

# Laudan, Intuition and Normative Naturalism

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*Abstract:* The aim of this paper is to document Laudan’s rejection of the appeal to intuition in the context of his development of normative naturalism. At one point in the development of his methodological thinking, Laudan appealed to pre-analytic intuitions, which might be employed to identify episodes in the history of science against which theories of scientific methodology are to be tested. However, Laudan came to reject this appeal to intuitions, and rejected this entire approach to the evaluation of a theory of method. This is an important stage in the development of his normative naturalist meta-methodology.

*Keywords:* Epistemic normativity; meta-methodology; method; theory-change.

## 1. Introduction

What is the relationship between intuition and the theory of epistemic normativity? For some, intuition enables us to explore our concept of knowledge or justification (e.g. Goldman 2007). For others, intuition serves only to identify obvious and uncontroversial items of knowledge (e.g. Kornblith 2002, 10–11). For still others, intuition is unable to play an evidential

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role because it is influenced by philosophically irrelevant factors (e.g. Weinberg, Nichols and Stich 2001). In this paper, I consider an episode from the recent history of the philosophy of science in which appeal to intuition was rejected precisely in order to develop a theory of epistemic normativity.

The episode relates to the proposal in the 1970's of opposing models of scientific theory-change by Imre Lakatos and Larry Laudan. In the attempt to provide a rational account of the dynamics of theory-change, Lakatos proposed a methodology of scientific research programmes on which scientists adopt progressive while rejecting non-progressive research programmes (Lakatos 1970). To overcome perceived shortcomings with Lakatos's model, Laudan developed an account of scientific research traditions, which he combined with a problem-solving model of scientific rationality. To assess competing theories of the methodology of science, Lakatos and Laudan both saw a need to identify earlier episodes in the history of science against which the theories might be tested. For Lakatos, it was the "value judgements" of the scientific elite (e.g. Lakatos 1978, 124), while, for Laudan, it was the "pre-analytic intuitions" of "scientifically educated people," that are employed to identify the episodes.<sup>1</sup>

Serious questions arise in relation to the evidential role that may be played by such value-judgements and pre-analytic intuitions. Laudan came to recognize that the appeal to intuition is confronted with severe problems. Given this, he rejected the appeal to intuitions, and developed instead his normative naturalist meta-methodology.<sup>2</sup> Thus, Laudan's development of a naturalistic approach to the normative appraisal of methodological criteria formed part of his rejection of the appeal to intuition. In this paper, my aim is to document Laudan's rejection of intuition in the context of his proposal of a naturalistic theory of epistemic normativity. Though largely historical in substance, the paper has the systematic intent of suggesting that appeal to intuition may be avoided in the theory of epistemic normativity.

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<sup>1</sup> For discussion of Lakatos's appeal to value judgements, see (Sankey 2018).

<sup>2</sup> For detailed analysis of Laudan's normative naturalist meta-methodology, see Nola and Sankey (2007, especially section 12.2).

## 2. Laudan and pre-analytic intuitions

In 1977, Laudan published *Progress and its Problems*, in which he proposed a model of scientific theory-change in the attempt to improve upon Lakatos's model of theory-change.<sup>3</sup> Like Kuhn and Lakatos, Laudan thought that scientific development rests on underlying theoretical structures which inform research in an area of science for extended periods of time. Laudan called these theoretical structures "research traditions." Like Lakatos, Laudan took there to be 'core' elements within a research tradition. But, unlike Lakatos, he allowed that the core elements of a research tradition may be modified or replaced over time (1977, 99). Laudan conjoined his model of theory-change with a novel problem-solving account of rationality.<sup>4</sup> This involves the idea that science is fundamentally a problem-solving activity. As such, "the aim of science is to maximize the scope of solved empirical problems while minimizing the scope of anomalous and conceptual problems" (1977, 66).<sup>5</sup> Given this characterization of the aim of science, what it is to be rational in science is to act in a way that increases the problem-solving effectiveness of a research tradition (1977, 124–5).

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<sup>3</sup> By starting my discussion of Laudan with *Progress and its Problems*, I pass over his collection of historical essays on theories of method, *Science and Hypothesis*. The reason is that I wish specifically to focus on the transition away from the intuitionist meta-methodology that Laudan shared with Lakatos at the time of writing *Progress and its Problems*. For parallels and contrasts between the intuitionism of Laudan and Lakatos, see Laudan (1986, especially 124–6).

<sup>4</sup> Though others (e.g., Popper and Kuhn) thought of science as a problem-solving activity, Laudan developed this insight into an explicit theory of rationality.

<sup>5</sup> In spelling out the problem-solving conception of rationality, Laudan develops a taxonomy of problems (1977, chapters 1 and 2). Empirical problems are substantive questions that arise with respect to the objects in a domain of scientific study. Unsolved empirical problems are not solved by any research tradition. A solved problem is solved by at least one research tradition. It thereby becomes an anomaly for a competing research tradition so long as it is unsolved by the latter tradition. By contrast with empirical problems there are conceptual problems, either internal ones (e.g. inconsistency, ambiguity or circularity) that arise within a tradition, or external ones which arise due to a conflict between a tradition and another theory or tradition, a methodological view or even a non-scientific world-view.

Though a scientist may pursue a range of theories or traditions, it is rational for a scientist to accept the research tradition which displays the highest degree of success in solving problems (1977, 109).<sup>6</sup>

Lakatos spoke of value judgements rather than intuitions. By contrast, Laudan does explicitly employ the term ‘intuition,’ though he sometimes speaks of judgements and convictions as well. He proposes that a model of scientific rationality is to be tested against key episodes from the historical development of the sciences.<sup>7</sup> A number of cases may be specified from the history of science about whose rationality or irrationality we have clear intuitions. The intuitions which relate to the resulting list of cases give rise to a set of “preferred pre-analytic intuitions about scientific rationality” (1977, 160). This set of pre-analytic intuitions may serve as touchstone in the evaluation of a theory of method or rationality. It is a necessary condition of adequacy for a theory of method or rationality that it fit with the set of pre-analytic intuitions. In a particularist spirit akin to Lakatos, the intuitions relate to specific episodes in the history of science.<sup>8</sup> Like Lakatos, Laudan holds that we have clearer intuitive reactions to particular cases than with respect to abstract theories of method or rationality. Unlike Lakatos, Laudan takes the intuitions to relate to a small set of cases rather than, potentially, the whole history of science. In a further departure from Lakatos, Laudan makes no appeal to the judgements of elite scientists. Instead, he speaks of “scientifically educated persons” (1977, 160).

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<sup>6</sup> Laudan usefully distinguishes pursuit from acceptance (1977, 108–10). In the context of pursuit, a scientist might explore a promising theory or research tradition without being fully committed to it. Acceptance involves a stronger degree of commitment, e.g. taking a theory to be true.

<sup>7</sup> At this stage, Laudan often speaks of a theory of rationality rather than a theory of method. However, methodological considerations play a role in his problem-solving conception of rationality. For example, an external conceptual problem may arise for a tradition if it comes into conflict with an accepted principle of scientific methodology (1977, 57–61). As we shall shortly see, Laudan later takes the view that the theory of rationality is to be sharply distinguished from the theory of method.

<sup>8</sup> For analysis of particularist elements of Lakatos’s approach to meta-methodology, see my (2018), which brings Lakatos’s approach into contact with the epistemological particularism of Roderick Chisholm (1973).

Laudan's account of the role that intuition may play in the evaluation of a theory of method was subject to significant criticism.<sup>9</sup> As a result, Laudan renounced his intuitionism, ultimately going on to develop a naturalistic meta-methodology instead. In 1986, Laudan published a response to a critical paper by Daniel Garber (1986), in which Garber questioned the role of the history of science as opposed to that of our own intuitions in the evaluation of theories of method. In his response, Laudan replied in concessive spirit to Garber's objections while at the same time repudiating the intuitionist approach he had previously adopted. Laudan raised a number of concerns about the appeal to intuitions (1986, 123 ff.). For one thing, he points out that if a theory of method is grounded in a set of pre-analytic intuitions, the capacity for the theory of method to serve as basis for criticism of those grounding intuitions is severely limited. It would not be possible to reject the intuitions on the basis of the theory of method, since the sole basis for adoption of the theory of method in the first place is its conformity with those very intuitions. For another thing, Laudan notes that intuitions are not always universally shared with respect to methodological questions. Given lack of unanimity with respect to intuition, an appeal to specific cases can hardly be expected to resolve disagreement with respect to methodological matters. Furthermore, even if there were to be agreement in intuition, it is entirely possible that competing theories of method may fit with all the same historical cases picked out by the shared intuitions. Having presented these and other reasons for rejecting the intuitionist approach, Laudan concludes by indicating that an alternative approach lies "ready to hand" (1986, 126). He does nothing at that point to characterize this alternative, though it seems likely that he was thinking of the normative naturalist meta-methodology that he went on to develop in subsequent years.<sup>10</sup>

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<sup>9</sup> For example, Janet Kourany raises questions about the relevance of the intuitions of "scientifically educated persons": such intuitions may fail to reflect the rationality of actual science, differ from notions of rationality found at earlier periods in the history of science and, given their origin in a person's science education, potentially constitute evidence that is lacking in neutrality (Kourany 1982, 535–6).

<sup>10</sup> In fact, Laudan refers to a "monograph-length treatment" entitled *Science and Method* on which he was working. So far as I am aware, no such monograph did materialize. But papers on normative naturalism start to appear the following year.

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### 3. Laudan's normative naturalism

The year after the response to Garber, Laudan's major articulation of the normative naturalist position was published (1987).<sup>11</sup> By contrast with *Progress and its Problems*, Laudan now distinguishes sharply between a theory of rationality and a theory of method. This is primarily due to the fact that the rationality of an action depends on an agent's aims and background beliefs, and methodological rules may be employed by scientists in an attempt to attain their cognitive aims. It would be inappropriate, therefore, to judge the rationality of scientists of an earlier epoch by attempting to determine whether they employed the methods which we currently adopt to pursue our aims, given that the earlier scientists might have adopted neither our methods nor our aims. Equally, a scientist of an earlier period might have held substantively very different beliefs from ours. Even if they did share our aims, they might have had different beliefs about how to achieve those aims, whether or not they shared our methodological views.

A sharp distinction between questions of rationality and method brings out the fatal flaw in the intuitionist approach to the appraisal of theory of method. The attempt to evaluate a theory of method by determining whether it counts the actions of an earlier scientist as rational is quite wrong-headed. As Laudan notes:

Because our aims and background beliefs differ from those of past scientists, determinations of the rationality of their actions and of the soundness of our methodological proposals cannot be collapsed into one and the same process. Rationality is one thing; methodological soundness is quite another. (1987, 23)

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<sup>11</sup> I will not attempt to bring Laudan's 1984 book, *Science and Values*, into this discussion of the development of his ideas. That would detract from the focus on the development of his meta-methodological views. Suffice to say that the reticulated model that he presents in *Science and Values* is primarily designed to provide an account of the rational evaluation of variable cognitive aims. There is a closer connection between the reticulated model and normative naturalism than is immediately apparent. For the naturalistic approach to the evaluation of methodological rules may be readily integrated into the reticulated model.

The result of enforcing a sharp distinction between rationality and method is that the appraisal of a theory of method comes apart from questions of the rationality of past scientists. The problem, now, is how to determine the soundness of a theory of method. This is where Laudan's turn to naturalism comes in.

The key to Laudan's naturalistic approach is the suggestion that the rules of method may be construed as hypothetical imperatives. Specifically, Laudan proposes that a rule of method has the form, "If one's goal is *y*, then one ought to do *x*" (1987, 24), where the goal is a cognitive or scientific goal, and what one ought to do is to employ some proposed method or procedure. This construal of the logical form of a rule of scientific method has the decided advantage of making empirical considerations relevant to the appraisal of methods. For a rule of method now rests on a substantive empirical claim to the effect that the employment of a specific method will lead to the realization of a specific desired cognitive or scientific end. Such a claim may be true or false, depending on how the world in fact is. Moreover, it is in principle possible to obtain empirical evidence for the truth or falsity of the empirical claim embedded in the rule of method. The upshot is that it is possible to provide empirical evidence of the extent to which a rule of method is an effective means of attaining a desired cognitive end.

On the intuitionist approach, a theory of method is to be evaluated in terms of whether it reveals selected episodes in the history of science as rational. Laudan now rejects both the appeal to intuition and the role of rational reconstruction in the appraisal of method. Nevertheless, the history of science continues to play a crucial role in determining the soundness of a rule of method. For, rather than appeal to intuition or the rationality of past scientists, the appraisal of a methodological rule now turns on the empirical question of whether use of the rule conduces to its purported aim. This is an empirical matter which turns on historical matters of fact. Investigation of the history of past science may reveal whether or not utilization of a specific rule of scientific method has in fact led to the realization of the aim to which it was thought to lead. Thus, even while rejecting the intuitionist appeal to past science, Laudan's normative naturalist meta-methodology accords history of science a crucial role in the appraisal of rules of method.

Laudan's approach to the empirical appraisal of rules of method is strongly naturalistic precisely in virtue of the way it treats the appraisal of the rules of method as an empirical matter. But such a naturalistic approach does not render epistemological questions a matter of descriptive psychology in the manner at one point seemingly suggested by Quine.<sup>12</sup> Rather, Laudan's naturalism is a *normative* naturalism on which the rules of method have normative force. They convey normative force because their employment does in fact conduce to desired cognitive ends. A scientist whose belief or theory-choice conforms with such rules thereby possesses epistemic warrant with respect to the belief or theory-choice precisely in virtue of their conforming with rules that lead to desired cognitive ends. Thus, Laudan's normative naturalist meta-methodology constitutes a strongly naturalistic epistemological theory about the basis of the epistemically normative force of the rules of scientific method.

#### 4. Conclusion

In this short paper I have sought to document how critical reflection on the role of intuition contributed to the turn to normative naturalism in the work of Larry Laudan. As we have seen, Laudan was critical of the role that might be played by intuition in relation to the theory of scientific method and the rationality of science. At one level, this is a historical point in relation to the development of Laudan's methodological thought. At another level, the lessons of this episode seem to me to have significant negative implications for the appeal to intuition in the context of a theory of epistemic normativity.

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<sup>12</sup> Quine (1969, 82-3) is sometimes read as a purely descriptive, anti-normative position, though other passages suggest an alternative more strongly normative interpretation (e.g. 1992, 19-20).

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