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Community-academic partnerships (CAPs) that embody reciprocity have demonstrated an ability to support solutions to complex societal challenges. In practice, such as within service-learning and community engagement (SLCE) efforts, developing reciprocal partnerships is difficult, and the resulting challenges can limit CAP effectiveness. Further empirical investigation is needed to strengthen both practitioner and researcher understanding of the development of reciprocal partnerships. Our team of three community and three academic partners employed a collaborative inquiry method to systematically explore, discuss, and create a shared understanding of the initiation of our partnership. Our analysis identifies three themes that can help community and academic members promote reciprocity as they initiate a CAP through equitable distribution of power: 1) preparation through prior experience and partnerships; 2) willingness to operate outside of status; and 3) integration of platforms that promote cross-pollination. We discuss how these findings provide a foundation for those seeking to develop CAPs that embody reciprocity.

Keywords: *Community-Academic Partnership (CAP); Service-Learning and Community Engagement (SLCE); Power; Reciprocity; Collaborative Inquiry*

Los Factores que Promueven la Reciprocidad: Dentro de la Iniciación de la Colaboración Comunidad-Universitaria

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Las colaboraciones comunitarias-académicas que modelan la reciprocidad han demostrado una capacidad de apoyar soluciones para desafíos sociales complejos. En la práctica, con respecto a los esfuerzos dentro del aprendizaje de servicio comunitario (ApS) y la integración a la comunidad, el desarrollo de las colaboraciones recíprocas es difícil, y los desafíos pueden delimitar la eficacia de las colaboraciones comunitarias-académicas. Investigaciones empíricas adicionales son necesarias para mejorar el entendimiento del desarrollo de las colaboraciones recíprocas tanto para los practicantes como para los investigadores. Nuestro equipo de tres colaboradores de la comunidad y tres colaboradores académicos utilizó un método de investigación colaborativa para sistemáticamente explorar, discutir, y crear un entendimiento compartido de la iniciación de nuestra colaboración. Nuestro análisis identifica tres temas que pueden ser herramientas para que los miembros comunitarios y académicos promuevan la reciprocidad al iniciar una coloración comunitaria-académica a través de una distribución equitativa del poder: 1) la preparación a través de la experiencia y las colaboraciones previas; 2) la voluntad de trabajar fuera del estatus; y 3) la integración de plataformas que promueven la polinización-cruzada. Discutimos los resultados y como ellos ofrecen una base para poder desarrollar colaboraciones comunitarias-académicas que modelan la reciprocidad.

Palabras clave: *las colaboraciones comunitarias-académicas; el aprendizaje de servicio comunitario (ApS); el poder; la reciprocidad; la investigación colaborativa*

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A variety of complex socio-technical challenges impact our society. For example, the United Nations (Sachs, 2012), the National Academy of Engineers (Mote et al., 2016), and other groups have articulated our most pressing challenges. These challenges require technical approaches that must also include politics, the humanities, and other areas of knowledge. Additionally, these are issues of social justice (Tyler & Smith, 1995), where what is needed to resolve these challenges is withheld entirely, made more difficult to access, or not distributed fairly and compassionately.

Such challenges require collaborative, comprehensive, and systematic approaches to move toward solutions (McNall et al., 2015), combined with approaches that recognize and leverage the resilience and assets of the community (Molly et al., 1992; Gonzalez et al., 2006). Community-academic partnerships (CAPs) provide a multidisciplinary approach to supporting solutions to societal challenges at a local level (Drahota et al., 2016). In these partnerships, individuals from local communities (e.g., people from non-profits, community centers, or churches) partner with those from the academy (e.g., professors, instructors, administrators, or students) to support addressing local challenges of mutual interest (Caldwell et al., 2015). CAPs should be characterized by "equitable control, a cause(s) that is primarily relevant to the community of interest, and specific aims to achieve a goal(s), and involves community members (representatives or agencies) that have knowledge of the cause, as well as academic researchers" (Drahota et al., 2016, p. 192). When reciprocal, CAPs can serve as vehicles for social justice (Tyler & Smith, 1995; Mitchell, 2008).

While CAPs hold substantial promise, in practice these partnerships are challenging to develop, maintain, and leverage towards positive results for both the community and academic parties (Brush et al., 2011; Wright et al., 2011). Reciprocity, in which authority and responsibility for knowledge creation are shared (Saltmarsh, et al., 2009), is considered an essential element of these partnerships (Davis, et al., 2017; Head, 2007; Jameson et al., 2007). Without reciprocity, the ability of such partnerships to solve societal challenges is limited (Harkins et al., 2020; Dostilio et al., 2012). Culture, gender, race, access to resources, and other factors can challenge the dynamics of CAPs and result in unequal power dynamics within the relationship (Strier, 2011). University representatives, often embodying a position of authority and expertise, may not have the will, intention, or knowledge needed to operate as equals in these partnerships (Strier, 2011). And while community representatives often embody substantial expertise and knowledge of their local context and culture (Yosso, 2005), when this expertise is not acknowledged, or if university approaches are not aligned with community needs, community representatives may experience resentment, disillusionment, and reluctance to engage the university as partners. To better understand the challenges of balancing power among CAP members, empirical research exploring the lived reality within the initiation of partnerships is necessary.

In this paper, we present results from empirical research on our lived experiences within our CAP to further knowledge on how partnership initiation can facilitate and promote reciprocity. Through the initiation of our CAP, we implicitly and explicitly sought to prioritize the inclusion of the community and academic partners in equitable ways, both in how our practice and approach to this research reflected our understanding of power and equity. Based on our own prior experiences in other CAPs, as well as the early approach to, sentiments, and outcomes of our group, we felt that our partnership was potentially establishing a foundation for reciprocity. Recognizing this, we collectively decided to perform this research using a collaborative inquiry method to systematically reflect on the initiation of our CAP. We sought to produce knowledge that can support other CAPs by focusing on an equitable distribution of power as a supporting element of reciprocity.

Literature Review

Prior investigations into CAPs clearly indicate that reciprocity between community and academic stakeholders is a cornerstone of such partnerships. Reciprocity suggests that the parties involved benefit mutually from the needs addressed, actions taken, and outcomes obtained (Hammersley, 2012; Henry & Breyfogle, 2006; Drahota et al., 2016; Dostilio et al., 2012).

Because CAPs often privilege academic interests over those of the community (Bortolin, 2011), this privileging also results in power imbalances, where partners cannot equally influence, guide, and contribute to the partnership (Holland, 2005). Academia has a long history of "helicopter research" whereby researchers outside of the "target" community have engaged in exploitative practices, breaching ethical boundaries of trust and perpetuating colonialism and power imbalances (Fong et al., 2003; Goering, et al., 2008). Many of these "target" communities have been indigenous communities and communities of color who face racism, oppression, and social injustices while experiencing vastly different lived realities from the privileges and power most academics hold through their educational status and institutions (Burnette & Sanders, 2014). When the academics have control of defining the problems to be addressed and the roles of participating members, the academic goals can, intentionally or not, prevent or limit the degree and depth of participation of the community (Purdy and Gray, 1994; Miller & Hafner 2008).

Power influences reciprocity in relationships where those with less power lack the authority to initiate or engage in the partnership and extract benefits independently. To promote reciprocity, power must be equitably distributed across members and parties. Prior research in critical service-learning (Mitchell, 2008), enriched reciprocity (Henry & Breyfogle, 2006), and democratically engaged CAPs (Dostilio, 2012) can help us understand how to identify and address imbalances of power and characteristics that support equitable partnerships. A common thread among these frameworks involves centering relationships (Strier, 2011; Barnes et al., 2010), highlighting how community authority — and, as a result, power — can be manifested differently in partnerships (Clayton et al., 2010; Thompson & Jesiek, 2017). For example, Henry and Breyfogle argue that partnerships should act in unity and collaboration with each other allowing those engaged to "understand how their mutual actions are important to the relationship, the perception of the power needed to make such outcomes happen is equitable" (2006, p. 32).

Conceptually, power is a hierarchical way of thinking (Freire, 1970) which suggests a characteristic of equitable partnerships is the commitment to use a non-hierarchical approach, as well as a mechanism for partners to regularly reflect on how their actions enforce or dismantle hierarchy in the relationship (Latta et al., 2018). An equitable distribution of power can be supported by adapting non-hierarchical methods, where power is a shared responsibility and partnership members hold each other accountable (Carson et al., 2007). Non-hierarchical leadership within CAPs "is distinctive in its flexible adaptation to community needs, in its fundamental reliance on community assets and abilities, its critique of structures of dominance, and its expansion of community possibilities" (Miller et al., 2011, p. 1092). Henry and Breyfogle (2006) suggest CAP members must adopt approaches that embody the concepts of a collective whole, shared authority, an expanded definition of community, and the transcendence of self-interest to create more significant meaning. These approaches can encourage generative improvements for all parties, where each action informs and fuels each subsequent action, creating a self-sustaining loop of progressively better approaches and outcomes (Henry & Breyfogle, 2006; Dostilio et al., 2012).

The convergence of power and partnership as they play out in CAPs points to the need for the current study, where focus is placed on how relationships are experienced and navigated by CAP members. This focus is important since, as Rosenberger notes, the CAP "literature shares a commitment to building mutual relationships and to letting members of the community identify the need. What is missing, however, is an approach for creating such relationships" (2000, p. 37; Mitchell, 2008). In addition to a lack of specific approaches to creating equitable relationships in CAPs, there is limited understanding of the role of stakeholders' lived experiences within these partnerships. For example, Miller and Hafner (2008) qualitatively investigated the processes within a CAP to understand collaboration and leadership through the experiences and perceptions of those involved. Although Miller and Hafner demonstrate lived experiences within a partnership, they did not directly explore partnership initiation. Scholars have suggested that an analysis of the nature of partnerships can continue to extend beyond the initial focus on program outcomes to explore experiences, planning, implementation, and evaluation processes (Clayton et al., 2010; Maurrasse, 2002) to provide clarity on how roles and processes can support equitable power (Dostilio, 2012). The limited research that captures community perceptions within CAPs has impeded clarity for researchers and practitioners on if, when, and how reciprocity is or can be initiated and achieved (Sandy, 2007).

Due to the challenges of balancing power amongst CAP members and the limited empirical research that has explored the lived reality within partnership initiation, this study sought to address an important gap. The authors explored this gap through the experiences of those involved in a CAP to ensure that the initiation and maintenance of CAPs addressed the needs of communities and advanced towards reciprocal partnership through the goal of equitable power among CAP members. Such research can provide an understanding of how to develop the beneficial characteristics identified in prior scholarship.

Further understanding through empirical data centered on perspectives from both community and academic partners supported creating and sustaining reciprocal partnerships through an approach that centered an equitable distribution of power. This research contributes to the conversation on reciprocity through a participatory approach that supported contributions from both community and academic members of our CAP. The authors sought to answer the following research question: What factors within a community-academic partnership promote partnership initiation with equitable power dynamics?

Methods

To explore how to promote equitable partnership initiation in a CAP, this research used a collaborative inquiry (CI) method. CI has provided a systematic, iterative process of evaluating problems within a community of practice (Donohoo, 2013; Goodnough, 2005; Nelson et al., 2008) and has created opportunities for members to examine various long-standing beliefs and implications within their practice. Studies have highlighted this method as an effective approach for evaluating problems within a community's practice (Suthers et al., 1997; Love, 2009; Donohoo, 2013; Goodnough, 2005; Nelson et al., 2008). More specifically in service-learning and community engagement (SLCE) contexts, collaborative inquiry has been used within professional development, faculty pedagogy realignment, and further understanding the role trust plays in transformative learning processes (Miller-Young et al., 2015). We aligned with Donohoo (2013) and Goodnough's (2005) approaches by using reflection and the exchange of significant experiences within our CAP to systematically explore both our CAP and how, together, we could produce knowledge to support other partnerships.

We implemented an approximately 40-week process with weekly meetings of the six authors. Each ninety-minute meeting centered around discussions, where our conversations became our primary data collection format (Dyer & Löytönen, 2012) and multiple, iterative conversations were held around our partnership, problem context, and personal involvement with this work. David (an assistant professor) and Nathan (a Ph.D. candidate) were the CAP members with the most experience in educational research methods. They introduced the CI method to all partnership members and initially facilitated the process. As we advanced, our approach was constantly informed by our team members' understandings and awareness of how power and equity inflected each interaction, task, and goal that we moved through and towards together. As the entire team grew to understand the essence of the method, facilitation was shared across the group, where we each contributed to the process and data generation. We obtained qualitative data in several ways: (1) independent written reflections, (2) independent notes before and after discussions, and (3) transcriptions of audio recordings of each meeting. One written reflection topic, collectively determined to be important to our effort, focused on significant events or outcomes from experiences both before and during our partnership. We synthesized the independent reflections on milestones into a sequential timeline of our partnership. With the timeline as a starting point, we performed iterative discussions around each milestone and reflected on these from each of our perspectives, adding further milestones and insights to establish a thorough re-creation of the initiation of our partnership. For example, discussions around increasing capacity through the implementation of new technology and additional human power (high tunnel, solar, etc., and volunteers) highlighted our shared vision and values as it demonstrated a higher level of commitment and excitement about our partnership independently and collectively. From there, we performed a thematic analysis (Braun & Clark, 2006) on our re-created timeline, the written reflections, and the audio data from our discussions to establish the themes presented below. During the preparation of this manuscript, all authors contributed to the first draft using collaborative online document editing platforms. We then alternated between phases of commenting and discussing any areas that required further

explanation and editing the manuscript accordingly. Upon having a full first draft completed, one academic and one community partner refined and edited the manuscript toward a more concise article appropriate for scholarly publication. Further description of the CI method and data collection approaches used can be obtained by contacting the authors.

Limitations

Collaborative inquiry is inherently difficult, leading to some limitations in this work. This method, in which all voices are acknowledged and leveraged for research advancement, is challenging to implement fully to ensure equal contribution from all members as participation level and consistency of interest can vary. In this research, each member embodied different strengths and roles. These were respected, yet the team patiently sought to involve everyone in each step. Efforts were taken to balance the roles of the members within the CI implementation and data collection, writing, and editing of this manuscript through using both electronic collaboration tools as well as patient listening and discussion. Furthermore, we had a wide breadth of discussion and content generated. We aimed to capture all data in a meaningful way and develop a concise manuscript that highlights our findings, but all elements cannot be addressed in this piece. Nonetheless, we sought to deliver high-quality research while also advancing the important work we were doing within the partnership. No control group or other CAP through which comparisons could be directly made was used in this work which presents an opportunity for future work. All data were collected following institutional review board protocols. All authors had consented to fully participating in the project as equal partners and agreed upon waiving confidentiality and using our identities to systematically build and retell our story. No additional human subjects were a part of this study beyond the authors.

Our Community-Academic Partnership

To contextualize this research in the goals of the community-academic partnership that scaffolds it, our CAP seeks to alleviate the injustices of urban food apartheid (Reynolds & Cohen, 2016; Penniman, 2018) and increase access to science, technology, engineering, and math (STEM) education within a community of color (London et al., 2020; Harper, 2010). Our partnership revolves around a community garden, the Charles Madison Nabrit Memorial Garden (referred to as the Garden), located on the grounds of a historic Black Church, The Church of Christ of the Apostolic Faith in Columbus, Ohio (referred to as the Church). The Church is a congregation formed in 1910 by descendants of formerly enslaved Africans. The Garden is a 5,000-square-foot, organic, bio-diverse, self-sustaining space situated in a previously fallow field behind the Church. The Garden and Church are the locations where the majority of our partnership's activities have taken place.

The members of the partnership and authors of this paper are a group of six individuals, three from the community and three from academia; we are predominantly Black (N = 5), with one member identifying as a woman and the remaining five identifying as men. Each member actively seeks to promote local changes to the systems that continue to disenfranchise people, and each was motivated to make strong contributions to this research. In the next section, we briefly describe who we are in the context of our partnership to facilitate an understanding of the results and to declare elements of our backgrounds that intersect with how we approached and performed this research (Jones et al. , 2014).

Paula Penn-Nabrit: I am a Black woman committed to maintaining a holistic balance between my spiritual, intellectual, and physical existence. A third-generation native of Columbus and a fourth-generation member of the Church, the Garden is the manifestation of my vision. I contribute to this research within the intersecting space of gender and generational differences. I am more than twenty years older than anyone else on the team and as the singular woman, my perspective on the work is inherently different. The co-authors have shown themselves to be allies, making it easy for me to freely exercise my voice.

Chris Ratcliff: I am a White, male faculty lecturer in a College of Engineering at The Ohio State University. Within SLCE, I have been a student, an instructor, and have hosted classes from within a non-profit. I have witnessed the challenges and possibilities inherent in the service-learning framework and my

passion for equity in food and farming, as well as social justice, has led me to actively seek out projects and this partnership.

Charles P. Nabrit: I am an African American male, and a fifth-generation member of the Church where most of my civic agriculture and community activism has focused. I am passionate about food security, economic empowerment, and community development. I am idealistic enough to believe I can help change the world, but pragmatic enough to anchor that focus in my own community. I believe this focus gave me a strong sense of ownership over the Garden, and a genuine commitment that could be seen by others and led them to participate in the garden.

Nathan Harris: I am a Child Of The Most High God, who has purposed and positioned me to do work that further uplifts people who may have lost hope. While creating this narrative, I have completed two years in a Ph.D. program in Engineering Education where I have emphasized my interest in STEM, social justice, and my identity as a Black man. Within this partnership I provide links between STEM education and the needs of the local youth, as well as promote ways that spiritual practice can be manifested within scholarship.

Damon Nabrit: I am an African American male, a fifth-generation member of the Church, and am responsible for the technology requirements of the Garden. Like my twin brother Charles, I was homeschooled, and we attended the same college. I am involved with this partnership because I recognize the importance of giving back to the community that helped shape me and value spiritual, educational, and social collaboration.

David A. Delaine: I am a Black man, and many aspects of my identity are intersectional. I am the bi-racial son (Black and Latinx) of immigrant parents. As an Assistant Professor, I am in a role I would have never envisioned for myself as a child. I strongly identify with the humble roots of my parents. Throughout my education I was heavily supported through affirmative action programs designed to diversify engineering. This promoted deep motivations to give back and provide a return on the benefits I have received and led me to this work. Within the partnership, I provide support on educational research methods, manuscript development, and links to the academy and research.

Results - The Narrative of our Partnership

A narrative of the initiation of our CAP, established through the milestones to produce a jointly recreated history, paints an overall picture of our partnership. The narrative does not attempt to provide exhaustive detail of our emerging partnership but focuses on experiences in which power dynamics were navigated to support reciprocity. The narrative contains three sequential chapters, each focused on highlighting an emergent theme from our analysis.

Chapter One - Coming Together

Since 2014, the Nabrit family, consisting of Paula, Charles, and Damon, has persistently pursued their vision to house a community garden at the Church. This required an enormous effort in fundraising, family labor, and networking. In 2017, Charles was elected president of a local community garden advocacy group, illustrating how the Nabrits were actively connecting with and supporting the city-wide civic agriculture space, and learning about the actors, needs, potential, and landscape of urban agriculture.

Over time the Nabrit family's expertise and network grew alongside the Garden, creating an attractive environment for potential partners; this development allowed the Nabrits to establish power in relationships with potential partners while refining their ability to determine the viability of potential partnerships. The Nabrits learned to value those who did not just talk the talk but also walked the walk.

Academic partners Chris and David started work in the same department at the University in the fall of 2016. Prior to their start at the University, they had each independently gained experience in SLCE and CAPs. They also understood higher education's obligation to provide students and the community with meaningful opportunities to engage. They became close colleagues and friends through a service-learning trip to Central America the following spring, where they bonded around the desire to perform more meaningful, reciprocal SLCE. After the trip, they met monthly to discuss how to establish and perform

research within a meaningful CAP at their university. They recognized that a partnership with a local organization could provide more communication and interaction than is feasible with an international partner. They decided to pursue funding that would support David as a researcher and Chris as a practitioner. David began supporting Chris's awareness of the theory and literature around CAPs, helping him find belonging within a research area committed to leveraging community and academic resources toward societal impact. They patiently sought opportunities to put this interest and knowledge into practice.

The first contact between the community and academic members of our partnership occurred at a meeting of a garden network in early spring 2018. Charles was seeking to build relationships with other civically-minded individuals and institutions while Chris, motivated by his interest in urban agriculture and actively pursuing potential partnerships, was consistently attending the garden network meetings.

In 2018, the Garden was selected as a partner within a university-led initiative, separate from this partnership, to support local agriculture. The university unit organizing this initiative offered frequent seminars, workshops, and networking events centered on issues of food and culture; Paula, Charles, and Chris crossed paths several times at these events. One presentation, about the possibilities of leveraging the resources of the Black Church to address food insecurity (Black Church Food Security Network, 2020), sparked Paula to ask how, precisely, one can successfully achieve such goals when confronted with a patriarchal culture. Chris recalled this as a highly memorable moment. Paula's question drew from a long history of confronting -isms and reflected her critical mindset and a sincere and genuine dedication to the work. To Chris, the question was asked by someone making a real effort toward addressing food apartheid/insecurity.

When Paula asked the question on patriarchy, she highlighted the Nabrits' practice of leaning on the legacies of African American food justice pioneers and recognizing the critical importance of controlling one's food supply. Paula was empowered throughout her life to understand the value of sharing her voice, even if it would alienate some. Chris recognized that a critical partner who expresses their views and acknowledges social dynamics could make for a strong partner with whom to pursue impact. Not long after that event, Chris began volunteering at the Garden. At this point, David was informed by Chris about the Garden, suggesting that they could be a positive partner for a meaningful CAP.

Chapter one reveals how we met and came together while illuminating the first theme: preparing and leaning on prior experiences to navigate initiating relationships. This theme involves CAP members obtaining knowledge and embracing dispositions supportive of entering a partnership equitably. As CAPs often involve diverse members who embody differing levels of experience and authority, preparation can support awareness of and appropriate responses to how power is manifested.

Chapter Two - Showing Commitment and Building Trust

Typically, the Nabrits are welcoming yet cautious of those who engage frequently with the Garden. Paula recalls being struck by Chris's quiet, shy, and focused demeanor, and because they had only met briefly, she thought he was a student as he quietly and unassumingly got to work during volunteer sessions. Charles also appreciated Chris's competency with agriculture and gardening because volunteers sometimes require as much time and effort as they provide. Paula, Charles, and Chris got to know each other through many authentic discussions on mutual topics of interest: their professional efforts with engineers and teambuilding, race and culture, and the city's urban agriculture scene. As a result, these gardening sessions "would just fly by" as they all felt they had found in each other sources of knowledge and experience on a wide range of topics.

As a White man with a terminal degree operating in a Black space, Chris could have expected to be received in ways that align with his perceived social status. Yet, he never led with his privilege and instead actively checked his White privilege and the authority granted to him and would ask Paula what needed to be done in the Garden and then do it. Chris entered the Garden and worked unassumingly to establish an authentic, personal relationship with the Nabrits.

A few months later, the Nabrits were working to install a high tunnel to extend the Garden's growing season, a project for which they had previously been granted funding. Despite the existence of numerous

similar structures throughout the city, the municipal zoning representatives were expressing reluctance to approve the project. The apparent discrepancy in the city's enforcement of zoning laws highlighted inequitable policies related to urban agriculture and potential racial bias within these systems. To support the municipality's approval process Paula asked Chris to complete site drawings, documents that cost thousands of dollars, are more expensive than the high tunnel itself, and are unnecessary for the safe construction of the structure. These actions represented an emerging relationship with deep respect, commitment, and trust among those involved. The Nabrits faced obstacles concerning approvals for the high tunnel; they also granted authority to Chris to contribute in a way that aligned with his skills. At the time, the Nabrits only had an emerging relationship with Chris, and prior experiences had made them reluctant to grant authority to others. Yet, in this case, the Nabrits were willing to recognize that they needed support and felt comfortable reaching out to Chris again.

Chris, Paula, and Charles continued engaging with one another at the Garden, and various community and academic events. This encouraged more communication, and as the relationship evolved, Chris remembered thinking, "oh, you guys have to meet" (referring to the Nabrits and David). At this point, and unbeknownst to the Nabrits, Chris and David, began discussing how to introduce David without negatively altering the still-developing partnership. Drawing from their previous conversations around the SLCE literature, they sought to approach the Nabrits—not with the desire to take control of a potential partnership but with thoughtful consideration of the consequences of introducing David, a university professor with potentially more perceived power than Chris. This approach intentionally considered strategies to overtly respect the Nabrit family's authority and to avoid being overbearing or dominating the relationship. It was not until much later, within the collaborative inquiry discussions, that the scope of the pre-introduction conversations was revealed to the entire team.

At one point during late summer/early fall of 2018, establishing a service-learning course in the context of the Garden was proposed. Chris asked, "Paula, if there is a chance that we would have a class of engineers out here and a grant, what would you do with it?" Paula simply answered, "FarmBot" (FarmBot - Open-Source CNC Farming) – a farming robot. This established a clear turning point for the partnership and the moment in which our formal partnership was codified.

Chapter two describes how we began working together and showcases the second theme: operating outside of status. This theme describes an approach where members enter into partnership in ways that maintain humility and harness expectations yet show diligence to work toward making contributions.

Chapter Three - Finding Alignment

As the summer of 2018 turned to fall, the service-learning course that Chris was developing provided the opportunity to synthesize the goals of both community and academic partners. Paula's suggestion of a "farming robot," an idea Damon and Charles had been interested in for some time, provided a central element upon which the course could be built. The farming robot and course blended STEM, agriculture, education, and social justice, establishing it as a platform to align the CAP members. The Garden served as a problem context and host site for the course and as a central location for students to experience and explore the implications of race on the neighborhood, city, engineering, and society. The Nabrits wanted to increase programming to promote STEM education to the local youth, and the farming robot connected that goal to Charles's and Damon's interests in technology. As an instructor, Chris wanted to offer high-quality learning experiences linked to humanitarian engineering and community outcomes. Robot installation and calibration requires a substantial amount of time, and Chris could leverage that time by educating engineering students via problem-solving within a partnership to support the Nabrits through the robot installation. David was seeking platforms for engineering education research that supported both community and academic impact. The collaboration enabled David to perform research and introduce his graduate student, Nathan, to the partnership, thus solidifying the team's core members. This was a moment in the partnership formation where the interests and goals of all partners seemed to come into focus and align.

The introduction of a group of students to our work represented both a significant milestone for the partnership and a delicate moment, because Chris now had a dual responsibility to his students and the Nabrits. Chris's approach to this introduction involved taking the class to the church and introducing the Nabrits as the leaders of the work whose knowledge and expertise were indispensable to realizing meaningful success. To Paula, the willingness of the class to come to the Church was meaningful as even though the Church is only four miles from the university campus, it was extremely rare for university students or faculty to visit the church grounds. To Chris, it was essential that students get off-campus and out of their comfort zone when learning about and practicing partnership formation. The students maintained a relationship with the Nabrits over the semester through additional visits to the Church and Garden and visits by the Nabrits to campus to hear the students present their team project proposals and final project reports.

Throughout the semester, the students worked on two projects decided on before the semester by the Nabrits and Chris: the design and implementation of the farming robot and a small solar generator. In addition to the project work, the students were assigned readings to help them build context around community food justice movements. They read and reflected on analyses of local food organizations, histories of systems of racism in America, and perspectives on insider-outside dynamics within community advocacy work. By the end of the semester, the solar generator was built and operational, and the farming robot was installed but not yet fully functional. While this was disappointing to the students, the Nabrits were gracious in understanding and shared their perspective that children in the community needed to see that engineering work is challenging and requires long-term planning, development, and maintenance.

The farming robot furthered the transformation of the Garden into a space for informal STEM education, highlighted by a free K-12 summer camp offered to the local community centered on the Garden and farming robot. Nathan embraced a role as instructor of the camp, teaching lessons on sustainability and technology, and how those principles link to the Garden and robot. Nathan's strong background as a youth pastor and computer science graduate promoted strong connections with the youth and context. Paula was touched by Nathan's dedication and commitment. Nathan could perceive the students' needs. Paula was impressed by the camp's success, and as the youth saw Paula at the Church, they continued asking, "when will the next camp be?" Through this experience, Nathan found alignment: an avenue to connect his Ph.D. work to his faith, an outlet for teaching credit toward his degree, and a potential platform for his dissertation research.

After the first implementation of the course and camp finished, the partners held several 'working days' in the Garden. These days were generally open to whomever wanted to contribute, but most often, Damon, Charles, and Paula worked alongside Chris, David, and some students from the course. Without coordinating, Chris brought his fiancé, and David brought his then-pregnant wife. The Nabrits' nieces, nephews, cousins, and extended family also came by. On this day, our families got to know each other as we worked in the Garden. All members of the partnership agreed that this day cemented a deep level of commitment that has remained intact since.

In the early fall of 2018, we decided to meet regularly to further the growth and mutual benefits of our partnership. David had continued to explore ways to perform research within the partnership; while seeking to submit a proposal for further funding, he needed a letter from the Nabrits under a tight deadline. Paula did not blink and said, "I will provide the letter tomorrow." Charles, David, and Damon had separately bumped into each other at local events around African American male wellness. They had pleasant and fun interactions, enjoying crossing paths at other venues outside of the CAP. The members established trusting and authentic relationships with each other. At this point, the CAP had multiple moving parts, goals, and outcomes. To continue advancing the partnership, David suggested the idea of publishing a manuscript around the work, which all members of the partnership were excited to pursue. That suggestion evolved into this current publication.

Chapter three illustrates how we found alignment amongst the CAP's members and the third theme: cross-pollinating mutual interest and contributions. This theme entails working within the intersections of the interests and abilities of CAP members. With members of varied backgrounds and skills, cross-pollination, or the synthesis of skills and strengths within platforms that support achieving mutual goals,

can promote shared goals and unity. Furthermore, with cross-pollination, objectives emerge that provide for mutual contributions and create opportunities for alignment of goals, needs, and values, for give and take within the partnership.

Reflections on Our Community-Academic Partnership

Assessment of the resources and outcomes is a necessary prerequisite to sustainable, equitable partnership (Bloomgarden, 2013), so in what follows, we provide reflection on our partnership to highlight the benefits of collaboration in our CAP. Collectively, our CAP promoted capacity building for both community and academic stakeholders. For example, the Garden increased its capacity to deliver quality educational opportunities for community members and children in particular. The CAP brought together university students and community learners to install a robotic farming machine, thereby updating the on-site technology of the Garden with the inclusion of solar panels, broadband internet connectivity, and lower-tech upgrades, such as high tunnel construction. Further, this partnership provided additional human power / volunteers to help balance the substantial workload required to sustain the garden. The academic partners gained the capacity to instruct undergraduate engineers and produced research in an authentic *Black space* that provided cultural exposure in a professional context that is not available on campus. As part of the engineering process, partnership should take precedence over academic goals, such as completing technical deliverables for coursework, advancing research, or supporting educational opportunities for students (i.e., teaching and mentoring) as these may or may not meet community requirements. Both parties in this work agree that the partnership and individuals involved have positively evolved in both anticipated and unexpected ways.

Our team recognizes a primary benefit of collaboration, rather than non-collaboration, is the ability to bring to bear multiple perspectives, disciplines, and objectives to further the mission and goals of all CAP members. We viewed this as a collaborative form of capacity building with a continually evolving set of directions and goals that help move the partnership towards greater impact and effectiveness in its diverse missions/goals. While we recognize and agree that those in partnership often have a long way to go before we can claim reciprocity (Bloomgarden, 2013), we are striving towards what Dostilio et al., (2012) refer to as generative reciprocity. Ultimately, we have established a CAP that is committed to simultaneously reducing food apartheid/insecurity and supporting STEM education in a particular predominantly Black neighborhood through the grounds of a historic church. Through the K-12 summer camp, service-learning course, increased volunteer hours contributed by both students and community members, engineering solutions installed in the Garden, graduate teaching and research opportunities, and platforms for academic research, our community and academic partners are benefitting. Our goals have evolved beyond what we originally had foreseen within this CAP. We have changed as people as well.

Discussion

The themes that emerged from this research highlight factors that support the initiation of reciprocal CAPs through an equitable distribution of power. Here, we link the three themes to the extant literature to demonstrate their value for understanding CAPs through this lens.

Theme One: Preparation and Prior Experiences in CAPs – "You Have to Till It or You're Not Gonna Get Results."

Our findings reveal the benefits of *deliberate preparation* for navigating, equitably, negotiations of power and authority that will inevitably enter into CAP formation. This theme came into focus for us through a comment Charles made in one discussion, "you have to till it or you're not gonna get results." Charles was emphasizing the need for partners to engage in intentional preparation to approach the formation of relationships founded on equity within a CAP; we assert that preparation must involve partners' deliberate reflection on their prior experiences to draw insights for navigating a partnership equitably. Broadly, this

theme represents a behavior where each member establishes a relevant way of contributing to a potential partnership and reflects on how to bring knowledge into an emerging partnership equitably.

This theme mirrors findings by Miller and Hafner (2008) stating that partners, especially academic partners, should prepare for community-based work by educating themselves on asset-based strategies for authentic collaboration in community-based work. Such an approach builds on acknowledging strengths of community partners rather than focusing on weaknesses (Schorr, 1997; Miller & Hafner, 2008). Our findings indicate that preparation involves developing experiential or studied knowledge relevant to the context of a particular CAP, whether that knowledge comes from everyday life experience, previous partnerships, professional work, or scholarship. In our work, the preparation of the community partners led to increased knowledge of and established a contextually relevant approach to a local issue (i.e., a community garden in a food apartheid/insecure area) and promoted being an attractive partner for alignment with academics. Scholars have suggested that community partners can commonly hold physical, social, spiritual, economic, and/or political assets (Perkins et al., 2004) that can leverage an array of often unrecognized and unacknowledged cultural knowledge, skills, abilities, and contacts possessed by marginalized groups (Yosso, 2005). Community member preparation that develops these assets can lead to a clear vision, an established agenda, and an understanding of how others/academic partners can be involved in community efforts. Preparation afforded our community members clarity on what actions and efforts would support local needs and how university partners could contribute using their particular skills. Our study shows that, based on local knowledge, community partners can define the scope of work and then collaboratively negotiate with university partners about how skills and resources contribute to that scope. This CAP's outcomes demonstrate how preparation facilitates community partners' ability to bring to the center of the collaboration the needs of the "people" (Freire, 1970).

The preparation of academic partners can involve exploring ethical and equitable ways to link academic expertise and scholarship to a local problem context and developing familiarity with community engagement and CAP theory (Latta et al., 2018). Our collaboration shows the benefits of preparation for equitable engagement through the care the academic partners took to work outside of status and to prioritize the community partners' goals. This finding aligns with previous scholarship's findings that academic partners should check their own authority while actively empowering and listening to the expertise of the community members (Miller, 2011). Prior research highlights authentic relationships with partners (Mitchell, 2008), non-hierarchical forms of negotiation, and anticipating outcomes (Carson et al., 2007) as evidence-based approaches for engaging with partners.

This theme illustrates how participants can proactively identify and confront power imbalances by anticipating power dynamics during partnership initiation, being prepared to deconstruct the harmful effects these dynamics may produce and seeking to empower those often powerless. This analysis links our findings to the concept of critical reflexivity, or the process where internal dialogue and self-evaluation of positionality towards acknowledgement and recognition of how position affects processes and outcomes (Berger, 2015). Critical reflexivity involves researching the self, researching the self in relation to others, engaging in reflection and representation, and shifting one's perspective from the self to the system (Milner, 2007); academic partners seeking reciprocity in CAPs could use such critical reflexivity to prepare to navigate positionality and power within partnerships. For all involved, using critical reflexivity (Latta et al., 2018) to evaluate progress in developing knowledge and preparing to engage can support navigating the initial ambiguity in an emerging partnership and promote approaches that avoid assumptions about leadership or domination of the direction of efforts.

Theme Two: Operating Outside of Status - "Head Bowed, Body Bent."

Our findings reinforce prior results indicating that individuals seeking to establish a reciprocal CAP should not enter the partnership with a presumption of leadership but *with an attitude of willingness and mutual respect* (Miller & Hafner, 2008). Theme Two is illustrated in a phrase Paula's used frequently: "head bowed, body bent"; a partner approaching the CAP in ways that embody physical, intellectual, and, for Paula, spiritual presence focuses on the tasks at hand while avoiding hierarchy or judgment. Those entering

partnerships should be aware of their power and position in society and the relationship by considering "the position, history, and power (or powerlessness) of all involved in relationships" (Ward & Wolf-Wendel, 2000, p. 775). Our findings demonstrate how approaches to CAP involvement that embody open-minded negotiation of status in ways that operate outside of expectation or social hierarchy are beneficial (Miller, 2008). Broadly, this theme characterizes factors beneficial for approaching reciprocity in CAPs, including (1) behavior whereby each member is not driven by status or title and acknowledges a give-and-take within the partnership and its members; and (2) positionality in which each member embodies a willingness and ability to respect everyone as equals.

Within CAPs, it has been suggested that "the onus is on those who occupy traditional leadership positions to ensure that equal participative opportunities are afforded to all interested parties" (Miller & Hafner, 2008, p. 66). Furthermore, Freire (1970) emphasized maintaining a disposition of humility when those in traditional positions of power work collaboratively with those who have been victims of oppressive structures and systems. We apply this to our findings to suggest that academic partners transfer power from themselves to the community by approaching potential community partners with a mindset of *'How can I/we support?'* rather than *'Here is what you need.'* Partnerships should be approached with a 'doing with' mentality that centers the work of others (Ward & Wolf-Wendel, 2000).

Community members should recognize that power is not to be withheld and, at a minimum, that they should be respected based on their expertise generated through lived experience, preparation, and/or proximity to local challenges. While the literature acknowledges that community members are too often disempowered in these partnerships, this research indicates that community partners must still be prepared to relinquish some control of the efforts within their local context to enable academic partners to make meaningful contributions. This requires an ability to recognize academics who will pursue equity within a partnership through trust and commitment, linking back to theme one.

Additionally, participants should forgo individual outcomes until the partnership has matured and individual outcomes can be aligned with the benefits for all partners (linking to Theme Three). Pursuing individual outcomes prior to maturation, especially for university members, can lead to harnessing power within the CAP and swaying its direction to meet individual rather than group desires (Carson et al., 2007).

Similar to theme one, this finding points to critical reflexivity, where an open-minded positionality that respects non-hierarchical approaches to leadership is valuable. Members must be aware of their strengths and areas for growth. Each should maintain independence as an individual while understanding and promoting collective power within the group (Carson et al., 2007). CAP members should be empowered to move in and out of leadership roles as needed, leveraging the variety of embedded expertise. As such, fluid power dynamics, where leadership roles shift amongst group members, as in shared leadership (Carson et al., 2007), can be beneficial. The ability to shift amongst leadership roles is critical in strategic long-term relationships. Each member's acceptance of a fluid leadership structure is important, where the shift in power from one to another does not diminish or infringe on the power the others embody. Embodying such a positionality communicates respect to all members, regardless of the status of the individual. Overall, when a positionality of "operating outside of status" is embraced and embodied by CAP members, differing levels of inherent power are normalized to ensure inclusion. This approach promotes listening and learning to find ways, in real-time, to contribute equitably with respect to power.

Theme Three: Cross-Pollinating Mutual Interest and Contributions - "The Flowers That Everyone Comes to Pollinate."

Our findings show the benefits of revolving CAP activities around *a central set of activities that serve as platforms for cross-pollination*, facilitating mutual benefits for all partners. Through our analysis, we recognized that our work contained several platforms that brought us all together, collectively summarized as, "the flowers that everyone comes to pollinate." Broadly, this theme represents elements within the partnership, where platforms can serve as cornerstones that allow all members to align their interests and abilities to contribute. Theme Three shows that these platforms for cross-pollination—such as the Garden in our project—can function as boundary objects that allow for collaboration across a mix of motivations

and expected outcomes and facilitate interaction toward closer-knit partnerships (Clark et al., 2015). These objects support partners' ability to share in the planning, implementation, and use of a shared resource; our findings show how the farming robot served as a boundary object for cross-pollinating academic and community interests. Platforms for synthesis, continuity, and commitment have been shown to link to power by providing a nexus for all parties' interests and allowing for members to be empowered through and engaged in a give-and-take process. This theme extends on important elements included in Ward and Wolf-Wendel's (2000), where a "doing with" approach to reciprocal partnership involves blurred boundaries and members connecting through commonalities. In our work, platforms for cross-pollination can provide alignment of CAP member interests and goals similar to the outcomes of blurred boundaries and member commonality.

Such platforms can provide a strong foundation for a partnership in which the skills and perspectives of each member are acknowledged. Some of the benefits of collaboration rather than non-collaboration are the ability to bring to bear multiple perspectives, disciplines, and objectives to further the mission and goals of all CAP members. When members are aligned within a CAP, they become empowered to share their perspectives openly, a position based on mutual trust and respect. Community members are often closest to local issues. As such, community partners lead by establishing contexts and thinking creatively on ways other areas of expertise intersect with the problem context. Our findings here are in alignment with Nation et al. (2011), suggesting that academics should be prepared to flexibly apply their expertise and scholarship in practical ways to community-based problem contexts. Through leaning on and listening to the community expertise, academics can find platforms to adapt their research agenda to local problem contexts. Overall, CAP members should pursue platforms that can serve as boundary objects that will enable all partners to contribute based on strengths and interests.

Conclusion

Gathering a diverse team is necessary in the face of complex socio-technical challenges. Many individuals and groups can make important contributions that enable results. What makes for reciprocity or equitable power dynamics within the approaches to, sentiments about, and outcomes of a CAP are difficult to characterize and can change as a CAP forms and develops. As a result, reciprocity is challenging to realize. This paper highlights three themes that are transferable to others seeking information on forming, strengthening or better understanding CAPs. Establishing equitable power is challenging, but when parties come to the table with prior experience, are prepared to work, approach partnership with humility, and pursue platforms for contributions from all, higher levels of authentic and equitable collaboration occur.

The literature supports our assertions established through empirical analysis of our CAP. Preparation helps establish the groundwork for equitable partnerships, and community members should be especially aware of how much their prior experience and local knowledge is worthwhile and needed expertise in CAPs. Likewise, academic partners should seek out local problem contexts and engage in balancing their scholarly expertise and authority with partners. Through preparation and prior experience, both community members and academic partners should seek to engage one another with mutual respect from the outset of a CAP.

By respecting or operating outside of status, CAP members consider how their presence and interactions, individually and collectively, affect others and the group as a whole. Again, the literature confirms that open-minded negotiation outside of the social hierarchy is beneficial. Entering a partnership with an attitude of genuine and authentic helping instead of a 'takeover spirit' is beneficial in establishing a reciprocal CAP. Being aware of one's power and position is key to the successful formation and cohesion of CAPs and draws upon prior experience and preparation to inform when and how to move head bowed and body bent and when to lead.

There will always be traditional leaders or those who naturally assume such positions within partnerships. Both must consider and execute strategies that raise the participation of all members. Finding platforms that align the interests and abilities of members helps to cross-pollinate or synthesize the skills and strengths of individual participants. Cross-pollination can also uncover new and emerging boundary objects that create further opportunities for unity and growth. Community members and academic partners

have different responsibilities and roles in finding these intersections, but all parties should be flexible in how their expertise, local or academic, is used to further mutual goals. Ultimately, the concept of critical reflexivity can enable both community and academic partners to leverage internal dialog and evaluation of the involved positionalities to recognize how individual approaches, assets, and limitations can affect the power dynamics and, ultimately, the reciprocity and effectiveness of CAPs.

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