

# Review: Contributions to a Theory of Knowledge

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Jacob Bronowski, *The Origins of Knowledge and Imagination*, Newton Compton, 1980, p. 106.

Enrico Bellone, *Something Out There*, Codice Edizioni, 2011, p. 102.

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Our current wrote in 1960:

*'Science has not yet succeeded in demonstrating to us how it happens that the theses that we are going to enunciate enter [food] and come out in the individual; it has not yet been able to show us what process takes place in those mechanisms, in those organs of our body that serve for nutrition and digestion, between the absorption in general of external energies and the production of our thought'.*

The two small volumes partly answer the question and bring useful elements both to a general theory of knowledge and to our specific assumption of the inseparable unity between art and science, denied until a few years ago by bourgeois epistemology and still denied in fact.

Bronowski was a mathematician who did not disdain to try his hand at other scientific disciplines and what we commonly call art. He was also a valuable educator. The essay collects six lectures he gave at Yale. The common thread is simple: our conception of the world is strongly determined by our biological being. Our perception, our imagination, our ability to construct a symbolic apparatus, depend on our biological constitution. We receive information from the world around us and can only translate it into what we call knowledge through our senses, which are activated by arrangements of cells, particular organs, and innervations between them and the brain. By examining the mechanism of perception, we also come to understand the ways in which we transmit what we have acquired and thus understand the nature of language and our ability to abstract, to arrive at the formal systems of the scientific method. Science can only be the result of the interaction between us and nature through the means that nature has provided us with. This circularity has both a defect and a virtue: on the one hand, it allows us to elaborate complex systems of knowledge but without the possibility of evolution due to the physiological limits of our senses; on the other hand, these same apparently closed systems are permeable to unexpected connections with reality and thus allow us systematic attempts to detect errors, i.e. to change paradigms. The unity of art and science

would be demonstrated precisely by the ability to overcome our limits from time to time.

Bellone was a physicist. As a historian of science, he was also an epistemologist. On the strength of his scientific achievements thirty years after Bronowski's lectures, he takes up the discourse and integrates the various parts, generally maintaining the basic assumption. There is no mention of the previous author in the book, but the continuity is clear. The starting point is the same as that of the philosophers: many phenomena of nature, the most elementary for our senses as well as the most complex, are experienced by us naturally, without us being aware of them. But as soon as we descend onto the terrain of knowledge, a very serious problem arises, that of defining events that are anti-intuitive, that is, unrelated to what our senses tell us. The Earth seems motionless to us, while the Sun rises and sets. The senses therefore deceive us. But how do we know this, if we have nothing else to interact with nature and 'understand' it? The discourse on the Sun and the Earth is now unimpressive, whereas in the time of Copernicus or Galileo it was very dangerous, but the same principle applies to the world around us and the conception we have of it today. For example, everything we see, touch, hear, smell and taste does not exist in the form and substance we perceive. We do not have the faculty to distinguish the real continuity between us and the matter around us, we need, in order to live, to see it broken down into discrete objects, at most contiguous but not continuous. Yet physicists tell us that this is not the case: an eye other than ours could see a universe of atoms that are very distant from each other and, moreover, do not consist of aggregates of small balls as they are drawn in popularisation books, but of 'particles' with a very ambiguous existence, between matter and energy.

*'What we perceive,' says Bellone, 'is governed, to a large extent, by innate criteria, by rules that biological evolution has engraved in our nervous systems. From this point of view, which is completely alien to common sense, so-called perceptions are not recordings of what happens outside our bodies, but are constructions that conform to the innate criteria we have inside us'.*

This means that the world we call 'external' is actually a perceptual model recreated in our brain. This, moreover, is an optimal situation for adaptation to the environment and thus evolution: living organisms adapt to their environment precisely by reconstructing it for this purpose. Reconstruction and evolution go hand in hand. A simple 'physiological' demonstration easily sweeps away centuries of dissertations on the human essence determined by free will. We believe we have an autonomy of 'judgement' over nature, but this belief is merely the creation of an organism that needs to be evolutionarily attuned to the environment of which it is a part.

In our condition, we do not freeze knowledge at all, nor do we freeze the possibility of getting out of perceptual creation. It is precisely the evolutionary

elements due to the environment-organism relationship that allow us to make the leap to a new level. This happens with 'discoveries' and 'elaborations' that are made and recorded in some corner of the human-nature whole, precisely in some mutant individual and group. The beginning of new knowledge, consequently, cannot be diffused, it must necessarily be limited to one part. This other aspect demolishes the ideological construction underlying the 'democratic principle'. It also demolishes the concept of the individual as a factor in history. The brain actually perceives a somewhat special organism, a bearer of novelty. Reacting entirely in accordance with the principles of nature, i.e. evolution, it has a reaction of rejection, at least until the novelty extends to many individuals. When the novelty is shared, then imitation is triggered. But during the transition from one stage to the next, from the old to the new, there is a no-man's-land in which the mutant group can be either burnt out or hailed. This sometimes happens sequentially with the same subject: from hero to monster and vice versa.

In nature, there is no dichotomy between subjectivity and objectivity. There is a set of relationships between its constituent elements, organisms, environment, matter, energy. Their constant interaction produces certain configurations, and each change in one of the elements produces others. The ability of organisms and their assemblies to change configurations depends on the ability to neutralise the innate constructions due to our senses and replace them with projects. Animals cannot do this, man became such when he began to be a mutant. The argument that applies to organism-environment interaction applies to society as a whole.