



THE CITY AS A RESPONSE TO NATURE

by

Shamil A. F. Hummadi

The Northern Polytechnic, London

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at the

Massachusetts Institute of Technology

June 19, 1967

Signature of Author

.....  
Department of Architecture

Certified by

Thesis Supervisor

Accepted by

.....  
Dean of the School of  
Architecture and Planning

June 19, 1967

Dean Lawrence B. Anderson  
School of Architecture and Planning  
Massachusetts Institute of Technology  
77 Massachusetts Avenue  
Cambridge 39, Massachusetts.

Dear Dean Anderson:

In partial fulfillment of the requirements for the degree of Master of Architecture, I hereby submit this project Entitled " The City as a Response to Nature ".

Sincerely,

Shamil A.F. Hummadi /

INTRODUCTION

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The city is the heart of urban culture and the centre of human thought discovery and achievement. Only within the city the individual can find directions to follow and circumstances to allow him to develop.

The successful city can offer its inhabitants both privacy and sociability. Its open spaces can give the feeling of restfulness and relaxation, and its busy streets illustrate activity and dynamism- the whole is the experience of urban life.

The successful city can be a " variety theatre ". On its stage one can find excitement, inspiration and contrast. The eternal cycle of urbanism and urban life will go on and in the process the history of a community is moulded and recorded- national pride.

In order that our new city is to provide all of this we need the courage to start afresh and apply what we have gathered from recent urban experiences and modern technology so that in dealing with urban design we must understand the city as a whole and never again as fragmented parts, and in order to understand the whole, we must understand all the component parts that make that whole and foresee what forms they are seeking to attain in our ever-changing multi-dimensional urban life.

The unfortunate affair is that the planner is dealing

with two incompatibles: the vehicle and, ironically, its inventor. This man-made tool which was intended for his own convenience has dictated upon him a new way of life, a new pattern of circulation, and by implication, a new scale, for which his ancestors were entirely unaccustomed. In our present civilised urban life it is difficult to imagine how man can do without it partially if not altogether, but the ways as to how man and his vehicle can be best accommodated are not yet fully explored.

The city is a centre of activity and for it to be active, it must be alive and, therefore, organic. Its inhabitants, who are the makers of the city's active life, must be stimulated.

The zig-zag street pattern of Medieval Europe indicated a lack of anticipation and bewilderment and, therefore, disorder. On the other hand, the checker-board pattern or square blocks, which is either very old or very recent, indicated a forced monotony which, I believe, is the dullest experience in the urban layout. The living city must offer excitement, mystery, sense of surprise, difference and choice, not for the sheer desire to be different, but rather to respond to the nature of geography and the culture of society. Cities can only be successful when they are artistic responses to nature and not merely reproductions of modern Prienes.

WHY A NEW CITY?

THE PROJECT

GOALS AND OBJECTIVES

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Cities cannot continue to grow and expand. Continuous expansion leads, inevitably, to rapture. But there is a rapid change in the circumstances that surround man and his world. These circumstances present a challenge- growing population and rapidly developing technology. The challenge must be accepted and new means for its accommodation must be worked out as there is no other alternative. This is the way nature works- continuous evolution.

Man, with this great scope in growing technology at his disposal can reshape his environment. The ultimate effects are still difficult to imagine and the means, admittedly, are still in the infant stage. They are themselves continuously changing. But man, now, has new aspiration to education and leisure. These demand accommodation in terms of buildings to shelter them. Some of these require architectural invention, others planning skill and in order to achieve all of this we must look back to our technology. Growing technology and material aspirations can only be sustained by using leisure creatively. " Out of play comes the creative urge; out of social intercourse comes social concern".

#### The Project:

The project is to design a " Satellite Town for Washington, D.C." The town is Germantown in Maryland for

the ultimate population of 100,000 by the year 2,000.

Goals and Objectives:

The primary goals and objectives in the proposal for the new city are:

Emphasis on the Pedestrian- yet, the city should be easily accessible by the vehicle.

Inward and self-conscious- yet fully aware of the outside.

Exploitation of the natural setting and geography to a maximum possible advantage to enhance the urban complex.

Compactness- intimate contact between the inhabitants is intentional and purposeful; dependence of the individuals on each other to strive for social cooperation and total integration.

Uniqueness and Identification- to be achieved by both logic and passion, not by sheer eccentricity.

Adaptability- necessary so that the city system can absorb sudden stress, avoid breakdown or recover rapidly.

Scale- the first and last concern in the development is to plan the urban spaces to scale. The scale here is related to the ultimate number of people, uses and facilities to be provided and above all the meaning of "Satellite Town!"

DISCUSSION, CONCEPT AND PROPOSAL

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### Discussion, Concept and Proposal:

The city is a huge melting pot, in fact a great arena in which the great drama of the human race takes place. Every one of its inhabitants takes part and assumes the double position of actor/ witness. Man acts and looks at what he is doing, not casually or aimlessly, but intentionally and purposefully.

There are three principal components:

Man himself,

His vehicle, the car, and

The uses: residential, shopping, transportation, education, industry, storage, leisure and recreation, cultural and sports...etc.

It is only by the successful location of these various uses that a city will be judged as successful.

It is a fact that these principal components and their component parts create a great deal of conflict when they are considered as a whole.

The formidable conflict is that between the movements of man when he strolls and that when he rides; that is man and his vehicle- a very useful tool, but also a dangerous one.

What are we to do? When we look at what we have,

what do we see? An urban mess. A nightmare of spaghetti that destroys beautiful urban spaces within our towns and our cities with supporting structures that are unimaginative and unsympathetic to what they are surrounded by.

Realising this, one is tempted to think of the, now routine, horizontal and vertical segregation.

But horizontal segregation has a very limited practicability. On the other hand, the vertical segregation has introduced, thus far, another dull aspect into our urban experience- perhaps the dullest: driving in tunnels. One perhaps can argue that there may be a time and a place where one may tolerate such situations. But if we are to look for a better urban environment, may be we should not tolerate such conditions. May be there is another answer. Every segment of our urban life and urban environment is changing and evolving continuously and dramatically. There is no reason that we should accept the present circumstances as they are, and in order that we change the environment in which we live for better, not for worse, we must not always look on what we have and reproduce the images, but rather to look on what we can do; there is plenty that can be done.

In some proposals, some planners allowed the imagination to go rather far- instead of going into tunnels,

they pushed their highways up into the air forming laces and networks of road system. The streets become like a spider-web, but not so transparent, that hangs over the open space which is intended to be recreational. They obstruct the view in the horizontal plane as do the skyscrapers of New York in the vertical plane. However, such road system may keep the traffic moving, but what about the resulting environment which is our primary concern?

As has been indicated before, the problem is formidable. The means as to how to accommodate man and his vehicle need further exploration. My attempt in the design was to take the following into consideration:

- The car, as a use, is important; in my proposal I neither encourage nor discourage its use; I try to accommodate it and effectively, taking into consideration the future possibilities of its evolution.
  
- The car has become an important part of our urban experience, not only when driving it but also seeing it from the pedestrian point of view.

It has been decided to devise a street system that carries the traffic effectively, keeping the vertical segregation as a useful device.

The site that has been chosen is hilly and surrounded by four streets; one of them is a major highway. Two major streets have been introduced. These run from north to south and from east to west and connect the new city with the existing four streets. These two major streets follow the topography, and an attempt has been made to keep their elevation at one level, but sometimes they dip and rise wherever necessary but this has been generally used for accommodating road intersections and interchanges or access to parking structures and services at various levels. The two major streets actually act as Urban Corridors for the new city. They carry the traffic to and from Germantown. There is another street system that weaves itself in between these two Urban Corridors for service and takes the vehicle to the parking spaces.

Topographic conditions have influenced the paths of the road system. Also, the depression in the centre of the chosen area allowed for an artificial lake which is intended for the following primary reasons:

1. To provide a large reservoir.
2. To act as a recreational lake.
3. As a focus around which the design of the city is oriented.

Also, having chosen a splendid site of hills and

valleys, the proposal is to retain the character of the land form even after building over it. The proposal is to emphasise the hills by building stepped terraces up their flanks which, frequently, open out to the hill side to provide gardens or access down to the lake. These terraces change gradually and sometimes abruptly into courtyard plans varying in size and treatment with dwellings on all sides that follow a spiral form ( rectangular on plan ) to culminate at the ridges or hill tops in high-rise structures, and consequently accenting the breadth and depth of the valleys.

The concept of the plan is simple. A series of ascending levels of terraces that follow the land formation beneath which parking structures are located. These levels have their edges built over by housing terraces that descend to the lake side and connect the lower terraces with those above over the streets that run round the principal level. The principal level is termed " Environmental Platform " as most of the activities in the new city are located on it. These include the administration and the regional shopping centre.

There are three principal clusters connected with each other by housing structures. Two of the clusters are like a butterfly on plan with the regional shopping centre in between.

The two clusters ( mainly dwellings ) are placed on hill sides and hill tops; the regional shopping centre spans over a valley between the two hills with the space underneath is used for service, storage, industry ( mainly light, and in the form of workshop units ) and parking for over 5000 cars. The railway and the rapid transit pass through this centre at two levels.

The planning of the shopping centre ( 1,000,000 sq.ft. of sales area ) follow, like the housing, a courtyard plan. These vary in size and treatment too; they are open to the sky and become as shopping precincts connected with each with each other by intimate arcades. Cultural and recreational facilities are also accommodated here. The whole acts as a forum for activity, business and social contact.

But this is primarily a residential community, and the emphasis, therefore, has been given to the housing. This has been achieved by:

The courtyard planning, the private terraces and gardens, the orientation towards the lake, the intimate spaces between the units, the ever changing heights and levels, the varying sizes of the living units. The different volumes of units sometimes project out and intermingle with each other giving a vivid interplay: light, shade and shadow and ever-

changing experience. Some courtyards are paved, others are green or with fountain and sculpture. Some are depressed while others rise. Others incorporate variations of both. The entire theme is full of variety, diversity and change. This is the environment of man- the place where he lives or retreat and meditate.

But man is also very proud of himself. He would like to see his achievement appreciated and his presence felt, so the emphasis goes to satisfy that- towering structures on hill tops that give shape to the skyline.

#### Structural System for the Housing:

Adaptability is of utmost importance and in order to avoid the problem of " urban slums " a structural system has been developed. A pre-cast unit that is flexible in plan with T-three dimensional form. This unit can be of various sizes to satisfy different types of dwellings. The intention is to use industrialised building methods, using modern technology as a tool. The structural principle incorporated has an economic advantage by freeing large areas on plan from structural obstructions. This has been achieved by utilising the side walls as beams and the front and back of the T-box as load bearing. The structural details are shown in the photographs. These boxes are manufactured on the site and can be arranged in infinite

variations without any additional cost. No wet concrete is required. They can be stacked against each other in a very short time. Some units can be entirely removed from the structure if replacement is necessary.

Future Expansion and Growth:

It has been noted that there are risks associated with expansion and growth of cities.

One of the reasons for building a new city is to reduce the stresses of this phenomena on existing, overcrowded and disorderly situations.

The proposal is for 100,000 people by the year 2,000. If more people are to be accommodated, then it is wiser to propose a similar new city. These new cities can always be connected by transportation routes.

Note: The photographs show the proposal for a population of 60,000.

DOWNTOWN GERMANTOWN

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Downtown Germantown:

The Downtown area has been chosen for more detailed study. This is located between the two housing clusters as shown in the photograph of the plan of the proposal for 60,000 people.

Schedule of Accommodation for the Downtown Area:

Type of Accommodation	Area in Sq.Ft.
Regional shopping centre .....	1,000,000
Offices: general including banks and post office .....	750,000
City Hall, administrative offices, and court- house .....	40,000
Health centre .....	10,000
Police station .....	4,000
Multi-purpose hall for maximum of 2000 with exhibition space .....	40,000
Swimming pool and sun-bathing terrace .....	22,000
Museum and art gallery .....	22,000
Regional library .....	35,000
Technical College .....	210,000
Industry, warehousing, and storage for shops..	1,000,000
Hotel rooms (250 or 50% of the required rooms is provided in downtown, the rest is provided elsewhere in the city) and residential .....	150,000

Schedule of Accommodation for the Downtown Area- Contd.

Type of Accommodation	Area in Sq.Ft.
Restaurants, cafes etc.....	space included with office & shopping areas

Parking for the whole downtown area ..... 6,500 spaces

Also provided wherever necessary: open spaces, courtyards, terraces with rest spaces, gardens etc.

Places of worship are provided within the housing clusters.

### Accessibility, Service and Parking:

Regional shopping centres require easy loading-unloading facilities. The more easy these facilities are made, the more effective is the handling of goods and merchandise- economy in time and labour.

The entire downtown area spans over a valley (see sections and plans) where it joins the housing clusters on two opposite hill tops; the valley in between provides natural access to the loading-unloading docks provided on both sides of the central street 20' 0" above the ground level. The plan at this level shows the arrangements of the ramping system used, accessibility to parking spaces, the loading-unloading buffer areas and the service cores. The entire level is intended for warehousing and industry. Goods etc. can be taken to shops or other required locations by means of elevators provided in the service cores. Service to theatres, swimming pool, the technical college, and the library is also provided at this level.

Essentially, the regional shopping centre is compact and easily accessible by the pedestrian from the sides of the housing clusters where they meet it; it is also accessible by the private car. The parking area serving the entire downtown provides parking spaces for more than 6500 cars at three levels (see plans). All the three levels can be reached from three points: from the left, middle, and

right. This three point access gives easy orientation towards the part of the downtown that is required to be reached so that parking may be as near as possible to that area. The compactness of the downtown ( about 1200' x 700' ) means that any point can be reached within few minutes walk.

Rapid Transit and Parking:

The two railroads namely: the Rapid Transit that connects Washington, Germantown and continues to Clarksburg, and the Baltimore and Ohio railroad, pass through the downtown area at two levels on the side facing the lake. Baltimore and Ohio railroad is at the same level of the loading-unloading, warehousing, and industry, thus provides direct access to these spaces. Immediately above that is the three levels of parking (see cross section) with the first level sandwiched between the Rapid transit and Baltimore and Ohio line with three points of vertical circulation on each side of the railroad that lead to all parking levels and the main shopping level. Within the first parking level, and joining every two opposite points of the vertical circulation are three concourse spaces to allow change-over from one side of the railroad to the other or from the Rapid Transit to Baltimore and Ohio line and vice-versa.

The side that faces the lake opens into landscaped terraces.

### The Regional Shopping Centre Level:

The compact Regional Shopping Centre is at various levels that change from two to four levels. As the height of each level is about 24', this would allow ducts and other services to be accommodated within the ceiling space, or storage and stocks can be located for each shop at a higher level within the shop itself leaving the entire floor area for sales and display. Also, this will allow split-level selling space. The arrangements, however, are flexible and they are the concern of those who will use the space.

The main shopping level is the first level above the third parking level. The arrangement of the plan and layout are dictated by the pattern of circulation, easy accessibility and the nature of the site, that is the valley and the hill sides on which it sits.

This principal level has been divided into the following according to the use to be sheltered:

A) Shopping: Generally this follows a courtyard plan. The courtyards themselves are shopping precincts and are connected by more intimate arcades of smaller shops.

The main feature of the shopping area is the Central Shopping Plaza that run immediately above the valley and across the width of the shopping level; this also connects the open terrace immediately above the Rapid Transit that

overlooks the lake and the third housing cluster.

The Plaza is also intended as an open space in a very busy location. Here, small shops and coffee houses are located; open air art display and sales can be exhibited there too.

Some of the sides facing the shopping plaza are filled with earth and planted. This happens at the first and second levels (see sections). At various points the shop sides are exposed to the plaza with display windows or door fronts etc.

**B) Offices:** Apart from offices used for the management of the shops, offices, including those for administration, are located in fluted towers of various heights. They are inter connected structures that accessible from the shopping levels terraces; these shopping levels and terraces are accessible from various points all over the downtown area.

Above every office building, a residential section is added. This is terraced towards the shopping plaza and thereby define the valley and the plaza itself. ( see photographs ). The terraced residential sections are in accordance with the general theme that has been pursued in the design of the whole housing project all over the new

city. Some of these residential structures are intended as hotel rooms in the downtown area. The rest are for those who wish to live in downtown or those whose business would require them to do so.

The fluting of the office structures is intended to give a sense of inclosure and a feeling of space. It is so arranged as to emphasise the significance and the location of the central plaza.

The offices on the west side are arranged so that the space between them provides a vista that emphasise the direction to a new and different centre of activities- the cultural and entertainment section of the downtown.

C) Cultural and Entertainment: This include a multi-purpose hall with exhibition space, a swimming pool, an art gallery and museum, a regional library and a technical institute. This is connected to a research centre overlooking the lake (not shown in the large model). The multi-purpose hall is with a mobile floor that can be raised or lowered, made flat or raked, by means of hydraulic jacks. A small cinema is located within the shopping structure.

The overall character of the downtown area is different from that of the residential areas. The first is a centre of activity and business; the latter is a restful section.

The two sections have different functions, and they are designed to give that feeling and expression. The downtown section can be easily identified from the residential section.

The high-rise structures of the downtown area are separated from the towering housing structures by low level buildings. This makes the residential section and the business section more easily readable.

THE VISUAL EXPERIENCE AND SENSATION

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### The Visual Experience and Sensation:

Before ending this report, I should point out one aspect that I did not divorce from the design vocabulary in the process of working out the design. In the design of cities, there are several important factors; some of them are:

1. Economy.
2. Social Structure.
3. Communication and Transportation.
4. Topography and the Natural Setting.
5. Structure.
6. The Uses and Their Locations.
7. Politics and Implementations.
8. The Visual Experience and Sensation.

All these factors work together with many others. It is important that planners must be aware of them.

But in the ultimate sense we are trying to shape and create a new environment in which people live and work, and in order that their production and output is great, they need a stimulating environment when at work; they need a restful environment when they want to relax at the end of an active day.

Here, in the end, the architecture of the city, its

landscape, its form, its views and its vistas come into play. These are the elements that are associated with the visual experience.

The human eye is always impressed by the sky, stars, trees, water, sand and colour. The eye is more impressed by the three-dimensional form in the presence of light, whether natural or artificial. It is this experience that makes our environment beautiful.

Beauty is relative and it varies according to taste and background. It is even more controversial when we consider architecture in its present stage of continuous change and transformation. New materials and new building techniques are important factors.

It is my belief and conviction that in order for an artist to be creative, he must not come down with his art to the level of the average man in the street; he must raise the level of the average man to the level of his art. Man has the unique quality of adapting himself to the changing circumstances.

The proposal for the new Germantown sits in the middle of an area bounded by green belt. As one approaches the city the hill tops that used to define the skyline of the central area, now is more dominant by the stepping towering

structures that accommodate the dwellings- all with hanging gardens and terraces. The topographical points of emphasis (hill tops) have been transformed into great sculptures (dwelling structures).

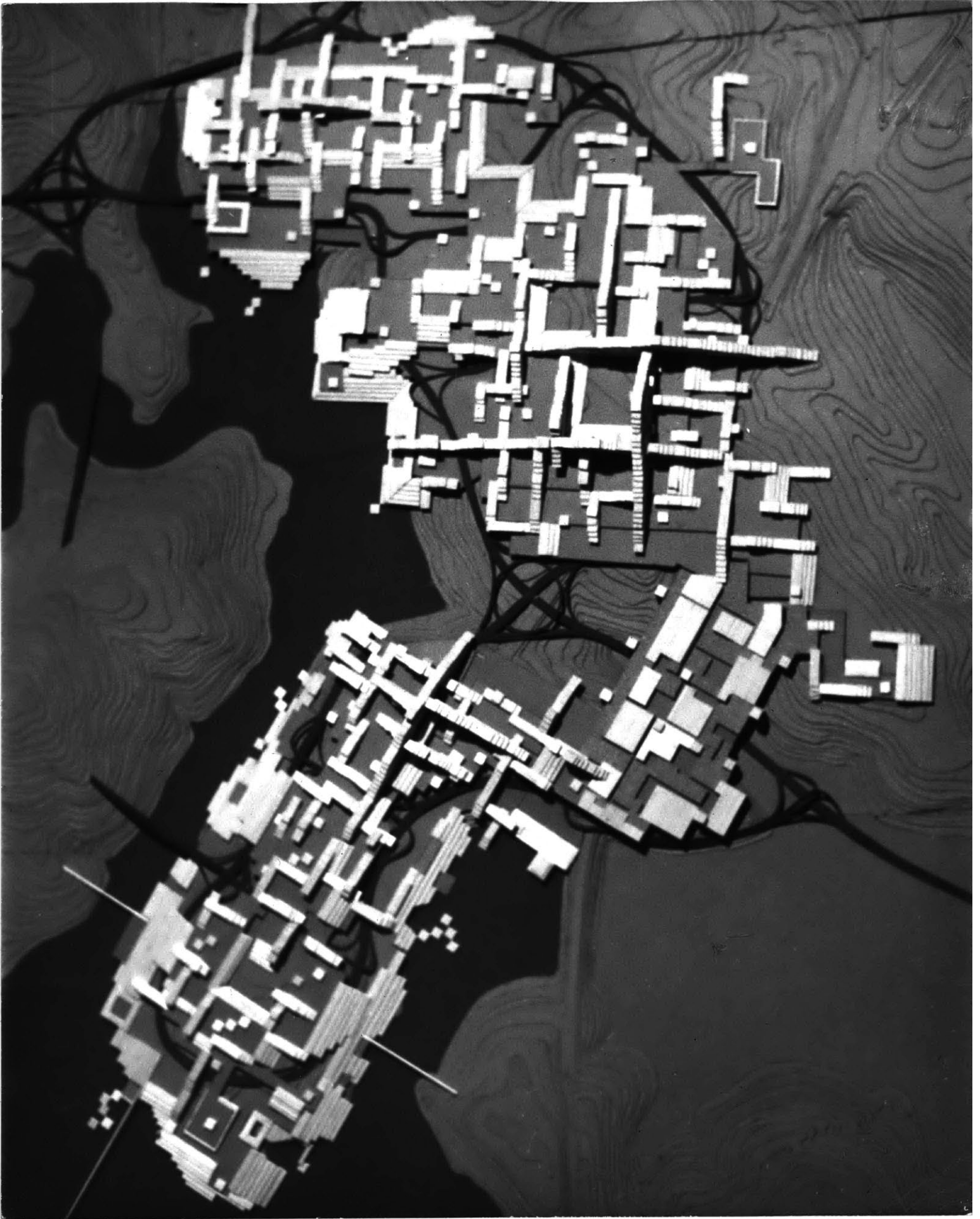
As one comes nearer, the entry from the south runs into a deep valley with its rising sides flanked by forests of small trees. As one comes closer, he confronts the structure of the regional shopping centre that spans over the valley. With the opening through it and the arms that branch from both sides appear to welcome every arrival. As one enters under the structure, there is a sudden change- from full light to complete shade- architecture is sensed in terms of space. At the end of the other side, light penetrates: the way out. As one emerges to the open space, there is another sudden change- now, from complete shade to full light. The street now begins to climb up until it reaches the greatest interchange in the new city.

Now, the whole lake, with its beautiful and colourful sails, the whole structure of the third section on the other side are in front of the eye. The great visual drama in the urban sense reaches its climax. Streets now follow one level, facing the lake on one side and parking structure on the other. The principal platform, sometimes projects over; sometimes built over with terraces which step down to the lake side.

The car is moving; the driver is enjoying the journey and his passengers are thrilled continuously. The pedestrian can walk the city from one end to the other far away from the danger of the vehicle, yet at points of maximum interest he sees the car moving- some cars turn round over intersections , while others pass underneath him.

PROPOSAL FOR GERMANTOWN: the photographs show a proposal  
for 60,000 people.

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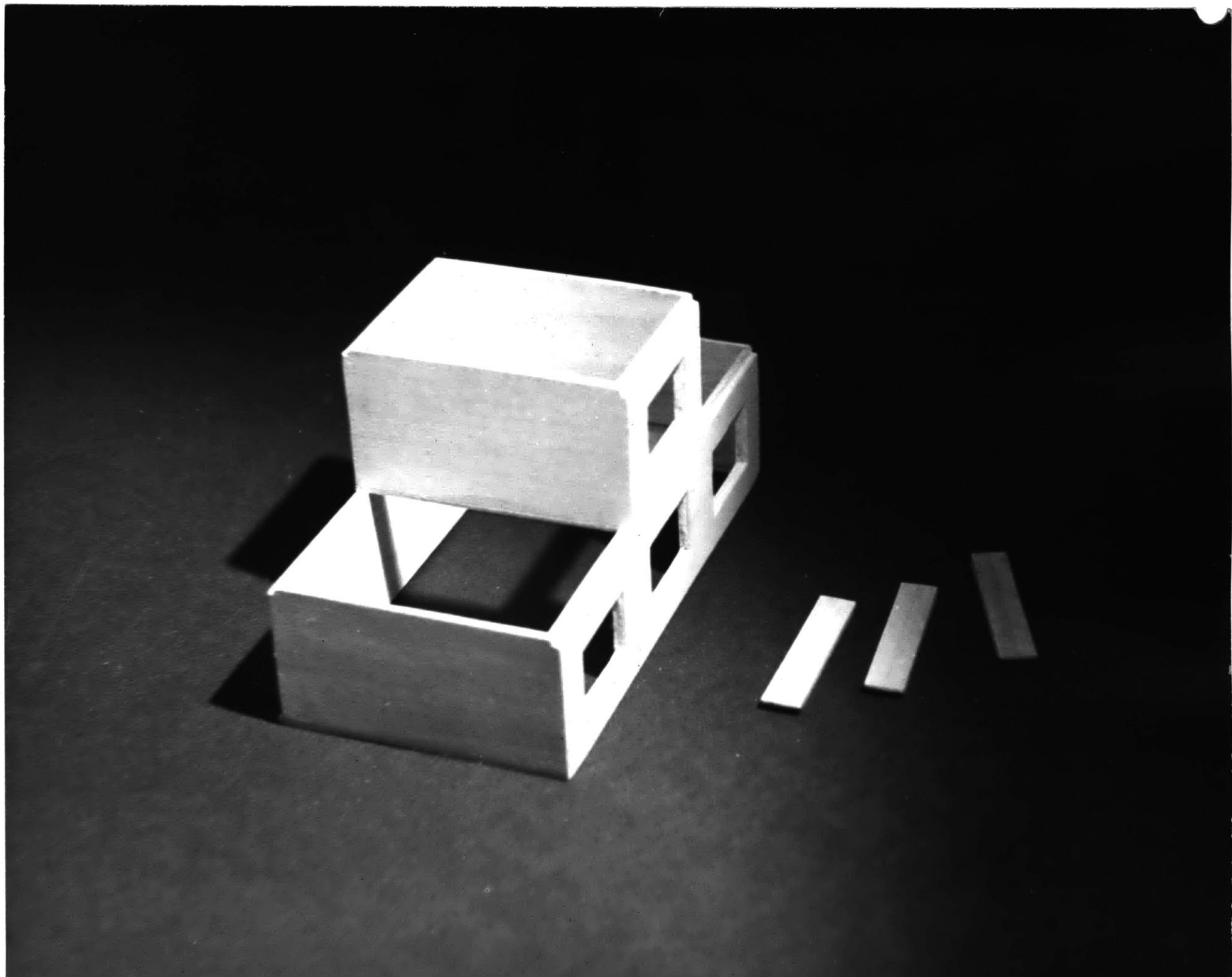


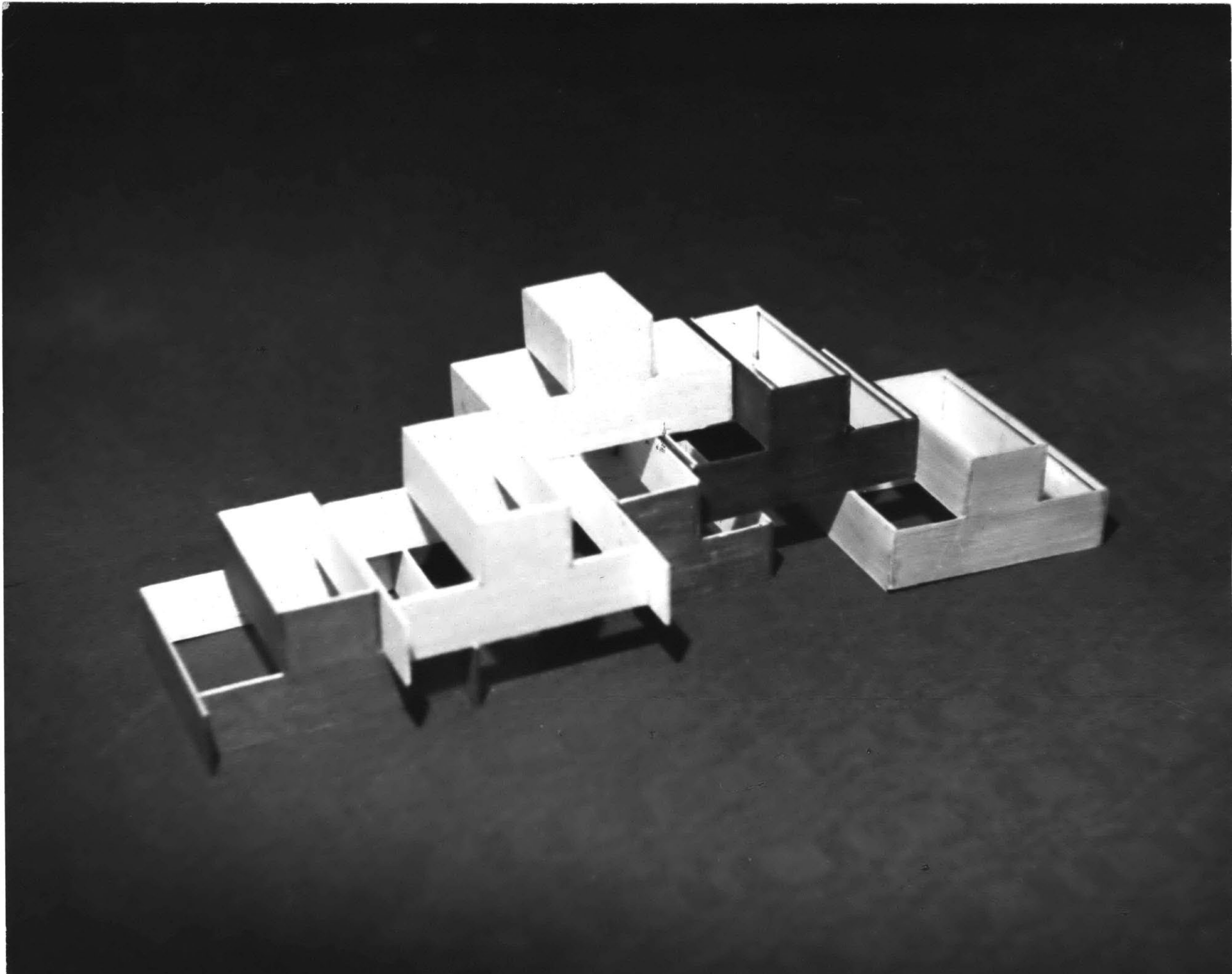


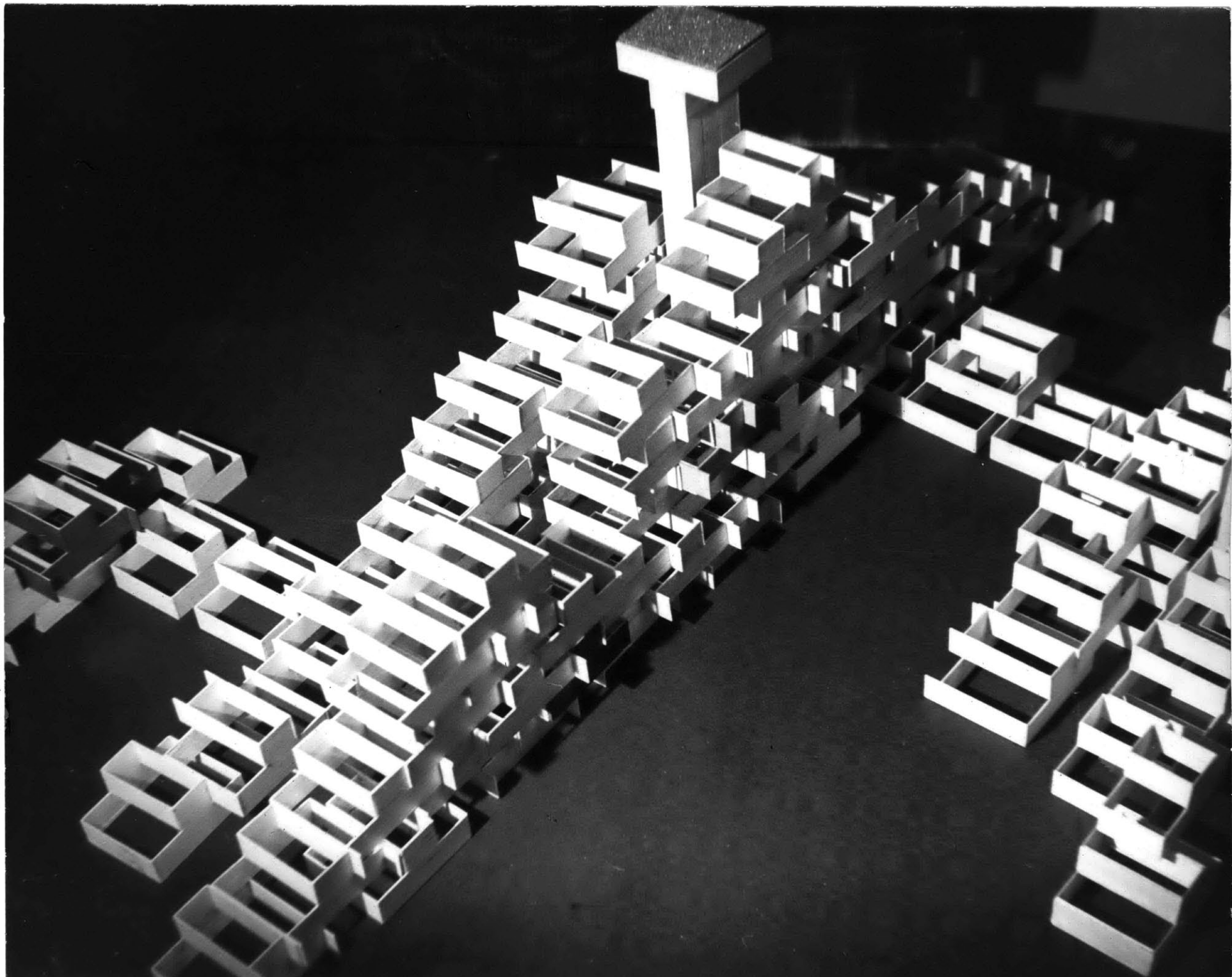


PROPOSAL FOR A STRUCTURAL SYSTEM FOR HOUSING

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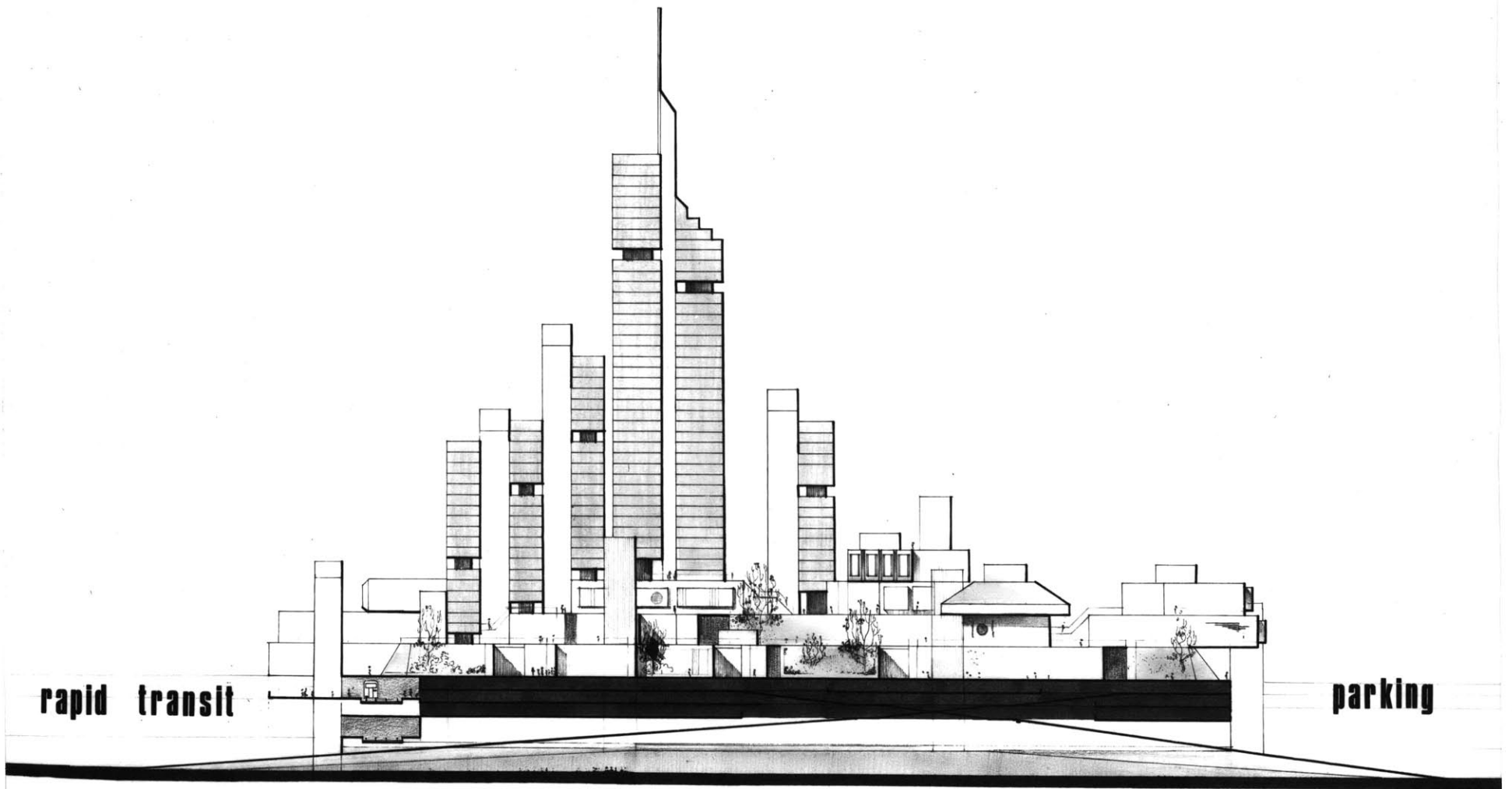




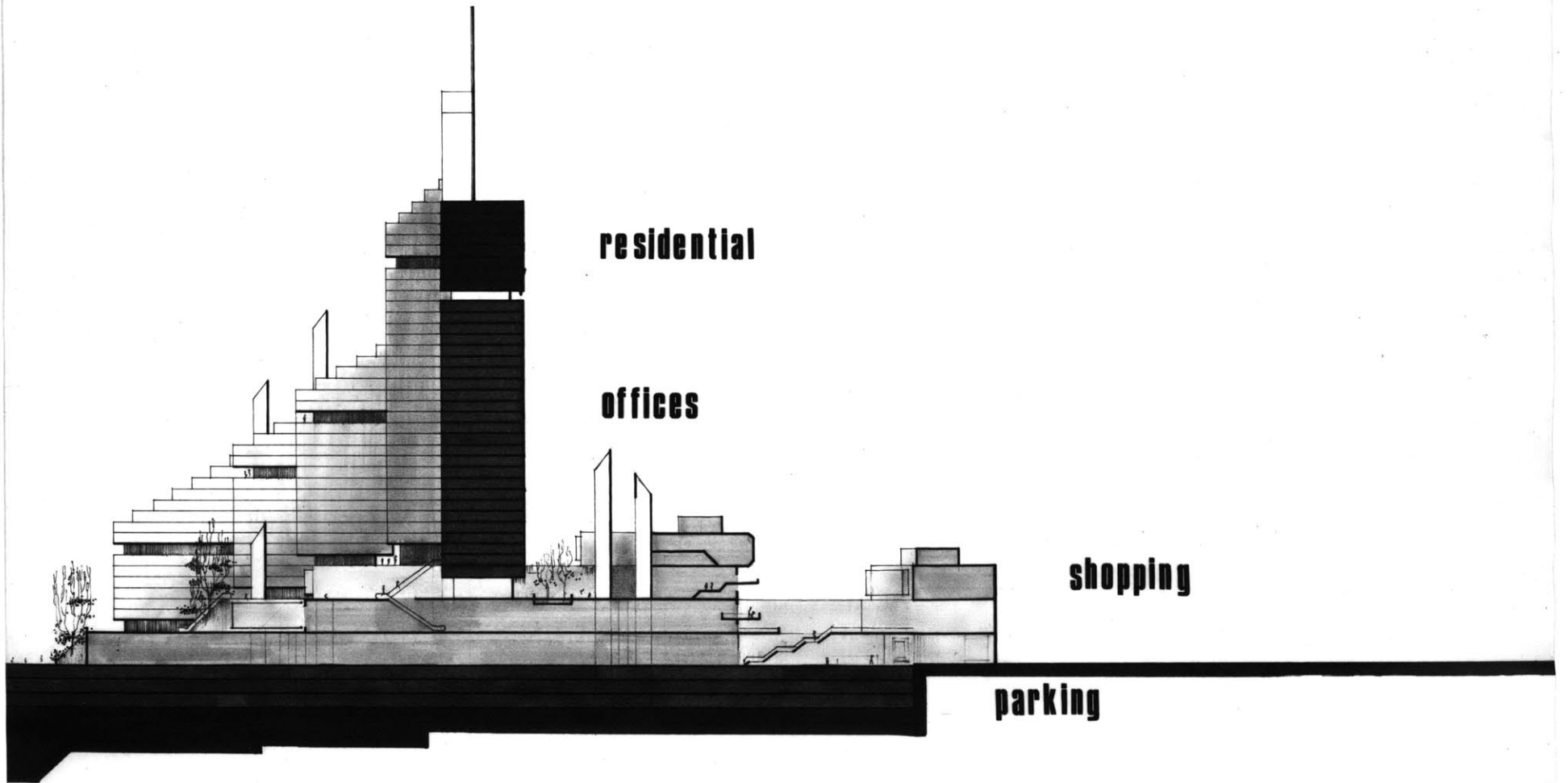


DOWNTOWN GERMANTOWN

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**CROSS SECTION**



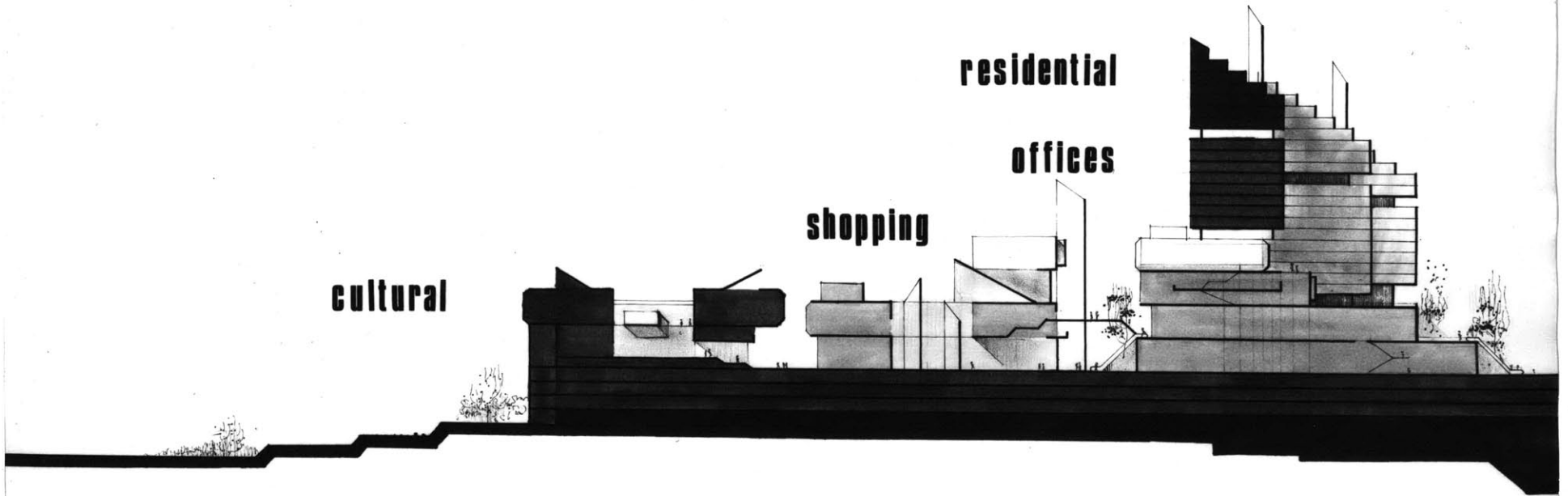
# LONGITUDINAL SECTION

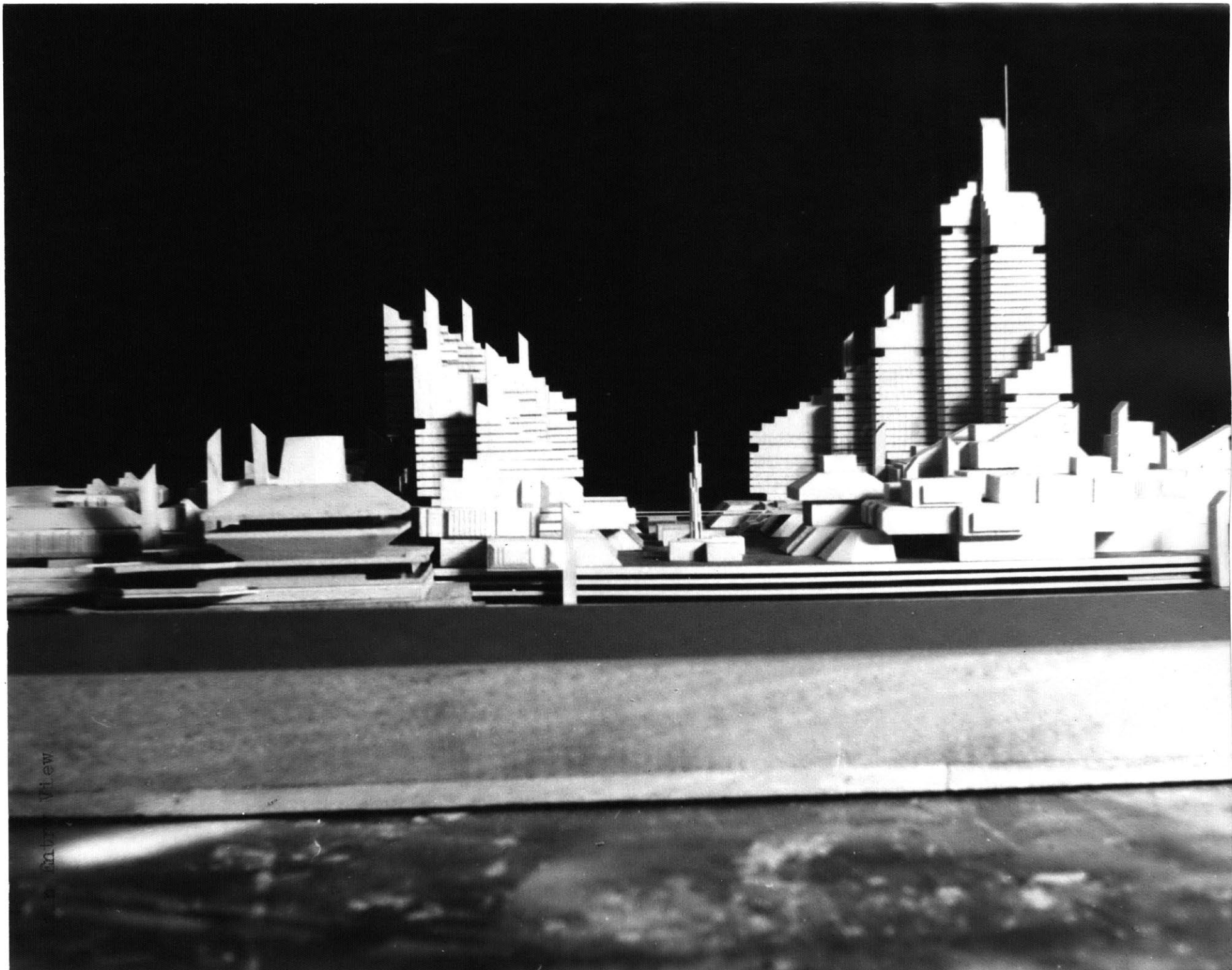
**cultural**

**shopping**

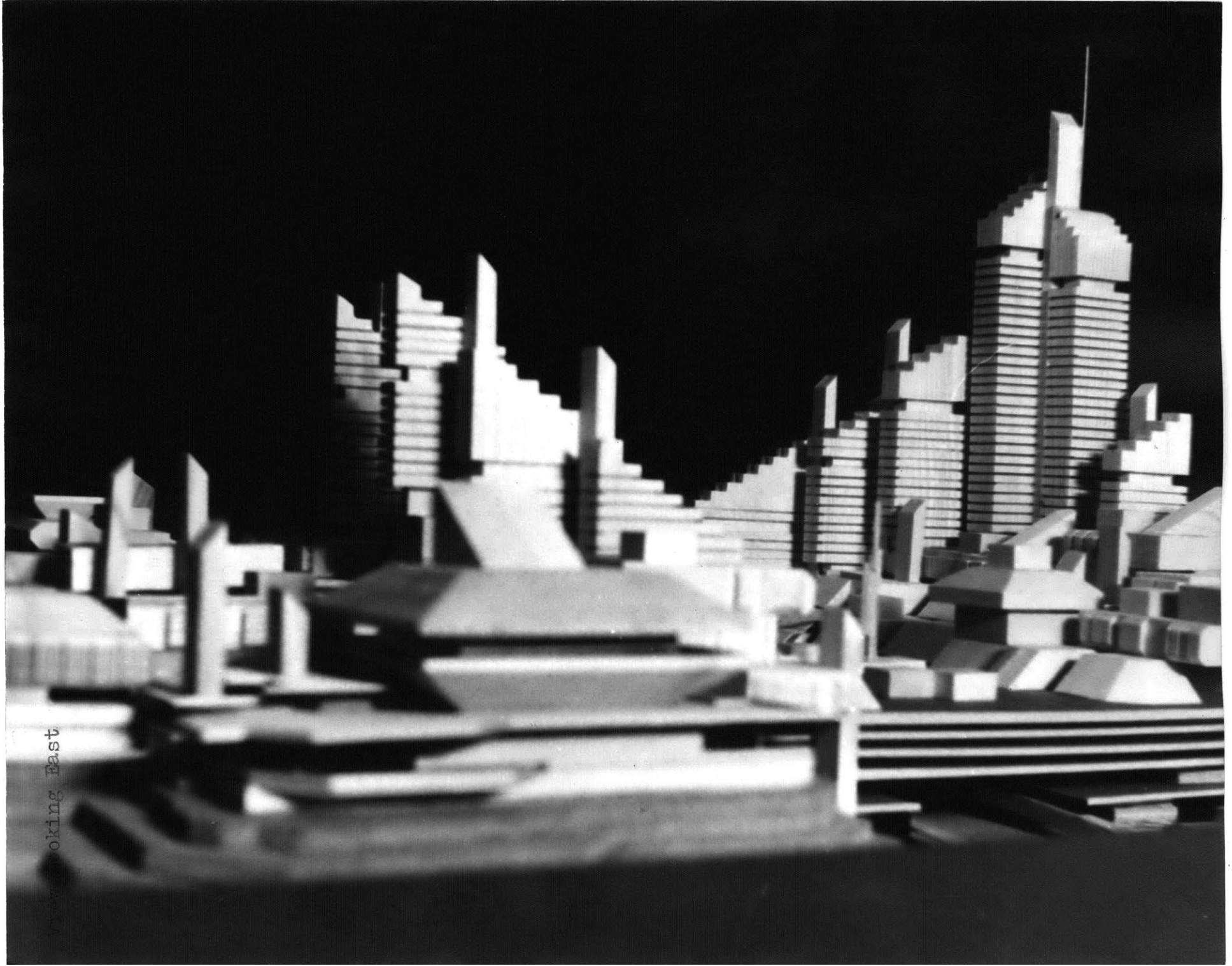
**residential  
offices**

**DOWNTOWN GERMANTOWN :**

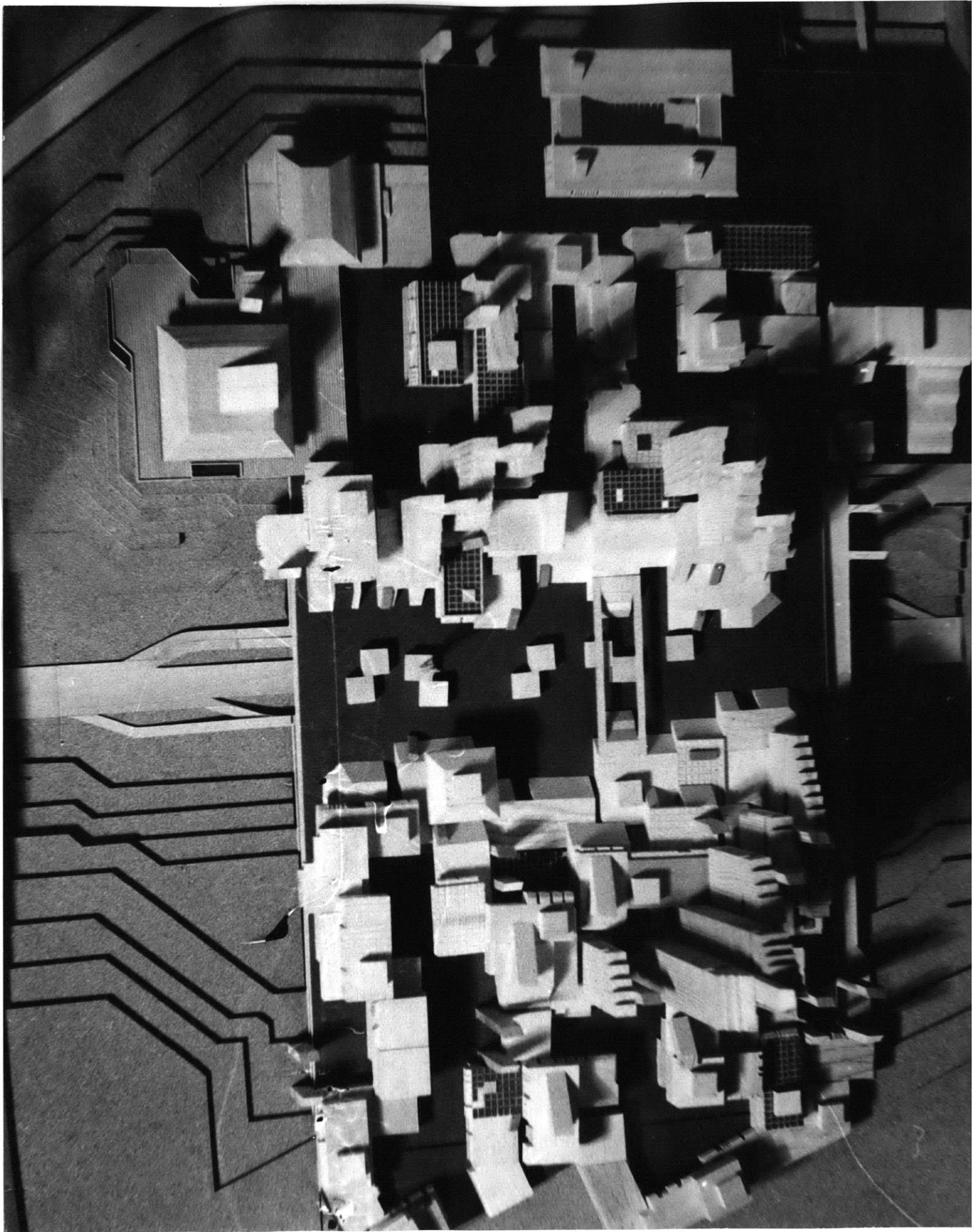




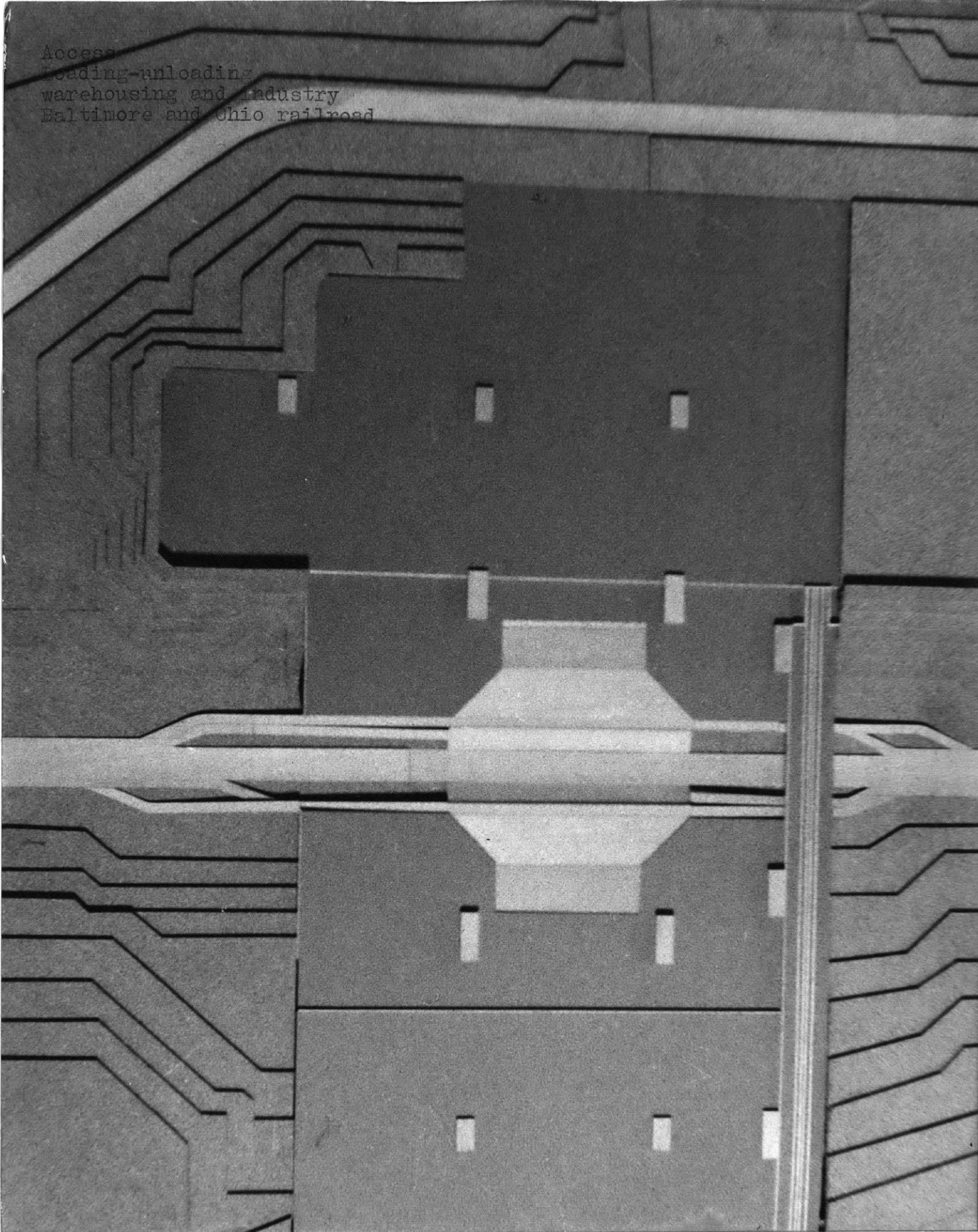
City View



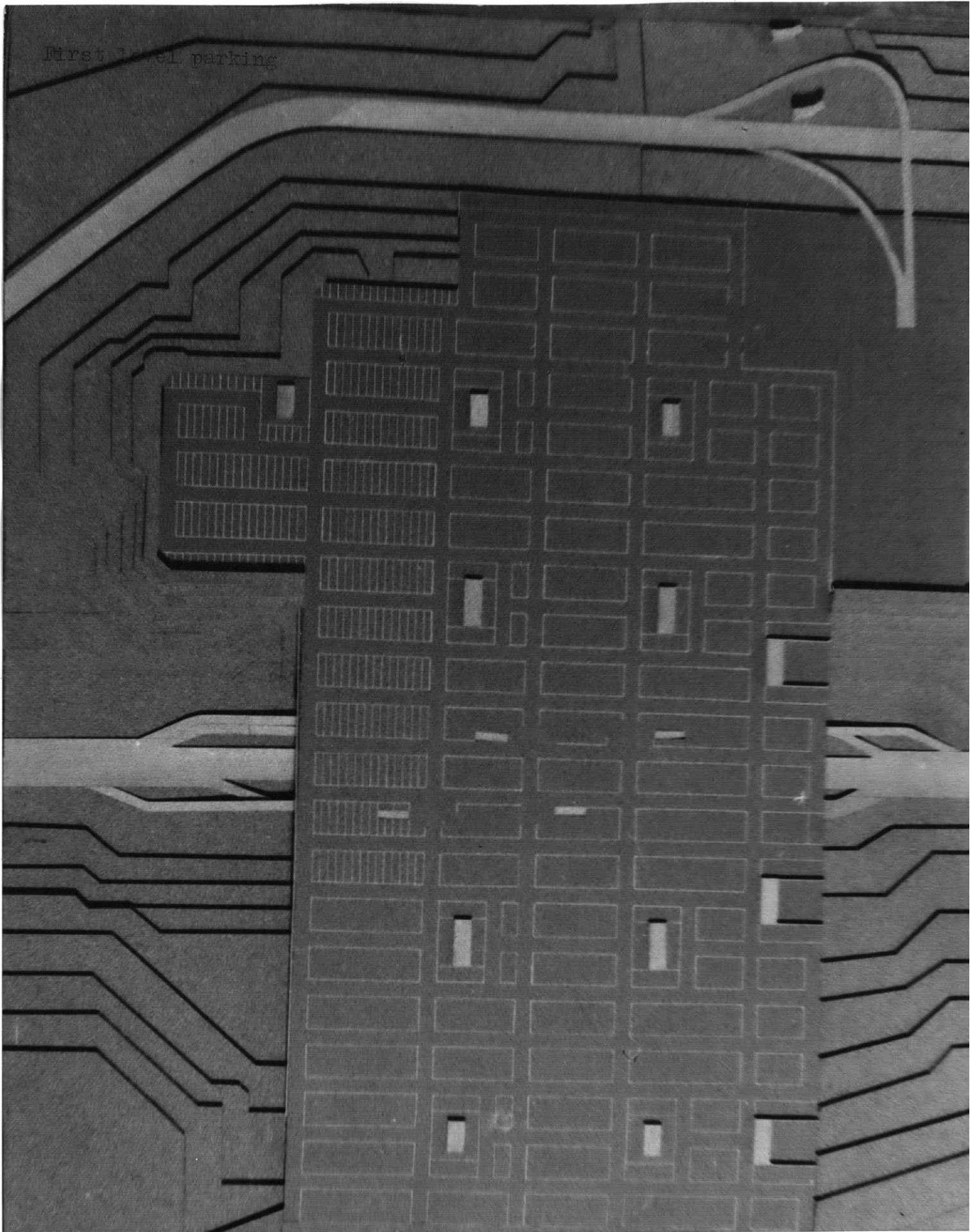
Looking East



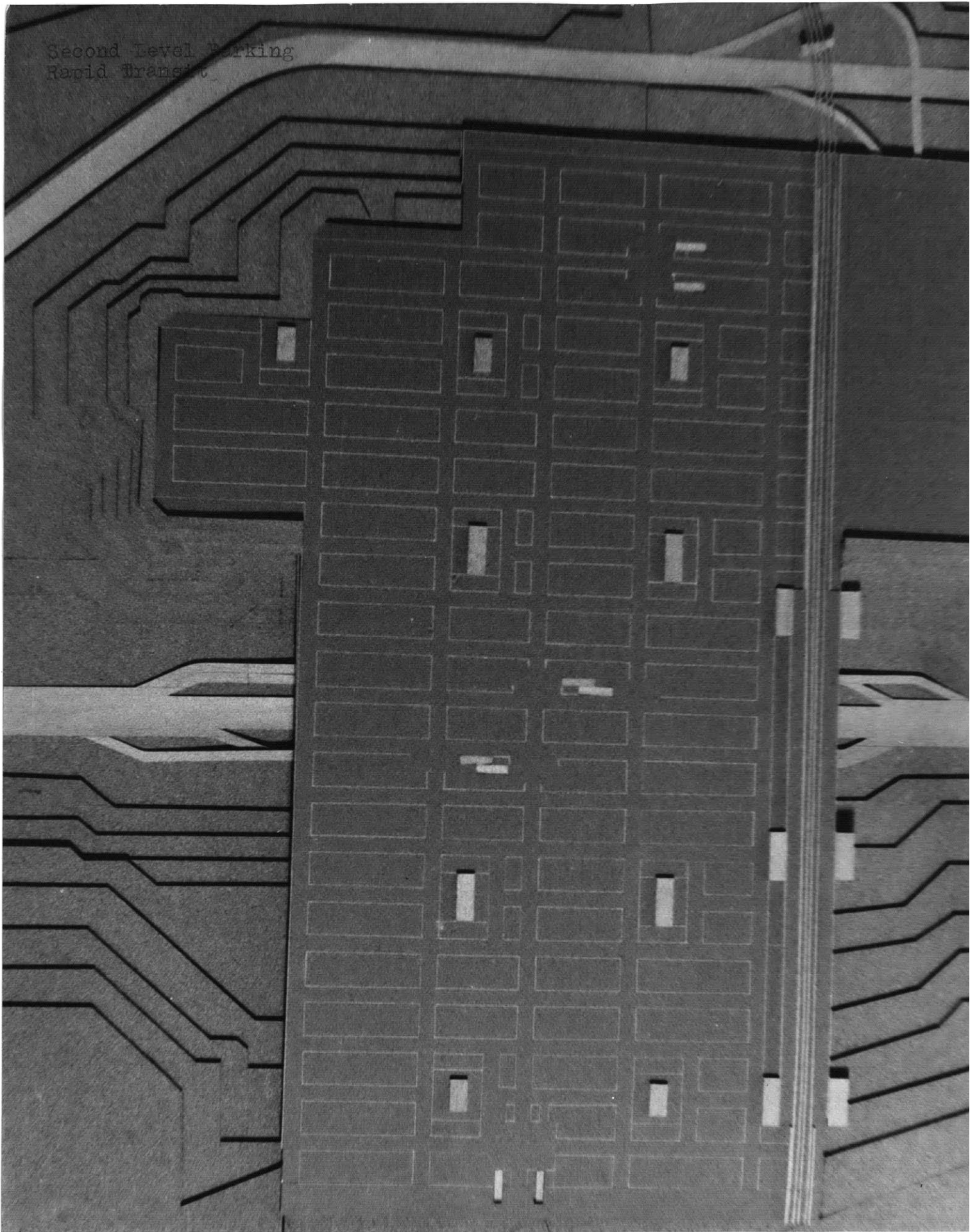
Access  
Loading-unloading  
warehousing and industry  
Baltimore and Ohio railroad



First level parking



Second Level Perking  
Rapid Transit



Third Level Parking

