

Reliable Effectiveness: A Theory on Sustaining and Replicating Worthwhile Innovations

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Abstract While many health and human service innovations are sustained and replicated, it has been a puzzle how to sustain and replicate the performance of the better ones. What knowledge, skills, and conditions are required to reproduce across space and time the effectiveness of those innovations that are the most worthwhile? An extensive body of literature and experience is reviewed to suggest a comprehensive conceptual framework of programmatic, organizational, and environmental factors that may shape the circumstances for sustaining and replicating effectiveness.

Keywords Sustainability · Replication · Reliability · Innovation · Diffusion · Implementation · Effectiveness

Fifty years ago, the word “sustainability” did not exist in the common parlance of social or health policy. Even 20 years ago, it was rare to hear it mentioned in health and human service circles. Today, though, it seems to be on everyone’s lips. Founders of organizations and programs talk about the challenges of sustaining support for their work. Grantors want grantees to develop sustainability plans for when the grant ends. With so many organizations and programs vying for pieces of a limited pie, it is perhaps not surprising that financial sustainability has emerged as a priority.

But financial is not the only kind of sustainability. It is, arguably, not even the most important. If improving health and social conditions is to be taken seriously,

the sustainability that should matter most is the sustainability of results or effectiveness. After all, why sustain a program or organization financially if its effectiveness is not or cannot be sustained? If only it were so.

There appears to be no shortage of health and human service innovations that prevail financially—that exist on a large scale – without being demonstrably effective. The Drug Assistance Resistance Education program, DARE, continues to be operated by thousands of police departments across the country, despite studies showing that it has little effect on the prevention or reduction of drug use by youth (Frumkin & Reingold, 2004). Parents as Teachers (PAT), which helps parents support the development of their young children, has spread to nearly 3,000 locations in the United States and abroad, even though rigorous evaluations of the model suggest that its results are, at best, small and equivocal (Smith, 2001; Wagner & Clayton, 1999). Interventions that use scare tactics to stop youth from committing crimes, such as boot camps, have been broadly replicated, but according to the evidence seem to do more harm than good (National Institutes of Health, 2004).

This is nothing new in human experience. That a piece of knowledge may be wrong or ineffective is not necessarily a bar to its being adopted and sustained in practice (Mokyr, 2002).

In other words, merely sustaining health and human service innovations may not be as difficult as conventional wisdom implies. Many innovations seem to endure for quite a while beyond their trial runs, according to several recent studies of health-related programs and practices (Herrera & Pepper, 2003; Scheirer, 2005; Stevens & Peikes, 2004; Wu et al., 2004). The more

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important problem may not be survival, but enabling those innovations that actually work—that have been shown to produce positive outcomes—to keep doing so and in ways that optimize their value over time.

What knowledge, skills, and conditions are needed to reproduce over time and across space the effectiveness of the better innovations? While there is little systematic knowledge about how to answer this challenge (Klein & Sorra, 1996; Repenning, 2002), insights can be drawn from at least a couple of sources.

Lessons may be gleaned from research and theory in the broad field of organizational studies. Much of this literature focuses on business organizations, and although commercialization is not the way in which most health and human service innovations will spread, there seem to be parallels between what it takes for a business to keep offering value to the market and preserving the effectiveness of a social innovation. The literature used in the material that follows comes principally from peer-reviewed journals in organizational and management studies and from the theoretical and empirical work of established scholars in these fields. Recent reviews of the literature relevant to sustainability and replication have tended to be weighted in favor of evidence specific to the contexts of health and human services, with less attention to the general organizations literature (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidan, 2004). The assumption of the approach taken here is that reversing the weightings to favor the latter may offer not just different understandings and insights, but a clearer path to cumulative knowledge by showing health and human service scholars and practitioners how they might build on this larger body of theory and research.

In addition, a growing number of examples exist of well-planned efforts to expand and sustain health and human service innovations. Their successes and failures, while not dispositive as knowledge, can still be useful to an understanding of the problems and opportunities involved in sustaining effectiveness more generally.

Starting Points

A workable grasp of factors influencing the sustainability and replication of health and human service innovations may begin with three, largely uncontroversial premises.

The first is the general importance of reliability in human affairs. People want to be able to count on one another, whether as friends or buyers and sellers in a

marketplace (Nelsen & Barley, 1997). Indeed, environments in general seem to favor organizations and programs that are reliable, whether or not they are especially effective (Levinthal, 2003; Singh, Tucker, & House, 1986).

Health and human service innovations enjoy no exemption from the expectation of reliability (Gill, Dembosky, & Caulkins, 2002). Providing value on some kind of predictable basis (a common sense definition of reliability outside the context of research, where it has a more technical meaning) appears to be generally indispensable to the sustainability of new services as they spread. Although the preference for reliability should not preclude making changes or adapting to circumstances, it does caution against making changes too much, too often, or without careful thought.

Secondly, service innovations do not achieve their intended effects directly. Positive results are produced, if they are produced at all, by the people assigned to implement an innovation. All an innovation as a defined intervention can do directly is build practitioner expertise, which then has to be applied to have an effect.

To be sure, replicating and sustaining effective services may be one of the best ways to build practitioner expertise. It has the advantage over formal education of being specific to the contexts in which practitioners work. It has the advantage over learning from experience of being disciplined about the learning that needs to occur. But, even with these advantages, a significant measure of uncertainty remains. Practitioners differ, and a given practitioner does not act precisely the same way day after day. So, while innovation reliability may be crucial to sustaining effectiveness, it is always threatened to some degree by the inherent variability among practitioners (Narduzzo, Rocco, & Warglien, 2000; Suchman, 1987; Pentland & Rueter, 1994).

Managing this variability, and its consequences, offers a useful way to think about sustaining effectiveness as a practical matter, which leads to the third and final premise. The simpler the innovation, the easier it is for practitioners to implement it reliably and achieve consistent results.

Yet, simple innovations are rare. Advances in health and human services today are apt to be relatively complex (Schorr, 1997). Because of their complexity, they take time to learn to do well, and even once they are learned, that same complexity makes them vulnerable to unintended or misguided alteration. Put more variables into play (which is what increasing complexity means), and there are more ways for things to go wrong (Racine, 1998). As a result, a more organized, sophisticated effort seems needed to support and sustain the effective implementation of complex innovations,

which, in turn, adds even more complexity that has to be managed in the quest for continuing impact.

The complexity involved in sustaining effectiveness over time and across space makes clear that getting innovations adopted—the focus of most thinking on the topic to date—is only the first step and perhaps not an especially difficult one, if programs like DARE, PAT, and boot camps are any indication. Diffusion of innovation theory has been quite helpful explaining the kinds of attributes innovations should have to be attractive candidates for adoption and the importance of key similarities (e.g., education level) between innovation promoters and adopters (Greenhalgh et al., 2004; Rogers, 1995a). But, rooted in basic sender-receiver communication theory, diffusion has been less helpful illuminating the deeper, more intricate challenges involved in achieving and sustaining effectiveness after adoption occurs (Szulanski, 2003).

A Preview of the Framework

The framework presented here argues that the reliable effectiveness of a health or human service innovation is shaped primarily by three sets of factors. The first of these factors is the need for several kinds of legitimacy. To be adopted, replicated, and sustained, an effective innovation, by definition, must work in some sense. But of equal if not greater importance seems to be that it is *perceived* by relevant people to produce value—be they users of the innovation, staff, policymakers, or what have you. Put simply, the legitimacy of positive effects or consequences may not be the whole story. Other types of legitimacy—pertaining to the appropriateness of an innovation's form or structure, the acceptability of the methods or procedures it uses, and its political and social relevance—appear to matter as well, according to the broader body of research on the adoption and use of innovations (Aldrich, 1999). Innovations that have more of these types of legitimacy, it will be proposed, may stand a better chance of being adopted, implemented well, and sustained in their effectiveness.

A second set of factors in obtaining durable effectiveness concerns the local conditions an innovation needs in order to perform well or as intended. Typically, a host organization will operate the innovation, and that organization will be situated within a local environment consisting of other organizations with the ability to directly or indirectly affect how the innovation fares. An enormously complex set of influences can play out at this level. The framework attempts to boil these influences down to several, mostly structural factors that can establish local suitability and serve as

relatively concrete guideposts in defining desirable local conditions for adopting and sustaining innovations in their effectiveness. While these factors, by and large, have not been systematically tested in the health and human services, they do enjoy good support in the general organizational research literature.

At the organizational level, these factors include innovation compatibility with organizational strategic commitments, the organization's ability to absorb the knowledge entailed in the innovation, the cultural balance in the organization, the nature and extent of management support for the innovation, and the organization's level of internal cohesion. Within the larger local environment, the pertinent factors concern the centrality of the innovation's local host, the influence of the networks of which the host is a part, efforts made to plan implementation and cultivate stakeholder support, and compatibility with relevant political, professional, and other institutional interests.

In most circumstances, effective innovations do not on their own accord get picked up by suitable local settings. An intermediary is typically necessary to make the connection, transmit information about the innovation, and foster reliability. The framework draws from research on multiunit and multisite organizations to describe functional attributes that seem appropriate for intermediaries to have in order to help local practitioners learn the innovation, implement it well, and keep it working effectively. These attributes include technical competence, capacities for communication with adopters, and balancing the authority of the intermediary and the relative autonomy of local adopters.

Figure 1 provides a simple, high-level model depicting the relationships among these three sets of factors. An innovation with different kinds of legitimacy is carried out by adopters in local organizations and environments defined by various, relevant conditions, through the efforts of intermediary organizations performing functions related to the transfer and use of the knowledge entailed in the innovation. The basic idea is that when the factors (small boxes) in this model are pointing in the right direction, innovations are more likely to be adopted and sustained in their effectiveness. In what follows, these factors are converted into a series of researchable propositions (See Table 1 for summary).

Innovation Legitimacies

An innovation is a new way of doing something, a departure from, and presumably an improvement on, existing practice. Many innovators seem to hope their

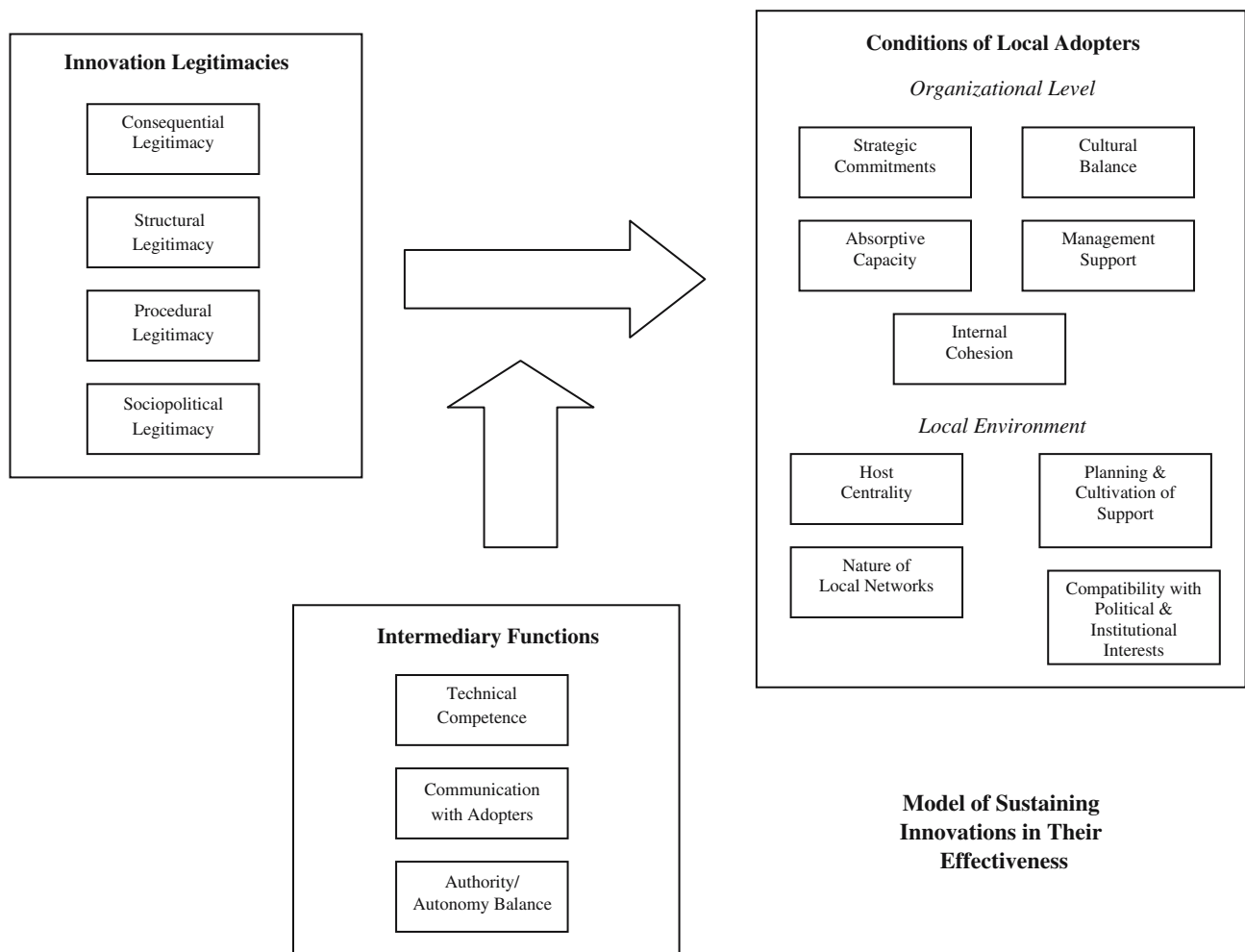


Fig. 1 Model of sustaining innovations in their effectiveness

innovations will, in time, become taken for granted or institutionalized as the way something is always supposed to be done.

Yet, how becoming taken-for-granted exactly occurs is something of a mystery (Granovetter, 1992; Jepperson, 1991). Nor does penetrating the mystery appear to matter much, given the time that must pass for just about anything to become so ingrained as to go unquestioned.

While being taken-for-granted may be the ultimate legitimacy for an innovation, it is not the only, nor obviously most common, form legitimacy takes. The concept of legitimacy provides a general construct for understanding how health and human service innovations appear to be regarded by their environments (Aldrich, 1999). Innovations get adopted and used because the people who adopt and use them consider them to be legitimate in various ways. The commercial sector essentially uses a simple formula to sum up the legitimacy of an innovative product or service: if it makes money and violates no laws in the process, it is

legitimate. In the absence of a simple measure like profitability, though, health and human services face a more complex calculus of regarding the different ways in which legitimacy can affect the fate of an innovation. Four kinds of legitimacy appear to be especially relevant in moving health and human service innovations into sustained, beneficial use.

Consequential Legitimacy: Does the Innovation Work?

Innovations are judged on the basis of perceptions of their consequences. Does an innovation make or appear to make a difference, and if so, how much of a difference? If it makes no or little difference, then sustaining or spreading the innovation further would seem inadvisable. But, of course, the matter is more complicated than this simple formula implies.

In a resource-constrained world, a good case can be made for evaluating innovations according to the adequacy of the evidence of their effectiveness in

Table 1 Summary of research propositions

<i>Innovation legitimacies</i>	
<i>Consequential legitimacy</i>	
1a	Innovations found to be effective through experimental evaluation methods are more likely to be adopted and sustained
1b	Innovations in which the process for producing positive effects can be made transparent and articulated are more likely to be adopted and sustained in their effectiveness
1c	Innovations shown to be cost-effective are more likely to be adopted and sustained in their effectiveness
1d	Innovations whose “dosage” levels can be adjusted without hurting effectiveness are more likely to be adopted and sustained in their effectiveness
1e	Innovations that generate important symbolic or reputational advantages for their adopters are more likely to be adopted and sustained
<i>Structural legitimacy</i>	
2a	Innovations with more appropriate forms are more likely to be adopted and sustained
2b	The more an innovation departs from established forms in its field, the less likely it is to be adopted and sustained
2c	The more institutionalized the field of an effective innovation, the more likely the innovation is to be adopted and sustained
<i>Procedural legitimacy</i>	
3a	Practitioners are more likely than other groups to focus on the legitimacy of an innovation’s procedures
3b	The less legitimacy practitioners grant the procedures of an innovation, the less adequate is their learning of those procedures and the lower the likelihood of the innovation being adopted and sustained in its effectiveness
3c	The more an innovation’s procedures depart from existing practice, the lower the likelihood of the innovation being adopted and sustained in its effectiveness
3d	The less institutionalized the field of an innovation, the more likely is promoting use of the innovation to be led by a charismatic founder
3e	The more dependent an innovation on its founder, the less likely it is to be sustained in its effectiveness when the founder leaves
<i>Socio-political legitimacy</i>	
4a	The sustainability of an innovation depends more on whether it is in a growing field than on qualities of the organization or group leading its use
4b	An innovation is less likely to be adopted and sustained in its effectiveness the more unstable the public policy governing its field
4c	The more an innovation is defined by the values and principles it represents, rather than its structure or procedures, the greater the likelihood that its structure and procedures will vary as it spreads
4d	The more an innovation is defined by the values and principles it represents, rather than its structure or procedures, the more likely it is to obtain media coverage early in its implementation or diffusion
<i>Fidelity</i>	
5a	An innovation is more likely to be sustained in its effectiveness the more it has of each of the four types of legitimacy
5b	An effective innovation is more likely to be sustained in its effectiveness to the extent it initially implemented with fidelity
<i>Conditions of local adopters</i>	
<i>General Fit</i>	
6a	An innovation adopted as a result of a careful local process of matching the innovation with objective measures of local need is more likely to be sustained in its effectiveness
6b	Local actors are more committed too innovations that they reinvent
6c	An effective innovation that is reinvented in a local setting will perform more poorly than the same innovation in a setting that does not reinvent it
<i>Organizational fit</i>	
7a	An innovation is more likely to be sustained the better it fits the adopting organization’s established strategic commitments
7b	The absorptive capacity of an organization has a curvilinear relationship to the effectiveness with which an innovation is implemented
7c	The more prior experience an organization has adopting innovations, the more effective it will be implementing subsequent innovations
7d	The more culturally balanced an organization, the more likely it is to: (i) adopt an effective innovation, (ii) implement the innovation as intended, and (iii) achieve reliable performance with the innovation
7e	The cultural balance in an organization leading the use of an innovation shifts in a durable way toward consistency and control as the number of innovation users increases

Table 1 Continued

7f	The more that managers in an organization are committed to an innovation, the more likely the innovation is implemented well and sustained in its effectiveness
7g	In an organization with clear roles and responsibilities for members, an innovation is more likely to be effectively implemented and sustained in its effectiveness to the extent it does not depend on an individual internal champion
7h	There is a curvilinear relationship between internal cohesion and the effectiveness with which an innovation is implemented and then sustained in its effectiveness
<i>Interorganizational fit</i>	
8a	An innovation performs better and is sustained in its effectiveness longer to the extent that its local host organization is: (i) centrally placed within the community and (ii) committed to the innovation
8b	The more influential the interorganizational network to which a local host belongs, the higher the probability that an innovation adopted by the host is sustained in its effectiveness
8c	The more stable the interorganizational network to which a local host belongs, the higher the probability that an innovation adopted by the host is sustained in its effectiveness
8d	An innovation is more likely to be sustained in its effectiveness when planning its local implementation explicitly includes possible interdependencies with other organizations
8e	An innovation is more likely to be sustained in its effectiveness when a broad effort is made to inform sources of local influence about the innovation and plans for its implementation
<i>Institutional fit</i>	
9a	The less stable the policy environment of an innovation, the less likely the innovation is to be sustained
9b	The closer the fit of an innovation with an existing policy agenda and the more important that agenda in the overall scheme of public policy, the more likely the innovation is to be adopted and sustained in its effectiveness
9c	The adoption and sustainability of an innovation within a political jurisdiction is directly tied to the fiscal health of that jurisdiction
9d	An innovation that lacks support from the mainstream of the profession with which it is chiefly associated is less likely to be adopted and sustained
9e	To the extent an innovation is relevant to more than one profession, the slower the rate at which it is adopted, the more likely it is to be changed from its original design, and the greater the likelihood it is not sustained
<i>Intermediary functions</i>	
<i>Technical competence</i>	
10a	The greater the technical competence of an intermediary, the more accurate is its advice under all conditions of causal ambiguity
10b	The more prior operational experience of intermediary agents with an innovation, the greater is the perceived value of the assistance they provide local adopters
10c	Intermediary agents learn more quickly and effectively the more prior operating experience they have with an innovation
10d	The motivation of an intermediary agent to learn from new experience declines with increasing experience
10e	Innovations with formal implementation monitoring systems perform better and are more likely to be sustained in their effectiveness
10f	Innovations with management information systems that provide both regular outcome and process feedback have higher performance and are more likely to be sustained in their effectiveness
10g	Innovations with management information systems designed with input from system users have higher performance and are more likely to be sustained in their effectiveness as a result of users making more and better use of the information in the system
<i>Communication & geography</i>	
11a	An innovation with an intermediary that uses an active, formal means of assimilating experiences of sites performs better and is more likely to be sustained in its effectiveness
11b	An innovation with an intermediary that uses a regular means of making changes in the innovation performs better and is more likely to be sustained in its effectiveness
11c	Frequency of communication between an intermediary and sites is positively related to the level of implementation fidelity obtained by sites
11d	The greater the face-to-face communication between an intermediary and a site during initial implementation, the higher the level of fidelity of implementation
<i>Authority & autonomy</i>	
12a	The greater the geographic distance of an innovation adopter from the intermediary for the innovation, the more likely is the adopter to deviate from fidelity
12b	The more that sites believe their intermediary is committed to them for the long-run, the more likely they are to maintain fidelity to the innovation and to sustain it in its effectiveness

producing the results they say they will. Those with the better, more robust results should have a stronger claim on the available, limited resources. Though there is debate about what should count as “evidence” (Annie E. Casey Foundation Conference Capture, 2000; Schorr, 1997; Schön, 1971), it seems indisputable that evidence produced using experimental methods is more valid and reliable than evidence generated in other ways. In an experiment or clinical trial, participants are randomly assigned to either receive the innovative service being tested or to a control or comparison group not receiving the service. If the group getting the service does measurably better, then the service is likely to be the cause. Other methods are less able than the experimental approach to rule out other factors besides the innovation as the reason for the results obtained.

The Nurse-Family Partnership (NFP), a well-regarded early intervention for low-income families having their first babies, has gone through three randomized clinical trials in three different local settings over a nearly 30-year period. This trail of evidence provides a relatively high degree of confidence that the program is effective in achieving the outcomes it has been designed to produce (Olds, Hill, O’Brien, Racine, & Moritz, 2003). No other home visiting program for low-income families has undergone the same level of scrutiny. And to the extent other home visiting programs have been tested, the results have not been as strong as those of the NFP (Gomby, Culross, & Behrmann, 1999). Thus, the NFP could be said to have an evidentiary advantage—more consequential legitimacy, stemming principally from the rigorous means used to evaluate it.

Some innovations are difficult to evaluate using experimental methods. This may happen, for example, when an innovation is intended to affect the whole community. It is usually not feasible to randomly assign participants to communities. Comparison communities have to be identified, and this is not easy to do. Communities are never strictly comparable (they have too much going on in them to be fully equivalent) and coming up with enough of them to assure statistical reliability can be difficult. Other, less powerful evaluation methods thus become necessary, and the resulting evidence is likely to be less convincing.

Managerial innovations (e.g., strategic planning, process re-engineering), as opposed to service innovations, also rarely appear to be tested using experimentation. This is not because experimental designs are infeasible here, but because they do not seem warranted. Managerial innovations are often difficult to tie to specific effects on programmatic or organizational

performance (Kimberly, 1981). Because their effects may be ambiguous, indirect, or modest, managerial innovations may sit rather lightly in the organizations that adopt them, easily terminated or diminished when the next fad comes along (Strang & Macy, 2001). Under these circumstances, careful (and expensive) evaluations may sometimes be hard to justify.

In addition to not always being applicable, experimental evaluation methods are inherently limited in at least one crucial respect. While they allow for a statistical determination of whether a model program or practice causes the effects attributed to it, they cannot explain this causality—how the specific activities and qualities of the program actually lead to the observed results. To understand how an innovation gets results, it is usually necessary to give close attention to its implementation by interviewing staff and participants, observing operations, and collecting and reviewing management data (Furano, Jucovy, Racine, & Smith, 1995).

The ability to explain causality may play a critical role, not so much in affecting decisions to adopt an innovation (although it is not unimportant there), but subsequently when practitioners are trying to learn how to make it work (Szulanski, 2003). Knowing why an innovation works the way it does appears to facilitate learning how to implement it (Bodilly, Purnall, Ramsey, & Keith, 1996), which may in turn improve its chances of being operated with fidelity to the tested model on which it is based.

Proposition 1a Innovations found to be effective through experimental evaluation methods are more likely to be adopted and sustained.

Proposition 1b Innovations in which the process for producing positive effects can made transparent and articulated are more likely to be adopted and sustained in their effectiveness.

Costs Count

Another part of innovation consequentiality is cost or cost-effectiveness. A health or human service innovation can produce wonderful results, but if it costs adopters more than they feel justified paying, it will be less likely to get adopted or sustained. Some innovators have tried to overcome adopters’ reluctance to pay by demonstrating that their models, over time, save more money than they cost (Aos, Lieb, Mayfield, Miller, & Pennucci, 2004; Center to Advance Palliative Care, 2004; Mihalic, Fagan, Irwin, Ballard, & Elliott, 2004).

Given competition for resources in the health and human services, it seems likely that in the future

demonstrating cost-effectiveness will only become more important in establishing consequential legitimacy (Rogers, 1995b). And innovations that can produce cost savings sooner rather than later may fare the best in a political culture where relevance seems to align with what can be done in a 1- to 4-year period.

Related to costs is the issue of whether the level of effectiveness of an innovative program or practice can be influenced by how much of the program or practice is provided (and thus by how much it will cost to provide). Research on Big Brothers Big Sisters, the mentoring program, indicates that one-to-one mentoring relationships between adults and youth should last at least a year to affect the youth's behavior (Sipe, 1996). Shorter relationships may even do harm. The NFP is designed to begin between the 12th and 28th week of pregnancy and last until the child reaches the age of two. Do families need to stay for the full duration to get the full benefits of the program? The answer is unknown, but nurses have raised the possibility that some families may not need the "full dose" to obtain the optimal benefit for themselves (personal communication). Distinctly therapeutic interventions are often designed to adjust services to individual needs, so that clients will receive neither more nor less than what will help them (Knapp, 1995). The ability to adjust the amount of an innovation without compromising its actual effectiveness provides deliverers with more control over costs, increasing its value to those who adopt it.

Proposition 1c Innovations shown to be cost-effective are more likely to be adopted and sustained in their effectiveness.

Proposition 1d Innovations whose "dosage" levels can be adjusted without hurting effectiveness are more likely to be adopted and sustained in their effectiveness.

Other Consequences

The effects of a health or human service innovation on the people it is intended to benefit and its costs are not the only consequences that may influence its legitimacy, though. Those who adopt and operate an innovation and their financial backers may be driven by what they perceive to be reputational or symbolic gains for themselves. A study a few years ago found that some hospitals adopted total quality management mainly because other hospitals had already done so, not because they had analyzed how the technique would enhance their own performance (Westphal,

Gulati, & Shortell, 1997). In the 1990s, the Coalition of Essential Schools, a high school reform model, seemed to spread, at least for a time, because schools liked being associated with Ted Sizer, the popular founder of the program (Racine, 1998).

These are probably not isolated examples. Because many of the problems that health and human services address do not have clear-cut solutions, innovations that at least appear to be doing something helpful about those problems may be in a position to prosper regardless of their actual effectiveness. Even when measurably better innovations emerge, displacement may occur slowly or not at all. Most innovations that stay in business for a while develop constituencies which try to protect and sustain them despite the existence of more effective alternatives. This may be the political and social equivalent of what Arrow (2004) refers to as "irreversible investments" in describing the economic staying power of some technologies.

Proposition 1e Innovations that generate important symbolic or reputational advantages for their adopters are more likely to be adopted and sustained.

Structural Legitimacy: Does the Innovation Have an Appropriate Form?

Form is the structure of an innovation, the fixed, general features that define and distinguish it from other innovations and activities. A community-based, non-profit hospital is a structure for the delivery of health care. Organized adult mentoring of youth is a structure for helping young people develop. Each of these examples has characteristics that differentiate it from other ways of pursuing the same general end. A non-profit hospital differs from a for-profit one. Mentoring differs from parenting or psychotherapeutic counseling.

The structure of an innovation can be viewed as more or less legitimate. When the idea for health maintenance organizations (HMOs) first emerged as a serious option for the delivery of health care, it was not regarded with much legitimacy (Starr, 1984). It was only when health care costs started to become more salient in the early 1970s that this particular form—designed to exert more control over costs—acquired enough legitimacy to gain significant diffusion. So-called "whole school reform" did not have legitimacy until the problems of public education were perceived as a crisis in the 1980s (National Commission on Excellence in Education, 1983). Before that, the accepted form for changing primary and secondary education practice focused more narrowly on specific

curriculum modifications, such as new math and basal reading (Teddlie & Stringfield, 1993).

Proposition 2a Innovations with more appropriate forms will be more likely to be adopted and sustained.

Flexibility in the form that an innovation can have and still be regarded as legitimate appears to vary, at least to some extent, according to how institutionalized the field is in which it operates. More institutionalized fields like health care and education seem to impose more limits on structural legitimacy (Scott, 1998). Health care providers and educators are guided by fairly thick bodies of public rules and professional norms. By contrast, workers in the less institutionalized youth development field, to take one example, seem to face fewer constraints, and thus appear to have more freedom to experiment legitimately with the structures through which their efforts to improve youth's lives may occur (Public/Private Ventures, 2000).

Proposition 2b The more an innovation departs from established forms in its field, the less likely it is to be adopted and sustained.

Being institutionally constrained, however, may not necessarily be a barrier to effective innovation, as the emergence of creative forms in both health care and education in the past 20 years seems to show. Indeed, it could be argued that institutional boundaries provide clearer direction in devising innovations which will be treated as structurally legitimate. Though no or weak boundaries may lead to more experimentation, the experiments may not stick if the field itself continues to be underinstitutionalized and, thus, inhospitable to rules and standards.

Consider, as an example, public education reform. Of the whole school reform models, the one called Success for All, developed at Johns Hopkins University, has appeared to gain more ground and have more staying power among public elementary schools than many other approaches (Bodilly et al., 1996; Slavin, 1995). It has a specific, well-tested approach to curriculum reform, anchored in reading. Other models do less with specific curriculum change, opting instead to try to encourage schools to design their own improvements. Consequently, they may call for behavior and effort not part of the institutional experience of teachers and administrators (Glennan, 1998). These models do not appear to have spread as much, conceivably, in part at least, because they are not as structurally legitimate as Success for All within the institutional context of public education.

Institutionalized fields may make the emergence of well-specified and coherent innovations easier or more likely, and these innovations, in turn, may obtain structural legitimacy more readily. Other, less institutionalized fields may have difficulty deciding what counts as specific and coherent, since these qualities to some degree have to be institutionally defined. An innovation is more or less specific, or more or less coherent, relative to the standards and expectations in its field (Racine, 1998).

When mentoring became a hot topic in the late 1980s and early 1990s, Big Brothers Big Sisters appeared well-positioned to seize the initiative and expand dramatically (Racine, 2000). While there seem to be many reasons why it did not grow much at that time, one reasonable explanation is that the field of mentoring was underinstitutionalized. The field had no overall standards or rules for determining what a good mentoring program should look like. Thus, those interested could freely experiment with the form, often, it seems, relying on looser, less expensive approaches; they did not need to affiliate with or be like the more rule-bound BBBS in order to succeed (Sipe, 1996).

Something comparable seems to happen when new markets form in the commercial world (Fligstein, 2001). In the early stages, no standards exist, and so, products and services take many forms, as do the firms created to produce and distribute them. All this variety, however, can be costly and destabilizing. Imagine, for example, how difficult file sharing would be today if there were a dozen incompatible popular operating platforms for personal computers. Over time, if a new market is going to endure, it tends to consolidate its gains and regard a more limited set of structures as legitimate. While some health and human service fields appear to evolve in roughly the same way, that is, toward standardization and stability, the pressures to do so clearly vary. In fields where the pressures are light, innovations may not be sustainable on a large scale unless and until more institutionalization occurs, which, of course, will not happen unless and until some of those innovations themselves stick—a Catch 22.

Proposition 2c The more institutionalized the field of an effective innovation, the more likely the innovation is to be adopted and sustained.

Procedural Legitimacy: Are the Innovation's Methods Appropriate?

Structural legitimacy focuses on the appropriateness of the components that define an innovation and how they fit together. Procedural legitimacy concerns the

acceptability of the techniques the innovation uses to achieve change or improvement.

Minimally invasive cardiac surgery is an innovation implemented through an interdisciplinary team in a supportive hospital setting (Pisano, Bohmer, & Edmonson, 2001). The surgical technique is the procedure, while the interdisciplinary team and related aspects of the hospital setting constitute the rest of the structure that defines the innovation as a whole. Faith in Action is a program that develops local interfaith coalitions to mobilize volunteers to help people with long-term health needs through informal caregiving (Herrera & Pepper, 2003). Informal caregiving is the procedure or method, while interfaith coalitions, volunteers, and focusing on people with chronic illness and disability represent other parts of the innovation's structure.

Procedure comprises the core of most health and human service innovations. It represents the direct work or effort exercised through the innovation, and for that reason, is often judged on its own terms. If structure gives an innovation its identity, procedure might be thought of as the beating heart.

Oklahoma policymakers decided to implement a version of the NFP statewide because they were convinced by the research evidence (i.e., consequential legitimacy) and by the structure of the program (i.e., they liked the idea of using nurses as home visitors working through local public health departments) (Replication & Program Strategies, 2000). But, it took a while after that decision for the model to be deemed procedurally appropriate by those to whom this mattered most: public health nurses. Initial training organized by the state did not show nurses specifically how to conduct a home visit. This was less of a problem for nurses who had done home visiting before than it was for nurses who had not. For the latter, the program only seemed to become legitimate after they learned how to do a visit. Even then, some nurses, used to the stricter accountability of hospital and clinic settings, appeared uncomfortable exercising the discretion home visiting requires.

As this example suggests, procedural legitimacy seems more closely tied than structural legitimacy to what practitioners—those responsible for implementing an innovation—think and believe. Some studies suggest that the quality of initial implementation of an innovation, when implementers are still actively learning, may be shaped more by internal or close-in factors, such as the skills, experience, perceptions, and relations among specific implementers, than by influences from within the larger organizational or community setting (Edmondson, Bohmer, & Pisano,

2001; Feldman & Pentland, 2003). If implementers have reason to question the appropriateness of an innovation's methods, they may have difficulty learning those methods satisfactorily during the initial stages of implementation.

Proposition 3a Practitioners are more likely than other groups to focus on the legitimacy of an innovation's procedures.

Proposition 3b The less legitimacy practitioners grant the procedures of an innovation, the less adequate is their learning of those procedures and the lower the likelihood of the innovation being adopted and sustained in its effectiveness.

Procedural legitimacy highlights the importance of innovations striking the right balance between being novel and familiar at the same time (Hargadon & Douglas, 2001; Hayagreeva, Monin, & Durand, 2005). An innovation needs to be perceived as a change in the current way of doing something. Yet, in order to be credible with practitioners, it may also need to have elements of the familiar. The NFP's use of protocol-like guidelines gives nurses something familiar to which to relate. Innovations that radically depart from existing practice may be resisted by practitioners unwilling to change their beliefs to the extent the innovation demands (Fiol & O'Connor, 2002). Working with what practitioners already have and adding to it may be a sounder and speedier route to sustained procedural legitimacy than trying to "deprogram" practitioners in order to build them back up in the right way.

Proposition 3c The more an innovation's procedures depart from existing practice, the lower the likelihood of the innovation being adopted and sustained in its effectiveness.

In promoting some innovations, the charismatic legitimacy of a founder may substitute for a lack of procedural legitimacy. Instead of drawing guidance from codified methods, practitioners look to the founder to teach and show them what to do. The Carrera teen pregnancy prevention program, run out of the Children's Aid Society of New York, began this way. Dr. Michael Carrera, its developer, personally guided adopters of the model for several years. With more and more sites, though, this became increasingly impractical, necessitating the development of more formalized guidance materials and training (Replication & Program Strategies, 2001).

In less institutionalized fields (Carrera's program functions within the youth development field), charismatic legitimacy may be both more likely and more

necessary to make things happen (Pfeffer, 1997). It remains to be seen, however, whether the legitimacy of strong founders in these fields (or for that matter, in any field) aids sustainability beyond the time the founder is active (Conger & Kanungo, 1998; Weber, 1947). Both logic and the anecdotal evidence suggest the competence of the founder must eventually be converted into effective, legitimate procedures that can outlast him or her.

Proposition 3d The less institutionalized the field of an innovation, the more likely is promoting use of the innovation to be led by a charismatic founder or leader.

Proposition 3e The more dependent an innovation is on its founder, the less likely it is to be sustained in its effectiveness when the founder leaves.

Socio-political Legitimacy: Does the Innovation Successfully Address a Relevant Problem in a Growing Field?

Innovations seem to fare best when they are favored by their socio-political environments—the people, organizations, and other forces that shape broader perceptions, expectations, rules, and the like. At first blush, this may seem counterintuitive, since part of what innovations try to do is change what environments want. But, as noted above, innovative programs and organizations may have a better chance of being sustained when they build on the direction in which things are already headed rather than going against the grain. Although founders and developers create the effective program or organization to begin with, the environment may play the more significant role in deciding whether that effectiveness will be sustained and extended (McGahan & Porter, 2003; Siggelkow & Van den Bulte, 2003).

Proposition 4a The sustainability of an innovation depends more on whether it is in a growing field than on qualities of the organization or group leading its use.

A good example may be found in the experience of the National Health Policy Forum at George Washington University in Washington, DC. The Forum was created in 1971 by congressional and executive branch officials to provide information and opportunity for frank discussion of emerging health policy issues, free from intrusions by the media (Love, 2002)). At the time, awareness of the challenges of health care access, quality, and cost was just beginning to form. In the intervening years, these challenges have only grown in

their importance on the nation's domestic policy agenda. The Forum has continued throughout to provide a valued service to those who participate in its gatherings and receive the information it prepares. Even with this level of excellence, though, the Forum might not still be around if the broad, public interest in health policy had faded for some reason. The Forum could be said to be a beneficiary of a supportive environment already primed to evolve in the right direction.

Many health and human service innovations may come into being when the larger environment is supportive, and then lose out when things change. Teen pregnancy prevention programs seemed to be in demand when teen pregnancy rates were high in the 1980s and 1990s. Since those rates have declined significantly in recent years, the environment has appeared to become somewhat less interested.

Demographic factors are not the only influences on environmental support. Policy tastes themselves may change apart from demography. One of the reasons boot camps and other get-tough approaches became popular in combating juvenile delinquency was because policy shifted in a more punitive direction (Bourque et al., 1996). In a field like child protection, policy preferences have vacillated dramatically during the past 50 or more years, between emphasizing the preservation of biological families and promoting the best interests of children through substitute care and adoption (Lindsey, 2003). Being confident about the direction of the child protection field has been difficult. This has rendered the task of innovators in devising sustainable improvements more uncertain than it might be if the policy environment were more stable or predictable.

Proposition 4b An innovation is less likely to be adopted and sustained in its effectiveness the more unstable the public policy governing its field.

Social Movements

Movements represent a special case of trying to force or induce the environment out of either being too diverse or too settled, and to push it in a new direction. Usually, although not always, values, principles, and ideas, not specific programs, are the stakes (Davis, McAdam, Scott, & Zald, 2005). The aim is to motivate creative action consistent with those values, principles, and ideas in order to change social or health conditions broadly (e.g., anti-tobacco campaigns, Mothers Against Drunk Driving).

Health and human service innovations often seem to seek to advance themselves using what might be con-

sidered a “weak movement” form. Rather than trying to change society writ large—the sort of bold thrust associated, say, with the civil rights or environmental movements—they may focus more narrowly on mobilizing effort to address a specific need or problem (Schorr, 1997).

Until it developed a business plan to extend its specific approaches to adult mentoring of youth, Big Brothers Big Sisters described itself as a movement along these lines. For a time under the sway of this thinking, it considered branching out beyond one-to-one mentoring, the competence for which it is known, into other ways of supporting the development of at risk youth, guided by a common set of values and principles (Racine, 2000). Movements appear to make such breadth of action tenable. YouthBuild, a popular anti-dropout program, initially tried to extend its reach in ways reminiscent of a movement. Instead of expecting replication of the program model, its leaders offered guidelines and encouragement to help adopters create the approach they thought would work best in their own local settings. When this led to more variation under the YouthBuild name than the leaders were comfortable with, they attempted to exercise more control over the network of sites, moderating its movement-like quality (Ayse & Dees, 2004; Stoneman, 2002).

Proposition 4c *The more an innovation is defined by the values, principles, and ideas it represents, rather than its structure and procedures, the greater the likelihood that its structure and procedures vary as its spreads.*

One thing movements seem to make clear is the important role often played by imagery in the fate of health and human service innovations. There is always the innovation as a particular operating reality and the innovation as an image received by people not immersed in that reality, whose support may matter to its survival (e.g., organizational chief executives, policy makers, foundation officers, opinion leaders). Because movements are about abstractions such as values, ideas and principles, they may be particularly able to take advantage of the cognitive room afforded to project a vivid, emotion-laden imagery. The imagery, in turn, may make communication about the innovation easier, at least in the initial stages of seeking sustainability or replication.

Proposition 4d *The more an innovation is defined by the values, principles, and ideas it represents, rather than its structure and procedures, the more likely it is to obtain media coverage early in its implementation or diffusion.*

For an innovation to remain alive and well on a significant scale, those parts of the environment that matter may need to embrace its image, what it stands for. If it depends on public funding, for example, the forces in control of that funding will probably have to relate favorably to the innovation’s image. If it depends on support from within a given profession, leaders and associations within that profession will probably need to draw a positive image from what they know about the innovation (Greenwood, Hinings, & Suddaby, 2002). And, of course, the media often have a role to play, not just as providers of information, but as arbiters of the level of legitimacy an innovation will acquire (Rao, Monin, & Durand, 2003). The media can translate the experience with an innovation into the kinds of stories that may not only make its image more concrete, but also seem consistent (or not) with broader trends in society (Deeds, Mang, & Frandsen, 2004).

Fidelity in Moderation

To achieve reliable effectiveness, an innovation may need to have some of all four types of legitimacy. It may need to be credited with producing desirable outcomes, using a structure and methods that make sense and seem appropriate, and dovetailing with interests already present in the environment.

Proposition 5a *An innovation is more likely to be sustained in its effectiveness the more it has of each of the four types of legitimacy.*

A question may arise, however, as to how tightly linked these different dimensions of legitimacy need to be. Can an innovative program still expect to get good outcomes by allowing its structure or methods to vary, or by adapting its features to accommodate different environmental interests? While opinions abound, there have been no definitive studies of this question for health and human services (but see Center for Substance Abuse Prevention, 2002). A combination of anecdotal experience, logic, and some research provide provisional support for the following “rules of the road.”

When a program has been carefully tested through experimentation and found to be effective—especially if it has been tested in different settings, there should probably be a presumption in favor of implementing it with fidelity. That is, it should be put into action relying on those of its features that are known or thought to be essential in getting results. The weaker the evaluative evidence, the weaker the argument, in turn, for insisting on or expecting fidelity to the model.

It is rare to know with certainty what is essential to the effective performance of an innovative program or practice. Mostly, decisions about what to deem indispensable are matters of informed judgment, not knowledge in the strict sense of the term (Racine, 2004).

Some who have thought about the problem believe that expecting fidelity is unrealistic (Bauman, Stein, & Ireys, 1991; Schorr, 1997). They argue that innovations have to be adapted to local circumstances. Up to a point, they seem to be right. It is inarguable that every new place or new group of staff will implement a given innovation somewhat differently, regardless of the control overseers attempt to exercise (Winter & Szulanski, 2001). The issue is how much or what kind of latitude in adapting an innovation makes sense, if reliable effectiveness is the objective.

When a program is supported by strong evidence, giving local implementers freedom to alter what are regarded as its essential features seems counterproductive. Research in both the social and commercial sectors suggests that deviating from designs that have been shown to work usually hurts more than helps in getting desirable outcomes (Blakely et al., 1987; Hansen, Graham, Wolkenstein, & Rohrbach, 1991; Jenrell & Ridgely, 1999; Knott, 2001; McHugo, Drake, Teague, & Xie, 1999; Winter & Szulanski, 2001). And there is emerging evidence that obtaining fidelity to critical ingredients may not be as elusive or resisted in practice as suggested by studies of innovation implementation in the 1970s and 1980s—the last time the topic was hot (Center for Substance Abuse Prevention, 2002; Mihalic et al., 2004; Olds et al., 2003).

At a minimum, it seems reasonable to expect adopters or new staff to become competent in an innovative program or practice, as designed, before contemplating changes (Winter & Szulanski, 2001). This may allow for a more informed and orderly process of adaptation. Indeed, thoughtful, systematic adaptation, rather than rigid adherence ad infinitum to a given design, may be the better path as practitioners gain increasing competence.

Over time, effectiveness is likely to depend on practitioners becoming more skilled at handling unforeseen circumstances. And this ability, it would seem, comes not from executing an innovation the same specific way time after time, but from learning how to perceive and act on the unfamiliar nuances that situations often present and still get the right results (Weick, Sutcliffe, & Obstfeld, 1999). Such expertise does not do away with standards and rules, but uses them as resources in combination with insight and judgment to solve a client's, a patient's, or groups problems in their particularity.

Simply put, fidelity may be thought of as a tool for developing an initial foundation of expertise. After the foundation is laid, experience, guided by accurate feedback on performance and proper accountability, may appropriately become more controlling.

Proposition 5b An effective innovation is more likely to be sustained in its effectiveness to the extent it is initially implemented with fidelity.

Conditions of Local Adopters

Fidelity of implementation and the emergence of expertise may be assisted when an innovation is placed or developed in settings that can meet its requirements. While the best innovations are most likely those that can work well under a variety of local conditions, it would seem unusual to find an innovation that can be effective under all conditions. Even if the need for an innovation exists in a particular setting, if what it requires to be effective there is unavailable or inadequate, then following through anyway may waste precious resources or possibly do damage (Goldman, 2003; The Conservation Company & Public/Private Ventures, 1994).

Unfortunately, not much is known about the local conditions necessary for innovation success in health and human services. Some researchers have looked at organizational factors (Glisson & Hemmelgarn, 1998; Glisson & James, 2002; Glisson, 2002). Some have examined broader community conditions (Alexander et al., 2003; Arthur, Glaser, & Hawkins, 2004; Banaszak-Holl et al., 1998; Isett & Provan, 2002; Provan & Sebastian, 1998). But, little has been done to weave these two strands together or to relate them to larger institutional and political conditions such as the role and influence of professions and differences across states and localities in how public policy is made (but for a step in this direction see Fixsen et al., 2005). Yet, organizational, community, and institutional conditions combined constitute the reality that innovators themselves and their supporters have to negotiate.

While not every health and human service innovation is likely to need the same local circumstances to operate well, research and experience suggest some of the key conditions that often seem to matter regardless of the particular innovation.

General Fit: Is the Innovation Locally Necessary?

It is probably best if an innovative program or organization is actually needed, instead of just seeming like

a good thing to have (Hawkins & Catalano, 1992). The innovation may garner better support if it closely matches local understanding of what influential stakeholders regard as important unmet need. The more precise stakeholders' grasp of this need, the more accurate can be the assessment of whether the innovation is an appropriate response.

Communities that Care, a model developed at the University of Washington, lays out procedures for a community to follow in gathering data on local substance abuse risks and protective factors that could be strengthened to reduce these risks. The data then help community stakeholders to prioritize the risks and protective factors they want to address and to identify existing programs and practices to implement those priorities (Hawkins & Catalano, 1992; Hawkins, Catalano, & Arthur, 2002). Essentially, Communities that Care is a structured process for assuring careful matching of needs and solutions.

Mustering systematic data on relevant local conditions may bring a valuable dose of objectivity to decision making that is otherwise mainly political. Unless the locality is compelled by higher authority to adopt a particular innovation, some group of local actors is assembled to use the power at its disposal to decide what to do. Having a more rather than less objective starting point, while it does not guarantee, probably improves the odds that these power-holders will make accurate and fair decisions (Griffin & Tversky, 1992; Hale, 2005; Lovallo & Sibony, 2006).

In the mid 1990s, Allegheny County, Pennsylvania (including Pittsburgh) launched an ambitious, high profile initiative to expand the availability of early child care and education to disadvantaged families. Rather than have each targeted neighborhood go through a planning process that began with collecting data on real needs, the initiative encouraged them, as Rand Corporation's evaluation of the initiative put it, "to indulge their biggest dreams." When these dreams ran into the narrower expectations of central planners (available resources were potentially large but still quite limited), the resulting disaffection was substantial. Eventually, the initiative had to be dramatically scaled back to survive (Gill et al., 2002). Conceivably, if instead of leaving neighborhoods to their own devices, central planners had taken steps at the start to work with each neighborhood on how best to match available resources with established needs, the problem could have been averted.

Proposition 6a An innovation adopted as a result of a careful local process of matching the innovation with objective measures of local need is more likely to be sustained in its effectiveness.

Many health and human service innovations, when first being offered for adoption, seem unlikely to draw heavy demand. They have to be promoted and pushed to garner interest (Geisz, Grazier, Greene, & Kabacell, 1996). Conceivably, because of the need to sell would-be adopters on the virtues of an innovation, its developers or agents may try to shortchange the local process of deciding whether the innovation is a good fit with community need. Local actors will generally not know the innovation as well as its developer does. Arguably, the larger burden will be on the developer or source of the innovation to work with local decision makers to assure that all concerned, upon considering the evidence of need in the community, are confident the innovation is a necessary and appropriate response (Noteboom, Berger, & Noorderhaven, 1997)).

Worry about "buyer's remorse" may be one of the reasons why health and human service innovators sometimes allow their models to be adapted right from the start. By letting their innovations be reinvented in each new local setting, they may not only hope to broaden the market of potential adopters, but to gain more local buy-in from those who opt to adopt. Local actors who invest creative energy in refashioning the innovation to suit their perception of local circumstances may end up feeling more ownership of the program or organization they help to create (Bauman et al., 1991; Ringwalt et al., 2003; Rogers, 1995b).

If adaptations preserve performance, so much the better. If they do not, however, a stronger sense of ownership may give local actors more reason not to be open about how the innovation is actually doing. The incentive to scrutinize performance may be weakened by too much trust among those involved locally (Langfred, 2004; Szulanski, Cappetta, & Jensen, 2004). Innovative health and human services thus may, by their reinvention, at times attract deeper, even enduring local commitment at the expense of effectiveness or the desire to pursue it forthrightly.

Proposition 6b Local actors are more committed to innovations they reinvent.

Proposition 6c An effective innovation that is reinvented in a local setting will perform more poorly than the same innovation in a setting that does not reinvent it.

Organizational Fit: Is the Local Host Organization for the Innovation Suited to the Role?

Some health and human service innovations are organizations in themselves. Big Brothers Big Sisters would

be an example. For the most part, each local Big Brothers Big Sisters is its own organization.

However, most innovations are adopted or established within pre-existing entities doing other things. Even if many innovators would like to follow the Big Brothers Big Sisters path, the costs and complexity involved in creating new organizations may militate against doing so much of the time (The Conservation Company & Public/Private Ventures, 1994).

Because innovations will typically operate within already established organizations, the question arises of what characteristics the local organizational host for an innovation should exhibit. In general, several dimensions of organizational life seem to play a role in determining whether an effective program or practice will be implemented in the right way and sustained in its ability to perform well.

Strategic Commitments

Among the key considerations appears to be the fit between the innovation and the extant strategic commitments of the organization adopting it. Organizations tend to be imprinted by their early experiences (Stinchcombe, 1965). Decisions made during the founding phase about goals, practices, procedures, structures, and the like are likely to continue to shape, often in profound ways, the organization as it passes through time. These are its core strategic commitments (Kraatz & Zajac, 2001).

An innovation being adopted from outside or even being developed within may fare better if it is compatible with the organization's strategic commitments. If the innovation is not, it may take the organization onto terrain for which it lacks the necessary capabilities (Glennan, 1998; Selznick, 1957). It also may clash with organizational members' sense of identity, with how they think about themselves as members and about the organization more generally (Ghemawat, 1991).

Children's Village, a residential treatment facility for children in New York, received funding from the U.S. Department of Labor to test replication in four sites of a model approach to helping older children transition out of foster care and into responsible roles in the community. Three of the sites remained in operation throughout the test and achieved acceptable results. But, the fourth site, a well-regarded community development corporation, never gained traction with the model and gradually faded away before the end. Although the community development corporation was the largest and most prestigious of the four participating organizations, its strategic commitments related more to economic development than to the more

intensive, almost therapeutic kind of social development called for by the Children's Village model (Racine, 1998). The one identity was incompatible with the other.

An innovation may have a better shot at effective implementation and reliable performance when it is adopted by organizations that specialize in the particular area or problem it addresses. There is some evidence indicating that more specialized organizations, even though they tend not to be as large and long-lasting as generalists, are more effective at assimilating new, relevant knowledge (Bothner, 2003). Specialized organizations may be strategically committed in ways that enable them to assess more accurately how an innovation will fit and, if the fit seems good, to learn more completely how to apply it.

Of course, organizations do and sometimes have to change. So, strategic commitments sometimes have to change, too. Thus, conceivably, the community development corporation mentioned above could have made a self-conscious effort to modify its identity sufficiently to embrace Children's Village's program. It did not, though, and possibly for the good reason that changing strategic commitments can be both difficult and risky. The commitments that need to be changed may elude careful identification or lack clear or feasible alternatives (Ghemawat, 1991; Levinthal, 2003; Williamson, 1975). Change may force an organization out of habits that historically have given it an advantage in the game of survival (Ghemawat, 1991; Kraatz & Zajac, 2001). If those very same habits, however, are responsible for organizational failure, then altering strategic commitments may be the only way to survive or avoid persistently low performance (Zajac, Kraatz, & Bresser, 2000). In that case, innovations that activate those new commitments may work out, although even then, the gains to organizational performance may be limited (Cockburn, Henderson, & Stern, 2000).

Research suggests that organizations which change too readily in response to shifts in their environments become more vulnerable to poor performance (Baum & Singh, 1996; Kraatz & Zajac, 2001). An organization may stretch itself to accommodate an innovation, and it may eventually succeed after doing so, but the risk of failure does not appear negligible. Innovative programs and practices may function best when they are able to advance the strategic commitments relatively healthy organizations have already made.

Proposition 7a An innovation is more likely to be sustained the better it fits the adopting organization's established strategic commitments.

Absorptive Capacity

A factor of growing importance in understanding the use of new practices is the ability of organizational members to absorb knowledge. Absorptive capacity refers to what people already know that helps them recognize the value of new knowledge and put it to work in their setting (Cohen & Levinthal, 1990; Fiol & Lyles, 1985; Zahra & George, 2002).

Absorptive capacity may in some circumstances actually have as much or more influence on the effectiveness with which an innovation is replicated than does the desire of the innovation's source to transfer it or the desire of the recipient to learn it (Szulanski, 2003). While the motivation to participate in the transfer process seems to just about always matter, if it is weak or uncertain, having enough absorptive capacity may keep the parties engaged anyway. People who have knowledge and experience in common and share a vocabulary may not need as much motivation to interact (Argyres, 1999; Cramton, 2001). Conversely, when absorptive capacity is insufficient, excess motivation on the part of the recipient may produce learning that is in error or superficial. Szulanski (2003) suggests that highly motivated adopters may be more likely to modify new knowledge before understanding well enough what they are dealing with.

Can an organization ever have too much absorptive capacity? The answer may be yes. If an organization already knows or believes it knows much of the information entailed in the design of an innovation, even though it may be better prepared to learn, it may be less motivated to try (Black, Carlile, & Repenning, 2002; Van den Bulte, Lievens, & Moenaert, 2004). Absorptive capacity seems optimal when it is closely related, but not substantially overlapping with, the innovation being adopted. And perceptions of capacity may be just as important as the reality. In one study of chronic care collaborations, organizations that rated their chronic care systems as more developed (a marker for absorptive capacity) did a poorer job implementing quality improvement than those that gave middling ratings (Wu et al., 2003).

Proposition 7b The absorptive capacity of an organization has a curvilinear relationship to the effectiveness with which an innovation is implemented.

Absorptive capacity need not, and probably should not, be solely equated with the knowledge and skills of individuals. How an organization as a whole works—the means it has developed over time to learn

from its experience—should also be examined (as Proposition 7b implies). Prior experience assimilating innovative programs and practices may offer helpful insights into the organization's capacity for absorbing new ones (Jansen, Van den Bosch, & Volberda, 2005).

Proposition 7c The more prior experience an organization has adopting innovations, the more effective it is implementing subsequent innovations.

Cultural Balance

Everything in moderation is generally good advice, but it may have special relevance to the culture of an organization when it comes to the work of implementing and sustaining effective innovations. Cultural balance may be crucial in creating the internal conditions needed to recognize the value of an innovative program or practice, learn how to perform it effectively, and keep it performing well over time.

One well-established body of research has found a dependable relationship between four dimensions of organizational culture and organizational effectiveness (Denison, Janovics, & Young, 2005; Denison & Mishra, 1993). An organization should: (1) have a sense of purpose, (2) be able to adapt as needed, (3) engage its members in shaping the direction of the organization, and (4) act with consistency over time. Obviously, conflicts can arise between dimensions. An organization too committed to consistency (an overly rigid bureaucracy comes to mind) may be less able to adapt, since adaptation requires breaking with the existing way of doing things. Some local public health departments in Oklahoma, for example, seemed too committed to their existing structure and practices to be enthusiastic implementers of the NFP (Replication & Program Strategies, 1998). By contrast, an organization that is always adapting and changing may be regarded as less reliable, as noted above. Striking and maintaining balance among the four dimensions seems to promote effectiveness.

Cultural balance may be particularly important in replicating and sustaining innovations (Shortell, Marsteller, Lin, Pearson, Wu, Mendel, Cretin, & Rosen, 2004). A sense of purpose and the ability to adapt may supply the cultural resources for identifying innovations that can help the organization advance or change its agenda. Member involvement may provide the means of legitimizing the innovation inside the organization and working through the challenges of getting it implemented in good order. Consistency may give the organization reason to try to keep the innovation

performing effectively. Adaptability may re-enter the picture if and when the innovation needs to be modified to respond to a changing environment or to accommodate new knowledge.

Shifting from consistency to adaptation when change seems needed, however, can be difficult. A successful innovation may reinforce with those operating it the value of the routines through which it is executed. Operators may, in a sense, become trapped in their current competence or success. Attached to the existing way of doing things, they may be unable or unwilling to see when change is needed and slow to learn new ways (March & Levitt, 1988).

While a conscious effort to maintain a balanced organizational culture may reduce the likelihood of competency traps, greater scale may make achieving balance more of a challenge (Baker, 1992; Blau & Schwartz, 1984; Cramton, 2001)). As a program expands and perhaps spread to new locations, reliable performance may become more elusive. What could be accomplished on a small scale through close, interpersonal relations may have to be replaced by less personal and more formal structures and procedures. The time and effort it often takes to put these structures and procedures in place may bias the culture in favor of control and consistency, at the expense of the ability to adjust when the environment changes. This is the dilemma of bureaucracies. Alternatively, the decision may be to minimize central direction and allow local operators to adapt largely as they see fit, at the expense of reliability. Arguably, it need not be either way. Standardization and creativity may not necessarily be incompatible (Gilson, Mathieu, Shalley, & Ruddy, 2005).

Proposition 7d The more culturally balanced an organization, the more likely it is to: (i) adopt an effective innovation, (ii) implement the innovation as intended, and (iii) achieve reliable performance with the innovation.

Proposition 7e The cultural balance in an organization leading the use of an innovation will shift in a durable way toward consistency and control as the number of innovation users increases.

Management Support

The adequacy of internal organizational support for an innovation seems likely to influence how well it is implemented and whether it is sustained, and if so, in what form. If leaders and managers inside the organization favor the innovation, they may be more inclined

to use their authority and power to help it succeed. On the other hand, if they are skeptical, they may foster or allow conditions that will make it less likely for the innovation to do well, thus justifying their skepticism (Repenning, 2002).

Among the most important roles played by managers in the application of new programs and practices may be their normative leadership. Managers and people in supervisory positions use their authority to signal what has value inside the organization (Edmondson et al., 2001). When they get behind an innovation, they are communicating the importance that innovation has to the organization. Normative leadership may be especially salient in health and human service organizations owing to the inherent ambiguity and uncertainty of many, if not most, of the social technologies they use (Shamir, House, & Arthur, 1993). Because a health or human service innovation will not be effective all of the time, and may not even yield positive results most of the time, its operators may have difficulty remaining motivated in the absence of strong endorsement of the innovation's value from management.

Management support may also be critical when an innovation depends on resources from other units in the organization or when other units depend on it. In this case, managers may be in the best position to coordinate action across units and solve bottlenecks that can lower performance. Non-management staff may devise suboptimal workarounds to compensate for failures that stem from problems in or with other units, and they may stick with these "half" solutions unless and until managers intervene (Tucker, 2004).

Proposition 7f The more that managers in an organization are committed to an innovation, the more likely the innovation is to be implemented well and sustained in its effectiveness.

Some of the literature on health and human services innovation emphasizes the importance of internal champions or change agents in building and sustaining support for a new program or practice (Rogers, 1995a; Scheirer, 2005; Shediak-Rizkallah & Bone, 1998; Stevens & Peikes, 2004). Although the idea of an innovation champion has intuitive appeal, most of the evidence for its significance appears to be anecdotal or based on organizational members being asked if champions are important (Howell & Higgins, 1990). In an individualistic culture like the U.S., it is not surprising that people attribute much of what happens inside organizations to individual agency.

For most successful innovations, it seems likely that many people will be involved first in the decision to

establish the innovation and then in the effort to implement and maintain it. Leadership may not be fixed on a given individual but may move around depending on circumstances and needs (Klein, Ziegart, Knight, & Xiao, 2004). In Oklahoma, after the legislature launched the Nurse-Family Partnership there, a team from the state department of health took responsibility for implementation. Later, when legislators had concerns about the amount of money being spent on the program, the issue was resolved effectively (albeit temporarily) because leadership shifted from the health department official managing the NFP to the state commissioner of health and the department's liaison to the legislature, people with more political clout. There may be advantages to this more "democratized" form of leadership. Hospitals that implemented minimally invasive cardiac surgery through well-constructed teams, where each member played a critical, complementary role, learned the new technique more effectively than those that relied on individual doctors to make it happen (Edmondson et al., 2001).

Indeed, problems may arise when leadership is restricted to a champion or lone hero and is not infused into the overall system through which the innovation is implemented. Champions may invest too much of their own ego in the innovation, making it difficult for others to feel that it is their innovation, too (Howell, 1997).

An organization that lays out clear roles and responsibilities for implementing and sustaining an innovation may be better than one that relies solely or mainly on the efforts of a bold and savvy champion. A champion may be necessary some of the time—for example, when internal resistance or ignorance is exceptionally high. But, it may not be appropriate to make this a general requirement or expectation for starting and sustaining health and human service innovations in their effectiveness.

Proposition 7g In an organization with clear roles and responsibilities, an innovation is more effectively implemented and sustained in its effectiveness to the extent it does not depend on an individual internal champion.

Internal Cohesion

A final organizational condition that appears to be important for innovative programs and practices is the degree to which members are attracted to the organization and the other people in it. Research has generally found a positive relationship between cohesion among members of an organization or group

and performance (Gully, Devine & Whitney, 1995; Mullen & Cooper, 1994)). When cohesion is sufficiently high, information may flow more readily through the organization. Better flow helps in communicating the value of an innovation internally and subsequently managing its interdependencies with other parts of the organization. The implementation of a new program or practice calls not just for learning new skills but also new ways of relating (Edmondson, 1999). If cohesion is inadequate, those responsible for the innovation may have problems obtaining cooperation from other units on whom they must depend for resources and support.

In getting work done, cohesion may be more likely in an organization or network that has worked out a clear division of labor among its various units and members (Cummings, 2004; Rowley, Greve, Rao, Baum, & Shipilov, 2005). When roles overlap too much or there is confusion about who is responsible for what, conflict and mistrust seem to be more common and performance suffers accordingly. A new program or practice introduced into such a setting may be similarly affected. If uncertainty about roles and responsibilities is accompanied by a higher rate of staff turnover, which would not be unusual, the innovation may never develop the reliable competence needed to reach effectiveness. In general, it may be important to the health and sustainability of innovations inside organizations that different members and units are able to lay claim to different, complementary forms of expertise (Lewis, 2004).

Just as too little cohesion may be a problem, too much may be a problem of a different kind. There is ample documentation of the dilemma of "groupthink," where excessive cohesion keeps organizational members from thinking for themselves (Janis, 1982). Groupthink seems more likely in situations where organizational members are insulated from external influences. Health and human service innovations that put more stress on adherence to particular values than on the use of particular skills may over time become more prone to groupthink if those values are not accepted within mainstream culture. An "us against them" dynamic may set in, making the group's values even more important to members' identities. Too much cohesion may also simply keep practitioners from learning about or recognizing opportunities or the need to adapt in the face of changes in the environment (Granovetter, 1973, 1992). The rule of thumb may be: enough cohesion to implement and sustain an innovation with a minimum amount of trouble but not so much that it is prevented from evolving in step with its environment.

Proposition 7h There is a curvilinear relationship between internal cohesion and the effectiveness with which an innovation is implemented and then sustained in its effectiveness.

Interorganizational Fit: Can the Innovation and Its Organizational Host Be Successfully Integrated into the Appropriate Local Network(s)?

An innovation will typically depend on other people and organizations in its immediate environment in a variety of ways—for information, money, clients, and the like—and others in that environment will likewise depend on it. Certain factors appear to be especially important in how well an innovation will integrate into its local setting with other organizations.

Host's Centrality

Everything else equal, an organization well connected in the community may represent a better place for an innovative program or practice than an organization that is more isolated (Alter, 1990; Edwards & Marullo, 1995). “Connected” means that the organization has access to others who control or have influence over important resources which the innovation may need or benefit from. If the innovation is spelled out well enough, the resources it will need to thrive should be relatively straightforward to identify. Organizations with access to those kinds of resources then would become logical candidates for hosting the innovation. Resources may include not just tangibles like money and staff, but also less tangible assets such as political influence, media connections, and referrals.

Access to the appropriate types of resources, tangible and intangible, is something that develops over time (Stinchcombe, 1965). A young organization with a well-established leader or other reputable staff or board members may have some of the necessary links, but its means for working these connections may be underdeveloped (perhaps more personal than organizational) and thus may not be as reliable as a more mature organization.

Research indicates that the more central the organization in the networks of which it is a part, the more likely it is to be privy to information that can help it (Gulati & Garguilo, 1999; Jaffee, McEvily, & Tortoriello, 2005). Ongoing information access may be an advantage in establishing and sustaining an innovative program or practice in a community, where the strategy for success cannot be known completely in advance and, in all probability, will need to be adjusted over

time (Nelson & Winter, 1982). Centrality, however, may also be constraining in at least a couple of ways.

A centrally positioned organization may have a lot on its plate (Knoke, 1990; Pfeffer & Salancik, 2003)). This possibility may explain, in part, the behavior described earlier of the well-placed and influential community development corporation that started to implement Children's Village's foster care transition model and then dropped it. A more central organization may also be more reluctant to act for fear of jeopardizing its reputation (Goode, 1978; Li & Rowley, 2002; MacNeil, 1983; Podolny, 1994). Innovations, by their very nature, entail some increased risk during initial implementation and perhaps beyond. An organization with much at stake in terms of its reputation in the community may be wary of expending the necessary political and social capital, unless the innovation satisfies a need the organization would have difficulty meeting otherwise (Pfeffer & Salancik, 2003).

If a dominant organization decides to get fully behind a new program or practice, it may be able to do more for the success and sustainability of that innovation than a less central one. But if its support is lukewarm or superficial to begin with, the dominant player may turn out to be the wrong host. A committed organization with a good, rather than great, reputation and some, rather than substantial, access may work better.

Proposition 8a An innovation performs better and is sustained in its effectiveness longer to the extent that its local host organization is (i) centrally placed within the community and (ii) committed to the innovation.

Local Network(s)

The host organization for an innovation may be centrally located in the local network to which it mainly relates, but that network itself will be more or less central in the overall structure of the community (Knoke, 1990; Rowley et al., 2005). For example, a health care network consisting of hospitals, clinics, and physician's offices may be more central, with more access and influence, than a child care network consisting of many small nonprofit and some commercial providers and a few larger ones. Although both networks fulfill important community purposes, the health care network may reach a larger cross-section of the local population, provide services considered more vital by most people, and work principally through highly trained professionals. An innovative program or practice may have to work harder to gain legitimacy within the health care network because of its comparatively

high standards and prestige. But, once acceptance has been gained, the health care network may be able to do more to extend and sustain the innovation than a less capable network can.

Proposition 8b *The more influential the inter-organizational network to which a local host belongs, the higher the probability that an innovation adopted by its host will be sustained in its effectiveness.*

An innovation may also be affected by the stability of the network(s) to which its host belongs. A stable network may be more likely than an unstable one to be able to follow through in supplying the needs of the program or practice over time (Beckman, Haunschild, & Phillips, 2004). Stability may be a challenge if the requirements of the innovation necessitate the development of a new network or a substantial change in an old one. Having decided to adopt the program or practice, the host may have to forge ties with organizations it has not worked with before or in new ways with old allies (Pfeffer & Salancik, 2003). This may work, but it may also be affected by uncertainties.

Union Mission in Savannah, Georgia built a health center to provide a range of inpatient and outpatient services to homeless people. Two competing local hospital systems agreed to join forces with Union Mission to help develop the center, which opened in 1999. Three years later, one of the hospital systems decided to pull out, putting the center in a serious financial bind. The CEO of the hospital told the local newspaper that the hospital had never committed to continuous support and had other community responsibilities to satisfy (Robert Wood Johnson Foundation, 2004).

Any partner in a local network or coalition may be a potential source of divided loyalties (Alexander et al., 2003). Each partner or member has an interest in the network, but it also has its own interests apart from the network. A network that has been at it for some time and has had notable successes may have sorted through many of the stresses associated with competing interests and reached some kind of workable accommodation (Beckman et al., 2004). Consequently, it may be of more reliable assistance to a new program or practice.

Proposition 8c *The more stable the interorganizational network to which a local host belongs, the higher the probability that an innovation adopted by the host will be sustained in its effectiveness.*

Groundwork

The position of the host organization in the community and the nature of the local network(s) of which it is a part may set the stage for placing the new program or practice on secure footing. It is likely that the host will have to expend effort working within this structure of relations to establish the innovation on a path toward continuing success.

Two activities may be particularly consequential in whether an innovation gets off to the kind of start that will improve its chances of surviving well in the long-run. The first is planning. If the host only plans its own work and neglects the program's or practice's anticipated interdependencies with others in the community, it may buy trouble down the road (Delmar & Shane, 2002). Trouble may still arise even with more attention to external interdependencies, if negotiations with others put too much emphasis on appearing cooperative and positive at the expense of clarity and specificity (Neale & Northcraft, 1990; Neale & Bazerman, 1985). This may have been part of the problem with the early childhood initiative in Allegheny County, Pennsylvania. In the interest of wanting to appear optimistic and supportive, central planners failed at the outset to engage neighborhoods in the kind of detailed negotiations that may have led to a more realistic and honest appraisal of the choices available for meeting child care and development needs (Gill et al., 2002). Wisdom may lie in surfacing potential problems with partners before the innovation gets underway, rather than waiting for those problems to erupt when innocent third parties—clients, patients, participants—could be adversely affected.

Proposition 8d *An innovation is more likely to be sustained in its effectiveness when planning its local implementation explicitly includes possible interdependencies with other organizations.*

A second key activity for early consideration is letting important community stakeholders know about the innovation and soliciting their approval (Delmar & Shane, 2002). This effort may need to go beyond just those with whom the host organization will be or is interdependent in executing the program or practice. Reaching out to the possibly broad array of persons whose opinions do or could matter—policymakers, funders, experts—may prove beneficial or even necessary. At the local level, when preparing the way for the new program or practice, building such sociopolitical legitimacy may, as Delmar and Shane (2002) found for business startups, have a significant effect on

survival, more so even than having clients lined up or management systems in place.

Securing community stakeholders' support before an innovation is launched may deepen their interest in the decision to move forward and their commitment to help it succeed with the passage of time. It may also head off opposition. Cash and Counseling is an innovative effort by Boston College and the Robert Wood Johnson Foundation to give persons with disabilities a Medicaid cash allowance to purchase and manage home care services (personal care, homemaking) for themselves. In the course of demonstrating the model in three states, its designers learned the importance of consulting early with traditional providers of these services who might not fare as well in a more consumer-directed system (Phillips et al., 2003). Being asked for input before final decisions are made may be enough to garner the goodwill or, at least acquiescence, of possible opponents.

Proposition 8e An innovation is more likely to be sustained in its effectiveness when a broad effort is made to inform sources of local influence about the innovation and plans for its implementation.

Institutional Fit: Can the Setting Offer the Political and Professional Support the Innovation May Need to Thrive?

An innovative health or human service usually gains when it has political allies pulling for it. Although anything involving political power can be disorderly and unpredictable, many health and human services innovations probably have little chance to reach their potential without acceptance from the political arena, given its control of public policy and resources.

In a federated republic like the United States, political activity is distinguished as much by its differences from one place to the next as by its similarities (Gray, 1999). Each state has its own way of making and executing policy. Gubernatorial authority, for example, varies significantly among the states (Beyle, 2003), as does the professionalism of state legislatures (King, 2000). Local differences are even more pronounced. While the federal level is in a position to promote or impose uniformity on the states, since the early 1980s it has been more selective in exercising its authority in domestic affairs. The federal level is also affected today, as are many states, by sharp divisions between the two major parties, making policy agreements more unstable in some cases (Fiorina, 1996; McKay, 2005). Such instability may be exacerbated for policy areas

that already lack coherence owing to fragmented legislative and executive responsibilities, such as those toward children, families, and women (May, Jones, Beem, Neff-Sharum, & Poague, 2005; Mazmanian & Sabatier, 1983).

Proposition 9a The less stable the policy environment of an innovation, the less likely the innovation is to be sustained.

Increased partisanship may play an important role in strategies for spreading innovations that depend on public support. When one party is in control and its allies constitute more of the population of relevant interest groups, the possibility for action—for the innovation if they favor it, against it if not—may increase, although this could depend on the significance and cost of the innovation (Gary, Lowery, Godwin, & Monogan, 2005). The higher the stakes, the more partisanship may matter, either as a facilitating or blocking force.

While partisanship may wield more influence when the stakes are particularly high, the overall ideological orientation of a jurisdiction (e.g., liberal versus conservative) has been shown to have an effect on public policy decisions in the normal course of things (Erikson, Wright, & McIver, 1993). Public opinion appears to count in shaping the priorities of the political environments in which innovations vie for support and money, especially when citizens' views can be channeled effectively through organized interests (Schneider & Jacoby, 2005).

Opportunity may figure in as well. When an innovation is perceived as responding well to a salient issue or crisis, its chances of being politically supported may improve (Meier, 1992; Paul-Shaheen, 1998). So much the better if it fits within an existing policy domain and resonates with agendas already established by actors within that domain (Kingdon, 1984), giving it heightened sociopolitical legitimacy. Chances of support are also apt to vary with fiscal health. Jurisdictions with more money in their coffers may be more open to allocating some of it to a new program or service or keeping an existing program or service in operation.

Proposition 9b The closer the fit of an innovation with an existing policy agenda, and the more important the agenda in the overall scheme of public policy, the more likely the innovation is to be adopted and sustained in its effectiveness.

Proposition 9c The adoption and sustainability of an innovation within a political jurisdiction is directly tied to the fiscal health of that jurisdiction.

In addition to politics, an innovation's odds of being adopted and sustained may depend on how it is regarded by professions whose interests are affected by it (Rogers, 1995a). Professions are usually a help to new programs and practices that they embrace. They can use their status to enhance the innovation's legitimacy. Sometimes, though, innovations are innovations because, to some degree, they go against the grain of the profession within which they arise. Then the challenge is finding supporters within the profession who are willing to build the case and to endure for the long time it may take for the profession as a whole to be brought around (Greenwood, Hinings, & Suddaby, 2002).

Proposition 9d An innovation that lacks support from the mainstream of the profession with which it is chiefly associated is less likely to be adopted and sustained.

New programs and practices are not always, however, the province of a single profession. They may cut across professions. Promoting palliative care, for instance, requires appealing to doctors, nurses, social workers, and others within hospitals (Center to Advance Palliative Care, 2002). Even a program anchored in a given profession, such as the NFP in nursing, may need to appeal to other professions for support. The NFP has made concerted efforts to garner support within not just nursing, but also pediatrics and obstetrics, since these are the main medical specialties that will interact with the mothers and children in participating families. Innovations that must work across professional lines may be slowed in their progress owing to the different ways in which professions operate and think (Ferlie, Fitzgerald, Wood, & Hawkins, 2005).

Proposition 9e To the extent an innovation is relevant to more than one profession, the slower the rate at which it is adopted, the more likely it is to be changed from its original design, and the higher the likelihood it is not sustained.

Intermediary Functions

The preceding discussion of propositions on the attributes of sustainable health and human service innovations and the local conditions that may help them flourish has implications for the capabilities needed to promote and support their advance. Whether the aim is to establish a new program or practice on a national, regional, or state scale or just to extend and sustain its reach locally, leadership and guidance are likely to be important. In some cases, the developer of the inno-

vation may provide direction and support. In others, it may make more sense for the developer to turn the responsibility over to people with more expertise in managing organizations and systems (The Cornerstone Consulting Group, 2002). Sometimes, both the developer and management experts may come together to do the job. Whatever the case, certain capabilities seem necessary or desirable in helping adopters learn the innovation, implement it successfully, and sustain it in its effectiveness.

Technical Competence: Does the Intermediary Know How to Enable the Innovation to Work Effectively in New Settings?

The adoption and implementation of an innovation involves learning. Information about the innovation must be transmitted to the adopter, and then, efforts may be made to help the adopter assimilate and use that information. Over time, as new knowledge emerges or other circumstances change, new learning may be called for to maintain effectiveness.

The credibility of the source of the information or knowledge entailed in an innovation will normally be important to the adopter. A source or intermediary that is perceived as knowledgeable is likely to be regarded more positively than one that is not (Hovland & Weiss, 1951). While trustworthiness (McEvily & Zaheer, forthcoming), status (Benjamin & Podolny, 1999), and social connections (Nahapiet & Ghoshal, 1998) also contribute to credibility, an intermediary's technical competence may be especially important in the spread and use of many health and human service innovations. Because these innovations often involve trying to change human behavior and attitudes, the knowledge they entail is likely to be incomplete, making them causally ambiguous (Rumelt, 1984). Consequently, adopters may be uncertain about whether an innovation that worked somewhere else will work for them given their different circumstances. Their uncertainty may be reduced by being able to count on a reliable, knowledgeable source. In examining knowledge transfers within large business organizations, Szulanski (2003) found a high positive correlation between perceptions of knowledge sources' credibility and perceptions of the causal ambiguity of transferred knowledge. He suggested the possibility of negative consequences from this relationship: trusting a source in the face of high causal ambiguity may increase the chances of getting and accepting inaccurate advice (p. 63). However, it seems plausible that technical competence may mitigate this effect. Apart from the other components of credibility, a more technically

competent intermediary—one that has a robust understanding of the innovation and know-how about its functioning in different settings—should be able to offer better advice regardless of the level of causal ambiguity inherent in the innovation.

Proposition 10a The greater the technical competence of an intermediary, the more accurate its advice under all conditions of causal ambiguity.

The knowledge an intermediary needs to be considered technically competent may be hard to acquire just by reading the literature on an innovation or by talking with people in the know. Actually working in the program or practice may be the best route to competence (Glennan, 1998; Public/Private Ventures, 1994). When the NFP was first offered for broader adoption, trainers were nurses who had worked in the program that served as the site for the third randomized clinical trial of the model in Denver. They had done a lot of home visiting using the model. When they spoke in training sessions about the program, they seemed able to provide nuances of understanding and concrete examples to illustrate program components or their underlying theories.

The importance of having substantive, actual experience with an innovation in order to teach and show others may stem from the complexity of many health and human service innovations. This complexity may make it impossible to capture in codified materials like manuals and handbooks everything that goes into making a program or practice effective (Winter & Szulanski, 2001; Zollo & Winter, 2002). Students of knowledge management refer to this as tacit knowledge (Polyani, 1983; von Krogh, Roos, & Kleine, 1998). Tacit knowledge tends to be situationally evoked (Follett, 1978). A person does not know he has it until a situation calls it forth. When the agents for an innovation are richly experienced in its use, their grasp of its explicit content is likely to be complemented by a body of tacit knowledge which they can draw upon when new sites or trainees ask questions or have problems not covered in the written material (Schorr, 1997).

Proposition 10b The more prior operational experience of intermediary agents with an innovation, the greater is the perceived value of the assistance they provide local adopters.

By starting out with deep knowledge, the agents for an innovation may also put themselves in a position to learn more effectively from the continuing experience of expanding and replicating the program (Fiol & Lyles, 1985; Mayer, 2004). Of course, even agents with limited

expertise will learn something from experience. Those with more expertise to begin with, however, may be more able to absorb new experience and convert it into the evolving body of usable knowledge that defines the innovation and how it is supposed to work in the world. Conceivably, a steep learning curve may lead to more and quicker success in getting the innovation adopted and sustained. Yet, sometimes the expert's challenge, as discussed earlier, is not the ability to learn, but mustering the motivation to do so (Black, Carlile, & Reppenning, 2002; Van den Bulte et al., 2004).

Proposition 10c Intermediary agents learn more quickly and effectively the more prior operating experience they have with an innovation.

Proposition 10d The motivation of an intermediary agent to learn from new experience declines with increasing experience.

Information Systems

While the technical competence of an intermediary is rooted in the capability and behavior of its staff or agents, it is complemented by data systems that track operations and performance. Using data to monitor local implementation is not just a means of promoting accountability, but of solving problems that impair performance. In the absence of regular, careful monitoring, implementation may be more liable to veer off course. Local operators may lack the expertise or perspective to detect small perturbations that, if left unresolved, can lead to serious threats to performance. They may allocate the wrong or insufficient resources to tasks based on the requirements of the program model. A monitoring system provides the intermediary and local operators with a shared mechanism for remaining vigilant.

Proposition 10e Innovations with formal implementation monitoring systems perform better and are more likely to be sustained in their effectiveness.

A data system is, in a sense, an extension of the innovation itself, and thus, is apt to encounter many of the same challenges in getting implemented and sustained (Robey & Farrow, 1982). In theory, management information systems can generate data for internal and external accountability and for occasional or continuous problem solving in pursuit of better performance. In practice, systems vary in terms of the kinds of data they collect, when they collect them, how the data are used, and thus, their overall usefulness.

Research suggests that information systems are used effectively when they are perceived by their intended users as sources of high quality information and as easy to use (Rai, Lang, & Welker, 2002; Sussman & Siegal, 2003). The perception of quality in the system is related to the perceived usefulness of its content. In operating programs and practices, outcome data have value in conveying whether explicit or implicit goals are being met, which is important for accountability and in providing general direction. However, outcome data alone may obscure how results are attained (Sengupta & Abdel-Hamid, 1993), and this may be particularly true with causally ambiguous health and human service innovations. Staff may need process data to see how their own actions may be affecting outcome performance (Early, Northcraft, Lee, & Lituchy, 1990; Mukherjee, Lapré, Van Wassehove, 1998). Process feedback, because it reflects what staff in fact do, may be more directly actionable than data on outcomes.

Developing systems that generate useful outcome and process feedback may benefit from user participation (Argyres, 1999; Robey & Farrow, 1982). Users' commitment to a system is likely to be enhanced by being able to influence its content and functioning. In addition, the design of the system can take fuller account of users' own understanding of their work, and attempt to align these understandings with the interests of the program or organization (Ba, Stallaert, & Whinston, 2001).

Proposition 10f Innovations with management information systems that provide both regular outcome and process feedback have higher performance and are more likely to be sustained in their effectiveness.

Proposition 10g Innovations with management information systems designed with input from system users have higher performance and are more likely to be sustained in their effectiveness as a result of users making more and better use of the information in the system.

Communication & Geography: Does the Intermediary Know How to Communicate with the Local Sites for the Innovation?

Communication is important in moving an innovation forward in a single location. The staff operating the program or practice and a variety of external stakeholders may need to be brought along with plans for expansion and sustainability. Programs or organizations that allow themselves to become isolated through a lack

of communication may increase their chances of being eliminated (Hager, Galaskiewicz, & Larson, 2004).

Communication seems equally important, and more challenging, when trying to gain wider use of an innovative program or practice (Rogers, 1995a, b). Geography introduces a major variable in the effort required of the center. An increasing number of locations for an innovation may bring both advantages and disadvantages that need to be taken into account in designing the strategy for managing growth.

On the upside, geographic dispersion creates the opportunity to be exposed to more possibilities for learning what may improve the performance of a program or practice (Cummings, 2004; Monge, Rothman, Eisenberg, Miller, & Kirste, 1985; Van den Bulte & Moenaert, 1998). Different locations have different experiences and thus have different information to offer on problems and issues. If the means exist for assimilating and sharing these different inputs, decisions can be made that are better informed and more credible because they are based on diverse voices from within the network of locations for the innovation. Success for All, the school reform program, makes a concerted effort to use the experiences of its different locations to improve its training and interactions with school personnel (personal communication with Robert Slavin, 1995).

Proposition 11a An innovation with an intermediary that uses an active, formal means of assimilating the experiences of sites performs better and is more likely to be sustained in its effectiveness.

Success for All illustrates the likely importance, especially in large, difficult-to-manage program networks, of getting into a rhythm or discipline in soliciting input from the field for changing shared standards and expectations (Brown & Eisenhardt, 1997; Heller, Pusić, Strauss, & Wilpert, 1998). While innovative programs and practices are never static (White, 1992), changing them too often or haphazardly is likely to create confusion and undermine the development of reliability and competence (Baum & Singh, 1996; Kraatz & Zajac, 2001). Setting regular, future points in time when changes will be considered gives operators an opportunity for input, should they so desire, and may, as a result, provide for a smoother transition to the changes that are agreed upon (Brown & Eisenhardt, 1997).

Proposition 11b An innovation with an intermediary that uses a regular, scheduled means of making changes in the innovation performs better

and is more likely to be sustained in its effectiveness.

Although being in more places enriches the overall experience with an innovation, all forms of communications are rendered more difficult by distance (Allen, 1977; Cramton, 2001; Cummings, forthcoming; Krackhardt, 1994). The frequency of communication tends to decline with distance, and the means of communication tend to become more impersonal (Baker, 1992; Blau & Schwartz, 1984). Trust is harder to establish (Forsyth, 1998), and more complex forms of knowledge may transfer less easily (Galbraith, 1993; Hansen, 1999). People appear to prefer obtaining work-related information from other people rather than from impersonal sources (Allen, 1977).

Innovation sites that are further away from a central office may experience more uncertainty, perhaps because communication is attenuated (Baker, 1992). Increased uncertainty may incline their staffs to put more faith in who they get information from than in the technical content of information (Haunschild & Miner, 1997). This may help explain why, in one study, those at a greater distance from headquarters tended to depend more on their peer networks than central information repositories maintained by experts (Finholt, Sproull, & Kielser, 2002).

Frequent communication between the center and local sites, if the resources exist to support it, has been shown to contribute to better performance (Cummings, 2002) and more willingness to support the collective interest of all locations (Shane, 2001). Also, communication that is done face-to-face appears to have clear performance benefits, because of its capacity for communicating richer, more subtle information about both the innovation and those involved in it (Doherty-Sneddon et al., 1997; Clark, 1996). Face-to-face communication may be especially important in the early stages of implementing a new program or practice, when local operators are unsure about what to do and are still learning. The same goes for innovations that are particularly complex, where implementers may need more access to the tacit knowledge of developers (Hansen, 1999).

Proposition 11c Frequency of communication between an intermediary and sites is positively related to the level of implementation fidelity obtained by sites.

Proposition 11d The greater the face-to-face communication between an intermediary and a site during initial implementation, the higher the fidelity of implementation.

Authority and Autonomy: Can the Intermediary and Local Sites Develop a Mutual Commitment to the Innovation?

The greater geographic distances that often accompany replication point to a common tension when extending and sustaining a program or practice in new locations between the authority of the source or intermediary and the autonomy of local adopters (Grossman & Rangan, 2001). The intermediary has the authority that comes with knowing the innovation better than anyone else, at least initially (DeGeorg, 1985). It would also not be surprising for the intermediary to want some control over the use of the program or practice, so that it is conducted in the way intended and the value of its name is protected (Bradach, 2003; Grossman & Rangan, 2001). Adopters are often independent or distinct organizations. They may be willing to agree to the intermediary's controls, but this may not deter them from attempting to act on their own when they perceive that to be in their best interest (Baker, 1992; Kalnins & Mayer, 2002; Knott, 2001). Because the intermediary may be a long way away and have limited communication with them, adopters may often have to rely on their own devices to solve emergent problems with the innovation (Finholt et al. 2002). The result may be a continuing battle over who is really in charge or has the power to decide. Most national, regional, and state nonprofit organizations with local memberships seem to experience this problem to one degree or another (Grossman & Rangan, 2001).

Proposition 12a The greater geographic distance an innovation adopter is from the intermediary for the innovation, the more likely the adopter is to deviate from fidelity.

The problem may be exacerbated if the intermediary fails or refuses to engage local sites as equal partners with it in the ongoing implementation and strengthening of the program or practice (Bodilly, Keltner, Purnell, Reichardt, & Schuyler, 1998; Replication & Program Strategies, 2000). The intermediary has a legitimate interest in seeing to it that its innovation is carried out successfully. So, some degree of top-down strategy and control is probably necessary. But, a bottom-up strategy may be necessary as well—one that honors each site's essential autonomy and the value of its own experiences (Nadler & Tushman, 1997; Slavin, 1995).

Spreading and sustaining an innovation may be as much about building and maintaining relationships with sites as it is a technical matter of knowledge

transfer (Dyer, 2000; Szulanski, 2003). The relationship between the intermediary and a site provides an important means through which the program or practice is implemented. For most relatively complex health and human service innovations, it may not be enough for the intermediary simply to train sites and give them technical assistance. The relationship itself may need to be regarded as something that will need to be actively managed and nurtured over time to sustain or amplify innovation effectiveness (Arthur, 1996).

Proposition 12b The more that sites believe their intermediary is committed to them for the long-run, the more likely they are to maintain fidelity to the innovation and to sustain it in its effectiveness.

Conclusion

How to replicate and sustain effective health and human service innovations represents an important challenge. As more promising innovations emerge from careful research and development, their creators, funders, and adopters need to know how to avoid the pitfalls that have plagued past efforts to extend the reach of effective interventions (Biglan & Taylor, 2000; Lipsey, 1999; Mihalik et al., 2004; Schorr, 1997). The purpose here has been to lay out a comprehensive framework of factors, stated as researchable propositions, which appear to play important roles in whether innovations are replicated and sustained in their effectiveness. While there are specific literatures on various aspects of the replication and sustainability challenge, these illuminate only pieces of a larger puzzle, leaving the puzzle as a whole undefined. This paper seeks to give some shape to that whole by drawing on multiple sources to frame the challenge in the multifaceted manner it actually seems to be experienced. In that way, it purports to lay out an agenda for research with clear practical implications.

The result is not without its limitations. Despite the intent to be comprehensive, the framework is not inclusive of all possible contributions to the success or failure of efforts to replicate and sustain health and human service innovations. There is no explicit discussion, for example, of financing, which, as noted at the beginning, looms large in the minds of most social sector innovators and those who adopt their innovations. The framework presumes that in pursuit of reliable effectiveness, financial developments derive from other factors, such as those the framework identifies. Nevertheless, developing a more nuanced under-

standing of the role money plays in conditioning opportunities is a gap in the approach taken here and merits more attention.

The framework is also mostly silent about the nature and content of training and technical assistance, factors that often appear to anchor much thinking about how replicating and sustaining innovations are made to happen (Public/Private Ventures, 1994). The training and technical assistance functions are of obvious importance to intermediaries. The choice was made to focus the discussion of intermediaries on broader dimensions that inform and constrain the efforts made to impart know-how to innovation adopters. But investigations into the specific influences on and effects of training and technical assistance, perhaps with these dimensions as theoretical starting points, would seem worth doing.

The framework alludes to the existence of stages in the process through which an innovation goes from adoption to sustainability. However, there is little explicit attention to the different factors that may be at work in different stages. Szulanski's (2003) research examines the stages of knowledge transfer inside organizations, but is perhaps more notable for its finding of similar influences at each stage than different ones. While good stages research requires longitudinal data that are difficult and expensive to come by, it will be important to try to develop a more finegrained understanding of the ways in which the mechanisms of effectiveness need to change as innovations make their journey to sustained impact (Fixsen et al., 2005). Even if stages share similar influences, the specific ways in which these influences manifest their effects should be expected to vary more or less.

More fundamentally, the framework largely side-steps consideration of the phenomenologically based sense-making perspective on organizations. This is a popular school of thought in organizational studies (Scott, 1998), premised on the basic idea that people help to enact the reality which they then find guiding and constraining them (Weick, 1969). Sense-making has been useful in understanding organizations and their environments as settings for action. It has mostly been excluded in these pages, not so much on substantive theoretical grounds, but because it essentially calls for a different measurement strategy (i.e., interpreting internal states of mind from outward behavior) than required by the mainly structural properties represented in the framework. Future work might find a way to integrate the structural and phenomenological into a single approach, since the meaning actors make of their experience is clearly relevant to replicating and sustaining innovations.

Admittedly, the theory suggested in the preceding discussion lacks elegance. It paints a complex, even messy picture. Although science advances by distilling phenomena into their essence, the starting place is always something that at first defies simple description. It seems unlikely that a useful, scientifically-informed understanding of replicating and sustaining innovations in their effectiveness will emerge, as it were, brick by brick from the typically narrow, often unrelated investigations of individual researchers. Having an idea of what the house as a whole is supposed to look like may help to give some focus and organization to the brick-laying. The intent of this paper has been to supply at least one version of that sort of blueprint.

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