# CONCERTATIO

Laura Teodora David Dorin David

# Panta Rhei An Application of the Constructal Law for a New Scientific Model of Religion

"For a flow system to persist in time (to live) it must evolve freely such that it provides greater access to its currents." (Adrian Bejan)

#### Laura Teodora David

Associate professor at the Faculty of Psychology and Educational Sciences, Transilvania University, Braşov.

### **Dorin David**

Independent researcher and writer. Author, among others, of the vol. **Mircea Eliade: La marginea labirintului** (Mircea Eliade: At the edge of the labyrinth) (2015).

HEN HERACLITUS stated that panta rhei, 'everything flows'-or, at least, Simplicius of Cilicia assumed that it was the affirmation of Heraclitus-and considered water as arche. 'the first principle,' he was very close to a discovery that came more than twenty centuries after him. Heraclitus needed just a small additional step to think that not the water, but the flow itself is the arche. The first laws of thermodynamics were formulated only in the modern era (the 19<sup>th</sup> century); even more years had to pass until a physicist and professor at Duke University, Adrian Bejan discovered and developed the *constructal law* (in an article written in 1996 and published in 1997). In its initial form it stated that: "For a finite-size flow system to persist in time (to live) it must evolve such that it provides greater and greater access to the currents that flow through it" (Bejan 1997, 815).

It is a law of physics, which means it is applicable to the whole of nature; as the author explained: "This law sweeps the entire mosaic of nature from inanimate rivers to animate designs, such as vascular tissues, locomotion, and social organization" (Bejan and Zane 2012, 9). Applications of the constructal law are still in progress. One of the developments, to the best of our knowledge only little attempted so far (see David 2016b, 93–107), is its application in probably one of the most randomized and delicate domains, because it has to do with the human beings, their most intimate beliefs, and their inner thoughts: religion.

The debate science vs. humanities (and religion as a particular case) is still in progress (see for example Haag, Peterson, and Spezio 2014). Yet, as Ioan P. Culianu (Couliano) himself pointed out more than 25 years ago, there is not much of a difference between them. Or between them and philosophy, or even literature. Albert Einstein had stated as early as 1937 ("Moral Decay") that: "All religions, arts, and science are branches of the same tree" (Einstein 2015, 9). This because, continued Culianu, they are all "mind games played with ideas . . . entirely similar in nature and built according to the same binary principle" (Culianu 1992, 268). Bearing that in mind, and also the clarification of Culianu's model that will follow in this article, an attempt to use a law of physics in the scientific study of religions would probably not appear so hazardous in the end.

## What is Religion? Some Approaches

Religion seems to be so well known and deeply entrenched in our society that it may appear not to need any definition. Nevertheless, it has changed over time. Actually, the *way* we *see* religion makes the difference. For example, Christianity now is certainly not seen as it was about twenty centuries ago, when it was only a Jewish sect among many other factions. As Stausberg (2009, 12) unambiguously noticed:

One can safely state that the discussions beginning in the 1980s have pulled the rug out from under any naïve realistic understanding of the term and the concept 'religion'. It has become increasingly clear that (1) in scholarly discourse, 'religion' serves as an analytical category, a conceptual tool, a map used by scholars to navigate their discursive territory, (2) that the term has dramatically changed its semantic and pragmatic dimensions in the modern period, (3) that it is a contested term, and (4) that the term carries a large and largely also limiting and embarrassing (religious, ideological, political) baggage.

Von Stuckrad expressed the same issues right at the beginning of his book:

For some time now, the academic study of religion has experienced fundamental challenges. Although established as an independent discipline at European universities more than one hundred years ago, the academic study of religion is still wrestling with severe problems of identity and legitimization. The reasons . . . are also related to the fact that religion has played a very special role in the scientific, political, and cultural debates of the past two hundred and fifty years. . . . the concept of 'religion' is charged with difficulties that have thrown its study into contestation. . . Given the ubiquitous presence of religion in the global cultural worlds of the twenty-first century, there should be no doubt that we need experts who are trained to scrutinize the history and present appearance of religion in a sound academic way. (Von Stuckrad 2014, 1)

Many experts in religious studies have tried to define religion. A different and interesting tableau, almost poetical, presents some of these theories, organized according to the declaration of the author: "The differences among approaches to the theory of religion can often be discerned in the central metaphors and analogies they use" (Riesebrodt 2010, 47).

These central *metaphors*, and the people behind the theories, are: 'religion as a divine gift of reason' (e.g. Herbert of Cherbury, or Immanuel Kant); 'religion as an experience of revelation' (for instance, Rudolf Otto, Friedrich Schleiermacher, Gerardus van der Leeuw, Jakob Friedrich Fries, and Wilhelm Martin Leberecht de Wette); 'religion as proto-science' (for example, Edward Burnett Tylor, James George Frazer, and Pascal Boyer); 'religion as projection' (e.g. Ludwig Feuerbach, Karl Marx, and Sigmund Freud); 'religion as affect' (for example, Robert Ranulph Marett); 'religion as a function of the brain' (for instance, Andrew Newberg and Vilayanur S. Ramachandran); 'religion as a sacralized society' (e.g. Émile Durkheim, Thomas Luckmann, and Niklas Luhmann); 'religion as an interest in salvation' (for example, Max Weber and Pierre Bourdieu); 'religion as a commodity' (for instance, Rodney Stark).

### **Religion in the View of Mircea Eliade**

F DIRECT interest for our article, one of the most famous scholars of the 20<sup>th</sup> century, and at the same time probably one of the most controversial of all times, Mircea Eliade, whose role in the career of Ioan Petru Culianu was also pivotal, defined religion in this, rather regretful, way: "perhaps it is too late to search for another word, and 'religion' may still be a useful term provided we keep in mind that it does not necessarily imply the belief in God, gods, or ghosts, but refers to the experience of the sacred" (Eliade 1969, i).

For Mircea Eliade's point of view regarding religion, 'sacred' was most certainly the key term. All the other concepts in his theory orbit around the 'sacred': the hierophany is the revelation of the sacred, the archetypes are sacred structures or patterns, the myths tell a sacred story, the exit of the profane time operated by rituals happens in a sacred time; and so on. But what is 'sacred' in Eliade's perspective?

After analyzing Eliade's many books in the field of religion, Eliade's viewpoint can be briefly delineated in these terms: the concept of the 'sacred' evolved in two directions in Eliade's theory: Eliade's scientific view and Eliade's personal view.

The first one is what Eliade discovered about *homo religiosus*, and his way (of the religious man, not of Eliade) of seeing the sacred: that is, the scientific position. In this theory, the sacred is positioned in opposition to the profane. From the very beginning of his work as a historian of religion, Eliade (1992b, originally published in 1949), considered the sacred completely opposed to the profane, between the sacred and the profane existing an absolute dichotomy. But this is only the starting point, because the sacred is always manifested by something profane, and the sacred never manifests by and in itself, even if it is considered as something that *is* by excellence, the 'trans-personal', the 'transcendent', and at the same time a model, a pattern that institutes prototypes to be followed. Of the same importance, especially for our study, is the affirmation that this sacred-profane dialectics involves a selection.

This 'selection' is anyhow a tricky matter, since it is not the humans who choose what is sacred, but the sacred reveals itself to the human, and the latter can only discover the former. In this Eliade is certainly consistent with his youth role-model, van der Leeuw, but Eliade also made an affirmation about hierophany (which means literally: something that manifests the sacred), which is important for our research. It deserves a full quotation, not only of the French original, but also in its English translation. We should consider the hierophany "comme une manifestation du sacré dans l'univers mental de ceux qui l'ont reçu" (as the manifestation of the sacred in the mental world of those who received it). The English translation, originally, made in 1958, states: "as the manifestation of the sacred in the mental world of those who believe in it."

Obviously, it is not only a little different, but certainly even closer to what Eliade had in mind. This affirmation is supported by at least two arguments:

1. His main book, which was not titled 'A History of Religion' or 'Religions' but *A History of Religious Ideas (Histoire des croyances et des idées religieuses)*, confirmed that he is taking into consideration, and talking about, religious *ideas* and *beliefs*.

2. The second argument also coincides with Eliade's own vision. In this one "the 'sacred' is an element in the structure of consciousness, not a stage in the

history of consciousness" (Eliade 1969, i). One year earlier Eliade had noted the same thought in his *Journal*, in Romanian in original: "«sacrul» este un element în *structura* conștiinței, nu un moment în *istoria* conștiinței" (Eliade 1993, 592, italics original).

Eliade, as many times in his theoretical work, does not fully explain—or define—his terms. But he illustrated his point of view in his fantastic prose:

—Prin imaginație, repetă Antim tot mai bine dispus. Adică, în mintea noastră... Dar asta nu schimbă realitatea, ce se întîmplă **cu adevărat** în noi și în jurul nostru...

—Depinde ce înțelegi prin **realitate**, spuse. Pentru mine, realitatea este **adevărul total**, adică ceea ce ne este dat să cunoaștem numai după moarte. Dar arta, și în special teatrul, **spectacolul**, ne revelează acest adevăr în tot ce se întîmplă în jurul nostru, și mai ales în tot ce ne putem imagina că se întîmplă. (Eliade 1992a, 48–49)

(—Through imagination, repeated the increasingly jovial Antim. That is, in our mind... But this doesn't change the reality, what **truly** happens within us and around us...

—It depends on what you understand by **reality**, he said. For me, reality is the **total truth**, namely, what we get to know only after death. But art, and particularly theater, the **spectacle**, reveals to us this truth in all that happens around us, and even more, in all that we can imagine happening.) (Our translation)

The sacred (what is truly real, the absolute truth) is deeply hidden in the structures of the human mind, which is Eliade's famous *camouflage*, thus rendering necessary a process of anamnesis (sometimes, mainly in his prose, acquired exactly throughout the show, the *spectacle*).

Now, if we replace "consciousness" with its more appropriate, clearer and obvious synonym, i.e. "human mind"—or, using Culianu's term, "mental space"—we realize that here the theory of Eliade opens the way for the hypothesis of Culianu. Henceforth it will be continued by Culianu's model. For a meticulous analysis of the term 'sacred', as well as of the 'sacred-profane dialectics,' and for other concepts and the correspondences of these concepts in Eliade's fantastic prose, see David (2015a, especially 35–47).

### **Religion in the View of Ioan Petru Culianu**

ULIANU'S SCIENTIFIC evolution was from a historical approach (mainly to Gnosticism and the Renaissance, with vast inroads and contributions to other fields of study such as the history of ideas, literary theory, or the philosophy of culture) to a cognitive interpretation of religion. He wanted to take forward Eliade's thoughts according to his own intuitions and, obviously, expertise. He also tried to unify his last studies with Einstein's theory of relativity or Mandelbrot's model of fractals, in order to find a new scientific explanation of religion, which could be universally accepted by academia.

His last *modus operandi*, which is a cognitive approach to religion, assumes the hypothesis that if different people start from the same premises, they will inevitably think out (at least in theory, as a possibility) all the consequences resulting from those premises. All these thoughts are parts of a logical system, which can be evisioned as ideally existing on its own. There are here two aspects one must take into consideration: first, human beings, and their minds, need time to process, think out and develop all—or some, depending on their choices the potentialities of the system. Second, in its logical existence, all the ideas of the system are in synchrony, and the system can be imagined as a whole—in Culianu's terms, an 'ideal object.'

In other words, if conventionally religion was seen as a succession of events and doctrines, as old as humanity itself, Culianu sees it as a system, as the combination of these 'ideal objects.'

An *ideal object* is defined by Culianu (1992, 7) this way:

ideal objects are systems operating in a logical dimension and cannot go beyond their (generally quite simple) premises. Systems are fractalic in nature, that is, they tend to produce solutions ad infinitum according to (simple) production rules. And they interact with each other in quite strange ways, forming other systems whose general pattern of uncanny complexity may be called history.

Ideal objects are not made of any solid substances, but of ideas; they are run in time by human minds. Therefore, religion/s have their source in the human mind, and the transmission of religion/s is from one mind to another. Ideas travel together with people, and so do religious ideas. They started with people, and they will end with people.

Culianu's illustrations, in order to help the readers understand his revolutionary point of view, go from a simple one (the dichotomy soul/body), through one of medium complexity (the human versus the divine nature of Christ), to one of a very complex situation: the dualist gnosis. Mathematically, the first one is very simple: if we take two pairs of opposites, for instance A & non A (|A), and B & non B (|B), there are only four logical combinations:

- 1. A-B
- 2. A-|B
- 3. |A-B
- 4. |A-|B

If we use the dichotomy soul/body instead of symbols and the premises are:

1. The soul preexists the body (A)

2. The soul does not preexist the body (|A)

- 3. The soul is created (B)
- 4. The soul is not created (|B)

Then the results are:

1. The soul is created and preexistent (A-B)—Hinduism, Platonism, some Gnostics and Origen.

2. The soul is created and does not preexist their bodies (A-|B)—Orthodox Christians and St. Augustine.

3. The soul does not preexist the body, but it is created (|A-B)—Traducianism.

4. The soul does not preexist the body, and it is not individually created (|A-|B)—North American populations and Averroes or Ibn Rushd (1126–1198), a master of Aristotelian and Islamic philosophy.

For the second example—the human versus the divine nature of Christ—see an image of the tree-like shape in David (2016a, 47). To the third example Culianu dedicated almost an entire book, *The Tree of Gnosis*, so it will be impossible to summarize it in an article. What can be done is to infer from Culianu's writings, his last books and articles, Culianu's definition of religion. In brief, it can be expressed as follows: "religion is a process started by the human mind and transmitted throughout time (i.e. our history) from one mind to another in a complex way, following a particular set of rules, perfectly logical" (see more in David 2015a, 24).

According to Culianu (1992, 268), religion is nothing more than a "game of mind." Culianu had hoped that this understanding of religion per se would be eventually accepted by as many people as possible—religious or not—even if religion fundamentalists would not see it with good eyes. Even if the former still need confirmation, and it is a work in progress, he was most certainly right about the latter, as the apprehensive beginning of this century demonstrated.

### **Constructal Law**

DRIAN BEJAN discovered and developed the *constructal law* starting with 1996. In its initial form it stated that: "For a finite-size flow system to persist in time (to live) it must evolve such that it provides greater and greater access to the currents that flow through it" (Bejan 1997, 815). In the following years, the theory extended its applications:

Using the constructal law, we recognize that not only biological species but also technology and language, religion, education, and all the rest are flow systems that configure and reconfigure themselves so that the bodies that possess these designs (we, the cultured) move more easily on the globe. (Bejan and Zane 2012, 199)

In one of his books, Adrian Bejan admitted:

Twenty years after 1996, I would not change the constructal law except to insert in it the world "freedom," because, although obvious, without freedom there is no change, and no evolution. I would now express the law in this way: "For a flow system to persist in time (to live) it must evolve freely such that it provides greater access to its currents." (Bejan 2016, 239)

It is only one word, and yet it is an important observation, and enhancement, as the next example will show.

As a concrete illustration, for an easier understanding of the application of constructal law in religious studies, this section will start with some data regarding religion, and in particular the Christian-Orthodox denomination (the major religion) in Romania, a country with a population (at the present time) of around 20 million.

At the last national census (2011), from a population of 20,121,641, 18,822,242 people declared that they have a religion, and from the total population, 16,307,004 declared themselves Christian-Orthodox (81.04% of the entire population). All the other religions taken together amount to 2,515,238 persons. Only 18.917 citizens declared themselves without religion, and 20.743 professed to be atheists (so, 39,660 in total, which is 0.18%). For 1,259,739 people the information is not available.

In 2002, out of 21,680,974 people, 18,817,975 (86.79%) declared themselves Christian-Orthodox. In 1992 the percentage of Christian-Orthodox believers had been approximately similar (around 86.80%) (Censuses of 2002 and 1992).

Imagine religion as a flow. This is not something completely new. For example, Tweed (2006, 54) assumed that: "Religions are confluences of organic-

cultural flows that intensify joy and confront suffering by drawing on human and suprahuman forces to make homes and cross boundaries."

Figuratively, religion is a river flowing through our lives, within our society. Similar ideas were also expressed before, for example, by Atran (2002, 10–11):

Think metaphorically of humankind's evolutionary history as a landscape formed by different mountain ridges. Human experience that lies anywhere along this evolutionary landscape converges on more or less the same life paths, just as rain that falls anywhere in a mountain landscape converges toward a limited set of lakes or river valleys.

In our case, Romanian society is the landscape. For about fifty years, the communist regime restricted or interdicted the access to religion, in some cases with dramatic consequences: mostly imprisonment, sometimes even death. It was like a dam blocking the flow of the river of religion (at least officially). After the fall of the communist regime in December 1989, this dam also cracked. The river streamed out, flooding the society. In terms of physics, we can say that what happened was *natural*. Certainly, it is natural that after the collapse of a dam all the collected water forces its way out. In our case, that of Christian-Orthodoxy, it flowed for ten years at around 86.80%–86.79% of the population. Then, it started to slow down: in 2011 it got to 81.04%.

In constructal terms, Christian-Orthodoxy will continue to reduce its 'flooding.' In order to verify this hypothesis the available data were introduced (table 1), and analyzed with a spss regression function. The resulted coefficients created the equation (E1), which allowed us to predict the percentage of Romanian Christian-Orthodox believers for 2025.

I ABLE I			
Year	Total population	Christian-Orthodox	% Christian-Orthodox
1992	23,373,155	20,287,898	86.80
2002	21,680,974	18,817,975	86.79
2011	20,121,641	16,307,004	81.04
2025	18,772,912 (estim.)	Ν	Р

TABLE 1

SOURCES: www.recensamantromania.ro/istoric/vizualizati-rezultate-rpl-1992-si-2002; www.recensamantromania.ro/rezultate-2.

Available Data and (E1:) P=-0.298Y+680.53 where P is the percentage of Christian-Orthodox people, and Y is the year.

So, for the year 2025 the percentage of Christian-Orthodox believers will be P=77.08% of the total population.

For 2025, the population of Romania is estimated at 18,772,912 persons. If we use this estimation, the number of Christian-Orthodox people will be N=14,470,160 persons.

This prediction can be seen by comparing graph 1 (current situation of the percentage of Romanian Christian-Orthodox believers, 1992–2011) with the S-curve in graph 2 (estimated percentage of Romanian Christian-Orthodox believers, 1992–2025).



SOURCES: www.recensamantromania.ro/istoric/vizualizati-rezultate-rpl-1992-si-2002; www.recensamantromania.ro/rezultate-2.



Sources: www.recensamantromania.ro/istoric/vizualizati-rezultate-rpl-1992-si-2002; www.recensamantromania.ro/rezultate-2.

The above example is a visual illustration to facilitate understanding. But in order to apply a law of physics (i.e. the constructal law) to the general case of religion, we need a different manner of perceiving religion itself, other than the traditional one. There is such a model, provided by Ioan Petru Culianu. As previously stated, he observed that religion has an arborescent structure, and he undoubtedly demonstrated that in his field of expertise: Gnosticism (Culianu 1992, 15). Consequently, Culianu described religion as a computational process started by the human mind and transmitted in time from one mind to another. Originating in the same premises and following a simple set of rules, it can evolve into many variants (ibid. 18). He called this movement (which is actually a "flow") *morpho-dynamics* (ibid.).

Now we have to figure out religion starting from Culianu's definition of religion (David 2015b, 24) and complete it with the constructal law. Thus, religion is a *system* of flow of thoughts: starting from human mind according to a simple set of rules, and progressing in time from mind to mind, interacting and intersecting other systems of human society, like a river with other rivers; visually, as Culianu (1992) did in the case of Gnosis, it can be approximated as an arborescent structure, or even better as the combination of all kinds of "trees": the forest. Its flow is governed by the constructal law, as it happens with any other design in nature. The flow systems are linked together; the small ones are part of the bigger ones, and so on.

The constructal law teaches us to see all flow systems as components of a single organism, the entire globe, which evolves its design to enhance its flow. They are not competing against each other but working together. (Bejan and Zane 2012, 178)

What Hegel thought of as thesis, antithesis and synthesis are actually branches of a tree: philosophical, religious or scientific tree, it does not matter, fundamentally they have all the same source, i.e. the human mind, and all are determined by the same law, i.e. the constructal law. Accordingly, there is a reason why in human society the extremes always collapse, because similarly to nature, the best (most efficient) way (design) is selected (survives). Even if it takes many years, as it happened in the case of communism in Romania, which took about 50 years to be defeated, one way or another the same will happen with other extremist organizations, because the constructal law dictates it.

The constructal law also predicts that the rigid hierarchy will give way in time to a freely morphing hierarchy. This is why dictatorships are relatively short-lived and democracies have staying power. (Bejan and Zane 2012, 158)

The constructal law, being a law of physics, "governs any system, any time, anywhere" (Bejan and Zane 2012, 9). In the religious domain, there is a particular demonstration made by the authors, on the hierarchical organization of the Church.

The Catholic Church also has an immense, complex hierarchy, from the pope to cardinals, archbishops, and on down. But at the parish level, the local priest is the main channel at the top of the hierarchy that includes monks, nuns, altar boys, and worshippers. (Bejan and Zane 2012, 159)

But, can the constructal law be used for religion per se, i.e. for religious ideas? Could it be the constituent of a new science of religion?

Starting from Culianu's perspective, combined with the constructal law, we can delineate a new scientific model of religion (and also of other domains built from ideas, as Culianu intended: philosophy, science; he even mentioned literature), which will look more like an irregular *web* (a truly "www"), i.e. a *network*; we must update the image of a tree, or even a forest: for a tree (David 2016a, 47), once a branch is separated in two, the two resulting branches will not merge again; in its turn, the forest is made of individual trees: the network (of something = the ideas that flow) would be like a forest only if a forest is made of *interconnected* trees (which is not possible in nature), and not individual trees. So, the web is the best image.

In fig. 1 there is a basic representation of religion's network, with the major religions and denominations. But when—maybe sometime in the not too distant future—all the available data is loaded in a computer program which will make all the possible connections between religious ideas, the image of religion's network will appear to some extent similar to fig. 2, which is actually a human brain's (neuronal network) image.

Adrian Bejan also realized the significance of the 'network' in some other fields:

How do the streets and the air routes accommodate all these superimposed treeshaped flows? By evolving into a superposition of trees, which is a grid, that is, a network. (Bejan and Zane 2012, 195)

Most certainly, in the domain of ideas, the 'network' (of tree-shape flowing ideas) is the most appropriate representation.

In which way are ideas disseminated? Constructal law governs the diffusion:

Like any other point-area flow in nature, a new idea spreads on the landscape in two ways, via two flow mechanisms:



Fig. 1.



SOURCE: http://maxpixel.freegreatpicture.com/ Network-Brain-Brain-Structure-Neurons-Brain-Cells-582054.

1. fast, along pre-existing (established) channels of prior interest in what spreads, and

2. slow, perpendicularly to the lines, sweeping the interstices that fill the land-scape. (Bejan and Lorente 2012, 804)

Consequently, the best model for representing religion is a network of flowing ideas. Another good and handy comparative image that can be easily found is the image of the World Wide Web, which can be described as a network of networks (see a very informative example of internet map: The Opte Project). Similarly, religion is the "www" of networks that are the human brains, and the religious ideas that start from them and flow through them.

Culianu sought a scientific theory on which to ground his own model. Mandelbrot's theory of fractals sounded very appealing, yet Culianu's model was wrong about the fractalic nature of religion. Culianu died (in 1991) before Bejan's first publication of the constructal law (1997), so he did not know it and could not use it, but his own model facilitated the application of constructal law in religion. Today we are able to combine Culianu's model with Bejan's constructal law. Consequently, a new scientific approach to religion (but not limited to it) emerges, with endless and rich applications and developments. Along these lines, a definition of religion based on *constructal law and Culianu's model* can be formulated in this way: religion is the system (= an ideal object) constituted by the networks of tree-like flowing ideas. In it (= the system), ideas flow freely (over time) from origin (= the human mind), through the network's "channels" (= also the human mind, or, to use Culianu's terms, 'mental space'); no matter how the ideas are communicated—orally, on paper, on the air (radio and TV), on nowadays computers or mobile phones, and so on to users (= religious people, or scholars, writers and so on)—, it (= the system) provides greater access to the flow of ideas.

In fewer words, the definition can be summarized as such: *Religion is an ideal* object composed of networks of tree-shape interconnected ideas freely evolving and flowing throughout the human mental space.

We shall name this new model the *Morpho-Constructal Theory* (in this particular case, *of Religion*). Philosophy, science, and literature have their well-established places in it, yet to be revealed.

### References

- Atran, Scott. 2002. In Gods We Trust: The Evolutionary Landscape of Religion. New York: Oxford University Press.
- Bejan, Adrian. 1997. "Constructal-theory Network of Conducting Paths for Cooling a Heat Generating Volume." *International Journal of Heat and Mass Transfer* 40, 4: 799–816.
- —. 2016. The Physics of Life: The Evolution of Everything. New York: St. Martin's Press.
- Bejan, Adrian and J. Peder Zane. 2012. Design in Nature: How the Constructal Law Governs Evolution in Biology, Physics, Technology, and Social Organization. New York: Doubleday.
- Bejan, Adrian and Sylvie Lorente. 2012. "The Physics of Spreading Ideas." *International Journal of Heat and Mass Transfer* 55, 4: 802–807.
- Couliano, Ioan P. 1992. The Tree of Gnosis: Gnostic Mythology from Early Christianity to Modern Nihilism. Trans. Hillary S. Wiesner and the author. San Francisco: Harper.
- David, Dorin. 2015a. La marginea labirintului. Corespondențe între conceptele lui Mircea Eliade și proza sa fantastică. 2<sup>nd</sup> edition. North Charleston: CreateSpace.
- —. 2015b. "Religion and Power in Ioan Petru Culianu's View." *Transylvanian Review* 24, 3: 19–25.
- ——. 2016a. "A Different Perspective on Arche Using Culianu's Model." Transylvanian Review 25, 3: 43–52.
- ——. 2016b. Thinking Interrupted/Comprehending Culianu's Model, from Gnosis to Constructal Law. North Charleston: CreateSpace.
- Einstein, Albert. 2015. Out of My Later Years: The Scientist, Philosopher, and Man Portrayed Through His Own Words. New York: Philosophical Library/Open Road.

- Eliade, Mircea. 1969. *The Quest: History and Meaning in Religion*. Chicago–London: The University of Chicago Press.
- -----. 1992a. Proză fantastică. Vol. 4, Les Trois Graces. Edited by Eugen Simion. Bucharest: Editura Fundației Culturale Române.

-----. 1992b. *Tratat de istorie a religiilor*. Translated by Mariana Noica. Foreword by Georges Dumézil. Bucharest: Humanitas.

- —. 1993. Jurnal, 1, 1941–1969. Edited by Mircea Handoca. Bucharest: Humanitas.
- -----. 1996. *Patterns in Comparative Religion*. Translated by Rosemary Sheed. Introduction by John Clifford Holt. Lincoln–London: University of Nebraska Press.
- Haag, James W., Gregory R. Peterson, and Michael L. Spezio, eds. 2014. The Routledge Companion to Religion and Science. London–New York: Routledge Taylor and Francis Group.
- Riesebrodt, Martin. 2010. The Promise of Salvation: A Theory of Religion. Translated by Steven Rendall. Chicago: University of Chicago Press.
- Stausberg, Michael, ed. 2009. Contemporary Theories of Religion: A Critical Companion. London–New York: Routledge.
- Tweed, Thomas A. 2006. *Crossing and Dwelling: A Theory of Religion*. Cambridge, MA-London: Harvard University Press.
- von Stuckrad, Kocku. 2014. The Scientification of Religion: An Historical Study of Discursive Change, 1800–2000. Boston–Berlin: De Gruyter.

#### Abstract

Panta Rhei: An Application of the Constructal Law for a New Scientific Model of Religion

Is religion an *autonomous*, as Eliade considered, *system*, as Culianu stated? What is religion? Nowadays "religion" is a term so broad that it encompasses a lot, from one God to many deities, from old gods to the spiritual life of today, from ghosts to the sacred, from stones and trees to spirits, and so on. What is more, given that each and every one of us, inhabitants of this Earth, have our own understanding, misunderstanding, or non-understanding of religion, and regardless of the fact that many scientists, researchers and writers in/of this field tried, with varying degrees of success, to define religion, there is not a final or unanimous accepted definition of it. This study starts with the view on religion of the mentor of Ioan Petru Culianu, Mircea Eliade, and it continues from the point where Eliade's view meets the perspective of Culianu, with a focus on *Culianu's Model*, namely, his outlook on religion. Then this article turns towards the *constructal law* developed by the physicist Adrian Bejan, and its applications in the humanities, in general, and religion, in particular. The main purpose of this research is not just to describe and clarify these viewpoints, but to provide a new definition of religion, and (equally important, if not more so) to take forward the theory of Culianu with the use of the constructal law, to open the way for a new understanding of religion, i.e. for a new theory, a new scientific model of religion.

#### **Keywords**

constructal law, Adrian Bejan, Mircea Eliade, Ioan Petru Culianu, Culianu's Model, new definition of religion