

Articles on Collaborative Public Management

Martha Feldman is the Roger W. and Janice M. Johnson Chair in Civic Governance and Public Management at the University of California, Irvine.
E-mail: feldmanm@uci.edu.

Anne M. Khademian is an associate professor at the Center for Public Administration and Policy in the School for Public and International Affairs, Virginia Polytechnic University.
E-mail: akhademi@vt.edu.

Helen Ingram is the Drew, Chace and Erin Warmington Endowed Chair of Social Ecology at the University of California, Irvine.
E-mail: hingram@uci.edu.

Anne Schneider is a professor in the School of Justice Studies and a faculty affiliate with the Center for Urban Inquiry at Arizona State University, where she was dean of public programs for 15 years.
E-mail: anne.schneider@asu.edu.

Martha S. Feldman
University of California, Irvine
Anne M. Khademian
Virginia Polytechnic University
Helen Ingram
University of California, Irvine
Anne S. Schneider
Arizona State University

Ways of Knowing and Inclusive Management Practices

The authors engage structural and agentic perspectives to examine opportunities for deliberation and the purposeful role of managers in creating those opportunities. Drawing on actor-network theory as a way of understanding the process of structuring knowledge, this essay focuses on the continuous enactment and reenactment of networks of human and nonhuman actants and the associations that connect them. This thinking is applied to policy issues, which the authors propose should be understood as ways of knowing. The fluidity of such ways of knowing provides opportunities for public managers to use the inclusive practices associated with boundary experiences, boundary objects, and boundary organizations to facilitate deliberation.

A distinguished history of scholarship holds out deliberation as the ideal means of making public decisions and promoting democracy (Dewey 1916; Elster 1998; Ingram and Rathgeb-Smith 1993; Manin, Stein, and Mansbridge 1987; Rousseau 2003). The scholarly literature is split, however, on the best means of accomplishing deliberative democracy. One body of scholarship focuses on the role of civil, social, and political structures to generate opportunities for participation and deliberation (Landy 1993; Mansbridge 1980). These authors focus on the creation and maintenance of a civil deliberative space that is often structurally distinct from government (Dryzek 2002), the creation of ideal speech conditions (Habermas 1975, 1989), the establishment of institutions of citizen deliberation and participation to enhance both representation and deliberation (Fung 2006; Fung and Wright 2003), and the establishment of “structures and processes that define relations between civil society.... and the state” (Chaskin 2003, 162).

Another body of scholarship focuses on the role of agents in creating and facilitating opportunities for deliberative democracy. This perspective is prominent in the public management literature, which presents the manager as a catalyst for deliberative processes (Heifetz 1994; Heifetz and Sinder 1988; Reich 1988), a facilitator of civic engagement (Box 2000; Bryson

2004; Kirlin and Kirlin 2002), a key to forging an alternative consensus around public goals (Behn 2001; Moore 1995), and a “public servant” who is able to “help citizens articulate and meet their shared interests” (Denhardt and Denhardt 2000).

This paper contributes to a small but growing body of scholarship that engages both the structural and agentic perspectives in order to examine opportunities for deliberation and the purposeful role of managers in creating those opportunities (Bingham, Nabatchi, and O’Leary 2005; Feldman and Khademian 2002, 2005, forthcoming; Roberts 1997, 2002, 2004; Thacher 2001; Vigoda 2002; Weber 2003). In this paper, we propose a way of understanding the structuring of knowledge that is associated with policy issues and that can be used by public managers to create opportunities for inclusive practices, or actions aimed at increasing the range of perspectives in deliberation. We can recognize distinct and stable ways of knowing any given policy issue, such as “pro-life” and “pro-choice,” which represent ways of knowing abortion as a policy issue, or “resource development” and “preservation,” ways of knowing the environment as a policy issue. Yet, as we will discuss here, ostensibly stable ways of knowing an issue must be continuously renewed. The ways of structuring and knowing associated with a policy issue, even those that endure, are active and ongoing. We suggest that the fluidity of knowing an issue is an opportunity for public managers to use inclusive practices to facilitate deliberation. This perspective helps them employ tools such as boundary experiences, boundary objects, and boundary organizations to bring together different ways of knowing and to create opportunities for new ways of knowing to emerge. By relating the process of structuring to the creation of opportunities for inclusive practice, this paper brings together the structured features of the civil society literature with the agentic features of the management literature.

As a baseline, we offer a definition of deliberation: “Deliberation is not ‘the aggregation of interests.’ It

requires thoughtful examination of issues, listening to others' perspectives, and coming to a public judgment on what represents the common good. Public judgment differs from public opinion in the sense of the typical opinion poll. Public judgment comes from people working together, face-to-face, in a shared search for effective solutions to their community problems" (Roberts 2004, 332).

Our question is, how can public managers intervene constructively in the creation of opportunities to deliberate by engaging different ways of knowing a policy issue? To answer our question, we propose in the first section that perspectives on policy issues can be understood as fluid networks that we refer to as *ways of knowing*. This is the structural part of the argument, though there is a great deal of agency in this structuring process. The second section of the paper focuses on agency. There, we explore how understanding this structuring process can help those who would like to facilitate deliberation on policy issues. We are particularly interested in public managers, whom we see as being in a position to use this analysis constructively.

Understanding Policy Issues as Ways of Knowing

Public issues and reactions to them are not innate but rather socially constructed through the intersections of history, society, and materiality (Lovell 2003; Schneider and Ingram 1993, 1997, 2005; Stone 1997). The way that public issues are known changes over time and in relation to other public discourses and technological advancements (Hajer and Wagenaar 2003). Actor-network theory (ANT), or the sociology of associations (Latour 2005), provides a means of entering into what has been a black box and conceptualizing ways of knowing as fluid networks. It is this ability to see the parts of networks and the way that changes occur in them that draws us to this way of conceptualizing ways of knowing.

We appropriate aspects of actor-network theory to conceptualize ways of knowing as dynamic networks of heterogeneous objects. Actor-network theory is neither static nor simple. We draw on only parts of it here, though further development of the perspective we outline may involve more intensive use of ANT. Use of the term *network* in ANT is distinct from a more general understanding of the term, which implies a stable set or cluster of interconnected people. First, within ANT, networks consist of human and nonhuman actants, and both human and nonhuman actants play important and often similar roles. Second, to the extent that these networks attain stability, it is an ongoing achievement. Though the re-creation of associations between actants (human and non human) can foster stability, it is the need continuously to create and re-create such associations that privileges change in ANT.

Translation is used in ANT as an alternative to diffusion as a way of understanding how ideas—in this case, ways of knowing—spread (Czarniawska and Joerges 1998; Latour 1986). Diffusion models suggest that ways of knowing are entities that stay intact as they move in ever-widening circles. Translation models suggest that ideas are altered as they move through time and across space (Latour 1999). The energy for this movement comes from those who pick up the ideas and move them along. The process of translation creates and re-creates the network. As a result, there is always the potential for change in the network, and stability is an ongoing achievement.

Another way in which ANT differs in its treatment of networks is its focus on and understanding of power. Often, power is not explicitly considered in networks because the emphasis is on the network as an alternative form of governance to hierarchies, for example, or markets, and the focus is on the interaction among members rather than the power differences (Klijn and Koppenjan 2000; Podolny and Page 1998). When power is considered, it is to examine its distribution among members of the network (Kriesi, Adam, and Jochum 2006; Van Waarden 1992) and the implications for the structure of the network (Sabatier 1988; Sabatier and Jenkins-Smith 1993). The focus of ANT is how power is produced (Latour 1986). Power in ANT is evident in the strengthening of continuously reenacted associations that enable some actions and constrain others. The focus on actions enables ANT to make a useful distinction between power in the diffusion model and the translation model (Latour 1986, 1999). In the diffusion model, power rests with the person who gives the order. In the translation model, "when no one is there to take up the statement or the token, then it simply stops." In the translation model, there is potential for "a continual transformation of the token" by each actor. This leads to the view that agency rests with individuals. When actors "take up the token" of a way of knowing a policy issue—by planning or accounting for their activities in terms of that way of knowing—the way of knowing gains power. Power, in other words, is not what holds the network together but what results from the network being held together.

An Example: Agriculture

We use these ideas to analyze how policy issues are conceptualized as networks of interconnected heterogeneous human and nonhuman actants. The ongoing development of ways of knowing agriculture production provides an example (Ingram 2004; Ingram and Ingram 2005). The policy issues at stake revolve around what constitutes agricultural production that is healthy and affordable to humans and not harmful to the environment.

Key actants in the ways of knowing agriculture production include soil, seeds, farmers, pests, crops,

technology, government agencies, and consumers. Over the past century, associations between these actants have changed to produce a way of knowing agricultural production as the production of uniform, unblemished farm products at a cheap price for the consumer. The emergence of this way of knowing has developed through changes in the associations between farmers, for instance, and soil and seeds; a direct association with the raw materials of farming has been altered by the introduction of chemical fertilizers to enrich soils, herbicides to kill weeds, pesticides to avoid losses to insects, and increasingly, genetically engineered crops. Demonstration projects and extension agents associate farmers with land grant universities, the U.S. Department of Agriculture, and large chemical companies such as Monsanto as actants in this way of knowing agricultural production. Farmers' associations with consumers are mediated by the provision of uniform, low-cost agricultural products to major food manufacturers and grocery chains and the export of crops to other markets.

The power of the chemical companies, the Department of Agriculture, and food

manufacturers is evident each time a farmer applies a chemical fertilizer or pesticide or uses genetically engineered crops, and each time a consumer purchases food processed by a manufacturer such as McDonalds or Kraft. These actions reenact associations that enable some actions and constrain others.

Take, for example, the case of the New Leaf potato, a genetically modified crop that is supposed to

cause the Colorado potato beetle to keel over and die (Pollan 1998). The potato crop is of uniform size and highly desirable to fast-food companies that purchase potatoes for french fries. The crop is patented, and farmers must get new seeds each year from the purveyor rather than simply replanting part of the previous year's crop. Over time, Pollan shows that the potato farmer has become more closely associated with the agribusiness and fast-food companies and has fewer available alternatives.

Yet alternative associations among the core actants of agricultural production have also emerged. During the 1930s, Sir Albert Howard and others involved in the British natural farming movement pursued another way of knowing agricultural products, one focused on safer and more healthful food for consumers and environmentally friendly consequences for the environment. In this approach, farmers are associated with soil, seeds, and crops—rather than the application of fertilizers and pesticides—through the practice of plant diversification and composting. Certification

procedures and labels that inform buyers that agricultural products are produced without chemicals, hormones, or genetically engineered seeds define the association with health food stores, alternative groceries, and ultimately consumers. Consumer demand for these products reinforces the association with farmers: Sales of organic products have grown more than 20 percent each year for more than a decade (Dimitri and Green 2002). Locally based farmers' organizations have also emerged as actants, using the process of certification to strengthen the association between individual farmers and organic methods of growing crops.

Interests and Ways of Knowing

Thinking about deliberative potential from the perspective of ways of knowing is different from thinking about it from the perspective of interests. Negotiation is often based on the notion that interests do not change but that multiple interests can be accommodated. Indeed, moving to interests rather than positions is often the hallmark of effective negotiation (Fisher, Ury, and Patton 1991). At its best, interest-

The power of the chemical companies, the Department of Agriculture, and food manufacturers is evident each time a farmer applies a chemical fertilizer or pesticide or uses genetically engineered crops, and each time a consumer purchases food processed by a manufacturer such as McDonalds or Kraft.

based negotiation addresses the ways of knowing associated with these interests. Processes that change interests or re-create the ways of knowing related to these interests, however, are seldom addressed, perhaps because ways of knowing are not understood as being capable of re-creation. As a result, the bargains that are struck are often temporary agreements between new rounds of bargaining, with differing interests continuously returning to

the bargaining table to attain more of their interests. We propose going beneath interests to the ways of knowing connected to them as a way of breaking this cycle.

Interests are intimately tied to ways of knowing. They may, for example, be the reason that people gravitate to a particular way of knowing. Farmers' interest in making a profit (or at least remaining solvent) may lead them to adopt pesticides and become part of a way of knowing agriculture that includes the whole panoply of actants discussed earlier. On the other hand, an interest in environmental sustainability may lead farmers toward an organic way of knowing agriculture. Interests may also be the result of ways of knowing. People have certainly developed interests in the institutions and products associated with each of these ways of knowing agriculture.

Developing new ways of knowing can provide people with new ways of fulfilling their interests. For instance, the interest in making a profit is not only

associated with conventional farmers but also with organic farmers. The ways in which farmers know how to actualize this interest vary markedly. Controlling pests is important to making a profit and is understood as eradication in the conventional way of knowing and as management in the organic alternative. A surefire mode of eradication is the use of pesticides developed by agribusiness conglomerates that stay ahead of the constantly mutating insects with better chemistry and, more recently, pest-resistant, genetically modified crops. The network tie of the farmer to the pesticide supplier typically extends to parallel relationships related to weed control through herbicides and soil enrichment through fertilizers. In turn, the extensive dependence of the farmer on agribusiness ties the farmer to producing the higher yields necessary to pay for higher-priced inputs and greater profits for the stockholders in the agribusiness (Pollan 1998).

The organic farmer shares the interest of his conventional counterpart in making money but views pesticides as an expensive alternative to natural treatments that avoid monocropping of large fields and the destruction of important pollinators, such as native bees, that are essential for setting the fruit. Crop rotation and mixing crops to take advantage of natural predator-prey relationships among insect pests results in high levels of biodiversity in fields and in agricultural products. Diversity and niche markets that are highly profitable replace the ideal of large yields that are so important to the conventional farmer. Being able to deliver a pesticide-free product attracts green consumers. The organic farmer is tied to the organic network through notions of appropriate organic practices and a certification system that ensures those practices are followed.

Interest-based approaches to the issue of pesticides in agriculture suggest that the conventional farmer, when under attack for the harm done to ecosystems and human health by pesticides, will negotiate ways in which highly effective pesticides can be retained while sacrificing other chemical applications (bargaining and negotiation). Nothing basically changes, and the search for more effective chemicals that can pass regulation continues undisturbed. In contrast, a way of knowing approach suggests that new associations could be made between farmers, plants, and pests. In this case, conventional farmers could learn the advantages of pest management as opposed to pest eradication and begin to produce pest-free products. A change in self-interest is also possible. Profit may become a more long-term concern as the farmers' reliance on expensive chemicals decreases and preoccupation with maximizing yields is balanced by a focus on long-term ecological sustainability. An understanding of the ecological link between productivity and pollinators, for example, might widen the

farmers' worldview so that fields and crops become only part of the environment. Self-interest may also broaden to consider the long-term productivity of the land.

This story of changes in ways of knowing and associated interests, told hypothetically, is based in changes that have, in fact, been taking place in the field of agriculture (Allen 2004; Buttel 1993, 2000; Goodman and Watts 1997; Ingram 2006). These changes have come about, in part, through the introduction of new actants that have enabled the rearrangement of associations in both networks of knowing agriculture.

A new way of knowing agriculture is emerging that conventionalizes the alternative and makes the conventional more alternative. Food safety has emerged as a central new actant, partially defined by the National Organic Standards Board. Ambiguities in the regulations for certification are being worked out in practice and in discussions among farmers and new actants, such as the many hundreds of certifiers who are trained to examine the consistency of field practices with the standards. Other new actants in the organic network are large-scale farmers who are either new entrants into highly lucrative organic markets or previously conventional farmers who see new opportunities in organic agriculture. The codification of standards on a national basis gives a degree of certainty and stability to organic practitioners. The considerable start-up costs (e.g., fallow fields for three years, cows that are never treated with antibiotics) are contended with by all farmers wanting to enter organic markets. Network associations with food safety have altered organic farmers' practice of composting, which the regulations address very specifically. Composting happens less (Ingram, forthcoming). Today, organic farming is a larger, less exclusive network than it was prior to national certification, and many organic ideas are being taken up by conventional farmers who do not market their products as organic.

Another Example: Neighborhood Planning

Agriculture, with its rich array of nonhuman actants, provides fertile soil (so to speak) for the use of actor-network theory. This way of thinking about policy issues, however, also works with a wide array of policy issues. In our discussions before writing this article, we have used the concepts to talk about a variety of topics, including juvenile justice, budgeting, water resources, nuclear energy, and neighborhood planning. Here, we present just one more example to help make our point.

Summaries of the East St. Louis Action Research Project (ESLARP) provide examples of a way of knowing what it means to "plan" for a neighborhood (Khademian 2002; Reardon 1995, 1997) that

continued to transform as new actants were introduced to create new associations and existing associations were changed. The residents of East St. Louis, their neighborhoods, empty lots, abandoned buildings, crime, and severe pollution were key actants in this way of knowing, as well as academics from the University of Illinois, the university itself, professional associations, and the planning documents, project designs, and research publications produced in the course of planning.

In the early days of the ESLARP, academics were associated with the East St. Louis neighborhoods and residents through \$100,000 in annual university funding awarded to faculty in three departments to produce planning documents, project designs, and research publications. The neighborhoods were the object of the research and planning developed by academics as experts, and the residents were the anticipated beneficiaries of the planning and design applications, once implemented. The influence of the university and the professional planning organizations was evident in the strength of the associations between the academics and the planning documents, project designs, and research publications. The processes of earning tenure and seeking publication in professional journals, which enabled some activities but constrained others, continuously reenacted these associations. For example, although these associations produced academics as experts in planning, the associations constrained direct involvement with residents and perpetuated residents' perceptions of academics as carpetbaggers and drive-by researchers. The funding that connected the residents and neighborhoods to the academics reinforced resident perceptions of academic research and design products as a waste of money, producing recommendations "any sixth grader in town already knows" (Reardon 1995). The associations, in short, produced no tangible improvements in the quality of life for residents.

Associations between residents, academics, and neighborhoods began to change with the introduction of two actants to this way of knowing planning: studio classes and students. Following several visits to East St. Louis and discussions with residents, project-focused studio classes were introduced into the project, and with the studios, students were introduced as well. These classes replaced the association of research funding with a face-to-face association between academics, residents, and students and a direct association between academics, students, and the physical neighborhood that residents were associated with daily. Project-focused studio classes provided opportunities for residents, students, and academics to work together on site to sample and document toxic and illegal waste dumped in the neighborhoods, for example, and to plan for cleanup. As the associations between residents and academics changed, so, too, did

the associations between residents and academics and the planning documents. Residents, in particular, became direct participants in the action of planning and the eventual implementation of the plans rather than the recipients of planning expertise. Associations between academics and the planning documents changed from a product of expertise to a jointly produced action plan facilitated in development and implementation by academic expertise.

Associations in the way of knowing planning in East St. Louis continued to change with the introduction of additional actants. When a resident criticized academics in the project for not creating a direct link to university resources for residents, the Neighborhood College was created. Rather than teaching university students in the studios and working with the residents as part of studio projects, academics participating in the Neighborhood College engaged residents directly in the classroom. Similarly, the introduction of the Neighborhood Technical Assistance Center placed university resources and technology in the neighborhoods, providing direct access for any resident trying to define, understand, and solve neighborhood problems. As we will discuss later, the direct working association between university-supported staff and residents began to expand and change the way staff understood and pursued their responsibilities in the center.

Using Ways of Knowing in Inclusive Management

Having demonstrated what it means to conceptualize policy issues as ways of knowing, we will now discuss why we think this may be useful in the practice of inclusive management. Inclusive management has two broad premises (Feldman and Khademian, forthcoming). The first is that bringing people together from different perspectives in ways that allow them to appreciate one another's perspectives enhances the design and implementation of policies. The second premise is that informed deliberative processes are fundamental to democracy. The public manager as inclusive manager facilitates the practice of democracy by creating opportunities for people with different ways of knowing public problems to work together in a collective space to solve problems.¹ Hence, we view inclusion as a management process that facilitates deliberation. Inclusive management is not practiced solely to achieve inclusion, but also purposefully to engage different ways of knowing in the continuous process of problem solving.

We argue that inclusive managers engage in practices that enable people to work together within particular organizations, across organizational and sectoral boundaries, and with members of the public. Though the inclusion of the public is often the most visible change as inclusive management is adopted, public

managers frequently find that in order to practice inclusion effectively, they need to practice it within and across organizational boundaries. In other words, including members of the public often leads to a focus on how agencies manage their employees and how they coordinate across organizational and sectoral boundaries (Feldman and Khademian 2002, 2003).

Here, we argue that understanding ways of knowing as fluid networks of heterogeneous actants can be a useful tool for the inclusive public manager, informing practices that can increase the ability to produce new ways of dealing with policy problems. This focus extends actor-network theory (in ways that many of its adherents may find uncomfortable) by suggesting that public managers can play a role in altering the networked ways of knowing that the theory allows them to analyze. Our ultimate goal is to help public managers facilitate purposeful change through inclusive practices. Understanding the actants and associations and the actions required to renew the associations involved in knowing particular policy issues can, we suggest, help those who want to facilitate deliberative processes.

Ironically, this focus is somewhat at odds with the public management literature, which emphasizes the importance of “failing into” collaboration (Ansell and Gash 2006; Roberts 2004). Though we fully recognize the sense of crisis or failure as an important motivation in collaboration, fruitful collaboration often requires help (Innes et al. 2006) and may even be possible without a sense of failure. Moreover, it is possible that, with help, collaboration can come about more quickly and easily or begin before failure becomes damaging.

We have noticed that public managers endeavoring to promote deliberative processes often engage in practices with the intention of promoting understanding across different ways of knowing and supporting the opportunity jointly to translate information and ideas. These practices exist in many different forms. We categorize these practices as the creation of activities, the use of objects, and the development of organizations or groups. Because the intention is to cross the “boundaries” of different ways of knowing, we draw on work that has been done on *boundary experiences*, *boundary objects*, and *boundary organizations*. These practices can facilitate the joint translation of information and ideas in a number of ways. First, they can help participants find common actants in different ways of knowing. Second, the practices can expose the associations among these actants, which are continuously renewed in different ways of knowing. Third, these practices can introduce new actants (both human and nonhuman). Finally, new associations with these actants can promote the rearrangement of other associations, resulting in substantially new ways of knowing.

In the following sections, we present these practices separately, even though we recognize that they often overlap in their use. A boundary experience, for example, may require a boundary object and take place in the context of a boundary organization. Presenting them separately allows us to illustrate the variation in these practices.

Boundary Experiences

Boundary experiences are shared or joint activities that create a sense of community and an ability to transcend boundaries among participants (Feldman and Khademian, forthcoming; Michaels, Goucher, and McCarthy 2006). Examples include field trips, bus tours, project, joint problem solving, and community activities. Even a public hearing could be a boundary experience, though it seldom is. In the context of ways of knowing, effective boundary experiences enable participants to find common actants in different ways of knowing, expose the associations between actants, and consider alternative associations. This may take the form of recognizing that actants that were previously discounted (as irrelevant, partisan, biased, or parochial) can be useful for addressing the problem at hand.

A boundary experience can happen spontaneously when, for example, two people associated with different ways of knowing an issue happen to sit next to each other on an airplane and engage in a long conversation, or when a hurricane or other natural disaster prompts action that engages actants associated with different ways of knowing to save lives, property, and communities. Because we are interested in what public managers or other facilitators of deliberative processes can do to create new ways of knowing, however, we focus on boundary experiences that are created.

Consider the purposeful creation of a boundary experience in the East St. Louis planning case. The experience of identifying and clearing trash-filled lots containing toxins began to change the associations between residents, academics, students, and the empty trash-filled lots. The association between residents and the empty lots was defined by immediate dangers. The lots were health hazards, places for crime, eyesores, and constant reminders of the challenges facing their city. Residents’ associations with these lots were renewed daily by breathing air pollution from burning trash, smelling the garbage, and observing or falling victim to crime committed in the lots. For the planners, the lots were initially seen as an externality of failed city governance that needed to be addressed in the planning process. The experience of working together to tackle the trash-filled lots began to change these associations. Direct physical contact with the trash-filled lots exposed and made real the daily experiences of residents for academics and students. For

the residents, the association of the lots with danger began to change as well, as the studio experience introduced means for residents to influence and change the trash-filled lots rather than simply experience their consequences.

Boundary Objects

Boundary objects are physical objects that enable people to understand other perspectives (Carlile 1997, 2002; Wang and Redwood-Jones 2001; Star and Griesemer 1989; Wang and Burris 1997). An “effective boundary object facilitates a process where individuals can jointly transform their knowledge” (Carlile 2002) or jointly translate ideas and information. Many things can serve as boundary objects, but a boundary object must provide a common focus for different ways of knowing. Pictures, prototypes, graphs, building blocks, research reports, grants, even text can serve the purpose of crossing the boundaries between different ways of knowing. As we will illustrate, focusing on a boundary object can expose associations that are continuously renewed in different ways of knowing, suggest alternative associations that facilitate the joint translation of information and ideas, and enable the inclusion of different actants, potentially leading to the creation of new associations.

Disposable cameras were introduced as boundary objects in the ESLARP planning case to facilitate change in the associations between residents and academics and the development of the action plan for neighborhood renewal. For the academics who were working to create a new way of knowing planning, a primary challenge was how to bring residents into the process of research and planning and create a direct association with the planning documents. Academics were directly associated with the planning documents and formal designs, and these associations were renewed through the application of the expert language and methods routinely used for those processes. Residents had no association with the planning and design documents because they did not share the language and methods of the academics. The cameras created an association by serving as an accessible tool for data collection and analysis. Residents were asked to photograph things that were good about their neighborhood, things that were promising, and things that were bad. The pictures were then used as the basis for a SWOT (strengths, weaknesses, opportunities, and threats) exercise conducted by the planners to begin the joint exercise of research and planning for the neighborhood.

In the agriculture case, the certification of a farm or food product as organic became a boundary object. A clear signal was essential to consumers, grocers, and

farmers hoping to sell their organic products at higher prices. Healthy food is a common element in conventional and alternative ways of knowing about agriculture, but what healthy food is associated with is different in the conventional and alternative ways of knowing networks. In conventional agriculture, healthy food is related to processes that reduce rot and microbes, as these are viewed as dangerous sources of pathogens that must be eliminated or strictly controlled. In alternative agriculture, by contrast, humus, derived from compost in which microbes perform beneficial services, creates healthy crops that are good to eat (Ingram, forthcoming). The process of creating the boundary object (organic certification) provided an opportunity for adherents of both ways of knowing

Many things can serve as boundary objects, but a boundary object must provide a common focus for different ways of knowing.

to change the associations between compost (and humus) and healthy food. The result was a set of regulations about specific composting processes, such as the number of times compost must be turned, what temperatures must be maintained, and other directions that are much more prescriptive than alternative agriculture previously would have endorsed. That the Department of Agriculture, a bastion of conventional agriculture, could envision composting at all was a significant change. Healthy food became associated with compost in a newly constructed rationale in which microbes are very carefully monitored and controlled.

Boundary Organizations

Boundary organizations or boundary groups are collections of actors who are drawn together from different ways of knowing or bases of expertise for the purpose of coproducing boundary actions (Cash 2001; Guston 1999, 2001; Jasanoff 1990, 2001; Miller 2001). Boundary organizations include task forces, design teams, rulemaking bodies, coordinating committees, study commission, centers, networks, and other similar entities that are charged with reflecting diverse information and intelligence in the service of some task or action that is not possible for one actor or perspective to perform alone. A boundary organization can be formal or informal, temporary or more permanent.

The Neighborhood Technical Assistance Center was introduced as a boundary organization in ESLARP. The office created an association between the university and the residents that was defined by immediate, on-site problem solving. The residents engaged the center for a wide range of activities, from gathering information about their neighborhoods to developing plans and even organizing efforts to draw the attention of local elected officials to the garbage problem in the city. Like the boundary experiences and boundary objects analyzed previously, the center served to expose

and alter associations that had been renewed for so long. When residents took on the challenge of cleaning up the uncollected garbage in their city, a concerted effort to highlight the problem and draw out elected leaders at the city and county levels of government pushed the center's staff to coordinate and facilitate demonstrations, such as candlelight vigils. This new association between university employees and city and county politics through protest strengthened the association between residents and academics as partners in planning for the neighborhoods.

In response to the Organic Food Production Act, the Department of Agriculture set up the National Organic Standards Board. It is a boundary organization with diverse membership from farmers, food processors, retailers, scientists, and consumers. This organization has responsibility for designing and reviewing organic rules that respond to health concerns and yet respect the experience and experiments of working farmers. As part of its initial efforts in 1997, it processed the largest public response ever to any proposed Agriculture Department regulation. A quarter million comments from every sector, particularly consumers, were received. The decision to make all comments available by putting them on an easily accessible Web site, with a classification system so that comments could be grouped into topics and evaluated not just by administrators but also by the public, was critical to disembedding the conventional approach and supporting the emergence of a new way of knowing agriculture (Ingram and Ingram 2005). As a result of the work of the National Organic Standards Board, a new form of agriculture is emerging that has its own expanding bibliography of peer-reviewed scientific work and is acceptable to an increasing number of government scientists and bureaucrats (Ingram 2004).

Conclusion

Movement toward deliberative democracy has been confounded, at least in part, by the conceptual separation of scholarship addressing the social and political structures that create opportunities for participation and another group of writings that consider the role of public managers as catalysts of inclusive practices. In this paper, we have combined a way of thinking about the structure of the way we know policy issues with the idea that particular people are able to exercise agency in changing these structures. Actor-network theory provides the framework for the structural part of this argument. There is a great deal of agency in this structure. Indeed, the structure cannot be created, re-created, or modified in any way without the actions of human and nonhuman actants. The agency we add to this picture is a particular, rational, and directed agency that we would like public managers to be able to exercise. Specifically, we propose that public managers who aim to go beyond interest-based deliberation can make headway by understanding the structures that define how

policy issues are known and by intervening in those structures through the use of boundary experiences, boundary objects, and boundary organizations. In this manner, we hope to provide ways that public managers can encourage the development of solutions based on new and hybrid ways of knowing policy issues.

Fundamental to the execution of such an intervention is an understanding of the fluid nature of the network structure and the necessity of renewing associations in order to renew the network. Actor networks are dynamic. Stability can be achieved only through the continuous renewal of associations between actants. Change involves the creation of new associations and often the inclusion of new actants. In the case of agriculture, the association between pests and chemical pesticides is just one example of an association that must be renewed in order to maintain the conventional way of knowing agriculture. If that association is replaced by the introduction of new actants (whether they be pest-resistant seeds or plants that repel pests), the way of knowing agriculture changes.

It is because action must be taken to maintain associations that the nature of the network is not cast in stone and that strategic intervention is possible. It is possible for critical associations to be disrupted by the introduction of new actants and the creation of new associations between actants. Understanding that potential is critical for public managers who seek to move beyond interest-based negotiations to develop communities of participants who transcend the differences between ways of knowing and create new ways of knowing policy issues. Boundary experiences, boundary objects, and boundary organizations can be used to encourage participants to engage and know policy issues differently. Understanding ways of knowing as networks can help public managers identify new actants and alter associations that they might otherwise only discover through blind luck.

Acknowledgments

We are grateful to Andrea Ballesterio, Mrill Ingram, Kathy Quick, Anne Taufen Wessells, and three perceptive reviewers for helping us think about the issues we raise in this paper. We are grateful to the Center for Organizational Research, University of California, Irvine; the Center for the Study of Democracy, University of California, Irvine; the Center for Nanotechnology and Society, Arizona State University; and the Newkirk Center, University of California, Irvine, for financial support.

Note

1. We define "public managers" broadly. Public managers manage people or programs that serve the public. Some plan for cities, whereas others educate

children, regulate industries, promote public health, or provide security. These managers bring together the participants necessary to pursue and enact their core tasks (Feldman and Khademian 2002), and hence they are in a position to promote or inhibit inclusion.

References

- Allen, Patricia. 2004. *Together at the Table: Sustainability and Sustainance in the American Agrifood System*. University Park: Penn State University Press/Rural Sociology Society.
- Ansell, Chris, and Alison Gash. 2006. Collaborative Governance in Theory and Practice. Paper presented at the Center for Organizational Research, University of California, Irvine. www.cor.web.uci.edu/ansell.php [accessed August 24, 2006].
- Behn, Robert. 2001. *Rethinking Democratic Accountability*. Washington, DC: Brookings Institution Press.
- Bingham, Lisa Blomgren, Tina Nabatchi, and Rosemary O'Leary. 2005. The New Governance: Practices and Processes for Stakeholder and Citizen Participation in the Work of Government. *Public Administration Review* 65(5): 547–58.
- Box, Richard. 1998. *Citizen Governance: Leading American Communities into the 21st Century*. Thousand Oaks, CA: Sage Publications.
- Bryson, John M. 2004. What to Do When Stakeholders Matter. *Public Management Review* 6(1): 21–53.
- Buttel, Frederick. 1993. The Production of Agricultural Sustainability: Observations from the Sociology of Science and Technology. In *Food for the Future: Conditions and Contradictions of Sustainability*, edited by Patricia Allen, 19–46. New York: Wiley.
- . 2000. The Recombinant BGH Controversy in the United States: Toward a New Consumption Politics of Food? *Agriculture and Human Values* 17(1): 5–20.
- Carlile, Paul. 1997. Understanding Knowledge Transformation in Product Development: Making Knowledge Manifest through Boundary Objects. Ph.D. diss., University of Michigan.
- . 2002. A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development. *Organization Science* 13(4): 442–55.
- Cash, David W. 2001. “In Order to Aid in Diffusing Useful and Practical Information”: Agricultural Extension and Boundary Organizations. *Science, Technology, and Human Values* 26(4): 431–53.
- Chaskin, Robert. 2003. Fostering Neighborhood Democracy: Legitimacy and Accountability in Loosely Coupled Systems. *Nonprofit and Voluntary Sector Quarterly* 32(2): 161–89.
- Czarniawska, Barbara, and Bernard Joerges. 1998. *Winds of Organizational Change: How Ideas Translate into Objects and Actions*. In *Organizing Organizations*, edited by Nils Brunsson and Johan P. Olsen, 197–236. Copenhagen, Denmark: Copenhagen Business School Press.
- Denhardt, Robert B., and Janet Vinzant Denhardt. 2000. The New Public Service: Serving Rather Than Steering. *Public Administration Review* 60(6): 549–59.
- Dewey, John. 1916. *Democracy and Education*. New York: Free Press, 1997.
- Dimitri, Carolyn, and Catherine Green. 2002. *Recent Growth Patterns in the U.S. Organic Food Market*. Agricultural Information Bulletin AIB777. Washington, DC: U.S. Department of Agriculture. www.ers.usda.gov/publications/aib777/ [accessed August 24, 2006].
- Dryzek, John. 2002. *Deliberative Democracy and Beyond*. Oxford: Oxford University Press.
- Elster, John, ed. 1998. *Deliberative Democracy*. Cambridge: Cambridge University Press.
- Feldman, Martha S., and Anne M. Khademian. 2002. To Manage Is to Govern. *Public Administration Review* 62(5): 529–41.
- . 2003. Empowerment and Cascading Vitality. In *Positive Organizational Scholarship*, edited by Kim S. Cameron, Jane E. Dutton, and Robert E. Quinn, 343–58. San Francisco: Berrett-Koehler.
- . 2005. The Continuous Process of Policy Formation. In *Integrating Environmental Considerations in Policy Formulation: Lessons from Policy-Based SEA Experience*. Washington, DC: World Bank.
- . Forthcoming. The Role of the Public Manager in Inclusion. *Governance*, April 2007.
- Fisher, Roger, William Ury, and Bruce Patton. 1991. *Getting to Yes: Negotiating Agreement without Giving In*. 2nd ed. Boston: Houghton Mifflin.
- Fung, Archon. 2006. Democratizing the Policy Process. In *The Oxford Handbook of Public Policy*, edited by Michael Moran, Martin Rein, and Robert E. Goodin. New York: Oxford University Press.
- Fung, Archon, and Erik Olin Wright, eds. 2003. *Deepening Democracy: Institutional Innovations in Empowered Participatory Governance*. London: Verso.
- Goodman, David, and Michael Watts, eds. 1997. *Globalising Food: Agrarian Questions and Global Restructuring*. London: Rutledge Press.
- Guston, David. 1999. Stabilizing the Boundary Between U.S. Politics and Science: The Role of the Office of Technology Transfer as a Boundary Organization. *Social Studies of Science* 29(1): 87–111.
- . 2001. Boundary Organizations in Environmental Policy and Science: An Introduction. *Science, Technology, and Human Values* 26(4): 399–408.
- Habermas, Jürgen. 1975. *Legitimation Crisis*. Translated by Thomas McCarthy. Boston: Beacon Press.

- . 1989. The Public Sphere. In *Jürgen Habermas on Society and Politics: A Reader*, edited by Steven Seidman, 231–236. Boston: Beacon Press.
- Hajer, Maarten, and Hendrik Wagenaar, eds. 2003. *Deliberative Policy Analysis*. Cambridge: Cambridge University Press.
- Heifetz, Ronald A. 1994. *Leadership without Easy Answers*. Cambridge, MA: Belknap Press.
- Heifetz, Ronald A., and Riley Sinder. 1988. Political Leadership: Managing the Public's Problem Solving. In *The Power of Public Ideas*, edited by Robert B. Reich, 179–204. Cambridge, MA: Ballinger.
- Ingram, Helen, and Steven Rathgeb Smith, eds. 1993. *Public Policy for Democracy*. Washington, DC: Brookings Institution Press.
- Ingram, Mrill. 2004. Regulating the Alternative: The Organic Agriculture Movement and the Emergence of U.S. Federal Organic Standards. Paper presented at the 2004 Annual Meeting of the Science and Democracy Network, July 22–24, Boston.
- . 2006. Biology and Beyond: The Science of "Back to Nature" Farming Unpublished manuscript.
- . Forthcoming. Disciplining Microbes in the Implementation of U.S. Federal Organic Standards. *Environment and Planning A*.
- Ingram, Mrill, and Helen Ingram. 2005. Creating Credible Edibles: The Organic Agriculture Movement and the Emergence of the U.S. Federal Organic Standards. In *Routing the Opposition: Social Movements, Public Policy, and Democracy*, edited by David Meyer et al. Minneapolis: University of Minnesota Press.
- Innes, Judith, Sarah Connick, Laura Kaplan, and David E. Booher. 2006. Water Management in California: CALFED as an Emergent Form of Governance. Unpublished manuscript.
- Jasanoff, Sheila. 1990. *The Fifth Branch: Science Advisers as Policymakers*. Cambridge, MA: Harvard University Press.
- , ed. 2001. *Handbook of Science and Technology Studies*. Thousand Oaks: Sage Publications.
- Khademian, Anne. 2002. *Working with Culture: How the Job Gets Done in Public Programs*. Washington, DC: CQ Press.
- Kirlin, John, and Mary Kirlin. 2002. Strengthening Effective Government: Civic Connections through Great Citizen Engagement. Special issue, *Public Administration Review* 62: 80–85.
- Klijin, Erik-Hans, and Joop Koppenjan. 2000. Public Management and Policy Networks: Foundations of a Network Approach to Governance. *Public Management* 2(2): 135–58.
- Kriesi, Hanspeter, Silke Adam, and Margit Jochum. 2006. Comparative Analysis of Policy Networks in Western Europe. *Journal of European Public Policy* 13(3): 341–61.
- Landy, Marc K. 1993. Public Policy and Citizenship. In *Public Policy for Democracy*, edited by Helen Ingram and Steven Rathgeb Smith, 19–44. Washington, DC: Brookings Institution Press.
- Latour, Bruno. 1986. The Powers of Association. In *Power, Action, and Belief*, edited by John Law, 264–80. London: Routledge.
- . 1999. *Aramis; or, the Love of Technology*. Translated by Catherine Porter. Cambridge, MA: Harvard University Press.
- . 2005. *Reassembling the Social: An Introduction to Actor-Network Theory*. New York: Oxford University Press.
- Lovell, Terry. 2003. Resisting with Authority: Historical Specificity, Agency and the Performative Self. *Theory, Culture and Society* 20(1): 1–17.
- Manin, Bernard, Elly Stein, and Jane Mansbridge. 1987. On Legitimacy and Political Deliberation. *Political Theory* 15(3): 338–68.
- Mansbridge, Jane J. 1980. *Beyond Adversary Democracy*. New York: Basic Books.
- Michaels, Sarah, Nancy P. Goucher, and Dan McCarthy. 2006. Considering Knowledge Uptake within a Cycle of Transforming Data, Information and Knowledge. *Review of Policy Research* 23(1): 267–79.
- Miller, Clark. 2001. Hybrid Management: Boundary Organizations, Science Policy, and Environmental Governance in the Climate Regime. *Science, Technology, and Human Values* 26(4): 478–500.
- Moore, Mark. 1995. *Creating Public Value: Strategic Management in Government*. Cambridge, MA: Harvard University Press.
- Podolny, Joel, and Karen Page. 1998. Network Forms of Organization. *Annual Review of Sociology* 24: 57–76.
- Pollan, Michael. 1998. Playing God in the Garden. *New York Times Magazine*, October 25.
- Reardon, Kenneth. 1995. Creating and Community/University Partnership that Works: The Case of the East St. Louis Action Research Project. *Metropolitan Universities* 2: 47–59.
- . 1997. Institutionalizing Community Service Learning at a Major Research University: The Case of the East St. Louis Action Research Project. *Michigan Journal of Community Service Learning* 4(1): 120–36.
- Reich, Robert B. 1988. Policy Making in a Democracy. In *The Power of Public Ideas*, edited by Robert B. Reich, 123–56. Cambridge, MA: Ballinger.
- Roberts, Nancy. 1997. Public Deliberation: An Alternative Approach to Crafting Policy and Setting Direction. *Public Administration Review* 57(2): 124–33.
- . 2002. Keeping Public Officials Accountable through Dialogue: Resolving the Accountability Paradox. *Public Administration Review* 62(6): 658–69.

- . 2004. Public Deliberation in an Age of Direct Citizen Participation. *American Review of Public Administration* 34(4): 315–53.
- Rousseau, Jean-Jacques. 2003. *On the Social Contract*. Translated by G.D.H. Cole. 3rd ed. Mineola, NY: Dover.
- Sabatier, Paul. 1988. An Advocacy Coalition Framework of Policy Change and the Role of Policy-Oriented Learning Therein. *Policy Sciences* 21: 129–68.
- Sabatier, Paul, and Hank Jenkins-Smith, eds. 1993. *Policy Change and Learning: An Advocacy Coalition Approach*. Boulder, CO: Westview Press.
- Schneider, Anne, and Helen Ingram. 1993. The Social Construction of Target Populations: Implication for Politics and Policy. *American Political Science Review* 87(2): 334–47.
- . 1997. *Policy Design for Democracy*. Lawrence: University Press of Kansas.
- , eds. 2005. *Deserving and Entitled: Social Construction and Public Policy*. Albany: State University of New York Press.
- Star, Susan Leigh, and James Griesemer. 1989. Institutional Ecology, Translations and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology. *Social Studies of Science* 19(3): 387–420.
- Stone, Deborah A. 1997. *Policy Paradox: The Art of Decision Making*. New York: W. W. Norton.
- Thacher, David. 2001. Equity and Community Policing: A New View of Community Partnerships. *Criminal Justice Ethics* 20(1): 3–16.
- Van Waarden, Frans. 1992. Dimensions and Types of Policy Network Labels. *European Journal of Political Research* 21: 29–52.
- Vigoda, Eran. 2002. From Responsiveness to Collaboration: Governance, Citizens, and the Next Generation of Public Administration. *Public Administration Review* 62(5): 527–40.
- Wang, Caroline, and Mary Ann Burris. 1997. Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment. *Health Education and Behavior* 24(3): 369–87.
- Wang, Caroline, and Yanique Redwood-Jones. 2001. Photovoice Ethics: Perspectives from Flint Photovoice. *Health Education and Behavior* 28(5): 560–72.
- Weber, Edward. 2003. *Bringing Society Back In: Grassroots Ecosystem Management, Accountability, and Sustainable Communities*. Cambridge, MA: MIT Press.