

Short Communication

Collaborating With the Community: The Extra-Territorial Translational Research Team

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- Community engagement

Abstract

The purpose of the present study is to suggest a revision of the *team science* concept to the more inclusive *extra-territorial research team* (ETRT). Translational thinking is largely marked by the perception of the team as a thing-like structure at the center of the scientific activity. Collaboration accordingly involves bringing external others (e.g., scientists, community members, and clinicians) into the team through limited or dependent participation. We suggest that a promising and innovative way to see the team is as an *idea*: a schema for assembling and managing *relationships* among otherwise disparate individuals with vested interests in the problem at hand. Thus, the ETRT can be seen as a *process* as well as an *object*. We provide a case study derived from a qualitative analysis of the impact of the logic of translational science on a team assessment of environmental health following an off-coast oil disaster. The ETRT in question displayed the following principles of constructive relationship management: a high sense of *adventure* given the quick pace and timeliness given the relevance of the oil spill to all team members; regular meetings in the community to avoid the appearance of academic hegemony; open access by lay as well as institutional scientists; integration of emergency management coordinators into the group; and the languages of public health, environmental pharmacology/toxicology and coastal culture seamlessly interwoven in discussion. The ETRT model is an appropriate strategy for mobilizing and integrating the knowledge and skills needed for comprehensive science and service responses, especially during crisis.

ABBREVIATIONS

CBPR: Community-Based Participatory Research; **CEKR**: Community Engagement & Research Key Resource; **CET**: Center in Environmental Toxicology; **CSW**: Community Science Workshop; **CTSA**: Clinical and Translational Sciences Award; **ETRT**: Extra-Territorial Research Team; **GC-HARMS**: Gulf Coast Health Alliance: Health Risks Related to the Macondo Spill; **KR**: Research Key Resources; **MTT**: Multidisciplinary Translational

Teams; **SI**: Symbolic Interactionism; **UTMB**: University of Texas Medical Branch

INTRODUCTION

The growth in science and engineering research conducted by teams has dramatically accelerated since 1975, making multi-university collaborations the fastest growing authorship structure [1]. This transition has been accelerated by the recognition that increasingly specialized scientific fields must

develop collaborations to enhance creativity and accelerate the pace of discovery to address major societal health problems [2]. Research and intellectual property developed by highly functioning multidisciplinary research teams has greater impact in peer recognition through citations and patent uses than research products from siloed investigators [3]. As a result, major funding agencies are placing increasing emphasis on team science approaches in their funding portfolio. A notable example is the Clinical and Translational Sciences Award (CTSA), an initiative emerging from the NIH Roadmap, intended to stimulate the speed and effectiveness of scientific research. Numerous literature reviews have found that team science is becoming increasingly prominent [4].

Bennett, Gadlin and Levine-Finley provide a generic definition of team science: "Team science has been described as a collaborative and often cross-disciplinary approach to scientific inquiry that draws researchers who otherwise work independently or as coinvestigators on smaller-scale projects into collaborative centers and groups [5]." The literature also includes definitions of teams according to a wide range of organizational/structuralist dimensions, such as size, organizational complexity, geographic scope, funding, duration, leadership structure, team goals, etc [6]. The definitions or models of team science are very closely situated with or intended to inform strategies for evaluating team science. This makes good sense since team science has become a--if not the--primary mechanism for enacting translational science, the ultimate goal of which is to *improve* the scientific enterprise [7].

Thus, the general understanding in the literature on team science is that the team is a mechanism, an organizational structure at the center of the translational science enterprise. Accordingly, collaboration involves bringing external others (e.g., scientists, community members, and healers) into the team through conversion or limited participation. The *team* is identifiable by its structure, organizational location, and temporal location [8].

This general understanding can be critiqued from a symbolic interactionist (SI) theoretical perspective in sociology. Symbolic interactionism is a pragmatist-based perspective that posits a *processual* model of social life. Society—at all levels ranging from everyday life and informal groups to formal organizations and social institutions—is the product of on-going interaction among people who share concern over a problem. Interaction involves the search for consensus over the nature and potential solutions to the problem at hand. The culture of the local community serves as a primary source of meanings for the potential solution, but the group itself is always emergent [9].

Thus, symbolic interactionism would argue that scientists and other participants commonsensically see the team as or assume the team to be an *object* with thing-like qualities [10]. The team is something to be measured, something with a beginning and an end, and even something with a personality. Further, there are two tendencies in conceptualizing or categorizing teams in this realist fashion. They are *judged* in terms of dichotomous variables such as success/failure, functional/dysfunctional, productive/less productive, etc [11]. They are also seen as unitary entities to be *intervened* in as such, for example, to "fix"

the broken team [12]. From a symbolic interactionist perspective, we are suggesting a suspension of the thing-like perception of the team and to instead operationalize it in terms of a generator of *ideas* that could lead to innovative ways of thinking about, designing and implementing team science. The most essential task of a team is to design a method for assembling and managing *relationships* among individuals involved in a shared scientific interest [13]. This conceptualization encourages the inclusion of a wider range of possible members, beyond those initially defined by institutionalized citizenship such as the scientists located at a particular research center. The purpose of this paper is to illustrate the value of the idea of a productive *extra-territorial research team*, suggested by the symbolic interactionist perspective. An *extra-territorial research team (ETRT)* thus consists of integrated, active members from the home university, other universities, local government and the citizenry without inherent disciplinary or geographic limits. We will use the CTSA project at the University of Texas Medical Branch-Galveston to exemplify our argument.

MATERIALS AND METHODS

The first author has been conducting an ongoing qualitative evaluation and ethnographic analysis of culture change related to the introduction of translational science sensitivities, through the Clinical and Translational Science Award (CTSA), to translational research at UTMB [14]. He has conducted semi-structured interviews with the majority of scientists, physician-clinicians, department heads, post-doctoral students, graduate students, and administrators involved with the translational project. He also conducted observations of the case study discussed here. The second, third and fourth authors are directly involved in nurturing an extra-territorial team involved with the location, definition, intervention and prevention of problems that generally fall under the rubric of public health. The case study presented here is of a working group whose *raison d'être* is the assessment of environmental health following an off-coast oil disaster.

RESULTS AND DISCUSSION

The CTSA project at UTMB is organized in terms of three major sets of components. The first is the *coordinating core* that functions as the policy-making and project management component for the project. The second consists of the *multidisciplinary translational teams* (MTTs) that are the actual research components in the project. The fifteen teams cover topics ranging from burns injury and response and colorectal cancer to novel therapeutics for *Clostridial difficile* infection and phenotypes of severe asthma. The third consists of the Research Key Resources (KRs). They consist of sixteen specific resources available to all CTSA researchers at UTMB. The KRs range from biomedical informatics and ethics support to novel methodologies and regulatory knowledge and support [15]. The mission of the Institute for Translational Sciences Community Engagement Key Resource (CEKR) is to develop collaborative partnerships with local, regional, and statewide communities, enhance trust and participation in clinical and translational research, integrate community engagement and communication activities, provide training in methods for conducting community-based research, and facilitate stakeholder engagement from

initial contact through research project development in terms of an organizational mechanism named “community-based participatory research” (CBPR) [16].

An important example of a CBPR project that arose from community concerns related to an environmental public health disaster is the “Gulf Coast Health Alliance: Health Risks Related to the Macondo Spill (GC-HARMS).” Following the explosion of the Deepwater Horizon in 2010 and the subsequent massive oil spill, many questions arose about the safety of Gulf seafood and the long-term health of those who consume it. The CEKR worked closely with affected communities and the Center in Environmental Toxicology (CET) at UTMB to jointly develop a proposal to identify oil-related contaminants in fish, shrimp, crabs and oysters, determine the toxicity of these compounds, and assess evidence of exposure and effect in the affected population. A critical benefit of the CBPR approach was having the fishing community help prioritize the research questions/problems to fit both community needs and sound scientific criteria. A second benefit was having local coordinators serve as “boots on the ground” resulting in 100% recruitment in the communities. A third benefit was being able to facilitate appointments with local clinics for follow-up care for residents, in conjunction with community partner coordinators [17]. The two platforms for actualizing an extra-territorial team to address this type of crisis are the SCI Café and the Community Science Workshop.

The SCI Café

The SCI Café hosts interactive dialogs that have served as a medium for priming, organizing, communicating and strategizing among the individuals involved in team science via community-based research projects and CBPR projects. The concept of the *SCI Café* (where *Science* and *Communities Interact*) is not unique to the CEKR at UTMB. As Ahmed, et al note in their comprehensive review of the phenomenon, sci cafes are intended to create informal dialog between scientists and community members over shared concerns. The larger goal is to accomplish *community engagement* “... to build understanding and to affect health and science literacy [18].” The SCI Café provides a comfortable and accessible—and non-academic and non-clinical—setting for this discourse. Clearly, community engagement is a multi-directional endeavor, although the unidirectional communication of ideas is more often associated with “community outreach.” SCICafés generally operate to educate the lay audience to scientific discovery [18]. The translation is primarily from scientific/clinical talk to commonsense talk.

The cafés also build relationships among scientists, clinicians, and community members: priming the participants for future exploration and projects. Cafes serve as the initial contact with science and scientific institutions where relationships based upon trust and shared knowledge can begin.

The purposes of SCI Café at UTMB are to engage community members with science and science with the local community; connect to community needs and interests; increase accessibility and connectivity between researchers and the community; and, to translate CTSA science to the community. The CEKR has to date conducted a total of fifteen SCI Cafés since the establishment of the CTSA at UTMB. Each café is designed to addresses all T1-

T4 stages of translational science. Completed cafés range from “Health Research for African Americans: Beyond Tuskegee” and “Mosquito-Borne Infectious Disease” to “Impact of Exposure to Xenoestrogens including BPA and BPS,” “Diabetes: Nutrition, Planning, Clinical Research,” and “Chikungunya, Ebola, and Ongoing Outbreaks.” The SCI Cafés are conducted at a very comfortable and accessible coffee house in downtown Galveston or at a local church. A key feature of the SCI Cafés at UTMB is the concerted effort to enlist community members who are *experts* in their particular fields and skill areas, in addition to the traditional effort to enlist community *leaders* to teams. Put differently, we seek their help, not only their approval.

The community science workshop

The Community Science Workshops (CSW), which are similar in purpose to the Sci Café, consist of community meetings set within community-owned and/or frequented locations. Initial community dialogues, like SCI Café, serve as the springboard to a secondary phase to explore a project through a Community Science Workshop (CSW). To accomplish the greater goal of the development and implementation of a CBPR project, both engagement mechanisms – the SCI Café and the CSW – can be thought of as preliminary, developmental mechanisms for community-based research (i.e. design, vetting) and CBPR projects. The CSW parallels the structure and purpose of science/community collaborations characterized as “Science Shops” throughout the European Union [19]. Science Shops bring biomedical, physical, and social scientists together with community partners, regulatory agencies, and public sector service providers, for the purpose of co-designing and developing community-based research projects and formulating sound public policy.

CET and CEKR utilized a café model and CSW framework in response to the Deepwater Horizon explosion and subsequent oil spill. In 2010, a series of meetings with over 20 community groups in the early days of the spill already revealed deep concerns over lack of knowledge regarding the safety of PAHs in the oil, its disposition due to the use of dispersants, and uncertainty over long-term effects on the food web and human health effects.

Continuing the CBPR approach, these concerns and engagement fueled the development of the consortium and a U19 proposal focused upon understanding the long-term health effects attributable to the spill. The study, funded by NIEHS in 2011 for \$7.85m, focuses on the contamination of Gulf finfish and shellfish and the potential health effects in humans consuming tainted seafood.

The community participants in the GC-HARMS are truly contributing members of the team. Their presence is a function of the fact that the scientific leadership of the team realizes that they are *necessary* and not merely convenient participants. Communication is distinctly dialogical. Talk is distinctly bilingual (i.e., practical and scientific). A good example is the presence of small ship captains on the team. These mariners work in the Gulf of Mexico and Galveston Bay. They can be either fisherman or offshore equipment maintenance and repair experts. In order for the public health and environmental toxicology scientists on the team to be able to assess the impact of the oil spill on the quality

of aquatic life, they require practical procedures for measuring toxicity, understanding local currents and tide patterns, and so forth. Furthermore, the captains are critical to the establishment of crisis mobilization. They can quickly provide informed transit into the Gulf for the entire team to immediately assess a maritime crisis, days if not weeks before academic or governmental facilities can respond. In effect, the team is extra territorial to the degree its geographic boundaries are set by the nature of particular crises, and its membership includes community residents whose contributions to the team are both (practical) knowledge based and instrumental. These extensions of the team structure occur even before we take into consideration access to the team by governmental officials (e.g., Texas Department of State Health Services) or academic experts (e.g., marine biologists from Texas A & M University Galveston Campus). Overall, the ETRT creates a productively high sense of *adventure* given the quick pace and timeliness given the relevance of the oil spill to all team members.

CONCLUSION

By looking beyond the obvious and taken-for-granted features of translational research teams, we are free to discover yet new ways of organizing research that are innovative yet productive. By seeing these teams analytically as relationship systems and idea generators, and not things, we open the door to “seeing” new members and new resources. A result of this stance towards the case study at hand is the idea of the *extra-territorial research team*, whose participants extend beyond the traditional delineations of team membership. The idea of the extra-territorial research team offers full team membership to relevant lay persons/scientists, without unnecessarily demoting them to the “community” audience to the scientists’ work.

The concept of an extra-territorial team perhaps makes best sense when attempted in scientific and clinical areas such as public health, as illustrated above. Scientific and clinical responses to public health crises require formidable expertise in local culture, traditions, language, and politics [20]. They may also require specialized academic knowledge. Future research should investigate the value of this concept to other kinds of scientific and clinical problems amenable to a team approach (e.g., basic “bench” research and animal research). The extra-territorial team in translational science opens the door to shaping our science to meet the needs, contingencies, and *expertise* of the communities we serve.

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