

Strategies of research and methodological pluralism: the significance of theories and the role of social values in the objectives of science

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Extended abstract

In Laudan's reticulated model of scientific change, the aims of science are understood as exclusively cognitive ones, namely as cognitive values. These values must be manifested in accepted theories and promoted by scientific methods. Any non-cognitive aim can never make part of scientific axiology, given that disagreements about which non-cognitive aims should be adopted could not be resolved in a rational debate. Moreover, for this author, non-cognitive values do not contribute for the success of science; that is, social and ethical values do not have a role in the process of making scientific knowledge more precise or capable of making reliable predictions (among other cognitive aims).

Lacey has a similar account of the objectives of science. He believes that the objective of science includes the acceptance of theories that manifest cognitive values in high degree, once that "the cognitive values (i.e., to obtain theories that manifest them) is constitutive of the cognitive ends of scientific practices. Nevertheless, there is a divergence between the authors in this point. For Lacey, the manifestation of cognitive values does not constitute the single aims of science. The reason presented by the author is that the manifestation of cognitive values contributes only partially to the realization of the objective of science. In Lacey's analysis, he also includes the understanding of relevant phenomena for human experience and social life among the goals of science. To know what these phenomena are, it is necessary an analysis of human experience itself, in order to know their significance in human's practical life.

However, there are two questions involved in such analysis. First, it is important to consider the significance of phenomena, since "significance" is a social value that may vary according to the agents that make such analysis. Then, it is necessary to investigate the relevant phenomena as making part of a social, historical, economical and ecological context. To answer both questions, one cannot use strategies that dissociate phenomena

from human practices and contexts. In consequence, to obtain theories that manifest the cognitive values in a high degree does not suffice, in Lacey's account, to promote the objectives of science, since that it is necessary to investigate, under the appropriate strategies of research, the relevant phenomena to human lives and practices and consider what their applications will be.

In order to obtain understanding of the relevant phenomena, it is necessary to conduct scientific inquiry with the appropriate methods to do so. Strategies have a methodological role, for it restricts the admissible kinds of theories and also selects the relevant data, determining the aspects of phenomena that will be considered in an object of investigation. Therefore, the adoption of a strategy is attached to the interests and, consequently, to the objectives of the scientists engaged in a particular research. The decision to adopt a strategy aims the manifestation of certain cognitive values in theories, but also of non-cognitive values in society. Lacey argues that strategies constrain the aspects of research that will be investigated, under which aspects, and the appropriate methods to research them. In this way, strategies that investigate the objects in terms of an underlying order, in its physical and chemical properties, are not adequate to investigate phenomena as being part of human lives, but for phenomena that are abstracted from them.

In the reticulated model, methods work as hypothetical imperatives. The rules must exhibit the realizability of cognitive values, selecting theories that manifest those values. In one hand, there is an imperative aspect in methods because they must realize the goals of science. On the other hand, there is also a hypothetical aspect because methods must show ability to realize the aims through theory selection. In what concerns this dynamics, we can find a similarity between the role of methods in the reticulated model and in the strategies of research: the latter must prove to be appropriate to realize the objectives of science (both cognitive and social ones) and different strategies are required to do so. Both models admit the empirical evaluation of methods, being possible to change them in case that they do not show themselves appropriate to accomplish the desired ends.

According to Laudan, if there weren't different methods capable of promoting the same cognitive aims, then there wouldn't be rational grounds for controversies about which methods to adopt. In this aspect, both models are similar, because Lacey believes that a plurality of strategies should be adopted. According to Lacey, different strategies can

produce theories that manifest cognitive values in high degree. In fact, only if science is conducted under a plurality of strategies of research it will be possible to investigate a larger number of phenomena in its different aspects. Moreover, the methodological plurality is associated with the idea that progress is not neutral, since it is always in the direction of some cognitive and non-cognitive values, and not all of them. In order to manifest more cognitive values in scientific investigations, different strategies must be developed to produce more understanding of phenomena. To sum up, both authors believe that there is no reason to adopt a few kinds of methods to realize the cognitive ends of science. In addition, for both Lacey and Laudan, there isn't a single aim for science, but there is a diversity of admissible ends, and a wide range of possible means to reach them.

The major difference between those models, though, is that Laudan's model does not contemplate applications of theories, while Lacey's model does. In this level of science, it is possible to raise some relevant questions related to the legitimacy and the ethical implications of the applications – as something distinct from the efficacy. The evaluation of social (direct and indirect) risks is extremely pertinent and is of great significance in humans' lives and practices. Even though these evaluations involve non-cognitive values, they can also present empirical and rational grounds to change the strategies of investigation and the directions of applications.