

Environmental Service Learning as University-Community Partnership: Using Actor-Network Theory to Examine a New Model of Engagement

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Abstract

Service learning has many documented benefits for students. The benefits to the communities are less clear. This study examines the unfolding of an environmental service-learning partnership from the perspective of one participating community liaison. We examine a new model of university-community engagement, where undergraduate students are paired with a local community to address environmental issues in courses that focus on adaptation and mitigation. We use actor-network theory (ANT) to explore the experiences of one community liaison, focusing specifically on factors that helped build and maintain the partnership and produced benefits for the community. Findings highlight the community liaison's agency in negotiating partnership goals and determining the definition and treatment of environmental concerns. We conclude by identifying the insights an ANT perspective holds for service-learning and community-engagement research and practice.

Plain language summary

Service Learning as Community Partnership

Service learning has many benefits to students, but the impact on the community is less clear. This study explores a university-community environmental service-learning partnership from the community's perspective. Undergraduates take courses in environmental issues and are paired with local communities to help address these issues. We focused on one partnership that produced benefits for the community and found that nonhuman entities helped this partnership develop. Additionally, agency and representation play an important role in how the community and environment are defined.

Keywords

service learning, university engagement, actor-network theory, university-community partnerships, environmental education

Service learning in higher education has documented benefits to students, including increased academic performance (Meyer et al., 2016; Weiler et al., 2013); application of knowledge and skills in a real-world situation (Botelho, 2020; Meyer et al., 2016); increased problem-solving skills (Weiler et al., 2013); and increased social capital and civic engagement after graduation (D'Agostino, 2010; Richard, 2017). Whether communities gain similar benefits depends on several characteristics of the university-community partnerships in which the service-learning experiences are situated. Aspects of effective partnerships include commitment of time and

resources, mutually agreed upon goals important to both partners (Bringle & Hatcher, 1996), and shared decision-making (Levkoe & Stack-Cutler, 2018). Levkoe and Stack-Cutler (2018) identify several obstacles to

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successful partnership, including imbalances of power, time, and resources between the university and community. Community representation (i.e., who speaks and prioritizes the needs for the community) has also been explored as a barrier to success (Bringle & Hatcher, 1996; Dempsey, 2010; Levkoe & Stack-Cutler, 2018); having one or two representatives speak for or make decisions on behalf of the community as a whole may over simplify the differential needs and priorities of a dynamic heterogeneous community. Though research has documented some of the factors that facilitate or impede the development of successful university-community partnerships for service learning, less is known about how these partnerships develop. Even less is known about how community partners understand and engage in this development.

Understanding these issues requires an exploratory approach that can contextualize and make more apparent how the university-community service-learning partnerships and projects take shape. This is especially important for communities that have limited resources and expertise to meet the demands of responding to environmental concerns. This study focused on one community liaison's experiences in a service-learning partnership between a New England university and the community. We use the term community to include any external group, including municipalities, non-profit organizations, and land trusts, that has partnered with the Environment Corps (E-Corps) program. This study is part of a larger project exploring a new model of university-community engagement via environmental service-learning courses. E-Corps is a program created to provide undergraduate students with real-world experience and assist local towns and community organizations by providing environmental expertise (Arnold et al., 2021).

This paper draws on the experiences of E-Corps to describe the development of the university-community service-learning partnerships, or how the partnership takes shape and develops, and to identify factors that stabilize such partnerships. This study centers the experience of one community liaison, a non-university actor vital to service learning. Given the central role community liaisons play in the nature and quality of students' service-learning experiences, understanding their perspectives on and participation in university-community partnership for service learning is critical.

We use actor-network theory (ANT) to explore the development of this partnership. Here, ANT is defined as a set of tools or approaches for examining the complexities and tensions that arise in cross-institutional partnerships in which people from different organizational settings and who play different organizational roles must coordinate their work to achieve some common goals (Fenwick, 2010; Green et al., 2019; Smith

et al., 2017). ANT focuses on how the interactions and relationships between people, texts, and material tools and objects variously facilitate or impede this work, which it refers to as *translation* (Callon, 1984). Follman (2015) suggests that ANT provides a nuanced lens for studying how service learning, especially the formation of partnerships, is enacted. ANT's focus on illuminating the heterogeneous networks of people, texts, and material objects that must get constructed for partnerships to achieve their goals helps capture the dynamic nature of service-learning programs.

In the following, we review the literature on service-learning and university-community partnerships. The research points to the importance of involving community representatives in the creation and maintenance of university-community partnerships to ensure the quality and effectiveness of service-learning projects for communities as well as students. Following this review, we describe how an ANT perspective helps to identify the people, texts and things and their interactions that can facilitate developing a university-community partnership for service learning and enable communities, as represented by community liaisons, to meet their goals through it. We then describe our research methods and present our findings. We conclude by identifying implications for using ANT in service-learning research and practice. The following question guided this research: How do community members participate in constructing university-community environmental service-learning partnerships and how does that participation benefit them? Addressing this question allows us to shift the lens from a dominant focus on what students gain from service-learning to considering how the partnerships serve communities.

Literature Review

This review of literature begins by defining and evaluating the impacts of university service learning on stakeholders. This is followed by an exploration of the conceptions of community in university-community partnerships. Finally, environmental governance is explored.

University Service-Learning and Community Partnerships

Service learning has the potential to be transformational for all participants. Extensive research has shown the advantages of service-learning (Botelho, 2020; Bringle & Hatcher, 1996; D'Agostino, 2010; Meyer et al., 2016; Prentice & Garcia, 2000; Salam et al., 2019; Weiler et al., 2013). These benefits, among others, include real-world application and more connected depth of course content knowledge (Dienhart et al., 2016; Meyers et al., 2016)

and increased reciprocity between universities and communities (Olberding & Hacker 2016). While many definitions exist (Salam et al., 2019), E-Corps was grounded in Bringle and Hatcher's (1996) definition of service learning as a:

credit-bearing educational experience in which students (a) participate in an organized service activity that meets identified community needs and (b) reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility. (p. 222)

Even as the focus is often on students, understanding community needs allows faculty to provide more authentic real-world examples (Botelho, 2020) and improvements in teaching (Bringle & Hatcher, 1996; Salam et al., 2019). For example, Botelho (2020) surveyed 1,700 students in STEM service-learning programs throughout the California State University system, finding that students in particular appreciated the opportunities to learn course content applied in a real-world context. In addition, communities benefit from faculty expertise, students' time and effort, and university resources (Blouin & Perry, 2009; Bringle & Hatcher, 1996; Salam et al., 2019). Examples of outcomes for the community members include increases in social capital and community self-efficacy (Salam et al., 2019).

Barriers and drawbacks of service-learning have also been documented (Baum, 2000; Dempsey, 2010; Levkoe & Stack-Cutler, 2018; Salam et al., 2019). For example, Volchok (2017) reports a tension in finding a balance between helping students achieve learning outcomes and ensuring that service-learning partners (e.g., local municipalities) benefit. Other issues include: challenges in communication between students, faculty, and community partners; lack of funding for sustaining service-learning programs; logistics of scheduling; time required for course design; and challenges in course assessment (Baum, 2000; Salam et al., 2019).

Ideally, university and community actors mutually benefit from service-learning projects as they share power and jointly engage in decision-making about project goals and processes (Levkoe & Stack-Cutler, 2018). In reality, this is not always the case. Often the university benefits more than the community (Bortolin, 2011; Cronley et al., 2015). For example, Dempsey (2010) documented the initial creation of a partnership between University of North Carolina, Chapel Hill and surrounding communities. When offered space to share their concerns, community representatives compared past partnerships to "extraction;" research outcomes were not shared, and the community did not benefit from the results (Dempsey, 2010). Community members said that they had been misquoted and had not had a chance to

review the research before publication. They criticized researchers for taking information from the community and not addressing "practical community needs."

Conceptions of "Community" in University-Community Partnerships

While service-learning aims to benefit the community, the term "community" is vague, ambiguous, and contested. Dempsey (2010) argues the "abstract treatments of community minimize its heterogeneity, thereby obscuring important questions about the politics of community representation" (p. 382). Questions arise about who represents the community and whether they adequately voice the range of community concerns (Baum, 2000). For example, Baum (2000) describes the difference between expectations and actual outcomes from partnerships. In particular, Baum highlights an unsuccessful partnership due to the turnover of community representatives and inaccurate assumptions between stakeholders. In addition, university stakeholders, especially students, may misrepresent the communities that they are serving by homogenizing the concerns and priorities (Blouin & Perry, 2009) or treat the community as monolithic. In choosing a service-learning project, university representatives must engage with community members in a way that allows for the development of trust and open communication. While more genuine relationships may take more time to construct, benefits include challenging the potential power imbalances between university faculty and community members that can derail or diminish the power of service learning (Dempsey, 2010). To create a partnership, it is necessary then to recognize and interrogate the nuance of power dynamics in the community and consider who is afforded the capacity to act as a representative when deciding community goals and needs and who is not. The spokesperson for the community should be someone directly affected by the issue that service learning is trying to solve. In the end, when it comes to service-learning researchers have been critical of the lack of focus on the community-university partnerships (Butin, 2003; Cruz & Giles, 2000), which is something this current research seeks to address through the use of ANT.

Environmental Governance

As its name indicates, E-Corps is a service-learning project focused on addressing environmental issues that partnering communities face in their municipal boundaries. Many issues, like sea-level rise along the coast, flooding and wind from storms, and remediating pollution, are not contained within the borders of the town. However, due to lack of federal policy and the immediate need,

towns tackle global problems at the micro level (Boyer, 2013; Rutland & Aylett, 2008). As local governments and organizations address these issues, many factors affect their policy decisions, including residents' concerns, federal, state, and neighboring towns' policies, economic constraints, and "political conflict, public contestation, [and] uncertainty" (Arnold & Long, 2019, p. 465). Municipalities innovate and expand policy, especially when citizens advocate for specific resolutions (Arnold & Long, 2019). The case of fracking in New York offers an interesting perspective on how municipalities make decisions that can impact policy decisions in neighboring towns and at the state level. Policies banning fracking in New York started at the municipal level and then became state policy (Arnold & Long, 2019). In another example, Rutland and Aylett (2008) used ANT to explore Portland, Oregon's approach to reducing carbon emissions. The Portland city government was able to enroll and mobilize citizens and industry in their efforts to significantly reduce carbon emissions. Previously, energy efficiency had been promoted as a cost saving measure. By linking carbon emissions to energy efficiency and saving money, Portland was able to align diverse interests so that the voluntary reduction of emissions was desirable (Rutland & Aylett, 2008).

In sum, while students, faculty, and communities can benefit from service learning, imbalances in power and decision making and differing priorities can lead to less fruitful experiences, especially for communities that must also grapple with federal and state policies and limited resources, personnel, and time to devote to such partnerships. As discussed above, service learning can support communities, but creating municipal environmental policy is a messy enterprise that involves a myriad of factors, including residents' concerns, federal and state regulations, response to natural disasters, and environmental advocacy groups. Moreover, municipal governments prioritize environmental issues in response to these factors but often lack the specific expertise and resources to explore, suggest, and implement solutions (Boyer, 2013; Hyde & Barrett, 2017). Adding university faculty and students through university-community partnerships into the mix can provide expertise and resources. It also means aligning even more interests in mobilizing, coordinating, and promoting action.

The E-Corps

This study was conducted as part of a larger project investigating the implementation and institutionalization of E-Corps a new model for university engagement in communities through environmental service learning, at a large New England university (for a more detailed summary of the program, see Arnold et al., 2021). E-

Corps offers service-learning courses to undergraduate students from all majors that focus on opportunities for real-world experiential learning (Arnold et al., 2021). In a prior study, Campbell-Montalvo et al., 2021 reported that collaboration between multiple departments, centers, and programs enabled the initial success. Through E-Corps, individual students or student teams are paired with community partners in order to address a local environmental concern. There are three different classes offered as part of the E-Corps model, each dedicated to a specific environmental focus (i.e., Climate Corps, Brownfield Corps, Stormwater Corps). In addition, instructors across the courses work together around a common instructional framework as part of supporting teaching and learning in E-Corps courses (Campbell-Montalvo et al., 2021; Park et al., 2022). Students produce projects that are shared with the community and offer suggestions for next steps (Arnold et al., 2021). To date, 394 students have taken at least one of the E-Corps classes (a few students have taken more than one of the classes) and created 107 community projects.

The New England state where this project takes place is notable for its parochial nature and affinity for local control (Nolon, 2002). With limited county government, each municipality must manage locally relevant environmental concerns that are often connected to more large-scale environmental issues (Boyer, 2013). Many small towns do not have the necessary knowledge and skills or external resources and support needed to address these issues (Boyer, 2013; Hyde & Barrett, 2017). As a Land and Sea Grant university, the university has a strong charge to operate as an "engaged institution" (Kellogg Commission, 1999). The new model for engagement through environmental service learning (i.e., E-Corps), that served as the context of this research, was created for the New England university to ensure it both met its aim as an engaged institution (Kellogg Commission, 1999) while concurrently benefiting students. While the model was originally designed for the local New England university, from its inception there was a belief that the model could also be adapted by other universities, especially those that aspired to the commitments of an engaged institution articulated by the Kellogg Commission. In the end, among other things, the E-Corps university-community partnership is an opportunity for students to gain real-world experience, while providing needed expertise, services, and support to local towns.

Theoretical Framework: Actor-Network Theory

The study presented here explores the development of one E-Corps service-learning partnership from the perspective of a community representative. We turn to

actor-network theory (ANT) to identify the networks of people, texts, and material objects involved in this work (Callon, 1984; Latour, 2005; Law, 2008; Mol, 2010). Actor-network theory is both a methodological and theoretical framework (Jeong, 2018; Law, 2008; Nimmo, 2011; Wang & Xiao, 2020); it offers sensibilities that recognize the complexity of action and thought and nuanced descriptions, rather than mechanistic explanations (Fenwick, 2010; Law, 2008). Originating in science and technology studies, ANT has many definitions and is used in many fields (Latour, 2005; Law, 2008), including tourism (Deason et al., 2022; Wang & Xiao, 2020) and climate change (Colston & Ivey, 2015; Simon, 2014). Green et al. (2019) define ANT as a “framework encouraging an understanding of the human experience through an identification of the complex networks and associated power dynamics that sustain and legitimize the systems in which they operate” (p. 241). While ANT offers myriad conceptual tools, the most salient for this study are the agency of nonhumans and the process of translation.

The E-Corps model requires that university and local community partners form and maintain relationships. These relationships are influenced by the natural and built environment, the availability of financial resources, and federal and state policies. According to ANT, these nonhuman entities (e.g., natural environment, policies) hold agency as they facilitate and constrain how human and other nonhuman entities can act (Fox, 2000). ANT refers to both human and nonhuman as “actants,” defined as the people, organizations, and objects that play active roles in a network. Since nonhuman entities affect others, the term actant is used instead of actor to avoid solely focusing on humans (Colston & Ivey, 2015; Fox, 2000; Rutland & Aylett, 2008). ANT thus provides a framework for examining negotiations among actants that accounts for heterogeneous relationships between human and nonhuman actants and actions.

Rather than simplifying the negotiations required to build partnerships and coordinate their work, ANT seeks to explicitly document the rough patches or tensions through which alliances (un)form and how different actants and entities interact (Callon, 1984). ANT does not offer causal explanations (Law, 2008). Instead, it offers a narrative of *how* the E-Corps service-learning projects unfolded within an actor-network.

From an ANT perspective, creating and sustaining university-community partnerships for service learning involves *translating* the diverse interests of humans and nonhumans (e.g., environmental policy, natural or man-made structures) to coordinate their actions and achieve a shared goal. Translation involves aligning actants’ interests and negotiating their involvement. For example, Rutland and Aylett (2008) describe how the city of

Portland developed and sustained a network of residents, businesses, and policies in order to encourage pro-climate behavior. The actants, including the local carbon emissions which had to be defined and measured, were persuaded to adopt shared priorities and commit to specific actions.

According to Callon (1984), translation includes four “moments” or phases: *problematization*, *interessement*, *enrollment*, and *mobilization* (Callon, 1984). In problematization, key stakeholders, such as university faculty attempting to create a service-learning partnership, try to persuade other actants, such as students, community members, etc., that their interests can be met by participating in the stakeholders’ project. Through defining problems and solutions in this way, stakeholders position their project as an *obligatory passage point*; other actants go through the project to meet their goals. Not all actants, however, are invited into an actor-network. Some are excluded and some must be separated from other relationships in order to focus their attention on the work of the project. This is the process of *interessement*. In enrollment, the key stakeholders then lock actants into these new relationships and their attendant roles. Finally, mobilization is the process through which stakeholders represent actants in the actor-network in ways that establish the stakeholders as spokespeople for the network. Though the term “moment” or “phase” suggests a linear relationship between these different translation processes, they are on-going, iterative processes. While each supports the other, none of the moments are ever entirely settled.

Actor-networks are fragile. Even seemingly stable networks require continuous effort to remain intact. Additionally, “counter-networks” compete for actants’ attention (Fenwick & Edwards, 2011). For example, if two tasks compete for our attention at any given time, one task might be prioritized, while the other task is temporarily set aside. This is important to consider when looking at temporary partnerships like those in service learning. Networks come together and fall apart. In ANT, “networks are treated not as stable structures in static landscapes but as contingent effects” (Nespor, 2011, p. 17). Framing networks as dynamic allows researchers to consider the complicated contexts of education. University-community partnerships are dynamic and include many moving parts; ANT offers a way to describe the relationships among these moving parts more carefully.

ANT conceives of university-community partnerships as more than two organizations working together. Rather, these partnerships, as actor-networks, are entanglements of individuals, policies, funding, and resources. ANT makes room for this multidimensional system. “An ANT approach notices how things are invited or

excluded, how some linkages work and others don't, and how connections are bolstered to make themselves stable and durable by linking to other networks and things" (Fenwick, 2010, p. 120). ANT asks researchers to pause and suspend assumptions in order to consider the complexity of the phenomenon. Documenting the tensions in the relationships between the actants within a network can reveal the power dynamics at play between human-to-human, human-to-nونhuman, and nonhuman-to-nونhuman actants in an effort to more comprehensively and expansively represent the network and the actants therein. More specifically, ANT can shed light on the intricate network of people and things as they negotiate their roles (Mol, 2010) in a university-community service-learning partnership. Because partnerships like E-Corps include stakeholders inside and outside the university and actants as complex as sea level rise, the boundaries between the phenomenon and context are ambiguous. ANT allows for this ambiguity and complexity to be surfaced rather than simplified. Given both the many interests that need to be mobilized to enact service-learning partnerships and the myriad factors that shape governmental and organizational responses to complex environmental issues, ANT offers a lens to examine "how a diverse array of political interests emerged and became intertwined" (Rutland & Aylett, 2008, pp. 633–634) in creating and maintaining service-learning partnerships like E-Corps.

Materials and Methods

Research Design

Like most ANT research, this study used qualitative methods to build a rich description of the E-Corps partnerships (Creswell, 2007; Deason et al., 2022). Due to the novelty of the E-Corps program, we chose to conduct an exploratory study (Creswell, 2007) using case study design (Merriam, 1998; Yin, 2009) to examine the E-Corps partnerships in context. Because in each of the three E-Corps classes, students work individually or in small teams to partner with a community, each student-community pairing and project is unique. The needs of the community and skillset of the students involved are similarly unique. Therefore, we defined a case as one partnership which included a student or group of students, a community liaison, course instructors, teaching assistants, and other community members. We further focused on the community liaison as our central actor. Extant literature suggests that community liaisons experience mixed outcomes from service-learning programs. They are thus likely to experience the tensions and complexities of service-learning partnerships more directly than other actors.

Examining service-learning partnerships from the perspective of a community liaison allows us to illuminate these tensions and complexities.

Data Collection

This study is part of a larger project studying the implementation and impact of E-Corps. Data collected for this larger project include interviews with instructors, students, and community liaisons, observations of classes, and collected artifacts. All data were collected by the research team and an external evaluator. The interviews with the community liaisons (i.e., a subset of eight community liaisons) were conducted by the external evaluator in the Fall of 2020. The semi-structured interview protocol (Miles et al., 2020) used by the external evaluator to conduct the interviews was jointly constructed and negotiated by the external evaluator and the research team. In addition to questions about nonhuman actants involved in the local environmental action, questions included:

- What was the central issue/problem/opportunity the project focused on? Why was this a problem for your community?
- What role do policies and financial resources play in prioritizing environmental issues in your community?
- To what extent are community stakeholders and other community members typically involved in addressing environmental issues? What is the nature of their involvement?

Before each interview, the external evaluator obtained informed consent from interviewees. The interviews were conducted via video conferencing, because the evaluation team was not located in geographic proximity to the university or communities. Interviews, which lasted between 30 and 60 minutes, were recorded, transcribed, and blinded. Pseudonyms were used for people and specific programs to protect confidentiality and to humanize the deidentified data.

Artifacts included publicly available websites, such as the E-Corps website and the Sustainable CT program (a nonprofit organization promoting municipal sustainability) website, as well as the statements and policies they archived. The artifacts both helped clarify the purpose and goals of human actants and served as nonhuman actants that asserted agency in the formation of the E-Corps partnership. They both assisted in enrolling and mobilizing human actants and had to be enrolled and mobilized by human actants to secure their own and others' interests in and through the partnership.

Case Selection

During their interviews, each of the community liaisons involved in the different partnerships that comprised the E-Corps identified a wide variety of actants, many of which were particular to their community contexts. The E-Corps partnership purposefully selected for this study, herein the “Townsville Partnership,” represents a unique case (Patton, 2015) in which the community liaison identified tangible benefits that the town accrued from the Partnership. The Townsville Partnership was initiated by Jim, an E-Corps university instructor, and Brenda, Townsville’s Director of Community and Economic Development (the participant’s job title has been altered slightly to protect confidentiality). After securing Brenda’s participation and in consultation with her, Jim assigned Kaitlin, a university student enrolled in Jim’s E-Corps class, to the Townsville Partnership. These types of connections and assignments were common across the different E-Corps partnerships. As we trace how Brenda mobilized these connections and assignments to meet the town’s sustainability goals, the Townsville Partnership provides a case through which to understand how communities can utilize service-learning university-community partnerships to meet their environmental goals.

Data Analysis

Data analysis was iterative and occurred across several cycles. Employing an ANT perspective, in the first cycle, we used structural coding (Saldaña, 2016) to label actants in the E-Corps network. Based on this coding, we created analytic memos (Miles et al., 2020) that described the significance of each actant, focusing specifically on whether and how it played a role in the translation of the partnership. In the second cycle of coding, we coded interview data using process coding (Saldaña, 2016) to identify the processes of translation, how the different actants were involved in each, and their outcomes in relation to (de)stabilizing the partnership and for the community liaison. Artifacts, such as websites for actants like E-Corps and the Sustainable CT program, were used during analysis to triangulate findings and provide context. For example, Brenda discussed various requirements of the Sustainable CT program. The first author consulted the Sustainable CT website to gather information about the program, including how towns could earn points toward certification. Without the website, our only understanding of Sustainable CT would have been the interviewee’s opinion of it. By referencing texts about Sustainable CT, we gained a better sense of how the Badge served as an actant in the partnership network, shaping Brenda’s actions and interactions with other things and people, like Kaitlin and Jim, in the network.

Findings

In the following, we describe the construction of the Townsville E-Corps partnership from the perspective of the community liaison Brenda. Since networks in ANT are precarious and fragile, and “translation is a process, never a completed accomplishment” (Callon, 1984, p. 196), documenting the moments of translation illuminates the factors that stabilize and inhibit successful partnership. While these moments are not linear, we present them in sequence to show how ANT can be applied to service-learning and community engagement research to better understand the benefits and potential challenges that university-community service-learning partnerships can have for community partners.

Brenda was one of the community liaisons for the Climate Corps class that Jim taught. She served as Townsville’s Director of Planning and Economic Development. She described that role as “a coordinator of programs that we have here in the community rather than being more of the hands on... I do more at the policy level than I do at the field level.” Brenda identified herself as organizing actions related to “sustainability and environmental protection” in the town. We follow her, in her role as Townsville’s Director of Planning and Economic Development, as she enrolls and mobilizes people and resources to meet her goals through the Townsville Partnership.

A Brief Chronology of the Townsville Partnership

Before tracing the processes of translation and their consequences, we provide a brief chronology of the Townsville Partnership. Again, we center Brenda’s perspective. This helps to locate the partnership within the context of the community’s goals and interests.

The actual service-learning component of the Townsville Partnership occurred during the Spring 2020 semester as part of the Climate Corps Independent Study course. This course followed the Fall 2019 course, Local Climate Planning, as part of a two-course sequence. The Townsville Partnership network rested, however, on a much longer-term relationship that Brenda had formed with Jim, a university course instructor. Long before E-Corps, Brenda had established what she called “a long-standing relationship” with Jim while she was the city planner for another town where Jim was the Director of Development and Planning. Brenda “kept in touch” with Jim after he changed careers.

During the years between Jim’s career change and the launch of the E-Corps initiative by the university in 2018, Brenda became Townsville’s Director of Planning and Economic Development. During this time, environmental planning and assessments were undertaken at the

town and regional level, and state mandates were being implemented. Townsville created its Plan of Conservation and Development (POCD) to conduct environmental mapping and assessments in 2012 and 2013. Over time, enabled by the town's GIS system, the POCD added layers of data to the initial environmental maps.

Significantly, in 2017, a group of municipal leaders in the state created Sustainable CT to make visible and endorse community sustainability efforts. Sustainable CT provided localities information they could utilize to meet typically unfunded state and federal mandates. Obtaining certification for Townsville became a central goal for Brenda. When Jim reached out to Brenda in 2019 as part of his effort to utilize his professional networks to help launch the Townsville Partnership, Brenda expressed her desire to be assigned a service-learning student who could assist Townsville in obtaining the certification. Jim recommended Kaitlin, a student in the first of the two-course Climate Corps sequence at the university that he taught in fall 2019. He believed Kaitlin's interests and skill set aligned with Brenda's goal. Following the semester and the formal partnership between the university and the community, Townsville earned the certification. We turn next to identifying the Townsville Partnership's role in this by examining the processes of translation.

Problematization

Problematization involves actants identifying and defining a problem or goal that requires interdependence. During problematization, actants attempt to position themselves as obligatory points of passage (Callon, 1984) by establishing their actions as the central means through which other actants can secure their own interests. Problematization thus entails actants negotiating how problems and solutions get defined and established. In the case of the Townsville Partnership, this centrally involved negotiating how environmental issues are defined and what constitutes the best way to address them.

The university-based creators of the E-Corps project asserted that participation in the project would enable communities to meet their environmental concerns. In addition to its goal of supporting undergraduate students in becoming the "next generation of scientists, engineers, and other practitioners" (Campbell et al., 2023) capable of tackling environmental issues, the E-Corps project sought "to address the lack of STEM-related skills in New England communities in order to help those communities better prepare for and weather current and coming environmental concerns" (Arnold et al., 2021,

p. 217). For Jim, securing Brenda's participation in the E-Corps initiative enabled him to meet the initiative's goal of providing students with "STEM-related skills" to assist communities in addressing environmental issues. Indeed, Brenda noted that Jim had "reached out" more than once seeking Townsville's participation.

While Jim, as an E-Corps representative, positioned the Townsville Partnership as a means for Townsville to achieve its environmental interests, it was Brenda who ultimately defined the Partnership's goal. She determined that Kaitlin's service-learning project would assist the town in obtaining certification from Sustainable CT. According to its website, Sustainable CT is a nonprofit organization created by "people from key agencies, nonprofits and businesses" (*Sustainable CT: About*, n.d.) to enact and enhance aspects of "sustainability," namely, the economy, environment, and equity. Sustainable CT's mission clearly articulates that environment is only one aspect of their focus:

To foster inclusive, resilient, and vibrant [state] municipalities that provide opportunities for all to thrive by: providing a menu of sustainability actions that build local economies, support equity, and respect the finite capacity of the environment; offering technical assistance to help advance sustainability initiatives; and recognizing and certifying municipalities for their achievements. (*Sustainable CT—About*, n.d.)

This broader vision of sustainability appealed to Brenda in her role as Director of Planning and Economic Development. She described the program as follows:

The Sustainable CT effort is very broad and comprehensive and touches on almost all of the things that local government does and provides. So, there were many other partners, players, individuals, organizations boards and commissions that touched base on the overall certification.

While E-Corps creators defined the goal of its university-community service-learning partnerships as helping communities address their "environmental concerns," by defining the goal of the Townsville Partnership as securing Sustainable CT certification, Brenda expanded the goal to include attention to economic and equity concerns. As she notes in her comment, meeting these goals involved obtaining the participation of a range of individual and organizational "partners." By agreeing to serve as the community liaison with the E-Corps initiative and establishing the Townsville Partnership's goal as obtaining Sustainable CT certification, Brenda thus positioned herself as the obligatory point of passage (Callon, 1984) for both E-Corps' singular environmental focus and Townsville's sustainability goals. Both goals had to go through Brenda to be achieved.

Interessement and Enrollment

As she defined the goals of the Townsville Partnership and established her position as central within it, Brenda utilized the E-Corps initiative and the Sustainable CT program to prompt and authorize her own goals and actions. This involved engaging in the work of *interessement* and enrollment. Because *interessement* and enrollment are closely related we discuss them jointly in this section. During *interessement*, actants lure or compel other entities into particular roles and relationships in order to achieve a particular goal. If successful, actants then work to enroll or lock other actants into these roles and relationships. According to Callon (1984), *interessement* “helps corner the entities to be enrolled” (p. 211). Some actants are invited, while others are excluded (Fenwick, 2010). Additionally, some actants are separated from or gotten “in-between” (Callon, 1984, p. 208) actants involved in other actor-networks in order to fix and stabilize their participation in the actor-network at hand.

Brenda “interested” and enrolled several entities in her efforts to use the Townsville Partnership to obtain Sustainable CT certification. Central among these actants was Kaitlin, an undergraduate student in the practicum semester of the Climate Corps class. Jim, in consultation with Brenda, chose Kaitlin to work with Townsville as he thought her skills and interests aligned with Brenda’s goals. Because participating in an E-Corps partnership was a course requirement, it was not difficult for Jim to “corner” Kaitlin into participating in the Townsville partnership.

While Jim invited Kaitlin into the network, Brenda ensured that Kaitlin prioritized certification over other course requirements. Brenda described her role in relation to Kaitlin as a “coordinator.” In addition to editing and critiquing the work Kaitlin produced for Townsville, Brenda “provid[ed] direction and guidance” and “introduced [Kaitlin] to the various players in terms of who she would be working with.” As the “coordinator,” Brenda positioned herself between Jim and Kaitlin, noting, “Jim would check in and make sure where the effort was moving forward and make sure things were on task, but primarily we worked directly with the student.”

While Kaitlin benefited from the Townsville partnership through building her knowledge and skills, earning university credits, and gaining field experience, Brenda enrolled or locked Kaitlin into relationships with other actants so that she could help Brenda, and Townsville, achieve Sustainable CT certification. Townsville’s Plan of Conservation and Development (POCD), a state-mandated municipal document containing specific priorities and plans for the town, was among the most prominent of these actants. Brenda used the POCD to frame how Kaitlin viewed and interacted with the community and its environmental landscape by “familiariz[ing] her

[Kaitlin] with the community... explaining what the Plan of Conservation and Development does.” Under Brenda’s guidance, Kaitlin relied on the data in the POCD as a starting point for her work. She then synthesized state and regional climate assessments and data collected through the GIS with the data in the POCD to produce an up-to-date assessment of climate vulnerability. Climate vulnerability is an evaluation of the impact that climate change will have on the assets of a community. Brenda positioned the POCD as the primary way for Kaitlin to identify Townsville’s assets. The POCD’s central role was further reinforced by the fact that Kaitlin’s service-learning project took place during the beginning of the COVID-19 pandemic when the university switched to virtual learning. In addition to virtual meetings with Brenda and other community members Brenda connected her with, Kaitlin’s interactions with Townsville occurred only through interactions with texts like the POCD. The POCD and the various maps and data associated with it centrally mediated Kaitlin’s relationship with Townsville’s natural environment.

Brenda focused Kaitlin’s work on using the POCD to accomplish Sustainable CT certification, specifically the certification action item related to climate vulnerability. Rather than a focus on the task of assessing climate vulnerability in itself, Brenda framed the work as earning points for certification, thus ultimately locking Kaitlin into a relationship with Sustainable CT. To conduct the climate vulnerability assessment, Kaitlin had to draw on the assets and priorities of Townsville, and Brenda provided this information through the POCD. As she directed Kaitlin’s work and provided feedback on it, Brenda ensured that the report Kaitlin produced “answer[ed] specific questions based on the Sustainable CT requirements” and “was formatted in a way to satisfy the certification requirements.” Brenda positioned the POCD and other data sources as starting points for Kaitlin to work toward Sustainable CT certification.

Significantly, despite the name and objective of E-Corps, in general, and Climate Corps, more specifically, the natural and built environment of the town was not specifically invited into the Townsville Partnership. This occurred, partly, because of the Covid-19 lockdown. Kaitlin used digital tools such as state environmental databases and GIS software to accomplish the goal Brenda set for her service-learning project. The environment did assert itself, however. Through her interactions with the POCD and Sustainable CT certification requirements, as well as the tools and data involved, potential flooding in one area of Townsville emerged. As Brenda noted:

One of the revealing things that I don’t think our economic development folks were aware of is, we’ve got a couple of areas within the community that are subject to flooding that

are in our primary business district and we've been kind of encouraging that area to further be redeveloped and expanded. But at the same time, you've got these potential flooding concerns that have to be mindful of as we do that. I think we're going to take a further look at some of those locations and get a better understanding if there are things that we can do to lessen the issues.

While Brenda defined the goal of the Townsville Partnership as obtaining Sustainable CT certification and coordinated Kaitlin's service-learning project to achieve that goal, the environment, here in the form of potential flood threats, resisted being defined by this goal. It demanded Brenda's attention beyond certification, impacting her interactions with other community members, that is, businesses and the "economic development folks," by focusing their attention on the flood risks, as well. Brenda had become "mindful" of the physical environment itself, beyond its role in securing Sustainable CT certification.

Mobilization

The fourth moment of translation is mobilization. During mobilization, actants position themselves and others as spokespersons for the networks they have assembled (Callon, 1984). As actants speak for a network, they represent other actants in other forms, or intermediaries, that are legible to actants within and outside of the network to secure support for the network. For example, university faculty represent the university-community service-learning partnerships they initiate through lines on their CVs, descriptions and videos on faculty websites, and data in grant proposals and publications. These representations or intermediaries help faculty secure support for the network from outside actants as well as with actants within the network.

Brenda mobilized several actants in ways that allowed her to speak for both Townsville and the Townsville Partnership. Brenda consistently positioned the POCD as representing Townsville as a community. As noted, Brenda reported that the POCD was created by a variety of stakeholders, noting, "we went through an elaborate community participation, community collaboration process in order to adopt the document." Brenda further described how the contents of the POCD represented Townsville's environment through its maps, charts, and other data sources.

There were a series of maps included in the document that identified the specific targeted properties. Each property in town has a recommended land use, for example. It also identifies at-risk areas ... things like which farmland to protect, what open spaces to acquire, here there are some sensitive resources that need protection.

In describing the POCD in these ways and in using it to coordinate Kaitlin's service-learning project, Brenda used the POCD to position herself as a spokesperson for Townsville and the Townsville Partnership.

Brenda further spoke for the Townsville Partnership by representing Kaitlin and her service-learning project. On the one hand, by selecting and assigning Kaitlin to the Townsville Partnership, Jim mobilized Kaitlin to represent the university. As a Land and Sea Grant institution, the university has a responsibility to engage with communities. Kaitlin represented the university's community, collective knowledge, and resources, drawing on them to work toward Brenda's goal. Brenda described Kaitlin as providing expertise not available to Townsville from other entities, noting, "She went through a much more detailed assessment than you would have gotten at the regional level, which then we were able to use for our benefit."

On the other hand, Brenda also mobilized Kaitlin's service-learning project. Brenda described the results of Kaitlin's project in the following:

... through her work (we were) able to acquire 25 points toward our overall certification point requirements, which is one of the bigger ones that you can actually get credit for... we were just notified a few weeks ago that we did in fact meet what they call silver certification level. It's the highest certification level that they presently offer here in [state] right now. So, we're one of just a few communities that were able to get this particular certification.

Brenda quantified and represented Kaitlin's service-learning work into Sustainable CT certification "points." By doing so, she spoke for the Townsville Partnership in terms of the goals she had established for it. As Director of Planning and Economic Development, Brenda's job is to support and coordinate Townsville's economic and community development interests. Achieving the highest level of Sustainable CT certification is evidence to entities within Townsville and across the state of the value of the Townsville Partnership and of Brenda's coordination of it. In representing the outcome of the Partnership in terms of Sustainable CT certification points, Brenda ultimately speaks for the Townsville environment in terms of its relation to the economic and equity concerns that the Sustainable CT program certifies. Who speaks for the Townsville Partnership thus speaks for the Townsville environment and how it should be perceived.

Discussion

University-community partnerships are complex networks of people, resources, policies and material objects. Though studies of these partnerships raise concerns that the university often benefits from these partnerships

more than communities (Bortolin, 2011; Cronley et al., 2015; Dempsey, 2010), some studies have shown that communities can benefit from service-learning partnerships (Blouin & Perry, 2009; Bringle & Hatcher, 1996; Salam et al., 2019). In the present study, Brenda, the community liaison in the Townsville Partnership, assembled an actor-network which benefited Townsville by enabling the town to gain Sustainable CT certification. The certification signaled that Townsville was meeting sustainability metrics established by Sustainable CT an initiative established by municipalities, nonprofits, and businesses that assisted towns across the state in their sustainability efforts. The service-learning project conducted by Kaitlin, the university student assigned to Townsville by her professor, Jim, significantly contributed to the town's efforts to obtain certification. This study thus adds to others that document how communities can achieve their goals through university-community service-learning partnerships.

The study also extends current research through its use of ANT, offering insights useful to building university-community service-learning partnerships. First, highlighting the processes of problematization sheds light on the nature and role of goal-setting in university-community service-learning partnerships. Shared goals have long been considered a hallmark of an effective university-community partnership (Baum, 2000; Bringle & Hatcher, 1996; Levkoe & Stack-Cutler, 2018). This suggests that partnership-building involves a well-defined process through which partners collaboratively establish articulated and agreed upon goals. ANT conceives of goal-setting, in contrast, as being continually negotiated in and across multiple spaces, and points to the potential benefits of providing spaces for community partners to shape their own goals rather than adhering to a shared partnership goal. In the case of the Townsville Partnership, the university established two broad goals for the E-Corps service-learning partnerships: building students' capacities to become future environmental experts and assisting communities in addressing their environmental concerns. Doing so provided space for Brenda, the community liaison, to define the goal for the Townsville Partnership, which she narrowed to earning Sustainable CT certification. Jim, the university faculty who assigned the student, Kaitlin, to work with Brenda on the Townsville Partnership, also facilitated Brenda's goal setting by giving Brenda voice in the student assignment; Jim consulted with Brenda to identify a student with the skills to assist Townsville in obtaining Sustainable CT certification. Brenda further directed Kaitlin's work onto certification as she coordinated the service-learning project. ANT thus illuminates the different spaces and moments during which "shared goals" for university-community service-learning

partnerships get negotiated. This points to the benefits of universities establishing broad goals for these partnerships which then allow communities to establish narrower, community-specific goals for service-learning projects. It also points to the potential benefits of communities being involved in student assignments. Both of these features of the E-Corps partnership assisted Townsville in using the partnership to address its "environmental concerns." When community liaisons are allowed to set the specific goals of service-learning partnerships, there is less opportunity for exploitation by the university (Dempsey, 2010) and more opportunities for communities to benefit from the partnerships.

An ANT perspective also allows us to see how community members are not only served by university-community service-learning partnerships but that they exercise agency within these partnerships, fundamentally shaping service-learning projects and outcomes. In this study, Brenda, the community liaison, actively assembled numerous human and non-human actors and entities to ensure that the Townsville Partnership helped the town address its environmental concerns. Brenda utilized her relationship with a university faculty member to identify a student for the service-learning project, the town's development plans, and Sustainable CT's certification program to focus Kaitlin's service-learning project on achieving certification. Brenda used these human and nonhuman actants to promote and authorize community goals and actions in ways that helped avoid tensions that often arise in balancing helping students and serving communities (Volchok, 2017). The notion of translation from ANT thus offers a way to examine who and what has agency (Callon, 1984; Law, 2008) in university-community partnerships. Bringing ANT into the field of environmental service learning and university-community engagement provides conceptual tools for interrogating the agency of a range of actants which are currently under-examined, including community liaisons.

At the same time, ANT also illuminates several tensions inherent in the creation and work of university-community service-learning partnerships. The notion of mobilization raises critical questions about community representation and who gets to speak for communities. In this study, Brenda, the community liaison, spoke for Townsville in several ways. She used the town's POCD, a plan she described as created by multiple community stakeholders, to frame and coordinate Kaitlin's service-learning project. Brenda also determined the community actors that Kaitlin interacted with throughout the project. On the one hand, Brenda's control of these resources meant that community representation was less contested (Cronley et al., 2015). On the other hand, it also raises questions about the extent to which Brenda represented the needs of Townsville's people and environment. Her

official role as the town's Director of Planning and Development both authorized and obligated her to represent multiple Townsville stakeholders. At the same time, it also focused her attention on business concerns. In university-community partnerships, who gets to speak for the partnership, and in what spaces, determines, in large part, who counts as the community. ANT thus points to the need for further research into how community liaisons not only define the goals of but also represent university-community service-learning partnerships as they interact with other community members and entities to fully understand who such partnerships benefit. This will require expanding the focus of research beyond the people participating in the service-learning partnership itself and following the network of people and things that such partnerships are part of from a broader community perspective. In this sense, it will involve viewing the partnerships as actants in other community networks.

ANT ultimately raises questions about how university-community service-learning partnerships focused on environmental issues speak for the environment. How the environment is positioned matters, especially in terms of what counts as an environmental issue. In the present case, Brenda's official role meant that she tended to view the environment through an economic and business lens. While the university E-Corps program defined the environment and its environmental goals quite broadly, Brenda enrolled Sustainable CT to effectively recast the focus from the environment to sustainability. Sustainable CT linked the natural environment to the economy and equity, both social components. It thus defined the environment in its relation to money and people; the environment and its concerns were not perceived in and of themselves. They could only be heard through their relationship to these other entities. The extent to which this actually serves Townsville or any community in confronting its environmental concerns is not clear. By illuminating how different entities come to speak for the environment in university-community service-learning partnerships, ANT helps to raise fundamental questions that, rather than being definitively answered, should be continually considered in terms of how such partnerships actually do—or do not—benefit the communities involved.

The study presented here focused on one community liaison in one university-community service-learning partnership. While it was clear that the town involved gained in at least some ways from the partnership, it is not known whether or how the university also benefited or whether and how other members and groups in the community benefited, as well. Data from additional interviews may have provided alternate outcomes and explanations. The study and its use of ANT, however,

does provide insights into the role community liaisons play in university-community service-learning partnerships and how such partnerships can benefit communities. It also raises questions about both that future research can be pursued.

Conclusion

This study provides new ways to examine and conceive of university-community partnerships using ANT. While implementing these partnerships requires shared goals and responsibilities between universities and communities, the study highlights the fundamental role that community liaisons can play in shaping the purposes and outcomes of such partnerships. This work is important for K-16 education institutions looking to engage their students in experiential education—and especially for Land Grant institutions that have a responsibility to give back to their communities. Rather than prescribing specific solutions for the community, universities should consider how they can provide community members multiple spaces to negotiate and select solutions to address their concerns as they define them. Universities looking to replicate the E-Corps model should consider the diverse actants or entities that may influence partnerships with communities, including those programs, policies, and procedures through which community priorities have been articulated. These can help to forge and stabilize partnerships. At the same time, universities need to consider how these entities are speaking for community stakeholders in ways that necessarily (re)present and reduce diverse perspectives and realities. In the end, questions of representation and power dynamics are never settled. Therefore, beyond mapping actor networks using ANT, further research is needed to critically assess not just the actor networks, but also the people and communities that are included and excluded from these networks, including the environment itself.

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Data Availability Statement

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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