Editorial: The interdisciplinary aspects of environmental justice and public health: a meta-analysis

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Interdisciplinary approaches to environmental research have emergent qualities: a broad spectrum of effects stemming from integrating fields.[1] They reveal more dimensions of a complex problem than researchers could uncover, or could seek to uncover, working in isolated disciplines. Gaining this enhanced view starts when a researcher or team brings two or more fields together to address a complex issue that can only be fully examined using tools from each discipline. This kind of research exposes that the initial research question is also an instrument for revealing more about the world than could have been anticipated. This 'more' is the range of predicted and surprising outcomes gained through interdisciplinary research.

These kinds of approaches grant us unique insight into the quality of beliefs coming from each field involved in a research project. They can provide testing grounds for the soundness of disciplinary beliefs. If research leads to unexpected outcomes when applying theory to practice, then scholars come to realise the need to rethink basic premises of their discipline. Alternatively, if they find that theory and practice are congruent, then researchers gain a greater degree of accuracy concerning a field's foundation. This accuracy makes interdisciplinary approaches better prepared to deal with complex issues that require different backgrounds [Khagram et al. (2010), p.388].

It also reveals how bringing disciplines together produces socially useful knowledge, justifying and perhaps signifying a change in research norms. Being mindful of the numerous environmental challenges facing the world today, employing research protocols with the benefits of having trans-disciplinary outcomes, 'real-world' results, seems advantageous. Researchers in Brazil, for instance, have had success combating environmental problems using interdisciplinary approaches. The government has embraced interdisciplinary thinking by making it an explicit priority for research and, accordingly funds it [Fearnside, (2010), p.376]. The case in Brazil is not an isolated incident. In the USA, The National Science Foundation has set the research agenda by

prioritising interdisciplinary projects for funding initiatives, thereby incentivising researchers to engage in interdisciplinary practice.[2]

More important, though, is the fact that forward-thinking universities have taken the lead in legitimising interdisciplinary affairs – establishing courses, departments, schools, and centres. Arizona State University hosts the School of Sustainability that is dedicated to the interdisciplinary topic embedded in its namesake. Columbia University's Earth Institute houses numerous centres and institutions that foster creative partnerships between hard and soft sciences.[3]

Moreover, institutions of various sizes have centres engaging in interdisciplinary research. The University of Texas at El Paso, a mid-size research institution, supports the Center for Science, Technology, Ethics and Policy (CSTEP), and Seattle University, a smaller school, houses the Center for Sustainability and Environmental Justice.[4] A philosopher-geologist, Robert Frodeman examines the ontology of interdisciplinary work at the Center for the Study of Interdisciplinarity at the University of North Texas.[5] In order to expedite a shift in research and education, Mack and Gibson (2012, p.1) argue that university libraries should form interdisciplinary collections and programs that will facilitate research.[6]

Moving to issues of pedagogy, Gandel (2014) predicts that problem-based majors will be a significant draw for future college students.[7] Public health and sustainability rank high among the most fertile new areas. Having research and pedagogical interests aligned will promote interdisciplinary approaches in the academy. In turn, this pedagogical shift will also increase the supply of workers with the progressive skill set required for implementing sustainability into existing infrastructures and combating the effects of climate change.

This special edition of *Interdisciplinary Environmental Review* counts as a humble addition to this recent wealth of interdisciplinary enterprises. Collectively, these articles exhibit how the intersections of environmental justice (EJ) and public health encompass an extremely broad range of topics.

On one hand, they show the deep-seated connections that EJ and public health have within numerous departments of the academy. These associations illustrate the point that such themes cannot be productively thought about within standard disciplinary confines. For instance, in 'Nature or Neoliberalism? Two views on science and the persistence of environmental controversies', Adam Briggle uses a case of EJ and public health involving air pollution from hydraulic fracturing to study the connections between environmental research and political issues. Briggle's article reveals the depth of political and cultural analysis that should accompany environmental controversies, which is a hallmark of interdisciplinary research.

On the other hand, employing an interdisciplinary approach also gives researchers a better understanding of what exactly constitutes a public health problem within an environmental justice framework. When examining the history of EJ, public health issues are usually the most critical cases because they directly deal with human suffering (Schlosberg, 2007). Yet, for other cases, pinpointing some kinds of suffering requires that one examine cases with a keen eye for nuance.

Consider in this regard M. Joseph Aloi's 'Propaganda as an environmental justice issue', for example. Aloi makes a case showing that the actions of oil companies amount to propaganda, affecting the health and well being of the people of Kivalina, Alaska. Issues such as Kivalina's require examinations on a case-by-case basis to pinpoint

injustice. The benefit of combining EJ with public health is that it shows how patterns of corruption and oppression continue, despite the varying times and circumstances.

Kyle Powys Whyte's contribution, 'A concern about shifting interactions between indigenous and non-indigenous parties in US climate adaptation contexts', shows how particular cases concerning EJ and public health are rich, encapsulating multiple historical patterns. In this paper, the patterns concern the continued subjugation of indigenous peoples through failed bureaucratic diplomacy. Yet, he zeros-in on what those patterns look like in a Twenty-first century context of climate change. The interdisciplinary threads of Whyte's paper weave themselves into a seamless fabric, wherein the complete enterprise appeals to researchers from several backgrounds.

Ian Werkhseiser, in his paper, 'Food sovereignty, health sovereignty, and self-organised community viability' uses an interdisciplinary approach to reconcile food justice with public health. Specifically, he provides helpful terms that alleviate some of the conceptual problems stemming from the lack of congruency between the ways academics think about food studies and public health. Werkheiser's approach exhibits another way that researchers benefit from breaking down disciplinary boundaries; attention to the way that terms and concepts vary across disciplines can enlighten our understanding of food justice and public health.

These kinds of investigations also provide a forum for international discussions, showing how the intersections of EJ and public health are ubiquitous and can benefit from interdisciplinary examination. Olusegun Michael Osinibi's article, 'Evaluating the impact of poor waste disposal management on environmental sustainability and human rights in Nigeria', illustrates this point. An interesting aspect of his work is that it includes provisions for how to mitigate the problem, thereby improving public health. Finding a solution to a problem is not a necessary attribute of interdisciplinary research, but it is a possibility.

Despite currently holding a peripheral place within the university system, interdisciplinary scholars are paving their own paths. Research efforts in EJ and public health highlight the strengths of these approaches, but weaknesses remain. For instance, interdisciplinary research lacks established protocols, and often collaborators rely on their intuition for developing research methods [Botey et al., (2014), p.518]. One could argue that lacking procedural methods is a shortcoming. Yet, to do so, one must assume that interdisciplinary cases bear enough similarities to even share a set of heuristic measures.

Even though several interdisciplinary environmental frameworks exist for dealing with specific kinds of issues, it seems implausible that there could be a one-size-fits-all framework [Tapio and Willamo, (2008), pp.125–133].[8] An encompassing framework would have to account for any discipline utilised during a research project. Even assuming one can put forth a framework wherein disciplines can be recalled or substituted, this practice does not sound like it would create much substance.

Not all disciplinary aspects can be easily implemented into a pre-existing model. Jules Simon's paper, 'Urban desertification and a phenomenology of sustainability: the case of El Paso, Texas', is a prime example of why an encompassing framework will not work for all interdisciplinary research projects. Simon employs an area of philosophy called 'phenomenological ethics' to make sense of a stealthy EJ issue threatening El Paso, TX. Simon's methodology does not easily lend itself to a pre-fabricated interdisciplinary framework because of its intricate nature. His use of phenomenological ethics is the pillar holding the interdisciplinary structure of his research together, meaning

that substituting it would end the project. In turn, the broad spectrum of insights into sustainability and desertification would be lost.

Simon's use of phenomenological ethics also shows that there are several different kinds of interdisciplinary research. His is one wherein a disciplinary device plays a dominant role, and the other disciplinary aspects are auxiliary features that define the project.

Another kind of interdisciplinary approach that is completely different from Simon's is the paper, 'Doing justice: the role of ethics in integrated ecosystem management and the implementation of the integrated assessment and ecosystem management protocol'. Truly an interdisciplinary affair, it belongs to a philosopher, Michael L. Humphreys, an environmental scientist, Michael A. Reiter, and Gary C. Matlock, Director, Office of Policy, Planning, and Evaluation, National Oceanic and Atmospheric Administration (NOAA). This ambitious undertaking sets out to include diverse voices in environmental planning to achieve the social solidarity necessary for effective stakeholder-based decision-making.

To conclude, we are witnessing an interdisciplinary turn in research, and the changes described above will increase. Attempting to predict the next sequence of events in this increase would not yield anything of certainty. Interdisciplinary research will undoubtedly stir up controversy within disciplines, as researchers assimilate new knowledge into existing belief systems. Yet, somewhat ironically, an interdisciplinary approach would even be part of the solution to that problem.

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Notes

1 For a robust account of the definition and practice of 'interdisciplinary', see Frodeman, R., Klein, J. and Mitcham, K. (2012) *The Oxford Handbook of Interdisciplinarity*, Oxford University Press, Oxford. Also, see Repko, A. (2008) *Interdisciplinary Research: Theory and Process*, Sage Publications Inc., Thousand Oaks, CA.

2 See http://www.nsf.gov/od/iia/additional_resources/interdisciplinary_research/.

3 See http://www.earth.columbia.edu/sections/view/9.

4 For more information on CSTEP, see http://cstep.cs.utep.edu; for the Center for Environmental Justice and Sustainability, see http://www.seattleu.edu/cejs/.

5 More information on the Center for the Study of Interdiscipinarity, see http://www.csid.unt.edu.

6 It is also worth mentioning that the Association for Interdisciplinary Studies provides numerous services for Interdisciplinary research and networking. See http://www.units.miamioh.edu/aisorg/index.shtml for more information.

7 See http://www.usnews.com/education.

8 Tapio and Williams point out that several kinds of interdisciplinary frameworks exist, but in the work cited, they do not endorse the views that it is implausible to have an encompassing framework.