Uroboros, or biology between mythology and philosophy
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ON THE ORIGIN OF SOCIOBIOLOGICAL THINKING

1. HISTORICAL REMARKS

Theoretical premises of modern sociobiological thinking can be found in the concept formulated by Russian biologist and sociologist Peter Kropotkin (1904) who lived and worked at the turn of the 19th and 20th centuries. The peculiar position of the then-contemporary biology also had its contribution to the beginnings of the formative period of sociobiological thought. From the point of view of philosophy of science the evolutionary (Darwinian) paradigm was widespread in the last two decades of the 19th century: the controversies around the concept of natural selection, presented by Darwin's opponents, confirm this domination even more markedly. It was then that the idea of "mutual aid" was formed – the idea which, according to Kropotkin, was as essential a factor/mechanism of evolution as the "struggle for survival". Kropotkin's concept was immediately rejected. Consequently, the Darwinian paradigm remained unchanged for many years in its basic element, i.e. natural selection. This imperfection has been improved only by modern sociobiological ideas.

The problem presented in the paper is essential for one more reason, namely that it indicates the existence – in the eyes of a philosopher of science – of the myth of self-sufficiency which is expressed in the belief that biological ideas are "impervious" to ideas belonging to other fields of knowledge. If it is true that science is "governed" by paradigms, then Kropotkin's idea could have been cognitively noticed only by W.D. Hamilton in the developmental process of the 20th century evolutionary biology.

From the point of view of the philosophy of science it is worth noting that in mid-19th century Darwin (1859) and Spencer (1862) proclaimed their concepts which caused the ideas of a "struggle for survival" and "natural selection" to become the main points of discussion on the evolution of living organ-

isms. Even opponents of evolutionary thinking became so entangled in the discussion of Darwinian ideas that any issue not pertaining to the fundamentals of Darwinian evolution was marginal to evolutionary biology in the making. On the other hand, evolutionary biology was dominated by proponents and opponents of the ideas mentioned above: the struggle for survival and natural selection. The Darwinian paradigm – to use the Kuhn's concept – dominated contemporary biology. The paradigm assumed that biological phenomena (and, in Spencer's view, also social ones) were subject without exception to unrestrained mechanisms of the "struggle for survival". This view was supported by Hegel's philosophy which founded some appropriate concepts, such as "society of citizens" and "spiritualized animal kingdom".

The view that the "struggle for survival" is the elementary mechanism/factor of evolution was opposed by two Russian scientists, K.F. Kessler and Kropotkin. In the work entitled "Mutual aid as a factor of evolution" (1904; main chapters of the work appeared first in the periodical "Nineteenth Century" in the years 1890-1896) Kropotkin rejected the assumption that the struggle for survival plays a dominant role in the animal kingdom. He attempted to prove that, next to confrontation, it is mutual aid that is an universal phenomenon in the animal kingdom. Moreover, he added that this phenomenon is characteristic not only of the animal, but also of human species. Thus, in Kropotkin's concept, the human and animal world is not a world of "fangs and talons", but one of mutual relationships and tolerance created within the bounds of those relationships.

Thus, whereas Darwin and Spencer saw the "struggle for survival" as common basis of biological phenomena (Darwin) and of social and biological ones (Spencer), Kropotkin attempted to show that it was co-operation which both these areas of phenomena had in common. The category of co-operation (manifest in altruistic behaviour) reveals, in my opinion, some sociobiologically significant relationships between living organisms, including human organisms: thence the conclusion that Spencer and Darwin's concept, as well as that of Kropotkin's constitute antipodal formulations of the fundamentals of biological and social phenomena. The table presented in point 2 shows those differences.

2. EGOISM AND ALTRUISM VERSUS THE NATURE OF BIOLOGICAL AND SOCIAL PHENOMENA

If we assume, somewhat simplistically, that egoistic behaviour corresponds to the concept of the "struggle for survival" while altruistic behaviour – to the concept of "mutual assistance" the following table can be presented:

TABLE 1

Forms of behaviour	Spencer / Darwin the struggle for existence	Kropotkin mutual aid
egoism	1	0
altruism	0	1

Intensities of egoism and altruism are marked in the maximum degree, which is justified by the views expressed by the three scientists. The positions distinguished stand in marked contrast. Modern sociobiology undoubtedly perceives altruism as the basis of social behaviour of animals (and, in particular cases, also of humans).

It is interesting to examine the ranges of influence in which the impact of egoism and altruism is traditionally surveyed. When these two factors are properly confronted with the nature of phenomena, another table presents the areas which the three representative seekers of common or contrary bases of social and biological phenomena considered suitable for the promotion of their ideas.

The basis for the construction of the below pattern is a combination of three elements: (a) factors (egoism, altruism), (b) types of phenomena (biological, social ones), (c) the impact range of the factors (full, partial impact). The areas in which those concepts are valid have been marked respectively. This allows to show exactly which relationships constitute the basis of the table.

TABLE 2

Forms of behaviour	biological phenomena	social phenomena
egoism	social Darwinism (Spencer)	
	Darwinism	liberalism
altruism	sociobiology (Kropotkin)	

Let us begin with the first position. The point of view which Spencer represents is social Darwinism. According to Spencer, egoism appears in biological and social phenomena. In other words, the struggle for survival is the basis of

biological and social phenomena; the essence of social phenomena remains identical with that of biological ones. According to Darwin, the struggle for survival governs biological phenomena. Thus, what is traditionally called *Darwinism*, is essentially Spencerism restricted to the field of biology. Egoism in social phenomena constitutes the core of *liberalism*. Kropotkin, in turn, according to whom altruism is fundamental to social and biological phenomena, creates the theoretical basis of *sociobiology*. In his view, the essence of biological phenomena is identical with of the social ones. This notion may be called *biological solidarism*.

Well, I show that table 2 presents still something more. At this picture we can see two important facts.

First is that all conceptions considered here are only doctrines (may be ideologies), but not theories. That is because they are defining by the range of factors only. This operation of a research procedure give us only classification, but not explanation of behavioural facts (or phenomena). Conclusion of this is that a sociobiological thinking is not an explanatory conception. It is classification point of view only. Second important fact is that this picture presents a method of my thinking here. At this example we can see two doctrines which are to itself more contradictory: social Darwinism and "Kropotkinism". Both are in strong opposition. In this case I think that they both assume the same background to the question of social and biological phenomena. That is right, but the solutions proposed by them are one another.

First doctrine (social Darwinism) claims that biological and social phenomena are "governed" by egoism as a behavioural factor. The second one ("Kropotkinism") claims, that they are "governed" by altruism. I think that, in each case which it concerns a similar research situations, we must discover this deep background of oppositionary conceptions or theories. This shows that both doctrines (social Darwinism and "Kropotkinism") accept the same thesis: behavioural factors are the most important to the picture of the evolutionary processes.

3. TWO CONCRETIZATIONS OF THE IDEA OF ALTRUISTIC BEHAVIOUR

Table 2 shows the first important moment in the development of sociobiological thinking. Namely, it reveals the existence of various ranges of significance of altruism. According to this approach, altruism works in the field of both social (human) and biological (animal) phenomena. Thus the first concretization of the idea of altruistic behaviour (co-operation) has taken place.

The other important moment in the development of sociobiological thinking was the realization (on the part of biologists first and foremost) that "intensity" of altruism (altruistic behaviour, co-operation) depended on a variety of real

situations and could be contained in the <0,1> bracket. Simultaneously, it became evident that extreme values of that factor's intensity did not exist in reality and were purely theoretical. Thus began the survey of the cases of co-operation between organisms, populations and species; to the description and explanation of this two last situations the Wynne-Edwards' (1962, 1986) evolutionary conception would be applicable. Ecology was the first field of science to have followed that path (in particular population ecology, by followed organismal ecology). In my opinion, it was organismal ecology which became a curtain-raiser on the modern shape of sociobiology, since only the first attempts at defining altruistic behaviour (in Hamilton's works – 1964) marked out a new mode of biological (sociobiological) thought. This approach was called *sociobiology* by E.O. Wilson (1975).

It was through those achievements of biological knowledge that the second concretization of the idea of altruistic behaviour (co-operation) came about. From the end of the 19th century, this is from Kropotkin's times, to the 1970s biological cognitive practice passed from analyzing the ranges of the influence of altruism (that was the first concretization which resulted in the development of ecology, e.g. the rise of the so-called mathematical ecology in the 1920-1940s) on the empirical examination of altruistic (and egoistic) behaviour, that is to say, an examination of the relations which define relationships between organisms of different levels of biological complexity. It was then that organismal ecology, populational genetics, ethology and, finally, sociobiology were developed.

Apparently, rejection of Kuhn's mode of thinking – the Darwinian paradigm – by evolutionary biology facilitated that development. This resulted in the incorporation into entire biological knowledge of the ideas whose source – in my opinion – could be found in the late 19th century sociology, thus being extraneous to biology itself.

4. CONCLUSIONS

At the end of this paper, I would like to add that my proposal contains only the main ideas of the problem which remains on the border-line of theoretical biology, methodology and philosophy of biology. However, even a brief formulation entails some important results which I am going to present now. All this consider we have the following conclusions:

1. The rise of sociobiological ideas should be ascribed to P. Kropotkin who remained in significant theoretical opposition to Darwin.

2. The development of sociobiological ideas followed two main paths determined by the rejection of those assumptions which restricted biological thinking:

(a) the first path was defined by the concretization of research on altruism in specific areas of human and animal behaviour;

(b) the second path was defined by a thorough recognition (empirical definition or designation) of the "intensities" of altruism (co-operation) in various fields of biological and social phenomena.

3. The term "sociobiological thinking" is used here to denote namely fields of knowledge, both the paths (a) and (b), while the term "sociobiology" (according to Wilson's approach), in my opinion, denotes only the path (b).

4. The approach to sociobiological thinking presented above reveals certain logic in the development of the idea. Thus it remains in opposition to Kuhn's approach which rejects such logic.

5. The development of sociobiological thinking proves that modern sociobiology breaks with the *self-sufficiency myth*. This is manifest in the development of theoretical biology, where interdisciplinary studies, combining the results of cognition on many biological subdisciplines, shed a new light on the whole of biological phenomena.

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