What is 'Good' Science?
How Disciplinary Norms Discourage Interdisciplinary Collaboration

This document provides an overview of Doody & Plaisance (2025), published in Perspectives on Science.

Executive summary

- Scientists and engineers who collaborate with philosophers of science report genuine benefits for their work, such as better questions, improved methods, and sharper thinking. Yet participants typically perceived most of their disciplinary colleagues to be ambivalent or dismissive of such collaborations, seeing them as peripheral to so-called 'real science'.
- We identify two conceptions of 'good' science that capture participants' views vs. views they believe many of their colleagues hold; we call these *field-disruptive* and *field-aligned,* respectively.
- We argue that while science needs both types of 'good' science, the current system systematically favors field-aligned work. Academic reward structures are built around this approach to science and struggle to recognize or reward field-disruptive work. As a result, incentive structures reinforce negative and ambivalent attitudes towards philosophy-science collaborations.
- The pace and expectations of modern science can make more philosophically informed work feel slower and less legitimate, even though scientists and engineers who collaborate with philosophers find it valuable and believe it can lead to better scientific outcomes.
- Embracing both types of 'good' science can benefit scientific communities, but require shifts in disciplinary culture and researcher attitudes, not just funding or policy interventions.

Background and motivation

Many of the contemporary problems we face require knowledge from multiple disciplines to address, motivating increases in interdisciplinary collaboration. Yet, researchers engaging in such collaborations face substantial differences in how research is conducted and evaluated. These differences are especially pronounced in *broad* interdisciplinary collaborations (e.g., between the humanities and sciences), where researchers approach knowledge-making from radically different starting points.

Scientists are very good at intuiting what 'good' research looks like in their discipline. They know how to employ acceptable methods and produce publishable results that move a discipline forward; they can also evaluate their colleagues' efforts and reward them through grants, publications, and tenure. But what if that strong intuition for 'good' science only recognizes *one* kind of 'good' science?

We examined how expectations about what constitutes 'good' science affects scientists' willingness and ability to collaborate with researchers from different disciplines — especially philosophers of science, who study the foundations, methods, and outcomes of scientific practice. Philosophy of science has a lot to offer scientists (see Plaisance & Doody, 2026 for an overview of the scientific benefits of philosophy-science collaborations), yet such collaborations are rarely seen as central to doing 'good' science.

Current literature on impediments to interdisciplinary collaboration tends to focus on institutional barriers, such as a lack of dedicated funding, but our research points to a deeper and often overlooked issue: how scientific communities' embedded notions of what counts as 'good' science can make broad interdisciplinary collaboration feel not just difficult, but illegitimate.

Methods

We interviewed 20 scientists and engineers who had engaged in broad interdisciplinary collaborations with philosophers of science. Interviews took place in 2022 via Zoom. We analyzed the interviews by systematically coding participants' responses and identifying recurring themes. For details about the methods and participant sample, see the original publication, Doody & Plaisance (2025).

Findings: Interconnected barriers to philosophy-science collaborations

Participants identified three interconnected factors that reinforce the imbalance between different approaches to scientific practice.

1. Attitudes of other scientists and engineers

Participants believed that many of their colleagues saw philosophy of science as a distraction and a few encountered outright hostility. Most common, though, was a kind of indifference, where participants' colleagues didn't necessarily think philosophy was bad, just that it wasn't useful.

> "*I don't think that [most scientists] feel that they need anything more than what they already know. They're very specialized, they're very intense, [and] it's not philosophy that they're looking for*." — Astronomist

In contrast, the participants expressed a different view: they found their collaborations with philosophers genuinely improved their research, helping them ask better questions and think more carefully about what they were doing and why. The tension between their own experience and what they perceived as colleagues' dismissiveness was a recurring theme across several interviews.

2. Institutional reward structures

The way academic careers are built — through publications, grants, and alignment with tenure and promotion criteria — creates strong pressure to focus on field-aligned work. Outcomes from philosophy-science collaborations (such as conceptual insights, changes in how a researcher frames their questions, or modifications to methods or models) rarely fit neatly into these metrics.

> "*[Nobody] looks at my CV and [says], 'Oh, my goodness, [you] did some great work with historians and philosophers of science and published book chapters or books*.'" — Biologist

Funding agencies present a similar challenge: even those that say they value interdisciplinary work can be slow to recognize or support collaborations that cross the science-humanities divide.

3. Disciplinary norms and the pace of science

Many science disciplines have moved toward faster, more technical, and more narrowly specialized research. This creates an environment where more reflective work that benefits from philosophical collaboration can feel out of place. Several participants remarked upon the "speeding up" of science:

> "*We have no time to discuss conceptual ideas*." — Cognitive Scientist

Participants were not opposed to technical research; indeed, they saw it as essential to scientific progress. But many expressed concern that it was crowding out the kind of foundational thinking that philosophy of science is well-positioned to foster and that has the potential to push science in new and fruitful directions.

Findings: Two conceptions of 'good' science

Our findings suggest that two different ideas about what makes for 'good' science coexist but are treated much differently by scientific communities. We call these *field-aligned* science and *field-disruptive* science:

- *Field-aligned science* is technical, data-driven, and focused on incremental advances within a discipline. It aligns with what journals, funding agencies, and tenure committees typically reward. Think of this as the 'normal science' of producing new data, publishing in top-tier journals, and moving established research agendas forward.
- *Field-disruptive science* asks more foundational questions. It interrogates assumptions, reconsiders models and methods, and often draws on perspectives from outside one's discipline. Participants in our study viewed these activities as genuinely valuable to their scientific work, but found that they tended not to be appropriately recognized or rewarded by their institutions or colleagues.

Both approaches to scientific practice are important given that field-aligned and field-disruptive science advance scientific progress in different ways. The problem is that scientific communities tend to actively reward field-aligned science while remaining ambivalent towards, or even discouraging, field-disruptive science, thus disincentivizing philosophy-science collaborations in the process.

Why both kinds of 'good' science matter

Participants in this study included scientists and engineers who had worked closely with philosophers of science. They emphasized that their collaborations made them better researchers, reporting improvements to how they thought about research questions, methods, assumptions, and inferences.

> "*I've always thought that scientists don't think enough about what they're doing and why they're doing it. I think philosophy helps you with that … understanding the relationship between theory and data, simple things like this, I sometimes see missing*." — Biologist

Einstein himself even highlighted the importance of philosophy of science in a letter to a colleague:

> *I fully agree with you about the significance and educational value of methodology as well as history and philosophy of science. So many people today — and professional scientists — seem to me like someone who has seen thousands of trees but has never seen a forest. A knowledge of the historical and philosophical background gives that kind of independence from prejudices of [their] generation from which most scientists are suffering. This independence created by philosophical insight is — in my opinion — the mark of distinction between a mere artisan or specialist and a real seeker after truth.* (Einstein 1944, quoted in Smolin 2007: 310-11)

In his book, *The Trouble with Physics,* theoretical physicist Lee Smolin draws a distinction not unlike our field-aligned and field-disruptive science. With regard to the former, he describes the "master craftsperson" as someone who is technically skilled, productive, and acting in alignment with current disciplinary norms. Such individuals are contrasted with "the seer," a scientist driven to grapple with foundational questions who may draw on philosophical thinking. Smolin argues that science needs both types of scientists, but that contemporary academic culture has not made adequate room for the latter. In a sense, the participants in our study who engaged in philosophy-science collaborations were often acting as seers, finding such an approach to be beneficial, albeit undervalued within their discipline.

Fostering broad interdisciplinary collaboration: what would need to change

Addressing the significant imbalance between field-aligned and field-disruptive work requires more than one-off interventions such as interdisciplinary funding streams (though funding certainly helps). Because the preference for field-aligned science is embedded in training, mentorship, peer expectations, and evaluation practices, meaningful change is needed at a cultural level.

Some promising avenues our analysis points to include:

- *Science education*: exposing researchers early in their careers to the value of big-picture, foundational thinking could help expand what is seen as 'good' science.
- *Informal interactions*: low-stakes, friendly exchanges with researchers from different disciplines can open up new ways of thinking without the pressure of a formal collaboration.
- *Signaling value*: if scientific disciplines explicitly recognized and rewarded field-disruptive work alongside field-aligned science, institutions and individuals would be more likely to follow.

Technical, disciplinary science is important, but science benefits from a more expansive understanding of what 'good' science can be, one that makes room for the kind of reflective, foundational inquiry that collaboration with philosophers — and other non-science disciplines — can offer.

Read the full paper

Our paper, "What is 'Good' Science? How Disciplinary Norms and Expectations Discourage Broad Interdisciplinary Collaboration" offers a detailed account as to we saw notions of field-aligned and field-disruptive science arising through interviews with scientists and engineers. The paper also explains how we developed these ideas by analyzing our data through the lens of Pierre Bourdieu's concepts of habitus and field.

If you're interested in learning more about the benefits of philosophy-STEM collaborations, as well as the ideal conditions for making them work, we encourage you to check out Plaisance & Doody (2026).