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The Mosaic Theory of Natural Complexity A scientific and philosophical approach

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Chapter 5. Towards an extended Biocosmological Stance

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Chapter 5

Towards an extended Biocosmological Stance

This chapter will show how the mosaic model of complexity can be combined with two major philosophical stances: the (neo)Aristotelian tradition and the general theory of systems.

First we shall review statements made in the Introduction and Chapter 3. Aristotle argues that there is a strong relationship between the microcosm (the Earth) and the macrocosm (the heavens and the stars). For Aristotle, the architecture of the cosmos is the same as the architecture of earthly structures. As has been noted, this does not mean in modern terms that the cosmos should be seen as a giant ape like King Kong, but rather that the architecture of the cosmos is probably based on the same patterns or principles as the architecture of the most complex structures we can directly observe and analyze on Earth, *i.e.* biological structures. As has been explained, the stance known as Biocosmology or Neo-Aristotelism was developed by the Russian philosopher Konstantin Khroutski. The mosaic structures described in the present book could be likely candidates for elements contributing to this general architecture of complexity. The fact that the mosaic model can already be applied to a wide range of different earthly fields, such as biological systems, and also language, sociology, culture, literature, music, town planning and robots, could be strong evidence for a model that is valid in many areas of our microcosm, and could also be a relevant tool for describing areas of the macrocosm. A biological stance could thus lead onto a Biocosmological approach and prove to be a fruitful collaboration for both Biocosmology and biology.

This is in fact what was done by the French astrophysicist Jean Audouze¹⁰⁶. In a recent book, Audouze presented a broad analysis of the architecture of the universe, from the atom to galaxies, and found strong parallels between the organization of the earthly microcosm and the organization of the cosmic macrocosm, pointing out the mosaic structure of heavenly bodies such as stars and galaxies. “Let us imagine, writes Audouze, that the Universe is an enormous Russian doll, from super-clusters of galaxies to objects of our terrestrial environment, passing through galaxies, stars and planets... Each of these structures is composed of all those of inferior rank of which they only partially share the properties, although it has been shown that the behaviour of the biggest structure of the Universes indeed reflects in a way the

¹⁰⁶ Audouze *et al.* 2015b.

physics of particles¹⁰⁷”. Audouze notes that all these structures “refer to the model of the mosaic, defined by Georges Chapouthier¹⁰⁸”. Audouze’s work gives a clear response to one of the goals of the present book which is to identify processes underlying macrocosmic and microcosmic events and provide evidence for the Biocosmological stance.

We have observed that one of the bases of the Biocosmological approach is a triune process that we have linked to the philosophical concept of dialectics. Following ideas as argued by Audouze, the Biocosmological stance can lead to the conclusion that such triadic or dialectical movement is obviously not specific to living beings, but can apply to the complexity of the cosmos; or, stated differently, evidence for the triadic development of living beings can be used to predict triadic development in other entities of the cosmos. When expressed in dialectical terms, this is a way of suggesting that the dialectics of nature (obvious in the case of living beings) may extend into in other fields or even other parts of the universe.

This (neo)Aristotelian stance can be seen in relation to the holistic “General System Theory¹⁰⁹” developed by the Austrian philosopher and biologist Karl Ludwig von Bertalanffy as early as 1937. The theory is that similar principles can be found in different theoretical and/or scientific fields, or, alternatively, that models, principles and laws that can apply to general systems can be found in all fields of knowledge. The starting point for von Bertalanffy was biology and he followed a path somewhat similar to ours. As the mosaic model is in complete agreement with the Biocosmological approach, it may be considered as one of von Bertalanffy’s very general principles, being found in a number of different fields of knowledge. Any analysis of the architecture of complexity should include an investigation of the juxtaposition of similar units and their subsequent integration in a mosaic formation that allows a certain degree of autonomy to the component parts. Or conversely, the mosaic model could be considered as one of the principles of a general system.

Against the “anthropic principle”

As this point, it is important to note that both Khroutski’s stance and mine expressly preclude the possibility of evolution centred on humans alone, as in the notorious and anti-Darwinian “anthropic principle¹¹⁰” which sees complexity solely in the specific case of human beings and their highly specific world/environment, our world, our planet. According to the anthropic principle, evolution was intended to ultimately and specifically produce the human being. This is in contradiction with everything that can now be reasonably assumed about life in the universe. As the chemistry of carbon appears to be ubiquitous, and as organic compounds can be found in comets, it is likely that complex biological structures can be found in many parts of the cosmos and that we, humans the “naked apes,” are a highly specific or unusual result of highly specific or unusual terrestrial

¹⁰⁷ Audouze *et al.* 2015b: 45.

¹⁰⁸ Audouze *et al.* 2015b: 45.

¹⁰⁹ Von Bertalanffy 1968.

¹¹⁰ Carter 1974.

evolution. Expressed in different form, the anthropic principle can be described as a revival of the old idea of mankind considering itself to be at the centre of the universe. Both Khroutski and I and are categorically opposed to the anthropic principle, it being an anthropocentric principle far removed from the Aristotelian cosmocentric approach.

Why knowledge is possible

These thoughts on complexity in living beings have a further and substantial epistemological effect that can be argued as a conclusion. If mosaic structures of life and their basic triune processes are models for the structures and triune processes of the entire cosmos, there is then a clear explanation of why the laws of the universe can be understood by humans, of why human (scientific) knowledge is possible. As has been seen, the most complex organ, the human brain and the mind processes which it controls (*e.g.* consciousness, language and memory), fits the theory of the mosaic model and triune processes of life and can therefore simulate or mimic laws governing the surrounding environment, which, for the Biocosmological hypothesis, are the same laws.

More specifically, as the central nervous system in living beings is part of the universe, it is able to understand the functioning of other parts of the universe which operate along similar lines. The simulation of the external world by the brain¹¹¹, which is already present in evolved animals such as vertebrates and cephalopod molluscs, reaches its highest point in the human ability to develop scientific knowledge of the world where humans live. In more philosophical terms, humans, as living beings, are determined by the four Aristotelian causes (material, formal, efficient and final), so it is only logical that humans should understand other systems in the universe which are determined by the same causes. Furthermore, complex species tend to cephalisation, *i.e.* concentration towards the top of the body, in the direction of movement, with the brain, a highly sophisticated organ, gathering sensory information and processing it in complex ways, including reasoning and memory¹¹². Through this is a general process (found not only in vertebrates, but also in insects and molluscs), simulation of the laws of the universe by animals and humans becomes increasingly sophisticated.

As both the cosmos and biological systems are built in the same way through the same Aristotelian causes, they tend to achieve the same patterns of complexity, with parts of the cosmos (human brains) able to simulate and understand other parts of the cosmos. If, as stated by Khroutski: “human consciousness is exactly a means – a tool function¹¹³”, then for cosmic evolution, there is an explanation of why human consciousness can understand the laws of cosmic evolution.

¹¹¹ Chapouthier 2008.

¹¹² Chapouthier 2008.

¹¹³ Khroutski 2010: 72.

Partial conclusion

Our book was written in a Neo-Aristotelian and Biocosmological spirit, assuming that, according to Aristotle's ideas, the structure of the macrocosm mimics the structure of the microcosm. The fact that similar principles (in this case our mosaic model with its principles of juxtaposition and integration) can be found in so many different fields, suggests there is common architecture throughout the material world. The best way of demonstrating this would be to directly show that macrocosmic events follow the same principles as microcosmic events, which is what the astrophysicist Jean Audouze did in his recent work, making legitimate use of the mosaic model applied to stars and galaxies, thus providing direct evidence for the neo-Aristotelian assumption which was our original hypothesis.

This leads us to make two key observations. Firstly, that our stance totally rejects the anthropic principle claiming that complexity ultimately leads only to the specific case of human beings and to their highly specific world/environment which is Earth. This absurdly anthropocentric view must be dismissed. It should, however, be assumed that complex carbonaceous structures similar to animal life but developing through specific evolution could well be in different parts of the universe. My second observation is on the way human knowledge can decipher and understand the world in which we live. The abilities of the human brain, from animal abilities, are built according to the same principles and rules as the rest of the universe, and because both the brain and universe are governed by the same principles and rules, the human brain and mimic or simulate the structures of the world and thus develop scientific knowledge.