

Pragmatism and Evolutionary Epistemology

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Abstract

To understand the significance of a pragmatist stance in this matter we must address a basic question: which kind of evolution are we referring to when talking of “evolutionary epistemology”? If we take evolution to be an undifferentiated concept, such that no useful distinction can be found in it, we are on a wrong track. The evolutionary “pattern” is certainly one, but this should not lead us to assume that the specific characteristics of mankind must be left out of the picture, either because they are not important or because no specifically human characteristic is admitted. Nicholas Rescher’s evolutionary framework, for example, is instead pluralistic and multi-sided.

It is worth noting how and why Rescher’s evolutionary epistemology differs from the one delineated in a famous book by Karl Popper. The Austrian-born philosopher based his approach on the “random conjectures and refutation” model. A scientist, for example, faces the problem of explaining nature’s doings by one of the endlessly many hypotheses that he has at his disposal. Subsequently he chooses to endorse a conjecture from this infinite range, and the testing itself, via falsification, furnishes the necessary selection. According to Popper’s picture we have, in sum, a sort of blind and random mechanism: his “trial-and-error” search procedure.

Rescher’s opinion about this issue is that, on such Popperian grounds, scientific progress becomes more or less inexplicable. In particular, the success in providing explanatory theories that perform well in prediction and the guidance of applications in a complex world is now an accident of virtually miraculous proportions.

Keywords: evolution; epistemology; fallibilism; history; mankind; nature; anthropocentrism.

Introduction

The American pragmatist philosopher Nicholas Rescher endorses an epistemology which is fully evolutionary. It must be noted, however, that his approach is endowed with elements of originality that make it somewhat different from similar stances that have been recently become popular. The term “evolutionary epistemology”, as he points out, has

(...) two distinct, albeit interrelated, traditions. One, recently exhibited in K. R. Popper and more explicitly in Stephen Toulmin, is a matter of a cultural development involving an evolution-analogous approach according to which ideas battle for selection by the

way of adoption and perpetuation in the human community through a process in which the fittest are likely to prevail. This, in effect, is cultural evolution by rational selection. The other, originated by Herbert Spencer and Charles Darwin and carried forward in C. S. Peirce, Karl von Frisch, and Konrad Lorenz, holds that the human mind has certain genetically determined innate dispositions to manage things in a particular way because this is conducive to survival. This represents paradigmatic biological evolution through natural selection.¹

As a full-fledged approach to the theory of knowledge, however, the term has been brought to the fore by other works, among which those by Donald Campbell deserve a special mention.² As such, evolutionary epistemology presents a cognitive approach which is very different from that endorsed by analytic philosophy, and has instead strong links with the so-called “naturalistic turn.”³

To understand the significance of Rescher’s stance, I must address a basic question: which kind of evolution are we referring to when talking of evolutionary epistemology? If we take evolution to be an undifferentiated concept, such that no useful distinction can be found in it, we are - according to our author - on a wrong track. The evolutionary “pattern” is certainly one, but this should not lead us to assume that the specific characteristics of mankind must be left out of the picture, either because they are not important or because no specifically human characteristic is admitted. Rescher’s evolutionary framework is instead pluralistic and multi-sided.

The evolutionary pathway provided by intelligence is one of the alternative ways of coping within nature that are available to biological organisms (among the others, we may for example mention toughness, multiplicity and isolation). Human beings, thus, can be said to have evolved to fill a possible ecological niche left free for intelligent creatures. There are, however, many ways to look at the evolution of mankind. Rescher stresses that “intelligence has evolved not because the emergence of intelligence aids the survival of its possessors within nature (...) It arises through evolutionary processes because it represents one effective means of survival. Intelligence is our functional substitute for the numerousness of termites, the ferocity of lions, or the toughness of microorganisms.”⁴

So this is our specific manner of fighting the battle for survival: we would not be here if our intelligence-led rationality were not survival-conducive. But does all this mean that intelligence is an inevitable feature of conscious organic life? The answer to such a

¹ N. Rescher, *A Useful Inheritance. Evolutionary Aspects of the Theory of Knowledge*, Rowman & Littlefield, Savage (MD), 1990, p. 11

² D. T. Campbell, “Evolutionary Epistemology,” in P. A. Schilpp (ed), *The Philosophy of Karl Popper*, Open Court, La Salle (Ill.), 1974, pp. 413-463.

³ W. Callebaut (ed), *Taking the Naturalistic Turn, or How Real Philosophy of Science Is Done*, The University of Chicago Press, Chicago-London, 1993.

⁴ *A Useful Inheritance*, cit., pp. 2-3.

question is crucial and negative. Rescher's position differs - although not totally - from that endorsed by a physicist like Paul Davies, who claims in this respect:

(...) An increasing number of scientists and writers have come to realize that the ability of the physical world to organize itself constitutes a fundamental, and deeply mysterious, property of the universe. The fact that nature has *creative power*, and is able to produce a progressively richer variety of complex forms and structures, challenges the very foundation of contemporary science (...) there is a growing dissatisfaction with sweeping reductionism, a feeling that the whole really is greater than the sum of its parts (...) Especially in physics, the synthetic or holistic approach is becoming increasingly fashionable in tackling certain types of problem (...) many scientists would still reject the idea of a cosmic blueprint as too mystical, for it implies that the universe has a purpose (...) Perhaps the apparent unity of the universe is merely an anthropocentric projection (...) These deep issues of existence have accompanied the advance of knowledge since the dawn of the scientific era. What makes them so pertinent today is the sweeping nature of recent discoveries in cosmology, fundamental physics and biology.⁵

Davies is not an isolated case within the scientific community, since many other scientists openly question the widespread analytical attitude to proclaim metaphysical issues meaningless or useless. Another interesting fact to be noted is that Davies deems important the theses of the French Jesuit Pierre Teilhard de Chardin, a thinker who was more or less banned by the Catholic Church in the first half of the past century and whose ideas have for a long time held to be bizarre by many philosophers of any tendency.

For my actual purposes it is important to explain why Rescher could not totally endorse what Davies states, even though accepting the holistic and synthetic meaning of his assertions. He does not take intelligence to be the inevitable outcome of organic life, the reason being that no purposive motive can be attributed to nature in this respect. Taking this path, we risk either to run into an anthropocentric projection of the universe, or to adopt some kind of pantheism in which Nature assumes the role that God plays in Christian theology. Intelligence must instead be endowed with "functional" characteristics: it is not the outcome of some hidden necessity but, rather, it arises out of practical needs. The "primacy of practice", which is one of the key maxims for understanding Rescher's philosophy, is indeed at work even in his evolutionary epistemology, as his own words clearly show:

(...) We have questions and need answers: the best answers we can get here and now, regardless of their imperfections. It is this basic practical impetus to coherent information that underlies the two fundamental imperatives of cognitive intelligence: (1) Do the best you can to obtain adequate answers to your questions, (2) Feel free to accept these answers, to deem them worthy of credence, at least for the time being,

⁵ P. C. W. Davies, *The Cosmic Blueprint. New Discoveries in Nature's Creative Ability to Order the Universe*, Simon & Schuster, New York, 1988, pp. 5-8.

proceeding on the principle that we must make do with the best we can get as good enough for present purposes.⁶

Rescher's stance

The American thinker avoids any foundationalist explanation: the process of acquiring information has nothing mysterious about it because, if we did not succeed in our cognitive endeavors, then we would not be here as the creatures that we actually are. At this point, however, a crucial question must be posed: does biological Darwinism provide a sufficient rationale for our cognitive resources?

As a matter of fact, Darwinism can be not only biological, but also cognitive. And this is because we need to explain not only the evolutionary development of the cognitive faculties of which human beings are provided, but also the fact that it affects the content of knowledge. A materialist thinker may believe that the two explanations are just one, being the content of knowledge reducible to the cognitive faculties. This, however, would be true only if humans were to transmit to their progeny nothing but genetic traits, and it can be shown that real situation is rather different. We constantly transmit, in fact, both as individuals and as members of a socio-linguistic community, such intellectual instruments as concepts, beliefs and methodologies, which simply means that a selective process operates at both the physical and mental levels.

The scheme we get by adopting this stance is, thus, more complex than the reductionistic one endorsed by materialist philosophers, since any element of the biological sphere is matched by an analogous element located in a sphere that may be defined as "sociological-intellectual", according to the following lines. At the biological level we have:

- (A) Biological mutation;
- (B) Reproductive elimination of traits through their non-realization in an individual's progeny;

and, eventually,

- (C) One's physical progeny.

The same steps can be traced at the sociological-intellectual level:

- (A₁) Procedural variation;
- (B₁) Reproductive elimination of processes through their lapsed transmissions to one's successors (for example, children or students);
- (C₁) Those individuals whom one influences.

⁶ *A Useful Inheritance*, cit., pp. 3-4.

The differences between (A)-(C) and (A₁)-(C₁) are clearly visible, but the same process is at issue in both cases, since both involve structures that are maintained over time. No one denies, of course, that the biological side precedes the other from a chronological viewpoint, because no cultural development would ever be possible in absence of biological evolution. On the other hand, the problem of the development of thought-procedures within humankind needs something beyond natural evolution, provided we wish to grant to the phenomenon of thought the importance it deserves.

So we have both a biological evolution which is Darwinian, with teleologically blind natural selection operating with respect to teleologically blind random mutations, and a cultural evolution which is Teilhardian, governed by a rationally-guided selection among purposefully devised mutational variations. All this prompts Rescher to remark that:

Our cognitive capacities and faculties are part of the natural endowment we owe to biological evolution. But our cognitive methods, procedures, standards, and techniques are socio-culturally developed resources that evolve through *rational* selection in the process of cultural transmission through successive generations. Our cognitive hardware (mechanisms and capacities) develops through Darwinian natural selection, but our cognitive software (the methods and procedures by which we transact our cognitive business) develops in a Teilhardian process of rational selection that involves purposeful intelligence-guided variation and selection. Biology produces the instruments, so to speak, and culture writes the music - where obviously the former powerfully constrains the latter. (You cannot play the drums on a piano).⁷

Rescher and Popper

It is worth noting at this point how and why Rescher's evolutionary epistemology differs from the one delineated in a famous book by Karl Popper.⁸ The Austrian-born philosopher based his approach on the "random conjectures and refutation" model. A scientist, for example, faces the problem of explaining nature's doings by one of the endlessly many hypotheses that he has at his disposal. Subsequently he chooses to endorse a conjecture from this infinite range, and the testing itself, via falsification, furnishes the necessary selection. According to Popper's picture we have, in sum, a sort of blind and random mechanism: his "trial-and-error" search procedure.

Rescher's opinion about this issue is that, on such Popperian grounds, scientific progress becomes more or less inexplicable. In particular, the "success in furnishing explanatory theories that perform well in prediction and the guidance of applications in a complex world is now an accident of virtually miraculous proportions, every bit

⁷ *A Useful Inheritance*, cit., p. 8.

⁸ K. R. Popper, *Objective Knowledge: An Evolutionary Approach*, Clarendon Press, Oxford, 1972.

as fortuitous as someone's correctly guessing at random the telephone numbers of someone else's friends."⁹

Furthermore, on such bases it becomes quite hard to explain Popper's recourse to truth conceived of as "regulative ideal", just because his random strategy gives us no warrant whatsoever for the conviction that we are indeed approaching ideal truth. And, in fact, Popper clearly states that our cognitively successful endeavors are miraculously improbable, and therefore inexplicable.

The difference in Popper's and Rescher's approaches lies in their very different opinions about two key philosophical issues. The first is induction and the methods for justifying inductive reasoning. In this regard the former adopts a destructive stance: inductive reasoning cannot be justified from the logical point of view and, thus, nothing like induction exists. The stance of the latter is, instead, much more articulated, and credits the human intellect with a sort of inductively oriented heuristic skill, that allows us to single out those alternative hypotheses that are likely to prove more promising candidates than the others. Rescher's concept of induction is thus rather broad and flexible and, just for this reason, more useful than the narrower notion of induction - like that put forward by J. S. Mill - conceived of as a method for reasoning to a universal generalization from its supportive instances:

(...) induction is understood to include all of our rational devices for reasoning from evidence in hand to objective facts about the world. Induction, thus understood, will encompass the whole of "the scientific method" of reasoning, and in treating of the justification of induction we take in hand the validation of the processes of reasoning in the sciences (...) induction becomes a process of plausible reasoning from the "data" of experience, with the parameters of systematicity themselves playing the role of standards of plausibility. All the familiar modes of inductive inference can be fitted into this general pattern of reasoning.¹⁰

The second issue, over which Rescher and Popper are at odds, is holism. This is one of Popper's main critical targets (especially in his political philosophy writings), while a general holistic attitude is present in Rescher's works. So, while for Popper useful hypotheses emerge as a result of somewhat haphazard combinations, for Rescher this is the outcome of the detection of patterns in empirical data. What should be noted is that many people look with a certain surprise to the "methodological anarchism" which has followers in contemporary philosophy of science. They usually heap all the blame on Paul Feyerabend, just forgetting that he was for many years a pupil of Popper. Feyerabend consistently developed some elements contained in Popper's

⁹ *A Useful Inheritance*, cit., pp. 17-18.

¹⁰ N. Rescher, *Induction. An Essay on the Justification of Inductive Reasoning*, University of Pittsburgh Press, Pittsburgh, 1980, pp. 2 & 87-88.

philosophy, taking some of the master's assertions at their face value. So, when we read statements like these:

(...) A second idea that plays an important role in the defence of Western civilization is *the idea of Reason* or rationality (...) To be rational in the material sense means to avoid certain views and to accept others (...) it would be hardly fruitful to let statements such as "this is rational" or "this is irrational" influence research (...) The notions are ambiguous and never clearly explained, and trying to enforce them would be counterproductive (...) Strictly speaking we have here two *words*, "Reason" and "Rationality", which can be connected with almost any idea or procedure and then surround it with a halo of excellence.¹¹

It is thus important to bear in mind that Feyerabend could indeed find in Popper's own theories useful insights for developing his anarchical view of science and of human cognitive procedures in general. Rescher answers this kind of remarks by noting that it must certainly be admitted that the scientific approach is simply one alternative among others; but this fact should not lead us to the wrong conclusion that it develops according to largely irrational standards.

Conclusions

Now a few remarks concerning Rescher's critique of any kind of materialistic epistemology. Our author is, in fact, neatly opposed to all those scientifically-minded epistemologists whose main objective is to explain the workings of the mind uniquely in terms of the operations of the brain.¹² He, in fact, distinguishes between the (a) possession of intelligence, which can be accounted for in a satisfactory way by biological evolution, and (b) our use of it, which calls for a different sort of evolutionary approach. We need to address the development of thought-mechanisms, which Rescher equates to a kind of "software" (the "hardware" being the aforementioned possession of intelligence). Here the concept of "possibility" plays a very important role, since he states that "biological evolution reacts only to actually realized changes in environing conditions: cultural evolution in its advanced stages can react also to merely potential changes in condition through people's capacity to think hypothetically and thereby to envision "what could happen if" certain changes occurred.¹³ In other words, we need to distinguish methods from faculties, in order to give a satisfactory explanation of why man is the kind of creature that he actually is.

¹¹ P. K. Feyerabend, *Farewell to Reason*, Verso, London-New York, 1994, 4th pr., p. 10.

¹² See, for instance, P. S. Churchland, *Matter and Consciousness: A Contemporary Introduction to the Philosophy of Mind*, The MIT Press, Cambridge (Mass.)-London, 1984 (Revised ed.: 1988); and, by the same author, *Neurophysiology: Towards a Unified Science for the Mind-Brain*, The MIT Press, Cambridge (Mass.)-London, 1986.

¹³ *A Useful Inheritance*, cit., p. 40.

I would like to conclude by noting how strong the connection between metaphysics and epistemology is in Rescher's thought. In a recent book he underlines the "existential component" of realism, meaning that "realism represents a commitment that we *presuppose* for our inquiries rather than *discover* as a result of them."¹⁴ My previous remarks show why he came to endorse such a position.

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¹⁴ N. Rescher, *Realistic Pragmatism. An Introduction to Pragmatic Philosophy*, SUNY Press, Albany, 2000, p. 126.