

Not All Interdisciplinary Philosophy Helps Justify Philosophy's Relevance: Lessons from the Philosophy of Biology

The announcement for this conference asks whether philosophy can perhaps justify itself to a skeptical society by pointing to the philosophers working “across and beyond the disciplines.” I argue that such a general strategy of justification can only yield mixed results, unless selectively applied. Some interdisciplinary philosophy projects earn positive receptions from disciplines outside of philosophy, while other contributions do not successfully translate into other disciplines and are thus seen as valueless outside of philosophy. I use Susan Leigh Star and James Griesemer's 1989 work to untangle the successful projects from the unsuccessful ones. Star and Griesemer lay out the challenges that arise when multiple disciplines attempt to communicate with each other about a single concept (e.g., “species”), but when that concept is approached differently by the various disciplines. The authors demonstrate that successful interaction between disciplines requires the negotiation of shared methodological “protocols.” Lacking such protocols, interdisciplinary philosophers' contributions cannot be relevant outside of philosophy. I demonstrate this using two examples from the philosophy of biology.

My first example is an early philosophy of biology project, pursued by Susan Mills and John Beatty. Their 1979 paper “The Propensity Interpretation of Fitness” brought philosophical rigor to the purportedly circular definition of the evolutionary concept “fitness” by arguing that it can be understood as a propensity to survive and reproduce. The paper's importance was quickly and widely recognized in the publications of both philosophers interested in causality, explanation, etc., and biologists who adopted or elaborated on the newly rigorous definition. This sort of interdisciplinary research very effectively demonstrates philosophy's ability to make crucial contributions to problems in the applied sciences. By contrast, the second example, from contemporary philosophy of biology, is an example of interdisciplinary research that has attracted virtually no interest from any parties other than philosophers of biology.

Denis Walsh, Tim Lewens, and André Ariew's 2002 paper “The Trials of Life: Natural Selection and Random Drift” is exceptionally influential in contemporary philosophy of biology. It establishes a conceptual debate that has flourished within the philosophy of biology community ever since, regarding whether evolutionary phenomena such as natural selection should be described as “dynamical forces” or as “statistical properties.” This debate has grown to be one of the key debates in contemporary philosophy of biology, but has attracted limited attention from philosophers in other sub-disciplines, and more notably, very little interest from biologists.

I use these two examples to show that the presence or absence of shared protocols determines the fate of interdisciplinary philosophy projects. Hence, we ought to evaluate such projects' successes in establishing cross-disciplinary protocols before utilizing them in public defenses of philosophy's relevance to society (or at least to other disciplines). Interdisciplinary research such as my second example highlights the cloistered nature of certain philosophy projects, which is precisely one of the features of philosophy that has drawn criticism in the first place. Can we use interdisciplinary philosophy to justify the relevance of philosophy to society? Yes and no.

In recent years, philosophy has been increasing its attention to interdisciplinary projects, while also expanding its ambitions to increase the field's engagement with concrete problems relevant to society at large. Yet, we ought not conflate these two things: interdisciplinary philosophy on the one hand, and philosophy that directly addresses issues that appear relevant to society on the other hand. These two broad projects have a great deal of overlap, but remain distinct. That is, interdisciplinary philosophy projects are not necessarily the sorts of projects that we philosophers can point to as evidence of our field's relevance to society. I will demonstrate this using two highly papers in the philosophy of biology, both critiquing ambiguities in biological concepts; one successfully influenced the biology community, while the other remains ignored by the biology community. Using a framework for developed by Star and Grisesmer (1989) for evaluating certain types of interdisciplinarity, I will argue that when interdisciplinary philosophers critique their non-philosophy field of study, it is the decision of the critiqued community whether to accept or reject the relevance of such critiques.

Before continuing, I would like to make absolutely clear that I do not wish to disparage philosophy projects that appear to have little relevance to society. I find value in all of philosophy, as I see a holism to the field, both synchronically and diachronically. I am also deeply skeptical of the always cold and often clumsy calculus manifested in attempts to measure the value of specific disciplines or subdisciplines within academia. My argument today is ultimately a pragmatic one. I believe that, when asked to prove the value of their field, philosophers can expect certain strategies to be more successful than others. I do not endorse the public demands for justifications of philosophy's existence.

Still, when faced by such demands, philosophers ought to have carefully considered the rhetorical force of their responses. Some responses seem well poised to appease skeptics; others seem better poised to make the skepticism stronger.

I will proceed under the assumption that public demands for philosophy to defend itself are demands to show how the core discipline or its interdisciplinary offshoots either contribute directly to the solving of problems viewed as relevant to society, or contribute indirectly to this process by solving problems seen as relevant by members of a second field that is already deemed to be relevant. That is, I perceive the demand to be a request for demonstration of direct social relevance, or relevance to some existing relevant discipline.

Two examples from the interdisciplinary field of philosophy of biology can help to illustrate the varying justificatory value of interdisciplinary philosophy, as well as the factors that influence that justificatory value. The first example is a famous 1971 paper from John Beatty and Susan Mills, which exemplifies the kind of philosophical research that one can point to publicly (as I have done) as an example of interdisciplinary philosophy that is relevant and valuable to society, in that it helped move biological science past a fundamental theoretical impasse. The second example, a 2001 paper by Denis Walsh, Tim Lewens, and André Ariew that also critiqued weaknesses in biological theory, has been enormously influential on contemporary philosophy of biology, but has largely failed to inspire interest among biologists.

In 1979, Mills and Beatty attempted to provide a response to a serious criticism that had been leveled against the evolutionary biology of the time: the oft-cited definition of natural selection as “survival of the fittest” leads to circularity when one tried to define

the term “fitness.” That is, it is circular to say that natural selection is survival of the fittest while also claiming that “the fittest” are simply those who survive (Mills & Beatty, 1979). Mills and Beatty resolved this ambiguity by arguing that biological fitness can be understood non-circularly as the *propensity* to survive due to one’s specific traits. This, they argued, allows biologists treat “fitness” as a meaningful technical term, which they indeed continue to do (Mills & Beatty, 1979). Their paper sparked a productive debate within the nascent philosophy of biology community, as well as a warm reception from the evolutionary biology community.

According to Google Scholar, Mills and Beatty’s paper was cited thirty-six times by 1987, eight years after its publication (1979). The most impressive feature of its citation record is that it was not only influential among philosophers of science, but was also cited by practicing biologists in their work. In empirical science journals, the citing journals include: *Systematic Botany*, *Evolution*, *Paleobiology*, *BioScience*, and *Annual Review of Anthropology*. Mills and Beatty applied a philosophical understanding of causality to demonstrate that propensity to do an action can make sense of a situation that was once unsuccessfully approached by focusing on the results of the actions. They critiqued a conceptual weakness in evolutionary theory with a philosophical approach, convincing the biology community that both the problem and the solution were legitimate.

In 2002 Denis Walsh, Tim Lewens and André Ariew published a paper questioning the validity of the ways that natural selection and random genetic drift are conceptualized and described. They argue against the idea that natural selection can be legitimately described as a ‘force’ that ‘pushes’ populations in one direction or another

(Walsh, Lewens, & Ariew, 2002). Similarly, the paper argues against this way of framing the process of “random genetic drift,” the deviation of real populations’ gene frequencies from the predictions made by idealized mathematical models. Their paper touched off a continuing debate over conceptions of causality in evolutionary biology, and the natures of statistical properties and causation. This debate, though, has taken place entirely within the philosophy of biology community, despite the fact that the work published in the debate has almost invariably involved highly technical discussions of evolutionary biology.

Compare the Google Scholar citation patterns for this paper in the same eight-year time period as Mills and Beatty’s paper. By 2010, Walsh et al.’s paper had been cited seventy-eight times, more than double the rate for Mills and Beatty’s paper (1979). But these citations are virtually exclusively from professional philosophers of biology in their books and journals. It is an interdisciplinary project that simply has not crossed over into the domain of biology proper. While it is an interesting philosophical question to ask what kinds of causes natural selection and random genetic drift are, biologists do not seem to think that these are interesting questions within their discipline.

The Mills and Beatty paper and the Walsh et al. paper are both critiques of the precise meaning of key terms in evolutionary biology, yet their receptions in the biology community have been quite different. I believe it would be misguided to attempt to discern the difference in the receptions by parsing the philosophical tools or conclusions appearing in the two papers. Ultimately, a community’s reception of scholarly work is a social phenomenon.

It is important to distinguish challenges that are simply social in nature from the structural social constraints that so often plague interdisciplinary interaction; structural constraints cannot account for the different receptions of the two papers. Leading interdisciplinary theorist Julie Thompson Klein has emphasized the role played by institutional and social structures in the production of the “critical mass” of inputs needed to generate a self-sustaining interdisciplinary program. “Full time [faculty] appointments in interdisciplinary programs,” “infrastructures of communication,” “an adequate number of individuals sharing common interests,” “the capacity for generating new knowledge and synthesis,” etc. generate robust interdisciplinarity (Klein, 2005, p. 78). Both the Mills and Beatty paper and the Walsh et al. paper were published in the same journal, *Philosophy of Science*. More importantly, supporting social structures (interdisciplinary departments, journals, etc.) were in place for both. In fact, they had improved dramatically between 1979 and 2002, as philosophy of biology’s community, journal options, academic appointment options, etc. all matured. The social factors responsible for the different receptions of the two papers are more nuanced than institutional barriers.

Star Leigh Star and James Griesemer (a philosopher of biology) describe the specific patterns of interdisciplinarity that surround “boundary objects,” physical or theoretical entities that do not belong to any single discipline (Star & Griesemer, 1989). As a subtype of such boundary objects, they identify “ideal types,” entities such as the concept “species,” which are abstract enough to be relevant to a variety of disciplines (Star & Griesemer, 1989, p. 410). The two philosophy of biology papers discussed here qualify as examinations of remarkably similar ideal type boundary objects: “fitness,” “natural selection,” and “random genetic drift.” (Mills & Beatty, 1979; Walsh, et al.,

2002) While such boundary objects offer opportunities for robust interdisciplinary interaction, one discipline's use of a boundary object will not necessarily have any currency in another discipline using that object. The objects straddle disciplinary boundaries, but the boundaries remain in place. More importantly, disciplines do not forfeit any of their autonomy when they examine a boundary object. Star and Griesemer use the language of economics to describe the process involved. Disciplines can establish shared methodological "protocols" that allow interdisciplinary interactions to evolve from crude interdisciplinary bartering to the establishment of a "common coin." (Star & Griesemer, 1989, p. 413) However, the authors caution, "protocols are not simply the imposition one world's vision on the rest; if they are, they are sure to fail." (Star & Griesemer, 1989, p. 414)

Star and Griesemer's framework (1989) allows us to make sense of why the Walsh et al. paper was so much less successful in the biology community than the Mills and Beatty paper. Walsh et al. paper and the Mills et al. paper both represent negotiations, concrete proposals from philosophy of biology to the biology community, for the establishment of protocols. In the Mills and Beatty case, the proposal was accepted; the method of applying the concept 'propensity' was adopted as a shared protocol. In the Walsh et al. case, the proposal was rejected; viewing "natural selection" and "random genetic drift" through the lens of dynamical vs. statistical causality was rejected as lacking value. For want of a shared protocol to facilitate interactions, the philosophy of biology analysis never crossed over into biology.

When interdisciplinary philosophers unilaterally attempt to establish a protocol bridging philosophical and biological treatment of a boundary object, the resulting

inequality makes uptake by the non-philosophical field a matter to be decided within that discipline. This is in sharp contrast to situations wherein biology and philosophy work as equal disciplinary contributors for the purpose of establishing such protocols and resolving a difficult issue. Philosopher of biology Roberta Millstein's recent work attempting to untangle the related notions of "population" and "metapopulation" in evolutionary biology exemplifies this approach; not coincidentally, it appears in a book edited by biologists (Millstein, 2010). Denying the relevance of Millstein's chapter to biologists would strain credulity; the published volume is an outgrowth of a biology symposium.

Interdisciplinary critiques that have been sidelined by the critiqued discipline, such as the Walsh et al. paper, are unhelpful if one wishes to demonstrate philosophy's relevance to society. In the Walsh et al. case, biology is clearly relevant to philosophy, while the converse remains to be seen. The hazy goal of defending philosophy in the public eye is not served by pointing to examples where philosophy has been enriched by the work done in other fields. There is potential for great enrichment of both disciplines when philosophy is critically applied to a phenomenon within another discipline, but there is also potential for the disciplinary enrichment to be one-way. When an interdisciplinary philosopher critiques their non-philosophy discipline, there are two further conditions that must be met before the research can be seen as relevant, and thus a potential justification for philosophy's relevance to society. First, the relevant discipline must accept the protocol(s) suggested by the interdisciplinary philosopher(s); here, Mills and Beatty succeeded while Walsh et al. failed. Second, the relevant discipline must also accept the validity of the solution. If one publicly discusses a project that fails on the first

of these steps, interdisciplinary philosophy can only succeed in drawing attention to a seeming inability to even contribute to the solving of problems outside of philosophy.

While Star and Griesemer's treatment of boundary objects presumably applies to all interdisciplinary efforts, there are special challenges introduced by interdisciplinary philosophy. Philosophy is not so constrained by a narrow domain of application as other disciplines are. Indeed, for many philosophers, that is a point of pride. There can be (and typically there already are) philosophical approaches to virtually every topic: biology, mathematics, art, mind, etc. Philosophers are continually striving to apply some variant of traditional philosophical methodology to subjects already currently claimed by one or more other disciplines. This tendency is especially marked when it comes to boundary object "ideal types" (Star & Griesemer, 1989), such as "action" (Frankfurt, 1999), "race" (Appiah, 1985), or "explanation" (van Fraassen, 1990). Historically, natural philosophy once claimed the entire natural world as its domain. Today, regardless of the reasons why, philosophy is seen by the public and by other disciplines as occupying a quite limited (though hazy) domain. Its contributions to debates in other disciplines are typically greeted with heightened skepticism.

When an interdisciplinary philosopher uses a boundary object, be it 'environment,' 'responsibility,' or 'natural selection,' he or she must remember that both the objects and the techniques used to analyze them are discipline-specific and until otherwise constructed. Protocols for sharing approaches across disciplines are quite possible, but only insofar as they are negotiable by members of the relevant disciplines. If we, as philosophers wish to defend our discipline by pointing out the strides made by interdisciplinary philosophy, then we ought to only look for cases wherein successful

interdisciplinary protocols have been established, i.e. where rules for exchange and interaction have been negotiated and mutually accepted. It is bad enough for philosophy to be seen as irrelevant; it is worse if we attempt to demonstrate our relevance by accidentally highlighting philosophy projects whose interdisciplinary protocol negotiations have already failed.

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