GERMANTOWN - A PROTOTYPE SATELLITE TOWN

FOR 100,000 PEOPLE

by

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Lawrence B. Anderson, Dean  
Department of Architecture  
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Cambridge, Mass.  
June 12, 1967.

Dear Dean Anderson,

I hereby respectfully submit this thesis entitled "Germantown - A Satellite Town for 100,000 People" in partial fulfillment of the requirements for the degree of Master of Architecture.

Yours faithfully,

Richard C. Henriques
ABSTRACT

This project seeks to explore some of the problems and potentialities involved in the creation of the human environment on a large scale.

A real problem has been taken as a context in which this exploration should take place. An attempt will be made to develop new architectural and urban design vocabulary and criteria which may seem appropriate and possible. It is not so much that the design should solve all the problems which arise in the actual setting, be economically feasible etc., but rather that the environment proposed should be one which provides a stimulating setting in which people can live; allowing them freedom to live as they choose and meaningful choice as to where and how they live.
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Jan Lubicz-Nycz
Waclaw Zalewski

INTRODUCTION

The fate of our living environment is one of the greatest single problems facing society today. The advent of the private automobile (which has been so wholeheartedly embraced by the American public) with its vast demands on space and problems of air pollution, along with the population shift from rural to urban centres both contribute to the immense congestion, suffocation and chaos which plagues almost every large city in North America today. This has happened accompanied by a lack of leadership and controls which are needed to coordinate the many agencies and people involved in building the urban habitat. As David Crane sums it up:

"This chaotic city is not the product of anyone's overall design, but rather a confusing overlay of individual creativity, business interests, governmental rigmarole and a very anonymous and imperfect market. The modern industrial city reflects the undisciplined genius of a productive society in which everyone and yet no one is to blame."

To escape the congestion and social problems accompanying the decline in city life, and perhaps with some nostalgic memories of rural living, the population with means moved out to the suburbs where "The air was fresh, the trees were
lush, and there was space to move around." By and large, these people did not find all their dreams fulfilled, but mainly their move meant an improvement in their physical and social environment. Their social patterns however remained remarkably similar to what they were before.

These people were generally middle class in income and aspirations, and they did not miss the great cultural facilities of the city - they never made use of them anyway. Their institutions were not the opera, ballet, theatre or exclusive club, but rather the P.T.A, bridge, golf or bowling clubs and religious organizations and these moved out to the suburbs with them.

There were several positive aspects to living in one's own house in the suburbs. In a small new community a person had a say in the local administration. He become more socially involved because he owned a house and had children to educate there. The quality of education was generally superior to what it was in the city centre.

A lower density meant that there was more private outdoor space for the family to use. It also meant there were less petty annoyances from other people.

But there were also disadvantages to living in the suburbs. The breadwinner who still worked in the city centre found that getting to and from work was a frustrating and
time-consuming business. This was especially so where the suburbs were not served by rapid transit and where one had to drive.

The family had to plan well in advance whenever they wished to go anywhere, since everything was so spread out. The car became a sort of second home; personal contacts face-to-face were cut to a minimum.

By and large, the environment was dull and stereotyped— it lacked vitality and identity. One could easily drive past one's house by mistake—every house looked so much alike. In short, it was far from a visually or emotionally stimulating environment in which to live.

Teenagers found the suburbs especially dull. The facilities they wanted—coffee shops, movie house, swimming pool, dance hall or whatever—were not usually there. In fact the grown-ups very often frowned on these activities and thought of them as somewhat anti-social.

The problems of the city core and suburbs are very much related—people's mobility makes very large areas come within range and they use facilities not directly designed for them. A large shopping centre in one suburb for instance will attract people from other suburbs and even from in town, while the city core, if it is accessible, is used by people who live far from it. Regional planning thus becomes a necessity. Large cities have started
started thinking in terms of meaningful expansion into new satellite towns which have a more unified, self-contained aspect, which are connected to the city core by a very fast transit system and where living, shopping, employment and recreation are integrated into a meaningful system of movement and growth.

New towns, which were pioneered in Europe, have many inherent advantages. In this context, one has much more freedom and control over the design and implementation than in either an urban renewal setting or in piecemeal development. As I.M. Pei complains:

"The price tag, the density specification and required write down all design the project long before the designer has ever heard of it."

In a new town, one can set up appropriate administrative bodies which do not rely on antiquated zoning, density and other ordinary restrictions.

Land costs in the context of a new town are lower than they would be in an existing city context.

On the other hand, because new towns are started from scratch and built up over a very short time, they tend to lack the complexity and richness which towns which have history and tradition seem to have. The new towns which have been built show up this point.
SCOPE OF THE PROJECT

The project is to design a satellite town for Washington D.C. The town is Germantown in Maryland and it is estimated that the population will reach 85-100,000 people in the year 2000 AD.

In the design of this prototypical community, one will address oneself not only to the existing situation involved in this particular town, but will also try to evolve new architectural and urban design vocabulary and criteria which may seem appropriate and possible. It is not so much that the design should solve all the problems in Germantown, be economically feasible etc., but rather the environment proposed should be one which provides a stimulating setting in which people can live; allowing them freedom to live as they choose and meaningful choice as to where and how they live.

The need for choice is implied if the inhabitants of the town encompass a full range of social and economic classes. A self-contained town needs both service personnel and executive types, and it should be the policy of those administering the town to try and encourage the development of a heterogeneous population.
If the town's population is from all classes, there must be a full range of job opportunities and this will also be the responsibility of the administration.

I do not believe that one person can or should design a town of this size alone. Too many aspects of environmental design have to do with people's value orientations and the tendency is for a designer to design cities solely on the basis of his own values. Besides, if people are to be truly involved in the building of their environment, many agencies, institutions and people will have to be given an opportunity to contribute their talents. A single strong architectural statement will not evolve unless people are given an organized meaningful system.

This project will result then only in a proposal which though based to some degree on the designer's own initiative, could as a further step be tested in a number of ways: economically, administratively, socially, architecturally and in the market place.

As a second stage of the project, a study will be made of one type of housing in the town centre. Some suggestions will be made at a large scale how people actually experience the place - what it is like to live there.
BASIC GOALS AND CRITERIA

Our basic goals in environmental design centre around the quality of life which people are given the opportunity to live. Many things are implied by this, but in brief the success or failure of the town can be judged by the involvement of people in their environment and the feelings of love and pride and attachment to the place which they share.

We have to support the activity patterns which people already have and make it possible for new and better systems of social association to happen. The environment can be a teaching medium which stimulates a person's awareness of his relation to the world - his place in life.

Another basic goal has to do with the preservation of social stability and traditions. These traditions are based on concepts of freedom - but freedom with responsibility and justice. Responsibility can be nurtured only through education; justice only by people's respect for law and order. By making the institutions which symbolize these values: the seats of learning, public administration and justice dominant elements in the town, we can exploit their symbolic potentialities. This not only fosters people's adherence to the values involved but expresses to our descendents the values which we held in highest esteem.
There are several livability values which are strongly supported by people, but perhaps the most dominant is mobility (see Value Assentations among Urban Residents by Lamana).

(a) Mobility

To be able to go where you want to, when you want to, without undue delay or unnecessary changes in the mode of travel.

There are many factors involved in the design of a transportation network:
- cost
- time (speed)
- frequency
- comfort
- convenience.

In this regard the aim is to maximize comfort and convenience and minimize the cost. It would then seem logical that the highest cost transportation system, for instance the rapid transit service, should be located where most people can use it most directly. The rapid transit station then should logically be located near the areas of highest density in the town centre.

It would also suggest that most money should be spent on these movement facilities which are used on a day-to-day basis.
(b) Privacy

Privacy is a livibility value which people today generally ascribe to but which as time goes on is becoming increasingly difficult to provide. With higher densities, it is just not easy for people to be isolated completely from their neighbours.

We have then got to consider the important aspects of privacy and not just use the old threadbare definition. Privacy for a person very often means going out and away from his immediate family. If a secluded, quiet place existed close to where people lived or was even built into a family's home, this requirement could be met.

Privacy also means isolation from noise and other people's prying eyes. Indoors, this is not a serious matter - there are soundproof walls and drapes which do the job. Where the problem really is, is in outdoor living space. In a high density, it is very difficult to make terraces impervious to sound and view. The situation is not entirely hopeless however, as sociologists claim that people who live in dense cities gradually lose their desire for privacy. By the year 2000, people may like to live in fishbowls!
(c) **Relationship to Nature**

Man's relationship to nature has been a debated point for ages - some people hold that the manmade habitat is a separate and different thing from the natural environment; while others try to integrate the two. Both sides however seem to agree that people need the natural landscape in its natural state, or otherwise. The preservation of natural vegetation very soon will become the preservation of life itself. The world's supply of oxygen is being used up by humans and industry at a much faster rate than it is being replenished by plant life, and if this trend is not halfed, we could be in serious trouble. It is therefore our goal to preserve as much natural vegetation as possible, building only on already cleared land. As well, landscaping will be used as a dominant architectural element, providing a contrast to the manmade environment, as well as shade, comfort and delight.

Formal Criteria

(d) **Diversity**

There should be an adequate amount of diversity in the environment on several levels. This will allow for a better fit of man to environment and for personal growth.

- type of visible and useful activity
- type of life style
- variety of qualities in various parts of the environment;
calm vs. noisy, hot vs. cool, natural vs. manmade, wet vs. dry. These choices must be both functionally and psychologically accessible, so that people can easily make use of them.

(e) **Identity**
The various parts of a good environment should have strong identity or sense of place. They should be memorable and recognizable one from another.

Identity helps a person to structure the environment and develop and sense of home. There now arises the question of which parts of the environment should be most memorable. The answer seems to be those which are used most often by most people, or those which contain dominant social symbols.

(f) **Structure**
There is a need for structure in the environment so that one can easily find one’s way around. This does not necessarily imply that there has to be a strong geometric order. People use sequences very often as a means of structuring the environment, hence a coordinated succession of events or places is also a structured environment.

(g) **Manipulability**
It is important that a person has some control over his environment and especially those parts of it which are
private. He should be able to change his immediate surroundings if he so desires. In the second phase of this project, some attention will be given to the problem of deciding what parts of the housing environment should be fixed and permanent and which parts can be under the control of the user.
QUANTITATIVE REQUIREMENTS

These figures are intended only as a very basic guide. The population increase in the town depends on many factors whose effects cannot be predicted with any degree of certainty. It is possible for instance that the town may not grow at the rate predicted, in which case decisions will have to be made then as to the course of future development.

It is not so much that these figures should be correct, but rather that they give adequate background to the overall proposal.

1) Assumption for the expected growth of Germantown

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Dwellings</th>
<th>Jobs</th>
</tr>
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<tbody>
<tr>
<td>1970</td>
<td>15,000</td>
<td>4,300</td>
<td>5,000</td>
</tr>
<tr>
<td>1975</td>
<td>30,000</td>
<td>8,600</td>
<td>10,000</td>
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<tr>
<td>1980</td>
<td>45,000</td>
<td>12,900</td>
<td>15,000</td>
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<tr>
<td>1985</td>
<td>60,000</td>
<td>17,200</td>
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<td>1990</td>
<td>75,000</td>
<td>23,000</td>
<td>22,000</td>
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<td>1995</td>
<td>85,000</td>
<td>28,000</td>
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<tr>
<td>2000</td>
<td>100,000</td>
<td>32,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>
2) Schedule of accommodation for 100,000 people attainable in 2000.

Approximately 32,000 dwellings @ 1,200 sq ft average.

15 elementary schools @ 30,000 sq. ft
6 junior high schools @ 180,000 sq. ft
2 high schools @ 500,000 sq. ft
1 community college and technical institute @ 700,000 sq. ft
2 public libraries @ 50,000 sq. ft
1 museum-art gallery @ 60,000 sq. ft
1 major auditorium @ 60,000 sq. ft
3 theatres @ 35,000 sq. ft
6 cinemas @ 40,000 sq. ft
10 multipurpose halls @ 15,000 sq. ft
1,500 hotel rooms @ 300 sq. ft

Places of worship
restaurants, cafes, clubs and dance halls

local shopping centres 750,000 sq. ft
regional shopping spaces 2,500,000 sq. ft
city hall 50,000 sq. ft
civic administrative offices 150,000 sq. ft
medical centre 800,000 sq. ft
2 health centres 7,000 sq. ft
2 police stations 20,000 sq. ft
2 fire stations 20,000 sq. ft
Federal offices 1,000,000 sq. ft
rental office space 1,750,000 sq. ft
research laboratories 450,000 sq. ft
industry and warehouses 3,000,000 sq. ft
airport
transportation centre
recreational facilities for a full range of sports and games - many of these water orientated
outdoor parks and playgrounds
2 golf courses.
Analysis of Uses and Relationships

Classification of functions and facilities in terms of space requirements:

A. Characteristics
- low space, finely segmented floor to ceiling height about 10 ft.
- depth of space to external wall and light 30 ft.
- small live loads
- small structural spans
- natural light and view mandatory

Typical uses
Residences, hotel rooms, hospital and nursing rooms, certain types of professional offices.

B. Characteristics
- floor to ceiling 12 - 15 ft.
- depth 30 - 40 ft. from external wall
- natural light and view desirable but not mandatory
- high degree of environmental control
- medium span structure - 30 ft.
- high degree of flexibility in planning
- higher live loads

Typical uses
schools, colleges, offices, research laboratories, general commercial space, supermarkets.

C. Characteristics
- high ceiling heights - 30 ft or more
- some natural light
- wide spans - 60 ft. or more
- heavy loads
- high degree of environmental control
- high occupancy

Typical uses
museums, art galleries, places of worship, gymnasiums, multi-purpose halls.

D. Characteristics
- high space - 35 ft. or more
- no exterior light or view
- wide spans
- heavy live loads
- high degree of environmental control

Typical uses
Auditoria, theatres, cinemas.

E. Characteristics
- high ceiling, 20 ft. or more
- natural light and air unnecessary
- wide spans - 60 ft.
- heavy live loads
- minimal environmental control

Typical uses
industry, warehouses, mechanical plants, bus terminals, parking (but with 10 ft. ceiling).
Relationship and classification of functions in terms of symbolic importance:

**LEADING TASKS**
City hall, court house, community college, library, religious buildings.

**MEETING PLACES - PUBLIC FACILITIES OF IMPORTANCE**
Transportation centre, stadium, auditorium, art gallery, total energy plant, public parks, plazas and promenades.

**CITY CENTRE NODES**

<table>
<thead>
<tr>
<th>City hall</th>
<th>- professional offices</th>
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<tbody>
<tr>
<td>Court house</td>
<td>- such as for lawyers</td>
</tr>
<tr>
<td>Public offices</td>
<td>- some restaurants</td>
</tr>
<tr>
<td>Post office</td>
<td>- some shopping</td>
</tr>
<tr>
<td>Police station</td>
<td>- parking</td>
</tr>
<tr>
<td>Jail</td>
<td></td>
</tr>
<tr>
<td>Entertainment</td>
<td>- night clubs</td>
</tr>
<tr>
<td>Theatres</td>
<td>- speciality shops</td>
</tr>
<tr>
<td>Auditorium</td>
<td>- restaurants</td>
</tr>
<tr>
<td>Library</td>
<td>- hotel</td>
</tr>
<tr>
<td></td>
<td>- parking</td>
</tr>
</tbody>
</table>
Transportation centre
- commercial
- offices
- parking

Art gallery
- shops
Museum
- restaurants
Art school
- offices
- parking
This section will deal with the prototypical housing for the town centre which has been proposed. A section along the lake front was developed and includes:

- 140 houses of varying size
- 1 junior school of 6 classrooms
- 7 small shops
- parking for cars and docking for boats
- 1 church
- 1 "on the pier" cafe and bar

The density of this development is approximately 120 persons per acre.

This type of high density housing differs from conventional apartment housing in a number of significant ways:

The ratio of enclosed area to exterior terrace or garden space is significantly higher than in conventional parts. This is in an attempt to adapt high density living to families with small children, as well as for overall livability.

The exterior spaces take one of two forms. First there are terraces related to the living room and with a view. Secondly, there are outdoor areas connected to the entry pathways and overlooked by the kitchen. This area is suitable for children, as they can be supervised from inside.
the house and given the opportunity to meet and play with other children who may be passing by.

This study has led to a 22' x 22' x 2 storey cube as the typical module. Building such a supporting frame would be the equivalent of opening up new land in a subdivision. People could then buy a lot in the frame and go about getting a house constructed on it.

Needless to say, these lots are serviced by all the necessary conveniences – telephone, electricity, gas, sewers, hot and chilled water, garbage disposal etc.

The life expectancy of the frame is anything from 50 to 80 years. Being concrete, it could be useful structurally for much longer, assuming the space characteristics were still appropriate for some use.

The life expectancy of the infill enclosing units would be 15 to 25 years with certain optional components, such as storage units, bathrooms, kitchens etc. with a life expectancy of 10 to 15 years.

The infill enclosures could take several forms:

(a) A square tube system of varying size, constructed of a light steel frame, foam infill and bonded with fibreglass and resin. Along with a series of optional interior components, this system offers considerable flexibility.
The units are also light and of mass production, therefore relatively cheap ($6 per square foot finished).

It is expected that the construction procedure would be almost completely industrialized with finished boxes being installed in the frame by crane or helicopter.

(b) A self-contained room container is the basic unit. There could be a major unit containing fixed functions such as living, kitchen, bathroom and storage areas. Minor units with bedrooms, study and the like could be added or taken away as the need arose.

(c) The structure is infilled with glazed and solid panels to form the basic enclosure. A variety of optimal components allows a wide range of subdivision possibilities.

(d) It is also possible of course to have a custom-designed and built house on the lot. In this case, the dimensions of the frame, the orientation of the lot, allowable loads, etc., would form site requirements and the architect would have to solve these in the same way as he would for a lot on the ground.
germantown

master plan 100,000 people

SCALE 200'
town centre

section b-b

SCALE 1: 90
town centre
housing study