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MEGA-STRATEGIES FOR MEGA-CITIES

A project to accelerate the
generation of effective social
and technological innovation.

Janice E. Perlman

Dezembro/1987



UNIVERSIDADE FEDERAL DO RIO DE JANEIRO
INSTITUTO DE ECONOMIA INDUSTRIAL

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social and technological innovation



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Executive Summary

The Challenge: The world is becoming predominantly urban. Cities are growing to sizes unprecedented in human history and the locus of this growth is shifting from the developed to the developing countries. Yet over 90% of all international development assistance is still directed toward rural problems and the major thrust of policy initiatives continues to be keeping people out of cities instead of making the cities more liveable for those who are there, and those who will inevitably be drawn there over the coming decades.

The Obstacles: Today's urban systems are not only inadequate physically and socially, but they become dysfunctional at the mega-city level. They were conceived and develop for a much smaller scale a century ago. New solutions are blocked, not only by inadequate resources but by a feeling of hopelessness among the mega-city dwellers, outmoded assumptions on the part of specialists, and limited communication and cooperation among diverse sectors.

The Approach: The Mega-Cities Project acts as a catalyst for increasing cooperation in urban problem-solving within and among cities. It will identify, document, and disseminate in-place innovations as well as promising prototypes and future possibilities. In collaboration with representatives of city governments, grassroots groups, university research centers, private sector research and development divisions, and

non-governmental organizations, it intends to launch a long-range process of discovery and application which would carry into the 21st Century.

The Products: The major outcome of the program will be a new agenda for urban development supported by a book of case studies and state-of-the-art papers; an internationally accessible data base; media packets for the press, radio, and television; a lecture series; and an ongoing network of practitioners, analysts, and activists.

The Administration: The project is based at the N.Y.U. Urban Research Center. The project director, Dr. Janice E. Perlman, author of The Myth of Marginality, has extensive experience in urban research, policy, planning, and teaching across five continents. The project has been designed in collaboration with a 15-person planning group, and draws upon the input of a wide resource network of collaborating institutions and individuals, particularly the Institute of Cultural Affairs, which will coordinate the fieldwork efforts in the ten cities.

The Support: To date, the project has received \$375,000, which is about half of the needed funds for the three year period. We have received \$210,000 over three years from the Tinker Foundation, \$100,000 over two years from the Rockefeller Brothers Fund, \$30,000 from the Jurzykowski Foundation, \$30,000 from the Urban Research Center at NYU, and \$5,000 from Peggy Dulany.

Section I - The Mega-City Challenge

"Urban dwellers are rapidly becoming a majority of the population. Most of them live in developing countries and an ever-higher proportion in the biggest cities. Most of the world's largest cities are now in developing countries and they are growing to sizes never before experienced... This urban drama calls for the immediate attention of the world's best minds in conjunction with those in a position to take decisive action".

Rafael M. Salas
Executive Director, UNFPA
The State of the World Population 1986

A - Urban Explosion

For several millennia, cities have been centers of culture and crucibles for the advancement of civilization, but for as long as there has been human life on the planet, the vast majority of the population has lived in tiny settlements, villages and small towns. By 1800, only 3% of the world's population lived in cities. Since the turn of the century, the largest cities have been concentrated in Europe and the United States. We are now in the midst of three dramatic changes: from a predominantly rural to a predominantly urban world; from cities as we have known them to mega-cities; and from a concentration of the world's largest cities in Europe and the United States to the major capitals of Latin America, Asia, and (soon) Africa.

The shifts have been in progress since World War II, but in the past two decades the pace of change has been accelerating at an astonishing rate. In 1950 only 29% of the world's population lived in urban areas, by 1985 it was 42% and shortly after the year 2000 it will be over 50%. Whereas in 1950 six of the ten largest cities in the world were in Europe and the United States, by the year 2000 there will be only one: New York City.

As shown in Figure I.1 above, the biggest city in the world in 1950 had just over 12 million people; in the year 2000 there will be 16 cities with that many or more; and 22 with over 10 million, (18 of which will be in the developed world). At that population scale, these cities each hold more people than some 100 member nations of the United Nations today.

While in the developed countries there is a trend toward de-concentration, in the developing countries urban population growth is expected to continue at a very high rate well into the next century, about one half due to migration from the countryside, and the other half to natural increase. The rate of urban population growth in these developing countries is three times the rate in industrial countries, doubling every 20 years. This means that by the year 2000 the urban population of developing countries will almost twice that of the developed nations, and by the year 2025, it will be almost four times as large. Estimates are that from 1950 to 2050 the urban population

FIGURE I.1

TEN LARGEST CITIES IN THE WORLD IN 1950, 1985, 2000

1950	POPULATION IN MILLIONS	1985	POPULATION IN MILLIONS	2000	POPULATION IN MILLIONS
1. Greater New York	12.3	México City	18.1	México City	26.3
2. London	10.4	Greater Tokyo	17.2	São Paulo	24.0
3. Rhine-Ruhr	6.9	São Paulo	15.9	Greater Tokyo	17.1
4. Greater Tokyo	6.7	Greater New York	15.3	Calcutta	16.6
5. Shanghai	5.8	Shanghai	11.6	Bombay	16.0
6. Paris	5.5	Calcutta	11.0	Greater New York	15.5
7. Greater Buenos Aires	5.3	Greater Buenos Aires	10.9	Seoul	13.5
8. Greater Chicago	4.9	Rio de Janeiro	10.4	Shanghai	13.5
9. Moscow	4.8	Seoul	10.2	Rio de Janeiro	13.3
10. Calcutta	4.6	Bombay	10.1	Delhi	13.3

Source: Estimates and Projections of Urban, Rural and City Populations 1950-2025, United Nations, M.Y. 1985.

in third world countries will have increased almost 16 times from under 2000 million to a total of 3,150 million people.

(See N.Y. Times articles in Appendix VI).

Despite the recent policy fascination with small and medium-sized cities, a growing proportion of the urban population will be in the biggest cities. The share of the urban population living in the largest cities will almost double between 1970 and 2025 primarily because of the growth of the very large cities in developing countries. By that time, almost a third of the urban populations in developing regions will be living in cities of over 4 million—more than double the figure for developed regions.

This astonishing growth is not equally distributed throughout the urban fabric. Since 50% of it is due to immigration from the countryside and since the vast majority of these migrants do not have the resources to purchase or rent in the "formal" housing market, they live in squatter settlements, shanty towns, illegal sub-divisions, or tenements in deteriorate and peripheral neighborhoods. Thus, while the "formal city" may be growing at an average of 3 or 4% per year, the "informal city" is growing at twice that rate.

The policy response has been almost universal. A recent United Nations inquiry revealed that 13 out of 23 governments in Asia, 35 out of 51 in Africa, and 23 out of 31 in Latin America and the Caribbean had taken some measures to

reduce the growth of their biggest cities. The efforts range from restricting in-migration, to dispersing the would-be migrants (to growth poles, new capitals, smaller cities, or resettlement areas), to stimulating regional and rural development in hopes of equalizing the level of living in the countryside and the city. Overall, these efforts have had limited success at best and some (like rural development) have proven counterproductive, actually hastening out-migration from the area.

The fundamental reason for the failure of these policies is not a lack of resources, enforcement mechanisms or political will, but the fact that cityward migration benefits the individuals, the families, the communities of origin, the cities and the nation as a whole. Going against urbanization is going against the tide of national development, and all of the economic, social, and political forces that spur that development. So as long as human beings have hope they will come to cities. And they are right! Recent International Labor Organization studies have shown conclusively that the larger the city, the greater the opportunity.

Even if some of the above projections overestimate population sizes in the year 2000, and even if renewed policy efforts are made both to limit in-migration to the cities and slow the rate of natural increase within them, the mega-cities will nonetheless grow to unprecedented sizes and the majority of their populations will be nonetheless

composed of migrants, squatters and the "informal sector".

B - Emerging Needs

In the face of this urban explosion every mega-city shares certain needs in common: 1) re-allocation of existing resources such that they can be most efficiently utilized for highest impact; 2) sustained growth without destruction to the environment; 3) generation and application of a new affordable technological base to serve the entire city population; and 4) a decrease in the time lag between ideas and implementation.

Resource Re-Allocation Priority

Despite the magnitude of urbanization over the past 25 years, relatively few resources have been allocated for the problem at the international, national and local levels. Over 90% of all bilateral and multilateral development assistance is currently directed to rural areas. The focus of attention continues to be the rural peasant and agricultural policy rather than the city squatter and urban policy. Clearly, the two are closely interrelated, but the imbalance of attention is striking in light of the emerging realities. Likewise at the national level, precious resources continue to be directed to stemming the tide of cityward migration rather than dealing with the pressing need for new approaches to the organizational and physical infrastructure of cities. And at

the city level, funds go to formal housing, infrastructure, credit and employment projects which are too costly for the vast majority, rather than supporting the mechanisms of the informal sector in the same areas which have a vastly greater multiplier effect.

Ecological Sustainability

Ecological sustainability has become an even more critical factor as the globe becomes more urban. One of the things that has been brought to public attention over the past decade is the fragile ecological balance on the planet, and the non-renewable nature of many of our natural resources. Many have bemoaned the inexorable growth of cities as devastators of the forests, marshes and the biosphere itself. This vision confuses two points. The first is that with increases in the standards of living and productivity, fuel and energy consumption go up, and the second is that with expansion of human habitation across the land, natural habitats are eroded.

As the world's population increases, it in fact behooves us to concentrate human dwellings in as dense agglomerations as possible rather than spreading them out in space-consuming suburban style developments. The concentration in cities thus has the potential for saving open space and natural habitats for other uses if agricultural technologies to increase food production in limited land areas are

concomitantly employed.

Within the urban concentration, then, immediate attention is needed to discover ways to conserve, recycle and reuse all of the natural and human resources within the cities; making use of the city's competitive advantage-economics of scale. In this way any progress in making urban environments more ecologically sustainable (such as non-polluting transportation systems, fuels, or solid waste disposal facilities) will have a beneficial effect on the rest of the planet as well.

Technological Systems Development

The physical infrastructure of cities around the world, whether in developing or highly industrial societies, is based on the same fundamental systems, invented in a brief 12 year span just 100 years ago (between 1877 and 1889). These include indoor plumbing, the incandescent lamp, the electric trolley, steel frame buildings and elevators (i.e. the skyscraper), the internal combustion engine (the automobile), the subway, and the telephone.

Given these systems, cities are falling even more behind in meeting new infrastructure needs and maintaining those already in place. Jorge Wilhelm, the former planning director of the city of Sao Paulo has calculated that it would

cost the present equivalent of thirty municipal annual budgets to make up the current deficits in water, sanitation, street paving and other aspects of the urban infrastructure as currently performed in that city. Such resources are not available and never will be. Meanwhile, the "social debt" will continue to grow exponentially with the population unless new approaches which mobilize all available human resources and spur the development of innovative technologies which are less expensive than traditional approaches. New combinations of high and low technologies and organization management technologies need to be explored in this regard. (See Perlman, "Mega-Cities and Innovative Technologies", Appendix VII).

Accelerating Innovation Implementation

New approaches are difficult enough to identify, but experience has shown that even where a new approach has been identified and successfully demonstrated, the time-lag between the idea and its incorporation into public policy may be an entire generation.

This was true, for example, in the evolution of low income housing policy regarding squatter settlements. The prevailing policy in most developing countries was the eradication of these settlements, or at best relocation to public housing projects. A new paradigm emerged in the early 1960's, which held that the shantytowns were not the problem

but the solution, that they should be legalized and upgraded rather than destroyed, and that underutilized urban lands should be provided with basic urban services and set aside to receive future migrants. Although these approaches has been demonstrated in Lima and Rio de Janeiro by the early 60's, it has taken until now for the strategy to receive widespread acceptance by policy makers.

C - Underlying Obstacles

The sheer size of the emerging megacities presents a situation for which we have no collective experience. No precedent exists for feeding, sheltering or transporting so many people in such a dense an area, nor removing their waste products and providing clean drinking water. Any enterprise, no matter how well run, enters a chaotic, if not breakdown, situation when growth is as fast as that described above. City systems and mental images based on human settlements of 50,000 or 250,000 may be able to accommodate a stretch to deal with urban populations of a million, but begin to break down at 4 million, are blatantly unworkable at 10 million, and no one knows what will happen as they approach and grow beyond 18 million. Underlying the need for improved resource allocations, innovative ecological technologies and accelerated adaptation processes is the need for a powerful and profound new vision of urban life and a heightened concentration of creative energy. This tremendous growth of urban centers projected through 2025 will be one of those profound shifts in history



where a quantitative change actually necessitates a qualitative leap to a new order.

There are three major obstacles to that creative leap to a new order:

1. A mindset of outmoded assumptions preventing a clear view of the opportunities posed by the new reality;
2. A blockage of cooperative mechanisms and channels of communication across sectors to foster innovation and channel ideas into implementation; and
3. A prevailing sense of hopelessness and isolation, which paralyzes policymakers and the general public alike.

Only when these obstacles are overcome can new agendas be envisioned, new solutions generated, resources reallocated and the lag time between innovation and implementation be shortened.

Obstacle 1: Outmoded Basic Assumptions

There are five basic assumptions in the prevailing mindset of many policy-makers and urbanists which need to shift dramatically if high-yield urban strategies are to be devised. They need to shift from:

1. seeing cities as a problem seeing cities as advances in civilization and wellsprings of economic growth;

2. seeing migrants and squatters as a parasitic drain on the economy - seeing them as the treatest resource of the mega-cities, those with the aspirations, motivations and drive to build the city of the future;

3. seeing "waste" as something to be discarded - seeing it as a potentially valuable resource for urban development;

4. seeing the solutions coming primarily from centralized decision-making and professional expertise - seeing it coming from decentralized participation as well (top down and bottom up); and

5. seeing the "formal sector" as the major generator of income and housing in the city - seeing the "informal sector" as the primary system for providing these (trickle down - trickle up).

Obstacle 2: Limited Communication and Cooperation

After the outmoded assumptions, the next major barrier to overcoming the mega-situation is the paucity of communication channels across sectors, both within and among cities.

Barriers exist between sectors (public, private, voluntary, academic), between levels (neighborhood, city, national and international) and between issue areas (housing,

transportation, energy, employment, etc.). Each one of these sectors, levels and issue areas has a critical role to play in the solution to the mega-situation, but they cannot be played in isolation.

For example, little opportunity exists for policy-makers to work in conjunction with analysts, urban scientists and technicians on urban problem-solving. Similarly, there are few mechanisms to spur private sector R & D Work into issues of urban importance or to aggregate the massive need into market demand in such a way as to make investment in this area attractive. Furthermore, the community organizations and grassroots groups which have been working at local-level strategies for problem-solving have little access to policy-arenas or private capital which could create a multiplier effect that might benefit all such neighborhoods.

The forums, mechanisms, and points of access that do exist need to be dramatically highlighted and expanded. This is one catalytic effect which the Mega-Cities Project hopes to provide. Meanwhile, policies at different levels of government or projects sponsored by international agencies often run at cross purposes, while the most dedicated change-agents within them suffer from a sense of isolation and futility. And the same is true between agencies and ministries. Often an excellent idea from an integrated low-income shelter project dealing with water, sewerage, fuel, urban agriculture and income generation, falls between the cracks of the

different bureaucracies. Taking this analysis one step further, every mega-city suffers from a sense of isolation in facing an unprecedented situation, one for which no roadmaps or guidelines exist.

Obstacle 3: Prevailing Hopelessness and Isolation

And finally there is the feeling of being overwhelmed by the mega-transformation task. This reaction at the socio-cultural level is not unlike that of an individual confronted simultaneously with several life crises. The first response is, typically, denial; then misplaced rage and anger; and, finally, hopelessness and despair. To reverse this cycle, the support of others in similar crises helps to build esteem and collective re-visioning that pieces the elements of reality together in a new configuration and allows new solutions to be perceived. Only in this way can the outmoded assumptions and current approaches to world urbanization be challenged and new insights and energy be released.

Section II. The Mega-City Project Approach

"The real voyage of discovery consists not in seeking new lands but in seeing with new eyes".

Marcel Proust

A - Goals and Objectives

There is enough creativity, there is enough energy and sufficient resources in the mega-cities today to cope with a great many of their problems, but there is no existing mechanism for accelerating the generation and application of social and technological innovation and facilitating the sharing of the successful strategies and approaches that already exist. The Mega-Cities Project will serve as an incubator or greenhouse for solutions to urban problems. By bringing together in a new context the best global thinkers, the most powerful practitioners and activists and distilling several decades of thinking, research, and debate, the project aims to reduce the lag time between ideas and implementation from a generation to a decade. The Mega-Cities Project will create a context in which breakthrough thinking can occur by bringing together existing institutions and experts in different fields, stirring-up and recombining what is already out there, and opening up new channels for synergistic thought.

Goals: In view of the foregoing analysis, the project goals might be summarized as follows:

1. Focus attention on the emergence of global mega-cities, not as disastrous but as a challenge and opportunity for the future.
2. Find out what urban innovations have been successful and how they might be replicated.

3. Identify arenas of new social and technological breakthrough and accelerate their application to urban issues.
4. Establish a multi-disciplinary "greenhouse" environment in which new innovations may be developed.
5. Create face-to-face networks of policy makers, scholars, inventors and activists within each city, facilitated and legitimated by the project's international prestige.
6. Form global networks among cities for ongoing sharing of experience.

In brief, the project seeks to create a "metanoya" (from the Greek), a new vision, which will stimulate creativity and mobilize energy toward a new agenda for urban liveability. For solutions to be found, questions must be posed in a new way. We will never get to "making cities work" from a departure point of keeping people out, viewing the informal sector as the problem, and patching up outmoded technologies.

We want to initiate a high-yield urban strategy which, with a critical-yet minimal-input of resources, will leverage great power. As in karate, the aim is to steer efforts in another direction by utilizing the existing momentum of the massive acceleration of growth.

In summation

The mega-cities project is designed to facilitate the generation and dissemination of innovations, set new priorities for attention and resource allocation; and shorten the time lag between ideas and implementation. It will serve as an incubator for urban problem-solving, bringing together in a new context the most creative global thinkers and most powerful practitioners with effective grassroots leaders and far sighted entrepreneurs.

Objectives

To accomplish these goals, the Mega-Cities Project proposes seven integrally related operational objectives to be implemented in the next three years.

First, a ten-step guiding approach will be used to direct the project's general sequential implementation. (See Figure II.1).

Second, a focused four-phase work-plan and time-table will be used to coordinate the project.

Third, a limited number of mega-cities(10) will be chosen to focus the project's efforts in the development of networks and testing of applications.

Fourth, cross-sectoral networks will be formed among cities and within each city through face-to-face meetings and exchange of findings as the project progresses.

Fifth, "a call for innovations" requesting the identification and documentation of success approaches will be publicized through the newsletters, publications, and informal communications channels of urban-related organizations.

Sixth, documentation processes will be devised, tested and refined for describing existing, prototype, and potential innovations.

Seventh, a series of high-profile, multi-media products will be developed and used to impact diverse audiences.

Finally an ongoing post-project network and access system will be established to continue gathering and dispensing findings for future applications, with a book to be published after the project's completion to substantiate the most significant innovations and their portent for the future of mega-cities.

Figure II.1

Guiding Approach

The Guiding Approach to the whole process will include the following ten steps:

1. Identify and document effective social and technological innovations in cities around the world, especially those which demonstrate new ways of utilizing idle or underutilized resources.
2. Package the case studies of these innovations in usable forms for policy-makers, practitioners and community groups to accelerate sharing, adaptation, and replication.
3. Identify and document urban innovations in the development or prototype stage, and innovations in other fields, with potential for urban adaptation.
4. Package and present these prototype innovations to public decision-makers, private investors, producers and users in the ten cities to stimulate accelerated research, development and application.
5. Create a network of committed individuals and groups across disciplines, sectors, and issue areas, both within and among cities to comprise a community of scholars, activists, practitioners and policy-makers and entrepreneurs.

6. Pinpoint the key leverage points in the mega-cities in general, and in each city specifically, where- despite pressing need- no existing or prototype approaches have been identified, and where focused effort could make a critical difference.

7. Begin a global learning and brainstorming process on these critical leverage points by presenting the elements of past successes and promising prototypes to the best creative thinkers in urban and scientific problem-solving in order to stimulate vision of future innovations.

8. Incorporate these future-oriented ideas into the research and action agenda to be distributed back through the network.

9. Disseminate the findings through the widest possible array of media and published formats.

10. Set up ongoing mechanism to keep process moving, through existing institutions and coordinated consortium of interested bodies.

B - Workplan, Timetable, and Products

For purposes of conceptual clarity, we have broken down the workplan into four phases over three year project period. Each phase has specified tasks, outputs and deliverables which contribute to the process. It should be recognized, however, that the phases have an inter-active relationship and that some processes are conducted simultaneously, particularly those which reflect the administrative office's responsibility, and the ongoing field activities in each city.

PHASE 1 - Establishing the project framework: (6 months)

In phase 1, we will refine the conceptual and analytical framework for the project, visit and interview the existing associations of world, cities, and begin testing the methodology through initiating the fieldwork in three cities.

Tasks

1. Setting up the project office at NYU.
2. Orienting staff and ICA fieldwork coordinators.
3. Conducting strategic planning for accomplishing project objectives.
4. Refining methodology.
 - a. Definitions and criteria for innovation.
 - b. Case study method for existing innovations.

- c. Documentation method for prototype innovations.
 - d. Brainstorming method for generating future innovations.
5. Create network of individuals and institutions
 - a. Policy makers.
 - b. Urban and Environmental Planners.
 - c. Urbanists and scientists.
 - d. NGOs and grassroots groups.
 - e. Private sector Research and Development specialists.
 6. Begin the literature search and compilation.
 7. Interview major global associations of cities.
 8. Design data base.
 9. Publicize "Call for Innovations" through journals, networks, newsletters.
 10. Finalize city selection and secure commitment from 10 cities.
 11. Initiate field studies in New York City, São Paulo and Rio de Janeiro.

Outputs

What will essentially be put into place by the end of Phase I will be the personnel and global network for guiding the project, and the methods and mechanisms for developing the products.

Deliverables

1. Data-base with system for cross-referencing bibliography, individuals, networks, institutions and innovations.
2. Protocols for case-studies and state-of-the art papers.
3. Administrative and Field coordination staff in operation.

PHASE 2 - Fieldwork on existing innovations: (12 months)

In Phase 2, we will refine and apply the documentation methods across the 10-15 selected cities and deliver the projected products on existing and prototype innovations.

Tasks

1. Interview the "point people" in each city; policy-makers (national and local), planners, NGOs, grassroots networks, academics, and entrepreneurs.
2. Meet with the ICA field coordinators and point persons in each city and refine the approach and application of methodologies for that city.
3. Utilize snowball technique to expand network within each city and form effective local steering committees.
4. Issue a "Call for Innovations" in each city, securing nominations from the networks for dozens of innovations to be considered for documentation.

5. ICA fieldwork teams work with the steering committees to select three to five promising innovations for case studies.

6. For each case study, collectively identify the factors essential for "making the mega-cities work" such as:

- a. What is the latent vision of the emergent liveable human city of the future?
- b. What are the specific needs the innovation is addressing?
- c. What are existing under-utilized human, natural and man-made resources it utilizes?
- d. What are the life-enhancing measures which this case suggests to address these needs?
- e. What obstacles or constraints inhibit these measures from being implemented?
- f. What actions or activities could encourage and facilitate the overcoming of these obstacles in the future?

7. Present the findings to the 75-100 mayors in the International Union of Local Authorities Major Cities Forum in September 1988 in Chicago.

Outputs

The primary consequence of Phase 2 will be a highly refined process for identifying and documenting.

Deliverables

1. Case studies of successful existing and prototype innovations and how they were implemented.
2. Emerging networks of innovative thinkers and actors within each city.
3. An Interim Project Report summarizing findings from the first 9 months of operation.

PHASE 3 - Locating and generating potential innovations: (12 months)

In Phase 3 we will identify potential innovations being developed in a variety of social and technological fields with promise for urban applications. We will also utilize brainstorming processes to generate new concepts and ideas which go beyond what is currently being tested.

Tasks

1. Identify and interview individuals working at the cutting edge of their disciplines in the world including:
 - a. private sector laboratories and university scientists
 - b. organizational and managerial innovators
 - c. NGO and grass-roots organizers
 - d. urban planning and urban animation entrepreneurs

2. Present the findings of Phase 2 and commission "state-of-the-future" reports from selected thinkers.

3. Distill and synthesize for brainstorming meetings with creative thinkers to generate additional future ideas.

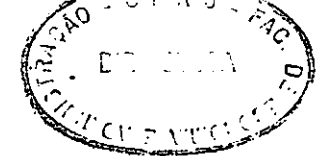
4. Conduct strategy sessions among Research and Development personnel, development practitioners, venture capitalists and grass-roots leaders, to formulate implementing framework ideas.

Outputs

The anticipated results of Phase 3 will be the establishment of new forums, mechanisms and points of access and linking people from different sectors and levels, while using existing and prototype innovations as seeds for stimulating long-range thinking and concepts.

Deliverables

1. List of potential innovations and specifications for prototype development.
2. State-of-the-art papers on selected and promising innovations.
3. Integrated data-base of existing, prototype and potential innovations.



PHASE 4 - Disseminating the findings: (6 months)

In Phase 4, we will prepare multi-media packages containing the findings of the project. The packages will be targeted to changing the perceptions of policy-makers and the general public. We will put the results of previous phases into usable form for adaptation in the cities with a particular regard for:

- a. Aggregating international urban needs into the form of a marketable demand to spur research and development efforts in the private sector.
- b. Extending the international assistance agenda to be more inclusive of urban development needs and concerns.
- c. Releasing local human resource and initiative in the voluntary and grass-roots sector.
- d. Impacting curriculum and public media development in the education community.

Tasks

1. Hold special briefing for policy-makers in key positions, internationally, nationally and locally.
2. Get Mega-Cities findings into the agendas of relevant organizations publications, conferences and research papers.
3. Release newspaper and magazine articles in each of the mega-cities.

4. Commission media production professionals to develop videotapes, slideshows, etc.
5. Commission TV series production.
6. Secure publishers and editors to initiate the publications process.
7. Promote database accessibility to all cities.
8. Hold a mega-cities summit inviting attendance by representatives from the various cities who will raise funds locally.
9. Prepare summary report and conclusions in concert with project participants.

Outputs

At the conclusion of Phase 4, the findings of the Mega-strategies for Mega-Cities project will have been packaged to influence policy decisions, leverage resources and facilitate the transition to sustainable, liveable cities of the future.

Deliverables

1. Completed documentation of existing, prototype and emerging innovations.
2. Findings packaged in multi-media forms for educational and public impact use.
3. Trained teams available to assist other cities in identifying needs and contributions they have toward making the cities of the world human living and working environments.

4. A final project report.

Post-Project Products

The planners and organizers see many of the products initiated in Phase 1-4, actually emerging in a post project time frame and not reliant upon current project funding. Because of their own concern and engagement in solving urban issues and development, they also consider themselves as continuing workers in all the project focus arenas. Furthermore, they will be better positioned to be of assistance and service to many whom this pilot three year effort is unable to touch.

Some of these products include:

1. A book which would synthesize the vision and future agenda derived from the project.
2. An interactive international information gathering and sharing system.
3. An environment conducive to ongoing dialogue whereby policy makers and practitioners at every level are encouraged to experiment appropriately with new approaches to urban development, and replicate at vastly broader levels the innovative approaches the project has identified.
4. Lateral interchange across neighborhoods and cities.
5. New inventions that will emerge after the project ends as a result of the new mindset and processes set in motion.

Mega-Cities Integrated Timetable

In Figure II.2 is shown the integrated timetable of the project which identifies points at which each activity is initiated and the approximate duration necessary for accomplishing them.

As the timetable indicates, some activities are initiated simultaneously with others at the global coordination and urban documentation level, are interactive, and overlap among phases. The ten cities shown on the timetable are suggestive, since final city selection will only be determined after further investigation in Phase 1.

Products Summary

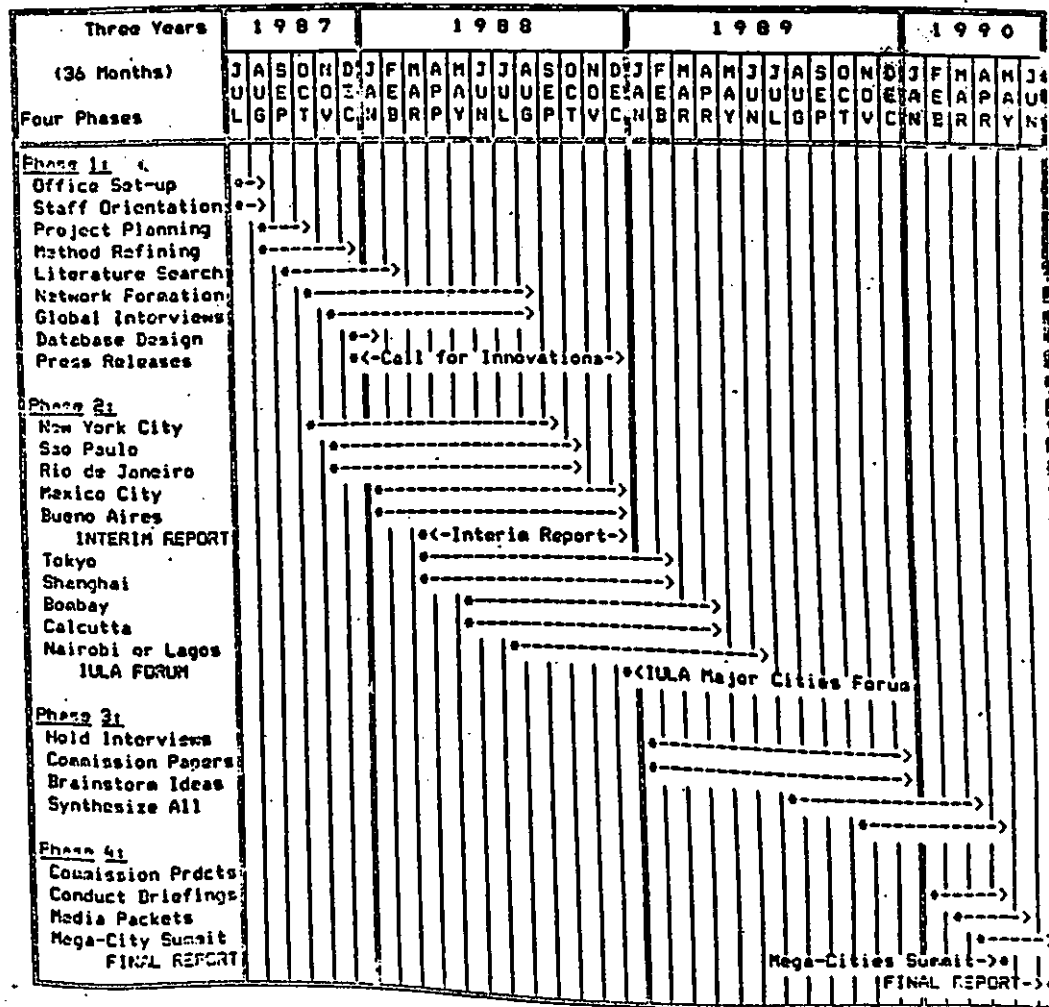
The substantive products listed below will be developed for conveying the content and import of the documentation. The future use and application of these from 1990 onwards is intended to set a bold new agenda for dealing creatively with worldwide urbanization.

Final report

- A document (to become a book) which blends and interrelates, in practical, usable form, the various innovations and their applicability and which can become a new resource for urban planners and

MEGA-CITIES TIMETABLE
Three Years -- Four Phases
(July 1987 to June 1990)

Figure II.2



dwellers. This will incorporate the case studies, data-bases, conferences, and interviews, and lay out the research and action agenda which has emerged from the three years' process.

- Case Studies of:
 - Existing innovations with proven applicability and transferability.
 - Prototype innovations currently being tested with strong transferability potential.
 - Potential innovations, still on the drawing boards and in a research phase which will soon enter a prototype stage.
- State-of-the-art papers on selected and promising innovations.

Active practitioner networks

- Global Networks of people and institutions combining talent and commitment of innovators, practitioners and activists.
- Trained teams and individuals available to assist other cities in identifying needs and linking them to the appropriate innovations which would make their cities human living and working environments.
- Local Urban Coalitions within each city geared to implementing new policies and innovations.

Media and education packages

- A lecture series and education packets will be developed for use around the world.
- Films, videos and slide shows will be developed which dramatize the vision of the human cities that can come to be everywhere.
- Posters, banners and art forms emphasizing "Making Cities Work".

International information access

- Integrated data-bases of the existing, prototype and possible technologies discovered, bibliographies, individuals, institutions and networks.
- Lists of potential innovations with specifications for prototype development.
- Access systems established through international urban development bodies, universities and NGOs.

Project process documentation

- Concept Papers will be written and revised periodically during the course of the project.
- Methods Manuals will be created for the symposiums, steering committee operations and various aspects of the documentation.

- Interim and concluding Reports will be produced to assess the progress and final contribution of the project.

C - Documentation Methodology

The project's three-year aim is not simply to create a comprehensive inventory of innovations occurring across the world, but to chart new directions for the next 20 years and to devise a framework, or documentation matrix, which will focus research and policy attention in the future.

This documentation matrix will be refined during Phases 1 and 2, in response to the findings in the 10 cities. Figure II.3 below, provides a representation of some of the principal elements that such a matrix requires. Its two dimensional nature is deceptive since what actually needed is at least a four dimensional construct.

The steps in formulating this matrix, while interactive in nature, might be portrayed in a linear fashion as follows:

Firstly, we identified six principal aspects of urban liveability whose current functioning is inadequate to meet the needs of mega-cities and where innovative approaches are required:

Figure II.3

PRELIMINARY DOCUMENTATION MATRIX					
Principal Aspects of Urban Liveability	Primary Areas of Investigation				
	Ecology Situation	Technology Usage	Social Equity	Policy Formation	Local Participation
(1) Income & Employment					
(2) Housing & Land use					
(3) Food & Energy					
(4) Water & Sanitation					
(5) Transportation & Communication					
(6) Education & Training					

1. Income and Employment.
2. Housing and Land use.
3. Food and Energy.
4. Water and Sanitation.
5. Transportation and Communication.
6. Education and Training.

Secondly, we have chosen to explore five primary areas that cut across the felt needs:

1. Ecological situation - identify idle and under-utilized human, natural and man-made resources.
2. Technology utilization - identify high and appropriate technologies and current development options for extensive applications.
3. Social equity - identify current inequities and imbalances in resource access and/or distribution for various segments of the urban populace (the poor, women, youth, elders, etc.).
4. Policy formation - identify organizational, managerial, and institutional innovations/strategies for effective management of urban development.
5. Local participation - identify effective approaches utilized by grassroots groups and organizers, the informal sector and NGOs for local voice and participation in the development and application of innovations.

It is recognized that manifold contradictions arise

1. Income and Employment.
2. Housing and Land use.
3. Food and Energy.
4. Water and Sanitation.
5. Transportation and Communication.
6. Education and Training.

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out of the tensions among these five areas. For example, the rush to adapt "modern technologies" is often at the expense of ecological balance, and the tendency of public policy to favor the privileged sectors, and in both cases the absence of effective means for participation by those affected most by these decisions.

Thirdly, identifying the social and technological innovations which show a high potential for making the city work in the future.

Three levels of innovations will be considered:

1. existing innovations that are currently being successfully applied and might be transferred or accelerated;
2. prototype innovations which have been conceived on a limited scale and are ready to be tested more widely; and
3. potential innovations which have been conceptualized and for which prototypes need to be developed, or those yet to be invented which might emerge from the project process.

Two parameters of information will be common for all innovations: a description of the innovation and its actual or proposed application; and a short narrative describing how it was originally conceived. Specialized information which is unique to each level will also be required. For existing innovations we will want to know the time lag between conception

and implementation, what financial, political, social and cultural obstacles existed, and how they were overcome. For prototype innovations, we will want to know how the idea was moved into a prototype stage, what has been learned from the prototype to indicate useful application in other situations, and how might new applications be accelerated. For potential innovations, we will want to know what these ideas are, what the obstacles might be to developing a prototype, and where would a prototype most logically be initiated.

In all cases, it is a critical concern that ways be found to accelerate the application of innovations by discerning the real underlying obstacles and finding ways of overcoming them.

Fourthly, identifying the selection criteria for innovations which relates them to an emerging global value system and the basic economic, political and cultural social dynamics which point to the scope of their applicability. It is important to note here that innovations may be selected from any major city or experimental site in the world, not just those with mega-city status. The following are primary values and applications criteria currently under consideration. These will be more fully specified in light of the fieldwork to be undertaken.

Primary Values: Each innovation chosen must be: Ecologically Sustainable, Economically Viable, and Socially Equitable. These values are derived as a response to several critical factors whose increasing importance to development of any sort cannot be underestimated.

1. Ecologically sustainable: The value for innovations selection is that they contribute to the conservation and/or increased capacity of the planet for regeneration of natural resources.

2. Economically viable: This value arises from the decreasing availability of resources for charitable purposes, and the increased emphasis on recoverable loans and investments as development mechanisms. This value is augmented by the desirability of practitioners and beneficiaries investing their own mental, physical and financial resources in the development process.

3. Socially equitable: This value arises from the increased consciousness of the significance of cultural wisdom and traditions in any development process, and the awareness that excessive technological advance benefits only those who create it or can afford it, and provides few avenues of participation or benefit to anyone else.

Applications Criteria: The following applications criteria, which will be tested and revised as the project proceeds, are concerned with ensuring that innovations may be practically applied in settings other than where they have originated.

Economic criteria

1. Affordable: Initial costs and maintenance costs are reasonable for the value derived.
2. Efficient: Operational costs relative to other similar technologies are efficient.
3. Sustainable: Beyond start-up, value derived will more than offset costs of operation.
4. Beneficial: There will be an improvement in the general economic state.

Cultura criteria

1. Appropriate: It is appropriate to the culture and life style.
2. Empowering: Releases people from social and psychological entrapments.
3. Symbolic: Does not violate primary symbols of the culture.
4. Replicable: Is replicable across cultures or usable in multi-cultural locals.

Political criteria:

1. Feasible: Essential policy modifications can be carried out with a moderate effort.

2. Unifying: Will generally increase unity and harmony in the society.
3. Redistributive: A more equitable distribution of participative potential will be derived
4. Participative: Beneficiaries as well as administrators participate in selecting innovations.

Transferability criteria

1. Adaptable: Can be adapted to other situations of similar circumstance and need.
2. Simple: There is an ease of learning to understand and operate by recipients.
3. Reliable: Existing operations have some proven measure of reliability over time
4. Regenerative: Uses, conserves and permits the regeneration of resources.

Examples of innovations

In practice, the most promising innovations may be those which do not fit neatly within the boxes, but cut across the arenas of investigation and aspects of urban liveability. The following examples illustrate this for existing prototype and potential innovations:



Transportation

- a. An existing innovation in Sao Paulo is the use of methane gas processed from squatter waste disposal and used as fuel for buses. This cuts across policy, community organization, resource conservation, sanitation and transportation.
- b. A prototype innovation is Jaime Lerner's bus system just now being developed in Rio de Janeiro, which by a mixture of design, hardware, zoning and computerized traffic management can transport people as quickly as most subway systems at much lower cost.
- c. A future possibility derives from the current super-conductivity breakthroughs which open up the possibility of extremely efficient electromagnetic people movers at the Epcot Center.

Food and energy

- a. Existing approaches that work are various types of agriculture, aqua-culture and fast-growing trees used for fuel.
- b. In the prototype stage is a toll-free hotline in New York City-the 1-800-HOMENET, which gives information to homeless people regarding the nearest available shelter, medical care and food, and also

allows vendors and restaurant owners to dial in for someone to pick up their unsold food for distribution to the homeless.

- c. Future possibilities exist through genetic engineering to develop new sources of protein, and photo-voltaics for more sophisticated use of the sun's energy in food production in urban settings.

Housing and Landuse

- a. An existing technology developed by the Habitat for Humanity in New York, and many other cities, acquires vacant buildings, organizes the homeless to rehabilitate the buildings, secures monies to train and employ them in the process. When completed they have a place to live, a new trade, and the potential for continuing employment. This has involved policy decisions, housing and land use, education and training, income generation and employment, etc.
- b. A prototype which has been available for some time but not widely applied, exists in prefabricated systems which home buyers can practically assemble themselves with a minimum of outside technical assistance and construction support.

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