



**home**

... about  
... news  
... links  
... giving  
... contact

**events**

... calendar  
... lunchtime  
... annual lecture series  
... conferences

**people**

... visiting fellows  
... resident fellows  
... associates

**joining**

... visiting fellowships  
... resident fellowships  
... associateships

**being here**

... visiting  
... the last donut  
... photo album

***Integrative pragmatism and scientific inquiry***

Melinda Fagan

In this paper, I propose a new way to integrate historical accounts of social interaction in scientific practice with philosophical examination of scientific knowledge. The relation between descriptive accounts of scientific practice, on the one hand, and normative accounts of scientific knowledge, on the other, is a vexed one. This vexatiousness is one instance of the gap between normative and descriptive domains. The general problem of the normative/descriptive divide takes striking and problematic form in the case of social aspects of scientific knowledge. With respect to this issue, history and philosophy of science appear starkly incompatible. I show how this dualism can be overcome, drawing on social action theory and the recent history of cellular immunology.

Our actual scientific practices, past and present, are pervaded by social interactions at every stage of knowledge-generation (e.g., selection of questions, development of methods and standards for inquiry, acceptance of results as knowledge). The distinction between knowledge and opinion is no exception. Epistemic standards by which scientific knowledge is, in actual practice, distinguished from opinion emerge from social interactions and vary across socio-historical contexts. Though changes in such contexts and the associated epistemic standards can be described, an historical approach to the social epistemology of science leaves no place for any criterion or principle according to which such changes could be epistemically evaluated. Yet such a principle, marking the distinction between knowledge and opinion, is the sine qua non of normative epistemology, as conceived by philosophers of science in the logical empiricist and analytic tradition.

History and philosophy of science thus appear at odds, with respect to the epistemic relevance of social aspects of scientific practice. Partisans of 'comparative' or historical epistemology proclaim the end of epistemology as we know it (e.g., Fleck 1979, Shapin 1994, Kusch 2002). Defenders of normative epistemology in the analytic tradition declare (some) social aspects of scientific practice irrelevant to epistemology (e.g., Kornblith 1994, Goldman 1999, Kitcher 2001). But principled grounds for such exclusion are lacking (as these defenders have recently acknowledged; see Goldman 2002, Kitcher 2004). Exemplary attempts by Solomon (2001) and Longino (2002) to reconcile historical and philosophical approaches in social epistemology of science do not bridge the gap, but fall into a dilemma reprising the original impasse: either fail to engage our actual social practices, or collapse into description of socio-historical facts.

Available normative accounts of scientific knowledge and justification thus do not engage the social aspects of our scientific practices. So disconnected, such accounts offer abstract epistemic ideals with no clear relation to our actual scientific practices. Conversely, historical accounts of the social aspects of scientific practice describe socio-historical facts decoupled from the epistemic ideals that motivate scholarly interest in scientific practices as such (rather than as a species of politics or discourse).

I propose to bridge this gap, reconciling history and philosophy of science with respect to social aspects of scientific knowledge. To do so, I present a new method, 'integrative pragmatism', which uses historical and philosophical approaches in concert within a framework compatible with both. I first sketch and defend this inclusive framework, drawing on a minimal consensus in philosophy of social action, which comports with commonsense intuitions. The basic idea is that social action is understood and explained in terms of the connection between shared goals that participants hope to accomplish together, and the coordinated means by which they try to do so. If a given social action is to be understood and explained in terms of instrumental rationality, then its shared goal must be achievable, and the means taken to it coordinated among participants. These requirements amount to minimal constraints of instrumental rationality, presupposed in everyday as well as technical explanations of social action.

Within this minimal framework, socio-historical accounts of scientific practices are cast as social actions aimed at shared goals. This framework accommodates the great diversity of scientific practices over time and across disciplines, while also allowing for commonalities. It is thus compatible with much empirical work on the sociology of past and present science. I use this framework to examine a recent episode of cellular immunology, the search for the blood stem cell (1961-2004). This line of research emerged from the confluence of cell biology, genetics and radiation research in the mid-20th century, and coalesced in the early 1960s around a new experimental approach: the spleen colony assay (Till and McCulloch 1961). I describe the social interactions within and among laboratory groups, fields and disciplines, that participating researchers recognize as crucial for scientific success, focusing on the widely-cited results of the Weissman lab in 1988 and their subsequent reception (Spangrude et al 1988; details in Fagan, forthcoming). Participants in this episode consistently recognize two aspects of scientific success: (1) construction of improved models of blood cell development, and (2) formation of new interfaces with other lines of inquiry. I argue that the first corresponds to a familiar normative conception of empirical knowledge, while the second reflects normative conceptions of coherence or systematization. The historical account of science as social action is thus compatible with aspects of scientific knowledge emphasized by philosophers committed to normative epistemology.

Finally, I demonstrate that historical and philosophical approaches to scientific knowledge can be used together to yield an integrative account of scientific objectivity, derived jointly from normative and descriptive accounts of science. This strategy is analogous to specification of ends in moral philosophy. Generalizing from the blood stem cell episode, I enquire: 'what must the shared goal of our scientific practices be like, given the coordinated means taken to it?' I argue that, if these practices satisfy minimal requirements of instrumental rationality, then their shared goal corresponds to a classic conception of scientific objectivity: knowledge independent of epistemic criteria specific to particular persons or groups. Scientific objectivity, on this view, is an explication of social interactions in scientific practice, as described by historical studies cast in the framework of social action. This result bridges the gap between history and philosophy of science with respect to its social aspects.