

The Life and Death of the Minnesota Experimental City: An Experiment in Utopian City Planning

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ABSTRACT

Sustainability at the macro scale of settlement has been an aspect of the design of cities since our earliest history as urban dwellers (e.g. human settlements in ancient China, Egypt, Greece, India, Asia Minor, the Mediterranean world and South and Central America). The Minnesota Experimental City (referred to by its planners) was imagined initially by a university professor and a newspaper publisher, and was planned by working groups – meeting at the University of Minnesota - which included designers, planners, business people, government leaders, sociologists, educators, theologians, scientists, and economists, and ultimately supported in its early phases by both the federal government and the State of Minnesota. The goal was to plan, develop, and build – through a public/private partnership - a healthy environment for a new city of 250,000 people for northern Minnesota and to be constructed from the early 1970's to the mid-1980's. It would incorporate such technological innovations as car-free zones with people-movers, waterless toilets, a power-generating system fueled by both the burning of garbage in pollution-free furnaces and the use of windmills, and partially domed, climate-controlled, city centers. The goals of the city included life-long learning; social integration among and between religious, racial, age-specific and ethnic sub-groups; and values which looked not just forward but back to a feeling of community which emphasized “good food, good friends, and a good relationship to the earth.” In essence, the Minnesota Experimental City embodied the principles of social, economic and environmental sustainability. This paper discusses the salient features of the Minnesota Experimental City and its relevance in the present context.

INTRODUCTION

As urban planners around the world confront the critical issues of the twenty-first century—expanding population, rapid urbanization, limited global resources, increased demand for food production, and protection of a fragile environment - this paper narrates the story of the Minnesota Experimental City (called MXC) – a livable sustainable new city of 250,000 people, planned for northern Minnesota in the central United States, intended to be constructed from the early 1970's to the mid-80's.

It's often the case that great big ideas like the MXC have larger-than-life characters behind them, and the MXC is no different. The story of the birth of the MXC idea is the story of Athelstan Spilhaus and Otto Silha – two men who met at the right time – (1965) - and in the right city and state – (Minneapolis, Minnesota – known at the time for its progressive politics) - each with a history of thinking creatively as they operated in their very different spheres – (Spilhaus, the world of science and education in his position of the Dean of the Institute of Technology at the University of Minnesota; Silha, the worlds of newspaper publishing and civic philanthropy). The MXC was planned by working

groups which included designers, planners, business people, government leaders, sociologists, theologians, scientists, and economists. Their goal was – through a public/private partnership - to plan, develop, and build a healthy, sustainable environment for the city’s inhabitants, which would incorporate such technological innovations as car-free zones with people-movers, waterless toilets, a power-generating system fueled by both the burning of garbage in pollution-free furnaces and the use of windmills, and a domed, climate-controlled downtown area. This paper will examine these forward-thinking technological innovations, but also the human-centered goals of the planners (among them futurist Buckminster Fuller, urbanologist Harvey Perloff, theologian Martin Marty, and economist Walter Heller) which included life-long learning; social integration among and between religious, racial, age-specific and ethnic sub-groups; and values which looked not just forward but back to a feeling of community which emphasized “good food, good friends, and a good relationship to the earth” (TIME, 1973).

It is helpful to understand the planning context in which these initial conversations between Spilhaus and Silha took place. The Housing Act of 1949 had launched the “Urban Renewal” movement in American cities. Neighborhoods considered “blighted” in dozens of cities across the country were cleared at federal and local expense, and land given to developers for redevelopment. The Housing Act of 1954 had made this redevelopment even more attractive to developers by providing FHA-backed loans to build housing. In 1956, the Federal-Aid Highways Act encouraged city and federal planners to construct new highways to provide easy access into central cities, often destroying healthy existing inner-city neighborhoods in the process. These actions, on top of the housing acts of the 30’s and 40’s which served to increase segregation and the growth of government-funded slum housing, along with the growth of suburban areas as city residents fled increasingly more troubled city centers, resulted in the sense that the American urban experience had failed. In 1961, Jane Jacobs in *The Life and Death of Great American Cities* began to raise strong questions about what had gone wrong at the hands of planners and government officials. There was a deep-felt concern that society was headed in the wrong direction in its ability to address the social issues of the day, e.g. segregation (of age groups as well as races), the environment, and education, but that all the tools were at hand to move in another direction.

By the mid-1960’s, cities and their citizens were in turmoil. Polluted rivers were catching fire, spurring the birth of the environmental movement in the United States. This and the race riots that began in 1965 and continued through the remainder of the decade resulted in the sort of thoughtful – and urgent – discussions that Spilhaus, Silha, and leaders in business and industry in Minneapolis were engaged in, concerning the future of cities.

Add to this milieu the sense – based on evidence such as the successes of the Apollo moon shot program – that technological advances could solve our problems and move us forward. There was the sense also – a sort of World’s Fair type of thinking – that the inventiveness and marketing know-how of the American people had not been applied to the problems of cities and housing (Spilhaus had directed the U.S. exhibit at the Seattle’s World’s Fair, and MXC planners were inspired by Moshe Safdie’s Habitat housing complex built for Expo 67 in Montreal).

The Minnesota Experimental City was never built. The paper will look to answer the question, “why not?” and seek, also, to describe aspects of the city’s design, features, and goals which might find new life in planning the healthy communities and sustainable habitats of today and tomorrow.

NEW TOWNS TO SUSTAINABLE TOWNS

The idea that we could re-imagine or re-invent cities to make them more “uplifting” places of habitation was, of course, not a new idea. Hippodamus (c. 498- c. 408 BC), a native of Miletus, Greece invented the art of planning cities and designed port towns of Piraeus and orthogonally planned towns such as Olynthus, Priene and Miletus. Conscious planning of cities reemerged in Europe during the Renaissance with prime objective to glorify a ruler or a state and partly aimed at improving circulation and providing military defense. From the 16th century to the end of the 18th, many cities were laid out and built with monumental splendor rather than health and comfort provisions for citizens.

The modern origins of urban planning lie in a social movement for urban reform that arose in the latter part of the 19th century as a reaction against the disorder of the industrial city. Many visionaries of the period sought an ideal city, yet practical considerations of adequate sanitation, movement of goods and people, and provision of amenities also drove the desire for planning.

New town developments have served many needs throughout history, including the following, according to William Alonso (1973): a) the acculturation and absorption of migrants, as in Israel and Australia; b) the development of frontier regions, ranging from tiny ones (Holland, Israel) to vast ones (the nineteenth-century American West, Siberia, and the center of South America); c) the exploration of concentrated resources (Ciudad Guayana, Venezuela and Kitimat, BC) and of extensive ones (central place systems such as the nineteenth-century American Midwest); and d) symbolism and politics (Washington, Brasilia).

In the United States, the Cities Beautiful movement, which architect Daniel Burnham was credited with founding, and which the Chicago Exposition of 1893 was credited with starting, influenced civic-minded citizens and planners in large cities and small towns across the nation. While the City Beautiful movement was based on the principles of Beaux Arts design, it really wasn't about beauty for its own sake, but for creating social order by instilling civic and moral virtue among the population. In 1906, Burnham and his assistant Edward Bennett designed a plan for the Chicago, which was the first comprehensive plan for the controlled growth of an American city. Happening at roughly the same time, and meshing with the same kind of intentions that the Cities Beautiful movement had was Ebenezer Howard's Garden City movement in England, founded in 1898, which was a reaction to the dirty, unhealthy conditions of cities caused by the Industrial Revolution. In the United States, bedroom suburbs such as Radburn, NJ, designed by Clarence Stein and the "greenbelt" towns continued the European Garden City tradition during pre-World War II years. In 1962, the modern new town community of Reston, VA, (Columbia, MD, came later) provided social and economic components of community as well as the simple physical aspects of the earlier new towns.

Table 1: Sustainable Urban Form Matrix

Design Concepts	Neo-traditional Development	Compact City	Urban Containment	Eco-city	MXC
Density	Moderate - 2	High - 3	Moderate - 2	Moderate - 2	Moderate - 2
Diversity	High - 3	High - 3	Moderate - 2	Moderate - 2	High - 3
Mixed land use	High - 3	High - 3	Moderate - 2	Moderate - 2	High - 3
Compactness	Moderate - 2	High - 3	Moderate - 2	Low - 1	Low - 1
Sustainable transportation	Moderate - 2	High - 3	Moderate - 2	High - 3	High - 3
Passive solar energy	Low - 1	Low - 1	Low - 1	High - 3	High - 3
Greening - ecological design	Moderate - 2	Low - 1	Low - 1	High - 3	High - 3
Total Score	15 points	17 points	12 points	16 points	18 points

In the late 20th century the term sustainable development came to represent an ideal outcome in the sum of all planning goals. As advocated by the United Nations-sponsored World Commission on Environment and Development in *Our Common Future* (1987), sustainability refers to "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The latter point has been labelled as 'inter-generational equity'. More recently, sustainable development is defined as "a dynamic process which enables all people to realize their potential and to improve their quality of life in ways which simultaneously protect and enhance the earth's life support systems," (Forum for the Future). While there is widespread consensus on this general goal, most major planning decisions involve trade-offs between subsidiary objectives and thus frequently involve conflict. Jabareen (2006) delineates seven design principles for attaining the goals of sustainable urban development and identifies four urban forms that contribute to the overall sustainability of cities. Neo-traditional Development, Urban Containment, Compact City and Eco-City are the four identified sustainable urban forms comprised of combination of seven design principles or concepts viz a)

Compactness b) Sustainable Transport c) Density d) Mixed Land Uses e) Diversity f) Passive Solar Design g) Greening. The MXC epitomizes the design principles of sustainable urban development and is a forerunner to the present day eco-cities, as can be seen in how the MXC scores using Jabareen's (2006) Sustainable Urban Form Matrix, measuring the seven principles above, and comparing the MXC to the four sustainable urban forms listed, shown in **Table 1**.

OVERLEAP

By 1967, multi-disciplinary studies for planning the MXC were initiated at the University of Minnesota, under the direction of Walter Vivrett, professor of architecture and planning. Otto Silha was by now the chair of a Steering Committee of 23 well-known individuals from a broad variety of disciplines from around the nation. The word "overleap" was used to describe what the MXC hoped to achieve: "at once an advance into future possibilities and a break with past constraints" (Vivrett, 1972). It was determined that the best avenue for arriving at a concept for the MXC would be to initiate "workshops" which would focus on specific areas:

- Education - Health, medical and environmental health
- City-building technology
- Communications
- Waste management and pollution control
- Transportation (people, goods, and mail)
- Energy and energy transmission

The workshop participants, numbering almost 200 people, met for roughly three days each from late 1967 through early 1968. They were asked to identify, in their areas, what was "state of the art, and then identify major gaps and issues and areas for potential innovation – critical for a city that was truly "experimental."

One might discount all of this as the efforts of a few scholars and interested business people. By February of 1967, however, grants from three government agencies (Housing and Urban Development, Health Education and Welfare, and Commerce) and 10 corporations – totaling around \$300,000, or more than \$2 million in today's dollars – were in place to fund the planning stage of the project. Vice-president Hubert Humphrey had signed on as a supporter, as had the Minnesota State Legislature.

WHY A NEW CITY?

The concepts of dispersal and building-from-scratch were critical for the success of a new experimental city. Attempts to repair the existing fabric would present problems having to do with "local traditions, outmoded building codes, restrictive legislation, and the consequences of unplanned, unhealthy growth" (Spilhaus, 1968) in addition to the vested interests of local business and industry. A "dispersed" city, located no less than 100 miles from an existing urban city, would be able to offer the advantages of an existing city but – with a defined perimeter and surrounding reserved land – it could not suffer from unplanned growth. The "built-from-scratch" aspect would allow new innovations in services, waste-management, pollution control, and communication to be fully implemented from the start, and serve as a test environment for other new cities.

A third aspect of the initial concept was that of "urgent need" – the urgent need to build and populate an "instant" city fully and quickly so that it might soon function as the kind of sociological and technological laboratory – the core of the "experimental city" concept - that might lead the way for other new cities and the repair of the environment into the 21st century. It was estimated that the MXC would cost about \$4 billion to build (\$26 billion in today's dollars).

While it is interesting to focus on the technological and planning aspects of MXC, it is important to state that from an early point in the conceptual phase it was the community and human values that were stated as the main goals of the project – the phrase "people-oriented, technologically advanced" was often used as a descriptor. Spilhaus said, "We must not force people into what is technologically easy, but find a technological solution which is practical and closely meets their desires" (Spilhaus, 1968).

The overarching goals were these (Vivrett, 1972): “a. man can creatively mold his environment; b. he can, in a positive and constructive manner, unite the resources of private technology with public authority; and c. he can re-orient social, economic, and physical forces to serve people.” The futurist Buckminster Fuller, a member of the Steering Committee, discussed the role of a city of the future as being “metaphysical,” offering a forum for the exchange of ideas, learning and culture, and not just goods.

MXC PLANNING PRINCIPLES

It’s important to make clear that site selection was an important aspect of the planning process. A number of sites around the state of Minnesota were considered, with two sites selected as finalists, both of them about two hours north of Minneapolis-St. Paul in rural areas, and both of them in areas of the state that were struggling economically. The basic planning principle that the MXC was based upon was Walter Christaller’s “Central Place Theory” which was developed during the 1930’s in Germany. The theory consisted of two basic concepts – that of “threshold,” which is the minimum population that is required to bring about the provision of certain good or services, and that of “range,” which is the average maximum distance people will travel to purchase goods and services.

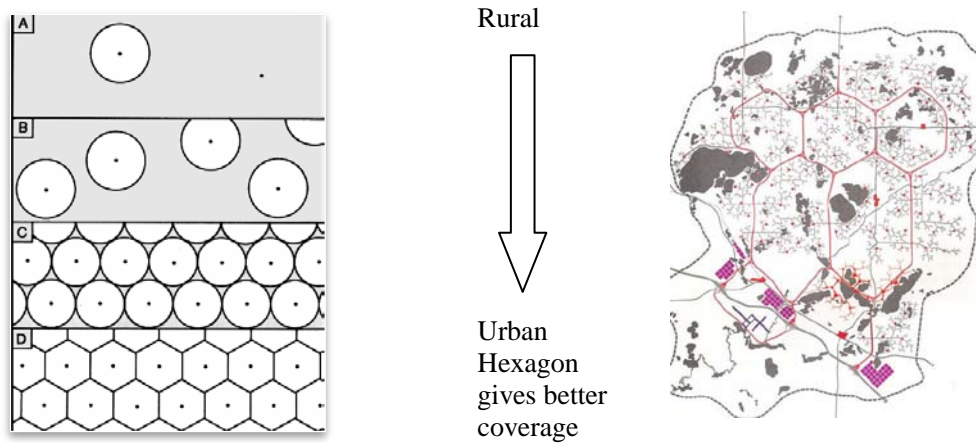


Figure 1 MXC development plan, combining hierarchical systems of centers with existing development patterns (Minnesota Experimental City Authority – Preliminary Report on Urban Design, 1973).

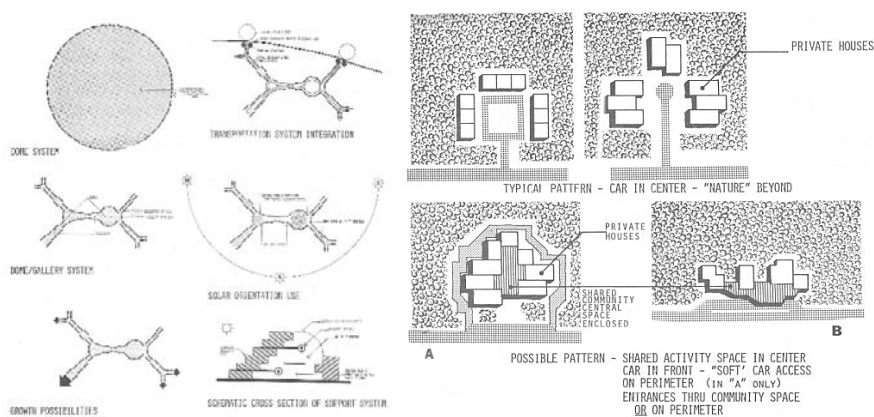


Figure 2 MXC development plans, combining hierarchical systems of centers with existing development patterns (Minnesota Experimental City Authority – Preliminary Report on Urban Design, 1973).

If you begin to “densify” areas of range you get a hierarchical system of centers, with the hexagonal shape ultimately giving better coverage than a circle. This system of hexagonal transportation networks was then laid out over existing potential communities in the initial master planning, as shown in **Figure 1**.

At the level of the community and neighborhood, as in **Figure 2**, built forms and development were laid out to maximize solar gain (images to the left), and to accommodate shared community space and close connections to nature (images to the right).

INFRASTRUCTURE AND SUPERSTRUCTURE

Technologically, the most important component of the MXC was its coordinated infrastructure and superstructure – its tunnel system, as in **Figure 3**. All transportation of goods and services, waste and utilities, and construction materials (small-sized components which could be assembled and disassembled for different configurations) would be handled through the tunnel system. Part of the tunnel system would be a network of environmentally-friendly features – solid waste would all be handled through an underground system that would allow for recycling of materials, the air would be scrubbed of pollutants, waste water would be reused for cooling and then recreation, and the infrastructure would do double-duty as superstructure.

People would arrive by vehicle at the edge of the city and would then be transported through a “pod” system of people movers, with semi-private “cabs” and the ability to select one’s own destination in a way that was more flexible than bus transportation. These cabs would provide door-to-door transportation to both low-density and high-density living and community structures, as in **Figure 4**.

It was very important to the planners that the communication network for the MXC also be part of the tunnel system. The substructure would be wired with coaxial cable to reach anywhere a telephone might conventionally be located. A wiring system to service radio frequency transmission would also be included. It was anticipated that the communication system would be used for high-speed connections to computers and video monitors which would be used for – among many anticipated uses - shopping, banking, crime prevention and the de-centralizing of learning and health care. It was planned that medical care would be made available through a series of care centers which would provide appropriate care at various levels, with computer connections back to central medical facilities for advice from specialists. Health care would be delivered as a “utility,” with easy access for all.

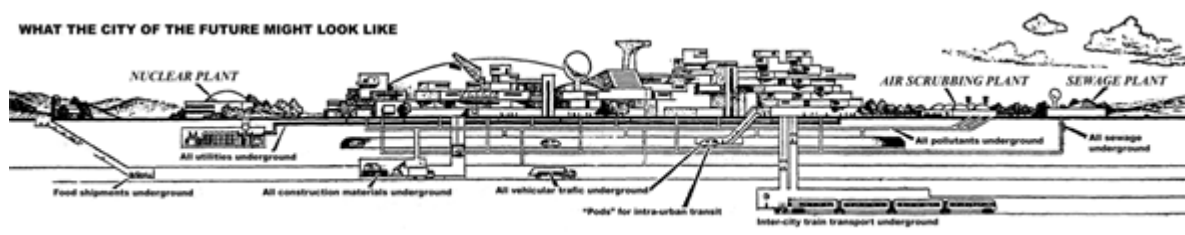


Figure 3 Cross-section of the MXC superstructure and tunnel system (New York Times, 1967).

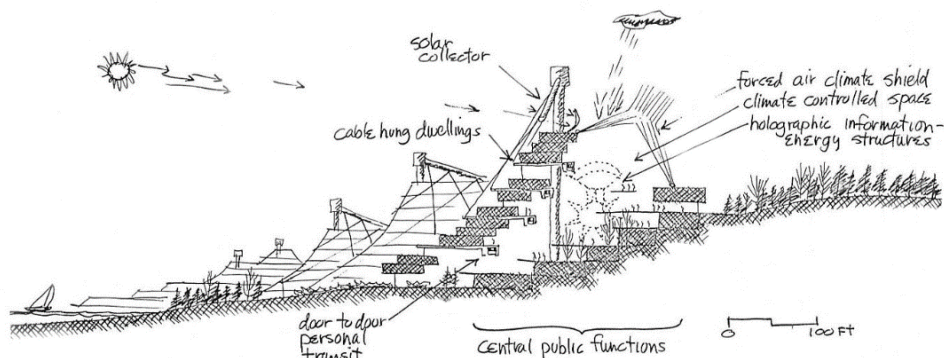


Figure 4 High-density community form, with maximized solar access and climate-controlled public space (Minnesota State Historical Society – MXC Authority Collection).

LIFE-LONG LEARNING

Perhaps one of the most interesting innovations in the MXC plan was in the area of education. The city would be constructed with no schools, but would instead serve as a life-long learning laboratory. Everyone would be a learner and everyone would be a teacher. Learning would occur everywhere within the city. There would be no schools, but instead learning centers located throughout the city in homes, businesses, and public spaces. These would include Beginning Life Centers for very young children, Stimulus Centers for films, tapes, sounds and spells, Gaming Centers for the study of complex realities in a simple fashion, Project Centers where people could work on experimental outcomes, Learner Banks where tools, equipment, print and non-print materials could be checked out, and Family Life Centers where families could learn together (Minnesota Experimental City Authority – Education, 1973).

FINANCING AND MANAGEMENT

With a price tag of over \$4 billion, who was to pay for and manage the MXC? The planners of the project suggested several options for management. One would be to have a quasi-public, quasi-private corporation run the city as a public utility (similar to the model that was ultimately used at the London Docklands); another would be to view the city as similar to a large Disney-style hotel complex with lodging, shops, restaurants, and transportation systems, with public services possibly contracted out to private entities. In terms of who would pay the initial price tag for infrastructure, it was hoped that business and industry – recognizing the opportunity that the city would provide as a laboratory for new technologies of pollution control, transportation, communication, and construction - would be willing to invest in the up-front construction costs. Additional costs could be financed through bundled FHA mortgages.

FATE OF THE MXC

The initial project reports were completed in 1969, and the workshops continued their studies. The project lost a strong supporter at a high level when Hubert Humphrey lost his bid for the U.S. presidency in 1968, and MXC gradually lost local support as the state legislature tipped from more liberal to more conservative from 1968-1972. The University of Minnesota at the time was also substantially funded by the legislature, and as the legislative makeup changed, state government was less supportive of the University's MXC efforts. By late 1972, the final site had been chosen for the project. In January 1973, the final planning reports were issued. But by February of that year it was also the case that local politics had begun to signal the end of the project.

Locally, the MXC project - grounded in environmental innovation - became a victim of the concerns of those who treasured the local environment of Aitkin County, MN, the wooded, rural county which was ultimately selected as the site for the MXC. While many residents of the county welcomed the opportunities which the project would bring, many feared the loss of property and peacefulness. In 1973, TIME Magazine published an article called "The Newest New Town" which spoke positively about the prospects for the MXC. It was the last hoorah, followed by these grim headlines in the Minneapolis Star Tribune from February through May of 1973:

- 2/8 "MXC Prospects Not Bright in Legislature"
- 2/14 "Opponents Term MXC a Trojan Horse"
- 2/16 "MXC Threatens Good Hunting Area"
- 2/20 "Petitions Opposing MXC Presented to Governor"
- 3/13 "PCA Recommends Dropping MXC Plan"
- 3/28 "Senate Sub-Committee Votes to Cut Off MXC"
- 4/4 "House Sub-Committee Votes Against MXC"
- 4/5 "MXC Bill Dead"
- 5/24 "MXC May Be Moved to VA, FL, or OH"

Things were also happening in the larger arena that helped to seal the fate of the MXC. The country was involved in an unpopular war which escalated after the election of Richard Nixon in 1968

and didn't end until 1975. From 1973 through 1975 the country experienced what some considered the most severe recession since WWII, with oil shortages, rising interest rates, and the reduction of real income and consumer spending. The notion that we could tackle any challenge if the ideas and the effort were there seemed like an idea whose time had passed. Locally, the MXC project - grounded in environmental innovation, with a tightly interwoven connection between human development and the landscape - became a victim of the concerns of those who treasured the local environment of Aitkin County, MN, the wooded, rural county which was ultimately selected as the site for the MXC. While many residents of the county welcomed the opportunities which the project would bring, many feared the loss of property and peacefulness.

CONCLUSION

Those who contributed to the imagining of the MXC should recognize aspects of the design in today's world. Forty years later, we live in a world where the environmental issues of air quality, resource management, and land use are more important than they have been at any time since the 70's. On-line learning and high-speed internet communication were just speculation in the 60's - now they're part of how we learn and communicate. The type of large scale building and planning of "instant" cities that characterized the MXC is now happening in the construction of new cities in India and China. The "cradle to cradle" use of resources we saw proposed for the MXC is now an aim for consumers, industries and nations.

Criticism has sometimes been leveled at the MXC for its top-down planning approach, conceived by an "elite" group of academics and businessmen. Its approaches, however, to sustainable land use, net-zero energy use and waste management, communication, education and health delivery systems still constitute the "overleap" of innovation that was the MXC's goal. Forty years later, perhaps, the open-source, bottom-up nature of current innovation might take some inspiration, especially in developing societies, from the ideas of an experimental city that was many years ahead of its time. While the "compact city" model is viewed by many as the best answer to a more sustainable urban future, perhaps the idea of smaller - yet dense - communities which are closely tied to nature is more compatible with the patterns that have satisfied our needs for communal habitation throughout history.

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