PROJECT MUSE®

Advancing Transdisciplinary Action Research in Rural Pennsylvania: The Case for Plural Design in the Susquehanna River Towns

Caru Bowns

Landscape Journal: design, planning, and management of the land,
Volume 30, Number 1, 2011, pp. 88-105 (Article)

Published by University of Wisconsin Press

LANDSCAPE
JOURNAL

➔ For additional information about this article

<https://muse.jhu.edu/article/415284>

Advancing Transdisciplinary Action Research in Rural Pennsylvania

The Case for Plural Design in the Susquehanna River Towns

Caru Bowns

ABSTRACT The current academic discourse around interdisciplinary scholarship and dissemination has major implications for plural design, a prominent area of academic engagement in landscape architecture. The engagement of citizens in dialogues on public policy indicates increasing consensus that plural design must be embedded in larger, interdisciplinary systems that will advance the work of *creating* public policy. This paper participates in an inquiry of Stokols's Transdisciplinary Action Research (TDAR) (2006) methodology and its potential to extend current theoretical and methodological limits in plural design research. Aligning with others, the author argues the importance of a structuring framework for plural design research and queries the philosophical and ethical changes necessary to advance environmental and community-based knowledge into higher levels of interdisciplinary discourse. The first or "theory" section juxtaposes plural design in academia with Stokols (2006) and other interpretations of transdisciplinary research. The second section uses the TDAR model to frame plural design research in three Susquehanna River towns in Pennsylvania. The discussion and conclusion speculate on the methodology's specific applicability to the case study research and the value of TDAR for university plural design practice in general.

KEYWORDS Transdisciplinarity, community, plural design, Susquehanna

Transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines. Its goal is the understanding of the present world, of which one of the imperatives is the unity of knowledge.

—Basarab Nicolescu, *The Manifesto of Transdisciplinarity*, 1996¹

INTRODUCTION

A paradigmatic shift in regard to what constitutes qualitative/quantitative research and the levels at which it should be disseminated is occurring in academia. What that implies for plural design, a major area of engagement in landscape architecture is the subject of this paper. In the article "LandSCAPES: A Typology of Approaches to Landscape Architecture," Crewe and Forsyth (2003) provide a structured differentiation of disciplinary practices in landscape architecture. They identify six specialty areas while acknowledging overlap. In their acronym SCAPES, the P represents plural

design, indicating the importance of ecocentric and anthropocentric knowledge in the implementation of community processes to engender collaborative and conscientious decision making.²

Use of the term *plural design* is recent and posits an evolved definition inclusive of the history, theory, and methodologies associated with participation, community planning/design, and community action. From its emergence in the social movements of the 1960s and 1970s, *community design* has sought to increase public knowledge about the community and environmental spheres of influence and to make public policy processes transparent for citizen involvement. Davidoff's (1996) call for advocacy and resident involvement in planning processes is considered precedent for participation. Hester (1996, 1999) described the work of early community design practitioners as addressing issues of social disparity and environmental injustice in everyday communities. Sanoff located the movement within the 1960s concept of participatory democracy and described participation as an attitude and belief that "the environment works better if citizens are active and involved in its creation and management instead of being treated as passive consumers" (2008, 59).

Ironically, after the 1970s, government aid programs that made citizen participation requisite in community planning decisions also contributed to blunting the radical edge of community participation. The roles of professionals and academics were curtailed as community partnerships were procedurally integrated into government (and corporate) decision making boards for redevelopment.³ With diminished opportunities to influence planning policies at local and regional levels of government, community engagement has fallen back to academia and has become a standard methodology for university outreach service in design programs (see "transitory" research below).

The process of globalization has revealed that many of the world's environmental problems are locally rooted, and the value of citizen involvement cannot be discounted. Agenda 21 of the Rio Earth Summit and its provisions in Local Agenda 21 (United Nations 1992)

underscores the importance of participation in issues of environmental well-being. Toward that end, Fischer (2000, 2006) writes that efforts to advance environmental expertise and the role of citizen participation call for a “broader public or ‘civic-ecological’ reorientation . . . one that facilitates more cooperative, interactive knowledge relationships between experts and the public” (2006, 83). In this context, plural design differs from community design. In their typology, Crewe and Forsyth define plural design as different in its “intellectual base” and “analysis of power.” As a practice, plural design is intellectually based in “democratic theory,” in which local resources, researchers, professionals, and users are sources for the production and synthesis of knowledge. Through plural design, users hypothetically exercise a greater degree of control over their own environments. Also implicit is its application to “larger issues of inequality” beyond the local—that is, at regional, national or global locations (Crewe and Forsyth 2003, 38). Thus the question: What kind of reorientation or structural methodology will produce cooperative and interactive knowledge contributing to environmental improvement across communities, urban systems, and our global environment—that is, the most beneficial plural landscape design?

For academic practitioners of plural design, the lack of a synthesizing structure challenges the production of interactive knowledge. The good deeds of participatory action research pile up without significant synergy to advance knowledge in the discipline or to contribute to effective interdisciplinary collaborations. There is increasing consensus that for plural design research to coalesce into coherent dialogue, it must be embedded in a system of inquiry associated with cross-disciplinary, community-based research that illuminates or challenges overarching arguments and principles.

As landscape architecture becomes more vested as an academic and theory based discipline and meets the expectations of developing a canonical literature and scientific research, the necessity for cross-disciplinary collaboration becomes apparent. This new direction in research must not only address the overlaps of plural

design with its usual allied professions and disciplines (that is, engineering, the arts, and so forth) but also realize landscape architecture as an integral participant in extradisciplinary/global discourses to improve the quality of life on the planet. Daniel Stokols’s TDAR methodology has the potential to expand the theoretical and methodological horizons of plural design research.

The discussion here includes a description of theory and methods, including an elaboration of plural design in academia and an analysis of transdisciplinarity and the Stokols TDAR rubric. The rubric is deployed in the article’s case study to provide evidence for a set of regionally-based, plural design involvements in smart growth and conservation in Pennsylvania’s Susquehanna River Valley as incipient TDAR. Arguing for a structuring framework for plural design research, it suggests philosophical and ethical changes in landscape architecture necessary to advance plural design research to higher levels of transdisciplinarity. The conclusion speculates on the value of TDAR for plural design in general as well as its specific applicability to the research and collaboration advancing regional agendas for growth in Pennsylvania.

PLURAL DESIGN THEORY AND METHODOLOGY Embedded and Transitory Community Research

As currently practiced in landscape architecture academia, plural design may be differentiated as *embedded* or *transitory* research.⁴ A research team’s continuing association or longitudinal study of a community in its real life context to achieve specific implementation or research objectives characterizes an embedded research model (Scholz and Tietje 2002). Examples of embedded plural design research in landscape architecture include the West Philadelphia Landscape Project (WPLP) and the University of Illinois at Urbana-Champaign’s East St. Louis Action Research Project (ESLARP). For 23 years WPLP project director Anne Spirn has integrated research and community service with University of Pennsylvania and MIT students to address the impacts of stormwater, infrastructure, housing, and

other quality of life issues in West Philadelphia's Mill Creek neighborhood (Spirn 2005; WPLP n.d.). Initiated in 1987, the ESLARP program is an example of both embedded and cross-disciplinary research resulting in replicable solutions. Faculty members, students, external researchers, and government officials working with community stakeholders addressed housing, economic development, and other needs in East St. Louis, subsequently modeling change in other neighborhoods and urban communities in Illinois (ESLARP 2009; Lawson 2005; Reardon 1998).

Both embedded and transitory plural design research integrate analysis and synthesis of ecocentric and anthropocentric findings with community engagement in problem-solving processes (Faga 2006). Transitory plural design research is characterized by funding and time constraints. In academia, it is most associated with service learning studios for course credits, which means limited fieldwork and contacts between university faculty/students and the community for meetings, workshops, surveys, and so forth (Forsyth, Lu, and McGirr 1999). With most transitory design projects, revisiting a community's planning and/or design issues is difficult once they have been addressed. Funding and time constraints often mean project knowledge is not quantified in formats suitable for dissemination to communities with similar issues or needs. Neither is such knowledge systematically extrapolated to other plural design projects.⁵ Thus, similar community issues may cycle through universities' outreach services for resolution without the benefit of earlier research.

Conversely, with the embedded model, researchers engage in an identified neighborhood or community for an extended time. As social science research, the model uses systematic methods of inquiry and analysis to produce new knowledge theoretically or methodologically linked to existing knowledge caches in the discipline. Embedded research sites are usually urban in geography, deficient in economic development or social services, and if located within the outreach service sphere of local universities, associated with social action research agendas. For environmental design,

such research may be facilitated by university design research centers or faculty consortiums or be funded by external organizations (for example, the National Science Foundation [NSF], the National Institutes of Health [NIH], and the National Endowment for the Arts [NEA]). Externally funded research in landscape architecture, embedded in the sociospatial dimensions of a community to address structural issues with larger (or more sustainable) ramifications, correlates with TDAR.

Fractious community politics or negative perceptions of the research's value to the community may impede progress with the embedded research model (Reardon 1998). In turn, the transitory model usually is constrained to a prescribed methodology identifying and addressing issues most pertinent to community improvement. While embedded research may address deep-rooted issues perhaps not seen by a community as associated with immediate problems, transitory community engagements are usually predicated on definable needs identified by the community.

In the social sciences and the humanities, the benefits of embedded or longitudinal research usually are substantial in comparison to the case-by-case practice of transitory research. In landscape architecture, however, the ecocentric and anthropocentric values of the latter inform much of the discipline's academic knowledge base and student skill set for professional practice. Analysis of plural design research characterized by multidisciplinary and participatory approaches to social and ecological problems suggests that such research realizes some of the profession's highest ideals (Crewe and Forsyth 2003). Yet for academics in landscape architecture dedicated to the ecological and social aspects of the discipline, the thousands of participatory/plural design research projects executed in studio courses across the country remain primarily obscure and discrete, "feel good" cases.

To its credit, landscape architecture has addressed the need for systematic approaches to situate plural design into larger contexts (Lawson 2005; Reardon 1998). Discipline-based efforts to synthesize project findings into more accessible formats include Environment/

Behavior/Neuroscience (EBN) studies, Post Occupancy Evaluations (POE), and case study research/documentation methods.⁶ *Landscape Journal* and other design journals serve as forums to advance inquiry and dissemination of organized research in plural design.

Consolidating Knowledge in Landscape Architecture: TDAR

For educators of plural design, the collective consciousness that transpires in a community during consensus building processes is a driving force for their continued involvement. Increasingly evident, however, is the realization that the “feel good” accomplishments of transitory plural design do not serve beyond immediate spatial, temporal, and disciplinary limits. How does one grow plural design knowledge in landscape architecture as well as contribute its findings to extradisciplinary research frameworks addressing ecological and environmental issues? One suggested theoretical and methodological framework for accommodating collaborative community action research is TDAR.

Transdisciplinary Action Research

Originally formulated as an alternative to the dogmatic methodology of traditional scientific inquiry, *transdisciplinarity* (or transdisciplinary action research) is considered a viable mode for the production of knowledge in design because of its “strong orientation towards societal problems” (Balsiger 2004). Though transdisciplinarity has been in use since the 1970s, less than twenty years have elapsed since Gibbons et al. (1994) acknowledged the concept in *The Production of Knowledge*, signaling the start of an epistemological debate and paradigm shift. The deconstruction of scientific practices and the emergence of scientific approaches that are not circumscribed in the context of any particular disciplinary field (Gibbons et al. 1994; Nowotny, Scott, and Gibbons 2001) characterize the growing currency of the concept. Key theorists including Erich Jantsch, Michael Gibbons, Jurgen Habermas, Jean Piaget, Donald Schon, and others articulate transdisciplinarity as a dynamic new interface among knowledge, science,

and society.⁷ Following are basic differentiating definitions for the two herein normative modes of research—multidisciplinarity and interdisciplinarity—and how transdisciplinarity is inclusive of and departs from these norms.

The definition of TDAR and the identification of questions and problems for which it is most applicable require an understanding of how TDAR differs from more familiar integrative, or cross-disciplinary, research (multidisciplinary and interdisciplinary research) that commonly structures university scholarship. Stokols appropriates Rosenfield’s (1992) definition of multidisciplinary (MD) as “a process in which researchers from different fields work independently or sequentially, each from his or her own disciplinary perspective, to address a particular research topic” (Stokols 2006, 67). *Topic*—not *problem* or *problem solving*—is the operative term in MD research, in which specialists use discipline-based methodological perspectives in examining a given topic. MD primarily differs from other research practices in its lack of problem solving and collaboration (Balsiger 2004; Bruce et al. 2004). The user or recipient of the research is left to frame the problem and arrive at a solution from multiple and sometimes competing disciplinary perspectives.

Generally speaking, interdisciplinarity (ID) entails a greater sharing of information and closer coordination among researchers than occurs in multidisciplinary research whether in constructing a common model or agreeing on a methodological approach for the disciplines involved (Gibbons et al. 1994; Lawrence and Després 2004). Collaboration, however, remains restricted to research participants anchored in their respective disciplinary models and methodologies, just as with multidisciplinary teams (Balsiger 2004; Stokols 2006).

Just as interdisciplinary research evolved from the shortcomings of multidisciplinary research, so transdisciplinarity (TD) and TDAR are evolving as processes to integrate disciplinary perspectives for new understandings of scientific concepts while “still follow[ing] scientific rules.” Balsiger (2004) is emphatic about this point,

Figure 1. The Middle Susquehanna River Valley (Courtesy the author 2010).

perhaps to terminate continuing misunderstanding of Paul Feyerabend's (1997) response to dogmatic science as anarchistic (anything goes). Balsiger interprets Feyerabend's statement as a directive for researchers to refuse methodological reductionism in preference for a *pluralism* of methods. He takes pains to define transdisciplinarity as a "problem oriented, theory guided, and methodologically driven approach to solve a special class of problems" (Balsiger 2004, 413–419). Beyond Balsiger's attempt to anchor TD in terms of scientific methodology, definitions of transdisciplinarity yield a bounty of perspectives and refinements:

- TD generates knowledge (and solutions) to serve real world issues and societal problems.
- TD transcends academic disciplinary structures by its hybrid nature, nonlinearity, and reflexivity.
- TD is a context specific negotiation of knowledge from local, complex, and heterogeneous domains.
- TD values Habermas's theory of communicative action and intersubjectivity, which advocates a process of exchange between representatives of different types of knowledge for mutual understanding and consensus.
- TD demands close and continuous collaboration (in other words, mediation space and time) during all phases of a research project. (Lawrence and Després 2004)

Stokols (2006) notes: "Transdisciplinary research collaborations are intended to achieve the highest levels of intellectual integration across multiple fields and yield shared conceptual formulations that move beyond the disciplinary perspectives represented by team members." He cites findings that contend effective action research (for example, research developing evidence-based, sustainable, community interventions) "depends heavily on the adoption of community partnering strategies in which researchers, lay citizens, and community leaders work together, often over extended periods in a highly collaborative and equitable fashion" (Stokols 2006, 64).

THE CONTEXT OF THE MIDDLE SUSQUEHANNA RIVER TOWNS CASE STUDY

University Context

At The Pennsylvania State University (hereafter Penn State), current faculty and student involvement in plural design research in the Middle Susquehanna River Valley (MSRV) has evolved from a 2005 decision by the university's Department of Landscape Architecture and the Hamer Center for Community Design to support research for sustainable community-based planning in the greater region (Figure 1). As a rurally based, land grant institution, Penn State has an established network

of cooperative and agricultural extension programs in the Susquehanna River Valley region. As a Penn State faculty member, the author decided to focus her outreach and research on engaging similar networks for sustainable community development in the region.

Pennsylvania Geographic and Demographic Context

The TD research for the Susquehanna River towns responds in part to unregulated development that is negatively affecting the economic and social growth of rural communities. The Brookings Institution Center Metropolitan Policy Program (BICMPP 2003) notes the importance of investment in small town conservation and regional planning to overcome the negative effects of sprawl development on the economy and character of communities in rural Pennsylvania.

The natural assets between Pennsylvania's major east-west urban centers—Philadelphia and Pittsburgh—include magnificent mountains, abundant hardwood forests, and the Allegheny, Delaware, Monongahela, Schuylkill, and Susquehanna Rivers. The state's economic success is associated with its many enterprising towns and productive agricultural regions (BICMPP 2003; McMahon and Mastran 2005). These assets, however, are targets for unregulated development, a threat undermining the essence of Pennsylvania's rural character and small town economies (Figure 2).

While Pennsylvania is one of the nation's slowest growing states, it is also a state that is "spreading out—and hollowing out" (BICMPP 2003, 9). Between 1982 and 1997, the state's population grew by only 1.4 percent, but more than 500,000 people moved from commonwealth cities, older suburbs, and towns to new developments in exurban townships. In many rural locations the population increased by 12 percent, resulting in a loss of nearly 1.2 million acres of agricultural, forest, and other open space land to development.⁸ Furthermore, the character of Pennsylvania's existing small towns, including that of the Susquehanna River towns discussed here, is not being replicated or integrated into the development of new, low density suburban communities (*ibid.*).

Figure 2. U.S. Route 45 and the MSRV agricultural landscape (Courtesy of The Pennsylvania State University).

Figure 3. The MSRV Counties and River Towns (Courtesy the author 2010).

Tucked into the northeast corner of Pennsylvania's Central Region, the MSRV is a regional neighborhood consisting of Snyder, Union, Northumberland, Montour, and Columbia Counties (Figures 1 and 3). One of six geographic regions designated by The Center for Rural Pennsylvania (TCRP), the Central Region counties lie in the path of sprawl development spiraling from the Scranton/Wilkes-Barre/Hazleton, Harrisburg, and Allentown/Bethlehem/Easton metro centers.⁹

Figure 4. Downtown Danville, PA
(Courtesy of The Pennsylvania State University).

The counties' larger river towns—Selinsgrove, Lewisburg, Sunbury, Danville, and Bloomsburg—are located within five to ten miles of one another along the convergence of the West and North Branches of the Susquehanna River. Platted as 19th century river communities, the towns hold historic charm, but expansive flood control structures now separate them from the river. Structurally, the MSRV towns are what New Urbanist planning theory advocates for community development: eminently walkable environments of gridded streets that anchor town centers or Main Streets with a mix of three- to four-story civic, commercial, and residential structures (four of the five towns included districts on the National Register of Historic Places) (Figure 4). Census data and information (TCRP n.d.) reveal the following about the river towns and by projection, the larger MSRV region (Table 1):

- Most of the towns are relatively small, ranging from 1.0 to 2.2 square miles each. Bloomsburg contains more than twice the area of the others (4.59 square miles).
- Bloomsburg (population 12,375) and Sunbury (10,610) are the largest. Sunbury, the historic regional center, has lost population; Bloomsburg has grown.
- Selinsgrove's and Lewisburg's median resident ages (26 and 22) and high percentages in the 18–24 year age range reflect their university populations.
- Per capita income for the five towns ranges narrowly from \$12,819 (Bloomsburg) to \$16,693 (Danville). All of the towns are well below the \$28,950 per capita income of rural Pennsylvania residents, in general.
- The poverty rates for four of the five towns significantly exceed the rural Pennsylvania individual poverty rate of 12.5 percent (Bloomsburg

31.2 percent, Danville 10.6 percent, Lewisburg 22.2 percent, Selinsgrove 16.7 percent, and Sunbury 18.1 percent).

Between 2005 and 2008, three MSRV towns applied to Penn State's Hamer Center for Community Design for assistance with downtown revitalization planning and design. This case study focuses on the transdisciplinary nature of community based collaborations with the river towns of Selinsgrove, Sunbury, and Danville (hereafter the Susquehanna River Towns or SRT).

Of the three river towns, Sunbury is the largest in population. It served as the MSRV commercial center until the 1970s, when industrial disinvestment and strip mall development along the region's principal north/south route (U.S. Highway 11/15) undermined commerce in its downtown. Population peaked at more than 13,000 in the 1970s and has since declined. In 2004, Sunbury successfully secured state and federal funding to develop its riverfront as a major destination for regional recreation. The city council wanted to focus community consensus on connecting a revitalized downtown and central park to future riverfront development.

Mall development has also impacted Selinsgrove, though the presence of the private Susquehanna University stabilizes its economy. A new bypass road that shortens the commute to the state capital (Harrisburg) and a good school system make Selinsgrove a desirable community for young families. The community's need for downtown open space to accommodate community events and the arrival of a new small hotel prompted discussions for a downtown revitalization plan.

Table 1. MSRV Socioeconomic Demographics (Bowns 2010).

Town/COUNTY Town Size/ sq. mi. People Density	Population Households (HH) Families Housing Units	Median Age Age Cohorts	Income Median (HH) Median Family Per Capita	Local Employers/ Below Poverty Level (BPL)
• Selinsgrove,/SNYDER 1.9 sq. mi. Density: 2,790/sq. mi.	5,383 HH: 1767 Families: 987 Housing Units: 1,912	26 18-24 yrs: 34.9% 25-44 yrs: 18.7% 45-64 yrs: 15%	M. HH: \$31,034 M. Fam: \$42,500 Per Cap: \$13,401	• Susquehanna U. • Manufacturing • Construction • 16.7% BPL
• Lewisburg/UNION 1.0 sq. mi. Density: 5,724/sq. mi. *NRHP	5620 H.H. 1,778 Families: 787 Housing Units: 1,938	22 18-24 yrs: 45.9% 25-44 yrs: 16.4% 45-64 yrs: 12.8%	M. HH: \$30,137 M. Fam: \$53,409 Per Cap: \$14, 146	• Bucknell Univ. • Federal Penitentiary • 22% BPL
• Sunbury/NORTHUMBERLAND 2.2 sq. mi. Density: 4,997/sq. mi. * NRHP	10,610 HH: 4,540 Families: 2,637 Housing Units: 5, 072	37 18-24 yrs: 8.7% 25-44 yrs: 29.5% 45-64 yrs: 20.5%	M. HH: \$25,893 M. Fam: \$33,148 Per Cap: \$13,350	• Weis Market headquarters • 18% BPL
• Danville,/MONTOUR 1.6 sq. mi. Density: 3,087/sq. mi. * NRHP	4,897 HH: 2277 Families: 1,238 Housing Units: 2,523	38 18-24 yrs: 7.6% 25-44 yrs: 31.2% 45-64 yrs: 20.5%	M. HH: \$30,498 M. Fam: \$38,778 Per Cap: \$16,693	• Geisinger Medical Center • 10% BPL
• Bloomsburg/COLUMBIA 4.59 sq. mi. Density: 2,818/sq. mi. * NRHP	12, 375 HH: 4080 Families: 1,791 Housing Units: 4,388	22 18-24 yrs: 45.5% 25-44 yrs: 18.6% 45-64 yrs: 12.7%	M. HH: \$24,868 Fam: \$39,806 Per Cap: \$12,819	• Bloomsburg U. • Manufacturing • 31.2% BPL

* NRHP: National Register of Historic Places

While Danville contains the Geisinger Medical Center, a preeminent medical research facility, its downtown is a mix of predominantly neglected storefronts and newly upscale shops. Other improvements in downtown Danville include a new five-story Geisinger Medical Center office building for more than 100 workers and a popular summer festival that celebrates the town's ironworks heritage.

The possibility of securing state and federal funds for downtown improvements spurred the towns' leaders to mobilize their communities for consensus on revitalization. Nearby Lewisburg was one of the first river towns to demonstrate the positive impact of public and private investments with a reinvigorated downtown economy and increased property values. Requesting Penn State assistance to facilitate public consensus, Selinsgrove, Sunbury, and Danville sought to improve their economies and quality of life.

Regional Research Partners

The potential for transdisciplinary research in the context of improving the economic vitality of towns in the Middle Susquehanna River Valley rests in the long-term and continuing planning efforts of the Susquehanna

Economic Development Association–Council of Governments (SEDA–COG), the nonprofit regional planning organization, and the Geisinger Medical Center.

SEDA–COG Snyder, Union, Northumberland, Montour, and Columbia Counties are members of the nonprofit Susquehanna Economic Development Association, Council of Governments (SEDA–COG). As part of its efforts to facilitate participatory planning in the region, SEDA–COG involved planning organizations, commissions, universities, visitors bureaus, state departments, and other health related and educational entities in developing *Valley Vision 2020: A Regional Strategic Action Plan for Land Use, Transportation, and Economic Development* (SEDA–COG 2006).

The SEDA–COG Community Resource Center is the community design arm of the organization and has become a major partner in Penn State's transdisciplinary research in the region. The center consists of three professional planners and produces local planning studies that guide each town's plan for revitalization and economic development to fit within a greater context of regional conservation and sustainability. Decisions by Selinsgrove, Sunbury, and Danville community

Figure 5. Participatory workshop for downtown revitalization, Danville, PA (Courtesy of The Pennsylvania State University).

stakeholders to apply for Hamer Center assistance were a departure from past practices of seeking SEDA-COG services. This created an initially awkward relationship between the Hamer Center and SEDA-COG.

The Geisinger Medical Center. This center in Danville is modeled on the Mayo Clinic concept of group practice (interdisciplinary medical teamwork to benefit patients). With 44 locations, Geisinger is currently the largest rural healthcare facility in the United States. Geisinger's vice president for community affairs directed Selinsgrove, Sunbury, and Danville community leaders to the Hamer Center and participated in startup meetings of community representatives with the landscape architecture faculty. This key connection helped secure funding for student travel and research materials.

SRT projects background The 2005 request by Selinsgrove Projects, Inc. (SPI), a Selinsgrove nonprofit organization, was accepted as a Department of Landscape Architecture community design studio to update Selinsgrove's 19-year-old central business district master plan. The public process meetings, workshops, surveys, and master plan resolutions were executed in a 15 week semester. Sunbury's mayor and city council subsequently requested Penn State assistance in conducting a similar planning process for its downtown. Sunbury's larger size and population mandated a more complex process commencing in the fall semester 2007

and completed the spring semester 2008. In Danville, anticipation of a new, five-story Geisinger medical office building also prompted the Danville Business Alliance (DBA) in 2008 to seek Penn State assistance for a community dialogue about revitalization in its central business district (Figure 5).

APPLICATION OF STOKOLS'S TDAR FRAMEWORK TO THE MSRV CASE STUDY

The Stokols TDAR Framework

While the SRT research projects were completed as separate and sequential, the present discussion employs the TDAR paradigm to treat the SRT projects as elements of a larger program to promote regional conservation and economic development in the MSRV. Stokols (2006) notes that various types and levels of collaboration often require coordination but that when they share an array of interrelated community improvement goals, they may be linked together as interrelated processes for the intended translation of research findings into public policy. In the process, they become TDAR.

Stokols describes TDAR as having three dimensions:

1. Organizational scope
2. Analytical scope
3. Geographic scale

Each dimension ranges from a narrow to a broad scope, within which scientific collaboration, community coalition, and intersectoral partnership are described. The organizational scope ranges from intraorganizational (narrow) to interorganizational (midrange), to broad, intersectoral capacities. The geographic scale ranges from (small) local groups to community, to regional, to the large scale of national/global groups and organizations. The analytic scope encompasses biological, psychological, social/environmental, and community/policy levels of empirical and conceptual analysis for examining community issues. Thus, according to Stokols, the transition from research to action research to transdisciplinary action research is reflected in intellectual analyses that expand in scope from the molecular or cellular, to the community's physical and social contexts, and eventually to policy perspectives (Stokols 2006, 66).

As will be discussed later, the tenets of TDAR are both compatible with and problematic for plural design research in landscape architecture. The following analysis of revitalization and smart growth efforts in Selinsgrove, Sunbury, and Danville uses the transdisciplinary rubric of team collaboration to situate the case study as “researchers working . . . with community members” (Stokols 2006, 64). The TDAR scope is used to assess the breadth and substance of empirical and conceptual knowledge produced for community interventions and regional policy in the plural design research. A discussion of the applicability of the TDAR framework to university based plural design research follows the case study research.

Susquehanna River Towns Case Study Analysis

Figure 6 orders the Susquehanna River towns’ organizational and analytic scopes as well as their geographic scale into a graphic representation to demonstrate the relationship of the SRT plural design research to Stokols’s TDAR model. The intent is to understand the interconnectivity of plural design research in three neighboring towns and how it fits within efforts to advance long-term goals for regional well-being.

Figure 6. TDAR Scope and SRT Plural Design Research (Courtesy the author 2010).

SRT Plural Design Research—Organizational Scope

The organizational scope of the SRT’s plural design research can be examined from Stokols’s (2006) intra-organizational, interorganizational, and intersectoral dimensions.

Intraorganizational Dimension. The university’s protocol for administering service learning and research activities with faculty members, students, and community/project sponsors was an important intraorganizational dimension of the SRT research. The SRT community design projects were housed in the Hamer Center, and the landscape architecture administrative staff managed research contracts and budgets and facilitated travel, presentations, and production costs for faculty members and students.

Interorganizational dimension. For the SRT research, the interorganizational dimension was the most evolved component of the organizational scope. Local and regional groups and individuals invested in the public dialogue for revitalization included university and school groups, local government, community groups, businesses, and local media.

University and school groups. The Susquehanna University Sterling Communications Group of student organizers and Penn State students collaborated to design and distribute banners, flyers, and postcard surveys for input from both town residents and university students on downtown revitalization. Children and youth are usually invisible citizens in community processes. The Selinsgrove school district superintendent permitted the solicitation of age-appropriate drawings in the elementary schools and writing exercises in the high

school indicating youths' perceptions of their community and the downtown. Danville's school superintendent and high school principal allowed surveys about student expectations for remaining in Danville after graduation. One class used participatory video (Lunch and Lunch 2006) to document additional impressions of Danville. Students interviewed residents along Main Street and made videos of their peers so as to present their case for a downtown skateboard park.

Local government. Community process is most effective with acknowledgment and support from local government. Selinsgrove's city manager was a major advocate of the planning process and supported the community's preference for the conversion of a former CVS pharmacy site from commercial development to town commons. Sunbury was the only town to fund community participation from its city council coffers. The mayor appointed himself project liaison although his busy schedule precluded his help with project details. In Danville, some borough officials initially did not support the idea of a public process to decide downtown improvements. The town's council president attended community meetings but did not participate in the discussions.

Community and business groups. SPI, Selinsgrove's proactive group of stakeholders, served as hosts and liaisons for the period of project engagement. In Sunbury, Sunbury Hill Neighborhood Association and Old Towne Neighborhood Association representatives attended every project meeting. As recipients of neighborhood improvement funding, they were interested in design research to augment resident involvement in neighborhood improvements and to brand their neighborhoods as distinct from the depressed downtown. In Danville, the residents, the Danville Business Alliance (DBA, the project sponsor) members, community group representatives, and the Geisinger Medical Center's corporate architect all attended public process meetings.

Local media, promotion, and dissemination. *The Daily Item* (a regional newspaper) and the local radio station covered every community engagement with interviews and photographs of meetings, forums, and

workshops. Project news was posted on the Sunbury City Web site. Downtown businesses and community facilities prominently displayed meeting posters, and distributed and collected postcard surveys. Survey return rates exceeded 10 percent in every community. For those unable to attend meetings, the meetings' presentations were posted in the community center or library.

Intersectoral dimension. The intersectoral dimensions of the SRT research reveal collaborative exchange between and among local, county and state governments, SEDA-COG, the Geisinger Medical Center, Penn State faculty members and students, as well as Susquehanna University, Bucknell University, and Bloomsburg University, the three institutions of higher education in the MSRV. In 2005, faculty members affiliated with Bucknell University's Environmental Center initiated the Susquehanna River Heartland Humanities Council (SRHHC), an interdisciplinary group of scholars, public sector representatives, and citizens. Bucknell and the regional Degenstein Foundation support *Watershed: The Journal of the Susquehanna* as part of the council's efforts to encourage environmental and humanities projects in the region.

For more than 20 years SEDA-COG regional planning has advocated cooperative and strategic planning among sectoral entities (that is, among local government and state representatives, commissioners and agencies, the local universities and Penn State, Geisinger, and so forth) to foster sustainable development in the region. The nonprofit group has led efforts to tie local and regional planning (for example, the above mentioned *Valley Vision 2020*) to state level planning and funding resources at the Pennsylvania Department of Conservation and Natural Resources (DCNR), the Department of Community and Economic Development (DCED), and the Appalachia Regional Commission. Current collaborative, intersectoral initiatives coordinated by SEDA-COG include the Susquehanna Greenway Partnership (SGP), the MSRV application for Pennsylvania Heritage Area status, the MSRV Revitalizing River Towns Initiative, and so forth. The MSRV initiatives are evidence of

progressive regional planning; local and county entities are slowly yielding years of independent identity and decision making to respond collaboratively to the effects of globalization and structural economic changes that continue to occur in rural Pennsylvania.

With the SRT research, SEDA-COG participated as senior consultant and regional resource. SEDA-COG planners provided plans and base data, essential readings of the region's historical and cultural contexts, and with each design studio an orientation and discussion of the region's economic and physical development issues. The director and chief planner provided critiques of student proposals for community improvement.

The project faculty's (the author's) research includes the sociocultural dimensions of the region (Bowns 2010). Toward that end, she is a member of Bucknell University's SRHHC and continues research with SEDA-COG planning staff and Bloomsburg University faculty. She has accepted appointment to the task force for the MSRV's application for Pennsylvania Historic Heritage Region designation. Increasingly, her views align with SEDA-COG's planning goals for landscape conservation, small town revitalization, and smart growth planning in the region. For the SRT research, she worked with SEDA-COG to disseminate prospective regional initiatives for smart growth and other relevant information and to delineate specific, community level studies for the students to supplement findings for regional planning initiatives.

Research—Geographic Scale

The geographic scale for the SRT community planning research ranged from local to community to regional levels of collaboration and to the state for funding. In the SRT local groups, organizations, and institutions (for example, SPI, Sunbury's Hill Neighborhood Association, Danville's DBA, and so forth) supported and promoted participatory components of the community design process. Local media coverage of meetings and community responses to the postcard surveys can be credited for strong community participation in each town.

With completion of the Selinsgrove master planning report, the faculty/student and community partnership essentially ended, but it was followed by similar community activities in Sunbury and Danville as well as the faculty's continued involvement in initiatives for regional planning. At the level of the MSRV region, Penn State faculty members continue to partner with SEDA-COG, providing research and analysis expertise for initiatives that support conservation and economic development. A positive, long-term relationship with SEDA-COG and its extended networks is key for university faculty members committed to plural design research and involvement in sustainable development issues in the region.

Research—Analytic Scope: The Social-Environmental Dimension

The SRT plural design research included biological investigations of the Susquehanna River fish habitat and water quality but primarily centered on social/environmental levels of analysis. The Susquehanna River is the region's predominant geographic feature, and it factors into all local and state plans for revitalization, natural resource management and conservation, and economic development along its waterways. Creation of the Susquehanna Greenway Partnership (SGP) manifests the importance of the river in the public imagination for the retention of regional character and economic development. SGP's collaboration with local towns and communities, regional agencies (SEDA-COG and the Chesapeake Bay Commission), and the state (Growing Green Foundation and the Pennsylvania Department of Conservation and Natural Resources) produced the *SGP Strategic Action Plan* for the river. The plan establishes public/private partnerships to achieve the greenway's vision of regionwide economic development, community revitalization, environmental stewardship, enhanced recreation, education, and healthy living (SGP 2006).¹⁰ The SGP increasingly will be a sectoral and regional force in development proposals affecting the ecology or use of the river.

Although similar methods are employed, the social and community levels of analysis and outcomes for plural design differ from one community to another. Culturally, the MSRV population appears to be a mix of ethnic German origination with a visible segment of Amish and Mennonite cultures. Within each town, however, social distinctions are based on length of community residency and / or known economic class. In Selinsgrove and Danville, there is additional social distinction between and among community residents, university people and students, and Geisinger medical people. Several areas in Selinsgrove contain only student housing or university uses. In downtown Sunbury, large numbers of affordable rental units result in a more diverse population and apparent social distinction between property owners and renters. Sunbury also has a higher number of disabled and nonwhite residents than the other towns.

Analysis and mobilization of a community in participatory processes varied with the level of community capacity for civic engagement as well as with the town's physical layout and walkability. The compact layout of the SRT downtowns allowed walking students to distribute posters and surveys to most civic and commercial destinations for community residents. Public recognition of the students as well as email and telephone contact with residents and civic leaders translated into animated and participatory meetings around the issues for community improvement. Penn State students with firsthand knowledge of the MSRV were resources for understanding each town's social makeup and community character.

DISCUSSION

Advancing Transdisciplinary Action Research in the MSRV

The MSRV counties represent five of Pennsylvania's 67 counties. The subregion is distinguished by its geographically and culturally unique location on the Susquehanna River and for the rich character of its unexploited

river towns. Local studies (Grbenick 2007), the SRT research, and the author's continuing involvement in the region reveal movement away from historic patterns of economic competitiveness among the towns and towards a collective, regional consciousness to achieve sustainable economic development. Current examples of regional level cooperation include implementation of the above mentioned Susquehanna Greenway Partnership, the MSRV application for Pennsylvania Historic Heritage Region status, and the Revitalizing River Towns initiative. In addition, some regional projects to economically benefit the five counties and towns are pending. These include a north-south bypass to relieve traffic congestion along U.S. Highway 11/15, development of a regional boathouse facility for public and collegiate rowing, and a fish ladder to bring Susquehanna shad and recreational fishing back to the region. The MSRV collaborative planning actions are both exemplary and atypical of planning in rural Pennsylvania.

A major hindrance to progressive regional planning in Pennsylvania is the unique and historic structure of governance for its small towns.¹¹ Many small towns will find it difficult to embrace a model of true regional planning that requires delegating local powers and decisions to a regional council of government. In its publication *Competitive Agenda for Renewing Pennsylvania*, the BICMPP (2003) takes a "tough love" position towards the state's deep-set localism. The BICMPP strategy to renew state and regional governance is especially relevant to planning for conservation and implementing sustainable economic development in the MSRV. Three actions toward achieving improved state and regional governance are recommended:

1. Upgrade state planning capacity to create a state vision for economic competitiveness and development and apply it across state programs.
2. Foster more local planning to provide better incentives and programs for training local officials and to tie state agencies' funding and permits to the existence of a local municipal plan and

zoning ordinances that conform to a county or multimunicipal comprehensive plan.

3. Promote multimunicipal planning to provide outreach and education for groups of municipalities to plan together and designate growth areas and rural areas to be conserved on a regional basis. (Brookings Institution 2003)

In reality, transdisciplinary collaboration is already underway in the MSRV. State, county, and local governments are mobilizing around a series of regional projects, initiatives, and funding opportunities. As more people discover the MSRV for its small town charms and agrotourism attractions, a collective, regional ethic for sustainable development may become a powerful shield against the insidious advance of sprawl development into northwest central Pennsylvania. In the best scenario, researchers will make substantive contributions to environmental and community based studies that promote revitalization and sustainable development at the regional and state levels. Opportunities will exist to collaborate with regional organizations and to inform citizens about regional and state level actions to improve local communities. Outside of a structured and externally funded research program, however, the faculty's continued involvement (beyond community design studios) depends on regional players making a place at the table and the university supporting the time demands and funding necessary for continuing TDAR.

Advancing Transdisciplinary Action Research in Landscape Architecture

A comparison with other cases allows evaluation of the effectiveness of the MSRV case study in advancing TDAR in landscape architecture. The recently published *Handbook of Transdisciplinary Research* (Hadorn et al. 2008) contains a cross-section of funded transdisciplinary research studies in the social and environmental sciences and planning. The transdisciplinary planning studies include an investigation of development strategies in a regional landscape unit (a canton) of Switzerland

(Walter, Wiek and Scholz 2008) and a collaborative process of retrofitting a suburban environment for community use (Després et al. 2008). A self-declared example of transdisciplinary research exists at the University of Minnesota. In 2006, its Institute on the Environment was funded through the Legislative-Citizen Commission on Minnesota Resources to develop a new conservation and preservation plan for 21st century Minnesota. Working with planning professionals, institute faculty members examined ecocentric resources—air, land, water, fish, and wildlife—and their intersection with quality of life issues in Minnesota to create a new conservation plan. Landscape architects on the team were involved in evaluating and redesigning “accepted patterns of settlement, construction, neighborhood design, stormwater management, and resource consumption” (Hession 2007, 8), so as to avoid future environmental crises for the state.¹²

These transdisciplinary research examples (and others in the handbook) differ from the opportunistic engagement of faculty members and students in the MSRV planning networks. The three (Hadorn et al. 2008) projects were funded, and each research prospectus characterized the team participants' expertise and research objectives as well as the research model/strategy necessary to accomplish the research tasks. Indeed, these initiatives follow Stokols's idea that applications of the TDAR paradigm for community problem initiatives are most effective when organized, funded, and implemented with a collaborative team structure using a conceptual framework for the collaborative research.

In comparison, even with the declared intent of continuing and expanded involvement in the region, Penn State faculty engagement in the MSRV region is not rooted in a structured team with a set of funded research commitments. This leads to a reframing of the introductory question. Now we must ask whether the Stokols TD framework is the most effective reorientation (or structural methodology) for producing cooperative and interactive knowledge—whether for university based plural design research or community engagement. If

the level of funding and collaborative teamwork needed to make TDAR successful is not readily available, what is the recourse for academic practitioners of plural design who are engaged in citizen participation and community building processes? We must also ask whether the TDAR paradigm can be successfully integrated into plural design research to effect change and quality of life improvements beyond that embedded in orchestrated TDAR structure and funding.

CONCLUSION

The importance of new interdisciplinary approaches such as TDAR lies in their ability to provide new perspectives towards structuring research, developing new theories, and disseminating findings. To quote Forsyth, however, "It is not a panacea."¹³ Innovative theories and methodologies (especially those in the sciences) using a priori and top-down approaches may be viewed as unresponsive to humanities-based disciplines. While approaching a topic of study from a multidisciplinary perspective is not new, we must encourage and probe new perspectives and approaches to evolve from within the disciplines of the humanities. For this to occur in design and landscape architecture, the following suggestions gleaned from the literature on interdisciplinary teaching, research, and design are relevant.

Interdisciplinary research begins with academic departments assigning the same or *more* value to interdisciplinary research as to scholarship within the discipline mainstream. Colleges and departments should provide funding and time resources to facilitate humanities faculty learning of the vocabulary and rules of the game so as to compete with social scientists and others for NSF, NIH, and other major funding sources for interdisciplinary research.

Teachers should introduce conceptual frameworks from other disciplines to construct a common language and tools to bridge the divide between the sciences, technology, and humanistic culture. Gorman (1995) argues that differences in the thinking styles of science, technology, arts, and design practitioners do

not negate the parallels in thinking styles of individuals engaged in these disciplines. (Indeed, the fields are not mutually exclusive; a poet may also be a nuclear scientist!) By interjecting various disciplinary cultures into a classroom or into the studio learning process, teachers encourage students to draw from both scientific and artistic approaches to design and problem solving (Gorman 1995).

In support of reordering design education, Findeli (1997) proposes an epistemological/methodological shift in design from technology to ethics that implies involvement beyond the project. The systemic view, which favors the making of artifacts (such as plans and models) as the normal outcome of a design process, would no longer be taken for granted. Designers would be expected to act rather than to make. In other words, making (*poiesis*) would be considered a special case of acting (*praxis*), to the extent that even *not* making is acting (Findeli 1997, 14). While this idea may be subversive to many designers, it resonates especially well with the practice of plural design, as the process of collaboration is meant to render collective solutions outside of an individual's creative signature. When and where the master plan or park design is realized becomes inconsequential to the work of mobilizing citizens towards greater knowledge and inquiry and so towards the making of their community environment.

Finally, interdisciplinary and transdisciplinary research is a paradigm shift gaining credence across academia. This reality brings new opportunities for academics of plural design research to contribute and collaborate across extensive organizational and geographic networks. Achieving the plural design goal of enacting effective policy at the regional and/or state levels cannot be realized without citizens and communities first being mobilized and educated to effect democratic change. In the new research arena, practitioners of plural design must continue their efforts towards improving the social and spatial qualities of communities. Success at the community scale must be parleyed into greater team efforts to effect widespread and sustainable improvement. Toward this end, a transdisciplinary

framework such as Stokols's TDAR may serve as an organizing tool to frame the complex structures of integrative and plural design research.

NOTES

1. Trans. Thierry Ramadier (cited in Ramdier 2004).
2. *Ecocentric* knowledge is composed of the environmental and ecological values of the immediate site and greater geography that situate a community in larger physical systems. *Anthropocentric* applies to social, cultural and political conditions/relationships associated with a community's population. Together they determine the character and quality of life of a place and its community (Brown and Jennings 2003; Crewe and Forsyth 2003).
3. On city, state, and federal boards or in community-corporate partnerships, citizen involvement may range from token representation to full, decision making capacities on environmental planning issues. See Arnstein 1969.
4. Both terms are intended to characterize the essential relationship of the model to the site of research and do not diminish assets that inform the structure and production of knowledge in the discipline.
5. Usual sites for the dissemination of service learning and plural design research are the annual American Society of Landscape Architects and Council of Educators in Landscape Architecture conferences.
6. The premise of E/B/N research is that perceived (designed) changes in the environment can change the brain and therefore change behavior (Zeisel 2006). POEs evaluate planning/programming processes and subsequent uses of designed environments (Francis and Bowns 1999). Yin (2003) is often referenced on case study research, and Francis (2000) specifically proposes a case study methodology for design projects.
7. See the thematic issue of *Futures* 36 (4) for an overview of transdisciplinary history, theory, and contemporary research.
8. Between 1982 and 1997 Pennsylvania urbanized nearly four acres of land for each new resident, more than any other state but Wyoming (BICMPP 2003, 47).
9. Between 1982 and 1997, Scranton/Wilkes-Barre/Hazleton urbanized 6.1 acres per new household, Harrisburg developed 2.1 acres, and Allentown/Bethlehem/Easton developed 2.0 acres (BICMPP 2003).
10. The Susquehanna Greenway is a land and water corridor to extend 500 miles along Pennsylvania's west and north branch of the Susquehanna River. When implemented, it

will be the largest greenway in the United States, providing new opportunities for employment, recreation, and tourism throughout the state (SGP 2006).

11. Each Pennsylvanian lives within one of 2,566 municipalities. Among municipalities, 80 percent govern fewer than 5,000 people, and 60 percent fewer than 2,500 (BICMPP 2003, 65–66).
12. See Hession 2007. The *Minnesota Statewide Conservation and Preservation Plan* is available at www.lccmr.leg.mn/statewideconservationplan/SCPP_FinalPlan.html [July 29, 2010].
13. Ibid.

REFERENCES

- Arnstein, Sherry. 1969. A ladder of citizen participation. *Journal of the American Institute of Planners* 35 (4): 216–224.
- Balsiger, Phillip. 2004. Supradisciplinary research practice: History, objectives, and rationale. *Futures* 36 (4): 407–421.
- Bowns, Caru. Forthcoming 2010. Toward small town revitalization in the Middle Susquehanna River Valley: Re-assessing historic and regional resources for collaborative development. *Material Culture: The Journal of the Pioneer America Society* 42 (2).
- Brookings Institution Center Metropolitan Policy Program (BIC-MPP). 2003. *Back to Prosperity: A Competitive Agenda for Renewing Pennsylvania*. Washington, DC: Brookings Institution Center.
- Brown, Kyle D., and Todd Jennings. 2003. Social consciousness in landscape architecture education: Toward a conceptual framework. *Landscape Journal* 22 (2): 99–112.
- Bruce, Ann, Catherine Lyall, Joyce Tait, and Robin Williams. 2004. Interdisciplinary integration in Europe: The case of the Fifth Framework programme. *Futures* 36 (4): 457–470.
- Crewe, Katherine, and Ann Forsyth. 2003. LandSCAPES: A typology of approaches to landscape architecture. *Landscape Journal* 23 (1): 37–53.
- Davidoff, Paul. 1996. Advocacy and pluralism in planning. In *City Reader*, 2nd ed., ed. Richard LeGates and Fredric Stout, 423–433. New York: Routledge.
- Després, Carole, Andree Fortin, Florent Joerin, Genevieve Vachon, Elise Gatti, and GianPero Moretti. 2008. Retrofitting postwar suburbs: A collaborative design process. In *Handbook of Transdisciplinary Research*, ed. Gertrude Hirsch Hadorn, Holger Hoffman-Riem, Susette Biber-Klemm, Walter Grossenbacher-Mansuy, Dominique Joye, Christian Pohl, Urs Wiesmann, and Elisabeth Zemp, 327–341. Dordrecht, Netherlands: Springer.

- East St. Louis Action Research Project (ESLARP). 2009. <http://eslarp.illinois.edu/view/about.aspx> [June 13, 2010].
- Faga, Barbara. 2006. *Designing Public Consensus: The Civic Theater of Community Participation for Architects, Landscape Architects, Planners, and Urban Designers*. Hoboken, NJ: Wiley and Sons.
- Feyerabend, Paul. 1997. *Against Method*. London, New York: Verso.
- Findeli, Alain. 2001. Rethinking design education for the 21st century: Theoretical, methodological, and ethical discussion. *Design Issues* 17 (1): 5–17.
- Fischer, Frank. 2000. *Citizens, Experts, and the Environment: The Politics of Local Knowledge*. Durham, NC: Duke University Press.
- . 2006. Environmental expertise and civic ecology: Linking the university and its metropolitan community. In *Toward a Resilient Metropolis: The Role of the State and Land Grant Universities in the 21st Century*, ed. Arthur Nelson, Barbara Allen, and David Trauger, 83–101. Alexandria, VA: MI Press.
- Forsyth, Ann, Henry Lu, and Patricia McGirr. 1999. Inside the service learning studio in urban design. *Landscape Journal* 18 (2): 166–178.
- Francis, Mark. 2000. A case study method for landscape architecture. *Landscape Journal* 20 (1): 15–29.
- Francis, Mark, and Caru Bowns. 1999. *University of California Davis Medical Center Urban Wildlife Preserve Post Occupancy Evaluation*. Davis, CA: Center for Design Research, University of California, Davis.
- Gibbons, Michael, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott, and Martin Trow. 1994. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. London: Sage.
- Gorman, Michael, and Julia Kagiwada. 1995. Invention, design, and discovery: A transdisciplinary quest. *New Literary History* 26 (3): 627–640.
- Grbenick, Tom. 2007. *White Paper: Growing Smarter—Regional Solutions to Community Betterment*. Lewisburg, PA: SEDA-COG.
- Hession, Jane King. 2007. Where design and sustainability intersect. University of Minnesota College of Design *EMERGING* 1 (2): 8, 12.
- Hester, Randolph. 1990. *Community Design Primer*. Mendocino, CA: Ridge Times Press.
- . 1999. A refrain with a view. *Places* 12 (2): 12–25.
- Hirsch Hadorn, Gertrude, Holger Hoffman-Riem, Susette Biber-Klemm, Walter Grossenbacher-Mansuy, Dominique Joye, Christian Pohl, Ur Wiesmann, and Elisabeth Zemp, eds. 2008. *Handbook of Transdisciplinary Research*. Dordrecht, Netherlands: Springer.
- Lawrence, Roderick, and Carole Després. 2004. Futures of transdisciplinarity. *Futures* 36 (4): 397–405.
- Lawson, Laura. 2005. Dialogue through design: The East St. Louis neighborhood design workshop and South End Neighborhood plan. *Landscape Journal* 24 (2): 157–171.
- Lunch, Nick, and Chris Lunch. 2006. *Insights into Participatory Video: A Handbook for the Field*. London: Insightshare. <http://islive.ecobee.org/resources/pv-handbook> [June 12, 2010].
- McMahon, Edward T., and Shelley Mastran. 2005. *Better Models for Development in Pennsylvania: Ideas for Creating More Livable and Prosperous Communities*. Harrisburg, PA: The Conservation Fund.
- Nowotny, Helga, Peter Scott, and, Michael Gibbons. 2001. *Rethinking Science, Knowledge and the Public in an Age of Uncertainty*. Cambridge: Polity Press.
- Ramadier, Thierry. 2004. Transdisciplinarity and its challenges: The case of urban studies. *Futures* 36 (4): 423–439.
- Reardon, Kenneth. 1998. Enhancing the capacity of community-based organizations in East St. Louis. *Journal of Planning Education and Research* 17 (4): 323–333.
- Rosenfield, Patricia. 1992. The potential of transdisciplinary research for sustaining and extending linkages between the health and social sciences. *Social Science & Medicine* 35 (11): 1343–1357.
- Sanoff, Henry. 2008. Multiple views of participatory design. *International Journal of Architectural Research* 2 (1): 57–69.
- Scholz, Roland, and Olaf Tietje. 2001. *Embedded Case Study Methods: Integrating Quantitative and Qualitative Knowledge*. London: Sage.
- Susquehanna Economic Development Association-Council of Governments (SEDA-COG). 2006. *Valley Vision 2020: A Strategic Action Plan for Land Use, Transportation and Economic Development*. Lewisburg, PA: SEDA-COG. http://www.valleyvision2020.org/Documents/Regional_plan_Mar_compressed.pdf [June 12, 2010].
- Spirn, Anne W. 2005. Restoring Mill Creek: Landscape literary, environmental justice, and city planning and design. *Landscape Research*. 30 (3): 395–413.
- Stokols, Daniel. 2006. Toward a science of transdisciplinary action research. *American Journal of Community Psychology* 38 (1–2): 63–77.

- Susquehanna Greenway Partnership (SGP). 2006. *Susquehanna Greenway Strategic Action Plan: A Call to Action*. Lewisburg: Susquehanna Greenway Partnership. <http://www.susquehannagreenway.org/Documents/susqgrnwycalltoaction.pdf> [June 12, 2010].
- The Center for Rural Pennsylvania (TCRP). N.d. *About Rural PA*. <http://www.rural.palegislature.us/about.html> [June 12, 2010].
- United Nations. 1992. *Report of the United Nations Conference on the Human Environment, Stockholm*, June 5–16, June 1992. New York: United Nations Publication, Sales No. E.73.II.A.14 and corrigendum, Chap. 1. <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> [July 5, 2010].
- Walter, Alexander, Arnim Wiek, and Roland W. Scholz. 2008. Constructing regional development strategies: A case study approach for integrated planning and synthesis. In *Handbook of Transdisciplinary Research*, ed. Gertrude Hirsch Hadorn, Holger Hoffman-Riem, Susette Biber-Klemm, Walter Grossenbacher-Mansuy, Dominique Joye, Christian Pohl, Ur Wiesmann, and Elisabeth Zemp, 223–243. Dordrecht, Netherlands: Springer.
- West Philadelphia Landscape Project (WPLP). N.d. *West Philadelphia Landscape Project*. <http://wplp.net/> [June 13, 2010].
- Yin, Robert. 2003. *Case Study Research: Design and Methods*. London: Sage.
- Zeisel, John. 2006. *Inquiry by Design: Environment/Behavior/Neuroscience in Architecture, Interiors, Landscape, and Planning*. New York: Norton.

AUTHOR CARU BOWNS participated in community-action planning in Peace Corps Brazil, which inspired her involvement in community issues while studying in the MLA program at the University of California, Berkeley. After working as a landscape architect in the United States and Middle East, she returned to community-based planning and academia to pursue a PhD at the University of California, Davis. Since 2005, she has been an assistant professor in landscape architecture at Penn State University, teaching community design with research agendas including civil society and the landscape of poverty in Brazil and participation, service learning, and smart-growth planning in Pennsylvania.