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ABSTRACT

The field of urban geography has as its prime foci the study and teaching of the spatial relationships that exist among the various structures, areas, and inhabitants within cities. The idea of a single-structure city, a building where people can live, work, and be entertained with a climatically-controlled environment is no longer a utopian vision and offers new areas for geographic study. Students may study such cognitive concepts as spatial relationships; physical structure; physical, cultural and/or economic neighborhoods; transportation; and the impact of the new single-structure cities upon human behavior. Student skill development could include the translation and application of statistical, technical, and photographic data to the aforementioned cognitive concepts. Affective activities could include a simulation where students have to decide who will be allowed entry into a limited number of domed cities when ecological catastrophe occurs in the year 2050. In a second activity students might be asked for the personal reactions to a future "ideal city." (Author/DE)

STUDYING AND TEACHING ABOUT THE INTERNAL ENVIRONMENTS OF SINGLE-STRUCTURE CITIES*

A paper delivered at the 59th Annual Convention of the National Council for Geographic Education in Washington, D.C. November 1, 1973

by

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The literature of urban geography is replete with definitions of what constitutes a "city." Despite some linguistic differences, the question of whether a particular area can be classified as a city or not seems to depend on three factors. First, is there an interaction of substantial numbers of people in business and social activities? Second, is there a system of human and mechanical services? Third, does the community provide a setting for, and/or sponsor, cultural and recreational activities? (See, for example, Spilhaus, 1967.)

Traditionally, we have accepted as given that each of these three functions takes place in a geographically distinct, and usually separate, sector of the city. Thus, one could differentiate in any

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major metropolis between the "business district" and the surrounding "residential neighborhoods." Leisure-time pursuits were to be found in another area. Government services, including such diverse activities as public health and mass transit, were all controlled from a cluster of buildings in the "government sector," frequently dominated by a city hall or state capital. Linking one sector to another required systems of transportation and communication which were forced to become increasingly more complex, and in many cases more inefficient, as the city grew in size.

Given this view of urban life, it is not surprising that the field of urban geography has had as one of its prime foci the study and teaching of the spatial relationships that exist among the various structures, areas, and inhabitants within these cities. Such geographic concepts as diffusion, interaction, accessibility, scale, and density became defined in terms of how we perceived the urban environment.

We are now seeing the onset, I believe, of a movement in urban design, (or if you prefer, redesign), which will radically alter our conception of cities, their planning, and the urban geographic concepts that pertain to them. The idea of a single-structure city, a building where people can live, work, and be entertained within a climatically-controlled environment is no longer a utopian vision. Since 1969, there has existed in Chicago a true vertical city. Developed by the John Hancock Mutual Life Insurance Company, this 100-story building

contains twenty-nine floors of office space, fifty-seven floors of apartment condominiums, and eleven floors of restaurants, lounges, and other residential and recreational services. All of which is neatly stacked on an area of only 50,000 square feet of land. (See schematic drawing of this structure in the appendix.) In St. Paul, Minnesota, a major effort is underway to link several older residential and commercial buildings with newly constructed ones by means of enclosed, aerial bridges. Carried to its logical conclusion, this would eventually create a linear city, in which a satisfying life could be led without the necessity of coping with the severe Minnesota winter.

Both of these developments appear to be precursors of future city building trends, and thus should be of concern to urban geographers. Even if such structures prove to be an aberration, the theory behind them presents an interesting field for geographic inquiry. Focusing on the concepts of "neighborhood" and "transportation," let us examine how the internal environment of single-structure cities might be studied in these respects.

Picture, if you will, a series of vertical or linear cities, separated by miles of park land, and connected to each other by subterranean and/or aerial transportation and communication systems. Designs for such cities, incidentally, have been completed by Le Corbusier (Cited by Goodman and Paolo Soleri (1968). Within this system of buildings, it might be possible to speak of each structure as a "neighborhood." One would then investigate the spatial interaction among these neighborhoods and between them and the proposed

surrounding green belts. In fact, there is no real necessity for continuing to think solely in terms of land use. Soleri has designed million-inhabitant cities which are to float on water. The question arises of whether the existence of such floating cities would change in any way the spatial concepts which define the interaction of land-based elements. Unfortunately, such investigations probably rely too heavily on speculation to be of much value in the classroom for developing the skill of conceptual development. A more worthwhile approach would seem to be the study of the existence, or lack thereof, and the placement of neighborhoods <u>within</u> such structures as the John Hancock Center in Chicago.

The spatial relationships of this Center were deliberately planned to function as efficiently as possible. While this may seem obvious, it is important to contrast to the haphazard development of most traditional urban areas. Without passing judgment on the theory that design can determine, or at least influence, human behavior, it still must be acknowledged that architectural plans greatly circumscribe the options for social interaction within single-structure cities. Not surprisingly, a representative of the leasing agent for the John Hancock Center informed me that the residential, business, and public activity areas were located where they are <u>primarily</u> because of the tapered design of the building and the projected rental costs of space at various heights in the building. In other words, architectural and economic considerations took precedence over those of <u>internal</u>

urban planning and tenant-centered spatial relationships.

Nonetheless, given the schematic design of the structure, students might inquire into the existence of a nodal region. If one or more does/do exist, where are the focal points of control and influence? How far does this power extend? What transportation and communication systems make this possible? Is there a hierarchy of functions performed by each sector within the region? Answers to these questions will help define the concept of "spatial interaction" for single-structure cities. The results might then be compared with similar findings for more traditional urban areas.

The mere physical existence of a planned community does not guarantee that in the area set aside for a particular function that that activity will actually take place. One has only to look at the development of Chandigarh in northwestern India to see how a planner's ideas about how people should live may not coincide with the way people actually do live. (Brolin, 1972). Considering that few people have had experience living in single-structure cities, it would be surprising to find modifications being made after the structure has been technically completed. Students might ask whether the outer and inner walls of the building are the inflexible boundaries they appear to be. Could apartment and/or commercial modules be developed that might allow for growth by "grafting" on additions? (See, for example, Fuller, 1968.) What provisions are made or could be made for garden

terraces which are open to the outside? (See, for example, Sale and Law, 1972.) In other words, can the physical structure of a neighborhood be changed within a self-contained city?

Another set of questions ought to be asked of life within the structure. Are there distinct physical, cultural, and/or economic neighborhoods? If so, are they differentiated by floors, by express stops on the elevator, by the placement of such services as the laundry, or by some other means? Is there any place set aside for social interaction among the residents? Was this "community center" the result of prior planning or natural growth? Has provision been made for such neighborhood-producing facilities as schools and medical centers? Even if the answers to all these questions were yes, as Professors Brownell and Petersen of Purdue have said: "In the final analysis, it is not as crucial that a building is multi-functional as it is that the different functions are effectively joined." (1973, 22) If such synergism is not present, then one must ask whether the end result is not simply a combination of distinct entities which happen to co-exist within the same structural framework.

It follows, then, that some investigation should be made of the interaction among the neighborhoods. For instance, do the elevators serve the function of public service carriers? What effect on neighborhood development does the existence of express elevators have on those floors that are local stops? Does the quest for personal safety limit one's social contacts? A brochure advertising the

apartments in the John Hancock Center boasts of the existence of an observatory on the 94th floor, at the same time that it promises the potential resident that "you'rs isolated from the visitors who travel to 94. They make the ascent in separate elevators and they enter and leave the building through separate entrances." (Sudler & Company, n.d.) Much the same questions might be asked of a linearly-constructed, single-structure city, which might depend on a system of publically-run, one-to-four passenger, automated transit cars. These would run along a pre-determined grid throughout the length of the city. (See, for example, Witkin, 1972 and Chasan, 1973.)

These questions are not just simple inquiries into the conduct of residents in a multi-functional building. In a very real sense, the answers determine whether or not such structures can be defined as "cities." Urban planner Constantinos A. Doxiadis claims that there are four principles which lead to the formation of human settlements. Among them are the maximization of potential contacts and the minization of effort. (Cited by Donaldson and Aldrich, 1972.) Yet, in the case of structures such as the John Hancock Center, these principles may be in conflict. The easiest way to get from one's apartment to the street is to take the express elevator, which by definition minimizes the number of opportunities to meet people. In fact, since the apartments serviced by the local elevators tend to be the smaller, cheaper ones on the lower floors, one could argue that economic class

divisions are inherent in the structure of the building. Furthermore, the transportation system tends to compound rather than eliminate these divisive factors. While it would seem impossible to have a physical slum in a building constructed of the same materials throughout, such an area might exist in comparative terms. Thus, a resident bemoaned the fact that she was forced to move below the 66th floor, an area which was more crowded (more apartments per floor) and noisier (younger people tended to live there).

A deliberate attempt has been made throughout this paper to explain the theory of single-structure cities and its possible application to the study and teaching of urban geography without undue reference to the specifics of any one building. This approach has been dictated by the fact that research is currently underway at Purdue and Fordham Universities to ascertain by survey techniques the social and geographical aspects of self-containment. While this work is in progress, it make little sense to speculate on possible findings. However, those preliminary results that are available (Brownell and Petersen, n.d.; Watson, n.d.; and Berger, in press) indicate that as long as single-structure cities continue to be build in the inner core of existing metropolises, they will never achieve full self-sufficiency. Economic factors caused by the relatively small size of these buildings are responsible for this development. Many of the services that presently exist are dependent on outside patronage (such

as the restaurants), are forced to charge high prices because of the small demand (such as the "commissary" or super market), or are subsidized by the maintenance fee (such as the health club and swimming pool). In addition, the residents' desire for both privacy and security seems to have diminished the need and opportunities for cooperative work and play in buildings such as the John Hancock Center. Finally, as an example of how far we have to go to achieve the ideal, Marina City in Chicago has continually made a deliberate attempt to have people who live in the buildings work there as well. Yet, despite the fact that two hundred (200) units are supposedly reserved for such people and that resident businesses give preference in hiring to Marina City dwellers, only two percent (2%) of those who live there also work there. (Brownell and Petersen)

In conclusion, I would like to be a little more specific as regards classroom application of the ideas presented in this paper. Educators are found of dividing knowledge into three domains: the cognitive, the affective, and the skills. Earlier, especially on pages 4-7, several approaches were outlined for examining the concepts of "neighborhood" and "transportation" within single-structure cities. Similar techniques could be employed to yield cognitive data in answer to such questions as: (1) Does design have any effect on behavior? (2) Does the concept of "population density" per square mile become meaningless when

investigating single-structure cities? (3) Do such structures alleviate and/or aggravate problems of safety? (4) Does mobility within self-contained buildings alleviate and/or aggravate the feeling of isolation so often found in traditional urban areas? (5) How can the regions devoted to residential, business, and public activities be best related to one another so as to minimize the problems of pollution?

As for skills, the existence of self-contained structures in a growing number of cities provides an ideal laboratory for teaching students how to transfer observed phenomena into geographic facts. Part of the author's own work has involved the skill of photographic interpretation. Fieldwork can be undertaken using statistical techniques to answer some of the cognitive problems stated above. Students can be asked to prepare a schematic map of the building such as the one in Appendix A, or they might diagram the spatial interaction among the various components housed in single-structure cities. Finally, the results of this research can be analyzed in an expository report.

Even the valuing process can be developed by presenting the students with situations demanding judgemental decisions. For example, Bender and McCuen (1972) have designed an activity concerned with the construction of what they call "New Domed Cities" to cope with a predicted ecological catastrophe in the year 2050. Unfortunately, not enough of these single-structure cities have been built when crisis strikes. Students are asked to role play being members of a selection committee, charged with refusing entry to seven of fourteen applicants.

The authors deliberately present the students with the necessity of weighing skills against moral principles, and of practicality against frivolity and/or culture. For instance, among the individuals seeking entry are a "practicing surgeon who is an admitted homosexual," "a millionaire playboy," "a male opera singer," "a prostitute who donates half of her income to research on cancer," and "a ten year old boy with learning difficulties."

For a second activity in the affective domain, students might be asked for their personal reactions to the following description of an "ideal city" by Ettore Sattsass and the Superstudio of Italy ("Superstudio on Mindscapes," 1973, n.p.):

> Even and perfect, the city lies amid green lawns, sunny hills and wooded mountains; slim tall sheets of continuous buildings intersect in a rigorous square mesh, one league part; the building, consists of cubic cells five cubits each way. These cells are placed one on top of another in a single vertical stack, reaching a height of one third league above sea-level, so that the relative height of the building varies in relation to the level of the ground on which it rises. Cell walls are of opaque material, porous to the air, rigid, but light. The wall facing north . . . is capable of emitting three-dimensional images, sounds and smells. Against the opposite wall is a seat capable of molding perfectly to the human body, even of enclosing it completely. Incorporated in this seat is an apparatus for satisfying all psychological needs. When not in use, this membrane and all apparatus withdraws and the wall reforms. The floor is a simulator and can evoke all sensations of living things. The ceiling is a brain-impulse receiver. In each cell is an individual whose brain impulses are continually transmitted to an electronic analyzer set at the top of the building beneath a continuous semi-cylindrical vault. The analyzer selects, compares

and interprets the desires of each individual, programming the life of the entire city moment by moment.

The activities described above are by no means unique. They show, rather, that the techniques of the "new social studies" are flexible enough to incorporate a new theory of urban design. As urban geographers, we would be foolish to ignore this opportunity to add a new dimension to our research and teaching experience.

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Appendix A

THE JOHN HANCOCK CENTER
CHICAGO, ILLINOIS

FUNCTIONS	
Concourse level	-Commercial and services
1st through 5th	-Lobbies and commercial space
6th through 12th	-Parking
13th through 41st	-Offices
42nd and 43rd	-Mechanical equipment
44th	-Sky Lobby (contains conveniences for residents, including specialty and service shops, a year-round swimming pool and lounges)
45th through 92nd	-Apartments
93rd through 97th	-Public restaurants, lounges, observation floor and television equipment
98th through 100th	-Mechanical equipment