PLANNING FOOD SYSTEMS CHANGE: A CASE STUDY OF THE MECHANICS OF ORGANIZATIONAL INNOVATION IN TRANSDISCIPLINARY PRACTICE

by

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This dissertation is dedicated to my grandmother Adelle Wiskow Day, a fierce, devoted, pragmatic, and hard-working Wisconsin native who lived to 104. She never had the opportunity to pursue higher education but her wide ranging wisdom was a testament to the fact that knowledge comes in many forms.

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ABSTRACT

This is an in-depth qualitative case study of the University of Wisconsin Cooperative Extension Community Food Systems Team, an experimental interdisciplinary initiative launched in 2012 to increase the systemic impact of the institution's community food systems work and to foster organizational learning and innovation in relation to interdisciplinary practice. Drawing on in-depth key informant interviews, participant observation, document review, action research, and extant theory, I answer the question: What issues are in play when practitioners work across disciplinary boundaries to promote food systems change?

As such, this case study forms the empirical basis for a broader investigation into the mechanics of inter- and transdisciplinary practice in the context of food systems planning and in the service of food systems change, i.e. the alteration of the status quo by transforming and realigning the structure and function of the food system so that all residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice.

My empirical findings point to four central lessons regarding the role of interdisciplinary and multi-stakeholder food systems initiatives in relation to organizational learning and the development of planning interventions that promote food systems change: (1) organizational innovation and learning require regular feedback mechanisms; (2) systemic change benefits from focused, multi-level interventions; (3) collaborative initiatives are strengthened by engaging partners in defining the work; and (4) outcomes-based objectives may help align work across multiple geographic scales.

I then adapt Mitchell, Cordell, and Fam's transdisciplinary outcomes framework for translational and practice-based settings to develop a heuristic for food systems planners who

seek to incorporate inter- and transdisciplinarity into their practice. The framework's potential to guide action is consistent with the aims of transdisciplinary practice, i.e. to facilitate transdisciplinary collaboration and translate or apply transdisciplinary research, concepts, and tools to non-research settings. The three components of the adapted heuristic are (1) systems based interventions, (2) knowledge translation and exchange, and (3) mutual and transformative learning.

INTRODUCTION

This dissertation is the story of the University of Wisconsin Cooperative Extension (UW Cooperative Extension) Community Food Systems Team. The team was created as an experimental interdisciplinary initiative in 2012 in order to increase the systemic impact of the institution's community food systems work and to foster organizational learning and innovation in relation to interdisciplinary practice. This in-depth, qualitative case study forms the empirical basis for a broader investigation into the mechanics of inter- and transdisciplinary practice in the context of food systems planning and in the service of food systems change, i.e. the alteration of the status quo by transforming and realigning the structure and function of the food system so that all residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice[1].

My interest in this topic originated from my involvement as a graduate research assistant on the UW-Madison Community and Regional Food Systems Project and from my participation in the Madison Food Policy Council. Generally speaking, food policy councils are multi-stakeholder bodies designed to promote collective problem-solving to address complex food system issues. At the time that I joined the newly formed council in 2012, food policy councils were rapidly proliferating in cities across North America. A number of publications (e.g. Winne, 2008; Harper et al., 2009) had recently come out cautiously touting the potential of this "underutilized tool for *reshaping* the food system" (Clancy, Hammer & Lipolt, 2007, p. 141, emphasis added).

As a member of the new Madison Food Policy Council, I was optimistic about the

[1] This definition of food systems change integrates Hamm and Bellows (2003) definition of community food security and Foster-Fishman and Behrens' (2007) definition of systems change.

potential of this food systems policy and planning mechanism to help advance food systems change, e.g. universal access to healthy, affordable, sustainably produced food. However, through first hand experience and later through a study of multiple municipal food policy councils, I discovered that it was not uncommon for these interdisciplinary and multi-stakeholder bodies to have difficulty realizing their potential. Moreover, when they did advance policies, projects, and programs, this was often done in a disparate manner rather than with an eye toward strategic systems change. In essence, it appeared that many food policy councils reproduced the types of incremental food systems planning activities that they were convened to coordinate and transcend. As a colleague of mine observed of other attempts at organizational innovation, "In the absence of a new mental model, people revert to what they know."

These observations led me to wonder: What theory underlies this approach to food systems planning? And what are the mechanics of interdisciplinary collaboration that enable multi-stakeholder bodies to effect food systems change? The food systems planning literature had little to offer in response to my first question. The systems change literature proved more insightful; rooted in the Social Ecological Model, which serves as the basis for many public health interventions, the systems change literature emphasizes the multi-level and transactional nature of systems change and sheds light on the psychological and relational dimensions of this work in addition to the role of planning and policy levers. These literatures, combined with my first-hand experience as a researcher and member of a food policy council served as an invitation to explore the underspecified mechanics of inter- and transdisciplinary practice in collaborative food systems planning.

Accordingly, the purpose of this dissertation is two-fold. The first aim is to provide an in-depth qualitative case study of the UW Cooperative Extension Community Food Systems Team

to elucidate the issues at play when working across disciplinary and programmatic boundaries to address complex food systems problems. The second aim is to weave together empirical findings from the case study with extant theory from the systems change, interdisciplinary, organizational development, and evaluation literatures to begin to add specificity to the role of inter- and transdisciplinary practice in food systems planning. In so doing, this study seeks to inform more strategic, systems-based food systems planning in the future.

As such, this study makes two principal contributions. First, it contributes to the under-theorized field of food systems planning by elaborating on the role of interdisciplinary and multi-sectoral initiatives in advancing food systems change. Second, in the tradition of action research, this study has also contributed to the knowledge and capacity building of my colleagues and collaborators on the UW Cooperative Extension Community Food Systems Team through program development and evaluation coaching, strategic planning, and the documentation of lessons from the Whole Measures Mini Grant Program, one of the team's first major initiatives (Day Farnsworth, Pratsch, & Lee, forthcoming).

Background and Problem Statement

A myriad of food systems problems have been documented in the academic and popular literatures (Schlosser, 2001; Pollan, 2006; Hinrichs & Lyson, 2007; Alkon & Agyeman, 2011). From a sustainability perspective, food systems problems can be broadly summarized in terms environmental, economic, and social issues. Agri-food production, distribution, and disposal practices contribute to environmental problems such as the degradation of ecological systems through resource contamination and depletion as evinced by reduced water quality and water scarcity, decreased genetic and biodiversity, and declining soil quality (Wilde, 2013). The food system also contributes to the destabilizing effects of climate change through its greenhouse gas

emissions. In fact, food systems emissions contribute to approximately 25 to 30 percent of total global greenhouse gas emissions depending on assumptions about what can be attributed to food production and distribution (Consultative Group on International Agricultural Research, n.d.). Research indicates that energy use in the U.S. food system continues to climb due to the adoption of production and distribution methods that require more energy at every stage of the food system (Wilde, 2013, p. 47).

Economic problems within the food system are characterized by unequal distribution of profits and risk across food supply chains. This has manifested in increased concentration of profits in certain segments of the food industry and widening economic inequalities. Over the past three decades there has been consolidation among large-scale agribusiness suppliers, food processors, grocery retailers, and institutional food service operators. Conservative estimates suggest that the market share of the 10 largest foodservice distributors grew from 17 percent in 1990 to 28 percent in 2000 (Stewart, 2002, p. 31). By 2000, broadline distributors accounted for nearly 50 percent of all foodservice distributor sales, with the top four firms (Sysco, US Foodservice, Alliant, and Performance Food Group) dominating close to 50 percent of these sales (Stewart, 2002, p. 31). Correspondingly, recent estimates suggest that farmers capture just over 10 cents of the average food dollar or about half the value captured by the food processing industry and less than a third of the share captured by the foodservice industry (Canning, 2011). But it is not just farmers who have been squeezed; many food chain workers—from field laborers to short-order cooks—work in substandard conditions and struggle to make ends meet (Jayaraman & Schlosser, 2013).

These economic issues are closely related to the social problems that plague the food system. Research shows that people of color occupy a disproportionately high percentage of the

lowest paid positions across the food industry (Yen Liu & Apollon, 2011). This racial divide not only characterizes labor and compensation patterns *within* the agri-food system, it also extends to food insecurity and public health statistics and to the geography of food access. USDA (2012) data indicate that nearly 15 percent of the U.S. population experienced food insecurity in 2012, with Black and Hispanic households experiencing a greater prevalence of food insecurity than other racial/ethnic groups[2]. Research also shows a disproportionately high prevalence of obesity and diet-related diseases in Black and Hispanic populations in the US; this is partly due to environmental factors (Cossrow & Falkner, 2004; Kumanyika & Grier, 2006). A recent review of the literature shows that low-income, urban neighborhoods of color have an abundance of retailers that sell processed, convenience foods and alcohol, yet they have the lowest availability of grocery stores compared with both low- and high-income white communities (Bell et al., 2013). Altogether, it is estimated that about 9 percent of the US population lives in communities that lack adequate access to healthy food retailers (Bell et al., 2013).

While it is not difficult to summarize food systems problems in broad terms, more formidable challenges emerge when we attempt to operationalize them for the purposes of problem solving. This dilemma is illuminated by Pretty's (2008) observation that the negative externalities associated with agriculture tend to have the following four characteristics: their cost are often neglected, they often occur with a lag time, they often damage groups whose interest are not well represented in political or decision-making processes, and the identity of the sources of the externality are not always known (p. 452). If the problems associated with agriculture were distinguished by any one of these characteristics, it might not be difficult to conceive of

[2] The USDA (2012) defines a household as food insecure if there were times over the period of a year that they "were uncertain of having, or unable to acquire, enough food to meet the needs of all their members because they had insufficient money or other resources for food."

appropriate policy and/or practice-based remedies, but the confluence of time lags, unclear sources, and critical power differentials makes it difficult to determine where in the food system to intervene and what strategies have the greatest potential to produce sustained results.

> Further, as Beus (1990) notes, conflicts in the food system
>
> exist at both levels of paradigmatic debate, societal and scientific. Some debate relatively narrow, technical issues dealing primarily with the scientific and production aspects while others describe the debate from a broader sociocultural perspective. At the broader level, the debate deals with fundamentally philosophical and value-laden issues not easily resolvable via empirical research. (p. 593)

This observation highlights another classic characteristic of wicked problems—to the extent that problem definition and solution formulation is values-based, the persuasive power of empirical evidence may be significantly curtailed. Even when there is consensus about overarching goals, e.g. the need to reduce the negative impacts of farming on ecological systems, there may not be agreement about how best to pursue them. For example, should policy makers use carrots (incentives) or sticks (penalties) to promote desired practices and outcomes? And at what scale within a system should we intervene?

In other instances, tensions arise when a strategy that resolves a symptomatic problem exacerbates deeper structural problems. For example, critics of supermarket attraction programs often point out that the subsidies necessary to attract large chain grocery retailers increase healthy food access at the expense of perpetuating economic inequalities by investing in large firms with low wages. In this case, health equity goals are advanced as economic equity goals are undermined. Such mono-dimensional strategies hardly represent meaningful solutions since, as the data above indicate, socio-economic issues are deeply connected. Similarly, as Connelly et

al. (2011) demonstrate, even when projects do not overtly reinforce structural inequities, if incremental and uncoordinated, they can inadvertently undermine one goal (e.g. environmental sustainability) in the service of another (e.g. social justice). They conclude that "working toward systemic change for local food systems" will require more than narrowly conceived interventions (p. 321).

> Burns (2007), a scholar of systemic action research, reinforces this observations noting,
>
> Complex issues cannot be adequately comprehended in isolation from the wider system of which they are a part. Things that happen in one arena affect and are affected by things that happen in other arenas. . . . effective whole system change has to be underpinned by processes of in-depth inquiry, multi-stakeholder analysis, experimental action and experimental learning, enacted across a wide terrain. (p. 1)

Here Burns emphasizes the importance of comprehending the systems context of complex issues and intervening on them accordingly.

I argue that what ultimately unites the sustainable agriculture and food justice movements is the notion of food systems change—the aim of altering the status quo by transforming and realigning the structure and function of the food system so that all residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice. As scholars and activists alike have observed, this type of transformation requires more than bringing together various perspectives; it requires intentional, iterative, and innovative processes that integrate multi-stakeholder input with strategic thinking about how to intervene on systems.

Yet, a review of the U.S. and Canadian food systems planning literatures suggests that food systems planning remains characterized by incremental approaches (e.g. Lindblom, 1959)

and largely fails to demonstrate coordinated interventions that comprehend the mechanics of systems change. The following literature review draws on the food systems planning and systems change literatures to first define food systems planning and provide an overview of the state of the field. I then introduce some of the central principles of the systems change literature as a conceptual framework that has potential to add both theoretical depth and strategic insight to food systems planning endeavors.

Literature Review

This research largely draws from the community and regional food systems planning literature and the systems change literature. The former is mainly descriptive while the latter is more theoretical. Given that the problems that typify food systems planning are inherently systemic in nature, systems frames provide a valuable lens through which to examine the myriad of policy and programmatic interventions that have emerged in recent years. Taken together, the food systems planning and systems change literatures shed light on how and why particular food systems interventions are likely to yield lasting and systemic results while others seem to have a much narrower impact.

Community and Regional Food Systems Planning and Development

The community and regional planning literature features policy, planning, and programmatic innovations designed to support the development of sustainable food systems by either reducing barriers to or actively supporting activities that promote urban food production, enhance access to healthy food, and foster food-related economic development. It also highlights empirical studies that illuminate disparities in food access, nutritional quality, cost and availability. The following literature review summarizes the activities that have characterized the field for the past fifteen years and closes with a discussion of practical, theoretical, and empirical

questions that will shape its future.

Urban and regional planning “is a systematic creative approach to addressing and resolving social, physical and economic problems of cities, suburbs, metropolitan areas, and larger regions. It involves identifying problems and opportunities, devising alternative policies or plans, analyzing and implementing these options and evaluating implemented plans” (ACSP Guide to Graduate Education in Planning quoted in Dear, 1989). Urban and regional planners have long been involved in certain agri-food system activities, such as farmland conservation (Daniels & Bowers, 1997). However, there has been a dramatic uptick in community and regional food systems planning over the past fifteen years. This increased interest in food systems issues among planning students, practitioners, and academics is the result of a confluence of factors: growing recognition of the relationship between the food system and sustainability, increased consumer demand for local food and food with credence attributes (e.g. organic or fair trade) (Packaged Facts, 2011; Pullman & Wu, 2012), and mounting documentation of the socio-economic inequalities and negative health impacts associated with the industrial food system. The elevated status of these issues in both academia and the media has spurred interest in sustainable food systems development in the public, private and nonprofit sectors and at the grassroots level.

As such, while this literature review highlights many activities that have been carried out by formally trained planners, I have also included the work of allied professionals (e.g. cooperative extension educators, nonprofit staff, public administrators), academics from disciplines such as Sociology and Economics, as well as “citizen planners” whose local knowledge and personal experiences have also shaped the development of community food systems. The decision to include activities advanced by this range of actors was two-fold. First,

as the field is still young, few professional planners identify primarily as food systems planners. Secondly, many of those who are not formally trained as planners are functionally engaged in food systems planning insofar as they are involved in "addressing and resolving social, physical and economic problems" of urban and regional food systems (Dear, 1989). Consequently, I refer to professional and nontraditional food systems planners to differentiate between those who belong to the planning profession and those who engage in food systems planning activities.

Defining food systems issues for planning, policy, and implementation. Adopted by the American Planning Association in 2007, the *Policy Guide on Community and Regional Food Planning* identifies multiple ways professional planners are already involved with the food system and makes a strong case for expanding the planning community's participation in addressing food systems issues. Rationale for increased planning involvement include the recognition that food system activities take up a significant amount of urban and regional land, growing awareness that planners can play a role in reducing food insecurity, and the understanding that the food system represents an important part of community and regional economies (American Planning Association, 2007). The policy guide details seven policy areas to focus planning research and practice, many of which are explicitly informed by sustainability principles. For example, its stated goals are to "help build stronger, sustainable and more self-reliant community and regional food systems, and to suggest ways that the industrial food system may interact with communities and regions to enhance benefits such as economic vitality, public health, ecological sustainability, social equity and cultural diversity" (American Planning Association, 2007, Introduction). The document's normative flavor is typical of the community and regional food systems planning literature and echoes values first articulated in the sustainable agriculture, ecological sustainability, anti-hunger, and food justice movements.

Using regulatory tools to promote urban agriculture and healthy food environments. Planners have built on the agricultural land-use continuum concepts developed by Duany Plater-Zyberk and Company's (n.d.) *agrarian urbanism transect* by detailing the nature and regulatory implications of a range of urban horticulture and livestock production practices. Mukherji and Morales (2010), Hodgson et al. (2011), and Neuener et al. (2011) highlight examples of municipal and county efforts to promote household food production and commercial urban agriculture through the creation of urban agriculture districts, use categories, and form-based codes. Morales and Kettles (2009a, 2009b) have documented code innovations and promoted advocacy, policy and legal reforms to support farmers' markets, food carts and fruit vendors. Zoning incentives have also been combined with fiscal incentives to attract grocery stores to underserved area by offering density bonuses, reduced parking requirements, and "as-of-right" store site locations (Neuner et al., 2011; PolicyLink, 2007). Finally, some cities have experimented with restrictive ordinances; in 2009, South Los Angeles instituted a temporary ban on the establishment of new fast food restaurants in an effort to contain the number of unhealthy food offerings in a particular geographic area (Spacht, 2009). In places such as Madison, Wisconsin—and many other communities—vocal citizen groups, often with support from individuals with planning savvy, were instrumental in urging the city to incorporate urban agriculture into its zoning code.

Mapping and geographic analysis of the food system. Planners and allied professionals have employed various mapping strategies to examine the alignment of regional food production and consumption and characterize the spatial dimensions of food access, quality, and affordability (Block & Kouba, 2006; Peters et al., 2009a; Peters et al., 2009b; Raja et al., 2008; Meter, 2009). Peters et al. (2009a, 2009b) assessed the production capacity of local and regional

foodsheds in New York State to ascertain whether there was sufficient production capacity to meet the nutrition needs of different sizes of population centers; they determined that small to mid-size cities could "theoretically meet their food needs within distances two orders of magnitude smaller than the current American food system" while larger cities could only satisfy a majority of their food needs by sourcing state-wide and prioritizing in-state production of particular food crops (p. 72). Meanwhile, Raja Ma and Yadav (2008) investigated the racial disparities in neighborhood food environments and Block and Kouba (2006) examined the relationship between grocery store type, location, prices, and product quality. Pothukuchi and Siedenberg (2002) developed a tool for community organizations and local governments to conduct their own community food assessments.

Promoting multi-stakeholder organizations and processes to improve problem solving. Most local governments do not have a centralized agency devoted to food systems issues, i.e. production, distribution, access and nutrition. Instead, these issues are typically managed across several different agencies, each of which oversees policies and programs concerning a particular component of the food system, such as agriculture or public health. Moreover, there tends to be little coordination across agencies with regard to municipal or metro-regional food policy. This can result in unduly complex permitting and bidding processes making it difficult to start community gardens, promote food cart entrepreneurism, and increase local food offerings in public agency cafeterias. Professional and nontraditional food systems planners alike have been strong advocates for food policy councils, i.e. multi-stakeholder advisory bodies developed to provide research, expertise, and advocacy to improve regulatory alignment within food systems (Pothukuchi & Kaufman 1999; Raja et al., 2008; Winne, 2009). Food policy councils, which have been organized as governmental, non-governmental and hybrid entities, have helped draft

and pass urban agriculture ordinances, preserve peri-urban farmland, develop sustainable food purchasing guidelines for city agencies, and host marketing and merchandising trainings to promote the sale of healthy foods in neighborhood markets.

Incorporating agri-food components into planning documents. Incorporating agri-food objectives into comprehensive and sustainability plans is another way for local governments to improve coordination across programmatic, policy and planning efforts. There are now a variety of examples of city, county, and metro-level comprehensive plans that address food systems issues ranging from agricultural preservation to food processing and aggregation to healthy food access (Raja et al. 2008; Neuner et al., 2011). Some plans devote entire sections to agriculture and food issues (e.g. Chicago Metropolitan Agency Planning) while others disperse agri-food objectives throughout plans (e.g. Greater Seattle) or integrate them into topical subsections such as health, natural and agricultural resources, environmental stewardship or energy (e.g. Metro Boston). A growing number of places are developing plans solely devoted to food issues. These range from the neighborhood scale (e.g. Buffalo, NY) to the regional-scale (e.g. Greater Philadelphia) (Neuner et al. 2011, pp. 7-13). Professional planners are ultimately responsible for translating citizen input into official plans. Nevertheless, vocal citizens and community-based organizations have played an important role in elevating agri-food issues at community listening sessions in places such as Madison, Chicago, and Boston, and their contribution to advancing the food systems planning agenda in comprehensive plans cannot be overstated (Chicago Metropolitan Agency for Planning 2010; Metropolitan Area Planning Council, 2008). Finally, it bears mentioning that despite the value of zoning-based tools such as comprehensive plans, zoning-based strategies alone are not the answer. Research has shown that the “if you zone it, they will come” mentality is a fallacy and that for zoning to be effective, it must be accompanied

by other strategies.

Providing research and financing to support food system infrastructure development. Inadequate physical infrastructure poses a challenge to businesses across the agri-food supply chain. Traditional financing options can be difficult to secure for small and mid-sized growers, food distributors and grocer retailers because of perceived risks by financial institutions. Yet, insufficient post-harvest handling and cooling infrastructure compromises product quality and prevents producers from expanding and reaching new markets (Day-Farnsworth et al., 2009). Likewise, small and mid-size grocery retailers with limited or substandard refrigerated storage and display cases are unable to provide the communities that they serve with high quality produce.

Day-Farnsworth and Morales (2011) highlight several examples of how Tax Incremental Financing and Economic Development Association grants have helped small producers and distributors close the gap in traditional financing by partially funding the development of "food hubs", i.e. centralized, multi-organizational, grading, packing, processing and distribution facilities. Similarly, the Pennsylvania Fresh Food Financing Initiative is an innovative public private partnership that provides a range of financing options for operators who wish to develop or expand grocery stores (including corner stores) in underserved urban and rural communities (Raja et al. 2008, pp. 54-55). The program was so successful that the U.S. Treasury and Departments of Agriculture and Health and Human Services (US Health Department) replicated the program at the national level with the creation of the Healthy Food Financing Initiative in 2011 (US Health Department, 2011).

Programmatic activities and community-led projects. Professional and nontraditional planners have been active in a variety of city, nonprofit, and community-led programs to

promote community food security. For example, the City of Seattle has developed a public-nonprofit partnership to support the development of robust community garden network, the P-Patch Program. In Wisconsin, the Dane County Planning and Development Department and Dane County Extension have provided technical assistance and match-making for Wisconsin farmers and mid to high volume wholesale, retail, and institutional food buyers through the Institutional Food Market Coalition. Planners have also been instrumental in bringing technical expertise to community-driven development projects such as Troy Gardens, a planned unit development that resulted in the co-location of a community garden, a natural area preserve, and cohousing development in Madison, Wisconsin (Campbell & Salus, 2003). Finally, grantees of the USDA Community Food Projects grants program highlight the range of innovative ways agri-food activities are being used to support youth development, revitalize neighborhoods, and use urban food production to ameliorate community food insecurity (Pothukuchi, Siedenburg, & Abi-Nader, 2007).

Challenges and Research Needs. In places where food systems planning has taken root, much of the low-hanging fruit has already been picked. As a result, the work that lies ahead is apt to be more onerous than the work that has taken place so far. Two of the major issues that are likely to shape the future of food systems planning are coordination and evaluation.

If community and regional food systems policy and planning is to amount to more than the sum of its parts, food systems planners, policy makers, nonprofits and community groups will need to move from what presently resembles a highly incremental model (e.g. Lindblom, 1959) toward a model that reflects a more cohesive theory of change as evidenced by more strategic interventions and better coordination of activities across different agencies, departments, constituencies, and types of knowledge and expertise (Koc et al., 2008; Muller et

al., 2008; Wekerle, 2004). This is not to be confused with a return to a more a state-directed, comprehensive-rational model of planning. Instead it implies a plurality of actors and interventions, each of which comprehends the mechanisms of systems change, and ideally, takes action in the service of a shared vision and/or values.

In addition, food systems planners of all types need to develop and employ better strategies for evaluating food systems interventions. Although evaluation is supposed to be a component of all planning processes, and in some instances is codified into planning laws, research has shown that all to often "evaluation of programs has not kept pace with implementation" (Edwards & Haines, 2007, p. 49). Similarly, the field of community and regional food systems has been criticized for underutilizing evaluation; this has come at the expense of discovering which and to what extent popular food systems interventions are achieving their intended outcomes (Clancy, 2013a). As Clancy (2013a) observes,

> Without such evaluations we don't know either the outcomes or impacts of these activities; we don't know what parts of projects are working; we don't know if a problem has been solved or if it is even solvable; and without evaluation groups can't share their successes and mistakes with others in a useful and replicable way (p. 6).

Further, in a systems context, lack of evaluation at any scale and in any part of the system means that important feedback is also not reaching other parts of the system, which can make it difficult for groups to align their work. (Clancy, 2013a).

One way to embrace systems research and thinking is to strengthen information feedback loops within individual initiatives and across food systems activities. Feedback, defined as "an influence or message that conveys information about the outcome of a process or activity back to its source," can act as communication and control devices in both natural and socioeconomic

systems (Capra 1996 quoted Sundkvist, Milestad, & Jansson, 2005, p. 225). For example, strengthening feedback loops can take the form of evaluations of particular policies and programs or manifest as applied interdisciplinary research that allows us to understand systems that transcend disciplinary boundaries (Clancy, 2013a; Clancy, 2013b). Clancy (2013a) cautions that when feedback is not detected or when it is ignored (i.e. a problem is perceived but not addressed), we miss opportunities to correct course and refine or modify our current practices (p. 5).

The grey literature on community and regional food systems reinforces Clancy's claims and specifies challenges that practitioners have experienced in their efforts to assess the impact of their work. Pansing et al. (2013) found that there is little data with regard to the successes, challenges, and lessons that have emerged from community food initiatives' efforts to advance economic development, environmental sustainability, and public health outcomes. They attribute this in part to "a lack of fully evolved indicators and data about the impacts of local and regional food systems investments" and note that "there are few agreed upon instruments or mechanisms to measure the impact of investments in this sector, nor is there consensus on what type of data might be most useful in guiding investment and action" (p. 4).

Similarly, Hatfield (2012) observes that municipal food policy programs have encountered difficulties in both crafting priorities and identifying appropriate metrics with which to assess them. In particular, she notes that while the most readily available metrics (e.g. number of farmers' markets, rates of SNAP participation) provide useful baseline and tracking data, they fail to capture more nuanced dimensions of food systems change, such as crucial shifts in knowledge, attitudes, relationships, and structures. She suggests that the emergence of narrative evaluation approaches to food systems policies and programs could enrich our understanding of

the impact of multi-dimensional food systems initiatives by complementing quantitative metrics (Hatfield, 2012, p. 22).

In sum, while there is ample documentation of local experimentation and innovation in food systems planning and policy, questions remain as to the individual and collective impact of these activities. Reflecting on the role of researchers in the development of sustainable community food systems Campbell et al. (2013) ask, “Are we learning what we need to know to expand the impact of this work?” (p. 97). Both the academic and grey literatures suggest that there is room for improvement along the research-practice continuum. Specifically, there is a need for evaluation and empirical research that tests the myriad of food systems planning interventions that have recently emerged to generate critical feedback about what is and is not working. In addition, there is a need to move the sustainable food planning research agenda beyond the study of innovative initiatives toward greater theoretical development (Moragues-Faus 2013, p. 578).

Systems Change

The systems change literature discusses how various systems science methods and theories can be applied to social science research and the design of collaborative interventions to foster social change. Much of the literature is devoted to explaining how systems change functions, what differentiates it from isolated and aggregate interventions, and why systems change is necessary for addressing complex socio-ecological and economic problems. To date, much of this research has occurred in the field of community psychology. Owing to the field’s origins and its intellectual and values orientation, some of the literature explicitly assumes a social justice slant and many of the case studies in this literature focus on public health issues

and human service delivery systems. This literature review identifies and summarizes key concepts, challenges, and methodologies.

Characteristics of planned systems change. Although planned systems change processes can take a variety of forms, there are several conceptual and methodological characteristics that distinguish them from other types of change efforts: (1) a focus on uncovering and addressing root causes, (2) use of systems interventions that are trans- and multi-level, (3) use of transactional interventions, and (4) systems change outcomes.

***A focus on uncovering and addressing root causes*.** The importance of uncovering and addressing root causes rather than responding to symptoms is predominant in the systems change literature. From an implementation perspective, this requires modification of underlying structures and mechanisms that operate within a system, such as policies, routines, relationships, resources, power structures, and values. It is helpful to first understand variation within the concept of change itself.

Borrowing from Watzlawick et al. (1974), Foster-Fishman et al. (2007) distinguish between first-order and second-order change to illuminate how interventions that address root causes differ in methodology and structure from those that address symptoms. In essence, first-order change is reformist. It focuses on improving practices within the existing system rather than transforming it. By contrast, second-order change is transformational. It involves a paradigm shift insofar as assumptions about the nature of the problem and the suitability of existing solutions are questioned and new problem frames and solutions are developed (Foster-Fishman et al., 2007, p. 201).

Christens and Freedman (2014) highlight another important distinction between first and second order change, noting that the dynamics of second order change can be counterintuitive.

An intervention that effects first-order change typically intervenes *directly* on a problem; in response to an issue such as household food insecurity, a first order intervention might focus on providing free meals or groceries. In contrast, an intervention that effects second-order change will often *indirectly* intervene on the problem. In this case, an intervention might focus on increasing household stability and adult job readiness to increase the head-of-household's long-term employability, and by extension, their ability to purchase food.

While the first intervention addresses the immediate problem of hunger, it is unlikely to break the cycle of food insecurity because it addresses the symptom, hunger, not the cause, poverty. By fostering household stability and individual employability, the second intervention addresses both the cause and the symptom. When the root of a problem is systemic in nature, focusing on second-order change is more likely to foster comprehensive and lasting solutions because it requires attention to the underlying causes of a problem (Foster-Fishman et al. 2007, p. 201).

Systems interventions are often trans- and multi-level. Systems interventions are "a set of approaches to improving health and well-being that intervene on parts of a system other than the individuals" (Christens & Freedman, 2014, p. 304). To conceptualize and articulate the importance of trans- and multi-level systems interventions, much of the Community Psychology literature on systems change draws on social ecological theory. Borrowing concepts from the organism-environment interactions characteristic of natural ecosystems, an ecological perspective on health and well-being emphasizes both individual and contextual systems (in this case, physical, social, cultural, historical) and the interactions and interdependencies between them (McLaren & Hawe, 2005). The iconic depiction of the social ecological system comes from Brofenbrenner's ecological theory of development, which is illustrated as five concentric spheres

with the individual at the center. Each sphere captures different factors that influence the individual, from their age and sex to the people, places, and interactions that constitute their immediate situation to broader influences such as politics, media, and cultural ideologies. Two-way arrows signify interactions and connections within and between spheres.

The utility of social ecological theory in the conceptualization of systems change and systems interventions is at least two-fold. First, it provides a framework and language for understanding the different spheres of influence on the health and well-being of an individual. Second, it underscores the multi-directional causal relationships that typify and reinforce systems. With this in mind, it becomes more apparent why individual-oriented programs such as healthy cooking classes may be undermined by other individual, setting, and environmental factors such as eating and shopping habits, household income, food culture, and proximity to healthy food retail outlets.

Transactional interventions. As Christens and Freedman (2014) succinctly state, "systems are changed by people who are themselves changed in the process" (p. 305). This is the essence of transactional interventions, which aim to change the relationship between people and the settings and environments in which they take part (Christens & Freedman, 2014, p. 305). This ideal is also at the core of many participatory planning efforts and social change processes.

Other examples of transactional interventions in the food system include a citizen-led coalition to convert abandoned lots to community garden spaces or grassroots community organizing to change state WIC laws to allow for the purchase of WIC products from mobile grocers. These interventions are distinct from individual-oriented interventions (e.g. vegetable prescription programs) or setting level interventions (e.g. Department of Development-driven grocery store attractive initiatives) because they present opportunities for the individuals who

participate in the collaborative or organizing process to develop new capacities in addition to bringing about changes in policy or the food environment.

Systems change outcomes. Foster-Fishman and Behrens (2007) note that the objective of systems change is "to shift the underlying infrastructure within a community or targeted context to support a desired outcome, including [shifts in] existing policies and practices, resource allocations, relational structures, community norms and values, and skills and attitudes" (p. 192). Because systems change is a question of both means and ends, the net result of focusing on roots causes and implementing multi-level and transactional systems interventions should be systems transformation rather than improvements to system components. Changes in policies, practices, resource allocation, and attitudes, among other indicators, evince systems change to the extent that they are component outcomes of integrated and systemic change strategies.

At present, one of the most popular approaches for promoting systems change is Kania and Kramer's (2011) Collective Impact. This model facilitates change across multiple scales and organizations through a strategy based on five components. They include a "backbone organization" that serves a coordinating function, a common agenda, a shared measurement system, continuous communication, and mutually reinforcing activities across participants.

Distinctions between systems interventions and individual interventions. In contrast to systems interventions, individual programmatic and policy interventions might be characterized by responding to symptoms rather than root causes and/or by focusing on and within singular systems components rather than interactions between systems components and the whole. This is not to say that policies and programs cannot contribute to substantive systems change. Systems change efforts can result in outcomes such as more coordinated service delivery systems, in which state and local policies and service provision programs play important roles. The critical

distinction is that in these instances, policies and programs are designed to improve alignment between systems activities and systems outcomes rather than focusing on isolated systems components.

In short, isolated policy and programmatic interventions, individual or in aggregate, are unlikely to produce comprehensive or sustained results. The reason that these types of interventions often fail to amount to more than the sum of their parts is that they are simply not designed to catalyze larger changes (Christens et al., 2007, p. 207). Certainly, programs that address immediate problems, such as hunger, serve important emergency functions, but unless they are complemented by and coordinated with efforts that can afford to take a longer view and address structural and relational root causes, they are unlikely to contribute to systems change.

Isolated interventions are also unlikely to be sustained over the long term for similar reasons. Social systems are maintained and reinforced by patterns of social relations that link individuals and environments, and these systemic patterns are connected to both identities and worldviews and are self-reinforcing (Christens & Freedman, 2014, p. 305). As such, when systems interventions only target components of systems, they tend to leave the relational dynamics between an individual and their context unchanged. This makes gains achieved by isolated interventions vulnerable to setbacks since systems dynamics are likely to supersede them over time (Christens & Freedman, 2014). To overcome these deep and self-reinforcing patterns, Christens and Freedman (2014) assert, “systems interventions must create disruptions and dissonance within systems that complicate the existing ecology” (p. 306); only in this way they can achieve sustained impact.

Models of systems interventions. There are two primary models of systems interventions: policy-oriented systems interventions and participatory systems interventions. The

former are initiated through policy and led by institutions (e.g. government, businesses) that can transform systems through regulation and by altering incentive structures. By contrast, participatory systems interventions originate from or involve community members and organizations. They involve people who will be affected by a systems intervention in either identifying the need for and/or specifying how an intervention will be designed and implemented. Both approaches to systems change have produced significant achievements, and it is not uncommon for interventions to combine elements of both models. However, one added benefit of the participatory model is that it has the potential to build individual and community capacity and transform local power relations. In other words, by naming the problem and determining how to address it systemically, participants involved in the process gain skills that cannot be imparted through top-down models. In this way, participatory systems change models present an opportunity for more than incremental change. (Christens & Freedman, 2014, p. 306)

Challenges. Despite their transformative potential, systems change interventions are not without significant challenges. Christens and Freedman (2014) identify several of the major issues that have impeded systems change efforts: difficulties associated with systems thinking and problem attribution, community-level measurement and determination of causality, and difficulties associated with political resources and power dynamics (pp. 307-308). The design, development, and implementation of systems interventions at once requires both systems thinking and boundary setting. This presents inherent challenges to practitioners and researchers—appropriate boundaries are not always recognizable at the outset of a project and yet inappropriately drawn boundaries can compromise the effectiveness of an intervention. Relatedly, misattribution of problems to the wrong system component or scale (e.g. attributing poor diets to individual decision-making rather than societal conditions) can lead to misguided

intervention design and impede crucial political support for systems approaches to social problems (Christens & Freedman, 2014, pp. 310-311).

Studying the impact of systems interventions has also proven difficult due to their complexity and the fact that many systems interventions have only been implemented in a single community. Small sample sizes combined with the diffuse and temporal dimensions (e.g. time lags) associated with some systems change outcomes have limited the potential for large cross-case comparative studies and make it difficult it to establish causality. Finally, systems interventions can encounter political resistance because, if successful, they have the potential to alter resource allocation and power dynamics. This political dimension can also dissuade practitioners, policy-makers, and community-based organizations from pursuing systems change interventions and lead them to favor more reformist approaches instead (Christens & Freedman 2014, pp. 311-312).

Methodological Developments. Theoretical advances in the systems change literature have resulted in the development of frameworks to improve the design of systems interventions (Foster-Fishman, Nowell, & Yang, 2007). They have also elevated the importance of addressing power dynamics in systems change processes (Christens & Freedman, 2014, p. 312). Meanwhile, empirical advances have expanded the range of methods used to examine systems change. For example, researchers have explored new approaches to mixed methods and evaluation of systems interventions through participatory evaluation strategies and a greater focus on proximal indicators (Christens & Freedman 2014, p. 312). Researchers have also incorporated methodologies from other fields. Hirsch, Levine, and Miller (2007) used systems dynamics modeling, which originated in the field of engineering, to highlight multidirectional causality and feedback processes in social change initiatives. Drawing on the action research tradition, Suarez-

Balcazar et al. (2007) employed Soft Systems Methodology (SSM) to engage diverse stakeholders in the design and implementation of a systems intervention to improve the healthy food offerings in Chicago Public Schools. Researchers have also combined SSM and systems dynamics modeling (Foster-Fishman et al., 2007) and employed more traditional quantitative analysis to study systems change (Emshoff et al., 2007).

Synthesis

Due to its epistemological roots, the systems change literature emphasizes the importance of designing interventions that operate within and across multiple levels of a system ranging from the individual to community to environment and policy. Conversely, while the field of planning also intervenes on social, environmental, and policy realms and engages with multiple systems (food systems, ecosystems, transportation systems, economies, to name a few), it has invested comparatively little in conceptualizing and articulating its theory of change, that is its theory "about the central processes or drivers by which change comes about for individuals, groups, or communities" (Funnell & Rogers, 2011, p. xix). In recent years, this has begun to change. Formally trained planning professionals working with public health professionals on issues such as obesity prevention have begun to pay more attention to the interaction between individual and household behavior and the built and natural environments. Similarly, the development of holistic planning and evaluation tools, such as Whole Measures for Community Food Systems, which is discussed at length in Section 2 of this dissertation, has helped community-based organizations better articulate their work in systems terms.

However, in many ways food systems planning, both professional and nontraditional, remains dominated by incremental approaches—an agricultural conservation easement is put in place, a public market is built, a gleaning project is launched, an urban agriculture ordinance is

created, a less-restrictive home canning law passes, and so on—but to what end? As scholar and activist Eric Holt-Gimenez (2011) asks, “How can we turn the food movement into a political force for transformative change rather than just a passing fad, a basket of weak reforms, or a collection of isolated food and agriculture projects?” (p. 317). By providing a framework that articulates the importance of interventions that comprehend distinct spheres of influence and agency and the interactions between them, systems change principles have the potential to shed light on the rich interactive space between individuals and their social and physical environments that can help pave the way for the more strategic development of food systems planning projects, programs, and policies. In this way, systems change concepts can help those engaged in both professional and nontraditional food systems planning. In addition, concepts such as first and second order change can help illuminate the theories of change that underlie existing food systems interventions and potentially contribute to their evaluation, improvement and/or redesign.

Case Selection

Why Multi-Stakeholder and Interdisciplinary Initiatives?

In light of the ad hoc, uncoordinated, and informal nature of much of the food systems planning field, what are the most promising inroads for developing systemic interventions that strategically address the complexity of contemporary food systems problems? The literature on wicked problems suggests that their complex nature requires the input and expertise of individuals from diverse knowledge backgrounds. For example, Rittel and Webber (1973) propose that the resolution of wicked problems be pursued through dialogical processes in which problem definitions and solutions emerge as products of discussion among diverse participants (p. 162). Similarly, Connelly et al. (2011) assert, “working toward systemic change for local

food systems will not occur through single issue topics, *there is a need for broad-based discussion of societal values, structures and processes*" (p. 317, emphasis added). In fact there are numerous calls for collaborative problem-solving in the community food systems literature (e.g. Barling, Lang, & Caraher, 2002; Connelly, Markey, & Roseland, 2011; Koc, MacRae, Desjardins, & Roberts, 2008; Muller, Tagtow, Roberts, & MacDougall, 2009; Wekerle, 2004).

This emphasis on participatory, multi-stakeholder problem-solving also features prominently in the broader planning and public administration literature in relation to complex environmental and public health issues and is central to a number of contemporary works on inter- and transdisciplinary research. For example, building on Habermas' (1981) notion of communicative rationality, Innes and Booher (2010) detail a participatory planning process based on what they call collaborative rationality, wherein "affected interests jointly engage in face to face dialogue, bringing their various perspectives to the table to deliberate on the problems they face together" (p. 6). They explicitly present this approach as an alternative to more traditional expert-driven, linear approaches to planning and public policy.

Similarly, the consulting group FSG has promoted Collective Impact as a strategy for aligning multiple organizations to solve complex social problems that no individual organization could resolve on its own (Kania & Kramer 2011; Kania & Kramer 2013). Meanwhile, others (e.g. Rydin et al., 2012) have proposed particular roles for practitioners and researchers involved in these processes (e.g. facilitative and evaluative) and emphasized the importance of small-scale experimentation and co-learning. Finally, interdisciplinary scholars Lélé and Norgaard (2005) advocate for university-society collaboration in interdisciplinary research endeavors, noting "thinking collectively about complex problems requires crossing boundaries both horizontally

(across disciplines) and vertically (across experts, policymakers, practitioners, and the public)" (p. 967).

In recent years, food policy councils have emerged as a popular organizational model for facilitating multidisciplinary and multi-stakeholder problem solving across different community constituencies, agencies, and sectors that shape our food system. Food policy councils can assume a variety of forms and functions, but their central purpose is to "provide a forum for diverse stakeholders to come together and address common concerns about food policy, including topics such as food security, farm policy, food regulations, environmental impacts, health, and nutrition" (Broad Leib, 2012, p. 1). As of October 2015, there were 282 total food policy councils in North America, an increase of more than 60 percent since just 2010 (Center for a Livable Future, 2015). Despite their popularity, questions about the effectiveness of food policy councils remain. Harper et al. (2009) note that "despite numerous success stories"—most of which highlight specific policy or programmatic achievements—more substantive quantitative and qualitative documentation of the impact of food policy councils is scant (p. 7).

In sum, the literature on wicked problem solving suggests that interdisciplinary and multi-stakeholder initiatives have an important role to play in generating integrated solutions to complex problems. If a central aim of food policy councils and other interdisciplinary and multi-stakeholder initiatives is to engage in complex problem-solving instead of single-issue programmatic and policy interventions, then what are the mechanisms and practices that enable these collaborative efforts? How do they move from convening diverse voices to actually fostering coordinated strategies that produce food systems change? While similar questions have been explored in the fields of Public Health and Community Psychology, there has been comparatively little research on multi-issue (ecological, social, and economic) systems change

efforts within the field of sustainable food system planning. The aim of this dissertation is to begin to fill this gap in the planning literature.

Why the UW Cooperative Extension Community Food Systems Team?

Land grant universities, like local governments and nonprofits, are experimenting with new organizational, programmatic, process and policy models that integrate diverse knowledge, strategies, and actors to address complex social, economic, public health and environmental problems. While universities have long partnered with communities, UW Cooperative Extension's permanent presence on both University of Wisconsin System campuses and in county and tribal governments gives it a unique (though not unified) organizational perspective on university-community collaboration and makes for a rich case study. Moreover, Cooperative Extension's four primary program areas address virtually every dimension of the food system and contribute to a variety of sustainable food system outputs, including agricultural production, natural resource management, youth, community and economic development, and human health and well-being[3].

In 2011, UW Cooperative Extension leadership sought statewide input on critical and emerging issues that require interdisciplinary responses. This process resulted in the formal creation of two interdisciplinary teams, including the Community Food Systems Team, whose mission is to support and enhance UW Cooperative Extension's "research mission and capacity to work with community food systems in an integrated, systemic, and coordinated manner, spanning across all program areas within Extension as well as with external stakeholders" (UW

[3] UW Cooperative Extension is one of four divisions of University of Wisconsin – Extension, the outreach branch of the University of Wisconsin System. The other divisions include Continuing and Online Education, Business and Entrepreneurship, and Public Broadcasting. UW-Extension was first created in 1906 and has existed in its current configuration since 1965. This dissertation focuses exclusively on the Cooperative Extension division of the organization, which is part of a national Cooperative Extension System that functions as a partnership between land grant universities and the United States Department of Agriculture.

Cooperative Extension Community Food Systems Team, 2012). As such, the UW Cooperative Extension Community Food Systems Team serves as an insightful case of an interdisciplinary community food systems initiative for several reasons. First, UW Cooperative Extension has long history of involvement in a wide range of food systems planning activities ranging from land use planning to economic development to community gardening. Second, as noted above, the team's mission indicates a commitment to advancing an "integrated, systemic, and coordinated" approach to interdisciplinary practice, which suggests the intent to employ strategies that move beyond the disjointed approaches typical of the present field of food systems planning.

Third, UW Cooperative Extension represents a well positioned, high capacity context for systems change insofar as the organization has the resources, knowledge, and influence necessary to carry out these crucial roles: information exchange, collaborative project definition, rule changing, and system changing (at the organizational and state levels). These are all regarded as preconditions for a successful systems change effort (Brindis & Wunsch, 1996; Kreger et al., 2007). In fact, outwardly, the Community Food Systems Team, which had a dedicated full-time staff person for its first 4.5 years and the resources of a venerated institution behind it, had clear resource advantages over many food councils. In fact, it has been documented that most food policy councils are under-staffed, under-resourced and have little or no institutional or public policy making authority (Harper et al., 2009). In this regard, the Community Food Systems Team appeared to represent what Flyvbjerg (2006) calls a "most likely case"—a type of critical case selected for its increased chance of exhibiting particular phenomena, e.g. practices that facilitate the design and implementation of interdisciplinary systems change (pp. 230-231).

Finally, the location of the study site and my strong professional relationships with UW Cooperative Extension colleagues engaged in community food systems development and evaluation enhanced my access to key informants. These relationships enabled me to actively partake in Community Food Systems Team activities, first in an action research capacity and later as a staff member of the UW Cooperative Extension Program Development and Evaluation Unit. Altogether, these factors presented a rich opportunity for an in-depth investigation of this interdisciplinary community food systems initiative and its implications for interdisciplinary and multi-stakeholder food systems planning in Cooperative Extension and beyond. In addition, it provided an opportunity to look at the relationship between inter- and transdisciplinary research and practice in an institution whose very purpose is the translation and dissemination of research to improve practice.

Research Questions

This in-depth qualitative case study was guided by the following research question: What issues are in play when practitioners work across disciplinary boundaries to promote food systems change? To operationalize this question in the context of an in-depth case study of the UW Cooperative Extension Community Food Systems Team, this broad question was divided into the following sub-questions:

(1) What was the impetus for Community Food Systems Team?

(2) What barriers did the team encounter?

(3) What innovations did it generate to overcome these barriers and what were the results?

(4) What are the implications of this case for interdisciplinary and multi-stakeholder community food systems initiatives?

    (a) What are the ramifications for Cooperative Extension program design?

(b) What are the broader ramifications for food systems planning and practice?

The aim of the first three research questions is to develop a nuanced understanding of the UW Cooperative Extension Community Food Systems Team by clarifying the purpose of the initiative, describing its implementation, and identifying how it could be improved. The fourth question is concerned with how the findings from this in-depth case study can inform interdisciplinary practice both inside and outside of the Cooperative Extension context.

Summary of Research Methods

The principal data collection methods employed in this study included in-depth interviews, participant observation, action research, and document review. Between May 2014 and October 2016, I worked closely with the Community Food Systems Team's Whole Measures Work Group to provide support in program development and evaluation. During this period of time, I also conducted site visits to county-based project sites, attended two statewide face-to-face meetings of the team, one all-state UW Cooperative Extension conference, two national eXtension conferences with leaders of the Community Food Systems Team, and I conducted in-depth interviews with 38 key informants. Additionally, I reviewed meeting minutes and agenda-setting documents of the Community Food Systems Team as well as archived UW Cooperative Extension publications. My analytical techniques were based on Charmaz's (2014) constructivist grounded theory and Timmermans and Tavory's (2012) abductive analysis; they included memoing, phased coding, and an iterative approach to the synthesis of empirical data with extant theory. A more detailed discussion of the methodology, research methods, ethical considerations, scope of study and delimitations, limitations, and research dissemination plan is provided in Appendix A.

Structure of the Dissertation

This dissertation is divided into five sections: Introduction, The Promise of Interdisciplinarity, An Experiment in Interdisciplinary Innovation at UW Cooperative Extension, Toward Purposive Transdisciplinary Practice, and Conclusion. The introduction (this section) describes the topical and theoretical context for this case study, provides rationale for case selection, introduces the research questions, summarizes the methods used in this study, and offers a structural overview of this dissertation. Section 1 situates this case in its epistemological and historical context. Section 2 is the most empirical section of the dissertation. Over the course of four chapters, it details the evolution of the UW Cooperative Extension Community Food Systems Team, the challenges that it encountered, its contributions to interdisciplinary practice and programming, and the resulting lessons. Section 3 makes the case for purposive transdisciplinarity as a guide for practitioners who wish to advance food systems change. Here, Mitchell, Cordell, and Fam's (2015) transdisciplinary outcomes framework is reconceived as a heuristic to guide practitioners working in translational and multi-stakeholder contexts. The conclusion summarizes key findings from each of the major sections and identifies topics for future research. A detailed discussion of study design, methodology, research methods and related considerations and limitations is provided in Appendix A.

SECTION I: THE PROMISE OF INTERDISCIPLINARITY

Chapter 1. An Introduction to Interdisciplinarity at UW Cooperative Extension

To make sense of the role of interdisciplinarity in the resolution of complex food systems problems requires a basic understanding of the epistemological and pragmatic roots of interdisciplinarity. This chapter illuminates the promise of interdisciplinarity by defining it in relationship to other cross-disciplinary endeavors and by describing how it has emerged as a favored approach, particularly in research and curricular settings, for addressing complex issues. In Chapter 2, I then consider interdisciplinarity in relation to the history and mission of UW Cooperative Extension.

Defining Interdisciplinarity

Klein (2010), a preeminent scholar of interdisciplinarity notes, "interdisciplinarity has become a mantra for change in the twenty-first century" (p.1). It is viewed as a strategy for "achieving unity of knowledge" (Klein, 1990, p. 11), differentiating and transcending disciplinary boundaries (Hinrichs, 2008), and addressing complex questions and real world problems (Klein, 1990; Romm, 1998; Carew & Wickson, 2010). As such, interdisciplinarity has become an important concept in shaping the future of higher education (Holley, 2009; Klein, 2010) and a key criterion for federal research funding in topics such as sustainability, agriculture, and food systems (Hinrichs, 2010; Klein 2010; National Academies, 2004). It has also become a buzzword in strategic plans and is often paired with concepts such as innovation and collaboration (Klein, 2010, p. 1). But what exactly is interdisciplinarity? And what is its relationship to related concepts such as transdisciplinarity?

As scholars have explored the nuances of cross-disciplinary collaboration and boundary work, a variety of terms have emerged to describe the integrative, epistemological, and participatory variation within these endeavors. In this process, the term *interdisciplinary* has both

assumed a precise meaning and become an umbrella term that encompasses multiple modes of research and practice (Hinrichs, 2008; Lélé & Norgaard, 2005; Balsiger, 2004). According to Klein (1990), “interdisciplinarity is neither a subject matter nor a body of content. It is a process for achieving an integrative synthesis, a process that usually begins with a problem, question, topic or issue” (p. 188). *Interdisciplinary* specifically refers to research, projects, and curriculum that “integrate content, data, methods, tools, concepts, and theories from two or more disciplines or bodies of specialized knowledge in order to advance fundamental understanding, answer complex questions, and solve problems that are too broad or complex for a single approach” (Klein, 2010, p. 181). Interdisciplinary implies that participants’ methods, conceptual frameworks, and deliverables are fundamentally altered through a process of integration in which participants are not just exposed to but rather influenced by other fields of knowledge and their associated epistemological and methodological approaches. Consequently, interdisciplinarity can appear in a variety of forms including integrative disciplines such as agroecology, research projects that synthesize methodologies from multiple disciplines such as environmental sociology and grassland ecology, as well as pedagogy and extension services that integrate knowledge and practices from multiple disciplinary traditions.

The meaning of interdisciplinarity is distinct from several other terms that frequently appear in the literature. *Multidisciplinarity* refers to additive rather than integrative collaboration across disciplines; it is exemplified by projects that engage researchers from varied disciplines to address specific dimensions of a research question from each of those unique vantage points, thus maintaining disciplinary boundaries (Holley, 2009). In contrast, interdisciplinarity fosters disciplinary overlap and synthesis. While interdisciplinarity is more integrative than multidisciplinarity, transdisciplinarity is the most integrative of the three terms.

Transdisciplinarity refers to "a practice that transgresses and transcends disciplinary boundaries" (Russell, 2004, p. 461). It is distinguished by its use of broad frameworks, e.g. sustainability and general systems theory, and it is recognized for its contribution to new modes of knowledge production and its emphasis on engaging non-academic stakeholders (Klein, 2010, p. 182; Jahn, Bergmann, & Keil, 2012). Haberli et al. (2001) succinctly define transdisciplinarity as "a new form of learning and problem-solving involving cooperation among different parts of society and academia in order to meet complex challenges in society" (p. 7).

A review of the literature reveals that these terms are often used imprecisely and interchangeably. Many activities that are described as interdisciplinary, in practice, resemble multidisciplinary collaboration (Hinrichs, 2008). Similarly, boundaries between genuine interdisciplinary and transdisciplinary endeavors may blur as interdisciplinary projects often have "transdisciplinary aspirations and commitments," especially with regard to the involvement of non-scientific and community partners (Hinrichs, 2008, p. 210).

Finally, much of the academic literature on interdisciplinarity focuses on research rather than programing and practice. In the limited practitioner-oriented Cooperative Extension literature on interdisciplinary work, the term "interdisciplinary" is often used interchangeably with the term "integrated" (e.g. De Bord, 2007; Guion, 2009; Guion, 2010). Both terms are typically used in reference to issue-based programming, a programming model first officially promoted by Cooperative Extension leadership in the 1980s and early 1990s, as discussed later in this section.

Throughout this dissertation, I primarily use the term interdisciplinary because of its versatility in the literature and because it became the primary term used to distinguish the Community Food Systems Team from other types of UW Cooperative Extension teams. In some

instances, I quote authors and interviewees who used terms other than interdisciplinary to describe concepts, activities, and dilemmas characteristic of the broader field of interdisciplinary research and practice; in those instances, I remain faithful to their original language.

Interdisciplinarity: A Response to Complex, Real Word Problems

While interdisciplinarity has been celebrated for its potential to advance a myriad of objectives, it is most commonly touted for its promise as a strategy for addressing complex, real world problems (Gibbons, 1994; Carew & Wickson, 2010). According to Klein (1990), the impact of mission-oriented and problem-focused projects on our contemporary understanding of interdisciplinary research and practice "cannot be overstated" (p. 33). Embracing "*the inexorable logic that the real problems of society do not come in the discipline-shaped blocks*," federal research grant programs have increasingly prioritized interdisciplinary issues and proposals (Roy quoted in Klein, 1990, p. 35). For instance, the USDA Agriculture and Food Research Initiative's (AFRI) six challenge areas focus on complex problems such as childhood obesity prevention and agricultural and natural resources science for climate variability and change. Similarly, a 2016 USDA AFRI request for applications stated that "priority will be given to applications that show a novel and innovative approach that will advance knowledge in targeted discipline(s). *Multidisciplinary and interdisciplinary approaches to address NIFA Challenge Areas are encouraged*" (USDA AFRI ELI, 2016, p. 13, emphasis added).

As Hinrichs (2010) asserted,

> We've reached a point where the challenges facing the food and agricultural system require more interaction and collaboration across disciplines. . . . We've arrived at a ... pressing interdisciplinary moment, one that reconceives knowledge, innovation and

> problem-solving as arising from improved (though not necessarily easy) collaboration between the social and the natural and technical sciences. (p. 28)

Hinrichs' call for an interdisciplinary reconception of "knowledge, innovation and problem-solving" is typical of the literature on interdisciplinarity. It evinces Klein's (1990) observation that many of the loudest contemporary arguments for interdisciplinarity are predicated on the notion that "a complex technological society, has problems that require interdisciplinary solutions," a perspective, she notes, that "has assumed an increased sense of urgency as the magnitude of the problems mounts and calls for praxis increase" (p. 38). Nevertheless, the notion of scholarship in the service of societal problem-solving is hardly new (Klein, 1990, p. 38). In fact, as the following chapter demonstrates, UW Cooperative Extension has its roots in these very ideals.

The Wisconsin Idea: A Pioneering Example of Interdisciplinary Research and Outreach

At the University of Wisconsin, the relationship between knowledge, innovation and real world problem-solving traces back to the late 19th century and the emergence of a principle now widely recognized as the Wisconsin Idea—the notion that the University's research and education should benefit the people of Wisconsin "beyond the boundaries of the classroom" (*The Wisconsin Idea*, n.d.). University faculty and staff have realized this mission largely by "providing information and exercising technical skill, … doing research directed at solving problems that are important to the state and conducting outreach activities" (Stark, 2003, p. 2).

The Wisconsin Idea is credited for exemplifying a service mentality that, while not uncommon among land universities (i.e. universities founded following the Morrill Acts of 1862 and 1890), became especially resonant in Wisconsin (Stark, 2003). Actualization of the Wisconsin Idea was at its apex during the Progressive Era when President Roosevelt noted, "in

no other state in the union has any university done the same work for the community that has been done in Wisconsin by the University of Wisconsin" (quoted in Stark, 2003, p.1). Still, the Wisconsin Idea remained an exemplar of integrated research, teaching, and outreach well into the 20th century. As Penfield (1975) observed, "Despite the general consensus that public service is one of three major university functions. . . . the Wisconsin Idea … is consistently singled out as epitomizing the … service ideal of the American university" (p. 109).

Problem-based research and a robust state extension system have long been cornerstones of the Wisconsin Idea in action (Stark, 2003). As early as the 1870s, University of Wisconsin faculty conducted research in the agricultural sciences to address issues facing Wisconsin farmers. In particular, Stark highlighted the University's "ability to mobilize specialists in a variety of disciplines and to work simultaneously on a number of problems having to do with one crop" (p. 41)—an approach that would today be broadly characterized as interdisciplinary research.

From early on, applied research at the Madison-based agricultural experiment station went hand-in-hand with agricultural extension activities. In fact, by some accounts, the University's extension activities predated the College of Agriculture (now the College of Agricultural and Life Sciences), which was not formally established until 1889 (Apps, 2002, pp. 16-20). Early extension work included campus-based farm short courses and local day-long farmers' institutes (Apps, 2002, p. 17).

Despite the University of Wisconsin faculty's ongoing commitment to applied research and outreach, it was clear by the early 1900s that they could not adequately perform these responsibilities in addition to providing traditional classroom instruction without support (Apps, 2002; Stark, 2003). In 1908, the Dean of the College of Agriculture lobbied the state legislature

for funds to formally create an agricultural extension service. By this time, county boards also saw the value of extension and wished to bring more university resources to bear in their communities. A county-based extension system was proposed in which the University and county governments would share the salary costs of county extension agents, an arrangement that persists to this day (Stark, 2003).

The dean's appeal to the state legislature was so successful he was chosen to lobby congress on behalf of the Association of Agricultural Colleges and Experiments Stations for a national cooperative extension system. In May 1914, the Smith-Lever Act passed, creating a link between land grant universities and the U.S. Department of Agriculture and formally establishing the Cooperative Extension Service. Smith-Lever charged cooperative extension with "diffusing among the people of the United States useful and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges. . . . and imparting to such persons information on said subjects through field demonstrations, publications, and otherwise" (Smith & Wilson, 1930, pp. 365-368). In sum, the Wisconsin Idea not only embodies a service-mindedness that has fuelled over a century of pragmatic, problem-focused scientific and policy innovation in Wisconsin, it also concretized these ideals in its outreach arm thus helping pave the way for a national cooperative extension service.

From Problem-Solving to Knowledge Creation and Dissemination

Klein (2010) contrasts *exogenous*, i.e. problem-focused interdisciplinary initiatives with *endogenous* interdisciplinarity, which is concerned with knowledge production (p. 181). She elaborates on the relationship between the two dimensions of interdisciplinarity as follows:

> Exogenous interdisciplinarity originates in the continuous momentum provided by "real" problems of the community, enriching and interrogating *endogenous university*

> *interdisciplinarity*, which is based on the production of new knowledge with the aim, more or less explicit, of realizing unity of science (Klein, 1990, pp. 37-38, emphasis original).

Here Klein describes the generative relationship between exogenous and endogenous interdisciplinarity while emphasizing the epistemological orientation of the latter. Other scholars have challenged this view by questioning the viability of this aim, i.e. the unity of science.

For example, Ramadier (2004) argues that a unity of science is not ultimately achievable because disciplines are fundamentally concerned with distinct levels of reality and exhibit considerable theoretical and methodological variation (p. 425). Further, he argues:

> Unity is a state and not a process. However, the main role of transdisciplinarity lies in the dynamics of the construction of the objects studied on the basis of disciplinary knowledge. It differs from epistemology because it focuses on an object of study common to several disciplines, rather than on the impact of knowledge produced by science. (p. 432)

Despite his skepticism about the epistemological aims and contributions of transdisciplinarity, he concedes that "what is important is not the unity but the coherence of knowledge," and he grants that transdisciplinarity can help foster an articulation of knowledge that emphasizes relationships between part and whole rather than striving for theoretical unity (p. 425).

Still other scholars are less concerned with the epistemological ramifications of interdisciplinarity than they are with its practical consequences for the research and teaching agendas of institutions of higher education. Russell, Wickson, and Carew (2008) observe that "[transdisciplinarity] promises to bring universities and other knowledge organisations into line with new demands and opportunities" of a changing knowledge landscape (p. 460). They argue

that the way universities actualize interdisciplinarity depends in large part on how they respond to the three major drivers of interdisciplinary research: “the environmental imperative, the engaged populace, and the knowledge economy” (p. 465).

While all three drivers are consistent with Klein’s (1990) notion of exogenous interdisciplinarity, they have very different implications for research and teaching. The “environmental imperative” speaks to the magnitude of contemporary environmental issues. The “engaged populace” calls for a more inclusive science that values and involves voices from outside of academe. And the “knowledge economy” calls into question the role of universities in a world where information about anything, albeit of varying degrees of veracity, is widely available online. For instance, they note that “universities are no longer regarded simply as sites of knowledge production and dissemination, but are increasingly encouraged to apply their knowledge and capacity to economic growth and industrial problem solving; the so-called ‘third role’” (p. 462).

Underscoring the public interest mandate of universities, Russell, Wickson, and Carew caution universities against privileging industry research interests over broader knowledge generation as they develop interdisciplinary curricula and research capacity. Specifically, they counsel universities to prioritize intellectual capacity building—the foundation of rigorous knowledge creation (p. 469). As illustrated in the following quote, they view interdisciplinary research (and teaching) as a crucial component of intellectual capacity building:

> Intellectual capacity is most useful when it spans many areas of knowledge, including those that are not currently in vogue, and when it displays depth and breadth, i.e. when it includes researchers deeply rooted in particular areas, and researchers who can move between knowledge areas, integrating, crossfertilising and overarching. (p. 469)

Yet, this quote begs the question: Is intellectual capacity building across disciplines enough?

Building on the transdisciplinary literature's emphasis on participatory and action research (e.g. Du Plessis, Sehume, Martin, McClelland, & Kalley, 2014) and Mitchell, Cordell and Fam's (2015) normative and change-oriented notion of "purposive transdisciplinarity," I would argue that the transformative potential of interdisciplinary initiatives at the community level will require more than the integration of research across disciplinary boundaries. Social ecological theory suggests that it will require engagement across social systems—this implies both a need for greater integration across the research-education-outreach continuum and likely a reconceptualization of the relationship between university extension and community-based audiences. De Bord (2007) suggests that interdisciplinary or "integrated" Cooperative Extension programming must be both a horizontal and multi-level endeavor, "a collaborative approach involving partners and various disciplines planning and implementing one or more strategies to impact micro and macro systems associated with one or more identified issues" where individual "learners are the smallest (or micro) aspect of the social system" and "macro system refers to impacts made with community organizations, systems, policies, standards, or rules, including culture and the economy" (para 12). This requires interventions that comprehend systems change. It also implies *interdisciplinary practice*—that is, the facilitation of interdisciplinary collaboration and the translation or application of interdisciplinary research, concepts, and tools to translational and non-research settings.

Conclusion

Over the past three decades, there have been considerable advancements in interdisciplinary research, theory, and pedagogy, but questions about interdisciplinary praxis

remain. For example: What core individual and organizational capacities are necessary for effective interdisciplinary practice? How can interdisciplinary research and adult education contribute to food systems change? What are the programmatic and policy implications of interdisciplinary work? As a nexus of research, education, and outreach, the extension arm of land grant universities makes for a rich case study of the challenges and opportunities of interdisciplinary praxis. The University of Wisconsin's influential history makes it a particularly poignant case.

As this chapter has discussed, the promise of interdisciplinarity is at least two-fold. Interdisciplinarity is at once a pragmatic, scientific means to address complex social and environmental problems ranging from climate change to food insecurity *and* a "systematic and holistic" approach for achieving epistemological reconciliation, or at least "coherence" across disciplines (Klein, 2004; Ramadier, 2004). In the spirit of the Wisconsin Idea, the question that remains for land grant universities, is not whether interdisciplinarity can enrich research, knowledge creation, and curricula development, but how it can be applied to extension activities (e.g. outreach and programming) so that interdisciplinarity lives up to its fullest potential by helping to address real world problems as they are experienced in communities. In essence, this was the challenge put to the UW Cooperative Extension Community Food Systems Team. How can interdisciplinary programming and collaboration enhance the impact of UW Cooperative Extension to improve the lives of Wisconsin residents?

Chapter 2. The Interdisciplinary Community Food Systems Team: An Origin Story

In many ways the motivations for founding the UW Cooperative Extension interdisciplinary community food systems team echo common themes in the literature on interdisciplinarity. Although the team resulted from a convergence of processes that were

initiated at different levels within the organization, there was widespread agreement across interviewees that today's major food systems issues—food insecurity, public health, climate change, agro-ecosystem health, and water quality and availability—cannot adequately be addressed within a single discipline, program area, or locale. In the words of a high-ranking UW Cooperative Extension administrator, "We've invested in this team because the fact of the matter is. . . . very, very, very seldom does an issue of importance show up in the community that doesn't engage at least two or three or all four [program areas][4]." In this regard, the motivation for creating the team, like the motivation for so many exogenous interdisciplinary initiatives, was to reconceive the organization's approach to food systems problems through interdisciplinary collaboration.

Community Food Systems: An Emerging Area of Programming

For county educators and state specialists, cross-program area and multi-county conversations about community food systems were initially informal and opportunistic. By the early 2000s, county educators in the southern Wisconsin had become involved with a range of community food systems programming ranging from school garden projects to agri-tourism. In the fall of 2010, the Dane County Extension Office in Madison hired a new department head. Twenty-five percent of the appointment was to be devoted to education. With a background in local and regional food systems policy and development, the new hire chose to focus her educational activities on community food systems. The multidisciplinary nature of the topic raised questions about which program area her work should fall under. Multiple program leaders urged her to affiliate with their areas, but she believed that the work was inherently cross-

[4] UW Cooperative Extension is divided into four program areas that are consistent with the structure of the national Cooperative Extension System. They are: Agricultural and Natural Resources Extension (ANRE), Family Living, Community, Economic and Natural Resources Development (CNRED), and 4-H Youth Development.

programmatic and was concerned that aligning with a single program area would compromise her ability to work with colleagues across the organization. Her supervisor, the regional director, agreed to a trial year during which time her position would not be affiliated with a single program area. This unique arrangement proved effective and continues but remains an anomaly.

As the new Dane County Extension Department Head explained, "When I was hired … there really wasn't anybody who had [food system] in their job title, even though we knew people were doing food-related work." In fact, in 2010, there was no clear channel within the organization through which to connect with other Cooperative Extension colleagues working on community food systems projects; it was entirely relationship-driven and by word-of-mouth. The regional director urged the new Dane County Department Head to contact to a Crawford County CNRED agent who was involved with farm-to-school programming and value-added agriculture entrepreneurship development. Soon after their initial meeting, the CNRED agent took an interim specialist position at the Center for Community and Economic Development on the UW-Madison campus; the increased proximity created new opportunities for the two of them to work together.

In early 2011, they organized an informal conference call to gauge regional colleagues' interest and involvement in community food systems programming and were pleasantly surprised by the response they received. As the Dane County Department Head later recalled:

> There were fifteen to twenty people [on the call], and people that we had no idea . . . . it was Agriculture and Horticulture people, and CNRED people, Family Living … so it was obvious that there was a lot of interest and that people were doing food systems work.

Energized by the enthusiasm of their colleagues, she and the CNRED specialist started exploring the potential development of a UW Cooperative Extension Community Food Systems Initiative.

Reigniting Cross-disciplinary Programing at UW Cooperative Extension

As the specialist and county leadership group developed a network of colleagues engaged in community food systems work and started to define its priorities, program leaders (the directors and associate directors of the four program areas and the Program Development and Evaluation Unit) began discussing how to reignite cross-program collaboration within UW Cooperative Extension. They recognized that program area boundaries "create barriers to working on issues of critical importance to [Cooperative Extension] stakeholders – and [that] often these issues really deserve a multi-program response" (UW Cooperative Extension, 2010). Although several program leaders lamented failed recent attempts to promote cross-program collaboration, they did not need to look very far back to find examples of cross-disciplinary programming in Wisconsin.

The early 1980s marked a period of national re-evaluation for cooperative extension. During this time, several reports by the Futures Taskforce to the Extension Committee on Organizational Policy (an oversight body of the Association of Public and Land Grant Universities) argued that Cooperative Extension would need to become more "issue-based" and "cross-disciplinary" if it was to maintain its relevance and address the complexity of contemporary issues (Apps, 2002, p. 120). One report plainly stated: "compelling issues facing people must drive the system. These issues must constitute the basis upon which all decision regarding [Cooperative Extension] programs, training, delivery methods, funding, and audience selection are made" (University of Wisconsin & Cooperative Extension Service Joint USDA - NASULGC Committee on the Future of Cooperative Extension, 1983; Virginia Polytechnic Institute & State University & Futures Taskforce to the Extension Committee on Organizational Policy, 1987).

The same report issued a series of recommendations to faculty and state-level administrators, including that the "Extension System must rely upon relevant departmental faculty to form interdisciplinary problem-solving teams" and that "the primary responsibility of program leaders should be to guide these interdisciplinary teams, rather than to concentrate efforts on specific program or disciplinary assignments" (Virginia Polytechnic Institute & State University & Futures Taskforce to the Extension Committee on Organizational Policy, 1987). According to historian Jerry Apps, in Wisconsin, "the major outcome of this task force's work appear[ed] to be a shift, at least in words, from conducting programs based on disciplines—agronomy, dairy science, horticulture, clothing, foods—to programs based on issues" (Apps, 2002, pp. 120).

A number of *Journal of Extension* articles from the 1980s and 1990s indicate that issue-based programming was met with mixed reception by specialists and educators across the Cooperative Extension System. Critics of the issue-based model dismissed it on multiple grounds. Bahn (1991) argued that it is in conflict with disciplinary programming models and incongruous with organizational incentive structures at the county and campus levels. Dalgaard et al. (1988) critiqued its lack of theoretical foundation. Baker and Verma (1993) noted that educators' found the issue-based programming model confusing to implement. Sanderson (1988) suggested that issue-based programming requires additional professional development to effectively execute and evaluate.

In interviews, UW Cooperative Extension administrators and staff members offered several different explanations for the erosion of interdisciplinary issue-based team programming at UW Cooperative Extension. According to a senior specialist in Program Development and Evaluation, "Extension is at its best in a crisis." She suggested that the strongest examples of

issue-based programming at UW Cooperative Extension were in response to urgent situations such as its cross program area “Strategies on Survival Program,” which was launched in response to the farm crisis in the mid-1980s. She also noted the organization’s effective response to major flooding in southern Wisconsin in the summer of 2008. While UW Cooperative Extension publications and program director meeting notes also point to successes in issue-based work in areas such as at risk youth and water resource management, another specialist observed that the organization has tended to have more difficulty mobilizing resources in a cross-programmatic capacity in non-crisis circumstances. Meanwhile, others argued that even the effort to promote issues-based interdisciplinary programming in the 1980s was simply a reframing of the way UW Cooperative Extension had been working (to various effects) for the better part of a century.

Still others suggested that it was budget cuts that contributed to the erosion of interdisciplinary practice and the dissolution of cross program area work at UW Cooperative Extension. For example, the senior specialist in Program Development and Evaluation mentioned above noted that major budget cuts to Cooperative Extension in the 1990s led to reductions in support staff and funding for professional development and networking. This resulted in increased workloads, fewer professional development and networking opportunities, and greater insularity within the program areas. In any case, over time, changes in team composition and orientation gradually contributed to a shift away from collaborative, issue-driven interventions in at least two critical ways.

First, by the early 2000s, issue-based and topical teams, which had a long tradition at UW – Cooperative Extension, appeared to have become increasingly associated with specific

program areas, making it difficult to use them as vehicles for cross-program area collaboration. As a Family Living program leader explained:

> Family Living had a team called Housing. CNRED. . . . had people who were interested in … how having adequate housing contributes to workers coming to the community. Probably about ten years ago, [the CNRED Program Director] and I were talking … and we said, "Why don't we get these people together?" I mean this is a bigger conversation than just keeping it siloed, so we encouraged the Family Living Housing team to meet with a less structured group of CNRED people who were interested in housing to try to create a new team. [It] didn't work. I think it's because … when the CNRED people came, they looked around the room and they go, "This isn't for us, this is a Family Living team." It was almost like you could not remodel a team. And we've had a similar thing going the other direction with CNRED and 4-H about leadership development. If there was an existing team that tried to open its doors to others, first meeting, people would look around the room and go: "This is a 4-H team!" It was just like, augh! It was very hard to remodel them.

As this example demonstrates, over time, UW Cooperative Extension teams had come to reinforce program area boundaries rather than help people work across them.

Secondly, as UW Cooperative Extension teams grew in number, their overall focus and impact diminished. This was ostensibly the trend across UW-Cooperative Extension teams irrespective of their topical orientation or composition. In the following quote, a CNRED program leader reflects on the evolution of the team model at UW Cooperative Extension:

> At one point we had a dean [who] brought the team structure to Wisconsin in a big way. And we developed many, many types of teams across the organization and were very

> intentional about developing what he referred to or hoped would become "high performing teams" as a way to get things done and be innovative and move things forward in Extension. And it did some of that. But it also created something like a hundred different teams. So it had some unintended consequences of perhaps being less than strategic.

UW Cooperative Extension teams' gradual shift away from "matters of widespread public concern" combined with an increase in the number of self-directed teams appears to have weakened their adherence to the high-performing teams model promoted by Dean Leholm (Katzenbach & Smith, 1993; Leholm & Vlasin, 2006). As the above program leader explained, while some teams remained focused and productive, others functioned more like "loose-knit networks" that met "to sustain their own interests."

In this regard, the diversity of self-directed UW Cooperative Extension teams reflected the decentralized and "entrepreneurial" ethos of the University of Wisconsin. In fact, one UW-Madison integrated specialist with a CNRED appointment observed that this independent spirit is so pervasive throughout the University of Wisconsin System that it effectively destabilizes the organization's formal hierarchy. As such, he argued that it has for decades created a dilemma for administrators, whose control over the day to day activities of campus and county faculty and staff is limited at best. Such observations raise questions about the role of administrators in catalyzing innovative and cross-disciplinary responses. And indeed, some UW Cooperative Extension staff and faculty are quick to argue that administrators would do best to defer to innovations that emerge from the bottom-up, whether through interdisciplinary grant-funded projects or county-based projects rooted in community needs and assets.

In any case, by 2010, organizational leadership determined that a number of UW – Cooperative Extension teams had lost their focus and ceased to fulfill an interdisciplinary function. This combined with the siloed structure of the program areas appeared to be preventing the organization from engaging in interdisciplinary programming, which in turn, was affecting the organization's impact. Program leaders wished to bring greater focus to UW Cooperative Extension teams and reinvigorate the issue-based, cross-program area team model. Growing enthusiasm for local and community food systems programing seemed to offer the perfect opportunity to build on an emergent area of interest that already had enthusiastic champions at the state and county levels. As an ANRE program leader recalled:

> Going back to 2009-10-11… there was a lot of energy coalescing around [local food]. . . . and at that time, [the dean] started saying, "You know, we want to start thinking differently. We want to start funding not only around your silos but around issues where we can bring multiple resources to bear in communities" … so we began to talk as program leaders about how could we take some risks and explore some areas of multidisciplinary programing … we got input from colleagues all over the state and the one that really emerged where there was a lot of energy, and where we could piggyback on stuff that was already beginning to emerge was food systems.

In fact, at an August 2010 meeting, the program directors discussed "what [it] would … mean for [UW Cooperative Extension] if we picked a big, central, thematic issue like local foods for our day to day work both as individuals and organizationally" (UW Cooperative Extension, 2010). What resulted was a brainstorm of the myriad of issues a cross-program area local food team might address. The summary, which appeared in meeting notes, suggests that the exercise was generative and wide-ranging. The resulting list of potential issues included such diverse topics as

food value chains, occupational health and safety, environmental impacts, land and water use, economic development, community development, health disparities, marketing, food safety, energy use and efficiency, human nutrition, business incubators, food security and more. It was evident that community food systems related to each program area in multiple ways, and the program leaders were eager to find a way to support cross-program area collaboration on community food systems.

Notably, these early conversations took place during the last months of Democratic Governor Doyle's administration, a time during which the University of Wisconsin System enjoyed comparatively high levels of support from the Governor's Office and the state legislature. Reflecting on this period, a member of the team's initial ad hoc leadership group recalled: "There was a time when—you know budgets have always been an issue—but they weren't an *overriding* issue, so there was a little more openness for some vision." Other interviewees also acknowledged that when the UW – Cooperative Extension Dean and program leaders began exploring ways to spur new interdisciplinary work, the political and budgetary climate was favorable for the types of small-scale risk-taking necessary to support innovative efforts such as the Community Food Systems Team. Indeed, virtually everyone I interviewed would later recall this period as one of relative stability and opportunity.

Formalizing the Interdisciplinary Community Food Systems Team

By Spring 2011, the emergent leadership group of the Community Food System Initiative had expanded to include the new Poverty and Food Security Specialist from the Family Living Program and the statewide SARE (Sustainable Agriculture Research and Education Program) Coordinator, who had ties to the Agriculture and Natural Resources Extension Program Area. Together, the four colleagues hosted several statewide conference calls and a face-to-face

meeting. They also developed a survey to inventory existing county-level community food systems programing and started drafting a proposal to program leaders to request their support for the creation of the UW Cooperative Extension Community Food Systems Initiative.

That summer, one of the program directors contacted the Dane County Department Head and asked her to draft, along with her colleagues, a proposal for the Dean of Cooperative Extension describing the scope and objectives of the Community Food Systems Initiative. Their letter to the Dean explained that community food systems was an "emerging area of programming for many of our county educators with significant potential for regional coordination across counties and program areas." To improve coordination and build capacity, they proposed formalizing a Community Food Systems Initiative to produce the following deliverables:

- Internal needs assessment
- Asset map
- Literature review
- Inventory of current programming
- Website/library of relevant resources
- Establishment of an effective communication system for colleagues
- Training to develop leadership to community food systems initiatives
- Educational materials (including fact sheets and curriculum)
- Professional development for colleagues to learn about existing food systems initiatives
- Documentation of best practices
- Creation of a content-focused logic model
- Evaluation plan

(Brown, Canto, Edgar & Program Directors, 2011)

The letter proposed that the "initiative serve as a two-year pilot project to evaluate best practices for approaching issues in a cross programmatic manner [and] involve careful evaluation of the team development process and professional development for colleagues in systems thinking" (Brown, Canto, Edgar, & Program Directors, 2011). The letter was co-signed "program directors," signaling their support.

By this point, it was clear that community food systems were also an emerging area of interest for interdisciplinary research, federal funding agencies, as well as other state and regional Cooperative Extension organizations. Within months of the program directors' August 2010 brainstorm about food systems issues, a multidisciplinary team of UW-Madison faculty were awarded a $5 million USDA Agriculture and Food Research Initiative (AFRI) grant for a five-year study designed to "integrate research, outreach, education and advocacy in order to better understand, develop and sustain community and regional food systems (CRFS) as a means of addressing food insecurity and related goals in American cities" (Community and Regional Food Systems Project, n.d.). Officially titled the *Evaluating Innovation And Promoting Success In Community And Regional Food Systems* project, this became known the Community and Regional Food Systems Project[5]. UW Cooperative Extension was a major sub-awardee on the grant; other key partners included Milwaukee's renowned urban agriculture nonprofit Growing Power, and Michael Fields Agricultural Institute's Public Policy Program.

In addition, by mid 2011, the North Central Cooperative Extension Association had identified metropolitan food systems programming as a regional priority. In the summer of 2011,

[5] In full disclosure, I served as a research assistant for the duration of the USDA AFRI Community and Regional Food Systems Project between February 2011 and June 2016. As such, it was the primary source of my graduate funding and enabled me to undertake this dissertation research.

it hosted a series of webinars on different metro food systems topics and released an agenda-setting report detailing needs that spanned a variety of disciplines, including “food infrastructure, food policy, consumer-centric food information, and collaboration, networking, and capacity building (Taylor, Shepard, & Vandehaar, 2011). The confluence of these various efforts reinforced program leaders’ interest in formalizing community food systems activities at UW Cooperative Extension so as to foster synergies with both the research efforts of the Community and Regional Food Systems Project (and its community and organizational partners) and the new programmatic priorities of North Central Cooperative Extension.

Further, program leaders recognized that to move the needle on food systems issues, the organization would need to revive an interdisciplinary approach to team-based work, which, given the state of UW Cooperative Extension teams, would require innovation and experimentation. As a result, the program leaders saw the Community Food Systems Initiative as the beginning of a new type of UW Cooperative Extension team, the interdisciplinary team. Interdisciplinary teams would mark a departure from UW Cooperative Extension’s two existing team models: “foundational teams,” which consist of colleagues from a single program area, (e.g. the ANRE Swine Team) and “capacity building teams,” which are supported by the Program Development & Evaluation Unit and focus on organizational capacity development, e.g. strategic planning. In essence, foundational teams focus on “the what” of the different program areas while capacity building teams focus on “the how” of the organization. The hope was that interdisciplinary teams would effectively do both by tackling cross-cutting topics that necessitate new approaches to extension programming and scholarship.

With the Dean of UW Cooperative Extension’s blessing, program leaders released an organization-wide request for proposals for interdisciplinary teams. Two teams were ultimately

selected: the Community Food Systems Team and the Engaging Young People in Sustaining Communities, Families and Farms Team (abbreviated as the “Engaging Young People Team”). The intent was that the two teams would provide fertile ground for organizational learning about interdisciplinary programming due to their topical differences and distinct developmental trajectories. While the Community Food Systems Team emerged from the bottom up, the Engaging Young People Team was initiated as a result of the administration-led request for proposal process. The program leaders openly regarded the interdisciplinary teams as an organizational learning experiment and hoped their distinct origins and issues would yield rich insights into how the larger organization might approach complex interdisciplinary issues.

SECTION 2: AN EXPERIMENT IN INTERDISCIPLINARY INNOVATION AT UW COOPERATIVE EXTENSION

Chapter 3. Uncovering Challenges to Interdisciplinary Practice and Programming

The Community Food Systems Team drew on the work of scholars such as Feenstra (2002) and Hamm and Bellows (2003) to develop its *Purpose, Vision, and Values* statement, which echoes the language and values of these seminal publications on community food security and community food systems. Specifically, the team's *Purpose, Vision, and Values* statement articulates its vision as "a sustainable community food system [that] provides a healthy, culturally appropriate, and nutritionally adequate diet throughout the lifespan while maintaining resilient ecosystems that supply food for generations to come with minimal negative impact to the environment" (UW Cooperative Extension Community Food Systems Team, 2012). Toward this end, the team's purpose is to "support and enhance Cooperative Extension's research mission and capacity to work with community food systems in an integrated, systemic, and coordinated manner, spanning across all program areas within Extension as well as with external stakeholders" (UW Cooperative Extension Community Food Systems Team, 2012).

From its inception, people interpreted the Community Food Systems Team's charge in different ways. This created and exposed a number of challenges. This chapter unpacks five challenges that significantly affected the evolution of the Community Food Systems Team: (1) tensions between instrumental and reflexive interdisciplinarity, (2) task ambiguity as manifest in confusion about the team's responsibilities and how success would be defined, (3) friction between different program area philosophies and programming models, (4) contradictions within UW Cooperative Extension, and (5) external factors, namely shifts in the state political climate and their impact on the budget of the University of Wisconsin System.

Tensions between Instrumental and Reflexive Interdisciplinarity

Some program leaders and team members principally viewed interdisciplinarity as a mechanism for developing integrated (i.e. cross-program area) community food system programing. They were chiefly interested in content development and accessing new information and colleagues in other program areas. For example, a 2011 UW Cooperative Extension-wide survey on current and emergent community food system programing indicated that county educators sought networking opportunities, funding, and support from specialists in the form of educational resources and professional development on topics ranging from entrepreneurship to food safety. Team leaders focused on fulfilling these functions were concerned with producing the connective and content-oriented deliverables described in the previous chapter. Meanwhile, other colleagues and program leaders were more interested in the Community Food Systems Team's role in organizational learning about interdisciplinary practice, and they saw potential for the team to serve as a new model for interdisciplinary programming within UW Cooperative Extension.

In the context of the literature on interdisciplinarity, the fundamental tension resulting from the team's broad mission might be described in terms of a tension between instrumental and reflexive interdisciplinarity. Focusing on the role of reflexivity in interdisciplinary practice, Romm (1998) notes that interdisciplinary work enables participants "to reconsider … the ways in which they are building up their understandings/constructions and it creates fresh opportunities for the building up … [of] multileveled learning" (p. 67). In particular, Romm is interested in the potential for interdisciplinarity to spur innovation in "understanding-and-action." For Romm, reflexive interdisciplinarity is both an individual and group practice through which ideas are exchanged and analytic frames (and other mental models) are made explicit with the dual objective of increasing individuals' awareness of their disciplinary biases and to develop a richer

understanding of real world issues by learning about and engaging with distinct disciplinary and non-academic (e.g. community-based) perspectives. In essence, reflexive interdisciplinary practice is concerned with the integrative conceptual and relational dimensions of interdisciplinary knowledge construction and collaboration.

In contrast, Klein (1996) notes that from an instrumentalist perspective, interdisciplinarity is viewed as an "empirical problem" (p. 10). Consequently, instrumental interdisciplinarity is characteristic of endogenous interdisciplinarity in that it focuses on "solving social and technological problems" (p. 10). Pragmatic and applied, instrumental interdisciplinarity is a mechanism for achieving certain ends. To the extent that this approach to interdisciplinarity engages with process, emphasis is given to "bridge building" between disciplines through a utilitarian exchange of disciplinary artifacts such as tools and methods. Unlike reflexive interdisciplinarity, according to Klein (1996) "instrumentalism … minimizes critical reflection. It retards or altogether ignores analysis of ends and means. . . . From an interdisciplinary standpoint, instrumentalism minimizes or negates reflexivity" (p. 14). This is significant because reflexivity figures prominently in the organizational learning and change literatures; as Kegan and Lahey note "self-reflection is a central aspect of any organizational work" (2009, p. 78). Thus, while instrumental approaches may be effective at answering complex questions or generating multi- and interdisciplinary outputs, absent complementary efforts to promote reflexivity, they are not likely to produce group learning about interdisciplinary practice itself, let alone contribute to meaningful organizational change.

Drawing on Klein (1998), an instrumentalist approach to interdisciplinary team development would prioritize bridge-building activities across program areas through network development, information exchange, and some mode of cross-disciplinary collaboration. In this

scenario, interdisciplinary practice is conceptualized as activities that convene researchers and practitioners from multiple disciplines (or program areas) to integrate their knowledge and skills in the service of realizing the Community Food Systems Team's vision. Much of the Community Food Systems Team's initial work had an instrumental orientation. Early on, a top priority for many of the founding team leaders was to develop opportunities and resources to help colleagues overcome an organizational structure and communication system that made it difficult to work across program areas. As a CNRED specialist and former county educator on the team's administrative committee (its primary leadership body) explained:

> It seems so basic—People in ANRE should know what people in CNRED are doing, and yet we have these institutional structures that weren't facilitating that communication. My interest was in helping people to start to have those conversations which, to be honest, looked pretty logistical and administrative.

The above quote's emphasis on the logistical dimensions of creating cross-program communication channels underscores the instrumental orientation of county-based team founders.

At the time the interdisciplinary teams were founded, and to a large extent still, UW Cooperative Extension's listservs, teams, and annual conferences were organized by program area. Although this facilitates statewide information exchange within program areas, it provides staff with few opportunities to interact with colleagues in other program areas unless they are located at the same UW Cooperative Extension site. Yet, food systems work was occurring in all four program areas. Consequently, the absence of organizational structures or communication systems to facilitate cross-program communication made it difficult for extension educators who were working on similar topics (e.g. farm-to-school) but in different program areas and parts of

the state to know who else was working on the topic, let alone exchange ideas. While building cross-program communication infrastructure and networking opportunities were important first steps, some team leaders believed that they were insufficient for promoting interdisciplinary practice.

In contrast to the bridge-building work of instrumental interdisciplinarity, a reflexive approach to Community Food Systems Team development would privilege process dimensions of interdisciplinary practice. In this instance, bridge-building and network development would serve primarily as foundational activities. This approach would focus more on means than ends, by centering activities that build individual and group capacity to work across disciplines through deliberate and explicit negotiation of the epistemological and methodological assumptions, distinctions, and contradictions of and between different program areas. In addition, this approach would be more conducive to the development and practice of "organizational learning mechanisms"—structures and processes "that enable organizational members to jointly collect, analyse, disseminate, and apply information and knowledge" to improve organizational performance (Lipshitz, Popper, & Friedman, 2007, p. 16). I will take up the concept and application of organizational learning mechanisms in more detail in the discussion of lessons in Chapter 6.

Where the instrumental approach to interdisciplinarity facilitates cross-disciplinary interaction in the service of a particular issue, the reflexive approach borrows from the action research tradition and emphasizes the reflective and synthetic dimensions of interdisciplinary work (Romm, 1998; Payne, 1999). Instrumental and reflexive interdisciplinary practices are not inherently at odds—in fact, they can be complementary. However, individually, they imply different courses of action. Given the open-ended nature of the team's purpose statement, the

question was how to structure the Community Food Systems Team in such a way as to facilitate both instrumental and reflexive interdisciplinarity to promote innovation in UW Cooperative Extension food systems programming as well as organizational learning. This proved to be a more difficult question to answer than anyone might have expected. As a PD&E program leader recalled, “Everybody was enthusiastic but nobody was clear who was leading because both parties [program leaders and team leaders] were kind of looking to each other.”

From the outset, program leaders sought to create a space for innovation by not prescribing a structure or specifying expectations for the interdisciplinary teams. Another program leader from PD&E explained that Extension’s emphasis on results and impacts can “get in the way” of innovation and learning. Since one of the explicit objectives of the interdisciplinary teams was to promote innovation and organizational learning about issue-based, cross-program area programing, the program leaders gave the interdisciplinary teams greater latitude than is typically afforded to Extension teams. Emphasizing this point, the same program leader noted, “At the beginning, literally, we said ‘Here’s a sandbox, just go play in it!’”

In a literature review of organizational innovation, Kaplan (2003) identifies three organizational components that interact to promote innovation—“organic structures, complexity, and an organizational climate that favors risk-taking” (p. 3). There are several ways in which these findings appear to validate UW - Cooperative Extension Program leaders’ laissez faire approach to the Community Food Systems Team. First, Kaplan explicitly mentions teams as an example of an organic organizational mechanism for promoting “decentralized control and authority, participative leadership, extensive lateral communication, [and] empowerment of employees” (p. 2) Secondly, his discussion of the role of complexity in organizational innovation focuses on the importance of facilitating interactions between highly trained and professionally

diverse employees; this too is consistent with the objectives of the interdisciplinary teams insofar as they convened staff members from distinct disciplinary backgrounds and vantage points within the organization.

Finally, risk-taking is evinced by the program leaders' genuine effort to create an unencumbered space for innovation in a large, generally risk-averse institution. Noting the uniqueness of the opportunity presented to the team, one program leader called it "a gift" and remarked, "I've been here awhile and I can't recall such freedom given to a group." Yet, for team leaders whose task was already broad, this flexibility proved to be a double-edged sword. Without greater clarity about the team's specific functions vis-à-vis interdisciplinary program innovation and organizational learning, these dual objectives were in tension and led to task ambiguity.

Task Ambiguity: A Barrier to Decisive Action and Evaluable Results

According to Serban and Roberts (2016), in an organizational context, "task ambiguity refers to the lack of work specifications or standard operating procedures, provided by co-workers or the organization itself regarding the expected resources and actions necessary for the successful accomplishment of a certain task" (p. 185). While much of the task ambiguity literature focuses on the individual, growth in team-based work since the 1990s has led to increased interest in the relationship between task ambiguity and team performance (Serban & Roberts, 2016). Citing Kahn et al. (1964), Eys and Carron (2001) note that there are at least three sub-types of task ambiguity, which are differentiated by the kind of information that is missing:

> (a) scope of responsibility (i.e. knowing exactly what the expectations are), (b) behavioral responsibilities (i.e. knowing what activities will lead to the accomplishment

> of those expectations), and (c) hierarchy of responsibilities (i.e. knowing what the priorities are in terms of fulfilling or not fulfilling multiple expectations). (p. 357)

The central idea is that in order for an individual (or group) to effectively perform a task, they must have a clear understanding of the intended outcomes, roles and actions, and which dimensions of a given task merit the most attention, time, and/or resources. The leaders of the Community Food Systems Team experienced all three forms of task ambiguity.

Ambiguity over scope of responsibility. First, expectations and responsibilities were unclear. In interviews, several program leaders lamented the team's slow, unfocused evolution and regular requests for direction and affirmation. Meanwhile, multiple team leaders expressed disappointment over the lack of direction they received from program leaders. Several team leaders mentioned that most program leaders became disengaged from the team after it was created. One team leader with primarily administrative responsibilities sardonically remarked, "We were given the budget to operate and we were given freedom … whether that was the rope to hang ourselves by ... I'm not really sure. But, sometimes freedom is a lack of supervision or guidance."

Unclear expectations also led people to have different ideas about what activities the team should perform and what would constitute success. Unarticulated expectations about team deliverables were exacerbated by differences in the ways the four program areas conceptualize, implement, and evaluate their programs. Reflecting on a particularly confusing meeting, a team leader from CNRED described the moment that she realized even the program leaders did not share a clear understanding of what they hoped the team would achieve: "I could tell that they were not on the same page; they put weight on different things."

She then explained that "success looks different in the four different program areas … in

some program areas, success is concrete deliverables. . . . [they] use an expert model—so you should be an expert in a discipline, create a program, deliver a program." In contrast, other "program areas are more process-based, and have … looser expectations of Extension educators and their role." This led to confusion and frustration as team leaders discovered that what was success in the eyes of one program leader was not necessarily success in the eyes of another.

Ambiguity over collective behavioral responsibilities. Because expectations were unclear and team participation was entirely elective, there was also ambiguity about who comprised the team and its leadership bodies and what activities they were responsible for executing. Uncertainty regarding behavioral responsibility surfaced in protracted conversations about the team's leadership structure and boundaries. Early on, team leaders observed that the leadership body was overwhelmingly made up of Madison-based specialists, and they were concerned about the ramifications of the under-representation of county educators, who were in many ways the staff members most directly engaged in community food system programming. Team leaders hesitated to formalize the team's leadership structure until they could identify an effective way to engage county educators.

While agenda-setting conference calls, meetings, and surveys indicated statewide interest in the team, the degree to which individual educators' programming needs and commitments interfaced with the team varied considerably. Moreover, even when educators were actively engaged in community food systems research and outreach, they were not necessarily motivated to serve a leadership role on the Community Food Systems Team, especially if they believed that they already had the relationships, information, and resources necessary to carry out their work.

This raised questions about what value the Community Food Systems Team added to community food systems work that was already taking place. A number of interviewees from

different levels of the organization suggested that team's limited authority and resources also compromised its effectiveness. For example, a prospective project partner working on state and regional farm-to-school programming at a UW-Madison research center was optimistic when she first heard about the Community Food Systems Team in late 2011. She was already working closely with the State Department of Agriculture, Trade, and Consumer Protection and been looking for ways to collaborate with UW Cooperative Extension, which seemed like "such an obvious partner." Despite the fact that several educators and specialists were doing similar work and expressed interest in further collaboration, full workloads and inflexible position descriptions made it difficult for existing staff members to devote more time to farm-to-school work, and Cooperative Extension leaders would not allocate additional funding or staff time to advance the work. After co-writing several failed funding proposals with team leaders, the prospective partner became disillusioned and turned her efforts elsewhere. The would-be collaboration was dead in the water.

Others highlighted additional examples of collaborations that never got off the ground, including an effort co-led by Community Food Systems Team leaders, the Community and Regional Food Systems Project, and the Wisconsin Department of Health Services to initiate a statewide food systems council. The effort produced considerable discussion and resulted in a white paper, but it did not ultimately lead to the creation of a robust state-level food system council. As an CNRED specialist based on a UW System campus observed, there were few clear benefits to initiating projects under the banner of the team because it had no real authority or resources with which to legitimize or fund new initiatives. In an interview, he pointedly asked what the team really had to offer besides networking. As he explained,

> Say I have a [project] idea, is that a team thing or an individual thing? What is the role of the Community Food Systems Team versus the program areas versus individual educators? *And what value-added does the team provide to an effort*?. . . . For individual county educator-led efforts, I don't know what value the team provides to them. I think that's the big question. . . . as it comes down to the specific project level, I don't know what role [the team] would play.

Limited resources and ambiguity about what the team had to offer not only appeared to make it difficult for Community Food Systems Team leaders to sustain external collaborations, it also made it difficult for the team to engage county colleagues, especially seasoned educators who already had well established networks.

Recognizing the various barriers (e.g. time constraints, competing commitments, geography, and motivation) county educators faced to participating in team leadership, team leaders eventually created a team structure with porous boundaries that allowed people to come and go as shared projects coalesced and disbanded. Team leaders also began defining their membership as "anyone in UW Cooperative Extension working on community food systems" projects. Still, efforts to engage county colleagues continued to be met with mixed reception.

Many county educators seemed to prefer to have less formal involvement with the team. Instead, they used it as a mechanism through which to connect with colleagues in other parts of the state, pose questions via the team listserv, and participate in professional development activities as their interests and schedules allowed. As one Family Living county educator explained, "I appreciate that the [team's] approach has been an inclusive one, and at the same time. . . . sometimes I don't want to be a leader, sometimes I just want to plug in." This observation suggests that over-stating the leadership opportunities and membership status of

nominally involved county educators was sometimes off-putting and had the unintended consequence of making the Community Food Systems Team appear to be a larger commitment than it was.

Ambiguity over hierarchy of responsibilities. Ill-defined expectations combined with the team's porous boundaries made it difficult for team leaders to know who their primary audience was and what types of activities to prioritize. This confusion manifested in protracted discussions among team leaders about whether the Community Food Systems Team should focus on in-reach to educators and provide indirect support for existing activities or whether it should prioritize outreach and direct programming. By and large, an inward-facing orientation prevailed.

If the central grievance of the leaders of the Community Food Systems Team was that they did not receive enough guidance, the central critique of many program leaders (and staff members from ANRE) was that the team was too insular. In an interview, an ANRE program leader acknowledged that he had become disengaged from the team, citing among other reasons, that he had grown "frustrated because [the team] seemed to continue to churn within" rather than reach out to state agencies, businesses and community organizations working on agriculture and food systems issues.

It was true. Team leadership spent an extended period of time trying define its mission and scope of work, and this alienated more action-oriented team members. Moreover, even the team's network development efforts had an intra-organizational orientation. In fact, for a period of time team leaders referred to the team as a "community of practice," which is by definition a group of peer practitioners (Lave & Wenger, 1991). And some team leaders recognized the limitations of this orientation. As an ANRE specialist focused on emerging agricultural market development noted, "For whatever reason the team stayed internally focused. That's natural for a

while, … you have to do some wordsmithing [about your priorities]. . . But at some point you know you've got to take that and turn outward." Yet, when I asked another team leader from PD&E why the team didn't collaborate more with outside organizations, he responded, "I'm not sure how we would have done that—I mean, we could barely keep county educators involved!"

Ambiguity with regard to the team's supportive and programmatic function also raised questions about contribution versus attribution. If the team was not directly responsible for original programing, how could it demonstrate its impact? For example, if two colleagues from different program areas met or became better acquainted through team gatherings and communication platforms and they decided to collaborate on an initiative to make it possible to use SNAP benefits at area farmers' markets, how much credit, if any, could the team take for the resulting project? For that matter, how would team leadership even know that the team served as a catalyst for the collaboration if it was not reported? A team leader involved in agricultural market development and grants management mused during a recorded meeting of the team's administrative committee:

> How do we get other Extension people to say, "Yeah, I'm part of the Community Food Systems Team, and my work is part of the team," so that when [they] report they give that [information] to us? Or do we go out and mine it and say, "What you're doing is community food systems related—can we use your report and pass it on to the people that we report to?"

The question of how to measure the team's indirect impact also surfaced in interviews. One team leader likened measuring indirect impacts to parenting: "If you're working indirectly ... ultimately it's the measure of the success of others, so it's like being a parent, you know? … You have to measure [your kids'] success not your success." He then remarked, but "I don't know

how you can measure connections." Team leaders were not only uncertain about how to evaluate indirect impact, they wanted to be able to point to direct impact when reporting to program leaders.

Consequently, ambiguity over team impact fueled interest in the development of original content and programming so that the team could take credit for more concrete outputs. This shift toward original programming surfaced tensions between divergent visions for the team, which were characteristic of the literature on interdisciplinary collaboration.

Frictions between Program Area Philosophies and Programming Models

In addition to task ambiguity, the Community Food Systems Team faced challenges typical of the literature on interdisciplinary collaboration. While some team leaders were eager to move from conversations about structure to discussions about cross-organization programming, others were concerned that certain foundational work had not yet been completed. As a CNRED specialist observed during a Community Food Systems Team leadership meeting:

> Through this process of formation and bringing people together … we are unearthing some real challenges to [developing] a systemic approach to a complex issues … shared language, a lack of agreement within Extension about how we deal with complex issues like poverty, whether commodity representation should be part of the team … I feel like we have started to create the safe space to have those discussions, [but] we may not be ready to program together because of the challenging discussions that we haven't really had yet.

The challenges described above are consistent with the literature on interdisciplinarity. Lélé and Norgaard (2005) and Roux, Stirzaker, Breen, Lefroy, and Cresswell (2010) discuss the common occurrence and associated difficulties of differences in worldviews, motivations, and

epistemologies in interdisciplinary research collaboration. For instance, Lélé and Norgaard (2005) observe that:

> Doing collective interdisciplinary research, especially projects stressing the feedbacks between social and environmental systems, is difficult at the best of times. Yet surely most efforts fail before they get seriously under way because the participants from different intellectual communities never recognize the barriers created by their separate ways of understanding and approaching problems. (p. 975)

Roux et al. (2010) add that when interdisciplinary initiatives do get off the ground, "transdisciplinary learning is not necessarily 'efficient'" due to stakeholders' diverse expectations and disciplinary biases (p. 739). Bracken and Oughton (2006) observe that within interdisciplinary initiatives, it is not uncommon for "each contributor in the discussion [to] believe that they have knowledge of the others' understanding, although this will not necessarily be so" (p. 379). This was certainly true of the Community Food Systems Team.

As a CNRED specialist on the team's administrative committee explained, team members often implicitly assumed they shared language and objectives when in fact they were sometimes even working at "cross-purposes":

> There may be this assumption that we are all on the same page about what we envision for our community food system, [but] I think what I learned … is that that's not necessarily true. We all may get together and be sitting at the same table talking about community food systems or sustainable food systems and the person next to you may say, "Oh, well, that's about organic, right?" You may say, "Well, no, that's not really what it means to me." We may not really be on the same page at all.

Indeed, team members were not all on the same page. Their disciplinary backgrounds, professional demands, and personal experiences contributed to fundamentally different understandings, approaches, and priorities with regard to the myriad of food systems problems.

For example, in discussing food systems problems and programming, multiple interviewees from the Family Living program area referenced the social ecological model (SEM). The SEM is a theory of change that implies multi-level systems intervention. This framework has become a conceptual cornerstone in fields such as public health and human development. As such, public health professionals often use the SEM to make sense of complex problems and design systems-based interventions. As one leader from the Family Living program area explained:

> Family and consumer sciences comes out of the human ecological model . . . .We [in Family Living] have a systems and environmental approach to all of our programing, so we're thinking about direct education, about working at the organizational level, the community level, the policy level, and the broader systems because we have a true belief that we'll be more effective thinking about the environment that people are working and living in on the issue of community food systems. Access, affordability, policies, supporting institutions, all of those make a difference in whether or not families' have access to quality food.

In addition, the SEM offers practitioners in these fields a shared mental model that centers systems interactions in their efforts to understand complex problems and conceptualize change.

In contrast, many ANRE educators, explicitly or implicitly, subscribe to the more linear technology transfer model, which is predicated on the assumption that university research shapes farmer decision-making through a largely unidirectional flow of information from researcher to

extension agent to farmer (Pratsch, 2009, p. 39). In a UW Cooperative Extension evaluation study on agricultural service providers, Pratsch et al. (2012) found that in practice, agricultural innovation is a function of the "co-production and dissemination of agricultural technology and information in an innovation system that involves multiple players interacting in various ways" (p. 38). Organizations, such as Modernizing Extension and Advisory Services and the Global Forum for Rural Advisory Services, are increasingly promoting the "New Extensionist" model which adheres to the agricultural innovation system theory of change and echoes the multi-level intervention approach characteristic of the SEM in that it "focuses on interactions among the wide range of actors critical for innovation, and the institutions and policies that influence these interactions" (Sulaiman & Davis, 2012). Despite shifts in the broader conceptualization of agricultural extension work and considerable variation across ANRE educators and specialists, the technology transfer model still reigns supreme in agricultural extension in Wisconsin (Pratsch et al., 2012).

In addition to having different prevailing theories of change, there are also cultural differences between the four UW Cooperative Extension program areas that contributed to disagreements, misunderstandings, and generalizations; this divide appeared to be particularly pronounced between the ANRE and CNRED program areas. For instance, an ANRE affiliate who specializes in sustainable agriculture, mentioned that the CNRED stereotype of ANRE educators is that "they are all about production, all about the profitability of the farmer … that environmental things are subsidiary and driven by legislation but don't go beyond that. And that they're also politically ... generally more conservative." She made a point to acknowledge that this description in no way characterizes all ANRE educators. Nevertheless, a number of other

interviewees noted similar philosophical and methodological tensions that reinforced some of these observations. For example, an ANRE program leader acknowledged,

> I do think our Ag and Natural Resources [Program Area] is very, very externally focused—almost to where people complain that we don't do enough within to build capacity, to do internal professional development, to build teams more effectively. And I think that the flip side of that is CNRED. As a program area, its very internal, there's a lot of internal capacity-building, professional development, organizational development ... And I think that those two cultures, they do collide at times.

His observation was borne out in disagreements between staff members from different program areas about how the Community Food Systems Team should spend its time and energy and whether it should prioritize direct programming or capacity building activities. As a county commercial horticulture educator put it, the Community Food Systems Team was too "tree-huggery" for her. She thought the team's time would be better spent focusing on local and regional market development and issues of farmer profitability. As she explained:

> I'm married to a farmer. Every time I buy something my husband says to me, "Do you know how many tomatoes I have to sell to buy that?" And it completely changes your perspective about growing food and how that food translates into quality of life. So I want to see farmers be able to work. . . . and make a decent living, I think that that's my goal ... [so] I'm always looking at the bottom line, does this make sense? Are people making a profit? Is this a good way to spend their time?

This quote sheds light on this educator's emphasis on farmer profitability, and it helps explain her intolerance for the lengthy, reflexive discussions that some team leaders favored.

Organizational Contradictions

Philosophical and programmatic tensions between program areas also illuminated contradictions within UW Cooperative Extension and surfaced examples of ways that the state's present political environment makes the organization resistant to change even as individual leaders attempt to make the organization more responsive to today's complex challenges. The following two examples illustrate these larger contradictions and allegiances. Although the issues they highlight contribute to tensions between program areas, they are fundamentally dilemmas that must be addressed by leadership at the organizational rather than program-area scale.

One issue that arose in multiple interviews was water resource management in the Central Sands region of Wisconsin. This issue, which itself is dissertation-worthy (and doubtless the topic of multiple UW-Madison Nelson Institute dissertations already), is fundamentally a question about how to balance agricultural irrigation needs with ecosystem health and water recreation in the face of a declining groundwater table. Research suggests that over the past few decades ground and connected surface water in the region has decreased an average of 4.5 to 14.2 cm per year depending on location, with greater decreases in groundwater levels, lake levels, and baseflow in streams in areas with a high number of irrigation wells (Kniffin, M., Potter, K., Bussan, A.J., Colquhoun, J., & Bradbury, K., 2014, p. 3). In some circumstances individual lakes and streams have run dry. These visible declines have led to debates over the cause of ground water depletion, with environmentalists pointing to high capacity wells and farmers and agri-industry pointing to drought and other climatic factors. The debates have become increasingly heated as the Wisconsin Department of Natural Resources has expanded the number of high-capacity well permits that it issues, an increase of over 50 percent between 2000 and 2015 (Bergquist, 2016).

As a CNRED specialist and native of the Central Sands argued in an interview, beneath

the debate about water usage—which is functionally a policy debate—is a debate about the underlying science. He observed that ANRE educators have tended to side with large agri-industry organizations and argued that the studies on the source of the declining groundwater table are inconclusive while CNRED educators have pointed to the correlation between the recent spike in the number of high-capacity agricultural wells and precipitous declines in the ground water table. As he put it,

> Within Extension, we've said that we do science-based programming. But we've not identified the science that we're using to support our work. . . . The Ag people get their Extension folks and the environmental folks get their Extension [experts] and they fight, and Extension as a whole says, "Oh, I don't know, they are both using science." But in the meantime, we're losing groundwater!

It bears mentioning, others have contended that while there were a "a few very vocal ANRE educators [who] argued this way," many others took a more nuanced perspective. Nevertheless, this particular CNRED specialist interpreted this debate as a harbinger of other consequential and unresolved debates within UW Cooperative Extension. He went on to assert that if the organization is to maintain its relevance by addressing complex problems in the service of specific aims like sustainability and social justice, it is going to need to "name its science" and take some controversial positions on issues such as groundwater management:

> We as Extension, if we're going to be useful in the future are going to have to say, "This is an issue that we're going to have to tackle, and this is our stance on it." Otherwise, we'll just fight about climate change until it doesn't matter anymore, and the same thing with food systems. It is going to continue to get consolidated and industrialized and

> corporatized and we're going the opposite direction from food justice, so we're going to have to pick a stance. It's going to be hard and ugly.

He seemed pessimistic as to whether UW Cooperative Extension leadership was up to the task of taking a position on such issues.

As this example demonstrates, frictions between program areas were not only illustrative of disciplinary and cultural differences, they were also sometimes symptomatic of bigger debates about the role and long-term vision of UW Cooperative Extension more broadly. At the individual level, disagreements over community food system planning priorities and approaches led to frustration and disengagement. At the team level, they led to under-representation of ANRE specialists and educators. And at the organizational level, these tensions surfaced larger contradictions, as illustrated by the discussion of water management in the Central Sands. The following example, which was relayed by an ANRE program leader, highlights the political dynamics that inform high-level decision-making and helps explain why the organization has difficulty "naming its science."

Program leaders from several program areas suggested that changes in position descriptions and hiring decisions presented some of the most promising opportunities to build a more interdisciplinary organization. In an interview, a Family Living program leader described a recent hiring process in which a specialist position was redesigned to incentivize cross-program area collaboration and Family Living program leaders departed from tradition by engaging representatives from other program areas in the hiring process. The effort was deemed a success. However, analogous efforts in ANRE have proved to be significantly more complicated, at least with regard to hiring integrated specialists (joint campus-Extension positions).

In a separate interview, an ANRE program leader described an instance in which there

was a position vacancy for an integrated specialist. He and others involved in the hiring process were considering significantly altering the position description to better address emerging issues since the organization already had other specialists with expertise in the area of the vacancy. As he explained,

> At that time bioenergy was really being talked about, and the impact on communities and ecology and environment, and the local economies, so … I thought it would be a great opportunity to redirect that position into sort of a multidisciplinary bioenergy or something connecting to changing environment and changing climate.

Despite his best intensions to create a position with a more interdisciplinary orientation, the proposal was not well received. As he described, it

> was like sinful to talk about. "How would you *ever* move those resources out of production agriculture and over to something … that's sort of amorphous . . . . And I had huge political pressure brought to bear on my office. I had people from the Corn Growers and the Soy Bean Growers and *all* the different commodity groups who had this all orchestrated—people coming into my office and … I had a person who actually took their shoe off and was like … [gestures banging it on the table] I mean people were very passionate that we maintain that piece of the silo.

As this quotes demonstrates, shifting toward an interdisciplinary extension model is challenging not merely because of organizational inflexibility or a lack administrative will. Trenchant political interests also enter into the equation and influence high-level decision-making, especially during a time when UW Cooperative Extension is on precarious footing with the state legislature, a major source of funding. A shift toward a more interdisciplinary orientation to extension work—especially as manifest in position descriptions and hiring decisions—would

almost invariably result in shifting resources in a way that would benefit some constituents at the real or perceived expense of others. This is further complicated by the fact that beneficiaries of the present system, such as "the corn growers," are already mobilized while would-be constituents of a position devoted to a topic like bioenergy are not.

This "chicken-and-egg" dynamic—as the same administrator described it—makes it difficult for the organization to redefine itself in relationship to changing societal needs. Its historical service to and affiliation with particular constituents has cast the organization in a role that alienates some prospective organizational partners and political advocates. For example, as he noted, groups working on climate change mitigation and adaption don't

> see Extension as a significant potential resource. . . . I don't know if it's because we have acted in a way, or we've been pretty beholden to these traditional commodity groups, so we've perpetuated the notion that, "Well you can't go to Extension cause they're in, in tight with the corn and soy bean growers."

Meanwhile, those commodity groups are important advocates for UW Cooperative Extension with the state legislature. As he explained, "they are also the ones who are going to the legislature and saying, "You guys got to not cut these people the way you're proposing to cut them, because we're going to lose a lot of our business and livelihood and capacity to get new information and technology." As result, UW Cooperative Extension leadership becomes indebted to these stakeholders, and the organization finds itself resistant to change.

The controversy surrounding proposed changes to the ANRE integrated specialist position suggests that in addition to having distinct cultures and program delivery models, the four program areas are not equally subject to external political pressures. Consequently, while Family Living successfully leveraged a hiring process to promote interdisciplinarity, similar

efforts were swiftly abandoned in ANRE following outcry from commodity groups. These dynamics seem to exacerbate differences between the program areas and explain some of the variation in their stances on critical issues. Altogether, this raises questions about the role of interdisciplinarity and the transformative potential of small-scale interdisciplinary initiatives, such as the Community Food Systems Team, in an organization that has unresolved ambivalence about its position on some of the defining issues of the time.

A Shifting Political and Resource Context

Finally, in addition to facing the above challenges, the team's trajectory was also shaped in part by a shifting political and budgetary climate. Program leaders held their first brainstorming session about the potential for interdisciplinary community food systems programming in August of 2010. Just months later, Republican Governor Scott Walker was elected into office and both houses of the state legislature fell under Republican control. This partisan sweep paved the way for aggressive legislative action against public sector employees that reduced compensation, retirement, health insurance, and sick leave benefits, and all but eliminated collective bargaining. Although this legislation (commonly referred to as Act 10) precipitated months of demonstrations by unions and others, it ultimately passed, putting public sector workers—University of Wisconsin faculty and staff included—on notice. While organizational support for the interdisciplinary teams continued, it was apparent to organizational leaders and staff members alike that the climate in which they were now operating was indisputably different from the one in which the interdisciplinary teams were first conceived.

Then, in January 2015, four years and two electoral victories later, Governor Walker proposed a budget plan that included a two-year funding reduction of $300 million for the University of Wisconsin System (Blank, 2015). According to UW-Madison Chancellor Rebecca

Blank, these cuts together with other recent budget cuts amounted to an $86 million annual reduction for the UW-Madison campus alone (Blank, 2015). UW-Extension was also significantly impacted. In fact, the budget cuts led to a restructuring process for UW Cooperative Extension—"nEXT Generation"—to enable the organization to absorb an annual reduction of $3.6 million in state funding (Schulz, 2016). In early 2015, UW-Extension Chancellor Cathy Sandeen announced "plans to cut $1.2 million from county-level programs, $1.7 million from campus programs and state specialists and $700,000 from administration" (Schulz, 2016).

By the time I was conducting interviews in the spring and summer of 2015, navigating (and surviving) the budget cuts was a major topic of conversation across the organization. In some instances, the impact of the budget cuts was stark. For example, one specialist who I interviewed in May had lost his job by the end of the June due to the budget-induced closure of the UW Cooperative Extension center where he worked. In other instances, the impact of the budget cuts was more indirect; it manifest as heightened anxiety about job security, differences of opinion between organizational leadership and staff members about the likely consequences of the reorganization, and a reshuffling of individual and organizational priorities.

Administrators tended to be, at least superficially, more optimistic about the reorganization. They repeatedly described it as an opportunity to rethink organizational structure and to bolster the role of interdisciplinarity within the institution. Other staff members were more cynical. For instance, one high ranking administrator mentioned that he had observed heightened resistance toward organizational change among faculty who were, or at least felt, "under siege" by state government. By his account, this made them more protective of disciplinary silos than was typical in recent years. The budget-driven reorganizational also diverted energy and resources away from the interdisciplinary teams by requiring many staff members to instead

devote time to reorganization committees. Altogether, external political and budgetary pressure created an organizational environment less conducive to experimentation and innovation by (1) reducing staff and resources, (2) fueling anxiety and structural conservativism, and (3) redirecting remaining resources and staff energy to the organizational restructuring process.

Conclusion

In general, the challenges described in much of this chapter are typical of other interdisciplinary efforts. Disagreements about the pros and cons of different forms of interdisciplinarity and difficulties resulting from tensions between different disciplinary methods and philosophies are well documented in the literature on interdisciplinary research and theory. Meanwhile, challenges resulting from task ambiguity are in keeping with the organizational development literature and consistent with many of the institutional barriers and disincentives to interdisciplinarity that Klein (2010) identified in *Creating Interdisciplinary Campus Cultures*; these include the ambiguous status of interdisciplinary programs, lack of experienced leaders, no clear and authoritative report lines for interdisciplinary units, reliance on volunteerism, and inadequate support from high-level leadership (Klein, 2010, pp.71-72). In addition, external factors, namely changes in state-level political leadership, significantly affected the UW Cooperative Extension budget and precipitated an organizational restructuring process that heightened anxiety and resistance to change and diverted resources away from interdisciplinary innovation.

Although not a comprehensive description of the difficulties encountered by the Community Food Systems Team, the challenges discussed here were among the most formative that the team encountered in its first four years, and in many ways, they set the stage for the evolution of the team and the nature of its innovations. These challenges suggest a need to (1)

provide clearer parameters to better support and guide innovation, (2) resolve tensions between reflexive and instrumental interdisciplinary practice, (3) create mechanisms to help overcome program-area differences and promote cross-program area collaboration, and (4) clarify the team's function in relationship to the larger organization's purpose and vision and the role of interdisciplinarity therein. After its forming phase, the Community Food Systems Team, with support from select program leaders, embarked on an informal process of problem-solving and innovation in interdisciplinary practice. As I discuss in Chapters 4 and 5, the team was more effective at addressing some of the above needs than others.

Chapter 4. Innovating New Approaches to Interdisciplinary Practice at UW Cooperative Extension

Team leaders continued to be of two minds about how to promote interdisciplinary community food systems work. Some preferred to focus on building network and communication infrastructure. Their aim was to foster interdisciplinary collaboration through relationship building and by removing barriers created by the siloed program area structure. These individuals were active on the team's listserv, helped organize semi-annual face-to-face meetings, and pursued collaborations with colleagues from other program areas as circumstances permitted. The informal theory behind this emphasis on cross-program area relationship building was in some ways similar to the theory that underlies food policy councils: complex problems call for diverse expertise, so the magic begins when diverse experts are convened.

However, other team leaders contended that to increase UW Cooperative Extension's "capacity to work with community food systems in an integrated, systemic, and coordinated manner," the Community Food Systems Team would need to do more than serve a convening function (UW Cooperative Extension Community Food Systems Team, 2012). In the words of

one team member from Family Living: “Building capacity for interdisciplinary work [is] going to look really different than providing a space for people to come together. They are related, but not exactly the same.”

Still, it was unclear what building interdisciplinary capacity might look like and how it related to content-based programming. As another team leader from Family Living explained in an interview, in the beginning,

> We [team leaders] talked a lot about how we took an issue. For lack of a better example: gardening … we all come at gardening … from a different perspective, so how do we then take the program of working in a garden and think about how each of our program areas creates the opportunity to leverage and expand the reach of the program? … How do we empower and build the capacity of our colleagues to think about those types of opportunities?

The question she raises—how to bridge topical content with an interdisciplinary practice—was central and persistent, and it contributed to a series of efforts to deliberately explore concepts and organizational issues pertaining to interdisciplinarity. With support from several programs leaders, leaders of the Community Food Systems Team began to innovate ways to supplement instrumental interdisciplinary efforts, such as cross-program area information exchange and networking, with efforts that amplified the team’s role vis-à-vis organizational learning and interdisciplinary capacity building.

To make sense of innovation in the context of the Community Food Systems Team, I borrow Phills, Deiglmeier, and Miller’s (2008) definition from the *Stanford Social Innovation Review*. Drawing on the larger literature on innovation, they note that the two central characteristics of innovation are novelty and improvement. Novelty does not necessarily imply

originality; a tool, practice or policy can be innovative as long as it is novel to the "user, context, or application" (p. 37). Phills et al. define improvement as a process or outcome that is more effective, efficient, sustainable and/or just than pre-existing alternatives (p. 37). As such, interdisciplinary innovation in the context of the UW Cooperative Extension Community Food Systems Team could be expected to include the development, adoption, and/or adaptation of practices that build individual, group, and/or organizational capacity to engage in interdisciplinary learning/inquiry, program design, and collaboration in the service of more just, sustainable community food system development. In this context, innovation also includes ways in which the Community Food Systems Team has altered business as usual by disrupting siloed structures, hierarchies, and processes that perpetuate the status quo.

This section highlights three examples of innovations other than cross-program area network development that the Community Food Systems Team, with support from select program leaders, developed to promote new approaches to interdisciplinary practice and address some of the challenges described in the previous section. They include the co-development of shared expectations for the team, the creation of an interdisciplinary learning community, and the adaptation and implementation of Whole Measures for Community Food Systems, a strategic planning and evaluation framework. Particular attention is given to the team's use of Whole Measures for Community Food Systems because it is one of the team's most visible outputs and was repeatedly identified by interviewees as one of that team's most significant undertakings.

Co-developing Shared Expectations

As noted above, while the program leaders' laissez faire approach to the interdisciplinary teams was intended to create freedom for innovation, in practice, it resulted in confusion as manifest in task ambiguity. By early 2013, it was apparent that expectations for the

interdisciplinary teams needed to be clarified. A PD&E program leader with expertise in interdisciplinary program development and evaluation facilitated a process through which program leaders and team leaders co-developed expectations for the interdisciplinary teams. This represented an innovation in that it was a marked departure from how expectations for teams were usually defined. Specifically, the co-development of expectations was uniquely participatory (i.e. specialists and educators involved with the team had the opportunity to speak into it). As the program leader who led this process noted in an interview, usually organizational leadership simply tells team leaders, “Here’s what this team is, and here are the expectations.” In this instance, rather than taking a top-down approach, the process was approached from a more collaborative and less hierarchical perspective. Team and program leaders were convened and invited to identify what they hoped to gain from the teams. The intent was to engage educators, specialists, and administrators in co-defining the purpose of the work and co-establishing expectations to guide it.

The result was a two-page document defining the expected contributions of the interdisciplinary teams (both the Community Food Systems Team and the Engaging Young People Team) to organizational innovation and learning with regard to interdisciplinary practice. Its introduction states, “interdisciplinary teams are an intentional and explicit means by which the organization seeks to foster innovation” (UW Cooperative Extension, 2013). The document goes on to explain that the organization’s commitment to the teams is rooted in such beliefs as “the organization and the people it serves benefit from new thinking and practice” and “the organization has a responsibility to support new thinking and practice.”

The document, which never mentions the topical focus of either of the interdisciplinary teams, tasks the teams with “building organizational culture and capacity” to support

interdisciplinary practice at UW Cooperative Extension through individual-level capacity building, modeling new multi- and interdisciplinary ways of conceptualizing and addressing issues, and fostering organizational learning by maintaining regular communication about what they learn with program leaders. The document offers several examples of how to model interdisciplinary practice including: "trying out new ideas, approaches, fostering new thinking," "feedback loops and reflective practice," and "movement toward co-conceptualizing issues/approaches" (UW Cooperative Extension, 2013). The remainder of the shared expectations document addresses team functions, roles, planning and evaluation, accountability structures, and allowable expenditures in relatively broad terms. For example, the discussion of team leader roles was limited to a short paragraph stipulating that each team establish a formal leadership group, identify point people to interface with program leaders, and develop a transition plan.

Creating a Space for Co-learning: The Interdisciplinary Learning Community

A number of interdisciplinary scholars suggest that reflexivity and dialogue are integral dimensions of interdisciplinary practice, and to some extent, constitute preconditions for productive interdisciplinary collaboration. For instance, in an exploration of the "practical difficulties of interdisciplinary research" Lélé and Norgaard (2005) assert that those involved with interdisciplinary research projects

> must overcome various biases and prejudices that accompany disciplinary training … be self-reflective about the value judgments embedded in their choice of variables and models, willing to give respect to and also learn more about the 'other' and able to work with new models and taxonomies used by others. (p. 975)

While this excerpt specifically addresses individual and group process issues associated with interdisciplinary research, it has corollaries in the disciplinary origins, methodologies, and cultures that characterize and differentiate the UW Cooperative Extension program areas.

The Community Food Systems Team's second contribution to innovation in interdisciplinary practice was the development of the interdisciplinary learning community. In late 2012, several leaders from both interdisciplinary teams attended a presentation on transformational education. The presentation precipitated an informational conversation about their desire to be more reflective about their interdisciplinary work. As a CNRED specialist and Community Food Systems Team leader explained to co-leaders in an email shortly thereafter, "As we have discussed previously, … reflection on the broader implications of multi or "trans-disciplinary" work requires some reflection time that we haven't necessarily had as a leadership team (and honestly that hasn't been available to other members)."

In light of these discussions, several leaders from the Community Food Systems and Engaging Young People Teams approached a PD&E program leader about creating a space for intentional reflection and co-learning on interdisciplinary practice. Early documentation of this process, indicates that team leaders had two central aims for the group: developing a "base of multidisciplinary team knowledge" and building team leaders' capacity to do interdisciplinary work by providing them with readings and training on topics such as "systems thinking, leadership skills, understanding the institution, developmental evaluation techniques, transformational education, transdisciplinary team development, and ongoing feedback on integrating the evaluation processes suggested by PD&E."

The PD&E program leader was supportive and developed a proposal to initiate an

interdisciplinary learning community for anyone involved in a leadership role on either of the interdisciplinary teams. The proposal explained:

> Educators and leaders need and desire ongoing and in-depth opportunities to engage with each other around shared work and to engage their areas of interest in new and innovative ways. This learning community responds to such an expressed need by providing a structure and process for regular, on-going dialogue within the context of community. The work of the group will include focused dialogues, discussions of readings, experiences and media, reflective writing, case study/problem solving, and various activities around multi/interdisciplinary practice, leadership and scholarship. Meetings will be held in a venue and location to best support the active and full engagement of all participant, and may include both face to face and distance meetings. (UW Cooperative Extension, 2012)

Specific goals for the learning community included: "Examining how [interdisciplinary] work is supported now by the organization and informing how it can evolve. . . . Growing institutional and administrative (leadership) support, and using shared learning to inform design of new multi/interdisciplinary efforts" (UW Cooperative Extension, 2012).

In the fall of 2012, the program leader invited administrators, specialists, and educators involved with the interdisciplinary teams to participate in the interdisciplinary learning community. From the beginning, the intent was to limit the size of the group to twelve or fewer people so that members of the learning community had the opportunity to get to know one another and engage in substantive discussions. To make the group more accessible to individuals located outside of Madison, the group held face-to-face meetings roughly monthly in different parts of the state.

The group started out reading and discussing introductory materials to develop a shared understanding of interdisciplinarity and how it relates to other cross-disciplinary concepts. In time, these meetings provided more in-depth opportunities for participants to read about and discuss a range of practical and theoretical issues related to interdisciplinary research, education, and programming. In addition, the learning community was a place for team members to talk about what they "were bumping up against in the organization" and reflect on their work in its organizational context.

Toward a Unifying Framework for Interdisciplinary Food Systems Programing

Scholars such as Feenstra (2002) and Hamm and Bellows (2003) provide normative definitions of terms such as *community food system* and *community food security* that conceptually integrate diverse food system activities, goals, and values. These definitions helped Community Food Systems Team leaders articulate the team's vision and values. However, to be actualized, these concepts needed to be translated into actionable program logic. Without an integrative framework for discussing the wide range of community food system programing within UW Cooperative Extension, it was difficult for team members to specify how various activities related to one another and collectively advanced food systems change ideals, such as community food security.

The third, and arguably most significant innovation in interdisciplinary practice, was the Community Food Systems Team's adaptation of Whole Measures for Community Food Systems (Whole Measures CFS), a "values-based, community-oriented tool for evaluation, planning, and dialogue geared toward organizational and community change" (Abi-Nader, Ayson, Harris, Herrera, & Eddins, 2009, p. 7). A Dane County nutrition educator first introduced the tool to team leaders after attending a national training on Whole Measures CFS as an evaluator on a

Madison-based USDA Community Food Project grant in early 2012. From the outset, team leaders were enthusiastic about Whole Measures CFS because its values-based, multifunctional orientation showed promise for helping the team negotiate and articulate the relationship between community food systems programs with markedly different focuses and goals—e.g. nutrition programs and agricultural market development initiatives—within a single framework.

Whole Measures CFS is predicated on the notion that community food projects produce and deliver more than good food and consequently represent a strategy for "transform[ing] the way people connect with food, community and land" (Abi-Nader et al., 2009, p. 7). For example, community gardening projects have been used to promote horticultural education and therapy, provide job training, increase household food security, facilitate food and agricultural literacy, and foster urban revitalization through community and economic development. In short, community gardening projects often produce more than produce.

Many grantees of the USDA Community Food Projects program observed that traditional program reporting and evaluation was not capturing the larger, more complex story of their work, and they requested evaluation tools and methods to address this gap. The Community Food Security Coalition and the Center for Whole Communities developed Whole Measures CFS in response to this feedback. The tool was created between 2007 and 2009, during which time it was vetted by over a hundred organizations. While a Whole Measures CFS guide and multi-case study report are available for free online, the tool continues to primarily be used by USDA Community Food Project grantees. Intended as a complement to rather than a substitution for more traditional, quantitative indicators, Whole Measures CFS emphasizes two factors that are absent or deemphasized in many planning and evaluation approaches: values and systems. As the Whole Measures CFS guide explains:

> Understanding a community food system requires asking questions about what is truly valued: What kind of community do we want to live and work in? How are we, in our organizations, helping build and sustain those healthy and whole communities? And how can we evaluate, define, discuss, and measure the success of our work in a way that supports our vision of whole, food-secure communities? (Abi-Nader et al., 2009, p. 7)

In addition to centering the values that drive food systems change, Whole Measures CFS is designed to help grantees and other community food practitioners and advocates take a systemic view of their work when planning and evaluating their projects and programs and when communicating their impact.

Whole Measures CFS is made up of six "value-fields" that function as the building blocks for program planning, evaluation, and dialogue. The Whole Measures CFS value fields are Strong Communities, Healthy People, Thriving Local Economies, Sustainable Ecosystems, Vibrant Farms and Gardens, and Justice and Fairness. The creators of Whole Measures CFS intended for it to be used by diverse multi-stakeholder groups to promote rich dialogue about potential tensions and trade-offs between activities that privilege different value fields. As such, Whole Measures planning and evaluation is based on a series of "rubrics" or matrix-based worksheets through which teams—first individually and later collectively—deliberate on the measurable or desired contribution of a given project to each of the six value fields.

When used for planning, the process is intended to lead to a course of action that intentionally promotes and integrates multiple value fields, and at a minimum, has a neutral impact on—i.e. does not contradict—the objectives of other value fields. For example, a middle school gardening project could be designed to promote vibrant farms and gardens, strong communities, and healthy people, but it would be in conflict with the Justice and Fairness value

field if it only served privileged populations. However, its contribution to the Thriving Local Economies value field might be considered neutral if it does not function as a market garden or has an otherwise negligible impact on the economy. The tool functions similarly when used for evaluation, however in this instance, it is used in either a formative or summative capacity whereby ongoing or past activities are evaluated to assess their contribution to each of the six value fields. The evaluation team identifies program strengths and growth areas according to the range of value fields the project or program promotes and the degree to which it promotes them. (Abi-Nader et al., 2009)

In both cases, the expectation is not that every project, program, or organization will substantially advance every value field. Rather, the objective is for participants in a planning or evaluation group to develop a more systemic contextual understanding of community food system work and a more nuanced appreciation for the ways that a particular project, program, or organization contributes to community food system development and how it can better support (or at least not impede) work in value fields that were previously more peripheral to its focus. Abi-Nader et al.'s (2009) guide to Whole Measures for Community Food Systems emphasizes the importance of (1) having diverse, multi-stakeholder planning and evaluation groups and (2) creating adequate time and space for dialogue where different personal and professional experiences can bring the framework to life through rich discussions about which value fields should be prioritized and how a particular project, program and/or organization can best advance them.

With financial support from the UW Cooperative Extension Dean's Office, team leaders arranged for an evaluation consultant who co-developed Whole Measures CFS to provide two trainings for the Community Food Systems Team over a four-month period between 2012 and

2013. One of the goals of the trainings was to overcome disciplinary and program area boundaries by creating a shared language to discuss and report on community food systems work at UW Cooperative Extension.

At the first training, the consultant introduced participants, who were largely Madison-based, to the Whole Measures CFS value fields. Training participants then adapted and refined the framework to the UW Cooperative Extension context and then shared it with a wider cross-section of the team at a northern regional meeting in January 2013. At the subsequent training, team leaders incorporated feedback from the regional meeting to develop value field definitions, which were then refined and disseminated through a participatory process at various regional and program areas gatherings and through email communication. Through this process, the Community Food Systems Team also created a new, seventh value field—Innovative Collaborations—to reflect the team's goal of promoting multi- and cross-program area collaboration. (Refer to Appendix B for definitions of each of the Community Food Systems Team's seven value fields).

Conclusion

In conjunction with key program leaders, the Community Food Systems Team contributed to organizational learning and innovation in interdisciplinary practice in the following ways: cross-program area network development, co-development of a shared expectations document, creation of an interdisciplinary learning community, and the adaptation and dissemination of Whole Measures for Community Food Systems, a values-based planning and evaluation framework. Network development aside, these innovations were fundamentally responses to the challenges discussed in Chapter 3 rather than elements of a cohesive strategy for promoting interdisciplinary community food systems programming and capacity building. The

shared expectations document aimed to allay confusion and frustration resulting from the program leaders' initial laissez faire approach to the team. The interdisciplinary learning community complemented the instrumental interdisciplinary functions of cross-program area information exchange and networking by creating a space for small group reflection on interdisciplinary practice. Finally, the team's adaptation of the Whole Measures CFS framework was an effort to implement a unifying program frame that could help bridge differences in philosophies and program models by providing a common language and an array of long-term outcomes that are broadly compatible with all four UW Cooperative Extension program areas.

It bears mentioning that I have focused on the ways in which the leadership of the Community Food Systems Team strived to innovate in relationship to interdisciplinary practice rather than examining the role of interdisciplinarity in relationship to the team's research mission. My decision to focus on interdisciplinary practice was partly a result of the fact that team leadership invested very little in the latter. In fact, I encountered only one example of an interdisciplinary research collaboration that resulted from relationships developed and/or strengthened by the team during my interviews[6].

[6] Following is the reference for the white paper that resulted from a collaboration between a Family Living specialist and two CNRED specialists that was initiated in part by the Community Food Systems Team: Deller, S.C., Brown, L., Canto, C. (2014, February). Poverty, Public Health and Local Foods. University of Wisconsin - Madison Department of Agricultural & Applied Economics. Staff Paper No. 572. Retrieved November 17, 2016 from https://www.aae.wisc.edu/pubs/sps/pdf/stpap572.pdf

Chapter 5. Outcomes

The Community Food Systems Team and program leaders' innovations in interdisciplinary practice generated varied results. Some innovations were patently unsuccessful. For example, the shared expectations document reproduced and reinforced the divide between the team's reflexive and instrumental approaches to interdisciplinarity while failing to produce clear, actionable expectations. Others, such as the adaptation of the Whole Measures CFS framework and the creation of the Mini Grant Program, fell short of realizing their full potential but partially achieved their aims (e.g. cross-program area collaboration) and yielded some unexpected insights. This chapter discusses the outcomes of each of the innovations as of November 2016. It also highlights several noteworthy informal and indirect impacts of the Community Food Systems Team that resulted from its statewide network development.

Persisting Ambiguity and Confusion about Team Responsibilities

In spite of the development of the shared expectations document, confusion about expectations, responsibilities, resources, and communication between team and program leaders persisted. One CNRED program leader later attributed this enduring confusion to the fact that the shared expectations document focused on the team's role in contributing to organizational learning about interdisciplinary practice rather than focusing on what the team was expected to deliver. In fact, he indicated that he had doubts about the approach even as they drafted the document:

> It's my perspective that what the program directors and the interdisciplinary teams really framed is what we mean when we say "interdisciplinary teams." It wasn't where I thought we were going, [which] was "what do we expect to achieve from this particular team?"

Because specialists' and educators' primary professional responsibilities are largely content and program-driven, the shared expectations document's emphasis on reflexive interdisciplinarity and organizational learning—devoid of its programmatic context—effectively presented interdisciplinary innovation and learning as a task distinct from the content and program-oriented work in which team leaders and members were already engaged. This left questions about how the instrumental dimensions of interdisciplinary work would be planned, implemented, and evaluated and whether there were expectations regarding the programmatic implications of interdisciplinary learning. For example, was there an expectation that team members, such as specialists involved in updating the Master Gardeners curriculum or increasing SNAP access at farmers' markets, would approach and report on these activities with a new and explicitly interdisciplinary lens? Questions like this combined with poor accountability and inconsistent communication between program leaders and team leaders resulted in persisting confusion about expectations, responsibilities, and resources.

When asked what he would do differently in hindsight, the same CNRED program leader quoted above replied, "We could have helped each other out by not just saying, 'We think interdisciplinary teams is a good idea, go figure out how to do it.'" He then acknowledged the difficulties associated with the program leaders' open-ended approach by way of the following metaphor:

> [It's as though] you load the team members up on a bus and you send them on a journey but you don't ever tell them what the destination is, you don't put any gas in the tank of the bus, and every once and awhile—about six months or a year—they drive by and you wave at them and say "Oh, there goes that team again!"

He went onto to explain: “for the people actually engaging in these teams to not have clarity on the length and extent of support and the expectations for product, is really hindering their ability to function. . . . they're still asking for the same thing—‘clarify your vision, support, commitment to the … work.’’’

In retrospect, he came to the conclusion that it would have been helpful for team leaders if the program leaders had taken a more traditional approach to team agenda-setting by more narrowly defining the team’s purpose and expected deliverables. Specifically, he suggested that it would have been more effective for the program leaders to have told team leaders at the outset: “We’ve got a particular need around food systems in this regard. Here’s why we’re developing a Community Food Systems Team as an interdisciplinary approach, and here’s what we anticipate the results being by such and such date.” He then explained that establishing greater clarity about why a particular issue requires an interdisciplinary intervention and specifying expectations regarding the timeline and outcome would have created valuable parameters for subsequent organizational learning. As he elaborated,

> [That] frees you up to always have the discussion, “Well, we couldn’t do that, we didn’t have enough money” or “This is going to take longer because we didn’t realize these obstacles,” but at least there’d have been some clarity on what the expectations are.

Altogether, his observations suggest that the shared expectations document would have been more effective if it established a more narrowly defined food systems problem or “need” for the team to focus on along with clear but flexible expectations that could be used as a yardstick for future decision-making. He also noted that the process of developing shared expectations should have focused on interdisciplinary content as well as process, and he was not alone in this regard. Both program and team leaders acknowledged that confusion and frustration persisted even after

they jointly developed the shared expectations document. This was largely because the process and resulting document focused heavily on reflexive interdisciplinarity and organizational learning while seemingly overlooking the teams' instrumental function in promoting interdisciplinary collaboration in the service of specific issues such as household food insecurity, agro-ecological degradation, and farmer livelihoods.

While most interviewees seemed to believe that clarifying expectations between program leaders and team leaders was the most promising strategy for resolving task ambiguity, one UW-Madison-based integrated specialist with a CNRED appointment suggested that more visionary, decisive, experienced, and/or charismatic team leadership might have obviated the need for such processes. He recalled that some of the most effective UW Cooperative Extension teams that he had observed over his more than two decades of experience with the organization were spearheaded by charismatic visionaries who had clear ideas about what they hoped to accomplish and founded teams with the express purpose of achieving those goals. He noted that the same was true in many successful citizen-led planning processes. Although the team was provided with a competent coordinator, she was new to UW – Cooperative Extension at the time she was hired. She had no previous knowledge of the organizational context and limited decision-making power. As a result, she was able to facilitate valuable information exchange and provide logistical support to team members but provided little in terms of vision, network, and knowledge of how to navigate the organization to advance specific objectives. These limitations combined with other team leaders' preference for a distributed leadership model also likely contributed to the team's difficulty finding its way.

The Interdisciplinary Learning Community: An Instructive but Insular Space

Despite persisting ambiguity about the interdisciplinary teams' instrumental charge, efforts to increase individual and team capacity to do interdisciplinary work continued with some success. Many people, especially educators and administrators, found it difficult to make time to attend the monthly meetings of the interdisciplinary learning community. However, those who were able to make the time reported that they gained a much better foundational understanding of interdisciplinarity, developed relationships with colleagues from other parts of the organization, and forged valuable connections between the conceptual and practical dimensions of interdisciplinary practice. A team leader from CNRED and regular participant of the learning community said of the interdisciplinary learning community:

> It was the place where I could go to get a better understanding of interdisciplinary work, and Extension, and my colleagues. . . . Interdisciplinary work, it's still a practice for me. And systems thinking is a practice for me. And there are many things I still don't understand about the organization. And so, I learned so much just from the articles that we were asked to read, and the conversations I had with my peers. It was a great co-learning experience.

While some participants of the group especially appreciated the opportunity to think about the teams' work in a broader and more conceptual context, others appreciated that the learning community served as a space to genuinely explore differences in perspective. Trusting relationships and structured exercises created a context in which different points of view could be surfaced and explored. As another regular participant with a leadership role in CNRED remarked:

> One of the things that I took from [the meetings] is that we all come from different perspectives and we all frame in different ways. And it was clear that I maybe frame things a lot different than others. But that was helpful.

He found it eye-opening that even members of the core leadership of the interdisciplinary teams brought very different mental models to the work.

Finally, I found that participants of the learning community—i.e. specialists involved in team leadership and a handful of administrators—had a shared meaning of "interdisciplinary" that did not extend to individuals who did not participate in the group, i.e. people who did not have an active and ongoing leadership role in the Community Food Systems Team. When I asked learning community participants to define interdisciplinarity in their own words, their answers were quite consistent. In contrast, individuals who did not participate in the learning community were less precise in their use of the term or used altogether different terms to describe the work of the interdisciplinary teams. Although I did not pursue this point, it may warrant further examination as it suggests that the learning community served a valuable function in cultivating shared language and meaning, which as previously noted, can serve an important role in building the necessary scaffolding to support interdisciplinary collaboration. Interestingly, when I asked members of the learning community to describe their vision for community food systems in Wisconsin, their responses were much more varied. Although the nature of these questions is distinct, I could not help but to wonder whether more intentional ongoing efforts to cultivate a shared vision for the team would have resulted in more similar responses to the latter question as well.

Despite participants' positive feedback about the learning community, low attendance in learning community meetings combined with the shifting and competing professional

commitments of the group's leader and facilitator eventually led to the discontinuation of the learning community midway through 2014. The questionable impact of the interdisciplinary learning community raises questions about the value of investing time and energy in developing a common definition of interdisciplinarity, especially among a group of individuals who are not actively engaged in a shared problem-oriented interdisciplinary project. The learning community's emphasis on reflexive interdisciplinary practice (absent a shared problem or well-defined, solution-oriented goals) may distract from issues-based work and even runs the risk of imposing and/or reinforcing patterns of thinking that constrain innovation.

Whole Measures: A Springboard for the Community Food Systems Team's Flagship Program

While the interdisciplinary learning community created a space for participants to explore interdisciplinary work in a conceptual and organizational capacity, the Community Food Systems Team's adaptation and dissemination of Whole Measures CFS aimed to help specialists and educators see and position their community food system work in a shared program framework. For the primarily Madison-based leadership group, the Whole Measures CFS trainings appeared to have its intended effect. Reflecting on the trainings, a team leader from PD&E marveled at how the team's leadership group embraced the value fields and started describing their work in those terms. As he explained, "Myself and others have … internalized the framework. . . . after [the] trainings … everyone seemed to be really on board. . . . People understood it better and they started to … show more ownership of it."

In addition, Whole Measures CFS served to legitimize values-based work already taking place. One team leader observed that this seemed to be especially true for Wisconsin Nutrition Education Program (WNEP) educators who, at the time, were discouraged from engaging in

broader food systems work or collaborating with cooperative extension colleagues outside of a programmatic capacity that was narrowly defined at the state and federal levels. He described WNEP educators' response to the Whole Measures CFS framework: "Yes! Thank you! Now I feel like I can talk about my work. I feel like my work has meaning and it fits into … the framework, and the framework allows me to express that work and legitimizes it." In the words of a WNEP turned 4-H educator, Whole Measures CFS helped "translate the values of the work" for organizational leaders and other audiences by providing language and ways to think about qualitative indicators that were overlooked by more traditional forms of summative evaluation.

While Whole Measures CFS had a unifying effect on Madison-based team leaders and validated values-based work in programs such as WNEP, it did not resonate equally across program areas or levels of the organization. Several interviewees recalled an episode at an ANRE conference when, following a presentation on Whole Measures CFS, an educator openly criticized the Community Food Systems Team for being out of touch with county-based extension activities. All three of the interviewees who mentioned the incident were reluctant to repeat the strong language that the educator had used. One of them paraphrased him this way:

> What the hell does this mean to my work? At the end of the day, what does thinking about our work in this big huge way have to do with what I'm doing? How does that help me on the ground?

Although expressed with varying degrees of exasperation, this was a common response, especially from those in ANRE. This type of feedback was sobering for members of the team's leadership group, and they took it seriously. One of them, a PD&E specialist, recalled the episode at the ANRE conference as a wake-up call:

> Maybe it was a blind spot in some ways … you think about something so much and it makes so much sense to you ... but because I'm not on the ground doing direct programming it's like I wasn't thinking necessarily that practically. I was trying to think at a 30,000-foot level … but this person was coming from zero feet and trying to make sense of what's directly in front of them and [Whole Measures CFS] was just so far away. Personally, for me, it led to some thinking about how do we respond to that? … What does this have to do with programming on the ground?

Such reflections led to conversations among team leaders about how to develop stronger connections between Whole Measures CFS and local programing. And that led to the creation of the Whole Measures Mini Grant Pilot Program, the team's first major programmatic endeavor beyond conference presentations and its semi-annual face-to-face meetings.

Launched the summer of 2014, the Program served as an opportunity to leverage the language and values developed through the Whole Measures CFS process to inform the development and evaluation of concrete projects. The Program was designed to incentivize the use of Whole Measures CFS as a planning and evaluation tool and to foster cross program-area collaboration in county-level community food projects. The application form required applicants to explain which Whole Measures CFS values fields their project would promote and how their project would "advance interdisciplinary programming (across multiple program areas, sectors) and demonstrate innovative collaboration" (UW Cooperative Extension Community Food Systems Team, 2014). Team leaders hoped the program would spur county educators' interest in working with the team and strengthen the linkage between county-level projects and team leaders' use of the Whole Measures CFS framework. It is at this point that my formal dissertation research began, and I joined the Community Food Systems Team's Whole Measures

work group to learn from and support this work in an action research capacity.

The team received eleven applications from county extension offices across the state. A volunteer grant review committee made up of a mix of specialists and county educators scored proposals and disbursed the $10,000 of grant funds to five finalists in Iron, Barron, Eau Claire, Richland, and Rock County Extension offices. Grantees were invited to a half-day orientation session at the September 2014 Community Food Systems Team in-service meeting in Stevens Point. There they were informed of reimbursement procedures, had the opportunity to learn about each other's projects, and were introduced to the team's Whole Measures work group, which consisted of the Community Food Systems Team coordinator, two members of the UW - Cooperative Extension Program Development and Evaluation unit, and me. Our role was three-fold: to provide one-on-one program development and evaluation support to grantees, to host bi-monthly group calls to familiarize grantees with the Whole Measure CFS framework and promote cross-project problem-solving, and to evaluate the pilot Mini Grant Program.

By February 2015, it was apparent that grantees preferred one-on-one program development and evaluation support to group videoconferences. Whole Measures CFS proved to be difficult to use remotely, especially with a multi-project group. Following a series of scheduling difficulties and lackluster engagement in videoconferences, the Whole Measures work group decided to discontinue the bimonthly group calls and focus on one-on-one project support. A Program Development and Evaluation specialist led the subsequent coaching sessions with assistance from other members of the Whole Measures work group. Through these sessions, the Whole Measures work group helped grant recipients spell out their program logic by walking through a Whole Measures adaptation of the logic model out loud. In some instances, these sessions also focused on project-specific needs and evaluation surveys.

In the summer of 2015, I co-conducted site visits and grantee interviews with a specialist from Program Development and Evaluation. We found that in all five cases, county educators and Extension-based AmeriCorps VISTA volunteers were implementing multi-dimensional, values-based projects that employed gardening projects in the service of a variety of goals including community and youth development and horticultural and nutrition education. While project leaders' clearly recognized the multifunctionality of these projects, they did not talk about them in terms of the Whole Measures value fields. At once they exemplified the values of Whole Measures CFS and eschewed the framework. For example, in an interview, a horticulture educator who received funding for a container gardening project explained it this way,

> I don't think a lot of the Whole Measures has stuck as much as you guys would have liked it to. . . . It's one of those things that is a challenge to being a county agent. You're one thing onto the next and onto the next. It's hard to sit and think about the bigger picture. I'm still trying to figure out my bigger picture in the county.

She went on to remark that Whole Measures CFS "is a little bit too academic. It's too Madison." In another interview, when asked if it would have been helpful to have more tools to help her use Whole Measures CFS, a Middle School teacher involved with a non-traditional 4-H garden project funded by the team responded:

> I'm still not sure what you mean when you say Whole Measures. I think that's still unclear. . . . It's a foreign term that we're not used to hearing; that's what it is. It's the Extension lingo that you guys get into that us commoners can't.

On the face of it, the Mini Grant Program evaluation confirmed what team leaders had observed all along: county educators, by and large, found the formulaic approach to Whole Measures CFS tedious, abstract, and unhelpful.

And yet, while the Mini Grant Program did not succeed in generating enthusiasm or buy-in for Whole Measure CFS with the notable exception of the Iron County Extension Office (which is discussed below), it did succeed in catalyzing cross-organizational programming and collaboration with outside partners (Day Farnsworth, Pratsch, & Lee, forthcoming). In Barron County, the mini grant project marked the county extension office's first major effort to directly serve Barron's growing Somali community. In Rock County, mini grant funds made it possible for a Family Living educator and a Horticulture Educator to do joint gardening and nutrition education programming. In Richland County, project funds supported a school and non-traditional 4-H gardening project that was incorporated into a nutrition and life skills class for Middle School students. Moreover, grantees reported that these projects likely would not have occurred without the incentive and support of the grant program.

With regard to the Iron County anomaly, there were several related factors that appeared to have contributed to the successful implementation of Whole Measures CFS: geographic isolation, which contributed to a tightknit office; a group of staff members with an unusually high propensity for cross-program area collaboration; and an AmeriCorps VISTA volunteer who had the time, flexibility and resources to experiment and adapt the Whole Measures framework to the Iron County context. Throughout this study, individuals from across the organization consistently pointed to the Iron County Extension Office as a model of intra-office cross-program area collaboration. One Madison-based specialist speculated that the Iron County Extension Office's distance from Madison and relative isolation made it easier for its staff members to experiment because they could "sort of fly under the radar." While this may be true to a certain extent, the Iron County Office is perhaps more accurately an example of the notion that necessity is the mother of invention. Operating in a context with vastly fewer economic

resources and social service organizations than many of Wisconsin's more populous and resource-rich counties, members of the Iron County Office had fewer outside partners to collaborate with and thus a greater incentive to work across program areas to achieve their aims.

Second, the Iron County Extension Office consisted of a group of uncommonly self-directed systems thinkers. As a high ranking UW Cooperative Extension administrator noted of the Iron County Office,

> That is as close to what we have as a poster child for a county office working collectively as a team. And I give a lot of credit to [the staff, including] the VISTA, who has actually been the sort of catalyst for the energy of working across those boundaries.

Indeed, the Iron County Extension AmeriCorps VISTA served a pivotal role in the implementation and dissemination of Whole Measures as a tool for promoting cross program-area collaboration. After familiarizing herself with Whole Measures and taking the lead for implementing it in relation to the mini grant project, she adapted it to suit the Iron County context and then worked with local colleagues to evaluate all of the Iron County Extension Office's programming. In an interview, she explained the importance of adapting the tool rather than just adopting it:

> I think each county modifying [Whole Measures] is important. I think it shows ownership or a thought process. I went to [the website] where the original Whole Measures came from and … saw how you had modified it and then I was able to try and do it myself.

She went on to note that going through the exercise of mapping county extension activities onto the Whole Measures value fields enabled the office to identify "what we value in our programming, where are we focusing, and maybe where are we not [focusing] so much."

While the extra initiative that she took to understand Whole Measures and apply it to the

entire office was unique in the context of the Whole Measures Mini Grant Program, it was not inconsistent with the culture of the office. As another member of the Community Food Systems Team reflected, “I think Iron County would be doing that work regardless of the team, but [the team] has helped to heighten the awareness and acceptance of it.” In other words, the Community Food Systems Team’s promotion of cross-program area collaboration served to validate those individuals and offices that were already operating in this way and encouraged them to expand upon and share their work. Consequently, due to a combination of factors such as geography, a comparatively low density of partner organizations, a staff member with the time to experiment with Whole Measures and multi-issue thinking, and an office culture of cross-program area collaboration, the Iron County Extension Office was much more receptive to Whole Measures and took considerably more ownership of the tool than did other county Extension Offices that participated in the Mini Grant Program.

Periodically over the course of my action research, I and other members of the Community Food Systems Team’s Whole Measures work group had informal conference calls with colleagues at the Center for Whole Communities, the organization that originally developed Whole Measures. The aim of these calls was to discuss what we were observing as we supported the implementation of Whole Measures in different settings. Our colleagues at the Center for Whole Communities also found that even with coaching, Whole Measures seemed to take off in some organizational contexts and not in others. In a December 2015 conference call, colleagues at the Center for Whole Communities corroborated some of our observations about the factors that contributed to the successful adaptation and implementation of the tool in the Iron County Office. Notes from a cursory collaborative brainstorm of characteristics of successful Whole Measures implementation included the following:

- Personality/personal predilections
- Time and resources to experiment with and cultivate ownership over tool
- Individual/office/organizational precedent in taking a systems view

(Day Farnsworth, 2015)

Further cross-case analysis of user-driven Whole Measures success stories could help validate and elaborate on these preliminary observations.

Overall, the team's promotion of Whole Measures CFS did not result in widespread adoption of the tool for county-level planning and evaluation purposes, but it did legitimize the values-based dimension of some ongoing programs, such as WNEP, and it catalyzed new internal and external collaborations in the context of the Mini Grant Program. Following two annual cycles of the Mini Grant Program, the administrative strain of the program on the team's financial specialist became unsustainable, and the team's administrative committee and Whole Measures work group decided to reevaluate the program. At the time of this writing, the Community Food Systems Team's administrative committee was undergoing a strategic planning process and considering transforming the Mini Grant Program into a "special projects program" to support multi-county regional projects and/or issue-based projects.

The Fruits of Network Development: Informal Functions and Indirect Outcomes

The Community Food Systems Team's instrumental approach to promoting interdisciplinary practice also catalyzed interdisciplinary work by creating cross-program communication channels and informal spaces for people in different program areas to learn about each other's work and explore opportunities for collaboration and integration. The following are several examples of the team's indirect impacts, which surfaced in interviews. They include enabling state specialists to become resources outside of their program areas, enriching existing

programs, filling resource gaps for underserved Extension audiences, and nurturing interdisciplinary food systems projects development. Several of these examples evince Schön's (1983) notion of reflection-in-action in that they are context driven and interdisciplinary knowledge or collaboration are employed tacitly and pragmatically in the service of other ends. This represents an interesting juxtaposition to some of the previous examples, which in some instances seem to place interdisciplinary practice on a pedestal while divorcing it from content and context.

Enabling state specialists to become resources outside of their program areas. Because many food systems issues are inherently multidisciplinary, it was not uncommon for educators in different program areas to be working on similar issues from different vantage points. The Community Food Systems Team not only helped illuminate and connect educators working on similar content from different program areas, it helped specialists serve as relationship brokers across program areas and made their expertise more readily available to educators in other program areas. For example, in some counties, Family Living educators took the lead on projects promoting EBT access at farmers' markets while in other counties CNRED educators championed this work. One Family Living specialist described her involvement with team as the primary means through which she could serve as connector between program areas:

> Through the food systems team, I've been able to [link] … program areas. . . . the WNEP program is a value added in that we directly reach the audience that the EBT programs seek to serve. So if our CNRED agent is working on getting EBT into the market ... our WNEP folks directly reach that audience, and are supportive in the outreach effort.

She also noted that by serving as a liaison between program areas, she became a resource for educators outside of her program area as she explains in the following quote:

> The team created a space for people to learn about my work—the programs that I support. So, now … more than before, I get requests for assistance from CNRED or request for assistance from Ag and in some cases even 4-H. So there's at least greater exposure. . . . like I'm more accessible to all program areas as a specialist than perhaps I would have been before in that people wouldn't have known [about] this resource or position.

A Family Living educator reinforced this point, noting that she had greater knowledge of and access to a wider range of state specialists—especially those outside of her program are—after participating in the interdisciplinary teams. At a conference, she explained, "One of the things that has made me excited about this is that I have had access to specialists and resources that I haven't had access to before in just Family Living. I wouldn't have even known [who] to call to ask about it!"

Enriching existing programs. The Community Food Systems Team also contributed to the improvement of some existing programs by expanding the thinking and professional networks of its members. For example, by 2010, the Wisconsin Master Garden curriculum was due for an update. The ANRE specialist tasked with leading this work decided to apply a more systemic view to program and curriculum design as a direct result of his involvement with the Community Food Systems Team. As he explained,

> By participating in the team, it's influenced what I've done with the Master Gardener training. . . . It's really from my involvement with the team to know, we aren't talking about fruits and vegetables the way we should … All this has been coming from conversations with the team over the years. And it's fed into the changes I'm making here. I don't think I would have been thinking along these lines when I came into this

> position and realized, “Oh, we’re not talking enough about food.” I don’t think I would have had that epiphany if it wasn’t for working with the team and the team members.

This quote provides a compelling example of the positive though indirect impact of the team on standard-bearer Extension programs, such as Master Gardeners. Yet, as noted in the previous discussion of challenges, it is difficult to capture the team’s contributions to such work through traditional evaluation and reporting systems.

Filling resource gaps for underserved Extension audiences. The Community Food Systems Team also served as a conduit through which training needs could be identified and assessed at a statewide level. For example, following the wake of the federal Food Safety Modernization Act, small-scale producers were in search of guidance and resources about how to comply with the new, stricter production and post-harvest handling regulations. In 2011, one team leader used the relationships and statewide network that she had developed through her involvement with the team to assess the need for Good Agricultural Practices (GAP) trainings and resources for small-scale producers. As a county-based team leader with no program area affiliation recalled:

> GAP training … has been an ongoing issue. [Local] farmers kept asking us to do some training to help them become GAP-certified. And I’d gone to ANRE and hadn’t really gotten any guidance other than, “No, we don’t do that.” But once I … started asking questions and finding out that they were having the same issue down in Rock [County], and … up north, … I realized this isn’t just a [local] issue, this is a statewide issue, and it’s a barrier within the current food system. And it’s something that Extension could help facilitate.

Working with UW Cooperative Extension administrators, campus-based staff, and educators, she helped orchestrate the development of educational resources on GAP for small-scale producers. With connections to both county offices and campus-based resources, leaders of the Community Food Systems Team were well-positioned to respond to this statewide food systems resource gap. However, it is worth noting that although a team leader served as the point of contact for initiating this work, the actual implementation fell to other campus and county staff members rather than the team.

Nurturing interdisciplinary food systems projects and initiatives. Finally, despite the criticism that the Community Food Systems Team did not have enough resources or authority to develop major programs or projects, it did serve a catalytic and connective role in efforts that were later developed by team members and partners with outside funding. For example, at the team's in-service meetings, open space activities (i.e. activities designed to foster creative self-organization around topics of importance to meeting participants, e.g. Owen, 2008) fostered generative discussions. In some instances, these led to projects such as the Food System Educational Framework, a resource developed to acquaint K-12 teachers and curriculum developers with a developmentally-appropriate, system-based suite of learning objectives related to teaching the food system. The framework, which was initially conceived of at a team gathering, was later supported by a cross-program area work group of the Community Food Systems Team and ultimately developed with funding and staff support from the Wisconsin Center for Environmental Education at UW - Stevens Point.

When asked to identify products or accomplishments that could be attributed to the team, the CNRED-affiliated team member who led the educational framework project readily acknowledged that the framework "is very much a product of the team." "I don't know where

else it would have come from," he remarked, noting that farm-to-school initiatives tended to focus on school gardens, supply chain development, and policy issues rather than curriculum development. As he concluded, "[The educational framework] needed the network … of the Community Food Systems team to make it happen."

In conjunction with the Community and Regional Food Systems Project, members of the Community Food Systems Team also contributed to the development of the UW-Milwaukee-based Institute for Urban Agriculture and Nutrition, now the Cooperative Institute for Urban Agriculture and Nutrition (CIUAN), a "cooperative of universities, community organizations, businesses, and public agencies advancing the principles and practices of sustainable urban agriculture, healthy nutrition practices, and economic development through innovative collaboration" (CIUAN, n.d). Members of the Community Food Systems Team were involved in launching CIUAN, and the Community and Regional Food Systems Project worked closely with several staff members at the Milwaukee County Extension office to get the institute off the ground.

Discussion and Conclusion

This chapter has described outcomes associated with the Community Food Systems Team and Cooperative Extension program leaders' innovations in interdisciplinary practice. While these innovations varied in their effectiveness, each contributed to the team and organization's evolving understanding of interdisciplinary practice and how to best support it. Following is a short summary of the central outcomes associated with each of the innovations.

The shared expectations document was decidedly the least effective innovation discussed in this chapter. The document was developed with the goal of creating a process through which staff members from multiple vantage points within UW Cooperative Extension could help define

the objectives of the interdisciplinary teams. However, the resulting document focused exclusively on content-neutral interdisciplinary learning thereby divorcing expectations regarding the team's contributions to organizational learning from expectations about its contributions to community food systems development. The result was persisting confusion and frustration, and the task ambiguity described in detail in Chapter 3 was never ultimately resolved.

The interdisciplinary learning community was more effective than the shared expectations process. It succeeded in creating a space for reflection and dialogue about interdisciplinary practice. It also helped its members establish a shared understanding of interdisciplinary constructs. The benefits of these efforts were evident in interviews with members of the learning community, during which they individually demonstrated shared, consistent, and precise usage of terms such as interdisciplinarity and multidisciplinarity. However, limited time and resources for this type of interdisciplinary practice combined with the common perception that this was not a useful approach to interdisciplinarity, resulted in low-attendance and eventually contributed to the dissolution of the group.

The adaptation and implementation of the Whole Measures CFS framework also yielded mixed results. On the one hand, the team's use of Whole Measures CFS validated and invigorated values-based and cross-program area work that was already taking place within the organization. And as a result of the Mini Grant Program, it spurred new intra- and inter-organizational partnerships through county-based community food systems projects. On the other hand, the Whole Measures CFS framework failed to catch on with most county educators. For example, while mini grant recipients' projects exemplified the ideals of Whole Measures CFS, most of them dismissed the framework as abstract "Madison talk" and therefore irrelevant to their more ad hoc, action-oriented, county-based work. Nevertheless, the Mini Grant Program

did lead to a promising, unexpected outcome: the realization that providing project-specific program development and evaluation coaching has the potential to create opportunities to integrate cross-program collaboration and systems thinking into UW Cooperative Extension program design in a flexible, context-specific way through the use of shared outcome categories, in this case the Whole Measures CFS values fields; this idea is taken up at greater length in the Chapter 6.

Finally, the Community Food Systems Team made indirect but discernible contributions to UW Cooperative Extension's community food systems work by fostering network development across program areas, helping team members expand how they think about the programs that they oversee, and by supporting the development of new projects and resources. In fact, this informal bridge-building produced more tangible interdisciplinary outcomes than some of the team's more intentionally orchestrated efforts to promote interdisciplinary practice (e.g. the interdisciplinary learning community). Still, the ad hoc nature of this work did not reflect a deliberate multi-level systemic orientation at either the project level or in aggregate, and was thus more characteristic of incremental planning than systems change. Altogether, there is no evidence to suggest that the team succeeded in facilitating an "integrated, systemic, and coordinated" organization-wide approach to the organization's community food systems programming through Whole Measures CFS or network development.

It is instructive to consider the team's contributions to innovation in interdisciplinary practice in light of different forms of interdisciplinarity. The first two innovations had a largely reflexive orientation. Moreover, they were not grounded in content-based work but instead focused on the conceptual and relational dimensions of interdisciplinary knowledge construction and collaboration. In contrast, the team's cross program area network development represented

its most instrumental work in that it emphasized relationship-building over reflection and deliberate cross-disciplinary dialogue. As noted in this chapter, this bridge building work appears to have played a valuable role in fostering network development and information exchange that led to cross-program area collaboration. However, it was difficult to discern the team's specific contributions to related programmatic outcomes because they were typically realized outside of the team by individual educators and specialists or through separately funded collaborations. Finally, the team's adaptation of Whole Measures represented a hybrid approach; it promoted values-based systems thinking in applied, project-based contexts. In this way, the program encouraged reflexivity through grant recipient engagement with the Whole Measures CFS framework while keeping the reflection largely grounded in context and project-specific work. While county educators generally did not embrace the framework to the degree that Whole Measures work group would have liked, preliminary findings suggest that rooting reflexive interdisciplinary practice in concrete, content-rich work created opportunities to engage educators and others in interdisciplinary program development.

Given that educational programming is the cornerstone of Cooperative Extension, identifying opportunities to incorporate interdisciplinary and cross-program area thinking into program design is significant if the organization's long-term aim is to develop a more integrative approach to programming. Further, these outcomes suggest that the Community Food Systems Team, and other interdisciplinary efforts, would do well to integrate the reflexive and instrumental dimensions of interdisciplinary practice. Reflexive interdisciplinarity facilitates the type of reflection-in-action that is so critical to experiential and organizational learning, which are at the core of transformational processes. Meanwhile, instrumental interdisciplinarity provides a clear, outcome-oriented focus for interdisciplinary collaboration, which can help

researchers and practitioners remain engaged in the work despite philosophical and disciplinary differences. Similarly, a context or issue-specific focus helps ensure that interdisciplinary work is rooted in concrete matters of importance to community partners and others outside of the organization. Schön's notion of "reflection-in-action" is key here; as the Community Food Systems Team case example shows, with the exception of the Whole Measures Mini Grant Program, the team often pursued reflection and action in parallel, which alienated action-oriented participants while causing team leaders to miss opportunities to deliberately learn from their experimentation. The following Chapter explores these central considerations for interdisciplinary practice in relationship to other organizational and program design factors that contribute to an interdisciplinary efforts' capacity to contribute to systems change.

Chapter 6. Lessons from an Experiment in Innovating Interdisciplinary Practice

Largely through trial and error, the Community Food Systems Team's experimentation with interdisciplinary practice yielded a number of lessons about how to create conditions conducive to innovation in interdisciplinary practice and organizationally-driven food systems change. This chapter draws on multiple literatures to elucidate and respond to some of the major challenges discussed in previous chapters. These lessons can be summarized as (1) organizational innovation and learning require regular feedback mechanisms; (2) systemic change benefits from focused, multi-level interventions; (3) collaborative initiatives are strengthened by engaging partners in defining the work; and (4) outcomes-based team and organizational objectives may help align local and statewide work.

Organizational Innovation and Learning Require Regular Feedback Mechanisms

When asked what they might have done differently to allay confusion regarding their expectations for the Community Food Systems Team, several program leaders acknowledged

that it would have been helpful to be more specific from the outset. A program leader from PD&E remarked, “What I think we realized was that we were almost too open.” Another from CNRED reflected, “Well, I wouldn’t have just said, ‘Here’s some criteria around what an interdisciplinary team looks like.’” A third, also from PD&E responded, that they could have done a “better job of … using feedback to critically assess what’s working and what’s not working.” As the ineffectiveness of the shared expectations document demonstrates, establishing expectations is only half of the battle. If the stated expectations are incomplete or they are not regularly referenced or reinforced—as was the case with the interdisciplinary teams—then they serve little value in guiding the work. As such, feedback mechanisms offer an important complement to articulating shared expectations because they can pick up where documented expectations leave off by creating regular opportunities to reassess activities in light of agreed upon objectives.

The role of feedback features prominently in the organizational learning literature. Discussion about nature, promise and limitations of different types of organizational feedback loops is a conceptual cornerstone of Argyris and Schön’s (1978) seminal publication *Organizational Learning: A Theory of Action*. Senge (1990) similarly underscores the importance of feedback in the structure and function of learning organizations in his influential book *The Fifth Discipline: The Art and Practice of the Learning Organization*. Building on the work of Argyris and Schön (1978), Lipshitz et al. (2007) define organizational learning as “the detection and correction of error and the discovery and exploitation of opportunity” (p. 15). They go on to explain that organizational learning, which is predicated on an integrated pattern of insight and action, is a “cyclical process involving the evaluation of past behavior, the discovery of error or opportunity, the invention of new behaviors, and their implementation” (p. 15).

One of the risks associated with the experimental nature of organizational innovation is the increased likelihood that new ideas will not necessarily lead to intended results. Feedback loops (as manifest in systematized organizational learning practices) aid the innovation process by serving the crucial function of helping those engaged in innovation determine whether or not experimental strategies are in fact advancing desired objectives; this enables them to correct course midstream. For instance, if the aim of adopting Whole Measures CFS is to help people across the organization develop shared language and understand how their work relates to a larger system of activities and long-range goals, systemized organizational learning can help team leaders determine whether or not Whole Measures CFS is serving this function. As a result, they could make informed decisions about whether to continue to use the tool in the same way, modify their approach, or replace it with an altogether different strategy.

Leaders of the Community Food Systems Team had relatively few supported opportunities to formally reflect on their experimentation and little in the way of yardsticks with which to measure their progress. The driftlessness of the Community Food Systems Team was perhaps best captured by a program leader who likened the Community Food Systems Team to a group of people on a bus to nowhere. In a scenario where the team had regular feedback mechanisms, rather than waving when the bus went by, program leaders would invite the team off the bus to discuss their journey in relationship to their intended destination.

In reflecting on how program leaders could have provided more guidance for the Community Food Systems Team, a program leader from PD&E described a variant of the rapid results initiative model (Matta & Ashkenas, 2003) as an example of a strategy that the team and program leaders could have used to test new ideas quickly and intentionally:

> One approach is to say, “What are the different functions that we need or want to produce? Let’s brainstorm a bunch of different ways to … deliver those functions, … take the best ideas, [develop] a composite idea and try it for like six months, and … get rapid feedback on it.

The value of the rapid results approach is that it enables a group to make determinations early on in a process rather than continuing to invest resources into efforts that will not ultimately advance their objectives. Conversely, without strategies for assessing what is working and what is not, there is no assurance that a brake will be put on ineffectual practices or that resources will be marshaled to sustain effective practices or improve promising ones. In the case of the Community Food Systems Team, more often than not, uncertainty about the effectiveness of many team activities meant that they were sustained until whoever led them had to turn their attention to other professional responsibilities. This was not only true of the interdisciplinary learning community but also occurred with a number of topical work groups, the team’s online newsletter, and a monthly webinar and conference call series that featured various community food systems topics and projects. The absence of systemized learning mechanisms not only resulted in a start-and-stop approach to experimentation, it also likely stymied innovation, which thrives on repeated cycles of reflection, improvement, and testing.

There are numerous approaches in addition to rapid results initiatives that organizations can use to build feedback loops into organizational practice to promote organizational learning. As noted in Chapter 3, Lipshitz et al. (2007) use the term organizational learning mechanism (OLM) to describe approaches that “enable organizational members to jointly collect, analyse, disseminate, and apply information and knowledge” to improve organizational performance (p. 16). They describe a range of organizational learning mechanisms in detail and are careful to

specify how and why various models are suited to particular circumstances and learning objectives.

Lipshitz et al. organize OLMs into a typology based on the following characteristics: internal, external, online, and off-line. “Internal” refers to learning initiated by individuals directly engaged in “both task performance and learning about task performance” whereas “external” OLMs are led by individuals who are not directly engaged in the task in question. Meanwhile, “online” describes OLMs that take place concurrently with task performance while “off-line” OLMs occur after a task has been completed. For example, coaching and peer assists represent online external OLMs while an after action review exemplifies an off-line internal OLM. (pp. 25-44)

Different circumstances lend themselves to different OLM structures. For example, internal online methods, such as communities of practice are appropriate for educators who are likely to benefit from ongoing information exchange and co-reflection with colleagues encountering similar instructional challenges and opportunities. In contrast, Lipshitz et al. offer the example of air force test flights as a case better suited for internal, off-line analysis (e.g. after-action reviews) because of the nature and duration of the task. Similarly, while there are many benefits to having task performers assume a leadership role in organizational learning, there are also instances when external guidance can be valuable. This is especially true of instances where (1) analysis is led by an external expert who brings technical or analytic insight to issues associated with a particular task, or (2) when individuals external to a task have unique access to organization-wide knowledge (e.g. organizational leaders or those involved in strategic planning or evaluation activities) and can thus provide valuable information about the organizational context (Lipshitz et al., 2007, p. 35).

Lipshitz et al. also emphasize the importance of clarifying learning objectives at the outset of any organizational learning effort. These learning objectives bring focus to the effort, and they have implications for the type of OLM that will be used to guide the learning as well as the kind of information on which the learning will be based. As Lipshitz et al. put it, "the first question to ask when setting up and managing an OLM ought to be 'learning about *what?*'" (p. 53, emphasis original). They note that when working with organizations, they help managers define "learning questions" at the beginning of an effort and then confer with OLM participants "to clarify the questions that will guide their inquiry, focus their efforts, and keep them on track" (p. 53). As they conclude, "issue orientation, as expressed through clearly defined questions, provides the members of an OLM with criteria for monitoring their effectiveness and determining when they have completed their task" (p. 53).

The clarity, intentionality, and continuity of Lipshitz et al.'s approach to organizational learning would have strategically complemented team and program leaders' efforts to promote organizational learning about interdisciplinary practice by providing a mechanism to systematize ongoing feedback between program and team leaders about the team's experimentation with different forms of instrumental and reflexive interdisciplinary practice. An OLM also could have potentially helped alleviate task ambiguity by enabling team and program leaders to identify and respond to it sooner while building ongoing capacity to evaluate and improve upon the corrective action.

Arguably, the interdisciplinary learning community, to some extent, served as a hybrid online OLM. On the one hand, it demonstrated characteristics of external OLMs in that participants gained insight about interdisciplinary practice from an expert who brought an organization-wide perspective to their work. On the other hand, it mimicked the peer-oriented

nature of internal OLMs by providing opportunities for participants to reflect on ongoing work with colleagues engaged in similar tasks. Although participants of the learning community largely reported that it helped them understand different forms of interdisciplinarity and the organizational context in which they operated, it is not clear whether or to what extent the learning community facilitated organizational learning as manifest in discernible changes in task performance and organizational policies, practices, and/or culture. As Argyris and Schön (1978) assert, "in order for organizational learning to occur, learning agents' discoveries, inventions, and evaluations must be embedded in organizational memory" (p. 19). In contrast, the learning that resulted from the interdisciplinary learning community appeared to occur primarily at the individual and small group level.

Finally, in addition to providing much-needed ongoing feedback about interdisciplinary innovation process, a strategically designed OLM could also build team leaders' capacity to methodically facilitate organizational learning. This would "model … learning from experience"—one of the stated functions of the interdisciplinary teams according to the shared expectations document (UW Cooperative Extension, 2013). Further, such capacity building would make it possible to sustain organizational learning efforts even when high-level organizational leaders are no longer able to lead the group. For example, rather than disbanding the interdisciplinary learning community due to the competing commitments of the facilitating program leader, after developing the skills to lead an OLM, group members could have taken over the facilitator function and transitioned the group from an external to an internal OLM model. That said, as noted above, substantive organizational learning requires that lessons learned at the individual and group level be transmitted to organizational leaders and "embedded in organizational memory" through organizational policies, practices, and culture. Consequently,

while internal OLMs can generate rich insight, they must still be formally connected to organizational leadership decisions to effect substantive organizational change—the ultimate goal of organizational learning.

Systemic Change Benefits from Focused, Multi-Level Interventions

As noted in Chapter 2, from the perspective of the program leaders, part of the impetus for creating the Community Food Systems Team was to increase UW Cooperative Extension's impact by improving its capacity to "do issue cross-program programming" (UW Cooperative Extension, 2010). Notes from an August 2010 program directors meeting indicate that program leaders used the meeting "to look specifically at an issue and really dissect what a cross-program response might look like" (UW Cooperative Extension, 2010). After conducting a brainstorming exercise, the program leaders concluded that there were numerous community food systems issues that would benefit from cross-program responses making community food systems a topic area well-suited to experimentation with issue-based programing. While it is true that most food system problems implicate multiple disciplines and program areas, this big tent approach to issue-based programming contributed to the team's task ambiguity because "community food systems," in and of itself, is not an actionable problem or issue.

In the *Journal of Extension*, De Bord (2007) defines "issues" as "matters of widespread public concern" (n.p.). The broad concept of a community food system does not fit this description, at least not in the catalytic way that child hunger or falling crop prices do. Instead, "community food system" functions as both a desired end state (e.g. Garrett & Feenstra, 1999) and as an umbrella term to describe a range of activities related to place-based and values-driven food production, processing, distribution and consumption (Feenstra & Campbell, 1996). As noted above, there are many challenges facing communities, organizations, and households that,

while related to community food systems, are easier to translate into issues for programmatic purposes. While still complex, they are more tractable than a broad topic in that they imply a particular objective, e.g. close the hunger gap, with specific policy and messaging implications. In addition, they are more catalytic than a broad topic because they are urgent or at least pertain to identifiable constituencies.

In a sense, team leaders' preoccupation with the big picture and their corresponding big tent approach prevented them from finding ways to promote systemic approaches to actual issues. This raises questions about how extension specialists and educators can maintain a systems view while zeroing in on a topic narrow enough to bring focus to interdisciplinary work. Some in the field of design thinking use the construct of a "focusing problem" to nest interventions in systems contexts. According to design thinking scholars Geoghegan and Pangaro (2009), a focusing problem is "the cornerstone of 'regenerative change by design'" because it enables project teams to reduce a broad topic into a bounded problem (p. 170) (Pangaro, 2016). Rather than brainstorming about how to make the food system more equitable, in this approach, a group would brainstorm with the goal of generating a narrower focusing problem or question, such as "How can we increase residents' access to healthy, affordable food in a particular neighborhood?" To ensure that a group does not lose view of the larger systems context, Geoghegan and Pangaro urge practitioners to prioritize problems that relate to larger questions and thus serve as "exemplars" so that the learning can be reproduced and/or scaled up (p. 170). Through strategic issue or problem selection, projects can address localized or narrowly-defined concerns while building knowledge and relational and organizational scaffolding to take on larger related issues at a later time.

Though it did not specifically employ Geoghegan and Pangaro's methodology, the

Wisconsin Obesity Prevention Initiative offers an example of what this approach can look like in practice. Rooted in the social ecological model of health, the Wisconsin Obesity Prevention Initiative is premised on the notion that "the complex challenges of childhood obesity prevention cannot be addressed through clinical care and education alone" (Spahr, et al., 2016, para 3). As such, the initiative promotes "a collaborative, multi-setting approach that includes policy, systems, and environmental prevention strategies" (Spahr, et al., 2016, para 3). To foster multi-level interventions, the Initiative developed an evidence-based "strategy menu" made up of nine categories of obesity policy interventions including Active Transportation, Recreational Spaces and Programming, Healthy Food Access and Consumption, and Clinical Care Practices. Each category offers three to five "environmental and policy-related obesity prevention strategies" that can be combined with other strategies and adapted to community context. For example, two strategies included in the Healthy Food Access and Consumption category are School Wellness Policies and Healthy Food Procurement. In sum, the strategy menu enables communities to select a combination of complementary approaches with the aim of facilitating behavioral change that promotes nutrition and physical activity by intervening on environmental factors, such as the accessibility of healthy food. (Spahr et al., 2016)

In this way, the Wisconsin Obesity Initiative started with a well-defined issue—childhood obesity—and, building on the social ecological model, considered how different individual and environmental factors interact to promote or inhibit childhood health. Thus the strategy menu represents one dimension of a multi-level intervention, that if successful will result in systems change. However, it is important to note that the Wisconsin Obesity Initiative was designed as a top-down model. To ensure that the Community Food Systems Team is responsive to county-level leadership and project initiation, it would need to formulate an

approach to supporting local partners in developing multi-level interventions rather than starting with an issue and a strategy and working outward into communities. Nevertheless, the Wisconsin Obesity Initiative demonstrates a creative approach to multi-level intervention design that fully comprehends the multiple, interacting factors necessary to effect change at the individual and community levels.

If the Community Food Systems Team took a similar approach and supported a variety of issue-driven, multi-level interventions on a range of issues (e.g. childhood obesity, farm profitability, groundwater depletion, living wages, etc.), it could promote coordinated food systems change by leveraging the organization's substantial resources and unique reach while keeping the work grounded in real issues that are actionable at the county level. This approach may offer several additional benefits for the Community Food Systems Team as well. First, it could help reconcile the tension between the team's content-based work and its contribution to interdisciplinary innovation. Given the complexity of community food system issues, a multi-level approach to issue-based projects and programs lends itself to interdisciplinary responses. Secondly, this grounded approach would likely feel less contrived than more conceptual approaches to interdisciplinary practice where interdisciplinarity is pursued almost as an end unto itself. Organizational learning about interdisciplinary practice (as discussed in the previous subsection) and interdisciplinary capacity-building activities could continue alongside or as part of issues-driven collaboration. For example, some USDA AFRI projects have convened participating researchers in reading groups to jointly explore articles on inter- and transdisciplinary team research and scholarship in order to improve their own practice (Clancy, 2015).

Third, although issue-based programing would not completely obviate tensions between

program area philosophies and programing models, it would at least bring focus and purpose to those discussions. Spahr et al. (2016) note that one of the major challenges they encountered when convening people from different disciplines to develop the strategy menu was that "different disciplines (and even researchers within the same disciplines) have different evidentiary standards" (para 8). Although this was a source of debate, it was bounded by the project objective of developing an evidence-based community resource. Consequently, scholars did not need to broker a monumental inter-disciplinary philosophical reconciliation; they just had to agree on a system of standards suitable for the strategy menu tool. While no doubt challenging, the task was at least concrete, delimited and had tangible real world benefits. Similarly, Mendum (2009) offers an example of a transdisciplinary plant-breeding project in which philosophical differences between plant breeders, seed companies, and organic farmers at points posed challenges to the collaboration. She underscores the importance of "well defined goals such as evaluation of vegetable varieties, and learning new pollination techniques" in sustaining the collaboration (p. 162). Perhaps specialists and educators who disengaged from the Community Food Systems Team due to protracted debates about programming and terminology would have been more willing to endure similarly heated discussions if they were in the service of clear goals and tangible outcomes.

Fourth, since the national Extension Committee on Organization and Policy first formally promoted the issue-based programming model in the 1980s, research has demonstrated its effectiveness, and ongoing experimentation has resulted in the development of tools and strategies to support it. For example, Taylor-Powell and Richardson (1990) found that a statewide effort to employ issue-based programming in Texas resulted in a

> broader base of support for Extension programs, involvement of nontraditional clientele, ownership of programs at the county level, the development of a statewide plan of work based on locally identified concerns, and a highly visible marketing tool for Extension. [And] Extension programs have become more focused and targeted. (para 16)

Taylor-Powell and Richardson acknowledge that there are a number of barriers to the successful implementation of issue-based programming and note that favorable conditions for it include adequate time and resource allocation as well as in-service education for specialists and educators on "turning complex issues into programs, innovative program delivery methods, building teams, and evaluating issues impact" (para 15).

To address concerns regarding the need for additional tools to support issue-based programming (e.g. Taylor-Powell & Richardson, 1990; Verma & Baker, 1993), Guion (2009; 2010) has developed and published resources, including a checklist and question guide, to help educators lead interdisciplinary issue-based programing efforts. And in response to Dalgaard et al.'s (1988) critique that issue-based programming has no theoretical foundation, scholars such as De Bord (2007) have provided some theoretical scaffolding for the programming model by introducing the concept of "integrated programming," a variation of issue-based programming that explicitly draws on the social ecological model.

Finally, because of its focused and bounded nature, an issue-based approach to interdisciplinary programming has the potential to more effectively engage Extension colleagues as active team members. Preliminary research on task ambiguity as mediating factor for various workplace satisfaction and performance metrics has found a statistically significant relationship between task ambiguity and participants' "affective evaluation of the team experience" where task ambiguity negatively correlated with team satisfaction and experience of shared leadership

(Serban & Roberts, 2016, p. 3). In other words, task ambiguity not only obscures team members' clarity of purpose, it negatively affects their experience of a team. When participation in a team is entirely elective (as is the case of the Community Food Systems Team), task ambiguity may have a deterrent effect on prospective members and partnerships. If that is the case, then what factors, in addition to task clarity, promote team member satisfaction and facilitate engagement? And with regard to program leaders' concern, what approaches might the team have used to more meaningfully engage external partners in its work?

Collaborative Initiatives are Strengthened by Engaging Partners in Defining the Work

In the community organizing literature there is a corollary to the notion of an identifying a focusing problem: issue identification. Although issues are defined differently in the community organizing context than they are by De Bord (2007) in relation to extension programing, the process of issue identification is similarly concerned with translating community problems into resonant and actionable solutions. As Minieri and Gestos (2007) explain, "by engaging in issue identification"—the process of translating community problems into attainable solutions— "you ensure that you choose issues that truly matter to members and constituents" and in so doing, galvanize support and catalyze action (pp.129-130). Thus, while focusing problems serve as mechanisms for advancing progress toward the resolution of larger systems problems, issue identification serves an analogous function but emphasizes the role of community voice and engagement throughout the process, thus realizing De Bord's (2007) aim of focusing on matters of public concern.

As Kretzmann and McKnight (1996), leading scholars and proponents of asset-based community development note,

> historic evidence indicates that significant community development takes place only when local community people are committed to investing themselves and their resources in the effort. This observation explains why communities are never built from the top down, or from the outside in. (p. 25)

In essence, if the objective is to address a complex problem, a well-defined focusing problem is necessary but insufficient; problems that require intervention at multiple levels, as is the case with most food systems problems, require active stakeholder engagement, which is strengthened when stakeholders have the opportunity to meaningfully speak into the process from the very beginning.

In addition to elevating the role of community voices, the community organizing and asset-based community development literatures also emphasize assets and opportunities over (or in addition to) presenting problems. Thus, while Geoghegan and Pangaro (2009) propose using the construct of the "focusing problem" to make complex problems more tractable, others (e.g. Kretzmann & McKnight, 1996; Ison, 2007) eschew the use of the "problem metaphor" arguing, respectively, that a problem-based orientation emphasizes deficits over assets and carries with it the tacit epistemological and methodological biases and power status of those who define the problem.

These principles have also been applied to organizational and systems change efforts through the use approaches such as dialogic organization development, which has a strong organizational orientation, and "the art of hosting," which has been used in both community and organizational contexts. Like asset-based community development, the art of hosting is "based on the assumption that people give their energy and lend their resources to what matters most to them – in work as in life" (Art of Hosting, n.d.; Green, Moore, O'Brien, n.d.).

Instead of using problem metaphors, some art of hosting practitioners employ the phrase "centering the work" to describe the dialogical process through which participants, especially those most affected by a particular challenge (e.g. household food insecurity) are invited to participate in the conceptualization and implementation of a change process to realize a specific desired outcome (e.g. decreases in self-reported household food insecurity). In this way, these approaches create space for people most affected by a problem to identify their priorities and significantly influence problem-solving processes to address it. Just as community food systems proved to be too broad of a topic to easily mobilize around, the Community Food Systems Team's inward-facing orientation distanced team leadership from issues and opportunities as they were presenting in communities, making it difficult to root its work in community-driven processes.

Flexible, Outcomes-Based Objectives May Help Align Work across Geographic Scales

Although mini grant recipients' response to Whole Measures CFS was generally lukewarm, several of the grant recipients provided positive feedback about the one-on-one program development and evaluation support that they received from the Whole Measures work group. As one grant recipient, a horticulture educator explained, "The step-by-step logic model work was great. I have a much better understanding of logic models and the capacity of logic models for understanding what you want to achieve and what you could actually achieve." She noted that she had previously attended logic model trainings hosted by UW Cooperative Extension but that it was not until she received project-based, one-on-one coaching that she fully grasped the function and potential of the tool. What she was grasping however, was not the value of the logic model per se, but rather the value of going through the process of articulating a program logic in which assumptions about the causality between program activities and impacts

are made explicit.

This type of feedback prompted members of the Whole Measures Work Group to consider how systems frameworks, such as Whole Measures CFS could be better tailored to educators' project-level planning and evaluation priorities by incorporating the framework into program development and evaluation coaching. As a PD&E specialist and member of the Whole Measures Work Group pondered, "What do people need to have in order to be able to understand and use something like [Whole Measures]? What are the skill sets that people need? I think we, in some ways, we are coming back to that."

The Whole Measures Work Group began to identify ways to meet educators where they are by providing tangible assistance with program development and evaluation through the use of a logic modeling approach in which the Whole Measures CFS value fields occupy the long-term outcomes field of a variant of the traditional logic model. This process ultimately led a PD&E specialist on the Whole Measures Work Group and Community and Regional Food Systems Project to develop a Whole Measures CFS variation of the flow chart logic model called the "Pathways of Change" for an online toolkit developed by the Community and Regional Food Systems Project and curated by the Community Food Systems Team. (Refer to Appendix C for the Whole Measures CFS Adaptation of the Pathways of Change template).

When using this adaptation of the logic model, project leaders are encouraged to describe in their own words what activities they plan to undertake and how they will lead to specific outcomes. Once they have articulated their program logic, i.e. their theory about the relationship between program/project content, action, and outcomes, they are asked to identify which Whole Measures CFS value fields best align with their project goals. This approach to Whole Measures CFS enables the team to support project planning that links local level projects to broader team-

wide and community food systems goals, while keeping the work grounded in the language and program logic of educators. This is important because despite the appeal of a common language, there are good reasons to honor variation in the terminology that educators use to describe their work at the county level. Not only does common language risk over-simplification in the context of interdisciplinary work as Bracken and Oughton (2006) and Ramadier (2004) note, but its insensitivity to context can also have negative consequences, particularly when terms have different connotations in different cultural and political settings. For example, at one Community Food Systems Team in-service meeting, a county educator from northwestern Wisconsin noted that using the term “climate change” in her county shuts down conversations. In contrast, terms like “extreme weather” are less politicized and easier for people to relate to their own experiences in light of major recent flooding events. As an ANRE educator, she comfortably uses the term climate change in meetings with Cooperative Extension colleagues, but when interacting with local farmers and other stakeholders she uses whatever terms are expedient in a given context.

Consequently, through a process of trial and error, the Whole Measures Work Group came to believe that it is not essential for educators to discuss their work in terms of the Whole Measures CFS value fields as long as there are touch points in the planning, evaluation, and reporting process in which local level work is situated in the broader team context. And while the examples provided here demonstrate how Whole Measures CFS can be used in conjunction with logic modeling to align fairly traditional, educator-driven project planning with team-wide goals, this approach is also compatible with issue-based programming. This is because as an outcomes-based rather than practice-based approach to Whole Measures CFS, there are no stipulations regarding the process through which projects and programs are developed and implemented as

long as there is a discernible relationship between project outcomes and one or more of the seven Whole Measures CFS value fields.

In sum, the Community Food Systems Team shifted from a top-down approach to Whole Measures CFS to a bottom-up approach in which the framework is incorporated into project-based capacity building, and educators speak into the framework in their own words through a process of clarifying their program logic. As a PD&E affiliated member of the Whole Measures Work Group summarized,

> Instead of [saying], "Oh here's the 30,000-foot vision," it's like we're helping people build the ladder to it. We're helping people develop their programs, implement their programs and evaluate their programs ... It's like we're going from the bottom up … [Before] we started at the top … and we got lost. Part of that was because there were no connections to the ground. Now, I think we're at the ground and we're going back up and we're trying to figure out: Is there a way that this all starts to come together?

For those engaged in the Community Food Systems Team's Whole Measures Work Group, Whole Measures CFS continues to serve as the framework that illustrates how a wide range of UW Cooperative Extension community food systems programs comes together. However, Whole Measures CFS is not the only interdisciplinary program framework being used at UW Cooperative Extension.

In mid 2012, following the informal introduction of Whole Measures CFS to the Community Food Systems Team and a handful of organizational leaders, the leadership of UW Cooperative Extension's Program Development and Evaluation Unit developed the "Educational Priorities." The Educational Priorities are an interdisciplinary framework intended to facilitate program design and evaluation based on staff members' contributions to long-term outcomes

(e.g. “Food safety, food security and health”) as opposed to the program areas (e.g. Agriculture and Natural Resources Extension) (University of Wisconsin – Extension, n.d.) (For a depiction of the Schematic, refer to Appendix D). However, to date, the Educational Priorities have primarily been used to organize reporting of organization-wide efforts. As such, since 2014, when staff members electronically submit retrospective work reports at the end of the calendar year, they are required to classify their work under one of the four major Educational Priorities: Resilient and productive environment, Stronger economies, Food safety, food security and health, and Thriving youth, families, organizations and communities (University of Wisconsin – Extension, n.d.).

When asked about her impression of the Educational Priorities, one team leader from CNRED responded, “I think it’s a good start. I think that it illustrates that the organization is headed in the same way that we are as a team.” Raising an eyebrow, she then remarked that the Educational Priorities reminded her of the Whole Measures CFS framework and that she would like the team to “get some credit for that.” She was not the only person who noted parallels between Whole Measures CFS and the Educational Priorities. In fact, some mini grant recipients even conflated the two frameworks; when asked if they could recall any of the Whole Measures CFS values fields, several of them rattled off a mix of terms and categories that drew from both Whole Measures and the Educational Priorities. Despite the substantive similarities between the Whole Measures CFS value fields and the UW Cooperative Extension Educational Priorities and the fact that they were rolled out at approximately the same time, no one that I interviewed mentioned any effort by program leaders to articulate the relationship between the two frameworks or to work with team leaders to make sense of the team’s work in relationship to the Educational Priorities.

Drawing on lessons learned by the Whole Measures Work Group, the same team leader went on to explain that what would be more helpful than an organization-wide interdisciplinary schematic is an "organizational vision for interdisciplinary work." She believes that such a vision would enable the team to more intentionally position its content work and interdisciplinary innovation in relation to explicit organizational priorities, and in so doing provide an organizational frame for the Community Food Systems Team that is analogous to role that Whole Measures CFS can serve for county level projects. She recalled that at one point there had been discussion of convening "people doing the work … and the people who are leading the organization to … create some shared language and ideas and vision" for interdisciplinarity at UW Cooperative Extension but "that just never happened."

In the spring of 2016, the Community Food Systems Team's Whole Measures Work Group launched an informal community food system evaluation community of practice with extension colleagues in Iowa and North Carolina after meeting at an eXtension conference. Early conversations with colleagues from this national network have supported the notion that a clearer relationship between organizational priorities and the Community Food Systems Team could provide valuable direction and legitimacy for the team. For example, following a major reorganization in 2013 and 2014, North Carolina Cooperative Extension developed a strategic vision that identifies food as one of its three core program areas along with agriculture and 4-H Youth Development. (NC Cooperative Extension, n.d., p. 4). Through the reorganization process, local food was recognized as a major cross-program area topic. Subsequently, organizational leadership has been very supportive of organization-wide efforts to advance research, programing, and outreach that support the development of local food systems (NC Cooperative Extension, n.d., p. 4; Lelekacs, 2016). North Carolina Extension's Local Foods

Flagship Program Manager, a member of the community food system evaluation group, has underscored how the identification of local food as an organizational priority has provided a major boost to the state extension system's Local Foods Flagship Program, which was launched in 2012 (Lelekacs, 2016). As of November 2016, it is unclear what role the Educational Priorities have served in shaping the University of Wisconsin - Extension's 2015-2016 nEXT Generation reorganization and whether the reorganization process will result in either topical or interdisciplinary priorities that strengthen the relationship between the Community Food Systems Team and the organization's vision.

Conclusion

This chapter places the lessons that emerged from UW Cooperative Extension's experimentation with interdisciplinary teams in dialogue with the literatures on organizational development and systems change. With regard to organizational innovation, this chapter highlights the importance of developing feedback systems to ensure that problems are identified quickly and promising strategies are appropriately supported. Lessons regarding program design emphasize the value of developing focused, multi-level strategies that center on community-identified concerns. This approach has the potential to help reconcile tensions between the Community Food Systems Team's content-based work and its contribution to interdisciplinary innovation by using interdisciplinary and multi-stakeholder collaboration as strategies for addressing complex issues rather than treating them as parallel aims.

This chapter also introduces the use of coaching and capacity-building, in this case in program development and evaluation, to help educators situate ad hoc, place-based programs in a multidimensional framework, Whole Measures CFS. This capacity building with regard to program design/strategy development could be expanded to replicate the multi-level design of

the Wisconsin Obesity Prevention Initiative by helping educators identify policy, systems, and environmental interventions that could complement their more localized projects and programs, which typically focus on knowledge and behavioral change at the individual level. However, because of the complexity of food systems problems and the myriad of direct and indirect ways in which public policy and agri-business interests shape them, there is no single issue that can serve as a silver bullet for food systems change. Instead, food systems change will likely require coordination across multiple, focused multi-level interventions some of which target agricultural policy and practice while others focus on processing and distribution infrastructure, nutrition and public health, waste management, and food justice. The lessons described in this chapter are substantiated by systems change strategies used in fields ranging from community organizing to public health and are supported by evaluation research on issue-based programming.

SECTION 3: TOWARD PURPOSIVE TRANSDISCIPLINARY PRACTICE

Chapter 7. Envisioning the Future of Interdisciplinary Practice

As noted in Chapter 1, despite the advancements in interdisciplinary research, theory, and pedagogy, questions about interdisciplinary practice remain, particularly in non-research settings or in liminal spaces such as university extension. The lessons from the UW Cooperative Extension Community Food Systems Team study in Chapter 6 begin to specify some of the necessary components of interdisciplinary practice in the context of community food systems planning. They point to the benefits of building systems interventions around well-defined issues and engaging community partners in issue selection and intervention design. The lessons also illuminate the importance of developing organizational learning mechanisms to promote individual and institutional capacity building in interdisciplinary practice, and they highlight the value of employing outcomes-based approaches that enable initiatives to align with organizational priorities while maximizing flexibility with regard to local implementation.

Further, the case of the Community Food Systems Team makes clear that organizational learning and change is part and parcel with larger food systems change efforts. In this chapter, I argue that transdisciplinarity may offer a more useful framework for guiding change-oriented, cross-disciplinary practice than interdisciplinarity. I then explore how Mitchell et al.'s (2015) transdisciplinary outcomes framework can help practitioners create conditions that are conducive to food systems change by advancing transdisciplinarity through three distinct but related realms of practice: systems interventions, knowledge translation and exchange, and mutual and transformative learning. Finally, I identify the implications of transdisciplinary practice for food systems planning at UW Cooperative Extension and beyond.

Purposive Transdisciplinarity: A Mechanism for Promoting Change

As previously established, interdisciplinarity represents an approach to research, teaching, and scholarship that "integrates content, data, methods, tools, concepts, and theories" from multiple disciplines or fields of specialized knowledge (Klein, 2010, p. 181). Klein differentiates between the two prevailing objectives of interdisciplinarity, wherein endogenous interdisciplinarity is primarily concerned with "advancing fundamental understanding" and the pursuit of a unity of knowledge; and exogenous interdisciplinarity has a more instrumental orientation. "Interdisciplinarity" continues to serve as an umbrella term for a range of cross-disciplinary activities and ambitions. However, much of the leading literature in the field, especially that with an exogenous orientation, now focuses on "transdisciplinarity" because of its emphasis on real world problems, flexible and evolving methodology, and collaboration with partners outside of academe (Russell, Wickson, & Carew, 2008, p. 461). As Russell, Wickson and Carew (2008) succinctly summarize, "transdisciplinarity has considerable potential to provide knowledge production that is problem-oriented, responsive and open to external knowledge producers, contextualized and systems-based, adaptable, consultative and socially robust" (Russell et al., 2008, p. 470).

Scholars such as Wesselink (2009) and Mitchell et al. (2015) take the discussion a step farther by arguing that due to the "problem-orientation" of many transdisciplinary endeavors, few are value-neutral. In fact, the very process of defining a problem, particularly in the social sciences, requires some value judgment. This is further amplified in fields such as policy and planning where research often has a prescriptive aim (Wesselink, 2006). For these reasons, Mitchell et al. (2015) use the term "purposive transdisciplinarity" to describe transdisciplinary research that embodies normative ambitions and "seeks to create change" (p. 87).

As such, Mitchell et al.'s notion of purposive transdisciplinarity is consistent with the transformational orientation of frameworks such as Whole Measures CFS whose aim is to help realize community food security by "creating holistic community food systems that have the ability to transform the way people connect with food, community and land" (Abi-Nader et al., 2009). It is also consistent with the broader field of food systems planning as evinced by pronouncements of professional associations, e.g. Principles of A Healthy, Sustainable Food System (Academy of Nutrition and Dietetics, American Nurses Association, American Planning Association, and American Public Health Association, 2010) and by the Community Food Systems Team's own Purpose, Vision, and Values statement (UW Cooperative Extension Community Food Systems Team, 2012). Such examples make clear that the impetus for this cross-disciplinary and extra-academic work lays in the transformative potential of transdisciplinary practice to help realize the vision of a more equitable, healthful, and environmentally sustainable food system.

Mitchell et al. argue that when transdisciplinary research is concerned with "improving" real world conditions in addition to contributing to knowledge production, researchers must become more explicit about the intended outcomes of their work. This emphasis on transdisciplinary outcomes marks a significant departure from much of the literature on inter- and transdisciplinarity, which has tended to "focus on the input and/or process of research rather than explicitly acknowledging the outputs or outcomes of the approach" (Mitchell et al., 2015, p. 86; MacMynowski, 2007). Mitchell et al.'s central aim in focusing greater attention on outcomes is predicated on the idea that "defining upfront the desired improvements has profound implications for how transdisciplinary research is conceived, designed, implemented and evaluated" (p. 86).

In particular, Mitchell et al. are interested in the potential for transdisciplinary research projects to contribute to systems change by deliberately intervening on three distinct but related outcome spaces, which together comprise the transdisciplinary outcomes framework: (1) situation, e.g. improvements in a particular situation or within an applied research context or field of inquiry; (2) knowledge, e.g. the creation and dissemination of knowledge that is meaningful and accessible to academics, participants, and the general public; and (3) learning, e.g. "mutual and transformational learning by researchers and research participants to increase the likelihood of persistent change" beyond the scope of a single project (p. 86).

Through this heuristic Mitchell et al. endeavor to increase the long-term and multi-dimensional impact of transdisciplinary research initiatives by (1) helping to clarify the desired outcomes that drive the research, and (2) by building the capacity of researchers and collaborators to do transformative transdisciplinary work. In light of the challenges the UW Cooperative Extension Community Food Systems Team faced in identifying and operationalizing its core functions and integrating instrumental and reflexive activities, I posit that the transdisciplinary outcomes framework could be instructive for practitioners who seek to incorporate inter- and transdisciplinarity into their practice. The framework's potential to guide action is consistent with the aims of transdisciplinary practice, i.e. to facilitate transdisciplinary collaboration and translate or apply transdisciplinary research, concepts, and tools to non-research settings. In addition, its emphasis on outcomes makes it especially compatible with the principles of program theory and presents an inroad for influencing program design and implementation. However, Mitchell et al.'s treatment of purposive transdisciplinarity is concerned with transdisciplinary research rather than its ramifications for translational or practice-based settings. In the remainder of this chapter, I adapt the transdisciplinary outcomes

framework for practitioner-based settings and explore what purposive transdisciplinary practice might look like in the programmatic contexts of Cooperative Extension, municipal food policy councils, and other community food systems initiatives.

Applying the Transdisciplinary Outcomes Framework to Extension Practice

In Cooperative Extension, a program is defined as "a planned, comprehensive set of educational change strategies/activities that are based on documented, high-priority needs and are designed to produce behavioral changes among targeted learners that ultimately lead to social, economic, and/or environmental impacts" (Guion, 2010, para 1). As "a main vehicle for change used by Extension," (Guion, 2010, para 7), programs, particularly in the conceptualization and design phase, represent a potential leverage point for transforming extension practice and developing greater clarity about the aim, role, and expression of transdisciplinarity within university extension.

Mitchell et al.'s transdisciplinary outcomes framework identifies three distinct but related "outcome spaces" (e.g. situation, knowledge, learning) that are in keeping with the aim of transdisciplinary practice in the UW Cooperative Extension context. I have adapted Mitchell et al.'s framework to a more translational and practice-based setting; in this adaptation the three outcome spaces are more specific: systems based interventions, knowledge translation and exchange, and mutual and transformative learning. In the following subsections, I discuss how UW Cooperative Extension programming is already exhibiting some of these ideals and identify ways that this framework can function as a conceptual tool to guide transdisciplinary practice.

Systems-based interventions. In Mitchell et al.'s framework, the central aim of the first outcome space is to encourage researchers to make "some discernible difference – a tangible and articulable improvement in the situation" in which their research is based (p. 90). Mitchell et al.

acknowledge that situational improvements can occur at various scales and in different parts of a system, ranging from changes in individual knowledge and behavior to shifts in policy. Indeed, systems change requires both types of changes. A direct translation of their framework to a programmatic context would imply a similar focus on a program's contribution to the resolution of a particular problem in a particular place (i.e. the situation). However, direct programming, unlike research projects, essentially has this responsibility. The very purpose of programs, as described above, is to respond to "high-priority needs."

As such, I argue that in a practice-based context, the greatest potential of this dimension of the transdisciplinary outcomes framework is to help practitioners conceptualize the nature of programmatic impact relative to larger systems change goals. Cooperative Extension programs are typically defined as "comprehensive set[s] of educational change strategies/activities that. . . . ultimately lead to social, economic, and/or environmental impacts" (Guion, 2010, para 1). However, in practice, the types of activities that are often described as programs are hardly comprehensive, and their contributions to social, economic, and environmental improvement, while not insignificant, are overstated. This is true even in instances of programming that are otherwise exemplary.

Take, for instance, the following example of a local program to promote food-based entrepreneurship. The program, which was led by a CNRED educator, consisted of a bilingual (English and Spanish) three-day training that included workshops on topics such as food safety and financing, individualized consultations with business experts, and facilitated networking. The program was developed in response to requests for assistance with launching small food processing and mobile vending businesses and was co-hosted by the State Department of Agriculture, Trade, and Consumer Protection. In so many regards, this program models best

practices vis-à-vis responsiveness to community priorities, collaboration with intra- and inter-organizational partners, and inclusion of historically marginalized audiences.

The problem lies in this program's stand-alone nature, which compromises its overall contribution to long-term changes in conditions as represented by Whole Measures CFS value fields such as Thriving Local Economies. In Cooperative Extension parlance, this is an example of a "Little P" program, that is, an event rather than a larger issue- or topic-based "Big P" program as defined above, e.g. Urban Agricultural Production, Pest Management, and Food Safety (Kirby Williams, 2015). Little P programs play an important role in advancing Big P programs by facilitating changes in knowledge and behavior. However, absent the umbrella of a Big P program and program theory that articulates the relationship between the two, educators risk conducting numerous Little P programs without ever articulating how (or evaluating whether) the cumulative work contributes to substantive changes in conditions.

Evaluation experts Funnell and Rogers (2011) note that program theory is strengthened when those who develop and implement programs can (1) clearly articulate a theory of action—the relationship between activities and expected impacts, and (2) situate those activities in a research-based theory of change, i.e. larger "theories about how change occurs for individuals, groups, organizations, and communities" (p. 319). As they explain:

> A program theory ideally has two components: a theory of change and a theory of action. The theory of change is about the essential processes or drivers by which change comes about for individuals, groups, or communities—for example, psychological processes, social processes, physical processes, and economic processes. . . . The theory of action explains how programs or other interventions are constructed to activate these theories of change. (xix)

Due to their broader scope, Big P programs are better positioned to help actualize a theory of change because they consist of multiple interventions rather than one-off events. This enables individual events, such the food entrepreneurship training, to function as a strategic part of a larger program thus increasing the likelihood that it helps move the needle on an issue such as food-based, equitable micro-enterprise development.

The example of the Wisconsin Obesity Prevention Initiative's strategy menu described in Chapter 6 represents a multi-level variation of this approach and demonstrates how a theory of change (e.g. the Social Ecological Model) can be used to inform a programmatic theory of action, which in this case might be summarized as "through the strategy menu, the Wisconsin Obesity Prevention Initiative intervenes on multiple policy, systems, and environmental factors that influence obesity, thereby creating conditions conducive to obesity prevention." Similarly, a county educator could supplement the food entrepreneurship workshop described with interventions that target other factors influencing food-based, micro-enterprise development, such as zoning, licensing, and lending practices. In fact, in a similar effort, the staff of the Los Angeles Food Policy Council integrated business owner trainings with local policy work to simultaneously build entrepreneur knowledge and capacity while reducing structural barriers to food-based micro-enterprises, such as restrictive mobile-vending regulations.

In sum, I contend that transdisciplinary practice must not only contribute to situational impact but that transdisciplinary practitioners should be able to articulate how a program's impact relates to and/or advances systems change goals. This does not mean that every program or project must produce structural changes; rather the aim is for practitioners to understand and be able to articulate a theory of action that situates a specific intervention within larger systems change goals. Identifying "systems-based interventions" as a target outcome of transdisciplinary

practice helps center the role of program theory and multi-level changes goals in program design and implementation.

Knowledge translation and exchange. According to Mitchell et al., "for transdisciplinary research, the flows are as important as the stocks" (p. 92). This is perhaps even truer for transdisciplinary extension because Extension is situated at the nexus of research and practice; knowledge flow is its stock and trade. As such, knowledge translation and exchange, the second outcome space, enhances situational impact by tightening feedback loops between basic, applied, and developmental research and extension programming. The aim of this outcome is not simply to develop research-based interventions or to publicize program impact but to put research and programming in dialogue with one another and the intended beneficiaries of the work. As Mitchell et al. state, "in this framework, [knowledge] flow relates to how knowledge moves: between disciplines; between theory and practice; between academic and professional practice, from within to outside of the project" (p. 92). This echoes renowned organizational behavior scholar Margaret Wheatley's observation: "To create better health in a living system, connect it to more of itself. When a system is failing, or performing poorly, the solution will be discovered within the system if more and better connections are created" (Wheatley & Kellner-Rogers, 1998, para 37). If the aim is food systems change and not just scholarship or programming, then information feedback loops are necessary to ensure that scholarship and programing are contributing to desired ends.

Accordingly, in the extension context, the aim of this second outcome space is two-fold. The first aim is to ensure that a program is founded on a solid data, whether primary or secondary. The second aim is to ensure that lessons from a program are communicated both to other practitioners and community groups through case stories or tools, as well as with scholars

to inform future research and to help refine theory. In this way, programming has the multi-function of translating research to practice, effecting change in communities, and serving as a ground-truthing mechanism. Accordingly, as this outcome domain suggests, lessons learned from practice ought to be shared horizontally with other practitioners and community efforts and vertically with academe.

In addition to serving a feedback function, knowledge translation and exchange can also be facilitated through cross-disciplinary learning opportunities. Several interviewees involved with the Community Food Systems Team discussed the value of professional development opportunities that expose practitioners to the issues, methods, and key concepts of other professional fields. For example, in an interview, an ANRE-affiliated specialist on the Community and Regional Food Systems Project suggested that the Community Food Systems Team develop a "mini course in the food system components." His involvement in the Community and Regional Food Systems Project had opened his eyes to food systems issues that he had not previously encountered in two decades of agricultural market development work. His involvement in the interdisciplinary project also impressed upon him the value of having working knowledge of a range of disciplines in order to be an effective member of an interdisciplinary team. Reflecting on how members of the Community and Regional Food Systems Project team had learned from one another, he remarked,

> Most people don't have our level of [general knowledge]—we've become generalists with some depth. Generalists with no depth isn't much good. But generalists who have some decent understanding below the surface of what's outside their specialty is really valuable.

As a result, he thought that UW Cooperative Extension staff members could benefit from a short course or certificate program on the components of the food system designed to foster multi-disciplinary knowledge to help community food systems practitioners develop a systemic understanding of the food system. He proposed such topics as "what makes plants thrive," small business development 101, nutrition 101, and racism in the food system. By engaging practitioners from different food systems backgrounds in cross-disciplinary learning, this type of training could also advance the aim of the third transdisciplinary outcome space: mutual and transformative learning.

Mutual and transformative learning. Mitchell et al. note that purposive transdisciplinarity "requires … a deep and reflexive appreciation of how change happens and the roles of researchers and participants" (p. 91). Because the types of systems change necessary to promote sustainability exceed the duration of a single project, they advise transdisciplinary project leaders to devise ways to extend their impact beyond the project timeframe. Specifically, they propose that project leaders deliberately foster learning that enables researchers and collaborators to "come away with new perspectives, new orientations, new strategies, and new tools – seeing and doing things differently as a result of their experience of transdisciplinary research" (p. 92). They identify several examples of activities that can promote mutual and transformative learning in the transdisciplinary research project context. Two approaches that appear to be compatible with both the instrumental and reflexive aims (e.g. Romm, 1998) of transdisciplinary practice are mutual learning and transformative learning.

Mitchell et al. assert, "mutual learning is significant because it requires the development of an appreciative stance towards difference. . . . [and] builds the kind of systemic, reflexive capacity in society that is necessary to respond to societal challenges like climate change" (p.

93). However, the aim of mutual learning is as instrumental as it is reflexive. Mutual learning between researchers and practitioners has helped address the "implementation problem" (Scholz, 2000) or the "applicability gap" (Lawrence, 2010) by ensuring that people who are best positioned to act on information derived from research (e.g. farmers, community members) have the chance to identify barriers and opportunities regarding the translation of research to practice. Scholz (2000) notes that integrating different perspectives and types of knowledge (e.g. technical, theoretical, experiential) from the outset of a transdisciplinary study has led to more realistic problem framing and subsequent problem-solving.

Mutual learning can occur in intra- as well as inter- organizational settings through project-based reflection-in-action. It can also come about through more structured and reflexive activities such as the interdisciplinary learning community in described throughout Section 2. Organizational (and cross-organizational) Learning Mechanisms, such as those described in Chapter 6, are another example of how mutual learning can be intentionally structured and employed to ensure that multiple perspectives are used to inform and improve program design and implementation. Despite its multiple forms, the essential aim of mutual learning is to enhance transdisciplinary practice through reflection and integration of different types knowledge.

Conversely, the aim of transformative learning is to trigger epistemological shifts in individuals that enable them to transcend previous learning (and disciplinary boundaries) so as to develop a more nuanced and complete understanding of an issue or situation. The transformative learning literature makes the critical distinction between learning forms that focus on knowledge and skill acquisition and those concerned with meaning-making. For instance, Taylor (1998) divides learning into two categories, instrumental learning, which is "task-oriented problem

solving" and "communicative learning," which is concerned with "comprehending meaning" (Taylor, p. 5). Kegan (2000) elaborates on this distinction in his discussion of the distinguishing features of informational and transformative learning. According to Kegan, informational learning aim

> at increasing our fund of knowledge, at increasing our repertoire of skills, at extending already established cognitive capacities into new terrain serve the absolutely crucial purpose of deepening the resources available to an existing frame of reference. Such learning is literally in-form-ative because it seeks to bring valuable new contents into the existing form of our way of knowing. (p. 49)

In other words, informational learning is additive; it builds on our existing knowledge and mental models. In contrast, "genuinely transformational learning is always to some extent an epistemological change rather than merely a change in behavioral repertoire or an increase in the quantity or fund of knowledge" (West Burns, 2010). As such, transformative learning is not additive in the same way that informational learning is—it does not simply replace or augment an individual's knowledge or skills, it recontextualizes them by altering an individual's meaning-making process, and by extension, their perspective. Consequently, transformative learning challenges some of the fundamental assumptions that underlie the traditional extension program model, which is largely based on expert-directed instrumental learning.

In recent years, the *Journal of Extension* has featured several articles advocating for the incorporation of transformative learning into extension programming. As a Program Development Specialist at Virginia Tech, Franz (2007) advocated for the incorporation of transformative learning methods into Cooperative "Extension systems work towards organizational transformation to create more participatory and democratic learning" (Franz,

2007, para 1). Specifically, Franz emphasizes the importance of creating opportunities for critical reflection in extension programming through "open discussion and questioning, reinforcing, and justifying personal assumptions" (Franz et al., 2009, para 5). To achieve this pedagogical shift, she asserts that educators will need to devote greater attention to their role in "facilitating how to learn" and "not just what to learn" (Franz, 2007). In other words, transcending disciplinary norms will require creating educational opportunities that promote and model nontraditional modes of learning for both Cooperative Extension staff members and the communities they serve. Franz' argument dovetails with recent observations made by other extension scholars about the evolving role of extension educators in community and regional food systems planning. In a *Journal of Extension* article titled "Educators or Facilitators? Clarifying Extension's Role in the Emerging Local Food Systems Movement," Raison (2010) concludes that major recent changes in the availability and dissemination of information will likely precipitate a shift in Cooperative Extension programming that privileges capacity-building, facilitation, and assistance with data interpretation over more traditional educational program delivery models.

Raison's notion of a more facilitation-based program model is compatible with techniques used to promote context-based and experiential learning, which are cornerstones of transformative education. The central idea behind experiential learning in the context of transformative education is that new experiences can challenge our beliefs and expose us to new ways of thinking and seeing the world. Moreover, the resulting perspectival shifts are often much more motivational sources of behavioral change than informational learning alone. By creating opportunities for experiential learning and intentionally pairing them with discussion and

reflection, educators can help build reflexive practice and transformative learning into Extension programs (Franz, 2007).

There were several examples from the Whole Measures Mini Grant Program in which exposure to new experiences through garden projects appeared to have a profound impact on participants (Day Farnsworth, Pratsch & Lee, forthcoming). For instance, in Eau Claire, what began as a modest effort to create a new community garden became highly controversial when several City Council members learned of the initiative and thought it would be a nuisance and an eyesore. To save the garden, members of the volunteer community garden committee, under the leadership of a UW Cooperative Extension-based AmeriCorps VISTA volunteer decided to testify on behalf of the proposed garden before the Parks Commission and the City Council.

This was the first time that most of these individuals had participated in local government outside of the electoral process, and it proved to be civically empowering. As one committee member explained,

> I'd never been into the city building except to vote. I had never been to a [city council] meeting. . . . then I got to talk in front of [City Council] which was horrifying … but I did it. It was like, "Wow, I can actually do something that I wouldn't have even considered!"

The group was ultimately successful in persuading the City Council to allow them to move forward with the community garden. In this way, the experience changed her sense of self-efficacy in relationship to the local policy making process.

Although this experience was not pre-orchestrated by a county educator as a transformative learning experience, it demonstrates how participation in activities as seemingly straightforward as creating a community garden can lead to opportunities for transformative learning and civic engagement. With the appropriate skills, educators could parlay such activities

into more intentional transformative learning experiences. However, because this approach to programming is a departure from the dominant Extension education model, as Franz (2007) concedes, “transformation of Extension workers may need to precede or accompany change in program participants” (para 1).

In summary, the third transdisciplinary outcome space—mutual and transformative learning—serves at least two functions in purposive transdisciplinary practice: (1) to promote collective knowledge construction that can inform program planning, implementation, and evaluation activities, and (2) to promote multiple forms of learning, especially learning that helps individuals negotiate their own “meanings rather than to simply accept those of others. . . . by becoming more aware and critically reflective of assumptions, more able to freely and fully participate in discourse, and to overcome constraints to taking reflective action” (Mezirow, 1996, p. 164). In the Cooperative Extension context, this will likely require a reconceptualization of the role of educators in which greater emphasis is given to facilitation and capacity-building, and instruction is reserved for Little P programming with expressly instrumental learning objectives.

Implications for Inter- and Transdisciplinary Practice at UW Cooperative Extension

As illustrated above, UW Cooperative Extension is already serving some of the functions described in Mitchell et al.’s transdisciplinary outcomes framework. The organization responds to community priorities. It leverages university research and resources to inform program design and implementation. And, as evidenced by emergent efforts such as the Community Food Systems Team and the interdisciplinary learning community, it has begun to incentivize cross-disciplinary collaboration and create spaces for mutual learning and reflexive practice, at least within the organization. The transdisciplinary outcomes framework adds focus and clarity to these functions and points to additional ways that Extension administrators, staff members, and

intra-organizational entities, such as the UW Cooperative Extension Community Food Systems Team, can augment existing efforts.

The Future of the Community Food Systems Team. In the summer of 2016, the Community Food Systems Team's administrative committee initiated a strategic planning process with support from its Whole Measures work group. During this process, team leaders revisited the primary functions that the team served over the previous five years and clustered them into the following five categories: fostering a network of community food systems practitioners; building capacity of educators to develop, implement and evaluate community food systems programs; catalyzing and supporting community food systems programs and projects; facilitating and disseminating learning and scholarship on community food systems and interdisciplinary work; and creating and supporting professional development opportunities in community food systems work.

Table 1 demonstrates how these core team functions map onto the three transdisciplinary outcome spaces. As such, it indicates where there may be opportunities to incorporate activities associated with the transdisciplinary outcome framework into the team's core functions. For example, the team could help promote systems-based interventions by incentivizing and supporting the strategic design of new projects and programs. Team leaders are planning to replace the Whole Measures Mini Grant Program with a Special Projects Program in which fewer projects will receive greater technical and financial assistance to advance issue-based community food systems work. Systems-based intervention design can be incorporated into the program development and evaluation support that will be provided to special project leaders. In this regard, this outcome space simply augments the ongoing work of the Whole Measures work group. In this way, the transdisciplinary outcomes framework can help the team build on existing

tools, such as the adaptation of Whole Measures CFS, which was developed to help educators link local level projects to larger, long-term team objectives, e.g. the Whole Measures values fields. Specifically, the transdisciplinary outcomes framework complements Whole Measures CFS, whose value fields highlight desired end states (e.g. healthy people), by identifying three types of practices necessary to facilitate the structural, relational, and epistemological changes required to actualize such desired end states.

As indicated in Table 1, the Community Food Systems Team's contribution to Knowledge Translation and Exchange has focused on instrumental information dissemination through professional development and topical and technical information exchange. Moreover, the team has tended to view specialists and educators as its primary audience rather than focusing on the needs and interests of community and organizational partners. By focusing greater attention on how the team can expand its reach and tighten feedback loops between community partners, practitioners, and researchers, the team could serve a more strategic role in aligning transdisciplinary research and practice and ensuring its relevance to people on the ground experiencing and addressing problems first hand. In addition, the team could foster better information flow

Table 1. Alignment of Transdisciplinary Outcome Spaces with Community Food Systems Team Functions

Transdisciplinary Outcome Space	**CFS Team Functions**
Systems-based interventions	• Catalyzing and supporting community food systems programs and projects • Building capacity of educators to develop, implement and evaluate community food systems programs
Knowledge translation and exchange	• Facilitating and disseminating learning and scholarship on community food systems and interdisciplinary work • Creating and supporting professional development opportunities in community food systems work
Mutual and transformative learning	• Fostering a network of community food systems practitioners • Creating and supporting professional development opportunities in community food systems work

between organizational and team leadership by serving as or by developing an Organizational Learning Mechanism focused on institutionalizing transdisciplinary innovation and best practices (e.g. Lipshitz et al. as discussed in Chapter 6).

With regard to Mutual and Transformative Learning, the team's major contributions to date have focused on (1) co-developing and participating in the now defunct interdisciplinary learning community, and (2) fostering cross-program area interaction and network development. As noted in Chapter 6, the interdisciplinary learning community could also be reconstituted as an "internal" and "online" Organizational Learning Mechanism, such as community of practice, to foster peer-to-peer problem solving and reflection on inter- or transdisciplinary practice (Lipshitz et al., 2007).

In addition, the Community Food Systems Team could build on the principles of transformative learning by providing structured experiential learning opportunities such as field days, tours of processing facilities or food pantries, visits to other state extension community food systems initiatives, or by creating opportunities for UW Cooperative Extension staff and partners to participate in the forthcoming Professional Certification Program in Food Systems Development, a project of the newly launched North American Food Systems Network, a transnational collaborative initiated by the Center for Transformative Action, a nonprofit-affiliate of Cornell University (North American Food Systems Network, 2016). The Community Food Systems Team could also help orchestrate professional development opportunities for educators to build their capacity to foster transformative learning through their programing.

Finally, the transdisciplinary outcomes framework can enhance the Community Food Systems Team's network development efforts. As highlighted in the discussion of the team's indirect outcomes in Chapter 5, instrumental and bridge-building interdisciplinarity activities

contributed more to tangible interdisciplinary outputs (e.g. the Master Gardener's curriculum update and the food system educational framework) than did the team's more reflexive and abstract interdisciplinary activities. As such, the team could explore ways to better incentivize and document the types of mutual learning that contribute to and result from more focused and action-oriented experimentation in inter- and transdisciplinary practice. The new Special Projects Program represents one avenue for incentivizing, supporting and documenting this work. In addition, the Community Food Systems Team with support from PD&E may find it useful to explore Ripple Effect Mapping to help track and evaluate the indirect impacts of its work. First developed between 2007 and 2009, Ripple Effect Mapping "uses elements of Appreciative Inquiry, mind mapping, and qualitative data analysis to reflect upon and visually map the intended and unintended changes produced by a complex program or collaboration" to document impact (Social Innovation Lab, 2016).

Applying the Transdisciplinary Outcomes Framework to Food Policy Councils

In this section, I draw on another study I conducted in conjunction with the Community and Regional Food Systems Project that examined the connective and facilitative functions of municipal food policy councils. As with the UW Cooperative Extension Community Food Systems Team, it is not uncommon for interdisciplinary and multi-stakeholder community food systems initiatives, such as food policy councils, to have difficulty defining their function and niche in the already crowded organizational landscape of community food systems. In the following subsections, I highlight ways in which food policy councils are already providing functions that are in line with the transdisciplinary outcomes framework, and I identify ways in which they could augment these efforts.

Systems-based Interventions. As food policy council expert Mark Winne (2008) notes, most food policy councils effect change through projects, programs, and policy work in the communities in which they are based. Consequently, each time a food policy council pursues or supports one of these types of interventions, it has the opportunity to consider (1) how the intervention relates to existing activities, (2) how it relates to broader, long-term council goals, and (3) what other types of interventions may complement it from a systems change perspective. By asking these questions, food policy councils can help answer Holt-Gimenez' (2011) call for more cohesive and systemic interventions by turning food systems planning into a "force for transformative change rather than just a passing fad, a basket of weak reforms, or a collection of isolated food and agriculture projects" (p. 317).

Moreover, there is evidence to suggest that some food policy councils are already engaged project planning and vetting activities. Consequently, there is a precedent for this type of work that could be enhanced. For instance, the Madison Healthy Retail Access Program offers an example of how food policy council members and staff have directly supported city grant recipients in refining project implementation and evaluation plans. Though the program has not specifically employed the methods described above, its use of coaching to strengthen project design and evaluation could be expanded upon. Following is a short synopsis of the program as it presently operates.

The Madison Healthy Retail Access Program was launched in 2016 by the Mayor's Office in conjunction with the Healthy Retail Access Work Group of the Madison Food Policy Council (of which I am a member). The aim of the program is to "make funds available for healthy retail projects that aim to improve access to affordable, healthy, and culturally appropriate retail within underserved areas" (City of Madison, 2016). To encourage small

independently operated grocery stores to participate, the Madison Food Policy Director, a staff member from the Office of Business Resources, and work group members meet with applicants following an initial screening to discuss and strengthen their proposals. This open proposal review process not only creates full transparency, it also creates opportunities for applicants to respond to work group concerns, strengthen their proposals, and bring them into better alignment with the mission of the program. Although the Madison Food Policy Council does not have a well-defined set of priorities, the same approach could be used to align projects funded by the City to food policy council priority areas.

A similar process could be used to help improve project design by supporting project leaders through the process of articulating their program logic and nesting it in a larger, ideally shared, theory of change. This does not have to be tedious, jargon-filled, and formulaic. When skillful evaluators provide coaching on project and program design, terminology such as "program logic" and "theory of change" take a back seat to open-ended questions that help participants lay out their causal assumptions about the relationship between proposed action (e.g. policy changes), intended outcomes, and their contribution to larger, long-term goals, such as the Whole Measures CFS value fields "healthy people" and "sustainable ecosystems."

Some of my colleagues at UW Cooperative Extension PD&E will guide entire program and project planning sessions by repeating the question "So then what?" This prompts participants to spell out causal assumptions that underlie their plan of action and desired intermediate and long-term outcomes. The Pathways of Change Tool in Appendix C is a template that can be used to guide this approach to project planning. A similar process could use the social ecological model as a project planning tool to help guide conversations with project leaders about how their work relates to other spheres of intervention (e.g. individual, household,

community, etc.) This could help identify gaps in strategy as well as complementary interventions.

Knowledge translation and exchange. As Mitchell et al. note, the aim of knowledge translation and exchange is to ensure that information is not just accumulated but that it is also distributed. The diverse expertise of interdisciplinary and multi-stakeholder initiatives, such as food policy councils, can contribute to generative knowledge exchange by creating opportunities to vet and strengthen projects that benefit from a wider range of knowledge than is represented at on a given project team or community-based organization.

For example, the Los Angeles Food Policy Council has a mechanism through which leaders of community-based efforts incubated by the council's citizen-led work groups can present their project and policy ideas to the appointed members of the food policy council. The aim of this exercise is to strengthen projects and policy proposals before they are formally advanced as policy proposals or programs of the council. (In some instances, the council provides feedback but does not officially endorse or advance an effort.)

My interviews with council and work group members suggested that these opportunities were constructive for project leaders who would not otherwise have access to such a wide range of expertise. Following is the reflection of a street food vending advocate after making a presentation to the council regarding proposed policy changes to promote mobile food vending:

> They were totally in favor of it. They were really excited about it. And then they were like, "Maybe you should think about this," or "You should check out this report," or "If you need help in this part of the city, let me know." And so that was super valuable and actually got the work group really excited, like, "Wow, we have all of these other folks really supporting us, we can keep moving forward."

An appointed member of the food policy council with a background in public health also had a favorable impression of this use of the council. As he explained, when the street food vending advocates presented to the council,

> I raised a concern about food safety—that a lot of this is unregulated. The environmental health folks are very rigid on this stuff. They come at this from a regulatory perspective. But the director of Environmental Health at the County Public Health Department is very open-minded and I said, "I think it would be good if you met with him. . . . because I don't want to see the Health Department be an impediment. I mean, we certainly have a responsibility to ensure food safety, but I think there are ways of doing that while at the same time being supportive of the Urban Agriculture Movement." So they did meet, and I was told it was a very good meeting.

This example demonstrates how interdisciplinary and multi-stakeholder bodies can leverage the expertise of their members to help project leaders anticipate potential policy and regulatory barriers and leverage their professional networks to identify partners and strategies to help overcome them. In this way, food policy councils can tighten information feedback loops within community and regional food systems, thereby strengthening individual projects by helping project leaders better negotiate systems constraints, such as regulatory frameworks and political processes. In addition, food policy councils can improve information flow between food policy council members and city staff and departments through presentations, tours, and issue-based problem-solving. These types of activities begin to encompass Mitchell et al.'s third and final outcome space, mutual and transformative learning.

Mutual and transformative learning. My 2012 study of food policy councils suggests that much of the mutual learning from food policy councils is a result of issue or policy-based

collaborations. In this regard, they mimicked the Community Food Systems Team's indirect contributions to interdisciplinary learning and collaboration. In reflecting on how much she learned through her involvement with the food policy council, one interviewee noted that when she first joined, "I didn't even know what I didn't know."

As with members of the UW Cooperative Extension Community Food Systems Team, members of food policy councils often bring knowledge or passion about a particular issue, such as urban agriculture or public health, but relatively few members have previous in-depth knowledge of multiple food system issues. Further, few of the individuals interviewed in this study had previously served on committees with such a wide a range of goals and expertise. While this breadth of scope presents challenges for communication and agenda setting, it also fosters invaluable intangibles such as systems knowledge and partnerships between unlikely bedfellows.

For example, one council member who served as food service director for a large urban school district believed that school food often got a bad rap from people who did not fully understand the scale, price points, and regulations that structured school districts' sourcing and meal planning. She joined the food policy council partially out of a desire to educate others about the efforts the school district had made to trace and document its locally sourced products in spite of the scale and cost constraints it faced. As she explained,

> I think sometimes people are critical of school meal programs. So the food policy council provided me with a venue to educate people that might be local farmers or local producers—to give them an idea of the scope of my operation. But I think the learning went both ways, because it was also an opportunity to talk about what their capacity was,

> what our needs were, and to try and find some points of intersection or points that we could leverage.

While she joined the food policy council to clarify misperceptions about school food service, she encountered new perspectives and opportunities for cross-sector problem solving.

Food policy councils also foster knowledge exchange and partnerships by attracting members with complementary skill sets, for example technical assistance and lobbying. For instance, another interviewee noted that her professional work prevented her from directly engaging in lobbying. She found synergy with work group members who were able to "roll up their sleeves and visit with city departments and city council members." As she explained,

> I see where the needs are with urban agriculture, and I will develop educational materials and resources that support [the work group's] efforts. For example. . . . how to remediate urban soils and what can be done around that. And it was clear that that's more of an educational role—teaching people about best practices and so forth. And I think it was going through that process of learning about what the city currently did in regards to soil testing for example, and studying up on what was happening in other cities that really helped me see "Oh, this is an area where I could really focus some time because there's no one else who can do it."

In this way, she brought technical expertise through her knowledge of soil science and testing, while other members of the work group provided political voice to promote the expansion of urban agriculture.

Another interviewee reflected on how much he has learned about other facets of the food system through his involvement with the food policy council. He even pointed to ways in which

his broadened understanding of the food system has potential implications for how public health interventions are conceptualized and approached:

> Our participation in the council has helped us expand the reach of our work . . . through introducing us to a broader network of potential allies. I have a medical background—a pretty traditional health and public health background. And in retrospect, I was remarkably uninformed about the food system and about the origin of food from farm to plate. . . . Through the food policy council, I've met a whole new group of professionals with different expertise, and it has helped us. I think we have a better understanding of what the issues are around getting healthy, affordable food to people. . . . So now I think we're much better informed when we're thinking about interventions. We need that broader understanding to engage these various players like small market owners, farmers markets, even schools.

The above examples illustrate the ways in which perspectives are changed through cross-disciplinary and multi-stakeholder work. Recognizing their potential to foster greater systems knowledge and new partnerships, food policy councils can choose not to leave this up to chance. Deliberate mutual and transformative learning activities create opportunities that are likely to disrupt individuals' ways of thinking and knowing. As the above examples demonstrate, this can be as simple as requiring that members participate in issue-based work groups with partners with different viewpoints, skillsets, and disciplinary backgrounds.

Food policy councils, such as the Milwaukee Food Council, have also promoted transformative learning by hosting workshops the illuminate the structural inequities and historical trauma associated with the U.S. food system. This systemic and historical perspective can powerfully reframe individuals' understanding of food issues and help surface and elucidate

the relationship between economic justice and household food purchasing power. Similarly, staff members of the UW Cooperative Extension Community Food Systems Team and the Community and Regional Food Systems Project co-organized a day-long dismantling racism training for participants at a national eXtension conference on community, local, and regional food systems in 2014 and have led efforts to provide similar training for colleagues in Wisconsin. For some of us on university campuses, these types of trainings have become quite familiar. However, depending on the composition of a food policy council, these are experiences that many council members might not otherwise be exposed to.

Implications for Inter- and Transdisciplinary Practice in Food Systems Planning

While a growing body of research and scholarship has examined the operationalization of inter- and transdisciplinarity in research contexts (MacMynowski, 2007; Stokols, Hall, Taylor, & Moser, 2008; Jahn et al., 2012), the role and application of inter- and transdisciplinarity in practice-based settings remains underspecified, and questions about interdisciplinary praxis persist. For example: What are the programmatic and policy implications of interdisciplinarity? And how can interdisciplinary and multi-stakeholder initiatives move from convening people with diverse knowledge to strategically advancing food systems change?

This chapter has attempted to answer these questions by applying an adaptation of Mitchell et al.'s transdisciplinary outcomes framework to translational and practice-based settings. University extension provides a fitting context for an initial foray into the study of inter- and transdisciplinary practice precisely because it is situated at the intersection of research and practice. Meanwhile, food policy councils, as one of the most visible forms of interdisciplinary and multi-stakeholder food systems planning, offer an insightful context for considering the broader ramifications of transdisciplinary practice for the field of food systems planning.

The adaptation of Mitchell et al.'s transdisciplinary outcomes framework presented here helps frame three key functions that transdisciplinary practice can provide to help advance food systems change: systems-based interventions, knowledge translation and exchange, and mutual and transformative learning. Together, the three components of this heuristic invoke the systems change literature by reminding us that food systems change is not just a question of developing innovative new approaches to urban food production or increasing the availability of fresh produce in disinvested communities, as important as these endeavors are. Food systems change also requires attention to how interventions are designed, how they interact with each other, and the ways in which they transform the hearts and minds of the individuals who they engage. I have elaborated on each outcome space in relationship to both cooperation extension and food policy councils to provide examples of ways these interdisciplinary organizational contexts are already demonstrating some of these functions. Drawing on the framework, I also identify ways in which present efforts could be expanded and enhanced.

Conclusion

In this chapter, I advance the notion of purposive transdisciplinary practice. I then adapt Mitchell et al.'s transdisciplinary outcomes framework to bring focus to the invariably messy work of transdisciplinary food systems planning by highlighting three distinct functions of purposive transdisciplinary practice: systems-based interventions, knowledge translation and exchange, and mutual and transformative learning. Together, they offer a coherent but flexible heuristic for conceptualizing and advancing purposive transdisciplinarity in translational and practice-based settings by elaborating different ways in which reflexive and instrumental transdisciplinary activities (and the interplay between them) can advance food systems change. Finally, I apply the framework to Cooperative Extension program design, the UW Cooperative

Extension Community Food Systems Team, and municipal food policy councils to demonstrate how the framework can be used to guide transdisciplinary practice in multiple food systems planning contexts.

CONCLUSION

Interdisciplinary and multi-stakeholder problem-solving have emerged as popular research and planning approaches for addressing complex contemporary environmental, social, and economic problems, such as those characteristic of the food system. While the mechanics of inter- and transdisciplinary collaboration have been examined in research settings (e.g. Stokols, 2008) they have remained largely under-specified in translational and practice-based settings. Further, because the application of inter- and transdisciplinarity in practice-based settings implies outcomes other than knowledge creation (e.g. changes in behavior, environment, policy), it raises unique questions about the particular ways in which cross-disciplinary efforts contribute to such changes, and through them, to food systems change more broadly. As Hinrichs (2010) notes "Our success in conceptualizing and creating more sustainable food systems will ... depend on new experimentation and continued reflection about the place of interdisciplinarity in this important work" (p. 320).

Toward this end, this study examines the issues that are in play when practitioners work across disciplinary boundaries to promote food systems change. Specifically, it considers this question in relationship to the UW Cooperative Extension Community Food Systems Team. Like local governments and nonprofits, statewide cooperative extension systems are experimenting with new organizational and programmatic models to integrate diverse knowledge, strategies, and actors in order to address contemporary food systems challenges. Because Cooperative Extension is located at the nexus of research, education, and outreach, it provides a rich case study context for examining questions such as: What theory underlies an interdisciplinary and multi-stakeholder approach to food systems planning? And what are the mechanics of interdisciplinary collaboration that enable multi-stakeholder bodies to effect food systems

change? By interweaving theory and analysis into the story of the UW Cooperative Extension Community Food Systems Team, I have attempted to address such questions and thereby add specificity to the role of inter- and transdisciplinary practice in food systems planning. The central findings of this study, organized by research sub-questions, are summarized below.

Impetus for the UW Cooperative Extension Community Food Systems Team

The Community Food Systems Team resulted from the convergence of parallel processes. Beginning in 2010, leaders of UW Cooperative Extension's four primary program areas (Agriculture and Natural Resources Extension, Family Living, 4-H Youth Development, and Community, Natural Resource, and Economic Development) began exploring ways to reinvigorate multidisciplinary, issues-based programming. Issue-based programming had enjoyed a period of success in the 1980s and early 90s when it was actively promoted at the national level by Cooperative Extension leadership. However, program leaders observed that in recent years, program areas at UW Cooperative Extension had once again become more insular. Program leaders were concerned that this lack of coordination across program areas compromised the organization's ability to effectively respond to complex social, environmental, and economic programs.

During the same period, educators and specialists recognized that community food systems represented an emerging body of work for all four program areas. Yet the siloed structure of the organization created barriers to cross-program area communication and collaboration. A small, informal leadership group formed to facilitate several cross-program area conversations about community food systems programming and to initiate the development of an organization-wide network of community food systems practitioners. With the advent of the USDA-funded, multi-million dollar Community and Regional Food Systems Project (a

collaboration of UW-Madison/UW Cooperative Extension) in late 2010 and growing interest in urban food systems by partners in the North Central Regional of Cooperative Extension in 2011, it became apparent that community food systems was a ripe topic for interdisciplinary innovation and merited support from organizational leadership. In 2011, top-down and bottom-up efforts within UW Cooperative Extension converged to formally create the Community Food Systems Team. Its broad task was two-fold: to increase the systemic impact of the institution's community food systems work and to foster organizational learning and innovation in relation to interdisciplinary practice.

Barriers to Interdisciplinary Collaboration at UW Cooperative Extension

The case of the UW Extension Community Food Systems Team demonstrates the complexity of interdisciplinary and multi-stakeholder initiatives. Their disciplinary and perspectival diversity—the very sources of their potential to generate innovative solutions to complex problems—can also be sources of confusion and disagreement. In general, the challenges described in Chapter 3 are typical of other interdisciplinary efforts. For instance, disagreements about the pros and cons of different forms of interdisciplinarity, and difficulties resulting from tensions between different disciplinary methods and philosophies are well documented in the literature on interdisciplinarity. Similarly, challenges associated with task ambiguity are consistent with common institutional barriers and disincentives to interdisciplinarity, such as the ambiguous status of interdisciplinary programs, lack of experienced leaders, absence of clear and authoritative report lines for interdisciplinary units, and reliance on volunteerism, (Klein, 2010, pp.71-72). Unresolved contradictions within UW Cooperative Extension and a shift toward unfavorable political and budgetary conditions at the state-level also hampered the team's contribution to organizational and food systems change.

Collectively, these challenges influenced the trajectory of the team's evolution as well as the nature of its contribution to innovation in interdisciplinary practice at UW Cooperative Extension.

Innovations in Interdisciplinary Practice at UW Cooperative Extension

Largely in response to challenges described above, leaders of the Community Food Systems Team, in collaboration with key program leaders, contributed to organizational learning and innovation in interdisciplinary practice in four primary ways: (1) cross-program area network development, (2) co-development of a shared expectations document, (3) creation of an interdisciplinary learning community, and (4) the adaptation and dissemination of Whole Measures for Community Food Systems. With the exception of network development, these innovations were responses to the challenges highlighted above rather than elements of a cohesive strategy for promoting interdisciplinary community food systems programming and capacity building. The aim of the shared expectations document was to dispel the confusion and frustration that resulted from the program leaders' initial laissez faire approach to the team and the task ambiguity that resulted. The interdisciplinary learning community complemented the instrumental interdisciplinary functions of cross-program area information exchange and networking by creating a space for small group reflection on interdisciplinary practice. The team's adaptation and dissemination of the Whole Measures CFS framework represented an effort to implement a unifying program frame to bridge differences in philosophies and program models by providing a common language and an array of unifying long-term outcomes that aligned with priorities of each of UW Cooperative Extension's four main program areas.

Direct and Indirect Outcomes

Although the team's innovations varied in their effectiveness, each contributed to the organization's evolving understanding of interdisciplinary practice and how to best support it. The shared expectations document was the least effective of the innovations described in Chapter 4. The aim was to convene team and program directors to jointly clarify goals and expectations for the interdisciplinary teams. While the collaborative nature of the process represented an innovation insofar as it included specialists and educators in establishing expectations, the resulting document failed to clarify team objectives or assuage task ambiguity. By focusing on the teams' role in organizational learning. The document effectively divorced expectations regarding the team's contributions to interdisciplinary innovation from its contributions to community food systems development. Confusion and frustration regarding expectations persisted.

The second innovation, the interdisciplinary learning community, was somewhat more effective. The interdisciplinary learning community successfully created a space for individual and collective reflection about interdisciplinary practice. Additionally, it helped its members cultivate a shared understanding and usage of key terms, such as interdisciplinarity and multidisciplinarity. Nevertheless, limited time and resources for highly reflexive interdisciplinarity combined with skepticism regarding the utility of this activity led to low-attendance and the eventual dissolution of the group.

The third innovation, the team's adaptation of the Whole Measures CFS planning and evaluation framework, also yielded mixed results. The Mini Grant Program stimulated new partnerships inside and outside of the organization as intended. However, even after greater exposure to the Whole Measures CFS framework, most county educators continued to dismiss

Wholes Measures CFS as esoteric “Madison talk” and failed to see its relevance to their predominantly incremental, action-oriented, county-based work. Importantly, through the Mini Grant Program, the Community Food Systems Team’s Whole Measures Work Group discovered that educators tended to be more amenable to using the framework when it was incorporated into one-on-one or small group project-based program development and evaluation capacity building. This provided insights for bridging county and statewide community food systems work.

Lastly, the Community Food Systems Team made indirect but discernible contributions to UW Cooperative Extension’s community food systems work by fostering network development across program areas, helping team members expand how they think about the programs that they oversee, and by supporting the development of new projects and resources. It is noteworthy that the team’s informal interdisciplinary “bridge-building” produced more tangible results than some of the team’s more intentionally orchestrated efforts to promote interdisciplinary practice (e.g. the interdisciplinary learning community).

Lessons from the UW Cooperative Extension Community Food Systems Team

The lessons discussed in Chapter 6 can be summarized as follows: (1) organizational innovation and learning require regular feedback mechanisms; (2) systemic change benefits from focused, multi-level interventions; (3) collaborative initiatives are strengthened by engaging partners in defining the work; and, (4) outcomes-based objectives, both team and organizational, may help align county and state-level work. These lessons begin to clarify some of the specific components of interdisciplinary practice in the context of community food systems planning. They point to the advantages of building systems interventions around well-defined issues and engaging community partners in issue selection and intervention design. They also illuminate the importance of developing organizational learning mechanisms to promote individual and

institutional capacity building in interdisciplinary practice. They highlight the value of employing outcomes-based approaches that enable initiatives to align with organizational priorities while maximizing flexibility with regard to local implementation. This is an approach that has the potential to help integrate the team's content-based work with interdisciplinary innovation rather than treating the two as parallel aims.

Toward Transdisciplinary Practice

The third and final section of this dissertation attempts to translate some of the central lessons from the case study of the Community Food Systems Team into a conceptual tool to guide transdisciplinary practice by helping practitioners identify practices that (1) bridge the gap between instrumental and reflexive approaches to inter- and transdisciplinarity, and (2) strengthen information feedback loops to promote multi-level learning and information exchange. As I noted in the introduction, a UW Cooperative Extension colleague once observed: "in the absence of a new mental model, people revert to what they know." This observation did not hold true in the case of the Community Food Systems Team. On the contrary, team leaders, along with certain program leaders, demonstrated ingenuity and an enthusiasm for experimentation and innovation. Nevertheless, some of the major difficulties they experienced seem to underscore the pivotal role mental models play in shaping our actions. Without explicit mental models (whether vetted or improvised) to guide our work, we are not so much liberated as rudderless (think task ambiguity as described in Chapter 3). Consequently, while team leaders demonstrated an earnest commitment to innovation, without a working theory of how interdisciplinary practice contributes to organizational and food systems change, it proved difficult for team leaders to learn from experimentation or to articulate, let alone strengthen, the relationship between particular strategies and intended outcomes.

Mental models, once made explicit, can serve as valuable reference points in programmatic and process innovation by laying plain beliefs about causality, expectations about outcomes, and ideas about the mechanics of change processes. Heuristic frames, a form of mental model, can serve as "aid[s] to solving a problem or understanding a procedure" (Noval & Gowin, p. 55). Specifically, they can bring focus and clarity to new and experimental practice by helping people more quickly categorize problems, functions, and types of objectives. In essence, by distilling complexity down to conceptual shorthand, heuristic frames free up cognitive resources to focus on the specifics of a particular project or process.

In Chapter 7, I introduce Mitchell et al.'s (2015) transdisciplinary outcomes framework, a heuristic frame developed to advance *purposive transdisciplinarity*, i.e., transdisciplinary work that "seeks to create change" (p. 87). I then adapt their framework, which has a research orientation, for translational and practice-based settings by highlighting the multiple interrelated outcomes food systems planners may wish to achieve through transdisciplinary practice. These functions include systems-based interventions, knowledge translation and exchange, and mutual and transformative learning.

This tri-part heuristic offers a coherent and flexible framework for conceptualizing and advancing purposive transdisciplinary practices by clarifying specific ways in which a strategic mix of reflexive and instrumental transdisciplinary activities can advance food systems change. To demonstrate ways in which the framework can be used to help frame and guide transdisciplinary practice, I offer several examples of Cooperative Extension and municipal food policy council activities that demonstrate nascent realization of various transdisciplinary functions, which I argue could be enhanced through more attentive application of this tri-part heuristic. I also propose several ways in which the framework could improve future inter- and

transdisciplinary and multi-stakeholder food systems planning in these two organizational contexts.

Future Research

Drawing on in-depth case study research, this dissertation has illuminated a number of the issues that are at play when practitioners strive to work across disciplinary boundaries to promote food systems change. By integrating empirical data with extant theory from the systems change, interdisciplinary organizational development, and evaluation literatures, I have also proposed several ways in which practitioners can approach interdisciplinary practice to improve its outcomes in multiple domains. Both my empirical research and the resulting propositions raise new questions that have implications for future research.

First, with regard to the case study, questions remain as to the preconditions for the successful adaptation and implementation of Whole Measures. Preliminary findings suggest that ongoing, project-based coaching in the use of Whole Measures CFS enhances participant understanding of and receptivity to the tool. (These findings are based on the small number of participants in the Community Food Systems Team Whole Measures Mini Grant Program.) However, this does not explain the Iron County Extension anomaly—i.e. that the Iron County Extension Office readily embraced Whole Measures and used it in a self-directed evaluation of office-wide activities while other grant recipients were, at best, reluctant adopters. In Chapter 6, I make some informed conjectures about the factors that contributed to the success of Whole Measures in Iron County, namely a comparatively low density of partner organizations, a staff member with the time to experiment with Whole Measures and interdisciplinary thinking, and an office culture that promotes cross-program area collaboration. Still, a more rigorous comparative case study analysis of successful user-driven adaptation and implementation of Whole Measures

could better elucidate the contextual and capacity-related factors that contribute to the success of this values-driven and systems-based planning and evaluation tool.

Second, building on lessons from the case study of the UW Cooperative Extension Community Food Systems Team and Mitchell et al.'s transdisciplinary outcomes framework, I identify three types of outcomes-based practices that practitioners can employ to potentially increase the impact of their transdisciplinary work by (1) bridging the gap between instrumental and reflexive approaches to inter- and transdisciplinarity, and (2) strengthening information feedback loops to promote multi-level learning and information exchange. However, at this point, this practitioner-oriented transdisciplinary outcomes framework is functionally a hypothesis. Further research will be necessary to validate this framework and provide concrete examples of whether and how it advances the aims of purposive transdisciplinarity in various cross-disciplinary and multi-stakeholder settings, including Cooperative Extension, food policy councils, and community-based coalitions.

Finally and relatedly, the practitioner-oriented transdisciplinary outcomes framework—and its systems-based interventions component especially—will likely look different across innovation contexts and in response to distinctive food systems issues. For example, given the tool's ties to the Social Ecological Model, this approach may initially be a more natural fit for public health and community and regional planning interventions than agricultural projects and programs. As such, additional experimentation will be necessary to test its utility and model its application in relation to production-related dimensions of the food system. As noted in Chapter 3, the Global Forum for Rural Advisory Services' conceptualization of agricultural innovation systems may provide insights that can help strengthen the bridge between agricultural innovation and the broader aims of food systems change.

The Future of Inter- and Transdisciplinarity at UW Cooperative Extension

A 1987 agenda-setting report of the Futures Taskforce to the Extension Committee on Organizational Policy asserts:

> In today's world, where the problems and concerns people face are highly complex and value-laden, Extension can no longer afford this fragmented approach to educational programming. . . . As a result, it is no longer appropriate to structure our programs around a multitude of specific and separate discipline-oriented needs. Instead, focus must be on the larger, most compelling issues facing people today, which tend to be broad-based and cross-disciplinary in nature and within the scope of the land-grant system.

Reflecting on UW – Cooperative Extension's attempt to answer this call, University of Wisconsin historian Jerry Apps observed, "the major outcome. . . . appear[ed] to be a shift, *at least in words*, from conducting programs based on disciplines. . . . to programs based on issues" (Apps, 2002, pp. 120, emphasis added). Yet, three decades later, the organization still finds itself trying to overcome the structural, methodological, philosophical, cultural, cognitive, political, and resource-based challenges that make it so difficult to authentically practice inter- and transdisciplinarity.

In November 2016, former CNRED Program Director Karl Martin assumed the role of interim Dean and Director of UW Cooperative Extension following the forced resignation of Dean Rick Klemme that September. In his first official written communication as interim dean via the all-staff listserv, Dean Martin (2016) assured staff that the organization would remain faithful to the Wisconsin Idea and noted, "I don't foresee our mission, purpose, vision, or values changing" (para 11). He went on to specify his three goals for the following several years. They included: (1) "increas[ing] our capacity to be relevant to the needs of the state, [and] flexible to

address changes in funding and programming priorities;" (2) "Work[ing] within our current and future structure to retain and recruit diverse and talented colleagues and rebuild our management team to lead us into the future;" and (3) "Engag[ing] with external partners at all levels, improve our communications internally and externally, and stay true to our mission as a world class educational institution that exemplifies the Wisconsin Idea" (Martin, 2016).

Despite the potential for transdisciplinary practice to advance these goals, as of late November 2016, it was unclear what if any role inter- or transdisciplinarity would play in the remainder of the nEXT Generation reorganization process and beyond. For clues, I turned to a September 2016 report of the nEXT Generation Program Development Work Group. The work group, which was created in the spring of 2016, was developed to inform organizational leadership's decision-making about the future of program development at UW Cooperative Extension. Although the work group included several of the interdisciplinary teams' major champions including the organization's foremost expert in institutionalizing interdisciplinarity, the term interdisciplinarity appears just twice in the 22-page report; transdisciplinarity appears not at all. The report's central message with regard to interdisciplinarity is that "an effective system for program development includes organizational capacity to support interdisciplinary and inclusive efforts" (UW Cooperative Extension, 2016, p. 13). Whether organizational leadership has summoned the will and capacity to move beyond platitudes and a handful of interdisciplinary exemplars and experiments toward a more comprehensive, organization-wide practice of inter- or transdisciplinarity remains to be seen.

Closing Reflection

Given the complex nature of food systems problems, their solutions are not straightforward. And while the development of a more nuanced understanding of the mechanics

of transdisciplinary practice is no silver bullet, it does mark a crucial step in the evolution of food systems planning theory and has actionable implications for practitioners. With improved knowledge of strategies and practices that increase individual and organizational capacity to (1) work across disciplinary divisions and other differences, and (2) design and align effective systems-based intervention, leaders of interdisciplinary and multi-stakeholder initiatives will be able to better engage diverse participants and knowledge systems in the resolution of complex food systems problems. As a result, professional and nontraditional food systems planners alike will be better equipped to realize the potential of purposive transdisciplinarity to promote food systems change.

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APPENDIX A: RESEARCH METHODS

Why Qualitative Research?

Qualitative inquiry "seeks answers to questions that stress how social experience is created and given meaning" (Denzin & Lincoln, 2005, p. 10). As Patton (2002) notes, qualitative research has many applied functions. In particular, it can serve as a potent evaluation tool by helping to clarify program logic, by providing rich depictions of program and policy outcomes, and by illuminating social and organizational processes, which necessarily require descriptions of human interactions and representation and the synthesis of multiple perceptions (p. 159). Qualitative research is also used in the organizational development, participatory, and action research traditions because it enables researchers to directly engage with research participants. This helps ensure the relevance and utility of the research and ideally creates opportunities for research participants to meaningfully shape and even co-conduct the research (Patton, 2002).

While the aim of qualitative research ranges from the strictly applied to the highly theoretical, it is invariably built upon the lived experiences and rich observations of research participants in particular places and points in time. Case studies present bounded opportunities to ground questions about process, outcome, and meaning. As Ragin (2009) notes, we "use empirical evidence to articulate theories, to flesh them out, to ascertain their spatiotemporal limits and establish their scope conditions" (p. 218). As if to elaborate, Flyvbjerg (2006) notes that case studies can help build, refine, and disconfirm theory while generating actionable context-specific knowledge by "closing in on real-life situations and testing views directly in relation to phenomena as they unfold in practice" (p. 235).

This in-depth qualitative case study of an interdisciplinary food systems initiative is at

once a close examination of the UW Cooperative Extension Community Food Systems Team and an analysis of the mechanics of innovating interdisciplinary practice. An example of evaluation and action research, this study also aims to elucidate broader themes about the challenges associated with employing inter- and transdisciplinarity in translational and practice-based settings. As such, this study's preoccupation with organizational processes and individual perceptions are wholly consistent with the aim and utility of qualitative case study and action research.

Methodology

In conducting this case study research, I employed adaptive theory, a contemporary variant of Peirce's (1992) abductive approach to qualitative research (Layder, 1998). As Layder explains,

> the adaptive theory approach includes attention to theory which emerges in conjunction with specifics research projects, as well as to theory which exists prior to specific research projects, such as general theories, hypotheses in need of testing, or some other body of accredited assumptions and axioms about a particular facet of social life or substantive area. (p. 38)

As a result, this approach (which is also referred to "abductive analysis," e.g. Timmermans & Tavory, 2012) enabled me to move between inductive and deductive analysis by remaining open to the meaning of empirical data while putting it in dialogue with extant theory.

As Timmermans and Tavory note, although abductive approaches are distinct from traditional formulations of grounded theory (e.g. Glaser & Strauss, 1967) in their ongoing incorporation of external theoretical sources, the procedural guidelines promulgated by grounded theorists, such as memo writing and "constant comparing," are not only compatible with

abductive approaches but improve their methodological rigor by "increase[ing] the resistance of the phenomenon to our interpretations" (p. 176). For these reasons, I have made use of constructivist grounded theory (e.g. Charmaz, 2014) to guide my analysis through practices such as initial and focused coding as well as memoing, which are described in more detail in the data analysis section below.

Data Collection

Corroboratory approaches to data collection, such as methodological and data triangulation, can improve the construct validity of case study research (i.e., increase certainty that appropriate operational measures have been developed for the concept being studied) by pursuing multiple sources of evidence of the same phenomenon (Yin, 2003, pp. 98-99). Accordingly, this research will draw on multiple forms of data with the aim of developing "converging lines of inquiry" through triangulation (p. 98). The three primary sources of data that this dissertation draws on are interviews, participant observation, and documents. Following are brief descriptions of each.

Key Informant Interviews

This study draws heavily on semi-structured, recorded in-person and phone interviews with UW Cooperative Extension administrators, specialists, and educators, as well as a handful of AmeriCorps VISTA volunteers posted in county extension offices and community partners involved with the UW Cooperative Extension Community Food Systems Team Mini Grant Program. Consistent with constructivist grounded theory, I employed a phased approach to sampling consisting of initial and theoretical sampling (e.g. Charmaz, 2014). I began by interviewing UW Cooperative Extension program leaders as well as specialists and educators involved in the creation of the team. As I analyzed the initial data and theoretical categories

emerged (e.g. reflexive vs. instrumental interdisciplinary practice), I moved toward theoretical sampling to fill gaps in my analysis. For example, because initial interviews were with individuals who were closely involved in the team's foundation and leadership, it became evident that many county educators and staff from the ANRE had distinct perspectives apart from those of team leadership. Consequently, I worked with key informants to identify individuals who could speak into these distinct perspectives and help develop a more complete picture of the Community Food Systems Team.

Table 2. Summary of key informants by position type and program area

Position Type	**Number of Interviewees by Position Type**
Administrators	9
Specialists	11
Educators	7
Administrative & financial specialists	2
AmeriCorps VISTA	3
Community partner	5
Other	1
Program Area	**Number of Interviewees by Program Area**
4-H	2
ANRE	8
CNRED	6
Family Living	5
PD&E	6
Unaffiliated*	11

Total # of key informants: 38

Note: These tables reflect program area affiliation and position type of interviewees at the time of the interview. However, there were multiple interviewees who have held multiple positions within UW Cooperative Extension and thus brought first-hand experience of other program areas or position types to our conversations.

* 5 Unaffiliated were community partners, another 3 were AmeriCorps VISTA volunteers

In total, I conducted 29 interviews with 38 individuals. (Refer to Table 2 for a break down of interviews by UW Cooperative Extension program area and position category). In the

context of the Mini Grant Program, two of the five site visits included group interviews with community partners and one included a group interview among county educators and an AmeriCorps VISTA volunteer involved in a Mini Grant project. All but two of the remaining 29 key informant interviews were conducted in-person on or near UW-Madison campus. In most instances they took place at interviewees' offices. When interviewees did not have private offices and group interviews were not appropriate, I met with them in a study room in a UW-Madison library. Interviews were audio recorded and later fully transcribed. Interviews averaged an about an hour in length.

In grounded theory, interview data collection generally concludes with theoretical saturation, i.e. when no new data are emerging "and all concepts in the theory are well-developed" (Morse, 2004). Because of the evaluation research dimension of this study, I was also concerned about the "representativeness" of my interview data in addition to its theoretical adequacy. I addressed this by ensuring that perspectives/individuals at every level of the organization were represented, as well as those of community partners.

Participant Observation and Action Research

While much of the data used in this study was derived from interviews, I also engaged in participant observation and action research. Between May 2014 and September 2016, I regularly participated in Community Food Systems Team conference calls and webinars, I partook in two annual two-day in-service meetings for team members, I attended the 2015 statewide UW Cooperative Extension conference, and I accompanied team leaders to two eXtension conferences on community food systems development.

During this time, I also served on the Community Food Systems Team's Whole Measures work group as an action research component of this study. Action research typically

"commences with an interest in the problems of a group, community, or an organization. Its purpose is to assist people in extending their understanding of their situation and thus in resolving problems that confront them" (Stringer, 1999, p. 10). It was in this capacity that I worked with the work group members—the team coordinator and two specialists from the Program Development and Evaluation Unit, and two ad hoc grant review panels—to plan, oversee, and evaluate the team's Mini Grant Program. During this process, as discussed in Section 2, I also helped provide training and coaching to the first round of mini grant recipients. In the summer of 2015, I co-conducted site visits to each of the five county extension mini grant project sites in Barron, Eau Claire, Iron, Rock and Richland counties and interviewed projects leaders, and in some cases, project participants. Because of the terms of this study's IRB status, I was not able to interview youth participants of mini grant projects.

By the end of my dissertation research, I was fully immersed in the UW Cooperative Extension context. From November 2015 through November 2016, I worked first as a student hourly and later as a graduate project assistant in the UW Cooperative Extension Program Development Evaluation Unit. Working for UW Cooperative Extension provided sensitizing information and enriched my understanding of the issues that surfaced in interviews. However, it bears mentioning that all of my formal interviews with administrators and official team leaders were completed by the time I took these positions.

Document Review

I also employed document review. Since documents often contain bias, over-reliance on documents can skew case study findings. Consequently, I primarily used document review for two purposes: first, to uncover information for further exploration (e.g. to help identify prospective interviewees or pertinent events), and secondly, to corroborate data collected through

interviews and participant observation.

Specifically, I reviewed historical publications at the UW Cooperative Extension archives at the UW-Madison College of Agricultural and Life Sciences Steenbock Library to find past accounts of interdisciplinary research and programming at UW Cooperative Extension. These documents provided snapshots of organizational growing pains, successes, and priorities during the period when interdisciplinary issue-based programming was first introduced to cooperative extension during the 1980s. As such, they supplemented reflections from interviews and articles from the *Journal of Extension* on this period of time.

I also reviewed documents from the Community Food Systems Team's UW Cooperative Extension Sharepoint site (an internal, cloud-based, document-sharing system) as well as its Google Community website. These sources also supplemented interview data, particularly in relation to the roughly two years prior to my involvement with the team. These documents included notes and audio-recordings from team leadership meetings and internal documents regarding team structure, vision, and early projects. Lastly, it was not uncommon for interviewees to reference documents such as the team's Purpose, Vision and Values statement, the Shared Expectations document, and the UW Cooperative Extension Educational Priorities schematic, which are all discussed in Section 2. In most cases, I obtained documents referenced in interviews directly from interviewees following our conversations.

Data Analysis

In keeping with abductive analysis as detailed by Timmermans and Tavory (2012), my primary data analysis methods consisted of coding and memoing.

Memoing

Glaser and Strauss (1967), the co-creators of grounded theory, propose the use of

"memoing" throughout the iterative data collection and analysis phases of qualitative research to systemically generate theory based on empirical data, to inform subsequent data collection and analysis decisions, and to document methodological and coding decisions as they are made. As constructivist grounded theorist Kathy Charmaz (2014) explains that memo-writing "is the pivotal intermediate step between data collection and writing drafts of papers. . . . Memo-writing constitutes a crucial method in grounded theory because it prompts you to analyze your data and codes early in the research process" (p. 162).

I began memoing when I started conducting interviews in March of 2015. Whenever possible, I memoed immediately after an interview about theoretical categories that surfaced in the interview, thematic links to previous interviews, and remarks that I found particularly puzzling or surprising. For example, I had initially assumed (without knowing it) that the team leaders and UW Cooperative Extension program leaders had a shared vision of the purpose of the team. It was not until after several interviews that the contours of different visions for the team started to become clear. Constant comparing is a cornerstone of grounded theory and was central to my analytical process. My memoing continued well into the writing phase of my dissertation research. It tended to focus on theoretical topics but also included reflexive and methodological considerations, such as observations about my biases and changing role in the research as well as reflections on decisions regarding coding and research focus.

Coding

As noted above, coding is another integral component of grounded theory and is closely linked to memoing. Grounded theory coding is typically made up of two phases, which are variously referred to as open and closed coding (e.g. Glaser & Strauss, 1967) or initial and focused coding (e.g. Charmaz, 2014). The aim of initial coding is to study fragments of data such

as “words, lines, segments and incidents”—these then become the building blocks of theoretical categories, which bring focus to the second phase of coding (p. 109).

Using the qualitative data analysis program MAXQDA, I conducted two distinct types of qualitative coding: both phases of grounded theory coding and evaluation coding (e.g. Saldaña, 2013, p. 119). The aim of using these two coding methods was to identify emergent data that would inform theoretically relevant categories, such as “reflexive interdisciplinary activities” as well as specific examples of a priori evaluative categories such as “outcomes.” My initial coding focused mainly on incidents and perceptions, which paved the way for focused coding. I then elaborated on the resulting theoretical categories through memos and early drafts of dissertation chapters. As the theoretical categories and their relationships to one another became clearer, I began to move back and forth between memos and chapter and manuscript outlines to situate grounded data into a broader theoretical context and narrative arc.

Ethical Considerations

This study was approved by the Educational and Social/Behavioral Science Institutional Review Board of the University of Wisconsin - Madison and was conducted in full accordance with all human research protocols per federal regulations, state laws, and local and University policies. As such, all research participants consented to participate in this study and were informed of their right to withdraw from the study at any time. Names have not been used to protect individual identities.

Scope of Study & Delimitations

This case study is chiefly concerned with barriers to and innovations in interdisciplinary practice. As such, this dissertation does not closely investigate community food systems planning activities at the state or county level nor does it explore the UW Cooperative Extension

Community Food Systems Team's contributions to incremental community food system planning more generally. To the extent that this study does investigate the team's content-oriented work, the focus remains on the relationship between those activities and interdisciplinary practice, such as the Whole Measures Mini Grant Program. In this regard, this dissertation is derivative of what are typically understood to be food systems planning activities rather than a case study of food systems planning per se.

In addition, this study focuses on the relationship between the UW Cooperative Extension Community Food Systems Team and concepts such as interdisciplinary practice and systems change rather than investigating the team's role in a broader network of organizations. The decision not to focus on the team in relation to other community food system initiatives was determined both by the central research question and by the fact that other topics emerged as more pertinent to the central research aims over the course of the study.

Finally, this study does not closely examine how the structural and bureaucratic dimensions of UW Cooperative Extension affect the organization's ability to innovate and incorporate interdisciplinary practices. Klein (2010) addresses these considerations at length in *Creating interdisciplinary campus cultures: a model for strength and sustainability*. She notes that the institutionalization of interdisciplinary practice requires changes in multiple systems within an organization, including the development of policies that incentivize interdisciplinary research and teaching in hiring, promotion, and tenure processes. Additionally the alignment of interdisciplinarity with organizational strategic plans, cultivating support for interdisciplinary research and instruction among high level leadership, developing communication systems that facilitate cross-departmental collaboration, and ensuring appropriate funding sources to promote and sustain interdisciplinary research will be required (Klein, 2010, pp.73-74). While many of

these topics arose in interviews, given Klein's thorough treatment of the topic, I opted to focus this study on other dimensions of interdisciplinary innovation and practice.

Study Limitations

There are two central concerns with case study research: richness of data and external validity or generalizability. Consequently, a central trade-off in case study research is breadth versus depth. This in-depth case study presents a rich depiction of the UW Cooperative Extension Community Food Systems Team from multiple perspectives inside and outside of the organization. Thus, while multi-case studies are often regarded as more robust than single case studies because they offer more data points, the level of case-specific detail provided in this dissertation would not have been possible in a multi-case analysis of the scope of this study. Nevertheless, because external validity is achieved in case studies through replication, additional research will be necessary to validate and refine the findings discussed herein.

In addition, while the interviews conducted for this study more than adequately addressed the research question, had I more time and resources, I may have conducted additional interviews with county educators so as to explore greater variation across county-level perspectives on the Community Food Systems Team and community food systems planning more generally. Similarly, greater representation of individuals who deliberately disengaged from the team would also enrich this study; though this perspective is certainly represented, exploring it in further detail would have likely added depth and nuance.

Research dissemination

I plan to disseminate study findings to multiple practitioner and academic audiences through conferences ranging from the local, community and practitioner-oriented Wisconsin Local Food Summit to national academic audiences such as the conference of the Association of

Collegiate Schools of Planning. I also intended to publish in a range of journals such as the *Journal of Extension*, the *Journal of Human Sciences and Extension*, the *Journal of Planning Education and Research*, *Futures*, *Systemic Practice and Action Research*, and the *Journal of Agriculture, Community Development, and Food Systems*.

APPENDIX B:

COMMUNITY FOOD SYSTEMS TEAM'S WHOLE MEASURES CFS DEFINITIONS

Fairness & Justice: Just and fair food projects/policies/initiatives are deliberately organized to promote social equity, justice, worker rights, democratic participation and healthy conditions from farm to plate to waste management. Just food systems ensure fair and respectful treatment of all people engaged in all aspects of the system and dismantle embedded systems of power, privilege, and prejudice with the engagement of all stakeholders.

Vibrant Farms & Gardens: Vibrant Farms and gardens are dynamic food producing operations that meet the family, business or organization's personal goals and contribute to the social, environmental and economic well-being of the broader community. Vibrant farms are always looking to improve their practices to better achieve the above goals.

Healthy People: A thriving community food system provides safe food and a built environment that enables all people to attain complete physical, emotional, social, economic, and spiritual well-being and positive growth, supported by families, employers, communities, places of worship and learning, and government in order to lead resilient and productive lives.

Strong Communities: A community food system can be a unifying force and celebrates the cultural diversity of the community. Strong communities meet the needs of members by promoting civic engagement and social responsibility and have capacity to identify, explore, and implement solutions to problems.

Thriving Local Economies: A thriving community food system provides safe food and a built environment that enables all people to attain complete physical, emotional, social, economic, and spiritual well-being and positive growth, supported by families, employers, communities, places of worship and learning, and government in order to lead resilient and productive lives.

Sustainable Ecosystems: Community food systems are dependent on and steward sustainable ecosystems which are biologically diverse and resilient; are woven together through interdependent relationships; are dependent on and result in clean air, water and healthy soil for current and future generations.

Innovative Collaborations: Interdisciplinary projects and programs in food systems recognize that food systems issues are complex and require multiple perspectives methods and approaches. Interdisciplinary approaches involve creating something new by crossing boundaries, and thinking across them.

APPENDIX C: PATHWAYS OF CHANGE TOOL

Answer the following question, “What change would you like to see happen in your food system over the next 3 years?”

Forward casting:

Take the change statement you identified above and fill it in the blank below. Repeat these causal relationship statements as needed.

1. If _____(fill in your change statement) happens,

   then _____will happen.

2. If _____(fill in your change statement) happens,

   then _____will happen.

Backward casting:

Take the change statement you identified above and fill it in the blank below. Repeat these causal relationship statements as needed.

1. In order for _____fill in your change statement) to happen,

   then _____needs to happens first.

2. In order for _____fill in your change statement) to happen,

   then _____needs to happens first.

Sketch out your pathways of change and connect your pathways to the whole measures value fields on the right.

APPENDIX D: UNIVERSITY OF WISCONSIN COOPERATIVE EXTENSION EDUCATIONAL PRIORITIES