

***Collective Vision of Objects of Inquiry: Some Preliminary Thoughts***  
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I am a philosopher of science, but before that I studied biology: as an undergraduate, then as a graduate student, and finally (with one foot out the door) as a post-doc. I worked in eight laboratories or field-sites before I ever attended a philosophy class or read a philosophy text. I loved biology — more accurately, I loved the living world, of which humans are so small and recent a part. Today I study biological practices and their representational results; the living world appears my day-to-day practice only through a scrim of words. No more scraping barnacles off the rocks, or folding butterflies into wax paper to be tagged and released, or cutting mouse tails to harvest antibody-rich blood. Now I write papers, books — and this piece, which is different.

There are two reasons for the little indulgence above. One is indicate my own stance; always advisable in inter- or multidisciplinary contexts. The other is to introduce the idea that I want in this essay to weave together with the notion of ‘collective vision.’ This idea is that one’s day-to-day practice shapes one’s epistemic framework; i.e., the background assumptions and standards that inform one’s judgments about knowledge, evidence, explanation, and the like. This statement has the air of a truism — which is a good thing in a starting point for philosophical reflection. Readers will of course be familiar with the related idea that one’s social context shapes (or comprises) what I have termed one’s ‘epistemic framework.’ The point I want to tease out is somewhat different.

If one’s day-to-day practice is inquiry, then there is an epistemic relation between inquirer and that which is inquired into; i.e., between the subject and object of inquiry. A simple way to think about this relation is in terms of a method, understood as a set of explicit rules for inquiry. On this simple view, an inquirer’s day-to-day practice follows a method that produces knowledge about the object of inquiry. Much of social epistemology is concerned with challenging the various assumptions implicit in this simple formulation. These include: (1) a single inquirer, (2) a single method, (3) a univocal characterization of day-to-day practice, (4) perfect correspondence between method and epistemic framework, and (5) ‘optimal fit’ of method to object of inquiry. In science today (apart from very circumscribed cases), the first three assumptions do not hold. Scientific inquiry is largely performed by communities, which vary widely in aims, methods and standards. Scientific practice exhibits many different aspects, reflected in the diverse conceptual approaches of scholars studying science: economic, logical, ethical, historical, psychological, etc.

Here I want to focus on the latter two assumptions. Both describe idealized epistemic situations in overtly value-laden language. Understood as idealized models of inquiry, the assumptions of perfect correspondence and optimal fit are harmless and potentially useful. But they do not straightforwardly apply to actual inquiry. More realistic counterparts are (4’) epistemic frameworks include but are not limited to methods of inquiry, and (5’) linkage between method and object of inquiry is an achievement, judged in light of inquirers’ epistemic goals. These modified assumptions allow for adjustment of the epistemic relation between subjects and objects of inquiry, in light of extra-methodological features of an epistemic framework.

The notion of ‘collective vision’ can be positioned within this set-up in a variety of ways. The most obvious is to focus on subjects of inquiry, exploring the meaning, significance and possible impact of collective subjects of inquiry in diverse modes of organization. I will try to grasp the other end of the stick: objects of inquiry. What I want to examine are possible consequences of conceiving objects of inquiry as involved in collaboration. This is not a merely reflective exercise. Such a ‘collaborative conception’ of objects under investigation is implicit, I think, in many recent studies of complex systems, including developing organisms, electronic infrastructure, economic policy, ecological environments, and the brain. These and other complex phenomena are increasingly modeled as networks of interacting components.

There is a longstanding tendency, in philosophy as well as many scientific fields, to think of all interaction as *causal* interaction. The philosophical literature on causal relations is enormous; for my purpose here, it is enough to note some general features that are widely agreed upon. Causality is a directed relation between pairs of entities, events or variables, such that one is active, independent, or prior, the other passive, dependent, or secondary. Causal relations are fundamentally asymmetric, and involve the application of power. Cause-effect asymmetry is at the core of our conceptions of causality. Conceiving components of complex systems as causally related thus frames these objects of inquiry in terms of unequal power relations and a dominance hierarchy. But interactions among components of complex systems need not be understood as causal. An alternative is collaboration, conceived generically as a symmetric, mutual relation among two or more entities, which through their participation in this relation form a more inclusive overall system. On this view, genes and proteins, signaling cells, small molecules, species, and other diverse components of complex systems *work together* so as to constitute complex systems with distinct properties and behaviors. This approach organizes objects of inquiry into part-whole hierarchies, but without presuming power asymmetry. Instead of sorting components into causes and effects, controllers and controlled, this variety of collective vision represents components as mutually interrelated collaborators.

This ‘collaborative view’ of objects of inquiry is gaining traction in many areas of biology, notably those that have moved beyond hypotheses about single ‘master molecules’ controlling cellular and organismal processes. Another feature of these fields is emphasis on interdisciplinary collaboration. Scientific inquiry is increasingly practiced by multi-disciplinary teams, including theoretical and experimental researchers from a variety of fields, as well as medical practitioners, engineers, ethicists, and so on. In situations where interdisciplinary collaboration is sought and objects of inquiry conceived as collaborators, it may be fruitful to adjust the epistemic relation between subjects and objects of inquiry such that collaborative relations among the former reflect those of the latter. Although such correspondence is not logically required, inquiries in which day-to-day practices are conceived in a single collaborative framework have greater coherence than those with divergent approaches to subjects and objects. And such coherence may pay off in greater efficiency or effectiveness. Of course this is just a speculative possibility. But if my suggestion is correct, a collaborative view on objects of inquiry could enhance collaboration among inquiring subjects.

My current research develops this idea in the context of mechanistic explanation — a major topic of debate in philosophy of science today. Here I have attempted to articulate some of the key ideas in a way independent of those debates, in terms that may strike a chord with other SERRC participants. The view suggested here is speculative, but may find a place within a broader account of ‘feedback’ between collective practices of inquiry and models of inquiry’s objects.

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