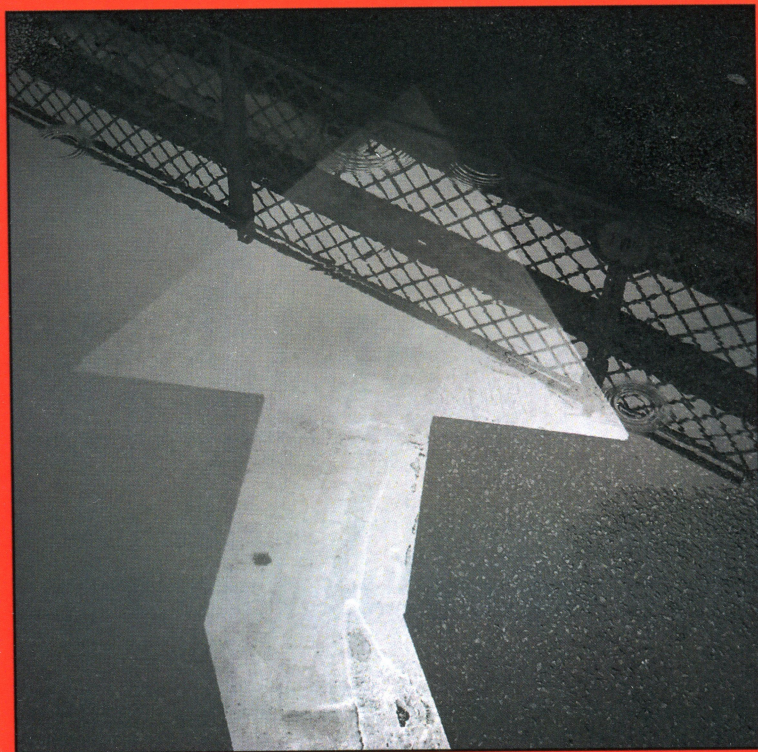


EDITED BY
MARINA MARTYNOVA
IVANA BAŠIĆ

**PROSPECTS FOR
ANTHROPOLOGICAL
RESEARCH
IN SOUTH-EAST EUROPE**



**PROSPECTS FOR ANTHROPOLOGICAL
RESEARCH IN SOUTH-EAST EUROPE**

N. N. Miklouho-Maklay Institute of Ethnology and
Anthropology Russian Academy of Sciences, Moscow, Russia

and

Institute of Ethnography Serbian Academy of
Sciences and Arts, Belgrade, Serbia

Prospects for Anthropological Research in South-East Europe

Editors

Marina Martynova

N. N. Miklouho-Maklay Institute of Ethnology
and Anthropology Russian Academy of Sciences,
Moscow, Russia

Ivana Bašić

Institute of Ethnography, Serbian Academy of
Sciences and Arts, Belgrade, Serbia

MOSCOW – BELGRADE

2019

UDK 39
BBK 63.52
47Querl

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**PROSPECTS FOR ANTHROPOLOGICAL RESEARCH
IN SOUTH-EAST EUROPE / Ed. Marina Martynova &
Ivana Bašić. – Moscow: IEA RAS & Belgrade: EI SASA,
2019. – 238 pp.**

ISBN 978-542-110-238 0

The book marks a new phase in the fruitful collaboration between the Institute of Ethnology and Anthropology Russian Academy of Sciences and the Institute of Ethnography Serbian Academy of Sciences and Arts. It is an important publication for any future research on the development of ethnology and anthropology in Southeast Europe. The papers presented here, the topics they raise and the methods they employ, comprise an overview of the issues, concepts, phenomena and research methodologies anthropology in this has been dealing with in the early 21st century. Positions of the discipline itself, transformations of traditional culture and various phenomena of contemporary culture in Southeastern Europe are subjected to a theoretical scrutiny in the papers of this volume.

ISBN 978-542-110-238 0

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Milan Tomašević

AN ANTHROPOLOGICAL INTERPRETATION OF POPULAR COSMOLOGY

This paper represents a short, informative essay on current research into the connections between popular culture, science, religion and anthropology. Using the example of popular cosmology, it points to the relationship between identity, science, philosophy and religion within the framework of contemporary Western society. It also points to the significance of semiotic analysis of the popular cosmological narrative and the possibility of interpreting this narrative as a form of folklore. Furthermore, it emphasizes the social significance of popular science as such, within the contexts of the *science* and *culture wars* at the turn of the century.

Key words: popular science, the cosmological narrative, myth, folklore, philosophy of science, purpose, sense, secular myth

COSMOLOGY AND POPULAR CULTURE. Science represents part of an order which sustains epistemological and axiological patterns of the society within which it is created and reproduced. It is the framework on which systems of value and worldviews are built. Regardless of the fact that its basic premise is to be devoid of cultural residue, science is the point in which networks of power relations and identity politics intersect (Barnard and Spencer 2010, 157–159, 632–635). The key reason for undertaking an analysis of popular cosmology lies in the desire to uncover philosophically and anthropologically relevant insights into the consequences it creates in wider social discourse.

Contemporary cosmology plays an important role in our orientation in the world, and the classification of phenomena and processes which determine our place in the Universe. In a way, cosmological theories represent a knowledge basis which we use to

attribute meaning to everything we face. Cosmology meanders between the means we use to explain natural phenomena and a tool that we use to question our deepest philosophical and religious beliefs – our cultural heritage (Gleiser 2005; Kragh 2007; Barnard and Spencer 2010, 157–159).

The importance of contemporary cosmological theories for philosophical and religious thought cannot be determined in a simple and unequivocal way. Even though they are supposed to be subsystems of culture on the whole, these segments of human knowledge are complexly intertwined. Philosophy of science keeps reminding us that truth is unattainable, as every new discovery births numerous unknowns (Синђелић 2005; Rosenberg 2005; Hackett et al. 2008). Similarly, every breakthrough in theoretical cosmology points to new problems to overcome. On the other hand, religious thought constantly grapples with scientific concepts, in an attempt to reinterpret them and represent them in accordance with its own dogmas. Scientific discovery bends theological exegesis to breaking point. Science points out all the flaws of religious discourse, but it also opens doors for creative approaches to interpreting the world. Research into connections between science and religion in the contemporary world, ways in which religion makes bricolages out of scientific concepts, and ways in which science contests religious dogma, still represent a dynamic field for anthropological research and analyses.

It is my intention to present the contemporary cosmological narrative as it is present in popular culture as a mythological story which possesses a slew of folklore characteristics. Popular cosmology is represented by literature and numerous television programs which serve to introduce cosmological knowledge to a wider audience in a compelling way, especially by suggesting the audience think about the effects this knowledge has on their own lives. I believe that the way in which discoveries pertaining to the origin and evolution of the universe are represented play a major role in the creation of the identity of individuals who adopt this knowledge. Further, I believe that these processes are tightly connected to the creation of personal identity, as people deepen their knowledge about the world around them and question their

deepest views and beliefs. Popular cosmology breaks down significant philosophical assumptions and cultural fallacies which we espouse through standard upbringing and education. It makes us take a more serious and dedicated look at the stable and deep seeded stereotypes we take for granted.

The popular representation of cosmological theories can be analyzed like any other narrative, as they create a certain sense of encounter with order and a system on the highest possible levels. Popular cosmology, especially as presented in television programs, articulates the history of the cosmos through comprehensible sequences, which, in actuality, differentiate and clearly display parallel events, which are, at times, very difficult to comprehend. On the other hand, popular cosmology is a narrative like any other, because it transfers different scientific and philosophical traditions on which it is based. More importantly, as its own genre convention, it relies on a worldview that insists on individual responsibility in creating purpose and meaning which we attribute to our own lives, culture and the Universe as a whole. I believe that the way in which popular cosmological literature insists that Man is able to determine his own purpose, and not to expect such determination from god, sacred texts and religious institutions, is what qualifies it as a vital part of a contemporary secular mythology, a cosmogonic myth for the whole modernist discourse of the contemporary world.

COSMOLOGY. As part of astronomy, cosmology entails the study of the structure and evolution of the universe. It studies it's physical properties, chemical makeup, density and speed of expansion, the layout of galaxies and galactic clusters. The purpose of cosmology as a scientific discipline is to help understand everything in universe, from its earliest beginnings, through its evolution to this moment and to the limits of the comprehensible future. Cosmology deals with creating models that define the observed traits of the universe, in an attempt to comprehend why they exist, how they influence us and what our shared future will be like in light of these observations. Thus, cosmology has a clear cosmogonic, but also an eschatological aspect: it considers the very

beginning of being, but also its eventual end (Ridpat 2007, 241–242; Gleiser 2005; Kragh 2007).

The currently dominant cosmological theory is called the *Lambda Cold Dark Matter Model* (Λ CDM) and it depicts a homogenous universe, which is isotropic and constantly expanding, further sped up by rapid inflation which began moments after the very beginning of existence. The lambda (Λ) in the model signifies a cosmological constant or dark energy through which the universe is in a constant state of expansion. Measurements and assessments tell us that the universe is currently made up of 4,9% of baryonic or ordinary matter, 26,8% of dark matter, and 68,3% of dark energy (Grin 2012, 25).

The *protoverse*, the cosmos in its pre-inflatory phase, contained within it everything we know today: space-time, dimensions, fundamental forces, probably even “laws”. It was a perfect singularity, a primordial state wherein everything was contained in “one”. It is possible that before that even “nothing” existed. Then, from vacuum fluctuations, matter emerged, and then went through rapid inflation. The question of existence, significance and shape of the laws which governed the emergence of the universe from *nothing* and its governance before inflation is still a mystery and the subject of philosophical thought.

THE CREATORS OF THE POPULAR COSMOLOGY DISCOURSE. The narrative which comprises contemporary cosmological knowledge is spread over all kinds of media. From traditional popular-scientific literature and newspaper articles, television programs and specialized series, radio shows and films, to websites, blogs and numerous channels on social networks such as *You Tube*.

Popular-scientific literature which presents contemporary cosmological concepts can be encompass texts written from the emergence and establishment of *general relativity*, and include books written by the likes of Albert Einstein, Arthur Eddington, Edwin Hubble, Georges Lemaître, Alexander Friedmann, George Gamow, and even Fred Hoyle. However, these books make up a sort of cosmological proto-narrative, as key roles in contemporary

popular cosmology are taken up by the concepts of *inflation*, *landscape* and *Multiverse*, and these are ideas which were established in the 1980s and 1990s.

Authors such as Alan Guth, Andrei Linde, Paul Steinhardt, Alexander Vilenkin, Andreas Albrecht, Steven Weinberg, Carl Sagan, Stephen Hawking, Paul Davies, Neil Degrasse Tyson, Michio Kaku, Brian Greene, Martin Rees, Lawrence Krauss, Roger Penrose, Neil Turok, Edward Witten, Sean Carroll, Max Tegmark and others are the creators of the contemporary cosmological discourse present in popular culture. Through their papers, popular-scientific books and involvement with different programs, they create and popularize the image of the origin and evolution of the universe, by introducing a large audience to the numerous phenomena and processes that determine the functioning of the world around us.

All of them together, *creators* of the contemporary cosmological narrative, their predecessors from the 20th century who created the theory of the Big Bang, the *founding fathers* of modern science from Galileo, Isaac Newton and Johannes Kepler, to Max Planck, Willem de Sitter and Niels Bohr, and even *mythic ancestors* such as Aristarchus, Eudoxus and Ptolemy, comprise a “scientific tribe” that created its own “myth” (Latour and Woolgar 1986; Latour 1987; Fuller 2006; Bloor 1975; Rosenberg 2005). This myth possesses cosmogonic, cosmological and eschatological segments and depicts the whole story of the cosmos through eons of existence. We are witnessing the process wherein this “myth” is seeping into popular culture and enchanting a wide and varied audience yearning to understand its place in the universe. It is also a multifunctional fractal, establishing relations with other elements of culture.

The integral version of the cosmological narrative can be synthesized from presentations found in the books of Steven Weinberg (Vajenberg 1981), Stephen Hawking (Hoking 2002), Neil Degrasse Tyson (Tajson i Goldsmit 2005), Brian Greene (Grin 2012), Michio Kaku (Kaku 2012), Lawrence Krauss (Kraus 2015), Martin Rees (Rees 1999) and Paul Davies (Davies 1990). Less popular works by the initial authors of inflation theory like Alan Guth (Guth 1997), Andrei Linde (Linde 2009) and Alexander Vilenkin (Vilenkin

2006) can also be utilized. Aside from literature, of use are video recordings of lectures by significant contemporary cosmologists, as well as their guest spots on educational programs, as well as data and images presented in popular-scientific series produced by numerous global television networks. Series such as *Cosmos*, *Universe*, *How Universe Works*, *Through the Wormhole* and others are vitally important for the establishment and popularization of the entire discourse. Finally, the production titled *Closer to Truth*, should be pointed out as a shining example of contemplating the connections between science, philosophy and religion, or rather, culture as such.

NARRATIVE. In order to view cosmology from an anthropological perspective, it is necessary to recall some of the concepts which can contribute to this endeavor. Utilizing them, it is possible to view strict scientific theories as fruits of the labor of human minds, or rather, as stories we tell each other. Because of this, it is necessary to review the concepts of narrative and myth, as well as semiotics, the analytical process which uncovers the intricacies of contemporary cosmological theories and the importance they hold for our culture.

Narratives are a form of representation that focus on the experience of coherency through past time and afford people a sense of order and meaning (Rapport and Overing 2003, 283–284). They transform time into an aspect of socio-cultural reality, because it becomes articulated through sequences in the narration. They order temporal experience by noting and rearranging, outlining and connecting events (Ibid., 284). Folk narratives are embedded in the historical and cultural reality of every community and they convey different traditions that sustain it. They transfer knowledge and beliefs, by standardizing social ethics through nurturing collective memory (Kovačević i Antonijević 2014, 55–57).

Not unlike conventional forms of folklore, popular science understood as any other narrative, expresses the axiological systems and collective values of the society and culture which produces it, regardless of how far positivist science goes in order to

shield itself from this (Mellor 2003; Lewenstein 1989; Hilgartner 1990; Broks 2006). Like myth, popular science is imbued with a relationship toward man and purpose, a relationship through which a specific image of the world is formed (Малиновски 1971, 89–128; Meletinski 1983, 170–175; Чапо 2008, 170–172).

Popular cosmology is intertwined with philosophical debates framed by the relationship between science and religion, or rather, the dynamics of domination between the processes of secularization and resacralization. It holds a significant position in the *culture war* between “creationists” and proponents of “secular humanism” which has been raging at the start of the new millennium (Brockelman 1999; Stenger 2012; Drees 2007; Spuhler 1985; Smith 1997). Popular cosmology is also tied to a slew of questions emerging from the philosophy of science, science and technology studies, or rather the *scientific war* which “escalated” in the mid 1990s (Franklin 1996; Shapin 1996; Kaiser 2007; Martin 1996; Martin 1998; Gould 2000; Mellor 2003). On top of this, the issue of the role of contemporary scientific knowledge in forming a new, potentially transhumanist ideology for the centuries to come is an open one. Tightly intertwined with different spheres and domains of socio-cultural life as it is, the contemporary popular cosmological narrative is worthy of the undivided attention of anthropologists, who must approach it utilizing means developed for making sense of complex narratives. Semiotics, with its tools, affords opportunity for such an undertaking.

МҮТН. A myth is defined as a story which, in a given society, is considered a true representation of what took place in the distant past (Малиновски 1971, 89–128; Meletinski 1983, 39–40; Чапо 2008, 13). According to the structuralist definition, one of the basic tasks of myth is to solve different contradictions which determine social life (Чапо 2008, 267; Levi-Strauss 1989, 213–239; Meletinski 1983, 76–88; Dundes 1997, 40). In order to make sense of contradictions or contradictory interests of different social groups, myth relies on binary oppositions, relations between them and the mediators they create. Actually, myths are sustained by mediators

and weakened oppositions that create the illusion of solving societal problems.

It is of equal importance that popular cosmology strives to reconcile the contradictions which characterize theoretical cosmology. Through highlighting string theory as an important part of its own discourse, popular cosmology transcends the contradiction between general relativity and quantum mechanics, as two incommensurable concepts. Through string theory, concepts of landscape and Multiverse, popular cosmology offers collateral for further research theoretical and experimental endeavors. By pointing out the inconsistencies of the major theories, popular cosmology infers that the golden age of science is yet to come. Staring into the abyss of our own ignorance makes it easier for us to determine the purpose of existence and our own work.

Terry Eagleton reminds of the widely accepted idea that early myths served as “narrative theories” about the world (Eagleton 1996, 47). They function as “metaphysical systems of knowledge” that explain the origin of man and his enterprises. According to his understanding, even today myths function as an “instinctive strategy” which aids us in understanding or making sense of things (Ibid., 47). Myth is most definitely one of the major mediums of ideology which naturalizes specific interests by incorporating them into its own structure. This trait should be sought in the popular cosmological narrative and the ways in which it is presented to audiences, as it seems certain that it contains numerous socio-cultural codes and plays a significant role in a wide variety of conflicts regarding domination in various fields of social action.

It should be pointed out that the way in which cosmology is presented to audiences and the way in which it enters everyday life possess certain narrative and genre characteristics. This points to the fact that contemporary cosmological theories present in popular culture can be analyzed using tools developed for the analysis of folklore (Cawelti 1974, 1–9; Cawelti 1968, 381–390; De Sosir 1989; Chandler 2002; Danesi 2002; Giro 1983, 28; Eko 1973, 12; Lič 2001; Eagleton 1996, 93–94).

A common trait of both cosmology and mythology is that they shape the world, they introduce order and sense into the chaos of existence. The contemporary cosmological narrative represents the origin and evolution of the universe to a wide audience, by simplifying complex processes and phenomena that strain the imagination and demand the full force of intellectual capacity. More importantly, the cosmological conception belongs to a far more complex discourse with a clear axiological system at its center. It contains specific value codes which contribute to establishing a cultural system, ethos or worldview. The task of anthropological analysis is to uncover and highlight it as such, and as socially relevant.

The contemporary cosmological narrative, like myths and epics, really does systematize knowledge and experience of the world, making it understandable, ordered, predictable and – as much as possible – controllable. In general, we often experience the world as confusing, chaotic and unruly. Myths, like contemporary cosmological theories, contribute to our feeling of certainty, which shapes such a world into a cultivated and bearable environment, an ordered system – the *cosmos*. Cosmology offers us an image of the universe, and it is upon us to discern whether this image imbues us with a sense of safety or pleasure stemming from our place in it. Simply put, the cosmological narrative has a specific role in considerations about identity and self-understanding of Humanity as a whole, and that qualifies it as an anthropological topic.

THE POPULAR COSMOLOGICAL NARRATIVE AS A FORM OF FOLKLORE. The “folklorized” cosmological narrative can be found as a form of genre convention in popular-science literature. It is always a part of a larger whole, meaning that the rest of the text – or the narration in television programs – focuses on explaining it. Most often, it is told as a myth or other folk tale, through narrative sequences or episodes centering on a certain process or phenomenon. A certain occurrence is presented as a character, a person or a participant of the story, thus gaining importance and value in the narrative as a whole.

Based on texts by Neil Degrasse Tyson, Michio Kaku and Brian Greene, it is possible to construct an ideal type narrative, a description of the Cosmos from its earliest time to today:

*Almost 14 billion years ago, the Cosmos was a speck of matter, space and energy no bigger than a pinhead. All forces, a possibly even time, were combined into one superforce. When the Universe was 10^{-43} seconds old, and its temperature was 10^{30} degrees, it started to expand and grow. Immediately after that, it entered the phase of inflation, a sudden and exponential expansion, that resulted in the separation of forces. After this, the Universe was still very hot, so photons formed pairs of matter and antimatter particles that annihilated each other. For some unknown reason, the symmetry of these pairs was corrupted, and matter “won”. During the first few minutes, matter turned into protons and neutrons and atoms formed. As the temperature continued to drop, hydrogen, helium and lithium formed, and the Universe became transparent. During the first billion years it continued to expand and cool. Galaxies started forming. After almost 7 billion years, the Sun formed, and after that the planets around it. The Earth formed in an orbit which would allow it to form and sustain an atmosphere and liquid oceans in which, a few billion years later anaerobic bacteria will emerge and help establish an oxygen rich atmosphere. After this, the long and slow process of the development of life, the flora and fauna of Earth, took place. Some 65 million years ago, an asteroid destroyed most life on Earth, but this cataclysm created favorable conditions for the surviving mammals to take up empty ecological niches. One of the clades developed into the primate *Homo sapiens* with a level of intelligence high enough to develop science through which it will succeed in understanding the origin and evolution of the Cosmos.*

In the words of Neil Degrasse Tyson:

“Yes, the universe had a beginning. Yes, the universe is still evolving. And yes, we can trace the origin of every atom in our bodies back to the Big Bang, or the thermonuclear furnace inside massive stars. We are not simply in the universe, we are part of it. We were born from it. It could even be said that through us, here in this remote corner, the universe is making sense of

itself. And we are at the very beginning of this journey.”(Tajson i Goldsmit 2005, 19–22).

Cosmology can be viewed as a mythological narrative which deals with the origin of Life, Intelligence and Humans, as a myth that explains their place and significance in the Universe. Like the Oedipus myth, through the cosmological narrative, we contemplate our own rootedness, uniqueness and value in the overall self-observance of the Cosmos. The popular cosmological narrative also serves as a kind of eschatological myth which offers hope for survival, but guarantees an ultimate end of fathomable existence with the Big Rip. This isn't the only, but it is a very good reason to view the contemporary popular cosmological narrative from an anthropological perspective as part of a new secular mythology tasked with explaining the real state of affairs in the Universe.

Cosmological theories, and hence the popular cosmological narrative as well, fit the definition of myth because they speak of the earliest beginnings of space, with a justifiable belief that this is true. The description of the first three minutes of the universe, or *the Planck era*, really does cover the earliest comprehensible time. Furthermore, *Planck time* is based on experimentally provable terms, so this period is based on theoretical speculation and approximation of a “mythical time”. This does not diminish the value of cosmological assumptions. On the contrary, it serves to further celebrate the capability of the human mind to reach, through science, limits that, even a hundred years ago, were beyond its comprehension.

As an expression of the legitimacy of an anthropological, or rather, semiotic view of the cosmological narrative as a form of folklore, the possibility of the narrative's segmentation – the possibility to break it up into key analytic elements – should be pointed out. The basic course of presenting contemporary cosmological theories fits, to a certain extent, the narrative plot (Antonijević 2010, 195) which begins with the primordial event, the trouble which marks the beginning of cosmic evolution, or destroys the source equilibrium of forces (Dundes 1986, 41–419). It continues with a series of trials which the universe goes through, creating the necessary conditions for intelligent life to arise. Further

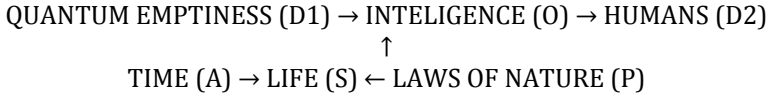
on, the segment of structure which determines reintegration emerges: the cosmos is shown as capable of self-seeing and self-understanding through human intelligence. Ultimately, the contemporary cosmological narrative contains an eschatological segment that tells of the return to perfection, the quantum emptiness of *the Big Rip*, the product of the influence of dark energy and gravity which will empty the universe as we know it today. This is the “ultimate fate of the universe” as foretold by the Λ CDM model.

In other words, the cosmological narrative possesses an initial sequence in which order is destroyed. It is followed by trials the cosmos goes through on the road to forming Life, wherein different polemic and contractual episodes are established. Finally, there is a string of positive episodes in which the Solar system and planet Earth are formed, leading to the evolution of life and the emergence of Humans and Intelligence, but also an eschatological return to the perfection of quantum emptiness, which re-establishes order and balance in the universe. Like the folk stories of American natives which describe the movement from imbalance to a natural equilibrium (Dundes 1986, 418–419), contemporary cosmology follows a similar path from the singularity, the Big Bang and inflation, to the current moment, and the future of the universe in the inescapable quantum void.

THE ACTANTIAL MODEL. Popular cosmology describes the epic journey of Life and Intelligence, Humans and Civilization through the turmoil of the evolution of the universe. Analyzed as a myth, narrative or text, contemporary cosmology displays a multidimensionality as a cultural artifact, and isn't merely a “sterile” hyper-positivist theory. It contains a multitude of principles which encourage, but also problematize the uniqueness of the emergence of Life and its significance for the “self-awareness” of the cosmos. An anthropological view of popular cosmology as a narrative enables us to determine how meaning is “ascribed” to the endeavor of determining the place of Man in the Universe.

The cosmological narrative can be analyzed using actantial analysis, and the semiotic square devised by Algirdas Greimas.

Humans, Life, Intelligence and Civilization. The laws of nature are absolute and the Universe will certainly behave in accordance with them, which will eventually lead to entropy. The actantial model of the popular cosmological narrative can be represented this way:



What the popular cosmological narrative tells us is that we are the makers of our own destiny and that we are responsible for our own survival. According to the cosmological narrative, there is hope in the future, but it will require an even stronger and more fruitful Intelligence on the part of Humans, so as to move Life to other places and *other times*. Among other things, the quest for alien life and a possible encounter with other forms of civilization have their own place in the narrative, but they do not dominate the plot. In the narrative, alien cultures play the role of *affirmation* of scientific discoveries which popular cosmology is based on. The search for intelligent life in the Universe and its valorization is at the very end of the popular cosmological narrative.

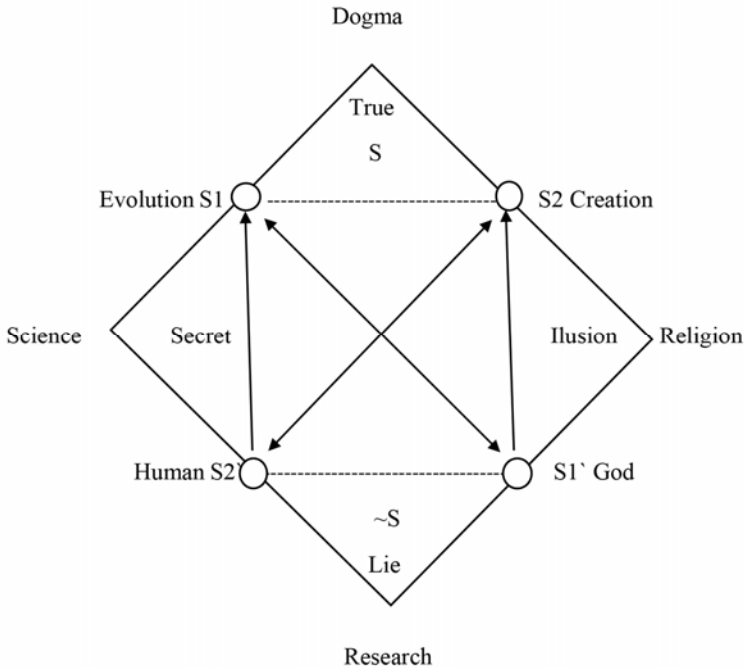
THE SEMIOTIC SQUARE. Algirdas Greimas adapted the logical square of opposition and posited it as an analysis of truth and lies in a given narrative. The semiotic square implies a thorough classification and analysis of contrary signs, as well as the consideration of interrelationships between dichotomous concepts that form specific relations. The basic premise of the semiotic square is to map logical contrarities, contradictions and implications connected to key semantic elements in a text.

Greimas' semiotic square represents an expression of his attempt to understand the conditions necessary for the emergence and production of elementary structures of meaning in a narrative (Greimas and Rastier 1968; Greimas, Perron and Collins 1989, 539; Greimas, Courtes and Rengstorf 1976; Antonijević 2010, 197; Herbert 2011). Utilizing the semiotic square enables us to view the dynamics of truth and illusion in any semiotic act, foremost in a text

(Hebert 2011, 51). The semiotic square maps logical conjunctions and disjunctions in the structure of a story that are deep seeded, abstract and difficult to see, so it can be used to extrapolate binary oppositions and meta-terms through which the articulated meaning of a text is formed (Antonijević 2010, 198). It enables the reading of the implicit, latent, hidden or suppressed meaning of a narrative, and the content and semes used to fill it in afford an image of the socio-cultural context of the text (Antonijević, 198–199).

Actantial analysis can be complemented by a series of semiotic squares that enable us to interpret the articulated meaning behind the popular cosmological narrative. The semiotic square can be populated by various semes gleaned from the three narrative levels of the story: the semio-narrative, the deep level and the discursive level. Here only the discursive level will be presented, as it describes the relationship between science and religion which has become a culture war between creationists and scientists interested in the debate such as Sean Carroll, Lawrence Krauss and Richard Dawkins.

At the discursive level, we find the layout of semes dealing with the relationship between science and religion in the contemporary world. The first opposition is between the semes of *evolution* and *creation*. The second is between *humans* and *god*. Above the first opposition in which the terms are contrarian we can construct the meta-term *dogma*, as science, like religion, accepts its own axioms, ideas that can't be proven as true, but are considered true none the less. On the other side, on the second semantic axis, made up of terms that contradict the previous, the meta-term of *research* can be constructed. Religion, like science, forms its own varied research projects, even if they are just attempts at reinterpreting scientific knowledge. Finally, above the deixis made up of the terms evolution and humans, the meta-term *science* is constructed. Opposing it, above the terms god and creation, the meta-term *religion* is constructed. Graphically, the semiotic square of the popular cosmological narrative looks like this:



Greimas' semiotic square can be enriched by the veridictory square (Greimas, Courtes and Rengstorf 1976, 439-440; Антонијевић 1991, 179-180). The starting position of the square represents desirable values and "truths", this side of the square represents that which is "secret". It is opposed by the position of undesirable and "false" which is to be overcome, this side of the square represents "illusion", which along with the unacceptable and wrong makes up the deixis of "false". The reading of true, false, secret and illusion depends on the intentions and capabilities of the senders and receivers of information (Herbert 2011, 74-78; Антонијевић 2007, 102-110; Antonijević 2009, 266).

POPULAR COSMOLOGY AND THE PHILOSOPHY OF SCIENCE. From Karl Popper a logical positivism, refutability (falsifiability) and problem solving, which authors such as Alan Guth and Paul Steinhardt often recall, Thomas Kuhn and paradigm shifts from the idea of the eternal universe to the idea of a hot Big Bang, to research programmes of Imre Lakatos and the concept of the inflatory cosmos which is searching for proof through more and more experiments, contemporary cosmology well illustrates the dominant flows of philosophical thought in the 20th century (Kaiser 2012; Bloor 1975; Fuller 2006).

The example of the popular cosmological narrative shows the transformation of dominant ideas, conventional science, and new paradigms in the general cosmological theory of the 20th century. The importance of the philosophy of science for contemporary cosmology is best exemplified by the relationship of one of the creators of the concept of the inflatory universe, Paul Steinhardt to his own theoretical work. Namely, Steinhardt is one of the harshest critics of inflation, attempting to refute the idea of the Multiverse, which is one of the most significant consequences of eternal inflation. It is his understanding that the idea of the Multiverse collapses and possibility of prediction by the theory of inflation. In other words, the theory of the Multiverse is not refutable, which robs it of its scientific character according to Karl Popper. Inflation predicts everything, and so, predicts nothing according to Steinhardt. Leaning on Popper, Steinhardt refutes his own theory, by forming an alternative. Along with Neil Turok, Justin Khoury and Burt Ovrut he established the ekpyrotic model of the universe.

Contemporary popular cosmology highlights the importance of the philosophy of science in the contemporary world. It also uncovers the intellectual and clashes about dominant paradigms and positions in scientific discourse. It focuses our attention on science as a political arena of negotiation, refutation and the search for compromise.

Ultimately, popular cosmology is at the center of issues concerning the formation of an educated and active participant in social life in the contemporary world. Should such a person be a devout believer or a harsh critic of religion, science, politics and

culture? What will be the image of the world in contemporary society built on? Is there room for traditional mythological images, or must we insist on a scientific view of the origins of the universe? What kind of education do we need for the 21st century? The role of popular science in general remains an open topic of conversation. It could be said that its role is to educate a wide audience but it's not always like that. However, in an ideal case, this kind of knowledge should be something audiences gleaned from the school system. It is important to consider the extent to which popular science is part of the entertainment industry, and to what extent it is part of the 250-year-old enlightenment project. It is important to understand why audiences find popular cosmology appealing.

CONCLUSION. A text like this one can't adequately present the full breadth and depth of the connections and themes that are intertwined with popular cosmology, but it can point to the possibilities afforded by an anthropological analysis of these relations.

It is important to point out that cosmology makes us face our own responsibility for the ideas of the sense and purpose of existence which we create. These are not found, but created through constant and devoted labor.

Like myths, cosmology doesn't really solve the contradictions it deals with. It just underlines the fact that knowledge keeps eluding us, and teaches us humility in facing our own place in the Universe.

The popularity of television series and popular-science literature in contemporary society tell of the significance that cosmology has for contemporary thought and the culture of the new millennium. Viewed as a form of folklore, or part of a secular mythology, popular cosmology can be understood as part of a system of a new, potentially transhumanistic ideology of a hypermodernist generation being formed right in front of our eyes.

When viewed as a focal point of a number of other processes and narratives, popular cosmology becomes a cultural artifact of immense anthropological significance. Because of this, I believe it should be analyzed as a multidimensional phenomenon that possesses the potential to transform into various narrative forms that can find their place in strictly scientific, but also philosophical and religious discourses.

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Scientific edition

Prospects for Anthropological Research in South-East Europe

Publisher: : N. N. Miklouho-Maklay Institute of Ethnology and Anthropology,
Russian Academy of Sciences, Moscow, Russia
Institute of Ethnography of the Serbian Academy of Sciences and Arts,
Belgrade, Serbia

Approved for publication

By the Academic Council of the IEA RAS held on April 30th 2019

and

accepted as volume no. 33 at the second meeting of the Editorial board of mono-
graphs EI SASA held on May 16th 2019

Cover design: Photography by Aleksandar Kelić

Proofreading by Sonja Žakula

Подписано к печати 20.06.2019
Формат 70 x 108/16 Усл.печ. 11,3
Тираж 500 экз. Заказ № 159
Участок множительной техники
Института этнологии и антропологии
им. Н.Н. Миклухо-Маклая РАН
119991 Москва, Ленинский проспект, 32-А