

## Presentation

### Darwinism and Social Science: Is there Any Hope for the Reductionist?

Jesús P. ZAMORA BONILLA

This monographic section of *Theoria* is devoted to one of the most active topics of research in the foundations of the social sciences: the complex and disputed relationships these sciences may have with the dominant conceptual framework in biology, *i.e.*, Darwinism. Though there have been discussion about this topic even since the publication of Darwin's *Origin of the Species*, the issue itself evolves as new approaches and discoveries appear in biology and as new concepts and analytical tools are developed in the social sciences. We can also assert that, as it is the case in the Darwinian non-teleological view of evolution, the ramifications of the debate about 'Darwinism and social sciences' seem hardly to have a clear directionality, and recent developments on this philosophical question lead authors and readers towards a vast variety of approaches and conclusions. The papers contained in this section attempt to be representative of this variety, not only because of the different aspects that have been chosen in each case (some more general, some more specific), but also because of the diverse intellectual perspectives that sustain the approaches developed by their contributors, all of them active and prominent researchers in the field.

By way of introduction, let me pose very briefly some relevant questions that arise regarding the relationship that Darwinism may have to the foundations of social science. In the first place, the old dream of scientific reductionism conceived the progress of knowledge as directed towards an ideal state in which every scientific discipline would have been condensed in a comprehensive list of axioms from which everything known about this discipline could be mathematically derived, and in such a way that those axioms could be in their turn deduced from the principles of more 'basic' disciplines: so, the complete 'laws' of chemistry should be derivable from the 'laws' of physics, those of biology from those of chemistry, those of psychology from those of biology, those of sociology from those of psychology, and so on. However, if we have learned something from the debate in philosophy of science during the last three decades, it has been that not only is there absolutely no hope of ever 'reducing' any discipline to any other, but even that no discipline (save probably some very simple and idealized parts of them) can actually and usefully be organized in an axiomatic fashion, mainly because the way in which scientific fields are 'covered' are not through the discovery of universal 'covering' laws, but through the piecemeal accumulation of more or less successful 'partial' models, which too often are in mutual conflict.

On the other hand, this has not precluded the attempts of connecting some disciplines to others, either 'more fundamental' or not; rather on the contrary, scientific disciplines are much more promiscuous, and their limits much blurrier, than what simplified positivistic approaches had seem to suggest. Models are built by exploiting everything researchers can wisely employ, and if a discipline provides methods and re-

sults which can serve as efficient inputs into a research process of other discipline, they will be exploited. A prominent example is the spectacular development of biochemistry and molecular biology in the second half of the past century: even if it is true that no reduction of their ‘principles’ (if such a thing exists at all as a list of formulable statements) to those of chemistry or quantum physics is feasible, the fact is that physical and chemical knowledge is massively put into use both in the production of new knowledge about biological substances and processes, and in the development of theoretical explanation of these. Something similar could be expected to take place in the relation between biology, psychology, and the social sciences: it is possible that discoveries about the evolution of humans, about the working of our neural system, or about our metabolism, become some day as useful to social science as chemical knowledge is now for biology? In particular, is it of any use to social sciences the fact that our features as a biological species must have arisen from a Darwinian process of aleatory variation *cum* retentive selection? The full discipline of ‘sociobiology’ (or, as its practitioners now prefer to call it, ‘evolutionary psychology’) is just devoted to follow this line of thought, although, lacking in general an empirical access to the *actual* evolutionary processes that led to our species, most of the work in this field is irremediably speculative, and subjected to all kinds of ideological influences and other cognitive biases. Some of the risks associated to this attempt are explained in the paper by Peter Saunders: ‘Bricks without straw: Darwinism in the social sciences’, which bases its major criticism on the fact that neither Darwinism nor neo-Darwinism are able of offering, just by themselves, detailed and systematic explanations of the appearance of new biological forms, much less of the development of social and cultural realities. This is not to suggest that Darwinism is ‘false’, only that it is unable of providing a comprehensive explanation of all the aspects of the living world, just as the energy conservation principle, though true, is not enough to explain by itself the chemical composition of the sun, for example. Jack Vromen’s paper, ‘Why the economic conception of human behavior might lack a biological basis’, is also critical to the attempt to espouse sociobiological explanations with rational-choice-type arguments, mainly because of the circularity which one commits when uses rational-choice *models* to explain how rational-choice *cognitive processes* may have evolved themselves.

All this leads us to a different but related question: is it possible to connect Darwinism with social sciences, not just by showing that our biological evolution may have also created our social and cultural features, but by showing that the dynamics of cultural and social evolution follows the same *formal* structure than the evolution of species? This line of thought has led to the development at least a couple of disciplines: evolutionary game theory (the attempt of explaining the genetic dynamics of a population as a ‘competition’ at the level of genes, analysed through the techniques of the mathematical theory of games) and ‘memetics’ (the attempt of explaining the dissemination of cultural traits as parallel to the process of Darwinian selection).<sup>1</sup> In a way,

---

<sup>1</sup> For some good introductions to these disciplines, see, respectively, J. Maynard Smith, *Evolution and the theory of games*, Cambridge: Cambridge University Press, 1982, and Susan Blackmore, *The meme machine*, Oxford: Oxford University Press, 2000.

these are different aspects of the attempt of constructing a ‘universal Darwinism’<sup>2</sup>, of which biological Darwinism would only be a single facet: everything which were capable of sustaining a ‘replicator dynamics’ would necessarily evolve through a more or less Darwinian trajectory. Nevertheless, both the goals and the deeds of these disciplines have also been subjected to several criticisms; for example, perhaps the notion of evolution is more general than that of *Darwinian* evolution, and the realizing of this difference may allow developing new and more powerful ways of connecting different disciplines in which evolutionary phenomena are studied. Ulrich Witt’s paper, ‘Generic features of evolution and its continuity - a transdisciplinary perspective’, just delineates some guiding lines for framing different types of evolutionary processes into a single, coherent definition, which could illuminate the ways in which evolutionary techniques and ideas can be profitably applied across different disciplines.

One field of social sciences where evolutionary approaches have been thoroughly pursued during the last two decades has been economics, mainly because many authors have seen in these approaches, either as a way of departing from the strictures and shortcomings of neoclassical economics (too strongly linked, according to some, to static equilibrium analysis), or as a way of biologically justifying the main assumptions of the neoclassical schools. Pablo García’s paper, ‘Knowledge in economics: an evolutionary viewpoint’, critically surveys some of the main approaches that have been developed along the first of these possibilities, focusing mainly on the study of technology as an essentially developing reality. Lastly, Jack Vromen’s paper, which I have already referred to above, explores some of the perils of the second line of thought, that of defending neoclassical economics on the basis of sociobiological speculations.

I am deeply grateful to all the contributors for their effort in jointly producing a monographic section that, as I am sure, will be very useful for those readers that try to get a precise idea of the diversity of questions lying under the topic of ‘Darwinism and social science’. The authors have also been very kind in responding to the complex constraints about time, extension and subject matter I put to them. I wish also to thank the editors of *Theoria*, and particularly to Andoni Ibarra, for the invitation to put together this monographic section, and for all the facilities they gave me. Lastly, the ideas that have been briefly articulated in this presentation debt a lot to discussions with Mauricio Suárez, David Teira and Juan Urrutia.

**Jesús P. ZAMORA BONILLA** is professor of Logic and Philosophy of Science at Universidad Nacional de Educación a Distancia (Madrid). He is both a Ph.D. in philosophy and in economics, and has published numerous papers on general epistemology and on the philosophy of economics, which have appeared in collective books and in journals like *Erkenntnis*, *Journal of Economic Methodology*, *Philosophy of Science*, *Synthese*, *Theoria* or *Zeitschrift für allgemeine Wissenschaftstheorie*. He is also the author of the books *Mentiras a medias* (about the theory of verisimilitude) and *La lonja del saber* (about the economics of scientific knowledge).

**Address:** Universidad Nacional de Educación a Distancia. Departamento de Lógica y Filosofía de la Ciencia. Senda del Rey, 7. 28040 Madrid, Spain. E-mail: jpz@fsof.uned.es

---

<sup>2</sup> See especially Daniel Dennet’s *Darwin’s dangerous idea*, New York: Simon & Schuster, 1995.