnologists:

- fetishization of objects
- valorization of the environment
- suspension of aggression as a way of gaining meat in rituals
- ritualized behaviors towards death of members of the flock (Szyjewski 2008)

In an attempt to proving biological foundations of religion, some scholars are studying artificial¹¹ factors of religious experience. Psychologists and historians of religion distinguish several categories of behaviors and conditions developed by the religious traditions that are considered particularly conducive to religious experience (Wulff 1999, pp. 77, 80–82, 84–86, 92–93).

¹¹ I use term „artificial” in a very broad sense, i.e. artificial as a intentionally or *quasi* intentionally triggered.

These include a deliberate sensory-physiological deprivation (e.g. keeping the fast, minimize dream, living in isolation, trained breath control), overstimulation of human body (e.g. ecstatic dance, whipping, shaking weapon, walking on red-hot coal) as well as ritual drug intoxication (the most common are: peyote, cannabis, ergot, opium, psilocybin) (Szyjewski 2008, pp. 316–318). In addition to the above practices, the researchers drew attention to possible correlation between ecstatic experiences and chronic disorders of the brain. A special place among this group has epilepsy, which was called “the sacred disease” in ancient times (Grzymała-Moszczyńska 2004, pp. 167–171; Saver and Rabin 1997, pp. 499–450).

It seems irrefutable that rudimentary forms of religion among animals and the possibility of producing numinous experiences through proper stimulation of biological systems show that religion has evolutionary roots. Thus, religion, as well as other cultural phenomena, has been evolving through more primitive stages. Religion has its own evolutionary history. Nevertheless, studying primitive religion of animals and artificially induced religious experiences require further research that would contribute to better systematization of these areas.

Some problematic issues

Before proceeding to the main issues of the work, it is worth to – at least roughly – present objections that pertain to conceptual-methodological basis of evolutionary theories of religion.

First, seeking adequate explanation of the origin and function of religion is closely linked to the issue of religion's conceptualization in this research program. Namely, a methodological presupposition encountered in the evolutionary theories of religion is the idea of universalizing approach to religions, that is to grasp religions as a Religion.¹² Thus from evolutionary standpoint it is reasonable to seek inherent trait or set of traits of what it is commonly labeled as religion. In other words, adherents of Darwinian outlook are eager to formulate, referring to the recently popular metaphor, so-called “grand narrative” of Religion (Szyjewski 2007, p. 137). This “grand narrative” would operationalize all known manifestations of religion. To employ the already classical distinction: nomological and ideographic, it should be noted that evolutionists fit to this first research trend. Zachary Smith and Holly Arrow, researchers from the University of Oregon, give an example of ways of defining religion by evolutionists:

(...) we define religion broadly as a set of myths, symbols, beliefs, and practices, of a supernatural quality, expressed and maintained

¹² Furthermore, such an approach to the subject being studied is the opposite of what contemporary anthropology and ethnology is promote, namely the uniqueness and specificity of each culture.

by an individual or group and consisting of four often inter-related components: (1) morality, (2) social cohesion, (3) emotion, and (4) explanation. Relative emphasis on the four major components varies across religions. So far, evolutionary theories of religion have also varied in their relative emphasis on these components (Smith and Arrow 2010, p. 50).

Additionally, another implication of employing evolutionism to religion is that the vast majority of proponents of Darwinian approach formulate deflationary accounts of religion, that is: “what explains religious thought or behavior may also explain many other domains of cultural thought and behavior” (Boyer and Bergstrom 2008, p. 112). In consequence, from evolutionary perspectives religion is not *sui generis*. It is not qualitatively different than any other cultural phenomena. And that is why it is methodologically proper to apply Darwinism to the study of religion. All systems of beliefs are just natural occurrences.¹³

Second, a contentious issue is whether the extrapolation of evolutionary nomenclature and instruments to the domain of cultural problems, including religion, is isomorphic or analogous. There is an intense debate on this topic (Martin 2008, p. 349). An isomorphic extrapolation implies a question about the validity of

¹³ A secondary issue in the context of typification of religion is that essentialization of so blurred and fluid phenomenon as is religion is rather contrary to the logic of evolutionary methodology that emphasizes the fluidity and dynamism of the surrounding reality.

a transfer of the theory which is efficient in the particular area to a completely different field of research. While an analogous extrapolation involves the danger of “the metaphorization of science”. That is a devaluation of the praxis of using precise terms, which is basically a regulative idea of science (Martin 2008, pp. 349–350). However, it should be noted that the third possible conceptualization of the universal Darwinism is the above-mentioned generalization, which seems to be the optimum way of understanding of evolutionism’s extrapolation.

Another important issue in the area of evolutionary theories of religion is level of analysis. In other words, whether the evolutionary processes should be analyzed from the perspective of interest of genes, memes, or a group of people. As Detlef Fetchenhauer, who is the prominent researcher of discussed subject, wrote:

(...) the phenomenon of religion can be tackled from many different perspectives. I would argue that a thorough understanding of religion can only be reached if we develop theories that are able to integrate these different perspectives with each other and do not arbitrarily try to answer one single aspect of religion and tend to ignore most others (Fetchenhauer 2009, pp. 281–282).

The problem of level of analysis is associated with another difficulty. Religion as a multifaceted phenomenon entails also an emergence of many non-overlapping, divergent theories of religion. Such situation means that there is no overarching

theory, which function would be to focalize many other concepts of religion (Fetchenhauer 2009, p. 275). Although, theoretically, such function might be ascribed to the universal Darwinism, because it provides an abstract conceptual schema for the evolutionary theories of religion: “(...) religion may best be understood as an evolved complex of traits incorporating cognitive, affective, behavioral, and developmental elements” (Sosis and Alcorta 2008, p. 109). Unfortunately, this explanatory framework has been criticized as being too general. Thus it is essential to clarify the theoretical nuances of the program. Wilson’s and Green’s remarks are noteworthy in this context:

We need to begin with a definition that is sufficiently general to provide a complete accounting system for all kinds of behavioral and cultural change. Then the accounting system needs to include a number of meaningful categories that can be determined on a case-by-case basis; for example, that a given element of religion evolved by selection, or drift, or as a non-adaptive byproduct of another trait, and so on. The generalities that emerge when a large number of cases are assigned to the categories save evolutionary theory from the criticism of being too general (Wilson and Green 2007, p. 7).

From this follows that evolutionary (more precisely: the universal Darwinism’s) framework has potential to integrate all paradigms that have emerged in the field of naturalistic studies of religion.

And finally, another cause of pluralism in the analyzed domain is whether religion is adaptive, maladaptive or is an epiphenomenon of more fundamental neural processes. As was mentioned earlier in this paper, the evolutionary theories of religion are divergent at this point: “Thus far, evolutionists have formed three theoretical camps that viewed religion as nonfunctional, functional, or dysfunctional” (Smith and Arrow 2010, p. 49). Nonfunctionalists understand religion as a by-product of some truly adaptive cognitive mechanisms (it is symptomatic of the cognitive approach). So religion *per se* is not an evolutionary adjustment to the environment. Whereas, from a functional standpoint religion is viewed as a beneficial product of natural selection. Being a believer of a particular denomination is advantageous in an evolutionary sense, i.e. it is beneficial for survival and reproduction (this hypothesis is propagated by sociobiologists). Theorists who describe religion as a dysfunctional phenomenon state that its long and stable persistence in human history is an outcome of comparatively autonomous cultural evolution. In this case, religion can be perpetual, despite its negative effect on human fitness (adherents of memetics formulate such an opinion) (Richerson and Newson 2008, pp. 73–75; Wilson 2008, pp. 24–26). Further, it should be also added that:

The three approaches also tend to differ in their favored level of analysis. Nonfunctional accounts tend to emphasize the role of genetics and the development of the brain in generating the various components of religious systems. Functional accounts tend

to emphasize social and cultural influences on behavior with an explicit focus on religion's group-level features. Dysfunctional accounts tend to emphasize the role of cultural transmission and rapid environmental changes in preserving costly aspects of religion (Smith and Arrow 2010, p. 49).¹⁴

Notwithstanding, it is possible to understand all those perspectives as a compatible and cohesive approach. There are some projects which main goal is to unify those *prima facie* non-complementary outlooks [see above all: David S. Wilson's enterprise in cooperation with The John Templeton Foundation].

In conclusion, the evolutionary theories of religion are diverse and multifaceted. They are divergent in many angles. Namely, those paradigms differ in level of analyses, evaluation of the function of religion, and in pinpointing the source of religion's origin (Is it a biological or cultural phenomena?). But yet, on a very general level, what is uniting them is their aspiration to accommodate religion in the evolutionary framework¹⁵, because advocates of this naturalistic perspective viewed religion as a result of human activities that is shaped by evolutionary trajectory (Boyer and Bergstrom 2008, p. 112).

¹⁴ Needless to say, there are some dissimilarities among scholars that pertain to description of what particular standpoint tend to emphasize.

¹⁵ In relation to the putative religion's high adaptive value and its universality among human cultures it is essential to clarify – on the basis of evolution – the phenomenon of atheism. In other words, why does this philosophy of life exist and recently has become even increasingly popular if religion has so positive influence on human fitness?

Evolutionary theories of religion

In this part of the work mainstream hypotheses of evolutionary perspective on religion (biological and cultural) are presented.

Sociobiological approach

As the name suggests, those hypotheses almost ignores the beyond-biological phenomena. For sociobiological explanations biological factors play central role in constituting religion. Sociobiologists, being in line with their central premise of keeping culture on a leash by genes (Wilson 2004, p. 167)¹⁶, see religion as an adaptation. An adaptation which function must be discovered.

What is a rarity in the history of science, in the case of this discipline it is possible to identify the founder of sociobiology, and year of its inception. So a caesura of sociobiology's

¹⁶ This is a paraphrase of E.O. Wilson's famous formulation. The original expression goes as follows: "The genes hold culture on a leash. The leash is very long, but inevitably values will be constrained in accordance with their effects in the human gene pool. The brain is a product of evolution" (Wilson 2004, p. 167). It is necessary to add to this description of the relationship between genes and culture that Edward O. Wilson later has relaxed this one-sided account. He became a proponent of the co-evolutionary theory which admits that there is some kind of cultural influence on biological processes (Piątek 2007, pp. 42–50).

practice is the year 1975, in which the study *Sociobiology: The New Synthesis* written by Edward O. Wilson, entomologist from Harvard, was published. Wilson's original field of research was the behavior of social insects. And this is an area of research in which gene-centrism hypothesis has achieved great success. Proponents of this view state – to put it briefly – that genes, rather than individual species or organisms, are the unit on which natural selection operates. Furthermore, another *differentia specifica* of this branch is the assumption of formation of all the common features of human behavior approximately 12000 years ago (this is so-called the adaptive lag hypothesis). That is in times when people lived in small, compact, closely related hunter-gatherer tribes. In this particular period and environmental conditions occurred the selection pressure which was “responsible” for the formation of the modern human psychological mechanisms (Buller 2009, p. 68). However, the current human environment is radically different from the environment of evolutionary *adaptedness* (Laland, Kendal and Brown 2007, pp. 60–61). The constitution of the modern human habitat, as is well known, consists of such new phenomena¹⁷ like: modern medicine, technology, varied food, social industrial (or post-industrial) structure. So this *hiatus*, i.e. the gap between the Pleistocene conditions and contemporary determinants, is the above-mentioned adaptive lag hypothesis.

¹⁷ Of course from the perspective of evolutionary time.

Interestingly, due to the fact that sociobiology aroused huge controversy, e.g. there were cases of assault on Wilson, new term for describing parallel application of evolutionary tools to human behavior was coined, i.e. evolutionary psychology:

(...) evolutionary psychologists suggest that the human mind is a complex integrated assembly of many functionally specialized psychological adaptations that evolved as solutions to numerous and qualitatively distinct adaptive problems (...).

(...) evolutionary psychologists all share the view that understanding the evolved functions of psychological adaptations – the problems they were “designed” by a prior history of selection to solve (no forward-looking intent implied) – is an indispensable, not an optional, ingredient for a mature psychological science (Confer et al. 2010, p. 111).

Analogously, religion can also be viewed as a functionally specialized psychological adaptation. Wilson said about this directly: “Although the manifestations of the religious experience are resplendent and multidimensional, and (...) the finest of psychoanalysts and philosophers get lost in their labyrinth, I believe that religious practices can be mapped onto the two dimensions of genetic advantage and evolutionary change” (Wilson 2004, p. 172). Nevertheless, he admitted that it is impossible to decrease the significance “of its [religion – K.K.-P.] substance” – as the founding father of sociobiology Thomistically put it, by using usual scientific method. What is even more important, Wilson also

asserted that religion is the biggest challenge for the sociobiology and solving its mysteriousness might contribute to the enhancement of theoretical basis of the sociobiology (Wilson 2004, p. 175).

Wilson himself pondered on religion's Darwinian survival value at two general levels. He distinguished between group's and particular person's evolutionary advantages. At the level of group's benefits Wilson stressed that religion can improve social cohesion, that is cooperation between group members. It is due to the fact that group bonded to a common transcendent factor is more monolithic and as a result more effective in combat than random crowd of people gathered for a temporary *ad hoc* instrumental purpose. Factors which increase the quality of group's monolith are primarily rituals. For instance, famous *rites de passage* connect youth with elders as well as reduce an uncertainty which pertains to place of young man in social hierarchy through simple dichotomy: child and man.

Whereas from individual perspective, religion provides stable and persistent identity which stems from participation in tight-knit group. Moreover, this undisputable advantage is gained without expensive, in terms of time and energy, investments (Wilson 2004, pp. 188).

Consequently, these two levels of the evolutionary advantages are not conflicting. On the contrary, they are rather complementary and synergistic: "If success of the group requires spartan virtues and self-denying religiosity, victory can more than recompense the surviving faithful in land, power, and the opportunity to reproduce" (Wilson 2004, p. 187).

Other frequently invoked examples of sociobiological explanation of the presumed adaptive value of religion are its putative immunization against the fear of death (it is so-called terror management theory – TMT) and a positive impact on the health of the individual. Adherents of this later explanation suggest that it is due to greater self-esteem and a more positive attitude to everyday life of believers (Sosis 2008, pp. 103–105).

Cognitive approach

Another paradigm to the study of religion which is offered by the evolutionary program is a cognitive view. *It should be noted at the outset of the presentation that the cognitive approach is the most influential, the most widely accepted as well as the most extensively studied contemporary evolutionary theory of religion.* Its success is founded mainly on explaining religion through the basic cognitive mechanisms¹⁸ which can be analyzed through empirical methods. Furthermore, a recent spate of empirical evidence supports cognitive approach.

It is important to keep in mind that cognitive perspective on religion is not homogeneous. There is no such thing like one overarching cognitive theory of religion. Instead of that, many competing hypotheses can be identified within cognitive outlook.

¹⁸ The consequence of this position is that cognitivists reject the idea of *tabula rasa* (blank slate). Thus, from philosophical standpoint, cognitive theory implicates psychological nativism (Sztajer 2007, p. 29).

Nonetheless, scholars and scientists, who are eagerly exploring this paradigm, intensively collaborate (Sztajer 2007, pp. 25–26).

Another point to make is that cognitivists generally – and this distinguishes them from sociobiologists – consider religion as a by-product¹⁹ of cerebrally determined mechanisms. As Scott Atran, one of the leading supporter of this paradigm, says: “We

¹⁹ This hypothesis has engendered the formulation of anecdotal and controversial at the same time analogy which illustrates religion’s epiphenomenal gist, namely the so-called fast-food theory. Religion, as a strong craving for high-calorie food, it is now counterproductive. Accordingly, like strong appetite for high-fat as well as high carbohydrate foods was a solution to the problem of long-lasting hunger, today this appetite is the main cause of the epidemic of obesity in Western countries; religion also had an adaptive value during the Stone Age, but now it has not. J. Anderson Thomson, one of the proponents of this view, wrote: “If you understand the psychology of craving fast food, a savory slice of prime rib, or a decadent chocolate sundae, you can fully comprehend the psychology of religion” (Anderson Thomson and Aukofer 2011, p. 101). Alternatively, Richard Dawkins claims that a more appropriate illustration of the essence of religion is the analogy that refers to “self-immolation behavior” of moths. At first glance, the behavior of moths, which fly right into the candle flame, should be described as a suicidal or at least preposterous. But in fact, moths mistakenly take artificial light as a compass that should enable them navigation. This counterproductive trait stems from the fact that it has evolved when there was no human technology. The only light during night was the light of the moon. Therefore, in Dawkins’s view: “The religious behavior may be a misfiring an unfortunate manifestation of an underlying psychological propensity that in other circumstances was once useful” (Dawkins 2004). In sum, for Dawkins religion is also a by-product of some more fundamental cognitive mechanism. However, at the present time it is not neutral, as adherents of cognitivism state, but is rather a destructive feature for people.

argue that the cultural evolution of prosocial religions and the historical rise of large-scale civilizations involve the dynamic interaction of the by-products of adaptive cognitive mechanisms (e.g. minimally counterintuitive beliefs and overextended agent concepts) (...)” (Atran and Henrich 2010, p. 19).

In order to get acquainted with the results of the cognitivists’ work the following cerebral mechanism will be presented: hyperactive agency detection, promiscuous teleology, counter-intuitive ontology and costly signaling. These indicated mechanism are the most commonly discussed in the literature.

First, hyperactive agency detection should be understand as a overperception of intentionality. In other words, the adaptive value of this cognitive system is founded on preventive attributing intentionality to objects and natural phenomena. As put it Stewart Guthrie: “This strategy has evolved, based on a good principle: Better safe than sorry. Walking in the woods, it’s better to mistake a stick for a snake, or a boulder for a bear, than the reserve. If we’re right, we gain much, and if wrong, we lose little” (Guthrie 2008, p. 241). In consequence, less costly is unnecessary and even erroneous flight from a predator than ignore or undetected it. Cognitivists state that religion emerged, *inter alia*, as a result of extrapolation and amplification of hyperactive agency detection system. For instance, it was extrapolated to inanimate objects and atmospheric phenomena – and that how originated animism.

Another example of cerebral mechanism which has contributed to the emergence of religion is so-called promiscuous

teleology (or simply anthropomorphism). This brain module contributes to the human propensity to interpret random events as purpose driven. A striking examples of this system were given by Guthrie: “anthropomorphism (...) pervades thought and action, mostly unconsciously. It occurs in ordinary perception, as when we hear a wind-slammed door as an intruder, see AIDS as punishment, or fine design in nature. Acknowledgements of this pervasiveness keep arriving” (Guthrie 2008, p. 240). It is quite obvious that anthropomorphism is strongly connected with overperception of intentionality. Again, an extension of these two mechanisms, made by a reflective person, into his entire life can lead to the observation of the teleological structure of the entire surrounding reality. And this statement is a strong premise for the recognition of the existence of higher supernatural beings (Anderson Thomson and Aukofer 2011, p. 71).

The third presented here mechanism is Pascal Boyer’s counter-intuitive ontology (also known as a minimally counter-intuitive worlds). Boyer claims that religion’s success is based in its specific content and structure. Recent research gives credence to the idea that people tend to better memorize contents which do not correspond to a small extent to the reality than concepts which are fully proven: “One can therefore assume that certain combinations of intuitive and counterintuitive claims constitute a cognitive optimum, in which a concept is both learnable and nonnatural” (Boyer 1994, p. 121). This “cognitive optimum” means that religion attained its position, because religious contents are able to strike a balance between counter-intuition and

naturalness. Good example of such concepts are thinking trees, which have been used many times by writers of fairy tales (Motak 2005, pp. 842–843).

The last presented here and the most prosocial cognitive system is costly signaling which was proposed by anthropologist Richard Sosis. This hypothesis seems to provide a plausible explanation for problematic, from the evolutionary perspective, unparalleled or even eccentric generosity of religious people. Sosis gives the following examples:

People across the globe engage in religious rituals that require a considerable amount of time or personal sacrifice. Ultraorthodox Jews spend hours every day worshipping at the Western Wall in Jerusalem. Vegans of Phuket, Thailand, perform various acts of self-torture, including bathing in hot oil, fire walking and piercing themselves with sharp implements during their annual vegetarian festival. (...) And young Christian men in Bulgaria dive into icy waters to retrieve a crucifix to mark the feast of Epiphany Monday (Sosis 2004, p. 167).

According to the researcher quoted above behavior is a form of costly signaling, which should be understood as a reliable communication of an attachment to the particular denomination. The credibility of the message is based on participant's large investments in terms of time, energy and goods. In a consequence, trust between the fellows has a solid empirical ground and is a good base for building effective cooperation, which can

help to override the problem of so-called free-riders in society (Sosis 2004, pp. 168–170).

Other cognitive mechanisms, which will only be mentioned are: childhood credulity, deference to authority, kin psychology, attachment, mind-body dualism, propensity toward essentialization.

Memetic approach

The corypheus of this biological sub-discipline is, as in case of Darwinian metaphysics, Richard Dawkins. In his *magnum opus*, *The Selfish Gene*, Dawkins wrote:

I think that a new kind of replicator has recently emerged on this very planet. It is staring us in the face. It is still in its infancy, still drifting clumsily about in its primeval soup, but already it is achieving evolutionary change at a rate that leaves the old gene panting far behind. The new soup is the soup of human culture.

(...) Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation (Dawkins 2006, p. 192).

Memetic conceptualization differs from the two previously described approaches. It emphasizes purely cultural understand-

ing of religion, whereas sociobiological and cognitive outlooks more focus on biological determinants of religion.²⁰ The conceptual core of this discipline, which evokes extreme opinions, says that it is possible to extrapolate biological replicator's functioning – a gene – to culture by replacing it by noo-spherical replicator – that is a meme (Wężowicz-Ziółkowska 2008, pp. 59–68). Meme, parallelly to genocentric interpretation of neo-Darwinism, is a “selfish” replicator. Human – like other animals endowed with at least the beginnings of consciousness – is seen as a vehicle of survival for information package, namely for genes and memes (Blackmore 2002, pp. 165–167). Philosophically, this is an extremely reductionist position. People are strictly determined by biological and cultural factors. As a matter of fact, there is no room for human free will.

There are two dominant approaches toward religion in the memetics. Dawkins' very controversial parasitic variant

²⁰ What is worth emphasizing, nature of relationship between genes and memes is an object of controversy. Proponents of gene's hegemony indicate a chronological priority of biological replicator, which in turn leads to the fact that the biosphere is a *conditio sine qua non* of infosphere. While supporters of meme's supremacy emphasize unprecedented acceleration of duplication and diversification of culture. They consider this acceleration to be a sign of domination of the biosphere by memes. Therefore, examples of peculiarly human behavior (e.g. contraception, homosexuality, compulsory celibacy in some denominations and adoption) have a very important place in the line of their arguments. This hypothesis seems to provide a plausible explanation for such phenomena (Distin 2005, pp. 11–12).

and more moderate Daniel Dennett's non-parasitic version of memetics.

Dawkins' view is "that many or most religious memeplexes entail an ultimate evolutionary cost" (Smith and Arrow 2010, p. 58). So, according to Dawkins, religion is defined as a meme, or more precisely, as a memeplex which is a group of cooperative memes. The author of *The God Delusion* asserts that the best metaphor for expressing the essence of religion is a "virus of the mind":

If you have a faith, it is statistically overwhelmingly likely that it is the same faith as your parents and grandparents had. No doubt soaring cathedrals, stirring music, moving stories and parables, help a bit. But by far the most important variable determining your religion is the accident of birth. The convictions that you so passionately believe would have been a completely different, and largely contradictory, set of convictions, if only you had happened to be born in a different place. Epidemiology, not evidence (Dawkins 1993, p. 24).

This metaphor, the virus of the mind, implies that religion has a negative effect on the condition of man. In his article Dawkins stated explicitly: "If I am right, religion has no survival value for individual human beings, nor for the benefit of their genes. The benefit, if there is any, is to religion itself" (Dawkins 2004). In sum, Dawkins, being a proponent of the epidemiological interpretation of memetics, *de facto* states that religion

is rather emotionally absorbed than rationally chosen, and, in his opinion, it is counterproductive phenomena for humans (Distin 2005, pp. 192–193).

More moderate – that is nonparasitic – view of religion is presented by Daniel C. Dennett. The American philosopher does not exclude the positive impact of religion on, so to speak, the evolutionary parameters (i.e. life-span, fertility). Although he does not resign from microbial naming, Dennett claims that: “we should not forget that the vast majority of memes, like the vast majority of bacterial and viral symbionts that inhabit our bodies, are neutral or even helpful (from the perspective of host fitness)” (Dennett 2007, p. 184). Thus, according to Dennett, the possible benefit of orthodoxy and orthopraxy for humans is accidental. Just incidentally interest of people and selfish replicators may coincide.

In addition, Dennett to illustrate the positive value of religion shows that it strengthens the solidarity group. Group cooperation, especially in the case of aggressive-minded neighboring communities, has adaptive value for obvious reasons for a man, but also it is beneficial to the religious memplex. Solidarity group through ensuring the triumph of their hosts become attractive to other groups and individuals (Dennett 2007, pp. 184–185).

Coevolutionary approach

Distinct standpoint is a coevolutionary theory. It bursts theoretical ramifications of previously discussed theories. But yet coevolutionary approach simultaneously is a *quasi* synthesis of a whole program of evolutionary theories of religion, because it integrates the outputs of the other two groups of explanations. The coevolutionary outlook takes into account the whole human environment, that is biological and cultural components.

It should also be noted that the theoretical core of this project is based on the two closely related psychological theories, namely cognitive miser and cognitive schemas (Grzymała-Moszczyńska 2004, pp. 135–137, 142–145). These concepts reliably explain any modifications or petrification of religious beliefs during life of individuals, which depend on their life experiences. Additionally, coevolutionary approach also illuminates the differences between humans' attitude toward religion.

In short, a schema “is a cognitive structure or mental representation containing organized, prior knowledge about a particular domain, including a specification of the relations among its attributes” (McIntosh 1995, p. 2). Whereas, a cognitive miser is a mental mechanism which enables people to attain relatively adequate representation of the world with little cognitive effort (Grzymała-Moszczyńska 2004, p. 135). Because of the prevalence of religion, adherents of this paradigm view religion as a schema which helps “to understand *how* religion can impose meaning on traumatic events and *why* religious beliefs

might be helpful when dealing with a crisis”²¹ (McIntosh 1995, p. 11). Moreover, it is believed that coevolutionary approach can be utilized to explain how religion affected perception or people’s God concepts (McIntosh 1995, pp. 7–8).

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²¹ Italic: McIntosh.

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