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Social Science-Environmental Health Collaborations: An Exciting New Direction

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Abstract

The Social Science-Environmental Health Collaborations Conference in May 2016 was a unique gathering of scholars from the social sciences and environmental health sciences, government agency professionals, community organizers and activists, and students. Conference participants described the research and practice of environmental public health as done through a transdisciplinary lens and with a community-based participatory research/community-engaged research model. NIEHS' role in supporting such work has helped create a growing number of social and environmental health scientists who cross boundaries as they work with each other and with community-based organizations.

Keywords

community-based participatory research; environmental health; social science

Introduction

In May 2015, with support from the National Institute of Environmental Health Sciences (NIEHS), the Social Science Environmental Health Research Institute (SSEHRI), in partnership with the Puerto Rico Testsite for Exploring Contamination Threats (PROTECT—Superfund Research Program), and Silent Spring Institute, we hosted a conference at Northeastern University (NU) in Boston, MA, the *Social Science Environmental Health Interdisciplinary Collaborations Conference.* SSEHRI and PROTECT are both interdisciplinary research organizations based at NU, respectively, investigating the interconnections of environmental health and justice, toxic threats, and social structures; and relationships between contaminants (especially phthalates and trichloroethylene, TCE) and preterm birth in Puerto Rico. Silent Spring Institute, a community-based non-profit in Newton, MA, has been at the forefront of research into the role of environmental contaminants in women's health, especially in relation to breast cancer. More than 100 university scholars from the social sciences and environmental health sciences, government agency professionals from NIEHS and the National Cancer Institute (NCI), community

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organizers and activists, and students came together to discuss their work at the intersections of environmental health, social science, and community activism.

This special issue of *New Solutions* is the result of these workshops, panels, and collaborations—we asked presenters, organizers, and attendees to submit articles that explored the inseparable connections between environmental health and social forces, and worked at the intersections of these disciplines. The issue also includes articles received in response to an open call for submissions on this topic. Across this special issue, readers will find evidence of the growing collaborative work of environmental health and social science that brings scholars from across disciplines together with community based organizations (CBOs) to understand and intervene in environmental health crises.

NIEHS has been instrumental in facilitating collaborations between the social and health sciences and CBOs in the last two decades.[1] In 1995, prompted by grassroots organizing around environmental justice (EJ), the People of Color Environmental Leadership Summit's "Principles of Environmental Justice," and the recognition that people of color and marginalized communities are most exposed to health threats from toxic contamination, toxic waste disposal, and other industry externalities, NIEHS introduced new programming to address the inherent connection between race, class, and environmental exposures.[1,2] That new NIEHS programming, the first of its kind in any National Institutes of Health (NIH) agency, focused on the ethical, legal, and social implications of science, a new community-based participatory research (CBPR) initiative, and an environmental justice program, providing federal funding for social scientists and environmental health scientists to collaborate in partnership with CBOs, to incorporate local knowledge in research, and to put residents at the forefront of problem definition, data collection, analysis, and report back of results.[1–4]

Social science–environmental health collaborations that grew out of NIEHS programs have taken several forms. NIEHS has supported partnerships with coprincipal investigators in both CBO and academic settings, like WE ACT and Columbia University, and Silent Spring Institute's past partnership with the Brown University Contested Illness Research Group and currently with SSEHRI at NU in which environmental health science and social science research occur in both partner organizations. Indeed, EJ program examples, such as Silent Spring Institute and Alaska Community Action on Toxics, were notable for being led by CBOs with scientists on their staff, making them distinct from most academic–community partnerships. NIEHS promotes interdisciplinary collaboration within broad multi-institutional, university-based projects like the Superfund Research Program and Children's Environmental Health Center program (jointly with EPA). NIEHS's most recent Strategic Plan (2012–2017) continues to create federal support for these types of interdisciplinary research projects and seeks to support research that incorporates translation of environmental health science, CBPR principles, and socioeconomic research relating to environmental exposure, alongside of research on chemical and biological pathways to exposure.[1,5]

To introduce this special issue, this essay provides a brief context for the growing and rich field of social science environmental health (SS-EH) collaborations. We analyze how social

scientists, environmental health scientists, and CBOs have created a new generation of SS-EH researchers who have impacts on policy, community capacity-building, and cross-disciplinary training in the academy. We hope that this special issue will boost those efforts and highlight the importance of such work for federal funding agencies, including non-environmental health agencies like Housing and Urban Development and National Institute of Minority Health and Health Disparities, which have overlaps with this field. Additionally, we hope that it can point the National Science Foundation (NSF) in the direction of SS-EH work, which has been limited by NSF's exclusion of human health-related funding.

Pathways to social science, environmental health, and community collaborations

The challenges of environmental health present a number of roles for social science. Social scientists take part in projects that have CBPR components in order to facilitate research translation, community engagement, or evaluation, or to document the initiatives through the lens of the social sciences. They may also serve as liaisons between researchers, policy makers, and the community. Social scientists also facilitate teaching of social, legal, and ethical implications of scientific research projects in the academy.

The role of social science is much broader, as well. As Hoover et al. show, sociologists, anthropologists, social psychologists, geographers, political scientists, and economists have long engaged in the "social science *of* environmental health" by investigating environmental health crises, exposures, contamination, and disasters. Environmental and public health historians, though not social scientists, share many similar concerns, and have also been key contributors. This includes the political, economic, legal, cultural, and social dimensions of environmental health problems, the social dynamics of illness and exposure contestation, and the disparate power relations between polluters, communities, decision makers, scientific experts, activists, and the state in conflicts surrounding environmental health.[1] Social research has engaged the social psychological,[6,7] the political,[8,9] the community,[10,11] and the racial and class components of environmental risk and contamination.[1,12]

While this legacy remains strong, social scientists are increasingly moving from the "social science *of* environmental health" to participation in "social science *with* environmental health," as they directly collaborate in environmental health research projects with health scientists, residents, and CBOs.[1,13] Hoover et al. illustrate this transition to participation in CBPR by examining a case study of community, social science, and environmental health collaboration in the Awkwesasne Mohawk Nation. This collaboration was the focus of the 2015 *Social Science Environmental Health Interdisciplinary Collaborations Conference* keynote address by Katsi Cook, director of Running Strong for American Indian Youth, women's health activist, and Awkwesasne midwife. Cook is a leader in the identification of reproductive illness in the women she served and began to associate these illnesses with the heavily industrialized St. Lawrence River. She initiated a research collaboration between members of the Mohawk Community at Akwesasne and scientists at the State University of New York (SUNY) at Albany that identified PCB contamination from waste sites from nearby industry leaching into community waters and found PCBs in the bodies of

community members through biomonitoring. Subsequently, the NY Department of Health conducted a risk assessment and recommended that residents refrain from eating fish from the river to limit the ingestion of PCBs. However, the state's assessment did not take into account the historical, cultural, and spiritual value of fishing for the community. Social scientists conducted interviews that showed the NY Department of Health that the loss of fishing was itself a cultural and social impact that would worsen health problems in the community.[14] This led to a more nuanced revision of the NY Department of Health fishing advisory that recommended only avoiding certain types of fish. Not only does this demonstrate the inseparability of social impacts and environmental health impacts from toxic exposures, but this case also demonstrates the necessity of social research to identify the full extent of harm from toxic exposures.[1]

The need for reflexivity in research activities and outcomes offers a role for the social sciences. Panikkar et al.[15] document the introduction of a framework for *reflexive research ethics*, or "the self-conscious, interactive, and iterative reflection upon researchers' relationships with research participants, relevant communities, and principles of professional and scientific conduct" in a large biomedical study. The large environmental health research project asked participants to donate fetal tissue for xenotransplantation—the process of inserting fetal tissue onto the bodies of rodents in order to study the impacts of pollutants on human tissues. Social scientists separately engaged lab researchers, clinicians, and tissue donors in ethnographic interviews about ethical, moral, and cultural perceptions regarding xenotransplantation and consent. Through these interviews and discussions, the team moved from a model of one-time "blanket consent," in which donors give one-time, broad consent to conduct research, to a reflexive model in which consent is a continual process of interaction between researchers and donors to address any moral or ethical questions that may arise over time.

Social science can fulfill a vital role in teaching the ethical, legal, and social implications of emerging technologies for university students training in science and engineering in interdisciplinary settings.[16] For one example, in an academic course on emerging nanotechnologies, social science materials were used to help students think critically about the broad social implications of emerging sciences, including a requirement that students prepare research proposals that incorporated a component on social and ethical implications. The team also employed social science methods to investigate the outcomes of the course on students' understandings of the social, legal, and ethical implications.[17]

Large interdisciplinary environmental health research projects with social, legal, ethical, and political implications often incorporate roles for what Pennell et al.[18] call "knowledge brokers," team members who build bridges between stakeholders and researchers—between policy makers and academics, between environmental justice organizers and researchers, between government agencies and researchers, and between researchers and attorneys. Groups like University of California-Davis College of Agricultural and Environmental Science's Center for Regional Change build bridges between university, policy, advocacy, business, philanthropy, and other sectors. Their work includes facilitating community-based environmental monitoring, reporting, and enforcement in California; guiding investments by

organizations under the Community Reinvestment Act; and working on sustainability in city planning.[19]

The SS-EH conference highlighted in this special issue is itself one of many outcomes of a long-term relationship between the community-based organization Silent Spring Institute and academic researchers at Brown, and subsequently at Northeastern, and UC-Berkeley working at the SS-EH intersection. To respond to participants' calls, the partners developed best practices for sharing environmental health data and built an ethical framework for the individual and community report-back of environmental health data. In both conducting and studying the process of report-back as it took place on Cape Cod, the team reflexively engaged with the community and research participants to: (1) understand the individual and collective needs of participants related to their environmental health data, 2) to understand how taking part in research and receiving data influences the creation of shared definitions of exposure, (3) to investigate how personal and collective histories influence the understanding of data, and 4) to understand generally how receiving environmental health data influences participants personally and politically.[20,21]

This collaboration between Silent Spring Institute and NU also provides training to create new generations of SS-EH researchers. In particular, the NIEHS "Transdisciplinary Training at the Intersection of Environmental Health and Social Science" T-32 Grant prepares students and postdocs to work in environmental health and the social sciences, to build connections across disciplines, and to work collaboratively to address complex socio-environmental problems. Students undergo course work in environmental health and environmental sociology to understand the complex entanglement of cultural, political, historical, environmental, and genetic factors that shape health. Students engage in dedicated seminars and receive methodological training in CBPR for environmental health and justice, and citizen science.

Evidence of social science environmental health success: The contributions in this issue

This special issue serves to illuminate the continuing growth of transdisciplinary work between environmental health scientists, social scientists, community organizations, and funding organizations. Each article presented here uniquely addresses these relationships from varying perspectives of the stakeholders involved. Readers will hear from social scientists, staff of government agencies like NIEHS, environmental health scientists, students, and activists.

We begin with a dedication to the late Theo Colborn—an environmental health scientist who developed the "endocrine disruptor hypothesis" that elucidates the connections between common environmental chemicals and changes to hormonal systems in humans and animals. Colborn's work has not only significantly altered our understanding of zoology and biological sciences, she dedicated much of her work to the community where she lived. Colborn's database of chemicals used in the unconventional natural gas extraction process was the first of its kind, and her organization The Endocrine Disruption Exchange (TEDX) is dedicated to acting as an expert ally to communities impacted by the rapidly developing

processes of energy development. Wylie, Schultz, Kassotis, and Thomas each speak to the work of Colborn from their respective perspectives as environmental scientists, anthropologist, and community organizer. The structure of their article itself, giving equal voice to each perspective, illustrates the unique and fruitful collaborations that can occur across these realms.

We hear the perspective of government funding agencies from NIEHS officials Finn and Collman, who direct readers' attention to the diverse and plentiful opportunities for interdisciplinary collaboration between environmental health scientists and social scientists, especially in relation to CBPR with CBOs, activists, and other community members. The article discusses the historical shift leading to a focus on the social determinants of health in biomedical research; describes the history of research funding from NIEHS; and provides detailed examples of NIEHS-funded programs and projects involving social science and environmental health.

Following these examples, Korfmacher et al. provide an evaluative framework for social scientists and environmental health scientists engaged in interdisciplinary research in partnership with community organizations to evaluate the impacts of their collaboration on social change. Using NIEHS-funded community/academic collaborations as examples, the authors show how these relationships can be facilitated and maintained and how the progress of these relationships can be measured using social scientific methodology. This framework is the first of its kind and will be useful for CBPR practitioners across disciplines, especially in the context of this special issue.

Loh moves readers beyond the discussion of CBPR and develops the concept of "colearning" to redefine the role of the academy within local contexts. Here, the author proposes that universities must radically rethink their place within their communities and direct efforts to redefine the university as an embedded, place-based, member of the community that must engage in equitable partnerships with other community members to coproduce knowledge and facilitate transformative change. The author first describes the historical shift of academic institutions from intellectual anchors geared toward knowledge production in the community, to neoliberal institutions increasingly geared toward profitable research endeavors. However, Loh then describes the parallel history of community-based research for action in the areas of environmental health, justice, labor, and occupational health that has occurred in spite of structural barriers between communities and the academy. In the colearning model, Loh asks how we can shift these relationships away from a sole focus on research, which primarily which rewards academics, to a model of reciprocal partnerships between universities and communities where each engage as equals in the coproduction of transformative knowledge for just and sustainable communities. Tuft University's Urban and Environmental Policy program is described as a case-study in colearning, where urban planning faculty and graduate students work directly in partnership with environmental justice organizations to fulfill course requirements and community members are directly involved as both educators and students.

Next, we turn to case studies of interdisciplinary environmental health research being carried out in partnership with communities. The first of these cases is a collaboration between

activists in Marseilles, France, social scientists, and environmental health scientists to document and contest the exposures to a myriad of pollutants from nearby industrial activities. Allen et al. show how community groups engaged with social scientists to identify environmental health disruptions, develop research questions, craft a research protocol, and conduct both quantitative and qualitative environmental health data collection. The case of Marseilles may be the first of its kind in France. Velez et al. describe the work of NIEHS-funded PROTECT project's interdisciplinary work to define the connections between chemical exposures to phthalates and TCE and preterm birth in Puerto Rico. This multi-sited research project connects practitioners across a wide range of disciplines, including social scientists, epidemiologists, environmental engineers, toxicologists, geologists, pediatricians, nurses, and experts in prenatal health. Sociologists work as knowledge brokers between mothers, scientists, community organizations, and governments and work to maintain equitable partnerships between scientists and community members involved in the research process. Social scientists also aim to translate the scientific work of their partners to the community. This collaboration is a model for other multidisciplinary and multi-sited research enterprises. Not only do these case studies illuminate the growing interdisciplinary work that this special issue hopes to further, but they also explore this work in varying and case-specific geopolitical contexts.

Conclusion: Future directions in social science–environmental health collaborations

This special issue of *New Solutions* brings together academics, activists, advocates, civic scientists, sociologists, anthropologists, environmental health scientists, epidemiologists, and federal funders to highlight the growing collaborations across traditional academic and professional domains. The successes of this growing academic collaboration with a focus on community-based and applied research projects can be seen in publications across the academic literature, presentations at conferences like the *Social Science Environmental Health Interdisciplinary Collaborations Conference*, in funding opportunities from federal agencies, and in campus-based opportunities for students.

Interdisciplinary collaborations are becoming commonplace in academic literature. Social scientists and environmental health scientists are increasingly publishing across respective disciplinary boundaries and working in partnership with community groups to publish research findings. This includes interdisciplinary publication in diverse journals like *Environmental Health Perspectives*, *Environmental Science & Technology, New Solutions*, the *American Journal of Public Health, Environmental Justice*, the *Journal of Health and Social Behavior*, and *Sociological Forum*.[1]

Such collaborations are not always without difficulties. Indeed, there remains much to transcend in terms of disciplinary rigidity in academic departments, traditionalism among journal reviewers and editors when it comes to evaluating publication submissions, and lack of understanding by grant review panels. For scholars, this type of work adds to the required effort—both working with communities, and living in multiple academic, professional, and

grant worlds. But we now have several academic generations of scholars who have been able to make their mark in this approach, so the groundwork is laid.

We hope that this special issue can illustrate the diverse work being done at these intersections, the opportunities for students, the changing role of academics within their communities, and the diverse funding mechanisms available for future work in the social science of environmental health.

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Biographies

Jacob Matz is a graduate research assistant in the Department of Sociology and Anthropology at Northeastern University and a member of the Social Science Environmental Health Research Institute. His research interests include environmental sociology, civic science and environmental knowledge production, and environmental justice. He received a masters degree in sociology from West Virginia University in 2013 and has coauthored papers in *Environmental Communication, Sociological Focus*, and *The Hastings Center Report.*

Phil Brown is university distinguished professor of Sociology and Health Sciences and director of the Social Science Environmental Health Research Institute at Northeastern University. His current research includes social policy and regulation of flame retardant chemicals and perfluorinated compounds, and techniques and ethics of reporting data to study participants in biomonitoring and household exposure studies. He codirects the Community Engagement Core and directs the Research Translation Core of Northeastern University's Superfund Research Program, PROTECT.

Julia Green Brody, PhD, is executive director and senior scientist at Silent Spring Institute, a research group founded by breast cancer activists to study environmental factors and women's health, with a particular focus on breast cancer prevention. She has led community-based studies that provide the most comprehensive assessment to date of exposures to hormone disruptors in homes, and she pioneered methods for reporting to participants on their own exposures. She developed a digital framework—the digital exposure report-back interface, DERBI—to efficiently produce high-quality personalized reports in biomonitoring and environmental exposure studies of any size.

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