Afterword

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A Methodology for a Scholarship of Transdisciplinary Action Research in the Design Professions

Lessons from an Indian Country Initiative[1]

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ABSTRACT This article responds to Stokols's (2006) explication of the core challenges of a scholarship of transdisciplinary action research (TDAR) in the design professions. It models and explains a grounded theory approach that addresses (1) the methodological challenges entailed in developing reliable and valid protocols for evaluating the processes undertaken by TDAR teams and (2) the challenges of compiling the lessons learned (Stokols 2006) from multiple studies of action research projects and translating these lessons into practical guidelines for future collaborations. A case study and examples from the Wisconsin-based Green Communities and Green Affordable Housing in Indian Country Initiative illustrate the usefulness of this methodology.

KEYWORDS Research methodology, action research, grounded theory meta-analysis, heuristic

INTRODUCTION: THE CHALLENGES OF A SCHOLARSHIP OF TRANSDISCIPLINARY ACTION RESEARCH

Academics from across the spectrum of scholarly disciplines have many opportunities to participate in university outreach projects. These projects, when approached from the framework of transdisciplinary action research (TDAR) (Brown 2005; Strand et al. 2003; Stringer 1999), become opportunities to orchestrate the integration of knowledge cultures (local, disciplinary, strategic, and holistic knowledge) required to effectively address complex place-based issues (Brown 2005, 8).[2] The fundamental challenges of integrating diverse knowledge cultures was the impetus for Stokols's call for the establishment of a "*science* of transdisciplinary action research" directly examining "processes for cultivating and sustaining collaboration across multiple disciplines, lay and professionally oriented community members, and multiple organizations and institutions" (2006, 65, italics in original).

Among the several core challenges of a science of TDAR, two are the foci of this article. The first involves the methodological challenges entailed in developing reliable and valid protocols for evaluating the processes undertaken by TDAR teams. The second involves the challenges of compiling the lessons learned from multiple studies of action research projects and translating these lessons into practical guidelines for future collaborations (Stokols 2006, 65). The community psychology literature (Altman 1995; Best et al. 2003; Conner and Tanjasiri 1999) suggests that methodologies for an effective practice of action research (for example "the development of evidence based, sustainable community interventions") depends on "partnering strategies" in which researchers, lay citizens, and community leaders commit to working together in a highly collaborative and equitable fashion (Stokols 2006, 64). In addition to evaluating the tangible outcomes of TDAR, it is important to assess the *intangible* outcomes relative to the "various *interpersonal* and *inter-organizational* processes that either facilitate or hinder a group's efforts" (Stokols 2006, 73, italics in original).

A realistic approach to translating the lessons learned from multiple case studies into guidelines for future transdisciplinary collaborations may be the development of case studies anchored in "grounded theories" and designed to gather data pertinent to specific questions or hypotheses posed by those theories (Stokols 2006, 74). Stokols differentiates the challenges addressed when working with campus-based "transdisciplinary research centers" versus working with "community-based transdisciplinary collaborations," noting that they are located at opposite extremes of the organizational axis of his three dimensions of the science of TDAR (2006, 66). The success of community-based collaboration appears closely related to processes that include citizen empowerment, consensus building, and technical assistance. Thus, a science of TDAR assigns high priority to the study of collaborative interaction and outcomes among scholars, community practitioners, and multiple organizations (2006, 65).

This article addresses both of these core challenges by modeling and explaining a grounded theory approach to TDAR that supports research practitioners' efforts to document outcomes relative to these interpersonal and inter-organizational processes. The paper presents a case study that includes the author's reflections on the lessons learned about refining and sustaining transdisciplinary collaborations as principle investigator of the Green Communities and Green Affordable Housing in Indian Country Initiative. These

reflections are followed by an overview of the grounded theory approach to meta-analysis of multiple case studies that informed the development of that initiative. The article then examines the intellectual and methodological foundations of action research, upon which the proposed methodology for documenting and evaluating the intangible outcomes of TDAR are grounded. The conclusion provides a step-by-step explanation of this combined grounded theory and TDAR methodology for a scholarship of TDAR in the design professions.[3]

THE GREEN COMMUNITIES AND GREEN AFFORDABLE HOUSING IN INDIAN COUNTRY INITIATIVE
Introduction to the Case Study

Landscape architecture faculty members who use participatory design methods occasionally have opportunity to participate in community-based collaborations to address fundamental needs in historically underserved communities. Often, university faculties and the design professions do not understand the spectrum of values and cultural mores in these communities. These collaborations pose an extreme challenge to the integration of knowledge systems required to address complex place-based issues effectively. When informed by social science literature, these projects offer opportunities to develop and test heuristics and practices that can make visible the several cultural, racial, class, sectoral, and/or bureaucratic barriers to the creation of effective transdisciplinary partnerships. This reflective, theory-based practice offers opportunities for an informed exploration of processes for overcoming these barriers, thereby increasing the capacity of the faculty, the community, the professions, and agency partners to collaborate effectively in the future.

When participatory design practitioners approach these particularly challenging community-based collaborations as TDAR scholars, with the intention of investigating various interpersonal and inter-organizational processes, they have the opportunity to make a sig-

nificant contribution to the scholarship of TDAR in the design professions. Such an opportunity arose in the 2002, when an elder from the Red Cliff Ojibwe Nation contacted the University of Wisconsin-Madison Department of Landscape Architecture about a planned housing development. Over the following years, the faculty team that responded to the initial request has developed partners.

These partnerships have engaged in a broad scope of projects and programs, including participatory land use and master planning, site design, design for stormwater management, housing design, and on the job training in green home construction. Participants have included local professionals; elected officials; nonprofit staff; community members; faculty and students from nearby tribal colleges; local artisans and tradespeople; architects, landscape architects, engineers, and planners; and faculty members and students from landscape architecture, planning, architecture, engineering, and environmental studies programs. This case study reviews the founding and development of the Green Communities and Green Affordable Housing in Indian Country Initiative. Interwoven in the narrative are the author's reflections on process, goals, and outcomes.

Reflections on a First Partership in Indian Country

Initial contact and conversations. Significant ecological, cultural, and political sensitivities affected the planning of 160 units of new housing on 200 acres of hilly, densely forested, lakefront property on the Red Cliff Reservation in northern Wisconsin. The impact of development on water quality was of particular concern because the aquatic resources provide both the traditional food source and the basis of the tourism economy there. A team of faculty members (hereafter, the UW team) agreed to facilitate a participatory design process that would engage community members and community leaders in a workshop designed to elicit their concerns and preferences for development of the site in question.

Initial design effort. The UW team included two members of the faculty, a local professional, and two undergraduate students. The team arrived in the community around noon the day before the public workshop took place; they were scheduled to meet with staff members from a variety of tribal agencies at the local fire hall that afternoon. The team spent time familiarizing themselves with the layout of the community and the few areas of the study site that were accessible on foot. Because the site was hilly and densely vegetated, few people had firsthand knowledge of the conditions. In addition, only a few people from the community were able to read topographic maps. With this in mind, the team had prepared a topographic model of the site to help the community visualize the physical realities of the space during the design process.

The model consisted of four sections, each measuring approximately three feet by four feet. The team assembled the model on tables in the center of the fire hall banquet room. As the hosts arrived, everyone gathered around the model. The UW team listened, took notes, sketched, drew diagrams, and asked questions as the community leaders shared their observations and concerns. The team told the community leader that they would work that evening and the next day to generate a series of conceptual plans to present for discussion at the public workshop scheduled for the next evening.

During informal discussions later that evening, the UW team reflected on the unexpected impact of the model at that meeting. It was agreed that, as intended, the model had contributed to the community leaders' understanding of the physical realities of the site and evoked a productive dialogue. What the team had not expected was that the community leaders, recognizing, with some surprise, the investment of time that went into building the model, evidently saw it as concrete evidence that the team not only understood the significance of the issues at hand but also as evidence of respect for their land and their voices.

The team held an open studio in the fire hall the following day as they prepared a series of conceptual master plans for the site. Various community members visited during the day. A few of the community leaders who had met with the team the day before brought colleagues to meet the team and learn of the project's intentions. Each visitor shared concerns and ideas for the design program.

As agreed, the tribal planner had circulated fliers and put the word out about a community meeting during which the new housing development would be discussed. The local cable television station agreed to promote and telecast the event. The workshop occurred in the bingo room at the casino. The team set up the model on one side of the room and taped their drawings to the adjacent wall.

The tribal planner introduced the general intentions of the workshop and introduced the UW team. The author offered a brief overview of the evening's agenda, explaining the charge given the team by the community leaders. She explained that the plans on display were intended to show a variety of ways to meet that charge, within the constraints of the site, and that their insights were needed before the team could take further steps toward developing a plan for submission to the Tribal Council. Each designer briefly presented an overview of the plan he or she had developed, answering questions as they came up. During a lengthy facilitated discussion, workshop participants compared and contrasted the features of the alternative plans.

The UW team returned to the fire hall late that evening, where they spent some time reflecting on the multiple levels of discussion engaged in during the workshop. At the most pragmatic level, the team agreed that the community expressed a general preference for one of the concept plans (much to the delight of the undergrad team), but participants were interested in seeing how a community center, multifamily housing, playing fields, and playgrounds might be included in the next iteration of that plan. The undergraduate team immediately, and enthusiastically, began the next iteration of design exploration.

Reflection on the evening's events continued as the team worked into the night. Again, team members agreed that the model brought credibility to the project while contributing to the community's understanding of the physical realities of the site, enriching the critique of the design studies. The team also wondered whether the model had made the significance of this development more tangible than the abstract plan drawings might have alone, and so contributed to the intensity of the dialogue.

And intense it was. Within the first few minutes of the workshop, the team learned that the proposed lot sizes were a shock to most of the participants. Many of them were on a waiting list for a lease lot on which to build a home. They had assumed they would receive 5, or 10, or even 20 acres each. When they saw half-acre lots on three of the plans and quarter-acre lots on one, they were incredulous.

As the project coordinator, the author felt obligated to explain. She told the participants that their community leaders had charged the team to accommodate 160 units on the 200-acre site, that the team had carefully reviewed the community's recently enacted land-use plan before they accepted the project, and that a comparison of the estimated housing demand and the relatively limited developable acreage within the reservation boundaries suggested the decision to allow 160 units on this particular site.

The facial expressions and murmurs of voices across the room conveyed dismay. The author knew that the people waiting for lease lots included tribal members who wanted to move back to the community as well as current residents who were living in temporary housing. She gently suggested that these must have been very hard decisions for their leaders, knowing how disappointed many of the prospective residents would be at the small lot size, but she imagined their leaders also knew that the other option—larger lots—would mean having to tell people that there was no room for them on the reservation. The room became quiet. The participants turned to look at the community leaders, who nodded in silence.

The team spent the next morning again in open studio, working on graphics to illustrate the key aspects of the latest iteration: the road layout, lot configurations, contiguous preserved forest, and a neighborhood center that included a community center, multifamily housing, and recreation facilities. Several of the community leaders visited the studio, offering insights on the new ideas; their responses ranged from acceptance for the enriched program to overall enthusiastic support. All of them expressed satisfaction with the general results: 160 units, minimum impact on the natural resources, and a constituency that, while terribly disappointed, understood the project's constraints. The team gathered up their materials around noontime and returned to campus. The team refined the plan, through a few more iterations mailed back and forth from the team to tribal planner, to a level of detail that allowed the Tribal Council to engage professional assistance for implementation.

During the intervening years, after several partnerships with the Red Cliff and other Ojibwe nations, the UW team continues to reflect on that early session. The team has wondered whether they could have pushed the envelope by proposing something more like an eco-village. Or had the team already risked its relationship with the community leaders by padding the program with multifamily housing, a community center, and recreational facilities? Or did the core value of the project lie in the fact that the participants were better able to understand the significance of the differences between the team plans and those produced by a local surveyor, which divided the 200 acres into 160 equal lots without regard to vegetation or topography?

In addition, the irony of a group of white people from the state university/capital making the realities of the limits of the Red Cliff nation's land holdings so visible was lost on the team at the time, but probably it was not lost on the residents. The team continues to learn the nuances of communication in this culture, and they understand that there is still much to learn about the blind spots of outsiders when it comes to living day to day with the continuing repercussions of colonialism.

Over the next few years, the roads were constructed and 48 single-family houses were built. As of this writing, multi-unit housing is under construction. The UW team effort contributed to a decision making process that resulted in housing that meets the needs of the most disadvantaged members of the community while avoiding the significant expense, and what were sure to be the devastating ecological consequences, of clear cutting and earth moving if the alternative plans had been adopted.

Further Reflections: Lessons Learned and Next Projects

Reflection on the continuing partnerships in Indian Country reveals two lessons that have held true and that continue to guide team practice at the local/community/site scale. First, by preparing visuals (models and drawings) that allow dialogue with the community about the physical realities of the site, the team demonstrates, in a tangible way, that they come with a skill set of immediate use to the community. The team also demonstrates that they intend to be respectful of the community's voices and lands. Second, the community's capacity for patience with the blunders and clumsiness of outsiders relative to the nuances of culture is directly proportionate to their perceptions of the usefulness of that skill set. (So far, the team's usefulness seems to have outweighed its considerable clumsiness).

The Green Community Development in Indian Country Initiative. Shortly after the first partnership project described above, the UW team became aware of the University of Wisconsin-Extension (hereafter, UW-Extension) Native American Task Force (NATF).[4] The NATF is a partnership of county-based UW-Extension faculty members working with First Nations, campus-based faculty members from a broad spectrum of disciplines, and members of the UW-Extension's administration. Some of the NATF members are also members of neighboring First Nations. The NATF conducts annual events to familiarize campus-based faculty and colleagues from various partner organizations and agencies with the research opportunities and nuances of working with First Nations governments and agencies. The UW team attended one of these conferences, where they had an opportunity to hear about a wide variety of work going on around the state and to share their recent experience.

During that conference the team learned of four major issues facing the neighboring nations:

1. Water quality (Water resources are the basis of both the traditional food source and tourism economy, but water quality was being degraded by development, recreational use, and invasive aquatic species.)

2. Human health (specifically issues related to obesity)

3. Economic development (Unemployment and poverty levels on some reservations were several times greater than the state average.)

4. Affordable housing

The team brainstormed with conference participants about partnership opportunities to address these issues. They shared insights about community design that integrated walking and bike paths with mixed-use development, green buildings, community gardens, and conservation design, and debated about how these ideas might be received in Indian Country. The participants agreed to continue conversations in the following weeks and months.

Within days of that conference the team received invitations to partner on conservation design projects for affordable housing in two other First Nations communities—the home communities of two members of the NATF. Preliminary meetings with these new partner communities confirmed interest in what they came to call eco-cultural design. Through this work, the Green Community Development in Indian Country Initiative became a statewide TDAR initiative under the auspices of the UW-Extension NATF.

The Green Communities and Green Affordable Housing in Indian Country Initiative. The expansion of the initiative into the design and construction of housing came about when, in the process of the first partnership project described above, the author had an opportunity to study the construction documents for some of the proposed housing. The plans and specifications were consistent with the most affordable types of manufactured housing available across the country. Recognizing the fundamental difference between *affordable* relative to the costs of construction and *affordable* relative to the annual costs of maintenance and energy and the costs relative to human health, the team thought it should be able to provide more choices for low income families.

As the UW team continued to respond to requests for technical assistance with land-use planning and community design issues over the next two years, the author undertook research into recent advances in bioregionally appropriate, energy efficient, affordable, healthy housing (affordable green housing). In dialogue with the leadership of the Tribal Housing Authorities, it came apparent that beyond merely presenting the results of investigations, there was an opportunity to undertake a technology-transfer/jobs-training program that would enhance the considerable expertise already available to those agencies in the form of local talent. In such a program, the living wage jobs would stay in the community rather than move to a distant manufactured housing factory, and if they chose, the local talent could further contribute to the local economy through small businesses addressing the need for green housing, affordable or otherwise, in nearby communities.

Research acquainted the author with Design Coalition, a nonprofit Community Design Center (CDC) that had been operating in Madison, Wisconsin since the early 1970s. The Design Coalition staff, like that of other CDCs founded in that era, had extensive experience with affordable housing. More recently, they have developed an expertise in green residential design and earned national recognition for several green, affordable housing projects. The director of the Design Coalition had

recently designed, constructed, and by then occupied an affordable, model, green home. The team arranged a visit with the Director of the regional office of U.S. Department of Housing and Urban Development's Native American Housing Program and the staff of one of the Tribal Housing Authorities. The model home was well received by staff of both agencies.

Soon after, the Director of the Design Coalition, Lou Host-Jablonski, AIA, joined Shawn Kelly, ASLA, and the author to form the core of the UW team.[5] As project coordinator, the author began grant writing and investigating partnership opportunities with colleagues from government agencies and nonprofit organizations to discover what resources were available to develop and implement the Green Communities and Green Affordable Housing in Indian Country Initiative. The team has since been actively engaged in partnerships with Tribal Housing Authorities across the Upper Midwest as well as their state, federal, and nonprofit partners.

Over the years, a series of conversations with other researcher practitioners during various academic events inspired the author to contextualize the team's reflections about these partnerships in the literature of critical theory. Preliminary explorations evolved into what in retrospect she recognizes was a protracted, grounded theory approach to meta-analysis of multiple case studies of similar TDAR initiatives. The following introduces the relevant literature and describes the heuretic that emerged from the process.[6]

TRANSDISCIPLINARY ACTION RESEARCH AND SURVIVOR COMMUNITIES

In fieldwork reports at the end of the 19th century, Durkheim used the term *anomie* to describe an attitude of people living with persistent constraints to attaining their needs. In addition to the constraints of limited resources, Durkheim described those imposed by social group consciousness and the effects of these deeply embedded constraints over generations (1897). Paolo Freire used the term *fatalism* to describe a similar attitude in different communities. He noted that uninitiated

outsiders sometimes interpreted behaviors associated with this attitude, because they transcend generations, as a cultural trait of docility or laziness (1970, 61).

More recently, a growing body of research identifies and describes *historical trauma* as a legacy of psychological and sociological responses to traumatic events experienced by a community over generations (Brave Heart 1999a, 1999b, 2000; Brave Heart and De-Bruyn 1998; Evans-Campbell 2008). Evans-Campbell (2008) suggests that historical trauma is collective and compounding—collective in that many members of a community simultaneously view the traumatic events as acute personal losses and compounding inasmuch as a sequence of events occurring over generations comes to be seen as parts of a single traumatic trajectory. Thus, though the events may have occurred over the course of years and generations, they continue to have clear impact on contemporary individual and familial health, mental health, and identity.

Comparing case studies from practitioners working in situations as diverse as multicultural immigrant communities in Appalachia and African American communities in the South with the author's personal experience in brownfield communities in rust-belt cities, former coal mining communities in rural Pennsylvania, and First Nations in the Midwest supports these observations about the social dynamics of historical trauma and generational poverty. Follow up interviews with practitioners found that while the causes of the adverse conditions vary widely, the terms practitioners use to characterize these communities are similar. They include *despair, defeatist attitude, jaded, disheartened, futility,* and *cynicism* (Carlson 2004; Comp 2000, 2001; Konechne 2004; Reece 2006; Thering 2007).

That the protracted meta-analysis of multiple case studies did not produce blanket characterizations of any ethnic group or geographic regions is notable; to the contrary, the results revealed a dynamic transcending such distinctions. This analysis suggests it would be more appropriate to approach research partnerships with communities presenting these characteristics using terms that acknowledge the socioeconomic dynamics held in common rather than terms that differentiate them on the basis of ecological, geographic, cultural, and/or ethnic heritage.

The term *survivor communities* is useful when describing these common characteristics. While the term has been somewhat controversial when posited in academic settings,[7] it acknowledges community-scale trauma, it is not pejorative, it does not focus on deficits, and it transcends the differences among communities without discounting the unique heritage at the core of each community's identity (Thering 2007).

The combination of grounded theory and TDAR guided a literature search that revealed supporting concepts in the fields of education theory, community psychology, community health research, cross-cultural education, and program evaluation research. All of these fields share a common intellectual and methodological foundation in critical theory. The following section reviews key concepts from this literature, which provided a foundation for the emergence of a generalizable methodology for documenting and evaluating the intangible outcomes of TDAR in the design professions.

THE INTELLECTUAL AND METHODOLOGICAL FOUNDATIONS
Critical Theory and Transformative Learning[8]

The concepts of critical theory emerged in the 1930s from the Institute for Social Research in Frankfurt am Main (Institut für Sozialforschung). Critical theory viewed traditional social science as supportive of an unjust status quo (Davidson et al. 2006). Critical theory "expressly seeks to become an agent in the promotion of social change and transformation" (Peters, Lankshear, and Olssen 2003, 5). Habermas (1971) explored the concept of transformative learning when he postulated (abstrusely) the "emancipatory" power of "the joining of subject and object" in the act of "critical self-reflection" in the pursuit of knowledge (313–314).

Mizerow (1998) expands on Habermas's ideas and notes that transformative learning occurs through critical reflection on the assumptions underlying beliefs and

actions in the context of the social, cultural, economic, and/or political systems. The term *problematizing* might be more familiar to some readers. Cranton (2002) notes transformative learning occurs when an individual becomes aware of the limitations of underlying assumptions, critically reflects on these assumptions, and consequently changes his or her beliefs and actions (64). This relationship between transformational learning and changes in an individual's actions is the cornerstone of the methodology for documenting and evaluating the intangible outcomes of TDAR initiatives explained in the concluding sections of this article.

Cross-Cultural Transformative Learning

Merryfield (1998, 2010) notes that "global educators" share certain characteristic instructional strategies: they confront stereotypes and exotica and resist simplification of other cultures and global issues; they foster the habit of examining multiple perspectives; they teach about power, discrimination, and injustice; and they provide cross-cultural experiential learning. Subedi (2004), following Mezirow (1998), rearticulates the concept of a global educator in terms of "cross-cultural transformative learning" by comparing and contrasting the conceptualization of knowledge, culture, and language in a "Deficit Model" relative to a "Transformative Model" of social studies education.

The deficit model assumes that legitimate knowledge, human history, and truth originate in European/Western societies and recognizes other sources and viewpoints as inferior. Conversely, the transformative model emphasizes the value of multiple perspectives, avoids hierarchical frameworks for truth and legitimacy, and acknowledges the relationship between legitimizing knowledge and legitimizing power. Similarly, the deficit model reinforces stereotypes that imagine non-mainstream cultures as homogeneous communities of exotic, bizarre, or primitive people, thus a problem for further study or resolution. Conversely, the transformative model respects differences among civilizations and culture groups while recognizing that economic, ethnic, religious, linguistic, and/or

political differences exist within any civilization or culture group.

The deficit model also disregards, ignores, or is unwilling to recognize the fact that some terminologies are preferred, proper, and/or respectful when speaking with or about individuals or culture groups. Conversely, the transformative model recognizes the importance of language and terminology and recognizes that language, including choosing to recognize or not recognize preferences in terminology, is a political choice and an exercise of power (Subedi 2004). The idea of cross-cultural transformative learning is particularly helpful when TDAR partnerships include individuals or groups from far outside the mainstream culture.

Program Evaluation Research

One of the major characteristics of the history of "evaluation research" has been "efforts to develop theory, research design, and methodology that are responsive to the knowledge interests of different stakeholders" (Albaek 1998, 94). Founded simultaneously with action research, program evaluation researchers articulated a research protocol framed around a spiral of steps composed of planning, action, and the evaluation of the result of an activity or series of activities (Kemmis and McTaggert 1990; Lewin 1946). Robson grounds evaluation research and action research together in the literature of critical theory, noting their common "emancipatory" purpose (2002, 215).

Action research programs contain explicit or implicit assumptions (theories and heuristics) about how and why they will work (Weiss 1995). Thus, the evaluation of these programs should identify the underlying assumptions and then develop methods for data collection and analysis to track the "unfolding of the assumptions" (Weiss 1995, 67). Lewin's (1946) "theories of change" approach to evaluation was the foundation of the logic model program evaluation protocol, which is now a required component of proposals to many state, federal, and nonprofit grant programs (HUD 2010; Kellogg Foundation 2004). At the most basic level, the logic model approach to program development and

evaluation asks program planners to articulate the following five elements:

1. The issues the program is to address
2. The activities they plan to undertake to address the issues
3. The intended outcomes of the program
4. The way in which they intend to document the outcomes
5. The assumptions (theories of change) that explain the relationships among the other four items (the logic of the program). (Kellogg Foundation 2004; UW-Extension 2008).

Evaluating Community Capacity

In 1995, the U.S. Centers for Disease Control and prevention (CDC) invited community health researchers to join CDC community specialists in the symposium *Identifying and Defining the Dimensions of Community Capacity to Provide a Basis for Measurement* (Goodman et al. 1998). The CDC recognized the importance of community capacity while acknowledging the lack of clarity of the concept. The result of the symposium was a report identifying and describing 10 dimensions and dozens of characteristics of community capacity. These characteristics are helpful guides in conceptualizing desirable outcomes and implementing any community-based TDAR partnership. Four of these characteristics are particularly relevant for partnerships with survivor communities:

1. Receptivity to prudent innovations
2. Ability to access external resources
3. Frequent, cooperative, decision making processes among local leaders, agencies, and organizations
4. Ability to reflect on the assumptions underlying ideas and actions. (Adapted from Goodman et al. 1998, 261–262).

Receptivity to prudent innovations and the ability to access external resources are helpful because they suggest that the program being evaluated has overcome barriers to trusting relationships with outsiders. Frequent cooperative decision making processes among local leaders, agencies, and organizations are important because they suggest that the program has overcome barriers of local factionalism. The ability to reflect on the assumptions underlying ideas and actions is particularly useful because it is also a defining characteristic of transformative learning.

THE EMERGENCE OF A GENERALIZABLE METHODOLOGY

Informed by the literature reviewed above, the author noted specific characteristics of the various partner groups that may be contributing factors to frustration, confusion, and / or conflict among various individuals and / or groups involved as the Green Communities and Green Affordable Housing Initiative unfolded. These characteristics clearly reinforced barriers to integrating the knowledge cultures, so team activities were planned with the intention of overcoming the specific barriers. Based on the theory of transformative learning, she tuned her ear to changes in language and watched for changes in behavior. Over the years she noticed patterns and themes relative to the survivor communities heuristic, the CDC's characteristics of community capacity, and Subedi's (2004) characterization of cross-cultural transformative learning and documented outcomes in those terms. Finding this combination of transdisciplinary action research, program evaluation research, and social science literature helpful when pressed to articulate the complexities of her work, she experimented with graphics illustrating the generalizability and usefulness of this methodology for other researcher practitioners.

A Step-by-Step Explanation

The generalizable methodology is both an iterative cyclic process (Figure 1) and a series of three sequential phases (Table 1). The loops and arrows in Figure 1 illustrate the iterative nature of this grounded theory approach. The linear version of the methodology
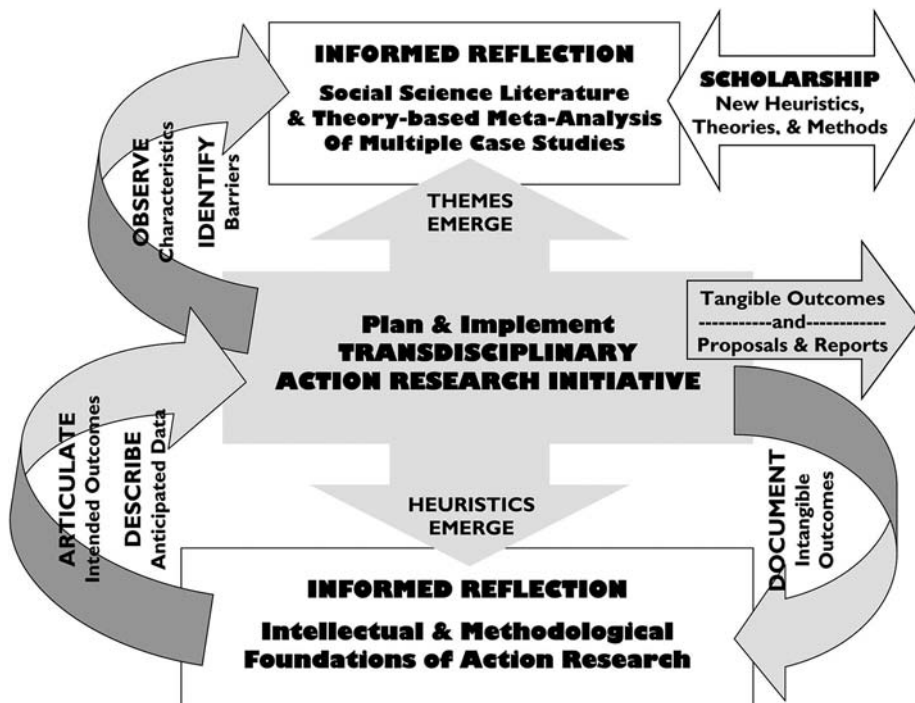
Figure 1. A Diagram of a Scholarship of Transdisciplinary Action Research.

presented in Table 1 has been useful for explaining the intentions and reporting the intangible outcomes of action research in the context of this case study. The dearth of publications of TDAR approaches to community-based participatory design suggests that the table may be useful to the design professions.

Figure 1 illustrates the grounding in the intellectual and methodological foundations of action research essential to a scholarship of TDAR. The double-ended vertical arrow in Figure 1 represents the themes and heuristics that emerge in the reciprocations between those foundations and the social science literature, to which the researcher practitioner periodically returns in response to observations in the field. The looping arrows illustrate the iterative nature of the three phases of the methodology that engage the researcher practitioner in the field.

Table 1 illustrates the three phases and the flow of logic among them. Phase 1, "observe and identify," represents times during which the researcher practitioner listens and watches for signs of frustration, confusion, and/or conflict from stakeholders, recalls the literature, notes the characteristics of the various participants, and draws on the literature to develop hypotheses about how those characteristics might inspire frustration, confusion, and/or conflict.

Phase 2, "articulate and describe," represents the times during which the researcher practitioner recalls

the barriers identified in Phase 1, articulates the intended outcomes of the program relative to those barriers, then describes the anticipated language and behavior changes (data) to be watched for in the field relative to those outcomes. Phase 3, "plan, implement, and document," represent the time during which the research practitioner produces various programs and activities and documents any outcomes that resonate with the anticipated outcomes described in Phase 2.

Summary and Conclusions: Addressing the Core Challenges to a Scholarship of Transdisciplinary Action Research in the Design Professions

Figure 1 and Table 1 together illustrate how, in this methodology, the *scholarship* of TDAR wraps around the TDAR initiative and how the two modes are co-constitutive. These graphics illustrate the following explanation of how the methodology addresses the two core challenges of the scholarship of TDAR articulated by Stokols (2006).

Regarding the challenges of compiling the lessons learned from multiple studies (Stokols 2006, 65), the discussion of survivor communities presented earlier illustrates how iterative critical reflection, informed by social science theory, facilitated the interpretation of multiple case studies of TDAR and informed a protracted, grounded theory approach to meta-analysis. While the specific body of social science literature, the

Table 1. A Methodology for a Scholarship of Transdisciplinary Action Research, Illustrated with Examples of "transformative learning" relative to "Outsiders"

Phase One		Phase Two			Phase Three	
Observe Characteristics of Academics, Professionals, and Agency Staff ("Outsiders")	**Identify** Barriers to transdisciplinary partnerships	**Articulate** Intended Outcomes of Program	**Describe** Anticipated Data "transformational learning"* **Short-term** Communicative	**Long-term** Behavioral	**Plan/Implement** Activities	**Document** Outcomes
Theme One: Knowledge and Processes						
Research findings and/or organizational protocol dictate what is correct.	Outsiders are unaware or uninterested in local expertise and/or protocol. and/or protocol.	Outsiders are respectful of ideas from local staff.	Outsiders suggest solutions that reflect new understanding of local expertise	Collaborative decision-making informing action in real time. concerns about buildability.	**On-the-job training in "green" construction**	**Example:** Construction detail modified in response to the carpenter's
Theme Two: Language and Terminology						
Use of language and terminologies from dominant culture.	Outsiders are unaware or uninterested in preferred terminologies, cultural meanings, and attitudes attached to language.	Outsiders are aware that the terms they choose to use and/or not use are indicators of attitudes.	Outsiders respectfully inquire about preferred terms, names, and titles.	Outsiders routinely include study of preferred terms when preparing for engagement with non-mainstream cultures.	**Service-learning**	**Example**: Service-learning students required to examine appropriate language suitable for use in case study context.
Theme Three: Stereotyping						
Interaction with locals based on stereotypes or broad impressions gleaned from a few brief interactions.	Sustained local perceptions of im personal, detached bureaucrat/expert outsider.	Outsiders recognize that a spectrum of values, beliefs, skills, and behaviors exist in the partner community.	Outsiders remember names, titles, and unique roles and responsibilities of locals.	Locals and outsiders accommodate each others' concerns, preferences, and abilities, whether professional or personal.	**Participatory Design for Green Affordable Homes**	**Example:** House plans expanded to include designs for cultural preferences (various configurations of multi-generational extended families).

* See Habermas (1971), Mezirow (1998), and Cranton (2002).

cluster of case studies included in that meta-analysis, and the emerging heuristic and themes will be useful to researcher practitioners working with survivor communities, the *methodology* for meta-analysis of multiple case studies is uniquely adaptable to the opportunities and constraints of any researcher practitioner operating within a TDAR framework.

This is true inasmuch as case studies for inclusion in meta-analysis are available from multiple sources, including peer-reviewed journals, project reports, and living projects coordinated by the researcher practitioner and/or others. Following Walsh and Downe (2005), the "research question, purpose, or aim" determines an appropriate or effective framework for meta-analysis and the "transparency" of the selection process "maximizes the authenticity" of the results (206). Thus, any claims that researcher practitioners make about the explanatory power of their meta-analysis of multiple case studies must be weighed against the rigor of the scholarship that informs the meta-analysis, the criteria for

selecting case studies for inclusion in that meta- analysis, and the transparency of the connections between the two.

Regarding the "methodological challenges" entailed in developing "reliable and valid protocols" for evaluating the intangible outcomes of TDAR (Stokols 2006, 73), this methodology integrates grounded theory and TDAR methods to "investigate the various *interpersonal* and *inter-organizational* processes that either facilitate or hinder a group's efforts" (Stokols 2006, 73 italics in original). This integrated methodology, substantiated from two theoretical constructs, facilitates the production of new theories, heuristics, and TDAR methods that inform such investigations. In Table 1, the themes that describe the characteristics and barriers in Phase 1 (that is, knowledge and process, language and terminology, and stereotyping) emerged from observations in the field informed by Subedi's typology of cross-cultural transformative learning" (2004). Subedi's typology and the characteristics of community capacity, described as "frequent supportive interactions" and "cooperative decision making processes" amongst local leaders, agencies, and organizations in the CDC report (Goodman 1998, 261), informs the intended outcomes and the anticipated language and behavior changes. In addition, the flow of logic between those intended outcomes and the anticipated language and behavior changes is grounded in the theories of transformative learning.

The first example in Table 1 is a relatively simple illustration of this methodology. With field observations informed by the literature on transformative learning, the author noticed a conversation between the architect and the local construction supervisor that eventually resulted in the modification of a construction detail (see the example outcome in the far right column in row 1, Table 1). The construction documents were originally prepared using professional protocols and assumptions without the input of the local staff. The conversation and modification were noted as "communicative" and "behavioral" evidence, respectively, of the relationship between the planned activities (on the job training) and the intended outcomes of those activities (outsiders are respectful of ideas from local staff members).

Reflecting on Subedi's (2004) insights about how the transformative model acknowledges the relationship between legitimizing knowledge and legitimizing power, the author began to document other instances of this type. Eventually, she identified *knowledge and processes* as a major theme in the characteristics of outsiders that reinforce barriers to transdisciplinary partnerships and *research findings and/or organizational protocol dictate what is correct* as one of a cluster of characteristics under that theme.

The heuristic and the themes presented in this case study emerged from the unique confluence of place-based issues, knowledge cultures, and personalities involved, as is indicative of grounded theory research. As such, they are useful to researcher practitioners working with communities that fit the description of survivor communities (Thering 2009). Again, however, across a spectrum of TDAR partnerships, the *methodology* for a scholarship of TDAR is generalizable to the investigation of any intangible outcomes, be they "various interpersonal and inter-organizational processes" as suggested by Stokols (2006, 73), individual learning outcomes relative to the educational intentions of the initiative, community capacity building outcomes as described by the CDC report (Goodman et al. 1998), or other phenomena identified in the field for which there are no measurement instruments. This generalizability is a function of the reciprocations among the intellectual and methodological foundations of action research (which are relatively fixed), the continual growth of knowledge in the social sciences, and the increasing availability of case studies in TDAR.

Other researcher practitioners who engage this methodology will search out the literature and case studies most relevant to the unique confluence of place-based issues and knowledge cultures involved in their respective projects. Those researcher practitioners will draw upon and explain the rich and complex intellectual and methodological foundations of action research, to inform their research and through this,

contribute to the growth of knowledge in theory, methods, research, and pedagogy of a scholarship of TDAR specific to the design professions.

NOTES

1. An observation about terms: Fellow outsiders often ask about the appropriate use of terms. This author learned to avoid labels as much as possible. When need be, she has found the term *First Nations* to be uncontroversial relative to *Indian* or *Native American* when speaking to or about our partner communities. First Nations, rather than suggesting groups of undifferentiated individuals, refers to social units. The term acknowledges the multiple nations, that they were nations before colonialism, and that they remain sovereign nations, legally as well as socially, today. The term *First Nations* has a specific legal meaning in Canada, however, so she does not use it in communications with some audiences. Regarding the seemingly contradictory use of the term *Indian Country* in the title of this article and the name of the project (Green Communities and Green Affordable Housing in Indian Country), this term is used in newsletters, websites, and common language in First Nations across North America. The term refers, however, to land rather than people, and it conveys the fact that things are different in Indian Country relative to the outside culture. The use of Indian Country in the name of the project was a deliberate choice made by the author to convey to partner communities that the project was undertaken with some awareness that things are indeed different in Indian Country.

2. Brown (2005) defines transdisciplinary action research as consisting of four knowledge cultures: (1) local / place-based (grassroots, local elected, appointed, and volunteer leaders), (2) disciplinary (university-trained professionals and researchers), (3) strategic (bureaucrats), and (4) integrative (those who facilitate the integration of the other knowledge cultures).

3. This article does not include definitions or ongoing debates about grounded theory. A brief overview of the subject is included in the second edition of Robson's "Real World Research" (2002, 190–193). A commonly used text is Corbin and Strauss's *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (1998).

4. See UW-Extension (2010) for information on the Native American Task Force.

5. See Kelly Design Group (2010) and Design Coalition (2010).

6. This article does not elaborate on the complexities of meta-analysis. See Thering and Chanse (2011) for a brief introduction to the literature.

7. The term survivor communities has evoked a range of responses, from concerns about trivialization of the word *survivor* in reality television to concerns about conflating the phenomena the term is intended to describe with the trauma of cancer survivors and holocaust survivors. As the term is not intended for use with the general public, as the literature on historical trauma suggests this conflation may be warranted, and as these discussions have not brought forth an acceptable replacement for articulating the phenomenon, the term, however controversial, continues to be useful.

8. This article does not elaborate on the complexities of critical theory. A brief introduction to the philosophical milieu and its influence on action research may be gleaned from Lemert (1999).

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