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COGNITIVE AND NON-COGNITIVE VALUES IN SCIENCE: RETHINKING THE DICHOTOMY[1]

INTRODUCTION

Underdetermination arguments support the conclusion that no amount of empirical data can uniquely determine theory choice. The full content of a theory outreaches those elements of it (the observational elements) that can be shown to be true (or in agreement with actual observations).[2] A number of strategies have been developed to minimize the threat such arguments pose to our aspirations to scientific knowledge. I want to focus on one such strategy: the invocation of additional criteria drawn from a pool of cognitive or theoretical values, such as simplicity or generality, to bolster judgements about the worth of models, theories, and hypotheses. What is the status of such criteria? Larry Laudan, in *Science and Values*, argued that cognitive values could not be treated as self-validating, beyond justification, but are embedded in a three-way reticulational system containing theories, methods, and aims or values, which are involved in mutually supportive relationships (Laudan, 1984). My interest in this paper is not the purportedly self-validating nature of cognitive values, but their cognitive nature. Although Laudan rejects the idea that what he calls cognitive values are exempt from rational criticism and disagreement, he does seem to think that the reticulational system he identifies is independent of non-cognitive considerations. It is this cognitive/non-cognitive distinction that I wish to query in this paper. Let me begin by summarizing those of my own views about inquiry in which this worry about the distinction arises.

CONTEXTUAL EMPIRICISM

I've argued for a view I call contextual empiricism, according to which empirical, that is, observational and experimental, data constitute the least defeasible grounds of theory assessment. This much is the empiricism of the view. But data underdetermine the theories, models, and hypotheses for which they serve as evidence. Theories and hypotheses always overreach available data. More crucially, the content (and language) of data descriptions and of explanatory hypotheses are different. For example, data can consist of correlations while hypotheses assert causal relations among correlated items. Thus, no purely formal relations can be established between them. Evidential relevance of data is secured instead by background assumptions, with the consequence that the same data can in different contexts serve as evidence for different hypotheses. This is the contextualism of the view.

L. H. Nelson and J. Nelson (eds), Feminism, Science, and the Philosophy of Science, 39–58.

Contextual empiricism invites the question what controls background assumptions. If scientific reasoning is so porous to context, what prevents theories from being entirely subjective? My answer, in *Science as Social Knowledge* (Longino, 1990), was that critical interactions among scientists of different points of view were required to mitigate the influence of subjective preferences on background assumptions and hence theory choice.

While intersubjective interaction is a necessary feature of scientific cognition, not just any form of interaction will do. If the point of intersubjective interaction is to transform the subjective into the objective, then those interactions must not simply preserve and distribute one subjectivity over all others, but must constitute genuine and mutual checks. This end can be served by specifying features of the design and constitution of a community that facilitate transformative criticism and enable a consensus to qualify as knowledge. Four such features can be identified.

(1) There must be publicly recognized forums for the criticism of evidence, of methods, and of assumptions and reasoning.

(2) There must be uptake of criticism. The community must not merely tolerate dissent, but its beliefs and theories must change over time in response to the critical discourse taking place within it.

(3) There must be publicly recognized standards by reference to which theories, hypotheses and observational practices are evaluated and by appeal to which criticism is made relevant to the goals of the inquiring community. Such standards serve as ideals regulating normative discourse in a community. That is, by explicitly or implicitly professing adherence to those standards individuals and communities adopt criteria of adequacy by which their cognitive activity may be evaluated. The satisfaction of goals of inquiry is not ascertained privately, but by evaluation with respect to shared values and standards. This evaluation may be performed by anyone, not just by members of the community sharing all standards. Furthermore, standards are not a static set, but may themselves be criticized and transformed, in reference to other standards, goals, or values, held temporarily constant. Indeed, the presupposition of reliance on such standards is that they have survived similar critical scrutiny.

(4) Finally, communities must be characterized by equality of intellectual authority. What consensus exists must be the result not of the exercise of political or economic power, or of the exclusion of dissenting perspectives, but a result of critical dialogue in which all relevant perspectives are represented. This criterion is meant to impose duties of inclusion; it does not require that each individual, no matter what their past record or state of training, should be granted equal authority on every matter.

Discursive interactions reduce the likelihood that the idiosyncratic preferences of individuals will be incorporated in the public body of scientific knowledge. While they cannot eliminate background assumptions altogether, discursive interactions conducted in and among communities satisfying the above conditions not only eliminate the idiosyncratic but insure that no set of assumptions dominates simply by virtue of its commonality or invisibility. The public standards mentioned in con-