

The Philosophical Basis of *Mirror of the Universe* and the Development of the Ideas Behind It

Justification: (*Mirror of the Universe* p. 191-200) translated shortened modified version

Here I provide some insights into the ideas on which the book is based.

The philosophical and psychological bases of *Mirror of the Universe* were built upon many years of trying to understand abstractions like 'eternality' and 'consciousness', and my recognition of the strong resemblances between biological and cosmic structures. From the beginning, my work fitted within the classical philosophical views which state that philosophy is concerned with the search for the ultimate coherence of all the entities. In other words, it reflects on the ways in which macro-cosmos and micro-cosmos are interconnected.

The method espoused is based on scientific reflections and references and on the use of visual imagery from natural, microscopic and telescopic observations.

After a long study of abstractions like 'eternally'— related to 'omnipotent beings' — it became clear that these abstractions were not accessible to me. I concluded that the idea of eternity for most people (except for some mystical spirits) probably was not imaginable.

What was left were some emotions like 'feelings of never ending', which are comparable with life events such as acceptance of 'seemingly never-ending suffering', or 'resignation in the face of a hopeless situation', and the feeling of 'always going on and never giving up', even when at first

glance it seems a contradiction. This kind of reflecting helped me grow into the process of relativizing and understanding apparently different worlds. My reflections were influenced by philosophers from early Indian, Egyptian, Greek and Arab cultures, as well as by later Western European thinkers including Spinoza (1632-1677) and Leibniz (1646-1716). Ideas about connections between form and matter and about the special and the general, came from Aristotle, who stated that, through the commonality of different but resembling forms, it should be possible to penetrate to the core of matter.

The most important challenge of my work was the question of what would be my perception of things in the light of cosmic evolution. My more specific goal was trying to understand the relationship between me and the cosmic nature from which I have evolved. Important here is the premise that the matter of which I exist is identical with the matter (stardust) of which the Universe is made, and that I am subject to the same physical laws as the planets and stars.

Accepting this should mean that in their most remote origins all beings are identical; thus I would be identical to my neighbour, to a flower, a shell, the ocean, the atmosphere, the earth, the sun, cosmic nebulas and so on. If this is correct, why could I not see this likeness in the many different forms in nature and cosmos? Of course, while there were some general similarities among many species and subjects, there were even more

differences. Was my proposition wrong or was it my interpretation that was incorrect?

My experimental approach began by choosing a comparison between a human image and our planet, Earth. For this analysis I might have chosen any subject but the fact that my first choice was the globe, probably had to do with my deep affection I had for its appearance from space and the geological processes that determined the shapes and reliefs of continents. According to my proposition, I should resemble the appearance of the earth. Although this seemed completely nonsense; I started developing a general philosophy about how differences in forms can be explained in terms of (cosmic) physical forces.

I proposed that the forms of biological life not only are influenced by physical forces present on our planet, but that biological life continues to influence itself. I found that the conditions for life not only are influenced by self-regulating physical systems such as those of the atmosphere and hydrosphere, but that these self-regulating systems also were part of even bigger system such as the solar system with its planets and its cosmic contents (radiation, gravity). The most important feature of the last is the relatively permanent character of its processes and forces. But sometimes events (collisions, eruptions, radiations) take place that can both disturb the permanence of the dominant systems and also influence terrestrials systems.

This implies that the existence of nature and the evolution of life depends (speaking generally) on of two kinds of influences: The first is adaptation to relatively stable influences (cosmic radia-

tion, gravity); the second, adaptation to relatively unstable influences (for example, geophysical forces).

Ultimately, the stable influence seems the stronger force in the process of evolution of nature.

Accordingly, my proposition that 'I should resemble earth' means that my physical appearance also depended on innumerable local and global variables.

Developing the hypothesis

My enquiries into the formal resemblances (shape similarity) between me and the earth started with my seeking relatively long-lasting geological events that might have influenced the early form of the earth. Eventually, my eye fell on the outline structure of the Antarctic continent. It reminded me of the shapes of human temporal bones and of the skulls of many other animals. This discovery encouraged me in my search. However, it also resulted in a growing complexity of thoughts and comparisons that, more and more, seemed to become the products of my fantasy. So I decided to leave that subject for a while and instead concentrate on fundamental studies of astronomical and geological evolution.

These investigations proved more insights into the geological and geophysical history of the earth and its surface. Hypothetical reconstructions of the movement of continents during the last 200 million years reminded me again of forms and relative positions of some human and animal skeletal plates. My first thought was to deny the similarities; on the other hand, they were sufficiently intriguing to elaborate them. What I needed was

an example of a scientific technique for comparing forms of apparently different subjects. An excellent example of such an approach appeared to be the scientific development of the continental drift and plate tectonic theory.

Comparing the shape of elements of the human skull with the modelling of tectonic plates and continents, seemed as unacceptable as suggesting that (without further scientific explanation), because of the complementary shapes of the coastlines of western Africa and eastern South America, these continents, despite their separation today by 5000 kilometres of ocean, were once united. But this was how Alfred Wegener started his theory of the drift of the continents nearly a century ago. What we can learn from this process is how apparently accidental shape resemblances can play a fundamental role in the development of a new scientific concept.

Explorations

From the history of the tectonic plate theory, and from the discoveries of spectral analysis, I learned that remarkable resemblances between shapes sometimes are visible traces of a deeper and complex coherence. To find that coherence, there was need for supporting arguments. For example, there should be evidence that skulls and trunks of animals must have existed in the same space-time context. Geological and paleontological data could confirm that continents coexisted with skeletal parts over hundreds of million years, but much research is needed to get a better picture of the geological history of the earth and its changing appearances.

Skeletal similarities could be only part of the story. What about the shapes of other species in nature such as plants and their flowers, insects, corals and plankton? They did not resemble continental terrestrial configurations. I needed expand my hypothesis: were there solar influences on the shapes of biological life? My attention was caught by the similarity of sun oriented sunflower with its yellow corona-shaped flower leaves. Was that form similarity accidental ?

Form analysis (intersections) of the sunflower reminded me of some microscopic human and animal eye structures. That sun and eye were shape related was that pure fantasy? Fortunately I was not alone: The German poet and scientist, J.W. von Goethe long time ago already had wondered whether sun and eye were related.

I reflected on the mechanisms that could account for shape resemblances between structures of the physical and the biological world. I did not find a clear explanation. We observe that species are able to adapt to their electromagnetic radiating environment by imitating shape and colour. This process of camouflage, in turn, is related to the widespread presence of minute magnetic particles and radioactive radiation present in almost all terrestrial biological matter.

I also realized that geological landscapes were created by the gravitational forces that are involved in elemental processes such as the production of geomagnetic radiation. I wondered whether the evolution of biological shapes was conditioned by the shape of the earth's geomagnetic shield; the form of this shield results from the continuous solar wind that compresses geo-

magnetic field-lines at the sunward side, and elongates the field-lines on the side turned away from the sun. The concave configuration caused by the solar winds and geomagnetic field reminded me of the basic head-trunk shapes of many biological species. This rather speculative idea became more interesting after my morphological analyses of skeletons; I could argue that the form of head and trunk are based on the same model.

This analogy became even more interesting after further study of the role of geomagnetic field-lines. At the magnetosphere (the near-earth region of space that is threaded by geomagnetic field-lines), there exists/is found a region in which very hot or ionized gas dominates the earth's atmosphere. It is populated with ions and electrons originating in the atmospheres of both the earth and the sun. At its day-lit side, the earth's magnetic field-lines become compressed and connected with the field-lines originating from earth and sun. While the compressed sun-ward side experiences a complex and dense electrical field, on the other side, the geomagnetic field-lines are elongated and the electric connections are less dense and spread over a vast area. This uneven distribution has an analogy in the complexity and density of electric (neuron) currents in the nerve systems of an animal's head and trunk.

I thought this topic exciting, but also too complex for me to attempt further elaboration. I fantasized,

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how the human neural system would appear at an enlargement of, for example, ten-thousand times the present body size!

In the meantime, I realized that I had not paid attention to the greatest proportion of biological life on earth – that vast population of protozoa (smaller than 0.2 mm), such as plankton, bacteria, algae, fungi, etc.

I decided to focus on plankton because of their often bizarre structures and exotic beauty when observed under the microscope. The first pictures (from the Hubble telescope) of planetary nebulae (star explosions) had just been released; they reminded me of these microscopic plankton, and there was now an (excellent) opportunity to juxtapose the images of microscopic plankton and telescopic planetary nebulae and thus to pursue the idea of shape resemblances in this new field.

Since the publication of the *Spiegel des Universums* (1996) I have sought to explore further examples of shape resemblances and physical explanations for such similarities. There is no universal explanation for these phenomena, but given the enormous progress in recent years of scientific investigation in fields such as chemistry, physics and astrophysics, there is reason to believe that such an explanation soon will be within reach..”

The aim of this book is to investigate some of the shapes shared by terrestrial, biological and cosmic structures.

I will try to determine whether these resemblances are strictly coincidental or whether they are expressions of a more profound coherence among the elements in the universe.

From both a philosophical and a psychological point of view, this book must be regarded as an experiment in the awakening consciousness. I hope to demonstrate that the relationship between normal perception and the subject perceived can be interpreted in its real context only when the genesis of the universe is fully integrated into the analysis.

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Titel: [Spiegel van het universum : vormgelijkenissen tussen kosmische, aardse en biologische structuren / Albrecht Ploum ; \[ill.: Emmeke van der Put ... et al.\]](#)

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Samenvatting: Beschrijving in woord en beeld van een theorie over de overeenkomst tussen structuren uit de kosmos en levende wezens.

Recensie: Het doel van dit boek is het onderzoeken van vormgelijkenissen tussen aardse, biologische en kosmische structuren. De ordening in de microkosmos lijkt op die in de macrokosmos. Zo bestaan er bijvoorbeeld vormgelijkenissen tussen zon, zonnebloem en het oog; tussen eencelligen en ontploffende sterren en tussen de menselijke schedel en de structuur van het aardoppervlak. De auteur vraagt zich af of het hier louter toeval betreft of een teken van een dieper liggende samenhang waarbij gelijkenis in vorm één van de manieren is waarop die samenhang tot uiting komt. De relatie tussen normale waarneming en waargenomene kan naar zijn idee slechts begrepen worden wanneer de ontstaansgeschiedenis van het heelal in het waarnemingsproces betrokken wordt. Of de benadering van de auteur juist en verantwoord is, zal in de toekomst moeten blijken; nu is er (nog) geen wetenschappelijk bewijs voor. Mooi verzorgde uitgave; rijk voorzien van prachtige kleurenfoto's en -illustraties die goed aansluiten bij de tekst. Helder, duidelijk geschreven.

Illustratie:



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