

***On the Value of Interdisciplinary Integration: A Response to Michael O'Rourke***  
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I was delighted to see the direct and informed reply from Michael O'Rourke to my paper in *Social Epistemology*. As usually is the case when receiving response, it made me see more clearly what my idea is about. I wish to thank O'Rourke for teasing out more about *for what* and *to whom* does interdisciplinarity provide accountability in my proposal.

**Questioning Disciplinarity and Interdisciplinarity**

In this response, I will shortly address five questions posed by O'Rourke:

- (1) Why is it *disciplines* that are being held accountable in my proposal, rather than researchers;
- (2) *What* about the discipline is being evaluated in interdisciplinary contexts, and to what end;
- (3) *Who* is served by the epistemic accountability across disciplinary boundaries;
- (4) What is the role of *integration* in supporting accountability to the multiple disciplines that have a stake in an interdisciplinary project; and
- (5) How are the concepts of *disciplinarity* and *interdisciplinarity* interpreted and distinguished in my paper, which, at the same time, emphasizes the interdependencies that occur between disciplines in all forms of research.

In addressing these questions, I need to expand on the theoretical and conceptual underpinnings of my suggestion. Most of the questions are raised within a perspective that differs from the systems approach I was trying to delineate at a relatively high level of abstraction. This is not surprising, given the long-term interest of O'Rourke in facilitating communication in the complex reality of interdisciplinary practice. My intention, in turn, was to situate this practice in the broader context of science and examine its possible functions *beyond* the reality of specific interdisciplinary projects. I did illustrate those functions with empirical observations from a sample of project proposals and their evaluation process, but the ultimate object of my analysis was the concept of interdisciplinarity itself, and how exactly it promises to make academia more than the sum of its disciplinary parts.

Most discrepancies between my account and O'Rourke's reply to, I believe, can be attributed to this difference of perspectives. Therefore, I'll start by clarifying my use of the concepts of *disciplinarity* and *interdisciplinarity*, in contrast with disciplinary and interdisciplinary *research*. As nouns, disciplinarity and interdisciplinarity refer to sets of social and epistemic dynamics, forces, or mechanisms that drive science to opposite

directions. Disciplinarity emphasizes the autonomy of disciplines, whereas interdisciplinarity emphasizes the “heteronomy” of disciplines, i.e. the influence of forces outside the discipline. When used as attributive adjectives, however, disciplinary and interdisciplinary can easily coexist: a particular research project can have *both* characteristics. Thus, I tend to avoid categorizing research as *either* disciplinary *or* interdisciplinary,<sup>1</sup> while simultaneously pursuing a clearer distinction between the functions of disciplinarity and interdisciplinarity as some of the major dynamics of science. This differentiation between institutional forces versus research characteristics sets the stage for addressing the other concerns of O’Rourke.

### **Accountability and Context**

First, he raises the question: “To what extent is the *discipline* that is being held to account in interdisciplinary contexts?” He points out that identifying disciplinary boundaries in interdisciplinary contexts is often impossible, as these contexts are not constituted by disciplines but rather by researchers, who are “much more than just disciplinary vectors and thus cannot go proxy for disciplines”. I could not agree more, and that is the reason I did *not* focus on individual researchers or particular research contexts in my attempt to understand interdisciplinarity. My goal was, instead, to situate interdisciplinarity in the institutional dynamics of epistemic justification. Individual researchers or their motivations, roles or responsibilities within particular research projects were not interesting as such, but the epistemic structures that “seize” their perceptions and behaviors. Researchers in this approach are not proxies of disciplines, but important carriers of scientific norms and expectations—and as O’Rourke points out, oftentimes from multiple disciplines. The accountability of individual researchers in various interdisciplinary contexts is a different question, which I raise at the end of my paper as one of the issues that deserve more attention.

Regarding the question *for what* does interdisciplinarity provide accountability, O’Rourke doubts my suggestion that the objectives and procedures of research constitute the major contents. He considers them as sites of accountability rather than contents. Again, I see this view as reflecting his interest in interdisciplinary communication within particular research projects. While interdisciplinary exchanges indeed take place in the context of particular research objectives and procedures, and are often best evaluated within that context,<sup>2</sup> my intention was to highlight the role of interdisciplinary *interaction itself* as a kind of evaluative act. At a broader (temporal) scale of scientific development, what gets scrutinized (or accounted for) in such interactions are the norms and procedures of participating disciplines. The answer to O’Rourke’s question “to what end” is that such inter-disciplinary feedback provides an institutional mechanism of keeping disciplinary trajectories mutually reinforcing in the long term. Interdisciplinary encounters can thus serve as arenas for checking the broader relevance of disciplinary knowledge.

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<sup>1</sup> Katri Huutoniemi, Julie T. Klein, Henrik Bruun, and Janne Hukkinen, “Analyzing Interdisciplinarity: Typology and Indicators,” *Research Policy* 39, no. 1 (2010): 79–88.

<sup>2</sup> Jack Spaapen, Huub Dijkstra, and Frank Wamelink, *Evaluating Research in Context: A Method for Comprehensive Assessment*, 2nd ed. (Hague: Consultative Committee of Sector Councils for Research and Development, 2007).

## Epistemic Accountability

This leads me to O'Rourke's question: "Who is served by the epistemic accountability available in interdisciplinary contexts?" The usual expectation is that interdisciplinary research serves those who deal with complex real-world problems. This is, however, only a part of the picture. In the long term—where the real concern of my paper lies—interdisciplinarity can potentially serve the academic enterprise as a whole. As a mechanism of epistemic accountability across disciplinary boundaries, interdisciplinarity can facilitate the process through which science transforms its own institutional design and social relations, expanding its problem space over time.<sup>3</sup> This vision takes account of the fact that all problems are constituted by existing knowledge, and that the epistemic needs of future generations are not known yet. What matters in the long term is not only solutions to the grand challenges of our time, but also the maintenance of conditions for learning. The more there is disciplinary specialization, the more we need interdisciplinary coordination to cope with the increasing complexity of our scientific system.<sup>4</sup> This is an obvious reason for the increasing demand of interdisciplinarity.

## Integration and Interdisciplinarity

Last but not least, I'll address the role of *integration* in my conception of interdisciplinarity. Towards the end of his commentary, O'Rourke takes up the question of integration, and raises a number of issues concerning its role in my framework of epistemic accountability. Seemingly unsatisfied with the little amount of attention I gave to this important concept, he suggests a possibility that "interdisciplinary research is answerable to its epistemic stakeholders for taking seriously their contributions *and integrating* them into the output of the interdisciplinary process". While perhaps intuitively appealing, this obligation cannot be derived from my concept of interdisciplinary accountability. In my framework, integration serves as a *practice* or *procedure* of epistemic accountability, not the content of it—like is the case with interdisciplinary interaction in general. While the integration of knowledge may be highly desired in the local context of interdisciplinary collaboration, it does not, as such, make a difference for the participating disciplines. In order to support accountability to the disciplines involved, interdisciplinarity should not demonstrate integration but epistemic contribution. The kind of contribution interdisciplinarity can make to a discipline is that it helps the discipline to connect with developments in other disciplines and thereby to adapt to its changing epistemic environment.

In fact, one of the driving forces behind my conceptual work in the paper was my frustration with the performative role that integration often plays in discussions on interdisciplinarity. Integration of knowledge from disparate fields is claimed to be a means toward greater insight and greater success at problem solving, and this assumption

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<sup>3</sup> See Cliff Hooker (ed.), *Handbook of the Philosophy of Science, Volume 10: Philosophy of Complex Systems* (Amsterdam: Elsevier, 2011)

<sup>4</sup> Niklas Luhmann, *Ecological Communication* (Cambridge: Polity Press, 1989).

is usually taken for granted rather than systematically scrutinized.<sup>5</sup> There are, however, obvious dangers in evaluating interdisciplinarity in terms of the degree to which knowledge from disparate fields is brought together in a synthetic or integrative manner. First, integrated solutions from one point of view are often clearly limited or incomplete from another point of view. In this respect, integration of contributions from different disciplines is not qualitatively different from the integration of contributions within a discipline—both require an integrative concept, framework, or viewpoint, which is subject to its own limitations.<sup>6</sup> Second, integration is by no means the goal of all interdisciplinary work, which may be exploratory or critical in intent.<sup>7</sup> Third, the very idea of integration neglects the possibility that knowledge created in different conceptual spaces is incommensurable.<sup>8</sup>

My intention was not, however, to undermine the value of interdisciplinary integration, but to develop an alternative account of where its value comes from—and to whom it serves. The paper as a whole can even be read as “an additional reason for endorsing interdisciplinarity”, as O’Rourke has it. But first and foremost, it is an invitation to pause and rethink the current politics of interdisciplinarity and its relationship with our scientific enterprise as a whole—which is, and probably will be, constituted by disciplines.

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<sup>5</sup> Katri Huutoniemi, “Introduction: Transdisciplinarity, Sustainability and the Complexity of Knowing,” *Transdisciplinary Sustainability Studies: A Heuristic Approach* (London: Routledge, 2014), 1–20.

<sup>6</sup> Jerry A. Jacobs, *In Defense of Disciplines: Interdisciplinarity and Specialization in the Research University* (Chicago: The University of Chicago Press, 2013).

<sup>7</sup> Andrew Barry and Georgina Born (eds.), *Interdisciplinarity: Reconfigurations of the Social and Natural Sciences*. (London: Routledge, 2013).

<sup>8</sup> Britt J. Holbrook, “What is Interdisciplinary Communication? Reflections on the Very Idea of Disciplinary Integration,” *Synthese* 190, no. 11 (2013): 1865-1879.

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