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# Should We Still Compare the Social Sciences to the Natural Sciences?

by Eleonora Montuschi

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## Introduction

As it is well known, the social sciences have been struggling, from the very beginning, to get their status as fully acknowledged “sciences.” Their history is replete with attempts at trying to imitate, more or less successfully, the methods, logic and techniques of the natural sciences – or at least to comply with what a certain image of the natural sciences had established to be the paradigm for science.<sup>1</sup>

The debates carried out in the context of these attempts displayed the need to address three underlying philosophical questions:

1. How does a field of inquiry qualify itself as “science.”
2. How (whether) do social phenomena qualify themselves as possible objects of scientific investigation.
3. How (whether) can the disciplines which deal with social phenomena, in their various forms, qualify themselves as “sciences.”

It is interesting to see what kinds of issues were brought to the fore by some of these debates while addressing these questions. To discover this, I will first analyse what solutions to the controversial consequences raised by the comparative strategy were put forward; secondly, I will draw attention to what issues emerged from the

<sup>1</sup> For details of how this history unfolded, and with what philosophical implications for social sciences, see Montuschi [2003] and Montuschi [2006].

ways in which those solutions were formulated; and finally, I will suggest how some of the emerging issues might be of some value in informing the present debate.

## Meaning of science

The traditional image of science, as inherited from the Seventeenth century natural philosophers (empiricists), was built on two components: an epistemic (factual) component (science is about facts, or “data,” which are what the external world, the world of experience, consists of); and a methodological component (science is said to possess a method which allows us to deal correctly with those facts, e.g., describe them, explain them, predict them, etc.). Scientific method is taken to be a sequence of stages or steps which a scientist must follow, in order to attain the aim of science (that is, finding out true knowledge of the facts investigated). In using this procedure, scientists are assisted by a series of rules which guide them along the process of investigating nature.

A typical example of how scientific method works can be found in modern experimental tradition (from Galileo to Mill to Kant to Einstein). Here below is the format of how scientific inquiry proceeds:

Initial O – tentative H – tests by Os – H tested

That is, in the presence of some observation O we put forward a tentative hypothesis H which is meant to account for that observation. We then try to test the hypothesis to see whether the account it suggests is true or false. The rules of method help us in putting restrictions on the procedure itself, by establishing what hypotheses are admissible, how the tests are to be performed, under what conditions an observation can be used to test a hypothesis, etc. This is why rules are such a crucial part of scientific method: effectively, they make the method work in practice as well as in principle. Let us assume that a hypothesis is accepted. This means that it ceases to be tentative, and it becomes a theory. It can be applied not only to the single observation of some facts, but to a whole series of similar observations, and possibly to cases which are yet to be observed (but which we predict will be similar too). As such it becomes part of the accepted body of scientific knowledge. To be a theory, within this tradition, is to be a system of scientific laws, that is a system of general statements which represent the world of experience in terms of regular patterns of events (facts).

This, in a very sketchy form, is how it was thought that science works; and this is how the new science (natural science) delivered its first results in terms of knowledge. It is not surprising then that, given that science first developed as natural science, and given that the natural sciences could claim to be successful in their dealings with natural facts, natural science has become the model of science per excellence. The social sciences, which came much after (and not before the Nineteenth century), could not but follow suit. But is this such an obvious move? How easy is it for social science to adopt the same image of science? Does the “social” easily candidate itself as being an object of scientific investigation (according to the image of science just sketched out)? As a matter of fact, if we look at what happens in practice, the social sciences face problems – which means that there might be constraints in principle.

The empiricists, who were in favour of using one ideal epistemology for both domains of inquiry, were indeed aware that in the case of social phenomena there were at least further complexities to take into account. And yet, they were optimistic. The differences were not substantial, they deemed. The real problem was just that the social sciences were “young” sciences, not that they could not be sciences. John S. Mill [1843] famously compared sociology to meteorology (a not well developed science in his time). It is very difficult, Mill claimed, if not impossible for the latter to predict what will happen in particular circumstances, owing to the quantity of variables possessed by meteorological phenomena. Meteorological phenomena are complex. Yet, nobody doubts that meteorology is a science. The same applies to the sciences of man: due to the complexity of their subject matter, we might at best be able to suggest probabilistic accounts of some courses of action, or of some social processes. Still, the logical principles and the methodological rules we employ in accounting for these actions and processes might well remain the same as those that we use in meteorology and in any other science.

Nonetheless, this is enough of an admission that there is indeed a problem when we move from the natural to the social world. In the history of the social sciences, this “problem” has been dealt with in various contexts and solved in a variety of ways (besides the empiricist solution which I have described above). By reviewing some of these contexts and solutions, we will be able to see whether social inquiry can and/or should qualify itself as “scientific,” and whether a comparative strategy is required in view of such an assessment.

## The comparative strategy

The comparison between the social and the natural sciences has taken different forms and directions. In what follows I review some among the most popular.<sup>2</sup>

1. *The social sciences are indeed sciences*, not so much because they imitate the natural sciences, but rather in the sense that they are nothing but a bunch of biologies. This is the direction taken by sociobiology first, and by its successor afterwards, that is evolutionary psychology. The core of the argument amounts to something like the following. Human beings, like other animals, have evolved by inheriting (in a Darwinian fashion) certain genetic codes. These inherited codes determine or at least highly influence the patterns of individual actions as well as of human social life. The solution which seems to ensue from endorsing this perspective is to deny any need for a separate field of inquiry called “social science:” evolutionary biology is enough to deal with society’s issues. The relevant explanation of social action and social choice is biological (or “ultimately” biological).<sup>3</sup>

2. *The social sciences are not sciences*, not so much because they cannot imitate the natural sciences, but because the very image of science they are meant to imitate is fake. As argued by the post-positivist philosophy of science (in the tradition of Kuhn [1962], Feyerabend [1975], Rorty [1991], etc.), the orderly, methodological model of science, which we have inherited and have been persuaded to endorse, does not accurately describe how science actually develops. As, for example, Feyerabend pointed out regarding Galileo, the new science won against traditional Aristotelian science not because the former followed accurately the rules of scientific method, but because a whole series of “tricks” were introduced to win the game, so to speak. For instance, Galileo pointed the telescope to the moon, claiming that he was giving indisputable, factual observations in favour of his theory when it was not true (early telescopic observations were very fuzzy and inconclusive); he wrote in Italian rather than Latin; he introduced a different vocabulary to describe his observations and show that they could support his theory; and so forth. At the very end (and at the most radical end of this spectrum of positions), theory choice, we are here told, rests on subjective factors (personal preferences, aesthetic taste, power, ideology, linguistic skills), to the point that, as was famously put, “anything goes.” However, if “anything goes,” there is no point in talking of science vs. non science, as ultimately “science” (at least in the sense that a certain tradition made us acquainted with) is an empty category.

<sup>2</sup> In reviewing the various positions, I do not follow any chronological/historical order.

<sup>3</sup> The literature in this field is vast. The seminal book on sociobiology is Wilson [1975]. Issues relevant to this debate can be found, among others, in Wiegele [1982]; Kitcher [1985]; Dupré [2001].

3. *The social sciences are not sciences* because their subject matter (human beings and their social interactions) cannot be the object of a science. According to the humanistic view, the social world does not consist of facts, but rather of actions performed in the context of purposes, intentions, meanings. Meaningful or intentional actions cannot be ruled over by laws, or accounted for in terms of causes, as they do not occur according to repeated and predictable sequences, or as empirically testable regularities. Consequently, social theories cannot be used to explain and/or predict social phenomena. They can only try to offer “interpretations” of these phenomena, or try to “make sense” of what they mean in the context of their own occurrence.<sup>4</sup> If we were to ask, for example, “why is the colour of the skin the cause of social inequality?,” a humanist’s answer would not be given in terms of a law-like generalization. The colour of the skin is not just a fact, that is a natural connotation. What needs to be considered, more specifically, are the meanings and points of views which people entertain about this purported “fact.” It is “because” of them that we can interpret the colour of the skin as being the observable cause of social inequality. The colour of the skin on its own is not the cause of anything. To be able to say why/how meanings and points of view turn the colour of the skin into a cause of social inequality, so we are here told, we ought to make them intelligible as forms of social practice, to make sense of them in the light of other interpretations and social meanings, and ultimately to understand them in terms of their conceptual, cultural, symbolic connections. All this – we are led here to believe – can hardly be done by, say, performing experiments. The consequence of embracing this perspective would be that of turning the social sciences into, effectively, a branch of philosophical inquiry.

4. *The social sciences are sciences* provided that an image of science different from the empiricist/positivist one is advocated. An alternative image should purportedly be able to take on board some of the specific features which the humanists rightly attribute to social phenomena (meanings, intentions, etc.) without necessarily giving up the empirical/causal side of social scientific research. As the critical realists argue (in line with scientific realism), science does not deal with observable facts only, but more specifically with entities, processes and micro-structures, which (often unobservable) are responsible for what we observe. For example, we cannot observe electrons, but we take them to be responsible for the behaviour of matter. Equally, in the social domain, political power cannot be observed as such, but on the assumption that it exists a whole series of socially observable phenomena would become explainable (the behaviour of certain classes of individuals, actions undertaken by states, etc.). Of course there is a difference between the natural and social domains:

<sup>4</sup> See, for instance, Winch [1961].

unobservable processes and mechanisms exist independently of human beings in the natural world, whereas they are at least partly dependent on human beings in the social world. However, it is claimed, once each type of entities or mechanisms are appropriately identified and defined, then the explanations we can offer follow the same path (usually a causal path: to explain what happens at the level of what we observe we resort to its unobserved/unobservable causes, while trying to provide evidence that the latter exist in some form which accounts for what we can observe).<sup>5</sup> Following this perspective, natural science retains some paradigmatic value, and social science becomes a branch of this revised paradigm of science without being reduced to one of the natural sciences (as in the case of sociobiology).

5. *The social science are sciences* just like the natural sciences in that their objects of inquiry are, just like in the latter, “socially constructed.” Different varieties and generations of social constructivists reject the well rehearsed distinction between natural scientific facts being “real” (part of the furniture of the world, so to speak) and social scientific facts being “invented” (creations of human beings). Quite to the contrary, it is here argued, all facts (natural and social) are constructed. All sciences “invent” the objects they refer to, according to how the sciences themselves have developed, and how they have brought certain objects of inquiry to bear on the explanations of the problems suggested by their theories. Contrary to our deeply rooted intuitions, even when we deal with the entities and mechanisms of, say, physics, nothing is “real” in the sense advocated by realists. As, for example, Pickering’s discussion of quarks points out, quarks are what they are because physics evolved the way it did, and elicited certain phenomena construed as evidence for the existence of quarks. However, physics could have evolved differently. According to Pickering [1984], its evolution was contingent, and contrary to what many scientists would claim, its historical development was not inevitable. If we follow this perspective, we find ourselves in a sort of reversal of the direction of comparison between natural and social science. It is now social facts which become a paradigm for what we should take natural facts to be. Science stays as a category for identifying certain fields of inquiry, but the status of the disciplines which fit into this category has been radically changed. “Science” becomes a category “unmasked.”

### **Should we still compare?**

This sketchy and simplified reconstruction of the various forms taken by the comparative strategy points at a series of interesting as well as crucial issues. These

<sup>5</sup> See Bhaskar [1979].

issues, arguably, should be taken on board by any “science of the social” in view of furthering the discussion over what methodological image most suits its domains of research. In other words, the comparative strategy should not be seen only as a straightjacket, but as a source of fruitful reflection on a number of levels of analysis.

A first level is *ontological*. What we can learn from the debate on constructivism is the importance of reflecting over the nature of the *object* of scientific inquiry as a preliminary to any discussion of how the inquiry itself is to develop (methodologically, and/or in practice). Constructivism at least alerts us to the fact that the nature of such an object is partly “constructed.” Construction is not necessarily a bad feature, which detracts from the reality of the object (as the most radical versions of constructivism might lead us to believe). It might instead be used to point at the fact that “objects” become “referents” of a science as a consequence of the scientists’ interests, lines of questioning and techniques of salience and embeddedness in research practice.

The world of any science is never a static reservoir of given objects. It is rather, as for example Daston [2000] argues, a dynamic world – a world made up of objects which “come into being” or “fade away” as referents of epistemic inquiry, depending on how epistemic inquiry itself develops. This does not mean necessarily that the objects of scientific inquiry are entirely a creation of the scientist (as radical constructivism would claim), and therefore that they are not real. It might instead be taken to mean that their reality can only be accessed via the theoretical and practical resources made available, in relevant ways, by the domains of inquiry which deal with various aspects of reality. It is because of this that we can say, without fear of contradiction, that scientific objects are at the same time real and constructed. This, though, should not at the same time make us conclude that all scientific objects are ontologically the same. The interesting outcome of a perspective of this sort consists, I believe, of taking a further, crucial step: trying to understand how the relation between reality and construction differently occurs not only in different sciences, but also in different domains of inquiry. Social objects are not the same as natural objects, even if they share the common ontological framework outlined above.<sup>6</sup> Conversely, saying that all objects are partly real and partly constructed should not make us lose sight of the various ways in which reality interacts with constructions in specific domains and within specific sciences.

A second level is *methodological*. Once the preliminary emphasis is put on what objects an inquiry refers to, the choice of what methods to employ can only be ob-

<sup>6</sup> This is an aspect intentionally overlooked by Daston, but which we find interestingly addressed in, though differently analysed by, both Searle [1995] and Hacking [1999], as well as the critical realists.



ject-dependent. No procedures of investigation can be given any priority in principle, as objects can be identified in a plurality of ways, and questioned from a plurality of angles. This pre-empts the comparative strategy from the very start, and can be used as a criticism of any methodological view based on an either-or choice (either quantitative or qualitative; either causal or interpretative; either gene or culture-driven, etc.). This also becomes particularly important when we try to assess the “objectivity” of an inquiry. Being “objective” and being “scientific” (as a received paradigm of science has acquainted us to) are no longer to be treated as equivalent.

A third level is *epistemological*. As the comparative strategy reminds us, the social sciences have traditionally been under pressure to emulate the natural sciences and to turn the referents of their inquiries into “true natural kinds.” However, for this to be possible the social sciences had to endorse an epistemological picture which simply proves inadequate to their domain – namely, that there is an object to be searched out, the right kind, the kind that is true to nature, a fixed target. This has skewed the parameters of what a correct epistemology for the social sciences should amount to. More emphatically, it has been suggested that this has locked the social sciences in a battle they have no hope to win [Flyvbjerg 2001]. In the light of the issues raised in this article, it should be clear that if an epistemological comparison has any function at all, this should not be as a way to penalise social inquiry for inadequately fitting a “scientific image.” It should rather be viewed as a means to single out what is missing from that image as a resource of theorizing and domain-specific research for social inquiry.

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**Abstract:** The history of the social sciences is replete with attempts at trying to imitate, more or less successfully, the methods, logic and techniques of the natural sciences – or at least to comply with what a certain image of the natural sciences had established to be the paradigm for science. Do such attempts still make sense in the present arena? What do old attempts tell us about the status of the sciences of the social and their specific methodological / ontological / epistemological aspects? In this article it is argued that if a comparative strategy were to maintain a function, it should be not to single out what is missing from social science in order to qualify as “science.” It should rather point out what and how specific features of the social world qualify for a scientifically domain-conscious type of analysis.

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*Keywords:* comparative strategy, empiricism, constructivism, scientific realism, scientific objects, objectivity, sociobiology.

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