

Uroboros

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IN VENENOSO DRACONE SUMMAM MEDICINAM INESSE, OR ON THE MYTHOLOGY AND PHILOSOPHY OF BIOLOGY

Dear Friends!

Your invitation to make a few points on the project of a tome, which is supposed to carry my name, I gladly accept. If I'm not mistaken, it's going to be the first truly international publication, dedicated to non-positivistic philosophy of biology. I hope, however, that you have heard a bit about my nature – mischievous and perfidious – and that you know what you are doing, inviting me into your household. I suppose you don't want anybody to find a reason for shaking the scientificity of your undertaking? I'm not sure at all, I must say, if the reviewers like my personal tone as well as my tendentious and partial opinions.

However, I wish to calm you down a bit: I'm not as harmful, as many speak of me. Furthermore my venom has a healing effect. It is for a reason that below my effigy it is often written: "*Hoc vere est magnum miraculum & cita fraus: In venenoso Dracone summam medicinam inesse*"¹. I have seen many countries and I have learned many myths created by different nations in different times (including of course myths about myself and my brothers from almost every continent²). Maybe that's why I'm resistant to modern mythology, both the everyday, especially political³, and the more sublimated – professional mythology, scientific⁴ as well as philosophical⁵.

¹ *Musaeum hermeticum reformatum et amplificatum*, Francofurti 1678, p. 353.

² About the origins and early evolution of myself cf. B.H. Stricker, *De grote zeeslang*, "Ex Oriente Lux. Mededelingen en Verhandelingen van het Vooraziatisch-Egyptisch Genootschap" 1953, no. 10, p. 1-28; K. Preisendanz, *Aus der Geschichte des Uroboros*, in: *Brauch und Sinnbild*, Karlsruhe 1940, p. 194-209; W. Deonna, *Ouroboros*, "Artibus Asiae" 1952, v. 15, p. 163-170.

³ A. Reszler, *Mythes politiques modernes*, Paris 1981 PUF.

⁴ S. Toulmin, *Contemporary scientific mythology*, in: A. MacIntyre (ed.), *Metaphysical*

I will try to do no harm neither to science nor to the scientists, of course. I would simply like to help those interested in reaching philosophical self-consciousness, to help them understand the difference between mythology and philosophy: difference between those philosophical currents that the myths create and sustain and those that try to impair them. While doing so I keep clear of violence; I simply follow my old device: "*nosce te ipsum*"⁶.

I think you know already, why I had put in the title the word "mythology", not "methodology" – as you often see in the titles of works from this domain. But lets leave the title's explanations: I assume that everybody knows what biology is, although a wise man once said, and I agree, that there are two biologies not one – functional and evolutionary – based on different philosophical grounds⁷. What concerns philosophy, this matter – being somewhat more complicated – is better left for later.

And the last thing. Even if I make few mistakes here and there, I have decided to address you in your own language – Spanish. I don't make so only by courtesy: there are other, much deeper reasons. Some of you will guess them at once, others maybe in the end, and the majority – probably never.

Seven myths I shall present you (seven is the most mythological number, isn't it?). In such a short time not much can be created – destroying however is much easier. But my intentions are not even destructive; they are much more modest. I would simply like to teach you to doubt (the non-Cartesian way however).

THE FIRST MYTH – THE MYTH OF SCHOLAR'S PHILOSOPHICAL SELF-CONSCIOUSNESS.

According to the myth, scientist are able to tell the difference between science and philosophy, to separate the good philosophy from the bad one, and they know on what ground their branch (or at least their own theory) is based.

It seems, not always and not everybody. Couple of years back a creationist dissertation got in my hands. The title was "The mystery of life's origin", by

beliefs. Three essays, London 1970 SCM Press, p. 1-71; S. Rose, H. Rose, The myth of the neutrality of science, in: W. Fuller (ed.), The social impact of modern biology, London 1971, Routledge, p. 215-224; R.C. Lewontin, Biology as ideology. The doctrine of DNA, New York 1992 Harper.

⁵ J.A. Nuño, Los mitos filosóficos, México 1985.

⁶ Fulcanelli, Les demeures philosophales et le symbolisme hermétique dans ses rapports avec l'art sacré et l'ésotérisme du grand oeuvre, v. 2, Paris 1964 Pauvert, p. 65: "*L'effigie du serpent Ouroboros se dresse sur le chapiteau d'une élégante colonne. Le curieux bas-relief est distingué, par l'axiome: 'Nosce te ipsum'*".

⁷ E. Mayr, Toward a new philosophy of biology. Observations of an evolutionist, Cambridge MA 1988 Belknap Press of Harvard University Press, p. 25.

Ch.B. Thaxton, W.L. Bradley, R.L. Olsen⁸. I must say that against a background of standard creationist production this piece is distinguished by a sort of subtlety in chosen arguments. The fourth page of the cover, however, turned out to be the most interesting. There it stood namely several enthusiastic opinions from scholars representing prestigious universities and research institutes. It is understood that a book's cover is not an appropriate place for reprinting its negative reviews. I have found intriguing however, that the reviewers of the book had granted it with *scientific* valours, not shall we say theological, belletristic or such. This book – as it has proved – is called upon (in positive context) in serious books and research papers published in renowned journals, as "Microbiological Reviews" (1988, v. 52, p. 453) or "Uspekhi fiziceskikh nauk" (1989, no. 1, p. 6). It has been treated as a *scientific* work by a whole range of reviewers of serious scientific⁹ journals. Please take a look at the sample:

"A valuable summary of the evidence against the chemical evolution of life out of non-living matter. It presents a very well thought-out and clearly written analysis of the alternatives to the accepted scientific theory of the origin of life" [founder and former director of the Goddard Institute for Space Studies of NASA]; "The authors have made an important contribution to the origin of life field (...) This new work brings together the major scientific arguments that demonstrate the inadequacy of current theories (...) It will help to clarify our thinking" [professor of chemistry, New York University]; "arguments are cogent, original and compelling" [professor of biology at San Francisco State University]; "I agree fully with many of the conclusions of the authors" [professor of physical chemistry, Institute of Physical Chemistry, Hungary]; "this book is strongly recommended to anyone interested in the problem of chemical and biological origins" [professor at Dept. of Epidemiology, Yale University]; "This comprehensive scholarly critique analyzes the major viewpoints of the origin of life on earth, challenging scientists to re-examine basic assumptions and consider more plausible alternatives that reflect recent research. It is a refreshingly objective book with penetrating analysis and broad perspective" [professor of biology, Oral Roberts University]; "The very substantial effort represents a scientifically useful critique of a very sizeable literature" [professor of biophysics, Yale University].

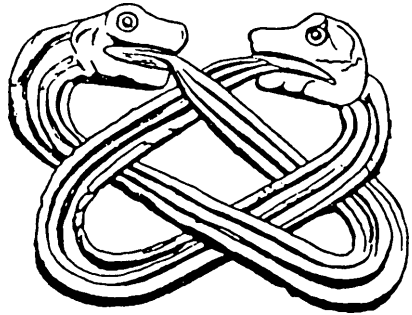
And so on. Where does the mystery of "Mystery's" success lie, then? How come, that many naturalists – including those that cut themselves off from some of creationists *ontological* theses – are willing to listen to their suggestions, that things presented in main part of their considerations are "pure science"? The

⁸ Ch.B. Thaxton, W.L. Bradley, R.L. Olsen, *The mystery of life's origin. Reassessing current theories*, New York 1984 Philosophical Library.

⁹ What concerns philosophical journals, I have found only one review, by Ch. Devine, "International Philosophical Quarterly", 1986, no. 1, p. 92. The reviewer writes: "Only the epilogue is of philosophical interest (...) while the author's discussion of chemical evolution cannot be recommended". In my opinion, just on the contrary: the epilogue is of rather limited philosophical interest, and the "author's discussion" (as well as the Devine's review) is highly recommended for everybody.

answer appears to be simple: the same *metascientific* assumptions, which Thaxton, Bradley and Olsen made a base of their argumentation, still lives in the philosophical consciousness (or subconsciousness more likely) of a throng of naturalists. Some of them even say that there is as much science in biology as there is physics in it. Closer investigation of this clinically pure example could, I think, be left for the psychoanalytics of modern science. It's enough to just mention it here in order to give the partisans of the first myth something to think about.

I have mentioned psychoanalysis here on purpose. I believe, that here we have a typical symptom of splitting of biologist's group consciousness: they have feelings for that which is alive (subject of their studies) as well as that which is dead (methodological standards of classical physics). One of the experts in my wonderful personage says: "If and when psyche found itself able to fuse these archetypal opposites into the new self, symbols of wholeness and unity appeared, such as the ouroboros"¹⁰. Although I agree that my personage is quite adequate for living world's symbol – thus subject of biological study – taking into consideration the splitted consciousness of scientists however, I think that this effigy¹¹ is more suitable:



THE SECOND MYTH: THERE IS ONLY ONE (GENUINELY SCIENTIFIC BRANCH OF) SCIENCE AND ONLY ONE SCIENTIFIC METHOD

Myths do not require any justification; you can however refer to the myth, when you want to justify something, for example such statement: "an axiom of science is, that laws do not change with the passing of time"¹². This is a thesis

¹⁰ B.J. Teeter Dobbs, *The foundations of Newton's alchemy or "the hunting of the Greene Lyon"*, Cambridge 1975 Cambridge University Press, p. 33-34.

¹¹ P. Toscanne, *Études sur le serpent. Figure et symbole dans l'Antiquité Élamite*, "Mémoires de la Délégation en Perse" 1911, v. 12, p. 153-228, fig. 394.

¹² "Es is doch ein axiom der Naturwissenschaft daß die Gesetzmässigkeiten der Materie und der Energie seit der Entstehung der beiden konstant geblieben sind", A.E. Wilder-Smith, *Die Naturwissenschaften kennen keine Evolution. Experimentelle und theoretische Einwände gegen die Evolutionstheorie*, Basel 1980 Schwabe, p. 18. Interestingly enough, one may find similar opinions expressed in a *scientific* book: J. Brooks, *Origins of life*, Tring 1985 Lion. Brooks writes that "scientific knowledge requires that we assume

of one of the leading "scientific creationists", and I myself believe, that for many naturalists it will be much more digestible, than the ontological thesis: "order does not arise from disorder"¹³. To avoid misunderstanding I want to point out, that I radically have nothing against either those who maintain that matter has a passive character, or those, who treat classical physics as a measure of scientificity. I am simply alarmed by the fact that especially the last thesis is being set forth (and taken) as something *self-evident*. The fact, that world-views can be (and are) different, seems to be commonly understood, but the fact that "scientificities" can also be different (and under no circumstances are they philosophically *neutral*), is often difficult to accept.

Both the roots and consequences of metascientific myths of positivistic origin (about the "sole scientific" branch of science, about the possibility of science existing without philosophical foundations and about "impartial" scientific analysis) were already described by revered authors, just to mention Max Weber¹⁴. Warnings about its' harmfulness to everybody's' (especially biologists') health were also often made. I won't repeat them here, for their efficiency seems to be no better than in the case of texts written on the boxes of other hallucinogenic products of mass use. I'd just like to express my personal predilection: it makes me happy to find work of a scholar, that sincerely and honestly shows his methodological believes. I'm glad for example, when I come across a serious book, aimed obviously at the students of biology and published by renowned publishing house, in which I find such a thesis: "to invoke the operation of creative Intelligence to explain the origin of life and the panorama of life, as we find it today, is a *sound* scientific explanation"¹⁵ [italics original]. From his own point of view the author is right, no doubt. I myself advise you to analyse this example of "naturalist's spontaneous creationism" and you will see, that the author is indeed following methodological rules taken from the popular version of positivism.

My friend, fair follower of analytic philosophy, free of any religious inclinations whatsoever at that, when he had got acquainted with creationists considerations on the subject of "an authentic scientific method" and the "universal criterion of scientificity", said: "in my opinion, they are right". I welcomed it with respect and recognition; it only proves once more that my friend

(...) the uniformity of nature" (p. 153-154) and maintains that the "scientific part of the Universe" is "the mechanical" one (p. 44).

¹³ R.E. Kofahl, K.L. Segraves, The creation explanation. A scientific alternative to evolution, Wheaton 1975 Shaw, p. 38.

¹⁴ M. Weber, On the methodology of the social sciences, Glencoe IL 1949 The Free Press, p. 36

¹⁵ E.J. Ambrose, The nature and origin of the biological world, Chichester 1982 Horwood, p. 146.

is a reliable philosopher: he's ready to admit what needs to be admitted. Indeed he deserves to have my effigy in his emblem as a symbol of psyche's unity and balance. The fact is, that reaching this balance was not an especially difficult task for him. He's interested not in living creatures but axioms of science. Thus he needs not to be bothered by the fact that by assenting invariability of laws as an axiom of science one eliminates its most important problems: the problems of origins¹⁶. For the biologists on the other hand (and those philosophers, interested in more than just axioms) it should, I think, be a good reason to start worrying. Good: such worries are creative and need fanning. Thus I'm glad, Dear Editors, that in the volume you intend to publish series of articles concerning, in my opinion, the most important of those "damned matters": issue of life's origin and methodological foundations of protobiology.

You can easily rely on my opinion on this matter. For I am the symbol of life's origin – its' self-generation – a symbol of nature's creative powers. Side-note – a little self-explication. And so in spite of etymological meaning of my name in Greek (*oura*, tail, *boros*, biting), and in spite of the fact that under my effigy there is sometimes written in Latin "*serpens aut drago qui caudam devoravit*", what I do as a matter of fact is something quite opposite: self-insemination. Many modern authors don't understand this and their failed attempts at interpretation of my effigy sometimes make me giggle. Most likely they suffer from the childish sickness of scientificity (understood in a physicalistic way) and accept the "axiom of science" mentioned before. And so they wrongly imagine, that the act of procreation must have always been the same: what needs a couple today, needed it also at the beginning of times. So remember once and for all: in the beginning, there was a snake (alone)! I believe that you will now be able to interpret the scene shown on the vase from Mari¹⁷: behold the lost link!

¹⁶ Those "damned problems" are, nonetheless, fascinating especially for those having clearly declared philosophical position, eg. Jesuits, militant rationalists, or mechanists, cf. V. Marcozzi, F. Selvaggi (ed.), *Problemi delle origini*, Roma 1966 Editrice Università Gregoriana; *La question des origines*, Paris 1989 Nouvelles Editions Rationalistes; F.J. Varela, J.-P. Dupuy (ed.), *Understanding origins*, Dordrecht 1991 Kluwer. See also J.G. Peretó, S. Alegret (ed.), *Els orígens*, Barcelona 1994 Universitat Catalana d'Estiu.

¹⁷ *Museum of Damascus*; A. Parrot, Sumer, Paris 1960 Gallimard, p. 140 [Tout droits réservés, Editions Gallimard 1960]; author confess, that he cannot explain the scene: "*nous retombons dans l'énigme, avec le vase de Mari, où l'on retrouve une figuration d'autant plus étrange qu'elle est par trop incomplète. Mais qui saura jamais pourquoi, au pied du palmier, un homme est agenouillé, alors qu'un serpent lui dévore le sexe*".



THE THIRD MYTH: THE SPIRIT OF MODERN BIOLOGY MANIFESTS ITSELF FULLY IN MOLECULAR BIOLOGY

This opinion is so popular, that I could show you as many examples of it as you wish: you can find it in the works of biologists as well as philosophers of different orientations. Since I have mentioned spirits, however, it would be appropriate to reach for a book, in which – before the author's name – you may find the following words: *Docteur en philosophie de l'Université Pontificale Saint-Thomas-d'Aquin*. Referring to the book itself, it has to be said, that one can rarely see works embracing – in intention – all of the philosophical issues of biology seen from clearly specified doctrine. Then what does "*l'esprit de la biologie actuelle*" rely on? Here is the answer, given by Patrick Chalmel:

*Tout phénomène vital est la manifestation à l'échelle macroscopique de l'autorégulation coordonnée d'une multitude de mécanismes cybernétiques physico-chimiques. La vie est donc le fonctionnement normal de machines cybernétiques naturelles*¹⁸.

This is the bottom of matter called by the author "*la conception 'machiniste' de la biologie actuelle*". According to this view, the three main characteristics of life – self-regulation, self-preservation and self-reproduction – can be

¹⁸ P. Chalmel, *Biologie actuelle et philosophie thomiste*. Essai de philosophie, Paris 1985 Téqui, p. 15.

seen in terms of cybernetics and be brought down to suitable occurrences on molecular level.

In order to give justice I must add, that this "*machinisme*" is not the only "postulate of modern biology"; besides this one, author mentions two postulates more: biogenesis and transformism. There is, however, a strongly symptomatic difference between the ways they are presented by. And so the two last (evolutionary) postulates seem to the author somewhat suspicious, he examines them with scepticism that is worthy of the best French tradition. Unfortunately, author loses much of his scepticism, when presenting the first postulate. He treats the "*machiniste*" view of life as though it was obvious and self-evident.

If you want, you can, of course, agree with the author, that there is as much science in biology as there is molecular cybernetics in it. You should consider, however, that summoning this and no other spirit of biology – as it is usually with spiritualistic sessions – is mostly a question of spells. It pays also – as always when science interacts with spirits and vice versa – to check on what bibliographical sources author is basing his pondering. What concerns the biogenesis' postulate, treated by Chalmel with caution, we find in his book's bibliography only eight relevant items, most of them belonging already the history of science or representing rather the science fiction genre. It had not called upon even one of existing hundreds, literally hundreds of important works from the field of protobiology published in the last decades¹⁹.



¹⁹ Enough to say: during the last forty years more than 120 theories of the origin of life

"While reading this, I'm beginning to agree with the catholic philosophers", says my friend, follower of the analytic tradition – and I believe, such honesty is worth of a genuine philosopher. About the Catholics, I personally have nothing against them, really. I even feel lots of sympathy to those, who value me – take the monks of medieval Ireland for example, the same that prepared the famous book of Keels. If you can't understand the meaning of the picture shown, here's an expert's commentary: "we recognize the cosmic self-consuming, self-renewing serpent, whose lion-head recalls the old Sumerian lion-bird (...) The serpent as we have learned is generally symbolic of both the self-consuming and self-renewing powers of life. The circumscribing serpent therefore is the demiurgic, world-creating and -maintaining principle"²⁰. Do not assume, however, that I'm inclining you to study the book of Keels instead of the one written by James Watson. I'm just making a proposal to think a while, before you assume, that the first one is pure metaphysics, and the second one – pure science.

THE FOURTH MYTH: LIVING BEINGS DO NOT (OR AT LEAST SHOULD NOT) EXIST

Fair philosopher acknowledges the consequences of his doctrine, even the least pleasant ones. Sometimes the scholars are up for it, especially the great ones, like Jacques Monod, who had once called the living beings "strange objects" (*d'étranges objets*). Indeed, according to his conception of science living creatures in principle should not exist. For a biologist, who is first of all a molecular biologist, such a corollary might be less painful. But if he is also a philosopher, declared atheist and a deadly enemy of all kinds of animism – as Monod is – he couldn't be pleased by the convergence of his conclusions with the views of scientific creationists.

As a matter of fact, this convergence isn't accidental at all. Both Monod and the creationists – although they condemn each other – assume the same methodological assumptions, taken from the physics of passed centuries. Well, for the wider public it is quite easy to see what is the difference between the two standpoints: on one side supernatural forces and pure chance on the other. It is, however, in general not so easy to notice, that the "axiom of science", stating, that laws don't change with time, is just a different version of that to which Monod refers as "universal postulates of invariance". Please take notice of the fact that not only the content is identical here, the grounds are

has been published (for review and bibliography refer: W. Ługowski, *Filozoficzne podstawy protobiologii*, Warszawa 1995 Wyd. IFiS, p. 175-207).

²⁰ J. Campbell, *The masks of god. Occidental mythology*, London 1974 Souvenir Press, p. 467-468.

also the same, namely self-evidence. Indeed, the argumentation "by self-evidence" is quite efficient: not many of the readers will be able to see, that what is "strange" are not the living beings, but the view of science which doesn't allow them to exist. On the other hand, it is not so difficult to notice, that whenever Monod speaks about "modern science", "postulate of nature's objectivity", "mile stone of scientific method", and about "only possible foundations of modern science"²¹, he's thinking about the only genuine science, namely physics.

It isn't surprising in the light of Monod's words, which he had once said about the influence of his father, who "used to read not only Darwin, but also Stuart Mill, Spencer, August Comte (...). He was truly a nineteenth-century positivist and it is beyond any doubt, that it exerted a strong influence on my attitude towards science"²².

It is surprising however, that not all followers of the second (metascientific) myth accept its consequences in the form of the fourth (ontological) myth. Monod does it, indeed – ignoring (as a true scholar should) any personal psychological troubles that may come to existence. And that's just what I like; I always sympathize with those, that clearly state their philosophical position. I'm not against taking sides – philosophy always does – I'm just against hiding it. That is why I prefer open partisans of physicalism to its shy followers.

Open partiality is rather rare. A manner of presenting ones (partial) philosophical views as obvious and only possible is quite common however. It isn't simply a disease of philosophizing naturalists; it is a professional illness of academic philosophers, especially those, who most often speak of empirical verification and falsification – while argument "from obviousness" can neither be verified nor falsified.

If you ask me, if I had met philosophers in my long life, that wouldn't say (nor think), that everybody excluding themselves is tendentious and partial, I'll answer: indeed, it depends on a current and a format. I am myself, for example, partial by nature. It is rightly written in some encyclopaedia, that my effigy is "a symbol of evolution's cycle. This symbol incorporates the idea of movement as well as continuation, self-procreation and – in consequence – eternal returns"²³. And so it is understood, that – being a symbol of becoming and self-procreation – by no means can I agree with the followers of such view of science, that don't allow my existence, don't allow me to reproduce in my favour-

²¹ J. Monod, *Le hasard et la nécessité*, Paris 1970 Seuil, p. 52.

²² H.F. Judson, *El octavo día de la creación*, México 1987 CONACYT, p. 381 [The eight day of creation, New York 1979 Simon & Schuster].

²³ J. Chevalier, *Enciclopedia de simbolos*, Barcelona 1988 Herder, p. 791.

ite way and don't allow me to evolve. In short, I believe that they are "strange objects", and not me.

What advice would I give you then, Dear Friends? Well, I may advise you to recollect – for not everybody recollects – that there is no such thing as universal science, given by the gods and as eternal as they are. (In my opinion, a wiseman of your times, Max Scheler, was right when he said, that so called modern science is born of the spirit of double accountancy and trader's book of incomes and expenditures.) It is worthwhile to show, that so called modern science is not really all that modern, and that the contemporary physics' view of nature has much in common with the old Mesoamerican world-outlook.



"Everything is subjected to the process of constant transformations; that which is eternal is transformation: that is one of basic concepts, that pre-Cortesian man had taken from observations of nature"²⁴. For me also – the only eternal thing is transformation, not modern science nor "universal postulates of invariance". That's why over the fourth myth I prefer the "Fourth Movement"²⁵. And that's why over the (contemporary) North American mythology I prefer the (ancient) Mesoamerican one.

²⁴ P. Westheim, *Ideas fundamentales del arte prehispánico en México*, México 1972 Fondo de Cultura Economica, p. 63.

²⁵ Nahui Ollin (4-Ollin) is a symbol of Sun and movement (in Nahuatl 'ollin' means also 'earthquake'), *ibidem*, p. 154. The Aztec cosmogonic myth, which has come down to us in different versions, speaks of the eras or "suns" that preceded our world, each ending with cataclysm. Cf. Y. Gonzalez Torres, *Diccionario de mitología y religión de Mesoamérica*, México 1991 Larousse, p. 130.

THE FIFTH MYTH: THE BEST SPOKESMEN OF BIOLOGY ARE THE BIOLOGISTS THEMSELVES

It seems, that not always and not all of them. Well, life – both biological and scientific – is full of paradoxes. We have already seen, that a biologist turned out to be the best spokesman for physics. The cult of physics in general is widely spread amongst biologists. Some of them are even willing to sacrifice (and – differently than Abraham – without any order from Heavens) the most valuable thing they have – living beings – on the altar of physics. Unfortunately, factolatry and theoriophobia in biology have their philosophical grounds and historical roots – as deep as the similar cult of facts²⁶ and the "public-opinion-poll-conducting-mania" in sociology. Speaking about sociological mythology, it is also resistant to any attempts of falsification; especially, so called empirical sociology is quite prosperous – even though it is criticised by wise-men and even with its explanatory indolence for social crisis, the most serious one in past decades. Truth is that the situation of sociologists is not so easy: they can't just simply say, that they aren't interested in crisis situations.

Naturalists do say so, however. For them moments of instability, spontaneous creation of order and qualitative changes in general are rather strange phenomena and from "the genuine science" point of view completely marginal: they deserve no more than attention of applied sciences, like hydraulics. "For us, declared physicists, the difference between past, present and future – is only an illusion", Albert Einstein once said.

"Only an illusion... I must confess, that this sentence had moved me deeply"²⁷, answered Ilya Prigogine – the one, that is the best prove that sometimes physicists can be the best spokesmen of biology. Prigogine himself is surely the most famous, although not the only representative of biological way of thought, furthermore it is impossible to take away from him the honour of being called "authentic scientist". By the "biological way of thought" – to repeat the classical title²⁸ in a new context – I understand a way of thinking based on the categories of wholeness and process, on the categories of change and origination, or – if you prefer – on the categories of autodynamics, emergence, and complexity.

While many biologists are ready to agree with an old scholastic principle "*causa aequat effectum*", a physicist asks the fundamental question: "Can

²⁶ "La première règle et la plus fondamentale est de considérer les faits sociaux comme des choses", E. Durkheim, Les règles de la méthode sociologique, Paris 1895 Alcan, p. 20.

²⁷ I. Prigogine, ¿Tan sólo una ilusión? Una exploración del caos al orden, Barcelona 1983 Tusquets, p. 12.

²⁸ M. Beckner, The biological way of thought, New York 1959 Columbia University Press.

genuinely new things come into existence?" and forms the main problem of his work as follows:

Deeply ingrained in science is a view of the natural order as being passive and inert and having no initiating power in its own. This I believe is a greatly mistaken image of reality – an image which pervades non-scientific as well as scientific thinking. My aim therefore is to show the temporal processes as having a more active character than science usually presents²⁹.

There are biologists, who easily accept the thesis about *eternity* of biological information and order (they even stubbornly prove this thesis on the pages of scientific journals, generally thought of as serious ones³⁰). From the other hand, there are physicists, who propose evolutionary explanation of the *origin* of life³¹ and search – in their philosophical works³² – for the ways of *becoming* of biological information. It even happens that physicists propose the evolutionary view of nature³³ and remind Heraclitean words "one doesn't walk into the same river twice"³⁴. And at last, in the recent times the greatest contribution to the processual understanding of nature³⁵ (and of man's dialogue with nature³⁶), acknowledging the priority of the category of becoming over the category of being, was made by a physicist, the same, that accents the creative character of time and states, that "it is hard to speak about authentic evolution, when everything is already planned"³⁷. Meanwhile, the biologists are generally more fond of Newton's concept of time than that of Bergson – and rather of being than becoming.

²⁹ K. Denbigh, *An inventive universe*, London 1975, p. 7, 145.

³⁰ C. Portelli, *The genetic code and the origin of life*, "Acta Biotheoretica" 1975, v. 24, no. 3-4, p. 176-177; C. Portelli, *The origin of life. A cybernetic and informational process*, "Acta Biotheoretica" 1979, v. 28, no. 1, p. 19-47; S.W. Fox, *Life from an orderly cosmos*, "Naturwissenschaften" 1980, no. 12, p. 576-581.

³¹ As W. Ebeling, R. Feistel, B.-O. Küppers, L. Peliti, C. Tsallis, to mention just a few names.

³² B.-O. Küppers, *Der Ursprung biologischer Information. Zur Naturphilosophie der Lebensentstehung*, München 1986 Piper [Information and the origins of life, Cambridge MA 1990 MIT Press].

³³ F.R. Krueger, *Physik und Evolution. Physikalische Ansätze zu einer Einheit der Naturwissenschaften auf evolutiver Grundlage*, Berlin-Hamburg 1984 Parey.

³⁴ P. Eisenhardt, D. Kurth, H. Stiehl, *Du steigst nie zweimal in denselben Fluss. Die Grenzen der wissenschaftlichen Erkenntnis*, Hamburg 1987 Rowohlt.

³⁵ I. Prigogine, *Vom Sein zum Werden. Zeit und Komplexität in der Naturwissenschaften*, München 1980 Piper.

³⁶ I. Prigogine, I. Stengers, *La nouvelle alliance. Métamorphose de la science*, Paris 1980 Seuil.

³⁷ I. Prigogine, "Es gibt keine wirkliche Evolution wenn alles gegeben ist", in: K. Bayertz, B. Heidtmann, H.-J. Rheinberger (eds.), *Darwin und die Evolutionstheorie*, Köln 1982 Pahl-Rugenstein, p. 121-133.

"Being doesn't really exist. There is only becoming and corruption; being is only a passing state between them. And that's what life is all about"³⁸. Too poetic, you may say, almost mystical, isn't it? Have you already forgotten, what I've said about my perfidious nature? So, listen up. For the alchemists *serpens Mercurii*, snake belonging to deceitful and misleading god, is the one, who plays tricks on them, just like the devil in the time of world's creation. In this context my effigy is associated with evolutionary *regression*: from the kingdom of animals, through the kingdom of vegetation, all the way to inanimate nature³⁹. Take a look at my pretty recent effigy (I came to life in this form in April 1952), made by Max Escher, an artist of a truly biological imagination⁴⁰. You probably think it's *self-evident*, that at the beginning there were crystals, and only later the living creatures appeared, with myself upfront. Indeed, for the evolutionists – with myself upfront – it is quite obvious. But not for all I believe. And so I strongly recommend, Dear Friends, to point out cases of *regressionism* – that show themselves even in *evolutionary biology*. I also suggest to show, that it is not *serpens Mercurii* playing tricks on scientists, but the world-view based on the category of being.

THE SIXTH MYTH: THE BEST PHILOSOPHERS (OF BIOLOGY) ARE PHILOSOPHERS THEMSELVES

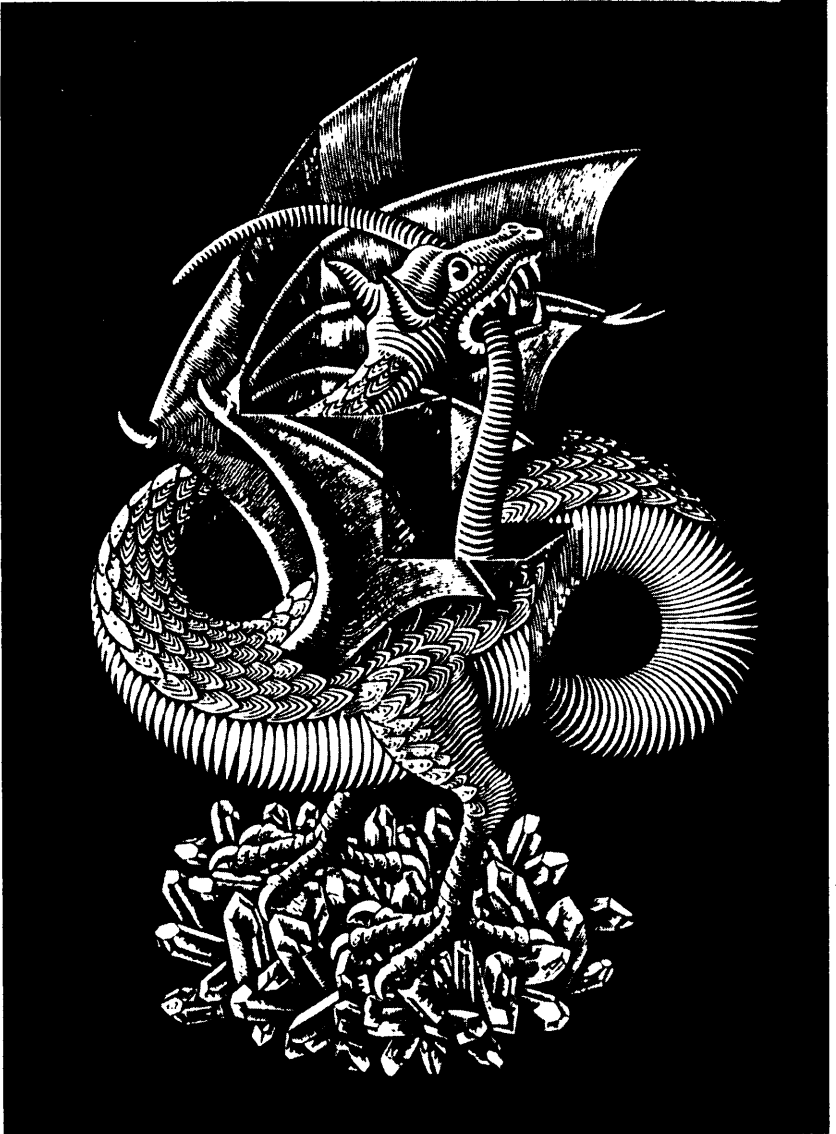
Quite the opposite, I'd say. Almost everything that deserves attention in the field of the philosophy of biology, came from scientists, mostly physicists and, of course, biologists. Considering the works prepared on philosophical faculties, after looking at hundreds of books on this subject, written by academic philosophers representing several different orientations (truth is, that the only "-ism", academic philosophers are willing to acknowledge, is perfectionism), I haven't found even one comprehensive treatise, that would concern a central, in my opinion, matter: how to reconcile two great ideas, that of evolution and that of levels of organization of biological matter.

It is, without any doubt, a matter of importance to the biologists, at least the real ones. Real philosophers on the other hand are asking about the possibility of establishing a genetic unity of the world in the face of different forms of movement of matter, or the levels of being. It's true, that within Marxist orientation, it was possible to achieve more on this topic than within any other current. It is also true, from one hand, that some elements of dialectical thought

³⁸ P. Westheim, *Arte antiguo de México*, México 1950 Fondo de Cultura Economica, p. 15.

³⁹ C.G. Jung, *Rebis czyli kamień filozofów*, Warszawa 1989 PWN, p. 422-423.

⁴⁰ *The world of M.C. Escher, with texts by M.C. Escher, J.L. Locher*, New York 1974 Abrams.



M.C. Escher "Dragon" © Cordon Art B.V.– Baarn – Holland. All rights reserved.

(or, thinking in the categories of process and wholeness, or autodynamics and emergence, if you like), appear also in other orientations, and, from the other hand, that many philosophers who consider themselves Marxists had really become spokesmen of positivism. It is one of the reasons, for which, instead of showing here the micro-panorama of main personalities and trends of the philosophy of biology of the last decades, I shall mention here several publishing houses (chosen, as you probably suspect, in a tendentious and partial way): Ossolineum – Publishing House of the Polish Academy of Sciences; Fischer Verlag, which has published series "Biologie und Philosophie"; Paul Parey Verlag, with series "Biologie und Evolution – interdisziplinär"; Kluwer, open for various philosophical currents; and Piper Verlag.

Those, who got acquainted with at least this sample of literature, will surely agree, that everything⁴¹ good that came out on this subject, came from philosophising scientists, sometimes also sociologists⁴², or even publicists⁴³. All that's left is to challenge the philosophers.

"*Les philosophes ont traduit l'union du fixe et du volatil, du corps et de l'esprit, par la figure du serpent qui devore sa queue*"⁴⁴, one of the experts in me says. According to me, he's right: indeed, I'm the symbol of the unity of all things⁴⁵, and nature's coherence. But I wouldn't give philosophers the right to carry my effigy in their arms. For I don't think, they have succeeded in solving the mystery of nature's genetic unity (I'm talking about a solution by your times standards, not mine). And so let them watch such a picture⁴⁶ for now.

*

And now you understand, I believe, that all of the myths shown so far are based on one more, deeper myth:

⁴¹ With several exceptions, of course, to mention only the eminent Polish philosopher Czesław Nowiński (1907-1981).

⁴² H.L. Kaye, *The social meaning of modern biology. From social Darwinism to sociobiology*, New Haven 1985 Yale University Press.

⁴³ J. Herbig, R. Hohlfeld, (ed.), *Die zweite Schöpfung. Geist und Ungeist in der Biologie des 20. Jahrhunderts*, München 1990 Hanser.

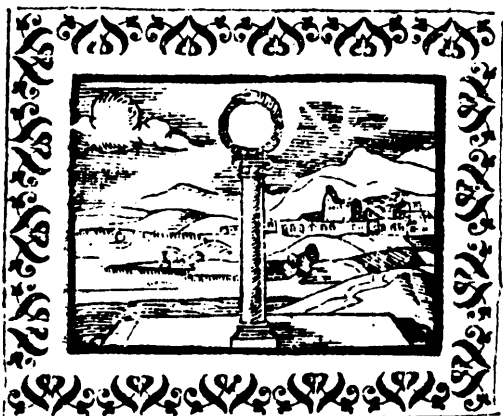
⁴⁴ Fulcanelli, *op. cit.*, v. 1, p. 391.

⁴⁵ Another expert in the history of myself writes: "Until about the time of the decline of alchemy, it has been supposed throughout the ages that gross or tangible matter took shape in progressively finer forms, ranging through mists, smokes, exhalations, air, and so-called ether, to animal spirits, the soul, and spiritual beings. There were supposed to be an essential unity of all things, whether tangible or intangible, material or spiritual. This conception found expression, for example, in an ancient Greek inscription associated with the Ouroboros, or tail-eating serpent: One is all, and by it all, and to it all, and if one does not contain all, all is nought", J. Read, *Through alchemy to chemistry*, London 1957 Bell & Sons, p. 25.

⁴⁶ La Perrière, *Theater of fine devices*, London 1614 Field.

EMBLEME LXXXIII.

*It is a point of great foresight,
Into our selves to looke aright.*



We reade how in Phœnicia long ago,
The people raifd this figure vp on hie,
Whereas the same might make the fairest show,
And men obſetue what it did ſignifie.
The Serpent in a circle painted to,
Thus much doth teach to vnderſtand thereby,
That in the world there is no greater art,
Then man to know himſelfe in every part.

On

THE SEVENTH MYTH: THERE IS (ONLY) ONE PHILOSOPHY (OF BIOLOGY)

I myself think, however, that there are at least two: the one which creates myths, and another which destroys them. As you can see, I haven't used textbook names of philosophical currents, for the myth of the neutrality of science – though of positivistic origins – functions far beyond the circle of conscious followers of this current. I myself have lots of respect for other philosophical options, for different ontological and metascientific convictions. The problem is, however, that metaphysics of positivism (professional as well as popular) is wrong. Wrong – because hidden beyond the shield of sciencificity,

supposedly the only, eternal and universal. It is wrong, because all other doctrines (as, of course, non-scientific) are wrong according to it. I must say, I don't like this way of showing contempt for other currents: the indirect way.

Not long ago, among many titles in the likes of "Philosophy of biology" [that carry an indirect but strong suggestion, that what's inside, is the only possible philosophy (of biology)], I have seen a work – edited by Michael Ruse and dedicated to David Hull – entitled promisingly "What the philosophy of biology is"⁴⁷. A formal opportunity to prepare the book was provided by the twentieth anniversary of the publication of Hull's article "What philosophy of biology is not", printed in 1969 in "Journal of the History of Biology" and simultaneously in "Synthese". This article, as Ruse states in the foreword, in equal measure with the activities of Hull himself, has contributed to the fact that, over the past twenty years, the philosophy of biology, starting from almost nothing, has become a blossoming discipline. I read this article twenty years ago and I remember that it was more a review of the literature in the area of philosophy of biology than a programme for practising the discipline. However, the volume put together by Ruse helped me to discern at least a few elements of this programme [and in addition, elements of the description of "what the philosophy of biology (already) is"]. Ruse writes:

Philosophers of science frequently bemoan (or cheer) the fact that today, with the supposed collapse of logical empiricism, there are no grand systems. However, although this may or may not be true, and if true may or may not be a cause for delight, no one should conclude that the philosophy of science has ground to a halt, its problems exhausted and its practitioners dispirited. In fact, in this post-Kuhnian age the subject has never been more alive, as we work with enthusiasm on special topics, historical and conceptual. And no topic has grown and thrived quite like the philosophy of biology, which now has many students in the field producing high-quality articles and monographs⁴⁸.

⁴⁷ M. Ruse (ed.), *What the philosophy of biology is? Essays dedicated to David Hull*, Dordrecht 1989 Kluwer. Of the English-speaking bio-philosophers of a neopositivist orientation, Michael Ruse and David Hull are amongst the best-known figures. Each of them, besides a number of works on the history and methodology of biology, has written (in the seventies) a book with "philosophy of biology" in the title. Ruse is also known as the editor of the quarterly "Biology and Philosophy", whilst Hull is famous in USA for his electoral successes; he has been the president of The Philosophy of Science Association, The Society of Systematic Zoology, and The International Society for the History, Philosophy and Social Studies of Biology. A gradual evolution can be observed in the views of both authors from the analytic to the synthetic variant of positivism, and in their sphere of interests - a shift from the history to the sociology of biology, that is, towards questions of the type "who-ousted-whom-and-how". This phrase was coined by Marjorie Grene ironically (as I understand it, she was implying that Hull has been wasting his talent recently). However, I personally consider this not very flatteringly-named sphere of problems as more important than that described by the question: "has-anyone-already-axiomatised-this-or-that-branch-of-biology-and-how?".

⁴⁸ *Ibidem*, p. IX.

This fragment seemed to me artistically apt and psychologically true; there are many who think likewise, but few who write about it so lucidly and concisely. As far as I understand it, the first point in the programme of practising philosophy (of biology, but not only) could be more or less encapsulated in the following rule: endeavour not to be overly perturbed by the existence or non-existence of philosophical systems; if they do exist – and especially if you subscribe to a particular philosophical orientation – try not to disclose the fact to yourself or to others, for it will not help you either in the creation of new works, or in obtaining the stamp of quality on them (there exists a neutral, i.e. system-independent, measure of quality).

I found two more elements of the programme in the introductory article, in which Ruse discusses Hull's views. Incidentally, I found the style of the article quite agreeable, though at the first reading, I was not always able to guess which of the opinions Ruse himself shared, and which he merely related to. After a while, I realized that it was not that important, as the arguments I was considering were expressed in an impersonal form, and were declaimed in such an emphatic tone simply because this best suited their content. The laws in physics textbooks are formulated in the same way: it is really not that important who discovered the law and who wrote the textbook; it is the law itself which is important. And with regard to apodictic form, textbooks are not (in general) printed for people to doubt them. Their contents are regarded as self-evident truth.

The situation is somewhat similar with this "only possible" philosophy of biology. Some might say that I am exaggerating and the title "What the philosophy of biology is", and what lies behind it, should not be taken too literally. Perhaps, but I did not notice at any point that Ruse informed us of the existence of other programmes, or tried to justify his own; this, after all, is precluded by the programme itself. One is tempted to say that this is the only programme *by definition*. This is, however, not true; its uniqueness is so deeply embedded within itself that it does not permit definition. Any attempt to define it would be fatal. And all the more so, any attempt to prove it. But now onto the subsequent elements of the programme.

From the evolutionary epistemology (or more precisely, from the English-language offshoot of this current) Ruse has drawn out various pieces of practical advice about how to survive in the academic jungle. Among these is the maxim: "*It does not matter how good your idea is if no one knows about it. What counts is winning*". Of course, everyone agrees that it is good to win and good to be known. But one of the basic principles of a game is that both sides acknowledge the neutrality of the referee. Where can we find neutral referees in philosophical games? And if someone, let us suppose, fails to read many

works in his field of interest simply because he does not know any language other than his own, does this imply anything about the intellectual content of those works?

And so to the next element of the programme: "*The true model of reality is not physics. It is biology*". It is true that the hope that biology is capable of providing us with "*the true world picture*" is (rightly) described earlier by the author as an organicist dream of nineteenth-century provenance; however this clearly acknowledges that the creation of such a thing as "the true world picture" by one of the natural sciences is possible. Irrespective of whether by physics or biology. I agree, of course, and have insisted for a long time, that the model of the world created by biology (though not only by biology and not by the whole of biology) is *better* than the model created by physics (though this also requires qualification, as theories have recently appeared in physics which are more "biological" than biology itself). But is it absolutely necessary to exorcise physicalism just with biologism?

Now to the further point of the programme, barely visible to the naked eye, but detectable with a statistical method. The total number of bibliographical entries in all the articles in this book amounts to 538. Of these, 533 are published in English. I counted a total of five works published in other languages, and these are all historical texts. If we were to ask how many works on the philosophy of biology published in languages other than English were cited in "What the philosophy of biology is", the answer would be: zero. Is there some programme behind this, or not? Can we be certain that there are no longer any grand systems in existence?

I admit that I was indeed initially inclined to discern the system behind this. It also occurred to me that each of the above-mentioned points in the programme harmonizes quite well with this last one; that I now know what is meant by a "neutral measure of the value of works" (see the first point); that I can more or less imagine what a neutral referee at the philosophical games would be like (see the second point); and that the biological world view (see the third point) is unfortunately also true in regard to the world of humanities. Is the philosophy of biology thus to be replaced by the biology of philosophy? Or maybe it is so only by chance: perhaps arithmetic has prompted me to jump to hasty conclusions. I resolved to test my suspicions and disprove them as quickly as possible. The list of Hull's publications shows 63 reviews written by him – exclusively of works published in his mother tongue. I therefore returned to Hull's review article of 1969 – and once more it transpired that the philosophy of biology was certainly not anything which had not been published in English. But I was still not certain. It remains, therefore, the eternal dilemma of the philosophy of biology: "chance or plan?".

So, is it only by chance, that with contempt for different world views, comes (also indirect) contempt for different languages – considered non-philosophical? Not long ago a new addition to my collection of books on "the philosophy of biology" was made. Its title "Philosophy of biology today"⁴⁹ promised something more. And so there is something more: two pages (!) on "Other lands". According to similar optics, the world is – North America and Sublands. For all inhabitants of those Sublands, who would like to learn about their place (and the place of their languages) in such view of world, I recommend the lecture of this book's bibliography, but – once again – together with abacus, the universal tool of a true scholar. What do you think, how many works are there in this bibliography, written in languages other than English? Well, from the general number of 793, you'll find 3 (three) of them.

Voici maintenant l'un de symboles majeurs du Grand-Oeuvre, la figure du cercle gnostique, formé par le corps du serpent qui dévore sa queue: amicitia. L'image circulaire est, en effet, l'expression, géométrique de l'unité, de l'affinité, de l'équilibre et de l'harmonie. Tous les points de la circonférence étant équidistants du centre et en étroit contact les uns avec les autres, ils réalisent un orbe continu et fermé, lequel n'a point de commencement et ne peut avoir de fin, de même que Dieu dans la métaphysique, l'infini dans l'espace et l'éternité dans le temps. Les Grecs nommaient ce serpent l'Ouroboros⁵⁰.

It sounds good, by it doesn't relate to the world which consists of The Centre and Sublands. There is no equilibrium, nor harmony, nor *amicitia* in it. For a divided world (rich North and poor South) I propose such interpretation of my effigy, in which I symbolise "the unity of chthonic world, represented by a snake, and the heavenly world, represented by a circle. In favour of such interpretation speaks the fact, that on some pictures uroboros is half white and half black. It represents the unity of opposing principles, like heaven and earth, good and evil, day and night, *yang* and *yin*, and opposing values represented by them"⁵¹. And so it is good, that my best known effigy (reprinted here) is divided in two parts: black and white. Let that, what



⁴⁹ M. Ruse, *Philosophy of biology today*, Albany NY 1989 SUNY Press. With the same situation you are facing when reading paper: M. Ruse, *The philosophy of biology comes of age*, "Philosophia Naturalis" 1988, v. 25, no. 3-4, p. 269-284.

⁵⁰ Fulcanelli, *op. cit.*, v. 2, p. 110.

⁵¹ J. Chevalier, *op. cit.*, p. 791-792.

will be published in your volume promote the liberation of myths, those shown above and many others. (Let the myth about me continue.)

So explain to the people, Dear Friends, that just as there is more than one world-order possible, there is also more than one philosophy. My experience shows, that the main enemy of philosophical doctrine isn't another doctrine, but rather the obviousness. Try to show them, what the argumentation "from obviousness" leads to and where the philosophers, who believe that everybody besides themselves are tendentious and partial, lead. I propose to place a picture of one of my brothers Quetzalcolatl here. Let him symbolise the unity of South (in a philosophical, not geographical sense of course), let him symbolise the consciousness of own, original values. And to those living in the South I address this words: *nosce te ipsum!*

Translation from Spanish

