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UNDP/UNCHS (Habitat)/World Bank

URBAN MANAGEMENT

**THE LIFE CYCLE OF
URBAN INNOVATIONS**

Volume 1

Elwood M. Hopkins

June 1994

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FOREWORD

This working paper has been prepared for the Urban Management Programme (UMP)—a ten-year global technical support program designed to strengthen the contribution that cities and towns in developing countries make toward human development, including economic growth, social development, and the reduction of poverty. The UMP is a major undertaking of the international community and involves a partnership of many actors. UNDP provides the core funding and overall monitoring of the program. UNCHS (Habitat) is the executing agency with The World Bank as associated agency. In addition, the World Health Organization, which brings its expertise in environmental health, and other multilateral agencies as well as bilateral donors and nongovernmental organizations (NGOs) provide various types of support. The key actors are those in the developing countries themselves, at the regional, national, municipal, and community levels.

The Urban Management Programme

Phase 2 of the UMP (1992-96) is concerned with capacity building at both the country and regional levels and with facilitating national and municipal dialogues on policy and program options. It emphasizes a participatory structure that draws on the strengths of developing country experts and expedites the dissemination of that expertise at the local, national, regional, and global levels.

Through its regional offices in Africa, the Arab States, Asia and the Pacific, and Latin America and the Caribbean, the UMP seeks to strengthen urban management by harnessing the skills and strategies of regional experts, communities, and organizations in the private sector.

Regional coordinators use these networks to address the five program components—land management, infrastructure management, municipal finance, environmental management, and poverty alleviation—in two ways:

- **City and country consultations.** The UMP brings together national and local authorities, private-sector networks, community representatives, and other actors to discuss specific

problems within the UMP's subject areas and to propose reasoned solutions. Consultations are held at the request of a country or city, and often provide a forum for discussion of a cross-section of issues. These consultations generally result in a concrete action plan for policy and program change.

- **Technical cooperation.** To sustain follow-up to the consultations, the UMP uses its regional networks of expertise to provide technical advice and cooperation to implement action plans and to mobilize the resources needed for their implementation.

Through its core team in Nairobi and Washington, D.C., the UMP supports its regional program and networks by synthesizing lessons learned, conducting state-of-the-art research, and supporting dissemination of program related materials.

The UMP's Working Paper Series

The working paper series has several objectives. The content of the series will seek to highlight examples of good and best practice in the various components of urban management. This will range from case studies of one or more aspects of urban management in a particular city to regional and even global syntheses of experiences. Much of the latter will increasingly be drawn from the UMP's regional programs. The timeliness of the information in the series is an important objective. Hence, the review and production processes for issuing the series have been streamlined to allow for rapid publication and dissemination. The sources of material that will be published in the series are drawn from the UMP regional coordinators, Programme consultants, members of the UMP's regional networks, UMP core team members, and others. The audience for the working papers will also be diverse, varying according to publication. The series should be of use to urban managers, urban policy makers at different levels of government, ESAs that provide support for urban development, community and nongovernmental organizations, academics, and the media.

In parallel, the UMP also issues a formal publications series that consists of discussion papers, policy framework papers, and management tools. A list of titles that have been prepared in the formal series is attached at the end of this paper. Many of the formal series publications are available in English, French, and Spanish. The working paper series is available only in English, though translations could be available at a later date.

ACKNOWLEDGEMENTS

Although I am named as the author of this working paper, it is really a collective work, produced by a great many individuals working on the Mega-Cities Project over the last several years. The Mega-Cities Project is an action/research project designed to help build the theory and method of urban innovation diffusion. The project operates with a dual strategy: on one hand, it shares workable solutions among policymakers and the public; on the other, it seeks to gain a deeper understanding of the process of innovation diffusion and the consequences for deliberate social change in cities.

Each of the field notes and initial write-ups for these case studies was done by the Mega-Cities Project fieldsite teams. The research on the Sulabh Shauchalaya case was undertaken by the Om Mathur, Pratibha Mehta, and their staff at the National Institute of Urban Affairs in New Delhi, India. The research on Magic Eyes was done by Orapin Sopchokchai of the Thai Development Research Institute in Bangkok, Thailand. In São Paulo, Brazil, the research on Sacalao was done by Silvio Caccia-Bava and his staff at POLIS, and the work on Alert II was conducted by Jorge Wilhelm and Laura Tetti at EMPLASA. The research on CAMACO was undertaken by Susana Finkelievich and Pablo Gutman at the Centro Estudios Urbanos e Regionales (CEUR) in Buenos Aires, Argentina.

In addition to the Mega-Cities Coordinators, I am grateful to a number of individuals for the help they have given me in designing, writing, and editing this working paper. They include the four UCLA professors who served as my thesis committee: J. Eugene Grigsby III, John Friedmann, Leland Burns, and Neal Richman. In addition, I received extremely helpful critiques and comments from Josef Leitmann, Everett Rogers, Tom Backer, and Leonie Sandercock. I am also grateful to have received a Benjamin Trustman Fellowship from Harvard University, which funded a year of travel to Asia, Africa, and Latin America to visit the innovations and work side by side with the coordinators. During that time, I received generous institutional support from the institutions responsible for the case studies. Above all, I am grateful to Janice Perlman, the Founder and Executive Director of the Mega-Cities Project. Not only has Janice created the organization that serves as the vessel for this project, but she has been a close friend and colleague over the last four years and has influenced me greatly, with both her original ideas on innovation diffusion and her rigorous habits of critical thinking, analysis, and creativity.

EXECUTIVE SUMMARY

The most innovative and valuable solutions to urban problems are often found in grassroots experiments or small-scale local government pilot projects. For these innovations to achieve maximum impact, they need to be upscaled, replicated in communities city-wide, transferred to other cities, or incorporated into urban policies. Unfortunately, innovations do not always diffuse. Too often, an innovative, small-scale initiative remains isolated and unknown. Or, if it does diffuse, it does so through a protracted process fraught with obstructions and delays.

The Approach

To overcome these obstacles, one must first understand the process of innovation in urban areas. There is a rich innovation diffusion literature; unfortunately, this entire body of research is of only limited applicability to the field of urban development. The dominant paradigm in the literature is based on the experiences of agricultural technologies in rural areas. This gap in understanding can be overcome by studying real-life cases of how urban innovations diffuse, integrating the findings with existing work, and extracting some preliminary lessons to guide both urban managers and urban researchers.

For the purposes of this paper, urban innovation goes through a five-phase life cycle:

Conception

The focus is on how and where a new approach was developed, and who made the decision to diffuse it.

Implementation

This phase involves how sources of support for the innovation are mobilized and how obstacles are overcome.

Evaluation and Redesign

As urban innovations often address complex issues, their outcomes can be ambiguous or unintended. This entails a phase of evaluation and redesign.

Routinization and Institutionalization

This phase covers the role of funding and institutional support for an innovation that gains widespread acceptance.

Dissemination and Replication

The final phase includes the processes that are involved in communicating innovations and having them successfully adopted in new contexts.

These phases, while drawn from the innovation literature, have been modified to apply to the circumstances that are peculiar to urban development.

In order to better understand urban innovations and test the validity of the life cycle approach, a sample of seven case studies was drawn according to three sets of criteria: impact (problem significance, potential for global impact, characteristics of novelty, quality, scope and proven merit); operational (practicality, replicability, technological feasibility, and economic viability); and value (social equity, political participation, environmental sustainability). This resulted in the selection of the following cases: the "Magic Eyes" Anti-Littering Campaign and the land sharing experience in Bangkok; the CAMACO Infrastructure Cooperative in Buenos Aires; the Sulabh Shauchalya Sanitary Latrines in Delhi; the Small Business Toxics Minimization Program in Los Angeles; and the Sacolao Community Wholesale Markets and the Alert II Traffic Reduction Plan in São Paulo. A short write-up of each case study is presented in more detail in the second volume of this working paper series.

Findings

For each phase of the life cycle, the following lessons were learned from the case studies:

Conception

Several of the innovators in the cases were motivated by a desire to be recognized as an innovative leader. The existence of political "climates for experimentation" helped new ideas

emerge. Sometimes, although it appeared that the innovation emerged from a particular individual or organization, it actually resulted from a network or web of organizations.

Implementation

Each of the innovations had to overcome significant obstacles, either from those threatened by the change or from social biases. Implementation depended on the participation and collaboration of a multisectoral range of stakeholders. Generally, changes were implemented on a small scale at first. Implementation often required a centralized command structure, a situation quite different from the conception phase. A critical stage in implementing urban innovations was gaining collective approval for them.

**Evaluation
and Redesign**

Unlike many innovations studied in the literature, the consequences of urban innovations can be ambiguous. Urban challenges are often society-level problems requiring long-term structural change that is difficult to measure. The cases suggest that "scaling up" an innovation may first entail "scoping out" a wider set of activities. Innovations that succeed in large cities are often highly visible and can result in nationwide change.

**Routinization
and
Institutionalization**

The routinization or institutionalization of an innovation can be facilitated by external recognition. A landmark in this phase is the incorporation of the innovation into ongoing policy. Another is the creation of institutions with the capacity to "franchise" the innovation or set up spinoff organizations. This phase can be bureaucratic and legislative, as opposed to entrepreneurial or market-driven during the implementation stage.

Dissemination and Replication

Innovations diffuse through the multinodal communications networks of urban communities, as opposed to the classic concentric circle model. The emergence of multiple leaders is a key characteristic in this phase. Expanding an innovation to a nearby community may raise questions of jurisdiction and community identity. Demand-oriented diffusion seems to be more successful than a supply-driven approach. Innovations that emerge from a web of diverse organizations may have greater success at diffusion, replication, and upscaling.

In addition to these findings, a number of methodological lessons were learned. These lessons will be applied to a second set of case studies that are described in the Annex.

Implications for Action and Policy

From the analysis of the cases, it is possible to suggest some concrete steps to help shorten the delay between conception of an idea and its realization. Tentative implications for action and policy include:

- Building on the innovative capacity of local leaders and organizations;
- Developing a climate conducive to experimentation;
- Identifying and documenting urban innovations;
- Targeting the dissemination of innovations;
- Celebrating and publicizing successful innovations internationally;
- Creating opportunities for peer-to-peer exchange;
- Providing a forum for policymakers to learn about innovations and how to adapt them to a new context;

- Bringing together multisectoral groups around common problems so that they can generate, implement, or replicate innovations; and
- Recognizing the adapter of a change so that he/she feels the motivation of the original innovator.

A caveat serves as the end-note of this analysis: there is usually a bias towards diffusing successful innovations. However, there are times when small-scale urban innovations should be combined with large-scale projects and there are times when diffusion might do more harm than good. A continuing challenge is to develop a framework for deciding when replication is the right thing to do.

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1. INNOVATION AND URBAN DEVELOPMENT

1.1 The Need

The issue of urban innovation diffusion has enormous implications for foundations, governments, and the international donor community. Throughout the 1970s and 1980s, most international donor agencies focused on launching experimental pilot projects, with the assumption that successful projects would create impacts of scale by being replicated citywide and across cultures. In like manner, foundations concentrated on developing small-scale test projects, assuming that a good idea would "sell itself." But although private sector innovations spread quickly, and new ideas in popular culture diffuse instantaneously, new approaches to solving urban problems have often taken decades to be replicated, if at all.

In fact, studies have shown that there is often a 20-25 year time between the genesis of new ideas and their incorporation into urban public policy. An excellent example is the "sites-and-services" innovation in low-income housing. It was recognized in the early 1960s that the self-built squatter communities of Third World cities were the beginnings of viable urban neighborhoods, and that it made more sense to grant land tenure to the squatters, provide them with urbanized lots in peripheral areas, and allow them to upgrade the areas over time than to bulldoze the shantytowns. Yet it took almost a generation for these ideas to be adopted, first by the international agencies (World Bank, 1972), then by national governments (early 1980s), and now finally and still only partially by local governments (Perlman, 1976).

As a result, in recent years, interest has grown in the diffusion and replication of innovative urban projects and initiatives. A number of international organizations with urban divisions have incorporated the issue into their urban strategies and research agendas. For example, the UNDP urban strategy paper for the 1990s, *Cities, People, and Poverty*, states that "the basic thrust of regional and global projects in the urban sector will be to enhance understanding of urban problems by providing global and regional forums for examining innovative policies and tools for urban development; strengthen regional institutions for operational re-

search and technical cooperation; contribute directly to building regional, national, and municipal capacity through exchanges of innovative policies and practices for urban management and human settlements" (UNDP, 1990). And the World Bank urban agenda for the 90s, *Urban Policy and Economic Development*, states that, "There is a need to foster the development of a broad-based learning strategy for urban issues. This includes studying how communities can learn from one another within cities and how innovations from one city can be evaluated and, if appropriate, diffused to other cities" (World Bank, 1991).

It is not that there are no channels for such exchanges. There have been an array of attempts to share innovative experiences within and among cities through city associations, clearinghouses, networks, and sister city programs. Organizations involved in this wave of activity include: the World Association of Large Metropolises (Metropolis), the Summit of the World's Major Cities, United Towns Organization, the Twin Cities Program, The International Union of Local Authorities (IULA), the Ford Foundation/JFK Innovations in State and Local Government, the National Housing Support Center, the Local Initiatives Support Corporation (LISC), and the Municipal Foreign Policy Institute, to name a few. But the vast majority of these efforts have taken place on an ad hoc basis, with little attempt to strategically replicate or upscale innovations or synthesize what is known about the diffusion of urban innovations, or to build a workable theory and methodology.

1.2 Theories of Innovation Diffusion

There is a rich theoretical literature on the diffusion of innovations. It emerged in the early 20th century in France with the work of Gabriel Tarde, *The Laws of Imitation*. Although the title of Tarde's work does not use the words "innovation" or "diffusion," it asked the fundamental question that was to underly all subsequent innovation diffusion studies: Why do only a small fraction of new ideas ever achieve widespread popularity?

Since then, innovation diffusion theory has flowed into nine highly specified empirical streams: early sociology, rural sociology, education, public health and medical sociology, communication, marketing, geogra-

phy, and general sociology. Each has its own method of data gathering and analysis, type of innovation being studied, main unit of analysis, and major type of findings (see Table 2.1). Each of these traditions is grounded in the concrete reality of its field and addresses questions that are theoretical but that contain immediate practical implications. For example, the public health and medical sociology tradition might ask, "What training techniques are most effective in introducing new medical procedures to the doctors and nurses who will use them?" And the rural sociology tradition might be curious about whether farmers find it easier to adapt new kinds of fertilizers than new types of plows or harvesters.

These nine streams are now converging into a general "metatheory" of innovation diffusion (Rogers, 1983). The metatheory asks fundamental questions about how new ideas spread and proposes abstract generalizations that are broadly applicable across the nine empirical traditions. This new metatheory does not replace the empirical streams, but draws on and informs them. Everett Rogers, author of the classic synthesis of diffusion theory, *The Diffusion of Innovations*, and one of the creators of this metatheory, states, "Meta-research is uniquely able to provide information about the reliability of a research finding across a number of disciplines." But because Rogers' background is based largely on the experiences of agricultural innovations in the 1950s, the metatheory of innovation diffusion is heavily influenced by the patterns and metaphors of the rural sociology tradition.

Unfortunately, then, **this entire body of research is of only limited applicability to the field of urban development.** Not only are none of the major research traditions concerned primarily with urban issues, but the dominant paradigm influencing all these traditions is based on the experiences of agricultural technologies in rural areas. For example, this paradigm tends to focus on technological innovations designed by special research and development centers such as those affiliated with the agricultural extension service; it emphasizes individual-to-individual knowledge transfer, the mode through which most farmers have been introduced to the latest innovation; it views diffusion as a deliberate marketing strategy that spreads innovations out in concentric circles from the center to the backward periphery (such a strategy was typical of the Agricultural Extension

Service's activities); it explains rates of diffusion by the traits of the innovation itself (equipment with unfamiliar parts, for example, will diffuse more slowly); and it sees the ultimate end as "routinization," the complete acceptance of the innovation by individual users. Some of these ideas can be used to explain how an innovative approach to an urban problem is diffused, but they are clearly based on a quite different set of experiences.

The closest attempt to establishing an urban tradition of innovation diffusion theory is found in "Factors Involved in the Transfer of Innovations," a paper commissioned by the United States Department of Housing and Urban Development in the mid-1970's (HUD, 1976), which surveyed the existing literature on innovation diffusion to see if HUD could better disseminate its policy innovations nationwide. In the appendices, the report does cite some specifically urban diffusion studies, noting that these have focused on governance and land use systems, and it does suggest that the works on organizational innovations in the sociology tradition are the most relevant to urban innovations. But in the end, the work is merely a condensed literature review of the mainstream metatheory and fails to articulate how urban innovations are similar to or different from those generally discussed. Another significant attempt is made by Yehoshua Cohen in *Diffusion of an Innovation in an Urban System*, which studies the diffusion of the regional shopping center innovation in the American urban system. His analysis of early and later adopters is quite sophisticated. However, he draws heavily on the dominant paradigm, and especially the center-periphery model, in explaining the diffusion of this innovation through space over time. Like the suburbs in which they are located, regional shopping centers spread continually outward from the inner city (Cohen, 1972).

There are therefore compelling reasons to establish a stream of diffusion literature with a distinctly urban perspective. Such a tradition will make it possible to determine which aspects of the mainstream metatheory are useful to the field of urban development and which are not. In most cases, this should not involve rejecting mainstream diffusion theory and creating something completely new. On the contrary, it should involve much more subtle questions of emphasis: which ingredients of mainstream theory need to be emphasized, de-emphasized, or refined to be useful to studies of urban

innovations? Furthermore, this urban tradition, like the other nine empirical streams, will also inform the larger metatheory by suggesting which of the universal generalizations may not really be universal, or by suggesting principles of diffusion that have heretofore been overlooked. Lastly, it should lead to practical implications that will help us know how to facilitate and accelerate the diffusion of urban innovations in the real world.

1.3 Foundations for an Urban Tradition

Although no definitive empirical stream has analyzed the diffusion of urban innovations, several groups of works can help to build an urban tradition of innovation diffusion theory. Although they are biased by an emphasis on First World experiences and in any case do not react to the mainstream paradigm, they are nonetheless a useful foundation. Some of the works are important because they deal on some level with the idea of urban innovation. Several other groups of works provide insights into the innovation diffusion process for certain subgroups of urban innovations (such as government innovations), insights that should be incorporated into our discussion. These works fall into five clusters which are presented in more detail in Annex 1.

None of the works attempts to organize an analytical framework (or lay out the appropriate research questions and metaphors) for understanding both types of urban innovations (grassroots and government). And none of them set up a broad, common discourse that would enable the authors to interact with one another or cross-fertilize each other's ideas. And they proceed almost entirely from First World vantage points (primarily that of the United States), failing to incorporate the experiences of Third World nations. This case study series will attempt to fill these unmet needs.

1.4 Definition of Terms

The concept of innovation is an elusive one that has been defined in many ways. It has been called, for example, "a fundamental change in a significant number of tasks" (Wilson, 1966); it has been understood as a "change in the productive methods of technical leaders" (Brozen, 1964). It has also been defined as a "change in the basic structure of an

organization...involving some rearrangement in the social relationships among segments of an organization, the manner in which roles are played, etc.” (Fainstein and Fainstein, 1972). Or, more simply, innovation has been called “an idea, practice, or object perceived as new by the individual” (Rogers and Shoemaker, 1971). For the purposes of this study, the Mega-Cities Project has decided to coordinate with the Ford Foundation/JFK Innovations in State and Local Government Program by defining innovation as they do: “novelty in action.” It involves “a fresh idea and its expression in a practical course of action, plus the implementation process, plus the successful outcome” (Altshuler and Zegans, 1992).

The concept of diffusion also presents definitional problems. Rogers defines diffusion as “the process by which an innovation is communicated through certain channels over time among the members of a social system.” It is a “special type of communication, in that the messages are new ideas” (Rogers and Shoemaker, 1971). Although this definition is useful, its emphasis on communication shifts the attention away from the implementation aspects of diffusion, which are arguably of more interest to an urban policymaker and practitioner. For our purposes, we have chosen to use Rick DeLone’s definition of replication: “A dynamic process that in different instances includes mixes of fidelity, adaptation, and evolution of the original model.” This definition not only emphasizes the implementation process, but does so in a way that is flexible enough to include neighborhood-to-neighborhood replication and incorporation into policy (DeLone, 1990).

1.5 Analytical Framework for Case Studies

The vast majority of innovation diffusion studies use an analytical framework structured on some “life cycle” sequence. Instead of viewing the innovation as a static entity, they see it as a dynamic subject that passes through distinct phases in its evolution, like a living being. For each phase, there is a basic metaphor and a set of research questions to be answered (see Yin, 1981; Rowe and Boise, 1974; Downs and Mohr, 1979; and Rogers, 1962). However, there is considerable variation in the way these life cycles are delineated and sequenced, as well as in which phases are emphasized. Furthermore, most authors agree that their life cycles are flexible and may be reordered on a case-by-case basis.

This life cycle approach offers an excellent analytical framework for analyzing urban innovations because it enables us to trace the evolution of these innovations over time. But given the various alternative life cycle sequences, the question remains as to what sequence of stages is appropriate for urban innovations. For practical purposes, the case study field notes were used to lay out a tentative framework that met two criteria:

1. it needed to loosely fit with the case experiences and allow structured comparison across the cases; and
2. it needed to incorporate the main stages delineated in other main stream sequences, such as those described above, so that we could have some basis for comparing mainstream concepts with the reality of these cases.

The sequence was in no way intended to be the definitive explanation, merely an experimental starting point. The five steps in this life cycle are: conception, implementation, evaluation and redesign, routinization, and dissemination and replication.

Conception. The dominant metaphor of conception is of technological innovations being developed by a research laboratory or R&D center and then systematically diffused to adopters. The fair trial period usually takes place under laboratory conditions. Because the innovations are developed with the intention of ultimately diffusing them, "packaging" and commercialization strategies factor prominently in the conceptualization stage. Typical research questions include: What methods were used to pretest the innovation? At what point was the decision made to diffuse it? What criteria factored into the decision? In these case studies, there is much more evidence of problemsolving in the field or on the ground by non-experts or street-level government officials. Experimentation in the laboratory is less prevalent.

Implementation. Implementation has been underplayed by the vast majority of mainstream diffusion studies, but there are still some basic assumptions which predominate. For example, diffusion research usually considers the central question to be: What kind of instruction or training is

necessary for the user to properly implement this innovation? The cases in volume 2 suggest that for urban innovations implementation may be of crucial importance to understanding the innovation life cycle. This is especially true, because the implementation of the innovation outlasts political offices or media attention. It must be a dynamic process that continually repositions the innovation to seek new sources of support. In this light, the relevant research questions must address how these sources of support are located and how obstacles to the innovation are overcome.

Evaluation and Redesign. In mainstream diffusion research, there is a tacit assumption that the original goal for which the innovation was designed will remain the primary desired outcome of the innovation. Incidental outcomes should be studied only to see if the innovation needs to be modified to prevent them in the future. Indeed, the goal of a new fertilizer will always be to augment the fertility of a given patch of soil. Typical research questions include: What were the unexpected, undesirable consequences? How can these be avoided through refinement or redesign of the innovation? In the short term, research questions such as these are certainly used in the evaluation of an urban innovation. But unlike many innovations in the mainstream literature, the consequences of urban innovations are often ambiguous. It is difficult to assess the success or failure of an urban innovation, because cities are comprised of multiple publics, each with different stakes in the outcome. And incidental outcomes sometimes provide a surprising new idea about success is or how to achieve it. Furthermore, urban problems, unlike those typically addressed by mainstream studies, are usually daunting, society-level problems, requiring long-term structural change, which is difficult to measure. In this sense, urban innovations are generally conceived of as an incremental step toward a larger vision, a basic redistribution of power, or a fundamental shift in images.

Routinization and Institutionalization. In mainstream diffusion theory, the "routinization" stage generally denotes the complete acceptance of the innovation by the users (as a result of continuous repetition) to the point where it is no longer considered an innovation. These case studies suggest that the routinization process for urban innovations is more complex and varied and involves any of the developmental phases that enable

the innovative service to achieve permanence. Frequently, this involves the formation of a legally registered nonprofit organization or the inclusion of the innovation into a permanent government office. A whole set of related questions emerge such as: How is the innovation funded? What other organizations, institutions, or agencies support the innovative organization? How?

Dissemination and Replication. The dominant metaphor of dissemination and replication involves individuals communicating the innovation to other individuals using marketing or pedagogical methods. Everett Rogers describes the diffusion process as a “snowball effect” in which individuals who have adopted an innovation influence those who have not yet adopted it, usually following a concentric circle model, with ideas rippling away from the center toward the backward periphery. In the case of urban innovations, individual-to-individual learning certainly plays a role in the diffusion of innovations; but often organizational and institutional learning processes predominate. Ideas can be diffused through the processes of institutional learning or disseminated through networks of various kinds. And where individual learning does take place, it is sometimes different in nature than what is denoted in the mainstream literature; it is often combined with processes of social mobilization and community leadership. And the patterns through which information passes among these individuals are not based on concentric circles but on more complex patterns as varied as the range of spatial and nonspatial communities existing in cities.

These substantive lessons can be observed in concrete terms in the case studies found in volume 2 and are laid out in greater detail in the conclusion. In addition, the conclusion presents some methodological lessons and a revised analytical framework to be tested on the next set of urban innovation case studies to be undertaken. Last, it reflects on the practical implications for urban planners, practitioners, and policymakers.

1.6 Selection of Cases

In the first phase of the Mega-Cities Project, field site teams scanned their cities for successful innovations. By 1989, each city had identified

between 40 and 200 innovations. The purpose of this scan was to provide a global overview of innovations. In large cities, one pattern that emerged was that the majority of significant innovations were relatively small-scale, either as government pilot projects or grassroots initiatives. The next step was to draw a representative sample, so that case studies could be conducted with a tentative sense of how typical or atypical the innovations were.

The decision to undertake this case study series was made in 1989, and were documented between 1989 and 1991 by five of the Mega-Cities Project fieldsite teams with support from the UNCHS (Habitat)\World Bank\UNDP - supported Urban Management Programme. The seven cases included in this series were selected by the Mega-Cities Project teams and their Steering Committees according to three sets of criteria: impact criteria, operational criteria, and value criteria. Under impact, the innovation needed to address a significant problem, it needed to hold the potential for global impact, and it needed to possess novelty, quality, scope, and proven merit. Under the operational criteria, the innovation needed to be practical, replicable, technologically feasible, and have a promising cost/benefit ratio. And under the value criteria, the innovation needed to be socially equitable, politically participatory, economically viable, and environmentally sustainable.

Final approval was made by the Mega-Cities Project central office to ensure diversity in issue areas and sector of origin. Efforts were also made to ensure that the cases would represent a range of different models for the way innovations are diffused in cities. Finally, because the case studies were prepared for presentation at the UNCED Earth Summit in Rio de Janeiro in 1992, some emphasis was placed on innovations possessing environmental dimensions.

The following cases were selected and are presented in further detail in volume 2:

- **São Paulo's Sacolao Community Wholesale Markets.** The Sacolao are a set of cooperatively managed markets that purchase food directly from farmers and resell it at wholesale rates to low-income urban residents. This case illustrates how an urban innovation can evolve as a series of experiments building on each other incrementally. It also

illustrates how an innovation initiated by one community group can spread to others through formal and informal grassroots networks, although the replicated innovation may fail if the appropriate social and institutional conditions are not present in the new location.

- **São Paulo's Alert II Traffic Reduction Plan.** Alert II was a one-day pilot project initiated by the government of São Paulo. The objective was to develop and test an emergency traffic reduction plan for days when air pollution reached critical levels in the central city. The plan involved 30 pollution monitors that publicly displayed air quality levels and massive public educational campaigns aimed at convincing motorists to park their cars and take public transportation into the city. Alert II is interesting because as a one-day initiative, it was never intended to be diffused or institutionalized. Instead, it was meant to be a way of buttressing public support for more long-term environmental policies.
- **Buenos Aires' CAMACO Infrastructure Cooperative.** CAMACO is a community-initiated cooperative that provides and maintains decentralized water and sewerage infrastructure for a middle-income community on the outskirts of Buenos Aires. The life cycle of CAMACO illustrates an interesting model for urban innovation diffusion. Instead of replicating the approach by setting up new, autonomous organizations, the CAMACO cooperative achieved its multiplier effect by simply growing in size and expanding its services to encompass a broader geographical area and new communities. But as the case discusses, expanding the "community" served by a community-based innovation is a problematic process.
- **Bangkok's "Magic Eyes" Anti-Littering Campaign.** "Magic Eyes" is an anti-littering campaign aimed at children that uses a range of marketing techniques designed by a Bangkok advertising firm: cartoon faces for posters, classroom teaching materials, television commercials, and trash bins with special logos. Magic Eyes is interesting because it is run by a nonprofit organization that has not only worked to expand the program's influence within Bangkok, but also to replicate it nationwide by teaching local leaders in other cities how to use the campaign materials to design their own versions of the program.

- **Bangkok's Land Sharing Experience.** Through a land sharing agreement, a plot of land that is illegally occupied by squatters is partitioned into two sections, one for commercial redevelopment by the landowner and the other for rehousing the residents. It is a creative win win solution that enables both the landowner and the squatters to peacefully coexist on contested land. This case is interesting because land sharing was never conceived of as an urban development project per se, but emerged as an informal ad hoc experiment. As its life cycle has unfolded, however, it has found expression in formal policies at the city level in Bangkok as well as in the international donor agencies.
- **Delhi's Sulabh Shauchalaya Sanitary Latrines.** Sulabh Shauchalaya emerged as a small organization committed to setting up public latrines and showers in low-income neighborhoods. It uses an innovative twin leach pit design that reduces smell and eliminates the inconvenience of emptying the pits. Its life cycle is noteworthy because it demonstrates how an innovation can be disseminated through the "franchising" of the organization that initiated it. As the Sulabh Shauchalya organization has evolved, it has established branch offices in many cities across India and gained the support and recognition of international donor agencies.
- **Los Angeles' Small Business Toxics Minimization Program.** The Small Business Toxics Minimization Program aims to show small business entrepreneurs how they can comply with environmental standards and improve their bottom-line profit as well. It enlists retired chemical and environmental engineers on a voluntary basis who visit small businesses, study their production processes, and make creative, cost-saving recommendations as to how they can reduce toxic waste. The life cycle of this innovation demonstrates how a local government pilot project can become institutionalized as a permanent office and diffuse its approach through policy documents and networking with other agencies in the metropolitan area and the nation.

1.7 A Foundation for Ongoing Study

This case study series is in no way intended to be the *sine qua non* of urban innovation diffusion studies. On the contrary, it is merely a starting point, the beginning of an ongoing series of cases studies. With each set of cases will come new hypotheses, to be measured against the reality of subsequent cases. Only through a self-reflective learning process such as this may we begin to understand the process and find appropriate ways to intervene and accelerate it.

2. THE INNOVATION LIFE CYCLE: LESSONS AND CAVEATS

There are problems with making broad generalizations from a small set of case studies. Nevertheless, if we treat these cases as illustrative of possible patterns, we can make tentative hypotheses to be tested against future cases. The methods of "grounded theory" provide some useful guidelines in this regard. In grounded theory, data are used to draw only the most tentative conclusions that are subsequently treated as "research questions" to be tested against the next set of cases. In what is called "theoretical sampling," the process of data collection is controlled by the emerging theory. The basic criteria for the formation of these concepts is that they have fitness, understanding, generality, and control. "Fitness" refers to the extent to which the concepts correspond to the realities of the cases. They should not be preconceived notions superimposed on the data. "Understanding" refers to the extent to which the conclusions are comprehensible in practical, everyday terms to the audience. "Generality" refers to the extent to which the conceptual categories (in this case, the life cycle sequences) are broad enough to encompass and explain a variety of circumstances. "Control" refers to the extent to which the theoretical concepts give the person who will use them a greater control over their professional activities (Glaser and Strauss, 1967). Keeping these criteria in mind, this section will lay out, in a highly preliminary fashion, the substantive lessons learned, the methodological findings, and the implications for policy and action.

2.1 Substantive Lessons Learned

For each of the innovation life cycle phases studied in these cases, there were lessons learned about the limits of the dominant paradigm. In some cases, the basic tenets of mainstream diffusion theory proved useful in explaining the innovation diffusion processes. In most cases, however, it became necessary to modify these tenets, or replace them with new metaphors or explanations. Table 2.1 details each step in the innovation life cycle.

2.1.1 Conception

Although mainstream theory focuses on innovations created by experts in research and development centers, these cases suggest that urban innovations are likely to be initiated by local leaders close to the problems being solved. In some cases, the innovators were extremely marginalized people. As for the fair trial period, most of the innovations discussed in the mainstream literature were tested in the safety of a laboratory, while urban innovations are usually tested in the real world, where there is less "forgiveness" for initial failure. And unlike many innovations studied in the mainstream literature, urban innovations are not always conceptualized as something that will ultimately be disseminated. They therefore frequently lack commercialization strategies. Future case study series will need to confirm these preliminary observations as well as pursue the following hypotheses and research questions.

Several of the innovators in these cases were motivated by a desire to be recognized as an innovative leader. Chochoy Sophonpanich and Bindeshwar Pathak both had personal visions to which they were dedicated, and an apparent eagerness to be recognized for them. This initial motivation may explain why small-scale innovations are often difficult to replicate. Devaki Jain, one of the founding members of the Indian Association of Women's Studies and currently director of the Institute of Social Studies Trust in New Delhi, explains that although this may be the primary force behind the emergence of an innovation, it can also be the greatest obstacle to its replication.

There are several reasons why successful microlevel projects are not generalizable. One is that the charisma and dedication associated with the "first experiment" usually cannot be replicated. Another is that the financial and ideological investment put into the original is often missing or hard to duplicate. A third is that certain cultures absorb what others cannot. My view is that the inability to replicate stems from all of these reasons and more. The innovative process itself generates the first success that counts. The impetus, the consciousness-raising, the leadership, the muscle, and the "heavyweight" that developed the first project dissipates in succeeding ones that seek to duplicate it" (Jain, 1989).

Table 2.1 Seven Mega-Cities Project case studies and their implications for innovation diffusion theory

Case Study Series Overview					
INNOVATION	CONCEPTION	IMPLEMENTATION	EVALUATION	ROUTINIZATION	DISSEMINATION
DOMINANT PARADIGM	developed by scientists or experts in R&D centers; the result of scientific research	involves a relatively short process of teaching potential users how to integrate the innovation into their everyday implementation	consists of fine tuning and enhancement to better achieve the original goal of the innovation	refers to complete acceptance of the innovation by users	takes place through a deliberate strategy by a centralized agency; ideas conveyed from individual to individual
SÃO PAULO: Sacalao Community Wholesale Markets	launched by a local labor movement	involved the consolidation of several experiments that emerged over a five-year period	basic idea of innovation was applied to new issue areas: health, transportation, and local self-governance.	involved the formation of a new organization and partnership with government agencies	idea spread through grassroots networks to nearby communities with support from municipal government
SÃO PAULO: Alert II Air Pollution Reduction Plan	launched as a pilot project by local government leaders	required a long educational campaign leading up to Alert II, and the formation of multi-sectoral partnerships	evaluations show that the innovation had unexpected effects on crime levels and solidarity levels	the project was used as a way to gain public support for new environmental policies	the project was not designed for outright replication
BUENOS AIRES: CAMACO Infrastructure Cooperative	initiated by a local government official and group of concerned citizens	involved overcoming government resistance and building partnerships	innovation being expanded to include environmental awareness programs, cultural facilities, and a television station	involved the establishment of an official cooperative	cooperative has attempted to expand its service area to encompass new communities

INNOVATION	CONCEPTION	IMPLEMENTATION	EVALUATION	ROUTINIZATION	DISSEMINATION
NEW DELHI: Sulabh Shauchalaya Sanitary Latrines	emerged from an experiment by a social mobilizer	involved a complex process combining education, participation, and partnership	innovation being adapted to generate energy	involved the formation of a new NGO and support of international agencies	idea spread through a nationwide movement and the formation of "branch offices"
BANGKOK: Magic Eyes Anti-Littering Campaign	brainchild of one woman committed to improving her city	involved a long team-building process with the advertising community, funders, schools, etc.	basic idea being expanded into new issue areas, such as water pollution	established an NGO	idea is replicated by young "ambassadors" trained for that purpose
BANGKOK: Land Sharing	an ad hoc experiment by several neighborhood groups	involved forging new partnerships and working through protracted negotiations		ideas being incorporated into public policy	idea passed among five neighborhoods, where the appropriate conditions existed
LOS ANGELES: HTM Project	conceived of by Mayor's multi-sectoral advisory group	required locating an institutional niche and earning trust of small businesses	project is seeking more targeted strategies	established as an official government office	ideas being disseminated through professional networks

Future case study series might explore these questions: Do these patterns of motivation hold true across all urban innovations? Is there an ideal personality profile of an urban innovator, one that balances individuality and eccentricity with an ability to survive routinization? Or does there need to be a changing of the guard?

The existence of political “climates for experimentation” appears to be important to the emergence of most of these urban innovations. The Sacalao, for example, emerged at a point in Brazilian history when the power of democracy and organized labor movements was being rediscovered in Brazil. And the Los Angeles HTM Project was launched on the wave of nationwide toxics reduction policies in the United States. Similarly, the implementation of an innovation is often facilitated by a “window of opportunity” in the political process. On this score, Perlman has introduced the use of John Kingdon’s concept of the “window of opportunity” in the political process (Perlman, 1990).

Sometimes, although it appeared that the innovation emerged from a particular individual or organization, it actually resulted from a network or web of organizations, in the same way that economic theorists explain innovation as arising from complex interactions among the multiplicity of firms in an industrial cluster. The HTM Project was designed by a network of environmentalists including policymakers, scientists, engineers, and academics. Similarly, Alert II was designed by a network of individuals and organizations concerned with air pollution in São Paulo. Sheldon Annis has observed that community-level networks are crucial to “upscaling an innovation”:

In Latin America...a process [that maintains the virtues of smallness but at the same time reaches large numbers of people, transfers genuine political power to the poor, and provides high-quality social services that are delivered by permanent, adequately financed institutions] is already taking place. Every Latin American country is now interlaced with a thickening web of grassroots organizations. These organizations are increasingly intertwined not only with each other, but with the state. As a result, a policy built

upon the idea of large-scale, small-scale development, something which might have appeared naive or whimsical just a few years ago, is emerging as a serious choice for Latin America in the 90s (Annis, Sheldon, and Hakim, 1988).

Future case study series should explore the extent to which this holds true across all urban innovations. Another important question is: What is the relationship between the charismatic leader and these networks?

2.1.2 Implementation

Issues of implementation are rarely addressed in the mainstream diffusion literature. The diffusion of agricultural technologies to farmers, for example, does not involve a complex implementation process; the technology is simply put to use. When issues of implementation are addressed, they are usually approached from a pedagogical perspective (i.e., what kind of training or technical assistance is most useful for helping people to implement a given innovation?). In contrast, the implementation of these innovations requires long gestation periods, from six to 25 years, which exceeded community political cycles and media attention. Below are some of the patterns and research questions suggested by this study.

Each of these innovations had to overcome significant obstacles, either from dominant powers that were threatened by the innovation, or from social biases the innovation was aiming to change. CAMACO represented, and continues to represent, a serious threat to the conventional agencies responsible for the provision and purification of water in Buenos Aires; Magic Eyes depended on a basic shift in the way the Thai business community viewed public service; and land sharing required a new mindset vis-a-vis the legitimate rights of squatters. Key questions for future research are: How is the innovation affected as various obstacles are overcome? And how much is the "fighter" mentality critical to the innovation's success?

In all cases, these urban innovations were multisectoral in nature, their implementation depended on the participation and collaboration of a range of stakeholders. Sacalao was in essence a partner-

ship between government, the private sector, and a labor organization; land sharing depended on the collaboration of the government, the private sector, and neighborhood groups; and Alert II needed to build partnerships with motor companies, auto repair shops, high school students, and the media to overcome public biases against driving restrictions. Although it is easy to idealize this partnership theme, such partnerships may have their drawbacks. As Giloth and Mier found, the compromise inherent in partnership agreement leaves a bitter taste in the mouths of the participants (Giloth and Mier, 1989). This has certainly been true in the case of the CAMACO Cooperative's relationship with local authorities. Future studies will need to delve more deeply into the nature of these partnerships.

In most of these cases, the innovators found it beneficial to implement the innovation on a small scale first, before attempting to expand in scale. One reason is that it is easier to be successful at a small scale than at a large one, and success at the early stages is very important for building confidence and group morale. Rogers, for example, conducted a study of the implementation of the "Dial-A-Ride" innovation in Santa Clara, California. His study concluded that Dial-A-Ride failed because it was implemented on too large a scale. The problems could have been ironed out, but the project had already been labelled a failure, and it was too late. A key question for future research is, Under what circumstances can an urban innovation be launched at a large scale, and what criteria can urban innovators use to choose the appropriate starting scale for their innovative initiatives?

It is interesting to note that the implementation of some of these innovations required a centralized command structure and systems of people willing to follow orders, the opposite conditions from what had led to the birth of the innovation in the first place. In addition, this insight contains potential implications for diffusion. With local government programs, ironically, it is often easier to transfer them cross agency, rather than push them up through the policy process (Kanter, 1983). For example, the group of government bureaucrats and business leaders who formed the Mayor's Advisory Committee on Hazardous Waste Reduction were given free range to envision whatever kind of initiative they desired. Once the commission was disbanded, however, the scope of the project became

locked, subject to the forces of a normally functioning bureaucracy. The window for systemic change had been closed. It could even be argued then, that it would be easier to transfer this innovation laterally to other government agencies where there is a window for change than to expand the innovation within Los Angeles by pushing it upward through the policy process. To what extent does this pattern hold true across all urban innovations?

A critical stage in the implementation of these urban innovations was gaining collective approval for them. This collective approval needed to be gained at the level of the organizations responsible for the innovation, as well as among other organizations and agencies, and above all, at the level of the general public. Many innovations, such as Land Sharing, Sacalao, and CAMACO, survived because social movements pressured the government for their survival. In this light, the composition of the neighborhood or community may be an important predictor of whether an innovation is likely to thrive. The CAMACO innovation, for example, caught on particularly well in Martin Coronado, because there were a great many doctors and health care professionals residing in the community who were acutely aware of the risks of contaminated water.

2.1.3 Evaluation and redesign

In the traditional paradigm, the redesign phase means “doing the same thing, but better”; there is a tacit assumption that the original goal of the innovation should remain the goal throughout all redesign phases. Consequently, when unexpected outcomes arise, they are generally seen as something to be corrected. On the other hand, these cases suggest that the consequences of urban innovations are more ambiguous. It is difficult to assess the success or failure of an urban innovation, because cities are comprised of multiple publics, each with different stakes in the outcome. Furthermore, urban problems, unlike those typically addressed by mainstream diffusion studies, are usually daunting, society-level problems, requiring long-term, structural change, which is difficult to measure. In this sense, urban innovations are generally conceived of as an incremental step toward a larger vision. Consequently, the redesign of urban innovations typically involves expanding the scope of the innovation, redefining the

problem in broader terms, or stimulating second-generation innovations. And unexpected outcomes may hold the seeds of greater success. Below are some of the suggested patterns and research questions.

Unlike many innovations studied in the mainstream literature, the consequences of these urban innovations can be ambiguous. It is difficult to assess the success or failure of the innovations in these cases, because cities are comprised of multiple publics, each with different stakes in the outcome. The land sharing innovation, for example, implies a fundamental power shift and a loss to the private landowners. The community's gains represented the landowners' loss. Given these complexities, how does one design an appropriate evaluation strategy for urban innovations?

Furthermore, urban problems, unlike those addressed by mainstream studies, are usually daunting, society-level problems, requiring long-term structural change, which is difficult to measure. In this sense, the urban innovations in these case studies are usually conceived of as an incremental step toward a larger vision, a redistribution of power, or a fundamental shift in images. As Barry Checkoway writes,

Even exceptional organizations have difficulties influencing the larger context in which they operate. They can take hold of their surroundings, mobilize resources for collective action, and improve their communities. But even the most accomplished organizations cannot be expected to reverse citywide decline. Neighborhood problems often result from decisions and institutions that originate outside the neighborhoods, and the consequences flow from that process. To alter the consequences, it would be necessary to alter the process (Checkoway, 1991).

Small-scale innovations with a potential for a multiplier effect are those that act on the neighborhood level but still see their actions as steps in a long-term strategy to "alter the process."

These cases suggest that "scaling up" an urban innovation may entail "scoping out." Several of the cases, such as Land Sharing and Magic Eyes, demonstrate that as an innovation becomes institutionalized in a

bureaucratic organization or is moved into higher and higher levels of policy, it is often abstracted or “watered down,” or broadly redefined to embrace a wider range of related policy areas. For example, Magic Eyes moved beyond littering to address a wider range of environmental and behavioral issues. In the case of Sulabh, building latrines needs to be coupled with strategies for clean water provision, planning for land use and settlement densities, etc. This observation fits well with the realization in the international donor community that “projectizing” the city ultimately has less impact on the quality of urban life than citywide policy frameworks or systemic interventions. What these cases suggest is that the two are not mutually exclusive and that some small-scale innovations pass through a life cycle that ends with the innovation being translated into a citywide framework. Future case study series will need to explore more deeply the tradeoffs and interrelationships between scale and scope.

These cases suggest that innovations that succeed in megacities or capital cities are often highly visible and can potentially effect nationwide change. This was certainly true for Land Sharing, Sulabh, and arguably the Small Business Toxics Reduction Project. Furthermore, it is perhaps for this reason that Sulabh is known for its work in Delhi as much as, if not more than, its work in the smaller city of Patna, where it originated.

2.1.4 Routinization and institutionalization

Mainstream theorists generally understand routinization to mean complete acceptance of the innovation by the users, to the point where it is no longer considered an innovation. This approach is sometimes useful when studying an urban innovation. Often, the program needs to be accepted by potential individual users before it can succeed. But in these cases, routinization generally refers to the institutionalization of the innovation through the creation of a new organization or the incorporation of the innovation into government programs or policies. Below are some of the suggested patterns and research questions.

The routinization or institutionalization of an innovation within a city is often facilitated by recognition from without, i.e. publicity in the national or international media. This was true, for example, with the Sulabh, which found it easier to expand its programs domestically after

being legitimated by the World Health Organization, World Bank, and UNDP. To what extent does this hold true across all urban innovations?

A major theme in the routinization and institutionalization stage of these cases is the incorporation of the innovation into ongoing policy. This is true both for government pilot projects, such as the HTM Project, or grassroots experiments like the land sharing initiative. Some important questions for future studies are: What are the different ways in which an innovation finds expression in policy? What are the various paths they follow to get there?

Another major theme in the routinization of these urban innovations is the creation of organizations and institutions with the capacity to "franchise" the innovation or set up spinoff organizations. The expansion of CAMACO, Sulabh, Sacalao, and Magic Eyes all illustrate how a nonprofit organization can grow in capacity, scale, and professionalism as a way of replicating its programs. In each case, the extent to which the innovation was able to reach new communities depended on the growth stage of the organization. This bureaucratization of the innovation may mean a loss in the organization's capacity for innovation. What are the implications of organizational development for the innovation? Are certain types of organizational structure more conducive to continuous innovation?

In these cases, there is sometimes a blur between replication and routinization and institutionalization. The two processes sometimes occur concurrently. For example, sometimes an innovation may be translated into a new policy that legislates the innovation's replication. This is the case for both land sharing and Sacalao.

Although the diffusion of these urban innovations involves entrepreneurial, market-driven forces, the institutionalization phase seems to require more bureaucratic and legislative processes. This paradox can be most clearly observed in the case of Sulabh. When Sulabh is diffusing its approach, it markets its basic principles widely, hoping that some community will declare itself a "customer." But once the decision has been made to set up a Sulabh project in a community, the organization shifts gears and follows the established procedures for setting up Sulabh latrines.

2.1.5 Dissemination and replication

In the mainstream paradigm, dissemination and replication involve individuals communicating innovations to other individuals. The model is a highly centralized one, with ideas rippling away from the experts in the center to the backward periphery. For these case studies, the decentralized models for innovation diffusion that are occasionally mentioned in the mainstream literature seem to be more useful. This decentralized approach to understanding diffusion is too often ignored by mainstream diffusionists. Rogers himself has written:

One of the unfortunate effects of the great impact of the agricultural extension model, and of the fact that diffusion research began with the study of farming innovations, was to limit our thinking about the types of diffusion systems that might be possible. Much agricultural diffusion is relatively centralized, in that the key decisions about which innovations to diffuse, how to diffuse them, and to whom, are made by a small number of technically expert officials near the top of a diffusion system. A quite different type of diffusion, we now realize, is also possible, in which there is a wide sharing of power and control among the members of the diffusion system. Local users may invent and develop the innovations to solve their problems, and then diffuse these new ideas to other users via horizontal networks (Rogers, 1983).

These cases not only illustrate decentralized modes of diffusion, but also include organizational and institutional learning processes in addition to the individual-to-individual processes. And where individual-to-individual learning does play a prominent role (as in the case of Sulabh), it is sometimes different in nature than the mainstream literature denotes; it often has a social mobilization character. The following are some of the suggested patterns and research questions.

The innovations in these case studies, rather than following the concentric circle model described by mainstream diffusion theorists, diffuse through the multinodal communication networks of urban

communities. As these communities can be defined in a number of ways (both geographically and nongeographically), the patterns tend to be rich and varied, and may “leapfrog” spatially.¹ The idea of the network is especially useful here. The basic ideas of the toxics project, for example, diffuse through formal and informal networks of environmentalists in metropolitan Los Angeles. Future case study series should consider whether certain kinds of innovations are better equipped to disseminate innovations (professional networks, for example).

The emergence of multiple leaders in an innovation seems to be a key stage in its diffusion. The Magic Eyes campaign is leaping to the next phases of its diffusion by training a new cadre of leaders, “Magic Eyes Ambassadors,” to spread the word. Future studies should consider the dynamics of multiple leaders and the nature of the intergenerational relationships among these leaders.

Expanding an innovation into a nearby community may raise questions of jurisdiction and community identity. Some of the key obstacles to replicating these innovations in nearby communities seem to be racial, ethnic, or economic biases. In this light, diffusion and replication can be facilitated by finding points of collaboration between the communities involved. A future case study series might focus explicitly on the ways small-scale innovations pass from one community to an adjacent one. What are the different models? What are the pros and cons of each?

These cases suggest that there is a useful distinction between vertical and horizontal diffusion. That is, some innovations are incorporated upward into the policy realm, and others are replicated geographically, in other neighborhoods, cities, or countries. These cases suggest that the horizontal transfer may take place informally or through organizational franchising, while the vertical diffusion is often associated with institutionalization at the policy level.

Within vertical and horizontal transfer, there is a continuum of degrees of diffusion. For example, an innovation may be adopted in toto or

¹ For an excellent analysis of the different types of urban communities, both spatial and non-spatial, see Janet Abu-Lughod's recent textbook of urban sociology, *Changing Cities*.

franchised in what has become known as the cookie-cutter model. An excellent example of this model is the Sulabh latrines, which are introduced using precisely the same method in each city. Alternatively, the innovation can be adapted or refined in some way to fit a new set of circumstances, as is the case with the replication of Magic Eyes in the smaller towns of Bangkok; or the main idea can be dissolved to its essence and become the basis for a whole new innovation appropriate to a new context. This is the case with the land sharing innovation in Bangkok. Future case study series should attempt to articulate the pros and cons of each approach and the appropriate conditions for each.

Aside from the issue of integrity to the original, a range of models for how the diffusion takes place exists. Some innovations may be diffused through social movements, such as the Jua Kali or Sacolao; others may spread through the development of new organizations and institutions (like Sulabh); and others may spread through the introduction of the innovation to agencies in new neighborhoods or cities (the Small Business Toxics Minimization Program). Again, future case study series should attempt to articulate the different characteristics of each approach as well as lay out other alternative models.

The urban innovations in these cases often seem to diffuse in a capricious fashion, because “packaging” and a targeted dissemination strategy was not usually part of their conception and evolution. These innovations spread primarily through formal and informal social networks or through the media. Sulabh and Magic Eyes are possible exceptions in that they both circulate specially designed information materials about what they do, although these materials are not designed with diffusion in mind. They are really part of the innovation and are intended primarily to spread health messages, not lead to replication. This contrasts starkly with the experience of farming innovations and the United States Agricultural Extension Service.

Although mainstream diffusion theory tends to explain variable rates of diffusion by looking at the attributes of the innovation, these cases suggest that the rate of diffusion of urban innovations may have more to do with exogenous factors, such as particularities of the local context (the political climate, the level of economic development, the local

culture, etc.), which affect the replicability of specific innovations. Each of these case histories is intricately linked with the sociopolitical context of the city in which they emerged, the problems being addressed, and a whole host of helping and hindering factors which existed outside of the innovation.

In most of these cases the “demand” model of diffusion is more effective than the “supply” model. Many innovations are deeply embedded in their context of origin and therefore may not be universally applicable, such as with agricultural technologies. It is more efficient to have potential users who know their local context well choose and import an innovation. Perlman argued this point in one of the first articles about the Mega-Cities Project: for example, the Sulabh organization found it was useless to attempt to replicate Sulabh in new cities or new neighborhoods if they were not first invited to do so by local authorities or residents associations (Perlman, 1990).

As in mainstream diffusion theory, the role of individual “change agent” or “opinion leader” is useful in understanding the way these urban innovations were diffused. But whereas the mainstream theory views this change agent as a “marketer” or “instructor,” more of a “social mobilizer” is needed in urban settings. Labor organizers were required to convey the meaning of Sacalao to other communities in São Paulo; it was followers of Gandhi who were enlisted to spread the word about the Sulabh.

These cases suggest that innovations that emerge from a web of diverse organizations instead of just one may have greater success at diffusion, replication, and upscaling. This is because of the emergence of multiple leaders is greater, as are multiple centers of impetus and broader support than the immediate neighborhood in which the innovation has arisen. Also the innovation that can begin to use broader and more all-embracing language and metaphor will have a better chance at succeeding with a goal of long-term structural change. Giloth and Mier found this to be true in the case of the local economic development initiatives in Chicago. By being essentially network based, the efforts were seen as attempts to mitigate citywide industrial displacement, and not merely isolated response to individual plant closings (Giloth and Mier, 1989).

2.2 Methodological Lessons and Revised Analytical Framework

The experience of producing this first set of cases has led to six methodological lessons that will help in the refinement and redesign of the approach to the next set. These lessons have been used to select a second set of cases (see Annex 2) for further study.

- 1. The criteria for case selection were inadequate and severely limited the extent to which meaningful conclusions can be drawn.** It is inadequate to choose cases simply because they reflect generic values or illustrate a range of policy areas. Too broad an array of innovations clouds the data with too many issues. If we are to isolate meaningful patterns, certain explicit aspects of the innovations need to be held constant. For the next set of case studies, a narrower, more rigorous set of criteria is needed, for example, the poverty-environment nexus. The case studies could focus on grassroots innovations that found ways to creatively deal simultaneously with issues of environmental degradation and income generation for the urban poor. It would also be useful to set up comparisons across innovations that diffused in similar ways (those that were disseminated through grassroots networks, for example, or those which were transferred cross-nationally among local governments).
- 2. The validity of the concept of urban innovation needs to be continually reexamined.** To what extent is the idea of an urban innovation insofar as it includes both government and grassroots innovations a valid conceptual tool? There are certainly good reasons to study government and grassroots innovations separately, but these cases suggest there is also considerable overlap and interrelationship between the two. And they also share commonalities by virtue of the fact that they are emerging in response to the same problems and often using similar approaches to service delivery and public education. As our base of case studies expands, we will also need to begin establishing the common themes that define the frontiers of urban innovation, such as the decentralization of service delivery.

3. **Using the life cycle as an analytical framework was a useful approach, although the rigid adherence to specific steps needs to be substituted by a more fluid format that pays greater attention to the specificities and particularities of the local context.** The five life cycle stages were useful but sometimes proved awkward when the order of stages in the actual life cycle did not fit with the order of the protocol. In some innovations (i.e., the HTM Project), the evaluation stage happened after routinization and institutionalization; in other cases (land sharing), replication happened before institutionalization. The solution is to lay out the basic themes of the life cycle, but allow the case study authors to address them in the order in which they happened, perhaps under broad case study categories, such as "the evolution of the innovation." Specifically, the revised analytical framework for these cases might look something like this:

- **Analysis of Systemic Context and Origins.** What is the systemic context (including networks of groups and intersectoral linkages which made the innovation possible?) What is the configuration of actors, and what were the power dynamics at play? What is the problem area this innovation is addressing? What is the scale and scope of this problem? What has been done to address this problem already?
- **Evolution: Experimentation, Implementation, Evaluation.** How has the innovation reached its current form? What stages has it passed through? To what extent were these stages planned? What obstacles impeded or redirected its evolution? How were these obstacles overcome? What sources of support helped the innovation? Has the innovation been evaluated? If so, in what way? What type of leadership was involved in this evaluation, and how has it changed over time?
- **Horizontal Diffusion.** Has this innovation reached larger geographical coverage over time? Through what process has this occurred (upscaling? franchising? replication in new neighborhoods or cities?)? Is the innovation more or

less successful in the new locations? Was it adapted to suit the new contexts? If so, how and why? How was the information about the innovation communicated?

- **Vertical Diffusion.** Has this innovation been incorporated into policy? At what level (federal, state, local)? Through what process? What were the motivations? What aspects of the innovation were incorporated, and which were left out? Why? Has incorporation into policy transformed the innovation in any essential way? Is it more or less effective?
- **Problem Redefinition/Second Generation Innovations.** How have the goals and substantive scope of the innovation changed throughout the innovation's life cycle? How has the problem being addressed been redefined? Has the innovation spun off second generation innovations? Do these represent an incremental advance toward the broader goal? Or do they present new problems and contradictions? In the future, it might be useful to draw a timeline of life cycle events for each innovation case study. In this way, when we have accumulated a sufficient number of cases, we can revisit the idea of the life cycle sequences and see if there are any apparent patterns.

4. **It is useful to include "minicases" within each case study that demonstrate how the basic innovation was adapted in different neighborhoods or project sites during its implementation.** This was very helpful in understanding the inherent flexibility of the Sulabh Shauchalaya approach, the land sharing concept, or the Small Business Toxics Project. The experience of these variations may contain the seeds for cross-national transfers or incorporation into policy. These will be particularly useful from a practical standpoint when other communities or cities are attempting to replicate the innovation.
5. **This case study series did not adequately address issues of costs and benefits.** Every innovation has an economic dimension that is

not captured by these case narratives. At what point do the costs of an innovation hinder its evolution? Is there an optimum scale of operation at which a particular innovation is most cost effective? Which innovations have "paid off"? How can financial evaluations be conducted? What are the drawbacks of financial assessments of innovations? How long have the innovations taken to become financially self-sustaining? The next set of cases should raise these issues.

- 6. The literature on innovation diffusion theory will not suffice in the analysis of these case studies. We need to move beyond innovation diffusion theory and begin drawing upon other bodies of theory.** The analysis of these case studies has already drawn on recent studies of bureaucratic innovations and grassroots innovations. One implication of this is that the next set of cases should draw on the larger body of organization theory and public administration theory, especially in the way these bodies of research study the interplay between individual and collective dynamics and patterns of change in bureaucracies; as well as community studies, and the insights they provide into networks, linkages, and informal communication channels in cities. Among the other relevant theoretical literatures are: leadership theory, and what it has to say regarding the role of the charismatic leader vis-a-vis their successors and counterparts; creativity theory and its lessons regarding the "preconditions" for inspiration; and postmodernism, insofar as it has developed methods to embrace contextualism.

2.3 Implications for Action and Policy

The ultimate goal of understanding the diffusion of urban innovations is to be able to intervene at various stages of the innovation life cycle, find appropriate sources of support, and accelerate the process. Using the analysis of these cases, it is possible to suggest some concrete steps to help shorten the timelag between idea and implementation. As the other lessons drawn from these cases, these are tentative and should be measured against other cases and pretested before being incorporated into any institutional agendas.

- 1. Build the innovative capacity of local leaders and organizations.** Since these cases suggest that local leaders are the most likely people to conceive of an urban innovation, it makes sense to build the "innovative capacity" of these individuals, as well as their organizations and agencies. This point has been made for development organizations in India by Devaki Jain (Jain, 1989).
- 2. Supporting experimentation.** Several of these innovations originated in political "climates of experimentation." In this light, international agencies would do well to look for ways to advocate new political mandates, or to use those already in existence as incubators of new innovations. The project teams could publicize these new mandates so that local innovators may take advantage of them.
- 3. Identification and documentation of urban innovations.** Urban innovators do not usually plan on documenting their innovations for others. As a result, their initiatives often remain isolated and largely unknown. This validates one of the Mega-Cities Project's primary goals: the identification and documentation of innovations. Identifying it as an "innovation" legitimates the experience, recording the experience enables others to replicate it.
- 4. Targeted Dissemination of Innovations.** Because the diffusion of urban innovations tends to occur in a capricious and disorganized fashion, international agencies would do well to increase their focus on identifying and disseminating innovations. These cases suggest that it might also be worthwhile to attempt to map out the networks that exist in a community, identifying those that appear to be the most comprehensive and using these in-place communication systems as vehicles for innovation diffusion.
- 5. Celebrate and publicize successful innovations internationally.** One of the surprising lessons suggested by these case studies is that international recognition can actually function as a form of support for the innovation back home. The international attention often lends legitimacy to an initiative considered risky or radical.

- 6. Create opportunities for peer-to-peer exchange.** A number of the innovations seemed to diffuse as a result of human interaction and “experiential learning.” In other words, seeing an innovation with one’s own eyes seems to make it more plausible or comprehensible. Furthermore, since these innovations are extremely embedded in their local context, actually visiting the site and interviewing the leaders responsible seems to be of key importance. The Mega-Cities Project has already designed strategies for peer site visits. On that same score, it might also consider short-term internships, so that leaders interested in adapting a particular innovation may immerse themselves in the context in which it emerged.
- 7. Create a forum for policymakers to learn about the innovations and consider opportunities for upscaling them or incorporating them into policy.** A number of these innovations achieved a “multiplier effect” by being incorporated into public policy. One important way that this can happen is to create a forum in which government officials can learn about small-scale innovations, in international agencies, national governments, local governments, or even neighborhood governance structures, and meet the leaders responsible for them.
- 8. Bring together multisectoral groups around common problems or points of collaboration so that they may collectively generate, implement, or replicate innovations.** These case studies suggest that multisectoral groups are capable of interdisciplinary problemsolving, which tends to be highly creative and innovative.
- 9. Create recognition for the adapter so that he/she can feel motivation similar to that experienced by the original innovator.** It appears that one of the primary motivations for an urban innovator is the desire to be recognized for his or her unique contributions to the community; thus, it is only logical that potential replicators would be more likely to adapt innovative initiatives if they were recognized for their ingenuity and creative problemsolving. The most obvious idea is some form of awards program that recognizes the imaginative re-use of an idea that emerged elsewhere. But there are certainly other possibilities such as minigrants, press campaigns, etc.

2.4 A Final Note: Risks of the “Pro-Innovation Bias”

There is an irresistible appeal to the idea of diffusing innovations, and as a result, the vast majority of innovation diffusion studies proceed from the assumption that we should facilitate or accelerate the diffusion process.

But there are risks to this “pro-innovation bias”.² We can never be certain that a given innovation will ultimately yield beneficial results. All efforts to shorten the timelag between idea and implementation need to be mindful of this basic risk. Thomas Dichter has argued that as much as we would like it to be true, a small-scale innovation may not be capable of having positive large-scale impacts; and in fact, attempts to replicate such innovations may overwhelm or even destroy the non-profits responsible for them. He blames foundations and international donor agencies for creating such unrealistic expectations:

Practitioners of “grassroots” development among poor people in the Third World face a new frustration. In a field requiring a high tolerance for failure, and where few projects are unequivocally successful, it is no longer good enough to manage a good project or program. We are regularly asked a new and painful question about our work: “Yes it’s good,” says our donor,” but is it replicable”....Replicationists tend to accept that while difficult, one can ultimately reach high levels of efficiency and achieve significant multiplier effects in fundamental social goals and social processes. There are good reasons to question this (Dichter, 1989).

When we package a program such as any of these and promote it as an “innovation,” we are implicitly encouraging others to adopt it wholesale. In reality, what we are labelling one “innovation” is really a whole series of innovative and not-so-innovative problem-solving techniques. And only some of these component techniques will be appropriate to replicate in the new context. When disseminating information about these programs, then, we need to disaggregate them into their component parts so that potential adaptors may pick and choose from among these instead of thinking that the original program needs to be adapted in toto.

² The use of the term “pro-innovation bias” is introduced by Rogers in *The Diffusion of Innovations*.

John Friedmann reminds us that although "small is beautiful," it may not always be the wisest scale at which to invest our scarce human, financial, and managerial resources. He points out that even though individual small urban development projects seem to have many superior attributes to large scale development projects (see Table 2.2), they also have significant drawbacks. Some big projects (i.e., dams) are essential to development; the impacts of small-scale projects are primarily local; the transaction costs are higher for many small projects (because they cannot benefit from economies of scale); and small-scale alternative development projects are inherently difficult to coordinate (Friedmann, 1992).

In short, there is a time and place for the replication or transfer of small-scale urban innovations, or their incorporation into policy. There are times when it may be preferable to large-scale projects, there are times when its should be combined with large-scale projects, and there are times when it is simply the wrong thing to do. A community challenge is to develop some kind of ethical framework for deciding when it is the appropriate thing to do.

Table 2.2. Small-scale alternative development projects vs. typical large-scale mainstream development projects

<i>Alternative projects</i>	<i>Mainstream projects</i>
Finance assistance goes directly to the poor	Financial assistance goes to the state
Relatively inexpensive, especially in terms of foreign-exchange requirements	Relatively expensive in terms of foreign-exchange requirements
People-intensive; face-to-face interaction essential	Capital-intensive
Appropriate technology, often as extension of existing practices	Advanced technology, usually imported from abroad and displacing existing practices
Flexible management (changes possible in course of implementation)	Bureaucratic management (once committed to a course of action, changes are difficult to make)
Fine-tuned to local conditions	Procrustean: what doesn't fit must be "cut off"
Oriented toward mutual learning between external agents and local actors: transactive planning	Top-down technocratic planning; little learning occurs
Control for negative side effects relatively easy and quick	Control for negative side effects are delayed
Short start-up time	Long start-up time

Source: Friedmann, 1992

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ANNEX 1. FOUNDATION OF AN URBAN TRADITION

The following section is a review of five groups of work that provide insights into the innovation diffusion process for certain subgroups of urban innovations.

First, there are works that document case studies of specific innovative urban development projects or attempt to define the current "frontiers" of urban innovation in a particular field. Although these works do not attempt to understand how innovation diffusion takes place, they nonetheless advocate the diffusion of urban innovations. Typically, the case studies are written in such a way as to celebrate the success of the innovations and to advocate their adoption by other cities or neighborhoods. Some focus on the detailed implementation issues of a specific innovation, such as Choguill's study on innovative slum upgrading in Dhaka (Choguill, 1987). Others survey a range of innovations in particular topic areas, such as urban education or growth management (OECD Center for Educational and Research and Innovation, 1983; Blair, 1984; Blair, 1985). A recent series of FANNIEMAE colloquium papers, for example, examined innovative housing policies in foreign countries, selectively focusing on those that might be useful in American cities. Other works take their analysis a step further by suggesting recent trends in urban innovation, such as new modes of political participation or the decentralization of service delivery. The most important work in this group is Morley, Proudfoot, and Burn's edited volume *Making Cities Work*. The contributing authors to this book describe some of the most significant innovations worldwide and analyze their potential for triggering significant paradigm shifts (Morley et al., 1980).

Second, a very small but interesting set of works explores the complex interrelationship between urbanization and innovation. Although these works offer little insight into the ways innovations diffuse, they place urban innovations in their larger macrocontext. Jane Jacobs, for example, sees cities and urbanization as both a cause and consequence of innovation; she writes that cities are "immense laboratories of trial-and-error" where social and technological innovations result from the endless problemsolving and serendipitous exchanges. She also argues that innovations are the reason cities become the engines behind national economic growth (Jacobs,

1961b). Janice Perlman has taken this point still further by positing that the largest cities are the most highly generative of innovations (Perlman, 1989). Eric Monkonnén argues that the history of American cities should not be understood as a process driven by problems, but as one driven by innovations, each of which led to new historical conditions and new problems to be solved (Monkonnén, 1988). Susan Clarke, on the other hand, sees urban problems as preceding innovations. In *Urban Innovation and Autonomy*, she argues that the recent conditions of fiscal austerity in American cities have led to the generation of many cost-saving innovations at the municipal level (Clarke, 1989).

Peter Nijkamp's edited volume, *Sustainability of Urban Systems: A Cross-National Evolutionary Analysis of Urban Innovation*, attempts to establish a link between urban innovations and the restructuring of urban areas. It examines case examples from Italy, Germany, Greece, Israel, Holland, England, and other European countries. It defines innovation broadly to include new ideas in the economic, social, technological, cultural, and political base of an urban system. A common theme among the contributing authors is that innovation is a "challenge response mechanism," meaning that innovations arise in response to particular urban problems, or that they emerge to make the urban area more competitive in national or international systems (Nijkamp, 1990). In a similar vein, the contributors to *Innovation and Urban Population Dynamics: A Multi-Level Process* were asked to address the question: What is the role of social innovation such as new life styles or family structures, new patterns of social mobility, new household types, or a new organization of the day such as work time regulations in the spatial population processes taking place in cities? (Strohmeier, 1992).

Third, there are more policy-oriented works that advocate increased investment in research and development for urban innovations, especially those involving infrastructure and technology. *The Struggle to Bring Technology to Cities*, for example, asks why recent technological advances in aerospace and defense have not been paralleled by innovations in urban infrastructure and service delivery. It advocates the creation of an Urban Applied Research Center to develop prototypes (Urban Institute, 1971). Richard R. Nelson's landmark book, *The Moon and the Ghetto*, asks the question, "If we can land a man on the moon, why can't we solve the

problems of the ghetto?" It concludes that urban policymakers tackling technological challenges are too limited by outmoded assumptions about the way things work; they lack the cutting edge (Nelson, 1977). The authors of *Centers for Innovation in the Cities and States* survey the key R&D centers in the United States that are, or could, apply their science and technology research to the public domain, and debate the appropriate role of science and technology professionals in urban development (Hayes, 1972). In *Cabling the City*, Robert K. Yin argues that the cable television innovation of the 1970s holds enormous potential for improving urban life, but that it needs to be enhanced and expanded at the federal level (Yin, 1974.) In a similar vein, John Eberhard has argued that the technological innovations on which the modern city is built are nearly a century old and that we need to move toward the next generation of technologies, including photonics, biotechnology, superconductors, and microelectronics (Eberhard, 1990). All of the works offer little in the way of theoretical explanation of the innovation diffusion process, but they make the case that one of the critically important frontiers of urban innovation a frontier that needs to be pushed forward is infrastructure technology.

The fourth group of works, those that study innovation as organizational change in governments (usually under the sociology tradition), are among the most useful for building an urban tradition. Although they focus on only one subset of urban innovations, those that occur within government bureaucracies, they successfully measure the real dynamics of urban governance against mainstream diffusion theory. Yin, in *Changing Urban Bureaucracies*, discusses how public sector bureaucracies gradually accept and routinize innovative approaches to government service delivery. He even proposes an alternative innovation life cycle that seems to make sense for these public sector innovations (Yin, 1979). In *Urban Innovation: The Transformation of London's Docklands 1968-1984*, Grant Ledgerwood examines the series of strategic organizational and political innovations involved in the development of the London Docklands, analyzes the constraints inherent in the institutional culture, and interprets these innovations as products of cultural innovation at the national political level (Ledgerwood, 1985). More recently, Donald Schon examined innovation as the process through which urban planners reflect on their work and try to improve it within bureaucratic constraints (Schon, 1992). In *Better City*

Government: Innovation in American Urban Politics: 1850-1937, Kenneth Fox argues that city bureaucrats are unable to generate significant urban innovations and that social scientists need to apply themselves to this task (Fox, 1977). In their study of urban educational reform in Massachusetts, on the other hand, Weatherly and Lipsky (1977) argue that innovations requiring new legislation are unlikely to be implemented, because there are too many decision points at which the idea could be vetoed. They suggest that it may be more effective to incorporate reform into existing bureaucratic systems and therefore advocate supporting innovation at the level of the street-level bureaucrat.

Among these studies of institutional learning in urban bureaucracies are some attempts to understand how ideas are transferred among cities cross-nationally. Ian Masser has studied the way that computer planning techniques from the United States are being applied in Great Britain (Masser, 1990). In *The Cross-National Transfer of Planning Ideas Between China and Sweden*, Abdul Khakee conducts a comparative analysis of the planning process of a satellite town in China and two housing districts in Sweden, and he reflects on a formal exchange that occurred between planning and bureaucrats from these communities (Khakee, 1992). Other researchers have examined the role of international agencies in disseminating approaches from one city to others, especially with regard to building codes (Strassman, 1978; Hardoy and Satterthwaite, 1981). These works all stress that cross-national urban innovation diffusion needs to emphasize communication and adaptation.

The fifth group of works, which is also quite useful as a foundation for an urban tradition, focuses on grassroots, neighborhood initiatives. Many of these works do not use the word "innovation," nor do they attempt to embed themselves in the innovation diffusion literature. But their insights are nevertheless directly relevant to our discussion. Perlman studied 60 neighborhood groups across the United States and observed a number of interesting patterns about their ability to be innovative. She observed, for example, that these groups are most creative when they take advantage of "cracks in the system" to win victories and demonstrate that authority can be challenged (Perlman, 1976). Donald Epstein, in *Housing Innovation and Neighborhood Improvement*, examines neighborhood innovations in

Winnipeg, Canada, and argues that social scientists should turn their attention to backing up these initiatives with evaluative research and to looking for ways to create a more nurturing political climate for such innovations. A recent pioneering work by Robert Giloth and Robert Mier created the beginnings of a conceptual bridge between the works on government bureaucracy transformation and neighborhood innovation in its analysis of community-based economic development initiatives in Chicago (Giloth and Mier, 1989). In a way, these works describe the "other side of the coin" not explained by the urban bureaucracy studies. They suggest that as the first step to building a foundation of an urban tradition, we should combine what is known about bureaucratic change with what is known about grassroots innovations, looking for where the experiences overlap.

ANNEX 2. THE NEXT SET OF MEGA-CITIES CASE STUDIES

The next set of Mega-Cities Project innovation case studies will be funded by UNDP. As discussed earlier, they will attempt to explore the intersection of poverty and environmental issues by examining experiments or pilot projects in which a local community has simultaneously reduce poverty and cleaned their neighborhood environment. UNDP's support of the Mega-Cities Project is being provided through the Technical Cooperation Among Developing Countries (TCDC) Unit and the Poverty Alleviation Programme. The TCDC Unit was created to promote knowledge transfer and exchange among developing countries, using a wide range of expertise. The Poverty Alleviation Programme was launched to provide catalytic support for the design and implementation of innovative projects in this area. By focusing on the transfer of environmental innovations in poor urban communities, this case study series combines the interests of both units at UNDP and provides a point of collaboration for them. The cases tentatively selected for this series include the following.

(1) Rio de Janeiro: The Mutirao Reforestation and Infrastructure Provision Program. The Community Mutirao Program of the Municipal Secretariat of Social Development trains and pays local residents so that they can build their own sewers, drainage gutters, roads, and sports and recreation facilities. The program strikes a unique balance between self-help programs, in which beneficiaries have no pay to motivate them to participate, and conventional approaches to infrastructure provision, which rely on centralized government bureaucracies and are too costly, time consuming, and ineffective. Most important, the program provides income to an impoverished community for providing services which the community needs.

(2) Cairo: The Zabbaleen Small Industries Program. This is a pilot program for establishing a small recycling industry in the Zabbaleen community of Cairo. For centuries the Zabbaleen have eked out an existence collecting trash from the city streets at night and separating out recyclables. Now the Cairo Governate has taken steps to legitimize this practice by giving them tracts of unused land to use as trash sorting grounds.

A local nonprofit organization provides the informal sector trash pickers with the skills, equipment, and start-up funds necessary to set up microenterprises where refuse is recycled into marketable products such as shoes, textiles, and tinware. To date, 47 recycling/manufacturing business have been launched.

(3) Delhi: Action for Securing Health for All (ASHA). One out of every six persons in Delhi lives in a slum. Diseases of poverty such as air and water-borne illnesses, skin infections, and malnutrition are rampant. ASHA (literally meaning "hope") is a voluntary organization that has initiated a service delivery project to improve health conditions in Delhi's slums. The program provides low-cost clinics within the slums and trains local women as community health workers. ASHA also promotes the formation of women's groups to organize for the creation of income-generating programs, sanitation improvements, and educational campaigns on health-related issues among local residents. Since its inception, when it served one slum with 4,000 people, ASHA's client base has grown to 15 slums with more than 100,000 residents.

(4) Buenos Aires: The PAIS Plan. In December 1989 the Ministry of Social Action of the Buenos Aires Province initiated the PAIS Plan (Programa Alimentario Integral y Solidario, or Integrated Joint Nutrition Plan). PAIS is an effort that has brought together regional government, local nongovernmental organizations (NGOs), and community residents to help the city's low-income population. The PAIS Plan is organized into three stages: the formation of multifamily cooking facilities (community kitchens), each of which has a formal borrowing relationship with a private bank; the encouragement of self-production by providing flour, seeds, and home machinery; and the organization of productive microenterprises through subsidies to cooperative organizations developed out of the multifamily kitchens. This is accomplished in part through the use of vacant land for vegetable gardens and the organization of low-income groups for food production projects and the development of productive microbusinesses.

(5) Bombay: CORO Pay Toilet Project. Bombay's Community of Resource Organizations (CORO) is working to provide sustainable, community-run sanitary facilities in the city's low-income settlements. In the

congested slum areas, stationary toilets have proven difficult to build and nearly impossible to maintain, but in July 1992, CORO took over the management of government-constructed toilet facilities in several locations throughout the city. Local groups manage the toilets on a cooperative basis, sometimes finding sponsors for the poorest areas where local residents cannot pay for maintenance. The maintenance activity provides monthly pay for 500 workers, and community members have demonstrated their satisfaction with the program by their continued willingness to pay for its services.

(6) Jakarta: Greening Program at Bidara Cina. The Greening Program at Bidara Cina is aimed at upgrading the quality of the urban environment and creating employment and income-generation opportunities through the cultivation of marketable plants. The program is operated as a community-government partnership through the mediation of an independent quasi-public agency. Community management ensures that community interests (namely income generation) remain the focus of the project. The program covers an area of approximately 126 hectares and directly involves a population of about 44,000. Portions of the project's service area have more than 600 residents per hectare.

The Mega-Cities Project is currently negotiating with TCDC for a second phase of funding which would allow the cities in the network to actually transfer and exchange these innovations.

ANNEX 3. VOLUME 2: INNOVATIONS IN MEGA-CITIES: SEVEN CASE STUDIES

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REFERENCES

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