

THE QUESTION MARKS OF THEORETICAL SYNTHESIS
(About the relation of theoretical biology
and philosophy in Hungary)

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Abstract

Author writes about the condition of theoretical biology and its relation with philosophy. It is emphasised that the dominant ideology of the last decades, pretending a united thinking, has influenced the development of an integrative natural scientific thinking. The fact relevant tasks of education and research are derived from it.

Key words: theoretical thinking, theoretical biology, natural philosophy, Hungary.

Introduction

It is a great responsibility to draw a reliable picture of the development of theoretical thinking within biology because however much it is tried to fight against it, specialization within biology grows to huge dimensions and it is a great responsibility, because there are ones who show their results on their own.

The picture will be partial and think it is good if we draw the exterior bounds of message well in advance: the concrete questions of biology will not be mentioned, although some problems could be debated, but we are not so at home on this field as those who deal with this subject day by day and that is why we can hardly give clear solutions. The development of theoretical thinking and examination of its application remain our subject in Hungary and of course not all questions of detail can be discussed.

Theory takes a very contradictory place on the base of traditions in Hungarian biology.

In spite of this we have some high qualified theorists, theory has not already taken its place in the system of biology and theory is thought to be an "idle chat" which is a slight help with the solution of practical questions.

Although pioneers of theoretical biology derive historically from Hungary too (BAUER, 1967; BERTALANFFY, 1932, 1934) situation, which has developed in connection of theoretical thinking, can not be compared to those central role, what theory plays in European and North-American research (GARCIA, 1982; JACOB, 1970, MOZA, 1989; WADDINGTON, 1965).

One of its causes is our isolation, which can be experienced in connection of

theoretical thinking, otherwise the effect of the dominant ideology of the last decades can not be neglected. Several works were translated on the field, which clearly show the conceptual marks of philosophy (NOVINSZKI and PLATONOV, 1954; FROLOV, 1975) this formal theoretical, apparently organic union, had a paralysing effect on integrated thinking within specialized branches of science.

The anomalies of thinking of theoretical biology

The subject of biology, examining living nature, has significantly advanced, especially during the last decades. The significance of generalisation of accumulated knowledge as a result of research, its theoretical summary and apprehension overgrow the boundaries of biology.

It derives from the characteristics of biology that its subject adjoins from one side, the not living nature, on the other side society. So it is clear since its becoming a sufficient subject, results reached by biology, correlations and theories served unavoidable as a subject of philosophical-ideological analyses and valuation. The different systems — but especially those of their ambitions, were perfectness — handled the questions of origin of life, its essence, its concept, the development and determination of living nature, the origin of man or evolution and function of mind as essential problems.

In spite of these, we can state that the general theoretical evaluation of biology — although a lot of conceptions, with an ambition for approaching synthesis from different directions, have been published — still come up against a difficulty (BRITTON, 1969; LAZCANO-ARANJO, 1985; CHANGEUX, 1985).

Some questions will be stressed and examined in detail among its reasons.

Variety of manifestation of life necessitated biology to convert to a system of branch sciences, examining the most different part fields. Certain scientific branches in biology have developed a particular method for examination, a lot of special independent institutions had been established and the consequence is an almost confused special literature. Such a situation has been established that it becomes more and more difficult for a researcher to follow the results of his own field of research or especially the ones of further branches of science and their registration.

The growing specialization and differentiation with the development of sciences and its manifestation within biology had a result that a great part of researchers had given up their earlier existed claim for the establishment of a comprehensive biological view and now they are satisfied with the modest purpose to work up the literature of direct research field and to place their results in the knowledge system of the given branch of science.

On the other hand the development of the last quarto of the century has deepened our knowledge in such an extent that some earlier "tight-cut" hypothesis should have been given up and a demand on creating of new synthesis appeared with a thunderous force. The situation is becoming more and more complicated through the evidence that the characteristics of many fields of research are becoming interdisciplinary. Biology has less and less the principle and

conceptual frame with the help its knowledge could be arranged satisfactorily and which could serve as a heuristic model in the further phase of research.

Progress can be reached by the result of those efforts which release the outlined conflicts. The solution of this challenge can be born out of new synthesis, which can serve to create new thoughts and explanations.

Contemporary biology at home has such outstanding personages who — having become aware of the situation, instead of explaining the contradictory situation — made an attempt at establishing a modern synthesis. (GANTI, 1971; SZENTÁGOTAI, 1979; CSANYI, 1976).

Now it became obvious that it was necessary within biology too, under descriptive — research method and “disunity” of analytical organism, that a researcher should do an integrated activity and strive for a formulation of general conceptions or hypothesis based on scientific facts.

Not any synthesis of all knowledge is meant, made by one man — which is in fact impossible — but a new way of thinking. Its characteristic is that it starts from facts if it is necessary false or archaic interpretation frames are removed and facts are rearranged according to new concepts. New special scientific research is inspired through this and later it leads to a more comprehensive integration of the analysed facts.

Our knowledge is held up by a widening horizon through such a natural way and it does not become — in ourselves important but — an incoherent mass of information. This work is made difficult that no theoretical biology on a solid basis has been accepted (disciplines analogous to theoretical physics or theoretical chemistry are meant here).

Our university education system lacks — except theoretical biology — such further synthetic subjects as social biology or social anthropology.

Comprehensive works made by biologists have not taken their due place in scientific theory.

Philosophy seems to be too abstract for a lot of nature researchers to become a bearer of a theoretical synthesis required by them.

Scepticism for philosophy can grow to a total negation.

While there was an intensive activity with theoretical and philosophical questions of natural sciences in our country during the 60ies up to recent decades “natural philosophy” got into an “embarrassing situation”:

No disciplinary aspect could be realised, it could not assign its role in the summary structure of philosophy. Its student circle became irresolute because of the charge “a philosophy of no full value”. The cooperation of scientists and philosophers could not be realised on the expected level and effectivity.

Its result was that the theoretical generalisations of biological knowledge and the methodological epistemological principles were all formulated out of philosophy.

In the formation of the situation, social-political and scientific history played of course a role. The example of the creation of a general nature picture as N. Hartmann’s conception, because of the lack of know, became ineffective.

The “shy” curiosity of natural philosophy about the so called civil scientific

theory — originated from the critical position, that one of its tasks is to reveal their hidden idealistic face. As a result of this, real problems eliminated and also worth extrapolations.

This happened to cybernetics, sociobiology, ethology and several branches of anthropology.

Natural philosophy from dialectic materialism got into a constant hypostatical situation, it became terminologically stiff and was not able to any philosophical thinking, which developed together with science. There were of course exceptions, but till these days it did not become clear where natural philosophy its place had and what its role was within philosophy. Scientific researchers and philosophers lived together in a "mutual suspicion" instead of cooperation. It derived from this source that in the latest philosophical essays, exactness and clearness were shaded by gleaming formulations, but glemour is only a superficial phenomenon. In fact one can not get rid of the suspicion that terminology is often unnecessarily bombastic. On the other hand we must remember that a qualified psychologist is slightly in the situation that he could work himself into sciences in order to follow their results and what is more to consider it critically. Physical, chemical and biological topics are too many folded for it, they are complicated and progress is too quick.

Circumstances were a bit more favourable for natural scientists. Although they are also able to survey current research conditions on a special field — as it was described above — but their scientific grounding makes following of essential result of sciences easier. What is more, not only scientists had the claim to raise and discuss new results on a natural scientific base. (ERDEY-GRÜZ, 1965)

"Bridge-building" between biology and philosophy seems not to be an easy solvable work. Theoretical ambitions, published in home scientific reviews were not only qualified as "universal dilettantism", while philosophers often used the attribute "vulgar materialist of good intensions".

It is really a basic question what the scientific "deepness" is, where natural philosophy can reasonably "penetrate", on the other hand what the philosophical "highness" is, where theoretical biology should "raise"?

Understanding of the phenomena of living nature seems to be logical, during its explanation you should pay attention not to "absolve" philosophy in science because it can really lead to a positivist or vulgar materialist point of view.

Sticking in the level of general categories is so "dangerous" too — it must be so from the theoretical point of view — which can result an abstract apriorism.

Abstract products of scientific research, categories of theoretical science compared with empirical concepts are in a tighter relationship with philosophy. An often formulated viewpoint is that biological theory is not well developed enough, it falls behind the state and level of experimental research.

Interest in theoretical biology is growing therefore it is clear that philosophical research, which tries to reveal what way and how you can construate theoretical knowledge concerning the essence of living nature and its regularities become more and more important.

These investigations should clear which specifications they have gained what kind of nature modern biological knowledge became, thanks to those new methods which are nowadays not only experiments but applied in the sphere of theory. These investigations should reveal the regularities of logical and historical development of biology, the sources of development and its inner and outer factors.

Summarising the earlier sayings, the conclusion can be drawn that philosophy should arrange its relation with science again. Research work, which tried to reveal the inner logic of the development of natural sciences, plays an important role in it. Its aim is — among other things — to clarify the role of different scientific interpretations and mental trends and schools in the development and we meet a new problem: the backwardness of elaboration of biology in a scientific-historical way. (A good illustration of this situation is that there exists no education in scientific history of biology at the universities!)

Under the development of research of history of science, investigations of theory of science and methodology of science are considered to be important.

It is time to turn a severe attention to studies of different explanation types within biology and verification models and structures.

On the other hand — and it is perhaps more important — theoretical and methodological problems should be surveyed and as far as possible to answer those that certain biological scientific branches produce out of themselves during their independent development (e. g. humangenetics, sociobiology and molecular biology, etc.)

Theory of science — together with investigation of theory of science — seems to enjoy a unique prosperity in the future years and these topics can overtake the role, which the discipline “philosophical problems of natural science” within education and research as well during the past years played. When philosophical history based on classical texts becomes dominant in philosophical education, it stresses the probability of the above mentioned.

All these do not mean and can not mean that we should give up generalization of theoretical philosophy based on knowledge of natural sciences and analysis of philosophically seizeable aspects of scientific problems. It should be seen clearly — especially on the base of experience of the last decades that a theoretical work with an orientation for an objective world concept should exceed the reference circle of special scientific examination. An ontological interpretation is the internal demand of philosophy, so it can not exist just as a mere illustrative function. Nature is not a “collection” of philosophy.

It is also a problem of history of philosophy how different, in principle divergent philosophies can integrate knowledge concerning nature? (Interpretation of the concept of „nature” should require an extra analysis.)

The problem is how “natural philosophy” can be inserted in the antropo-centric world concept of philosophy in the classical sense.

According to a socioontological viewpoint declared recently, knowledge concerning nature can not be the subject of philosophy, so any natural philosophy is impossible (VAJDA, 1967).

According to our point of view, general theoretical analysis concerning nature, can become the content elements of philosophy in so far as over exceeding empirism, in a wider sense, give a proper base about the place of man and his role and help with a higher development of old philosophical disputes.

So theoretical philosophy can not leave the problem out of consideration "man as an active subject" and it should distribute philosophical antropology on its own way.

It should clarify the natural particularities of man as a biological race (sex), his evolutionary-genetic abilities, individual mechanisms etc. i. e. all those physical-biological endowments which originally belong to man's bio-social totality. It should oppose historically exceeded false conceptions as the concept that man is solely the product of social developments and his natural biological endowments will dissolve in his socialness.

Some conclusions

In the consequence of philosophical research and education special theoretical sciences can be expected to gain a bigger significance and also theoretical biology.

Demand of interpretation, hypotesis and theoretical work will grow i. e. "a philosophical" moment will appear in special sciences. Some marks of integration will more and more emerge in the integration with the differentiation of sciences. During this process such special sciences will be established which would like to fill the role of philosophy — e. g. system theory will appear as much a science (KINDLER and KISS, 1969).

It is an important question in this situation how a more general theoretical synthesis can be established in one special science.

Two different integration ranges (they can be called a vertical and horizontal integration) do not preclude each other. At the same time theory of philosophy — especially epistemology — can grow in both of them. Biology can not do without a clear conceptual picture about itself.

In expert training of future researchers should be trained for a synthetic view and methodology and so that they should be able to coordinate the results of several scientific branches and they should turn from one research field to another that during the process they will not become unscientific.

All these will not preclude the so called traditional research fields and methods either. No scientific specialization will be argued, but such a specialization that starts work so, that it does make a survey of the whole field and it continues its activity that it does not fit its results in any kind of united frame.

References

- BAUER, E. (1967): Elméleti biológia. — Akadémia Kiadó, Budapest.
- BERTALANFFY, L. (1932): Theoretische Biologie I. Berlin.
- BERTALANFFY, L. (1934): Theoretische Biologie II. Berlin.
- BRITTON, K. (1969): Philosophy and the Meaning of Life. — Cambridge University Press.
- CHANGEUX J. P. (1985): Neuronal man. The Biology of Mind. — Oxford University Press, New York-Oxford.
- CSÁNYI, V. (1979): Az evolúció általános elmélete. — Akadémiai Kiadó, Budapest.
- CSÁNYI, V. (1988): Evolúciós rendszerek. — Gondolat Kiadó, Budapest.
- ERDEY-GRÚZ, T. (1965): Filozófiai tallózás a természettudományokban. — Kossuth Kiadó, Budapest.
- FROLOV, F. J. (1975): Filozófia és modern biológia. — Kossuth Kiadó, Budapest.
- GARCIA, M. (1982): Exposicion de las teorías vigentes sobre el origen de la vida. — Anthropos Editorial del Hombre.
- GÁNTI, T. (1971): Az élet princípiuma. — Gondolat Kiadó, Budapest.
- HARTMANN, N. (1970): Teleológiai gondolkodás. — Akadémiai Kiadó, Budapest.
- HARTMANN, N. (1972): Lételeméleti vizsgálódások. — Gondolat Kiadó, Budapest.
- HARTMANN, N. (1980): Philosophie der Natur. — Walter de Gruyter Co., Berlin.
- HORVÁTH., J. (1981): Filozófia és szaktudományok. — Kossuth Kiadó, Budapest.
- JACOB, F. (1970): La logique du vivant. — Paris: Gallimard.
- KINDLER, J. and KISS, I. (1973): Rendszerkutatás. Válogatott tanulmányok. — Közgazdasági és Jogi Könyvkiadó, Budapest.
- LAZCANO—ARAUJO, A. (1985): El origen de la vida. — Editorial Trillas.
- MOYA, A. (1989): Sobre la estructura de la evolucion. — Anthropos Editorial.
- NOVINSZKI, I. I. and PLATONOV, G. V. (1954): A modern biológia filozófiai problémái. — Akadémiai Kiadó, Budapest.
- SZENTÁGOTHAJ, J. (1979): Egységes agyelmélet: utópia vagy realitás? — Magyar Tudomány, 24, 601—616.
- VAJDA, M. (1967): Objektív természetkép és társadalmi praxis. — Magyar Filozófiai Szemle, 2, 317—325.
- WADDINGTON, C. H. (1965): Towards a Theoretical Biology 1. Prolegomena. — Edinburgh University Press.