CONTINGENT VERSUS CONSTITUTIVE SOCIALITY OF SCIENTIFIC INQUIRY

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There are two ways of thinking about the social dimensions of scientific knowledge: contingent or constitutive. According the contingent view, it is a matter of fact that scientists are located in communities and accept content as a result of their interactions with each other (or, in an alternative formulation, that some knowledge is produced by scientists working in groups or in institutions). This sociality may speed up the processes of knowledge production, but has no real relation to the nature of knowledge or to the quality of the knowledge produced in the community. If values are involved in science, their proper role is in agenda setting, not in the process of research. According to the constitutive view, a normative social element as part of the meaning of "knowledge." Epistemic acceptability of content (or epistemically justified acceptance of content) presupposes the satisfactory performance of certain kinds of social interactions. The normative notions central to common understandings of "knowledge", such as truth and justification or (in my preferred locutions) conformation and epistemic acceptability, involve both traditional evidential norms *and* norms of effective critical interaction, indeed evidential norms, properly understood, include those social norms.

I have developed this constitutive approach in a view I call Critical Contextual Empiricism (Longino, 2002). Data (measurements, observations, experimental results) acquire evidential relevance for hypotheses only in the context of background assumptions. These acquire stability and legitimacy through surviving criticism. Justificatory practices must therefore include not only the testing of hypotheses against data, but the subjection of background assumptions (and reasoning and data) to criticism from a variety of perspectives. Thus, intersubjective discursive interaction is added to interaction with the material world under investigation as components of methodology. From a normative point of view this means articulating conditions for effective criticism, typically specifying structural features of a discursive community that ensure the effectiveness of the critical discourse taking place within it. I have suggested four such conditions: a) the provision of venues for the articulation of criticism, b) uptake (rather than mere toleration) of criticism, c) public standards to which discursive interactions are referenced, d) equality (or tempered equality) of intellectual authority for all members of the community.

The public standards that regulate the discursive and material interactions of a community are both provisional and subordinated to the overall goal of inquiry for a community. Truth simpliciter cannot be such a goal, since it's not sufficient to direct inquiry. Rather, communities seek particular kinds of truths. They seek representations, explanations, technological recipes, etc. Researchers in biological communities seek truths about the development of individual organisms, about the history of lineages, about the physiological functioning of organisms, about the mechanics of parts of organisms, about molecular interactions, etc. Research in other areas is similarly organized around specific questions. Which kinds of truths are sought in any particular research project is determined by the kinds of questions researchers are asking and the purposes for which they ask them, i.e. the uses to which the answers will be put. Different sets of heuristics (consisting of rules of data collection (including standards of relevance and precision), inference principles, and the epistemic or cognitive values) will satisfy the different cognitive goals. Truth is not opposed to social values, indeed it is a social value in the sense that it is a social demand on scientific inquiry that it provide truths rather than falsehoods, but its regulatory function is directed/mediated by other social values operative in the research context.

On the contingent view, plurality of hypotheses and theories is a temporary feature at some stages of inquiry and is resolved by further evidence. On the constitutive view, as developed in CCE, plurality may be

an ineliminable feature of inquiry. Other philosophers have advanced pluralism as a view about the world, i.e. as the consequence of a natural complexity so deep that no single theory or model can fully capture all the causal interactions involved in any given process. While this may be the case, the epistemological position I am advocating is merely open to pluralism in that it does not presuppose monism. It can be appropriate to speak of knowledge even when there are ways of knowing a phenomenon that cannot be simultaneously embraced. Whether or not it is appropriate in any given case depends on satisfaction of the social conditions of knowledge mentioned above. When these are satisfied, reliance on any particular set of assumptions must be defended in relation to the cognitive aims of the research. These are not just a matter of the individual motivations of the researchers but of the goals and interests of the communities that support and sustain the research. On the constitutive social view all of these must be publicly sustained through survival of critical scrutiny. Thus, social values come to play an ineliminable role in certain contexts of scientific judgment.

A second point of contrast has to do with how feminist approaches to science are framed. On the contingent view, the feminist issues have to do with equity – increasing the representation of women in science – and agenda setting -- ensuring that questions that matter to women's welfare are including in the research agenda. Some of feminist interventions have indeed been about agenda setting: protests against studying the biological basis of alleged sex differences in ability or behavior when the average differences between men and women are so small, or agitation to get women included in clinical trials. But much feminist work has concerned the content of particular sciences or subfields. Here feminists challenges were sometimes focused on the quality of evidence for views about gender differences, but in other cases, it was the framework of interpretation that was in question. The methods of data collection and evaluation employed were in line with the standard in other areas of inquiry, but because the assumptions that governed the interpretation were gender biased, so were the conclusions. In physical anthropology, feminists challenged the man-the-hunter model of human evolution, exposing the androcentric assumptions that facilitated reading the fossil record as a record of masculine behavior as well as proposing an alternative model: woman-the-gatherer. In neuroendocrinology, feminists challenged the classification of gonadal steroids in sex-dichotomous ways, challenged the reasoning and assumptions attributing purportedly sex-differentiated behavior to sex-differentiated hormone exposure, challenged the assumptions underlying views about the distributions and frequencies of certain behaviors. Still other feminists took on the epistemic or cognitive values that were employed in the description of data and assessment of hypotheses.

The point is not that there is in any and every case a feminist alternative that the community settles on as supported by the preponderance of evidence. For one thing, there may be several feminist alternatives. And there may be gender neutral or gender egalitarian alternatives. The feminist interventions, carried out by scientists, historians, and philosophers, were instrumental in dislodging embedded assumptions and values and they were effective in doing so because a feminist movement outside the sciences was challenging those same assumptions. The issue was not the simple empirical issue of which approach had greater evidential support, but the deeper issues of what the evidence was and why data did or did not count as evidence. When we understand science as contingently social, the persistence of gender biased work is understood as the persistence of bad science. This requires showing that there were indeed methodological mistakes being made. When we understand science as constitutively social, we see the work of the feminist critics as a dimension of the critical interaction that is part of the way science, at its best works.

REFERENCES

Longino, H. (2002). *The fate of knowledge*. NJ: Princeton University Press.