Is This True Interdisciplinarity? A Case Study of an Interdisciplinary Journal Paper

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1 Introduction

Interdisciplinarity (ID) is often invoked as a buzzword without substantive engagement (Pohl et al., 2021). This essay critiques *What AI Researchers Read: The Role of Literature in Artificial Intelligence Research* (Dillon & Schaffer-Goddard, 2023) as an instance of such superficial interdisciplinarity. I contend that the paper fails to meet basic criteria for ID: it does not address a problem that requires ID, does not engage with multiple disciplines and does not make a genuine attempt integration.

To support this argument, I will first summarize the paper and its context. Following this, I will establish criteria gathered from three different definitions of interdisciplinarity. I will then show the ways in which the paper falls short of most of these criteria. Finally, I will suggest ways in which the study could be revised to become genuinely interdisciplinary.

2 Case Study

The study in question reports on interviews conducted with 20 artificial intelligence (AI) researchers, with the sample balanced for both gender and career stage. The interviews explored the influence of literature, particularly science fiction (SF), on the researchers' work. The primary outcome of this research is a six-category taxonomy of literary influence on AI research: research focus, career choice, community formation, science communication, ethical thinking, and sociotechnical futures.

The authors—a literature professor[1] and a writer—study "AI narratives" through typical literary lenses such as power and gender. The paper was published in the journal *Interdisciplinary Science Reviews*. An editorial commemorating its 40th anniversary (McCarty, 2016), states that its aim is not to determine what counts as ID but rather to highlight research that builds connections between the arts and sciences.

[1] https://www.english.cam.ac.uk/people/Sarah.Dillon/

3 What is interdisciplinarity?

With the content and context established, we can now assess if the paper counts as ID. To do that, we must first determine what ID is.

Integration is widely regarded as the hallmark of ID (O'Rourke et al., 2016). For the purpose of this analysis, I will treat integration and interdisciplinarity as largely synonymous. While this simplification overlooks some nuance, it is sufficient for our purposes and avoids unnecessary complexity.

I propose an evaluative framework based on three definitions of interdisciplinarity: historical, collective and individual.

3.1 Definition A: Historical (Creating New Disciplines)

Integration is defined here as the historical emergence of new fields (Grüne-Yanoff, 2016)., a macro-level view unsuitable for assessing individual projects, and so will not be used.

3.2 Definition B: Collective (Tackling Complex Problems Through Teamwork)

Standard definitions of interdisciplinary integration (Laursen & O'Rourke, 2019; O'Rourke et al., 2016; Pohl et al., 2021; van Baalen & Boon, 2024) describe it as a collaborative process for tackling complex problems. It involves combining diverse disciplinary tools and perspectives in an iterative way to generate novel outcomes, such as new methodologies, shared vocabularies, or practical solutions. This process requires actively managing group dynamics and often transforms participants' own understandings.

By considering these aspects, I elect four aspects to consider in a interdisciplinary project: *complexity* (the problem requires interdisciplinarity), *teamwork* (it involves multiple people who represent disciplines), connection (it links unrelated perspectives), *novelty* (it generates new understanding), and *outcome* (it generates new tools). To better accommodate the concepts of narrow and broad ID, can further divide this into *union* and *reach*. The first one involves disciplines with compatible worldviews, while the second involves disciplines with significant ontoepistemological differences (Pohl et al., 2021).

3.3 Definition C: Individual (Unorthodox Research)

An alternative perspective on ID is articulated by the journal's editorial (McCarty, 2016) and its *About* page[2], which states an interest in "the cultural significance of scientific work and its relationships with the arts, music, and literature." This approach consciously avoids standardizing interdisciplinarity, refusing the idea that adjudicating what counts as ID is a worthwhile enterprise. It talks about the challenge of being a "maligned 'lone' scholar" (McCarty, 2016)

[2]https://www.tandfonline.com/journals/yisr20/about-this-journal

and positions itself as an outlet for projects which would otherwise struggle in strict disciplinary environments. This definition highlights the concern towards intellectual edification rather than a collective effort to solve real-world problems—making it more appropriate to our case study.

This perspective defines interdisciplinary projects by three key characteristics: *cultures* (it establishes a relationship between arts and sciences), *expansion* (it moves from one discipline to another) and *hospitality* (it is work that would be unwelcome in strict disciplinary spaces).

3.4 Comparing definitions

These definitions were created in different contexts and respond to different needs. Definition B focuses on problem-solving group work, whereas Definition C is concerned with intellectual exploration and providing a platform for unorthodox scholarship. Definition B is teleological and normative (Grüne-Yanoff, 2016), while C explicitly seeks to avoid being the arbiter of who gets to be called ID, fearing this would incentivise treating ID as a goal in itself rather than as a means to an end.

We can now proceed to analyse the paper using these categories. A project can be considered interdisciplinary if it fits most of these criteria, which were chosen to exclude factors not usually reported in similar work (e.g. iterative process, reshaping of participant's perspectives, scholarly virtues, or struggles during integration).

4 Analysis

4.1 Critical analysis

This paper employs a single sociological method (interview) to investigate the culture of specific technical population (AI researchers) through the mediation of literature (SF). While competent, it remains within sociology of science and fails to integrate with other disciplines. Its claims to interdisciplinarity are superficial, since cross-disciplinary interaction only happens within the object of study (scientists interacting with literature), not in the research methodology itself.

Four potential arguments for this paper's interdisciplinarity can be considered.

4.1.1 Object of study

The paper examines both SF (literature) and AI (science). However, the analysis stays within sociology of science. An anthropologist studying shamanism isn't integrating anthropology and shamanism; they're simply doing anthropology. Similarly, this paper's focus on AI culture doesn't engage AI or literature as disciplines: they don't affect the research goals, methods, or concepts. The most one could argue for the use of literary thought-styles is the gender-balanced

sample (unrepresentative of AI's demographics), hinting at emphasizing equity, but this is not emphasized. No concepts or methods from literature were used.

4.1.2 Sub-disciplines

The authors might claim to integrate disciplines such as sociology of literature, ethnographies of reading, etc. However, these sub-disciplines share enough methods/epistemologies/objects/goals to be considered effectively one discipline for this purpose. They operate within the same "disciplinary perspective" (van Baalen & Boon, 2024). Their straightforward methodology indicates that no epistemological negotiation was necessary. Charitably, we could call this Narrow ID.

4.1.3 Output

Their claim to novelty is the creation of a taxonomy by applying an empirical approach to a discipline (literature) that is traditionally historical and interpretive. While the outcome is strictly novel, this approach is common in sociology of science and this one is not particularly innovative. One distinction than can be made is Methodological ID vs. Theoretical ID. Methodological ID typically aims to improve the quality of results by using a method, concept, or tool from another discipline to test a hypothesis, answer a research question, or advance knowledge in an emerging area within a primary discipline. In contrast, Theoretical ID seeks to develop a comprehensive general view or a new synthetic framework by integrating insights from different disciplines. It is neither methodological ID nor theoretical ID, because it uses neither methods not concepts from different disciplines (Pohl et al., 2021).

4.1.4 Cultures

The way it addresses the cultural effects of literature, focusing on practitioners instead of the text and is sensitive to how readers bring their own interpretations (Rosen, 2015) are markers of sociological thought-styles. However, since the methods, objects, goals, and thought-styles are all from a single disciplinary tradition, there is nothing to integrate.

4.2 Summary

Type	Criterion	Mark	Explanation
B	Complexity	✗	No complex problem addressed
B	Teamwork	✗	No interdisciplinary team
B	Union	✓	Sociology of science and sociology of literature
B	Reach	✗	Only sociology/anthropology
B	Novelty	✗	Scientific culture has been studied
B	Outcome	✓	New taxonomy

Type	Criterion	Mark	Explanation
C	Cultures	✓	Discusses art (literature) and science (AI)
C	Expansion	✗	Stays within sociology
C	Hospitality	✗	Could be published in disciplinary journals

It is not tackling a complex problem (*complexity*) that requires multiple perspectives. It also does not it involve a multidisciplinary team (*teamwork*). While it does not connect (*reach*) distant disciplines, it can be argued that they are connecting similar disciplines (*union*), though I reject this on the grounds that they mostly share thought-styles. While scientific culture has been studied extensively (*novelty*), it does create a new taxonomy (*outcome*).

Its strongest claim towards ID is that it does approximates arts and sciences (*cultures*). While it is arguable that it fulfils the *expansion* criterion because the authors are originally from literature, the study itself stays within the bounds of sociology. This also means it fails the *hospitality* criterion because it would be publishable in a disciplinary journal, though we must concede that adding empiricism into an interpretive discipline might make it harder to publish, which is also aggravated by the topic (SF) being stigmatized as not real literature (Ditum, 2019).

Based on these metrics, the study satisfies neither the rigorous Definition B nor the more accommodating Definition C. Its claim to interdisciplinarity rests on the thinnest of grounds: it discusses art and science, converges closely related sub-disciplines, and produces a standard academic output. This evidence is insufficient to classify the work as genuinely interdisciplinary.

4.3 Constructive analysis

To make this study ID, it would need to attempt to integrate other disciplines. This could be done in several ways:

- Incorporating literary analysis through close reading of SF texts or interviews.
- Applying computational methods (e.g., topic modeling, clustering, large language models, interpretable deep learning) to analyse interviews.
- Collaboration with subjects for co-creation and co-interpretation of categories.

This would turn the project interdisciplinary through incorporating new disciplines and encouraging teamwork with representatives of other disciplines. We could then consider if the process involved integration or if it just juxtaposed disciplines, which could be encouraged by considering the underlying disciplinary assumptions and creating a metalanguage (van Baalen & Boon, 2024).

5 Conclusion

This essay has considered historical, collective, and individual definitions of interdisciplinarity to argue that the analyzed paper fits only the most superficial interpretations of the term. The study is not interdisciplinary because it does not attempt to integrate different disciplines; it remains firmly within the methods, concepts, and goals of sociology, even as it studies scientific culture through the lens of literature. While it touches upon art and science and produces an outcome, it does not address a complex problem, does not use several disciplines, does not involve a team of people, is not novel, stays within sociology of science and so could be published in their journals.

Although it could become more ID by incorporating methods, concepts and researchers from literature and computer science, this would not guarantee better outcomes since the problem at hand does not itself require ID. In fact, forcing it into an ID framework would be a prime example of the "reification" of interdisciplinarity that the journal itself, in the definition articulated by (McCarty, 2016), cautions against.

This work contains around 2000 words.

This document was produced using Obsidian, Zotero, Better Bibtex, obsidian-citation-plugin, pandoc, and Overleaf. This convoluted workflow is, as far as I know, the state-of-the-art for writing papers in the natural sciences. It allows for automatic reference managing, typesetting using LaTeX, and internal links in the references. It's the first time I am doing it, so please forgive the issues with the ID numbers in the references.

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