A STUDY FOR AN URBAN HOUSING TYPE

by

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ABSTRACT

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Submitted to the Department of Architecture on August 22, 1960,
in partial fulfillment of the requirements for the degree of
Master of Architecture.

Urban housing in the United States has evolved into a
limited number of repeating types, in the past dominated by row
houses and tenements. This corresponds to the predominance of
commercially motivated grid patterns of streets. In most housing
designs being built there is a tendency to violate the traditional
city form and propose a new pattern – an outgrowth of social pre-
cepts formulated as a reaction to overcrowding in the city slums.
The formal characteristics of this new pattern have become well
established and combine oversimplified building masses with some
variation of the garden city concept of open space. The new
pattern often loses the cellular quality and human scale of the
existing city and threatens to level everything out with multi-
story slabs standing in open space, with expressways linking
clusters of such buildings in an endless monotony.

The city should remain, and urban housing should be based
on the best of urban life, and provide a sharp contrast to sub-
urban or rural living.

This study is an attempt to find a type of housing appro-
priate to the city and existing grid patterns. The study is
not intended to be a city planning project. It is intended that
the solution be more universally applicable than to a particular
site. It should provide a high standard of living, not merely in
terms of physical conveniences, but in the provision of a rich
urban environment and a desirable way of life, as well.

The individual is considered more important than the com-
munity, consistent with urbanism as opposed to ruralism, and each
unit becomes a cell not subordinated to geometric simplicity, but
expressed in the total configuration. At the same time recreation
space is provided for community activities in such a way that it
is an essential part of the form concept, not what is left over
and "adapted" for use. Another aim of the design is to retain the
best qualities of the urban street as a vital element in urban life,
not merely for vehicular circulation.

The study presented here does not adhere to current economic
trends, building codes, and zoning laws in every respect since they
tend to stereotype design solutions. Rather an attempt has been
made to give breadth to the architectural vocabulary of housing.

222 Park Avenue
Raleigh, North Carolina

August 22, 1960

Dean Pietro Belluschi
School of Architecture and Planning
Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge 39, Massachusetts

Dear Dean Belluschi:

In partial fulfillment of the requirements for the degree

of Master of Architecture, I hereby submit my thesis entitled,

"A Study for an Urban Housing Type."

Sincerely yours,

John Preston Shaw

"Nothing will ever be attempted if all possible objections must first be overcome." - Samuel Johnson

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To these and others who helped in this project, I here
express my gratitude.

I. Background and Observations

Ever since the first cities existed there have been tre-
mendous attractions which draw men to the city life. Today
those attractions are more astounding than ever before, though
the attitudes which produced the suburban trend have somewhat
distorted our view and also encroached on attitudes toward urban
housing. The social ideals which grew out of the nineteenth
century and reached a peak of formative influence in the 1930's
have permeated the thinking of planners and architects to such
an extent that it is difficult to retain an objective view of
housing in cities, or to formulate an idea or design which is
not predestined to the formulas dictated by the zoning laws and
building codes which are by-products of these ideals.

In the words of Henry S. Churchill, "City planners are
generally pretty well agreed about certain things they consider
desirable to take the place of blight and slums: more light,...
more air, more quiet, stabilized land values. Most of them
envisage a community of like-minded souls dwelling in well-ordered
harmony amid neat community facilities. Most of them, of course,
would die if they had to live in one of their own dull Utopias,
but they keep talking about them. I believe they do their cause
considerable harm, even though it may be the natural reaction to
noise, confusion, and frustration of the cities with which they deal."[1]

1. Churchill, Henry S., "What Kind of Cities do We Want?", The
    Future of Cities and Urban Redevelopment, p. 45.

In a sense the approach generally taken tends to negate
the true spirit of urbanism, and does not face the city as a
desirable fact derived from man's social inclinations. No longer
can we seriously doubt the city's survival as an institution.
The city will not be abandoned in favor of a return to rural
life or the village of medieval times with its limited opportunity
and lack of modern conveniences. The city inevitably embodies
all the cross-purposes of modern life, not only in physical con-
fusion, but in attitudes toward the cure for its many ills.
These attitudes range from make-shift expedients to drastic up-
heaval of urban form. At any rate, the metamorphosis of the
city as we know it into a desirable place to live is long over-
due.

"Men come together in cities in order to live: they remain to-
gether in order to live the good life." - Aristotle

A. The Development of Urban Housing

In an attempt to gain insight needed to revitalize atti-
tudes toward urban living it would seem desirable to trace the
urban form of life to the sources which influenced it in its
present physical and social state.

The history of cities as we know them in the United States
like the architecture of those cities is derived in physical
form primarily from the main tradition and history of Europe
emanating from Greece and then Rome. The ideas which have be-
come fundamental to western art stem from this tradition. In
our enthusiams for innovation and social reform we often overlook
the intellectual and aesthetic continuity of this tradition from
the classic.

The Greeks were artists by nature, and Greek art was the
outward expression of the national love of beauty. The Greek
cities were orderly in their civic and palacial architecture and
the houses appear to have been based on palaces in their arrange-
ment. Greek city houses had one story only, grouped around an
interior court. Vitruvius describes the general arrangement as
having no atrium, but a peristylium with porticoes on three sides,
and chambers grouped around[2]— the classic court house plan.

The Romans were rulers by nature, and Roman art was the

2. Fletcher, Sir Banister, A History of Architecture on the
    Comparative Method, p. 118.

outward expression of the national love of power. The Palaces

of the Emperors in Rome were impressive not only because they

were powerful expressions, but also because they represented a

high order of civilized achievement. These palaces crowned the

Palatine and looked down on the center of civic life in the valley

below. The disposition of the buildings was governed by axial

lines and thus magnificent vistas were obtained.

The domus or private house was probably evolved from the

Greek house. An atrium formed the more public portion of the

building and a peristyle beyond was the center of the family

apartments. Excavations at Pompeii show that Roman houses differ

but slightly in plan and disposition from the Greek dwellings

which preceded them. The streets were narrow and the houses on

them had plain facades. The frontage on either side of the

entrance was given over to shops - a characteristic which remains

in almost every era. The absence of windows toward the street

was probably due to the desire for privacy. The rooms were

lighted by openings on internal courts, as in medieval times in

England and France, and as in oriental houses today. The houses

were mostly one story in height but there are traces of stairs,

and upper floors were probably of timber.

We may consider the House of Pansa, Pompeii, as a typical

domus. It had streets on three sides; the garden occupied the

fourth; and besides the house proper there were shops, bakeries,

and three smaller dwellings. An entrance passage led directly

from the street to the atrium. The atrium was open to the sky
in the center with a "lean-to" around all four sides, and the
water cistern was sunk in the center of the court. The atrium
contained the family altar and the ancestral statues. An open
saloon was a link between the atrium and the peristyle. The
peristyle was the center of the private part of the building and
was often a garden. Bedrooms, dining-rooms, reception-room and
recesses for conversation surrounded the peristyle. The kitchen
and pantry were at the side of the peristyle, farthest from
the entrance, but convenient to the side street.

The blocks of tenement dwellings of many stories in that
period seem to have resembled modern flats, or workmen's dwellings,
and housed the slave population. A decree was issued by Augustus
limiting the heights of houses in Rome to seventy-five feet,
which seems to indicate that buildings of this type were numerous
and that overcrowding was not exclusively a product of the in-
dustrial revolution, but existed in Roman times.

After Roman housing let us examine that of medieval times.
The advent of agriculture as a means of livelihood promoted the
transition from village to active institution of the city, since
surpluses of food allowed population concentration. As early
as the nineth century the need for protection led to the redis-
covery of the security of the walled town. Life in the open
country ceased to be as attractive as life behind the urban wall.
The feudal system provided quarters for vassals within the castle

walls and in a similar manner monastic communities lodged their
dependents and laborers under their protecting walls. As popu-
lation increased and conditions changed, more accommodation was
required and these communities expanded; and as commerce expanded
thriving trading towns were formed. Craftsmen, peasants, and
fishermen came first to market their wares and finally to live.

The houses which grew up in these villages were essentially
row houses. The medieval urban family was no private unit; it
included, as part of the normal household, not only relatives by
blood but a group of industrial workers as well as domestics,
who were in effect secondary family members. The workshop was
operated as if it were a family affair and there were no clear
lines as to public and private space. The members of the house
ate together at the same table, worked in the same rooms, slept
in common spaces and joined in family prayers and amusements
together. The church was the most powerful institution after
the fall of the Roman Empire. A large part of the economic
life was devoted to the glorification of God. The church furn-
ished the need for privacy and contemplation lacking in the
houses. To sum up a description of the house of the early med-
ieval era we could say that it was characterized by a lack of
differentiated space and differentiated function and had scarcely
any of the present day requirements for privacy and comfort.

In the time between the eleventh and the thirteenth cen-
turies immense extension of agriculture brought on an increase in

population. Commerce served to stimulate growth also and the rise of a trading class began. Between the rude huts of the tenth and eleventh centuries and the elaborate merchant houses that were built from the thirteenth to the sixteenth century there was a great difference. The sixteenth century houses were usually built in rows around a rear garden. The larger houses were built with a private green near the middle of the building, reached from a gateway on the street. Free-standing houses which wasted the land on either side and had a maximum exposure to the elements were relatively scarce. Even farmhouses would form part of a solid block that included the stables, barns, and granaries.

In France the plan of the house included a shop on the ground floor and an open gallery in the rear. These two formed a court in which the well occupied a corner. There was a chimney in the kitchen and in the living room or grande salle above the shop. The bedrooms were reached from the grand salle. In Germany the floor plan was not essentially different. The houses were marked by lofty roofs which frequently had more stories than the walls, and were provided with dormer windows to make a through current of air for their use as a place to dry the large monthly wash. Right angles of the roof ridge to the street resulted in gables of great variety of design, often with a hoist in the top gable to raise goods from the ground level. In all countries urban houses were built along the streets and between party walls, and often had shops on the ground floor.

The Renaissance was characterized by a flourishing of creative effort and a high order of appreciation of beauty. Its domestic architecture can best be typified by examining the houses of the noblemen. The "maison nobles" began to rise in the fifteenth century when French nobles ceased to be feudal lords in fortified castles, and erected houses, known to this day in France as "hotels," planned around a court, with an elaborate facade to the street. One of the best examples of the middle fifteenth century in Italy is the Palazzo Ricardi, Florence. This, Michelozzo's best known building, has a cortile or peristyle, as in Pompeian houses, around which are arranged the various rooms with the grand stair to the "piano nobile." The Renaissance palace is a well known architectural form with its simple, flat exterior surface pierced by relatively small openings.

New artillery was developed in the late fifteenth century which made cities vulnerable. Towns were forced to abandon their old system of city planning and make the town wall a real fortification. The old-fashioned cities were divided into blocks and squares and then surrounded by a wall, but now the entire city was planned as a fortification. New growth could take place only vertically because no one wanted to live outside the fortification. The competition for space between the domestic and the working quarters, as business grew and the scale of production expanded, was also perhaps responsible for encroachment over the original back gardens and courts by sheds, storage bins and special work-

shops. This building tended to overcrowd the land and rob the people of their gardens, play areas for children, light and air. Land values increased and rents got higher. Two story buildings were replaced with four and five story buildings. In the seventeenth century the practice of building tenements of five or six stories became universal - reminders of the old Roman slave quarters.

With the seventeenth century also came the increase of privacy within the home. Gradually the place for eating, for entertaining and family living became separated from the workplace. Space became specialized, room by room. In England, for example, the kitchen was separated from the scullery, where the dirty work was done, and the various social functions of the kitchen were relegated to the living room and the parlor. The rooms no longer opened into each other, but were grouped along a corridor. Privacy was the new luxury of the well-to-do, and the trend toward privacy filtered gradually to the lower classes.

Crowded conditions became acute during the seventeenth century. Older houses were transformed into crowded tenements but were unable to accommodate the increased population. There was a marked contrast between the new residence quarters of the upper classes and medieval quarters, now overbuilt and crowded, or the new accommodations for workers in every city, including Paris, Berlin, London, Edinburgh, etc. The more congested the land got the higher was the income derived from that land. Slum

properties often earned much higher returns than investments in more respectable parts of town. In spite of the congestion, or possibly because of it, grand scale planning began to be prominent and these examples remain some of the most conspicuous evidences of planning on a large scale to this day. The avenue is the most important symbol of the Baroque city. The general ordering of space into a system of geometry, so characteristic of the period, facilitated the movement of vehicular traffic, while it also expressed the predominant intellectual preoccupation of the time. These new avenue provided the opportunity for the military parade and its feminine counterpart: the shopping parade.[3] The open air market henceforth was restricted primarily to providing a place to buy routine provisions. The new type of shop which lined the avenue had large glass windows used for displaying merchandise. Shopping became a special occasion for the lady of the house to dress up and go out to spend an exciting, even frivolous afternoon.

Among some of the examples of Baroque architecture at its best are the Place des Vosges in Paris and the Place Vendome. Here we see the more intimate scale of Baroque design. Both of these consist of unified dwelling facades around rectangular squares. Another good example, though more grand in scale, is the parts of Bath built between 1763 and 1767.

3. Mumford, Lewis, The Culture of Cities, p. 99.

With the nineteenth century came a tremendous increase in
industry accompanied by an overcrowding problem of new magnitude
in housing. Cities vied with one another for big populations,
but housing was left to take care of itself. The landlords and
financiers took advantage of the situation to divide already
overcrowded tenements into more units. Though power and luxury
were the dreams of the Baroque era, these objectives were at least
directed toward human enjoyment, as opposed to the new goals
projected by the nineteenth century pragmatist, who had no place
even for sensuous pleasures, but pursued only economic gain.

Because of the expansion of industry immigrants came pour-
ing into American cities by the millions. In 1840, 68,000
arrived; in 1850 the number had grown to 228,000, aided by the
fact that regular steam ship service was now offered from Europe
to America.[4] The rural population began to shift toward the
city also. The agrarian society envisioned by Jefferson no
longer could become a reality. Social protest against inferior
housing for this increased worker population was noticeable as
far back as 1817 when New York City's health inspector assailed
the "mercenary landlords" for overcrowding their tenants. Protests
reappeared throughout the century, but they had little effect.

The rapid rate of city growth did not concentrate itself
mainly in America during this period. The industrial revolution

4. Gray, George Herbert, Housing and Citizenship: a Study of
   Low Cost Housing, p. 6.

was in full swing in Europe and the city population increase there was equal to that of the United States and sometimes greater. Cities also faced the problems of noise, smoke and grit now brought into their centers by locomotives and industry.

Buildings surviving from the past, many more useful than the ones that replaced them, were destroyed in a fury of demolition; open spaces were built over; plazas, market places and quiet residential areas were opened up to traffic as streets were widened. Factories and commercial enterprises took precedence over everything and wiped out the best along with the worst of what remained from the past. This pattern has been repeated in the wholesale distruction of buildings in the wake or urban renewal projects of more recent times, done for financial gain but in the name of social progress – more palatable to present generations of planners than the former motivation of commercial gain only.

The individual living units were built in rows, each varying in width but sometimes as narrow as 15 or 12 feet,as in parts of Baltimore, and as deep as 125 feet. In earlier times the row houses had been only two rooms deep and did not present the problem of light to interior rooms. Others were lighted from interior courts. Now, as in past periods of overcrowding, the buildings were extended over the rear garden or interior court. They occupied the entire width of the lot and had two to four apartments to each floor. To accomplish this, extra bedrooms

were located centrally within the building mass while light and ventilation came only in the front and back rooms. There would be as many as eight, twelve, or sixteen rooms on each floor, of which only four had outside light and ventilation.

The street was forced to become the playground, vehicluar circulation artery, park, and promenade since it was the only open space left. It was a linear grid of space between densely massed buildings, composed of souvenirs from architectural styles centuries apart and from remote geographic areas. Instead of providing variety the result was chaotic. To add to the confusion a crisscross of telegraph wires, trolly poles, railroad bridges, elevated structures, and competitive advertisements completed the visual disorder.

Around 1850 the first highly specialized tenement building in the United States, Gotham Court, appeared. Every room had outside light, though taken from narrow alley-like courts. Richard M. Hunt in 1869 built a high rent apartment house which showed a way for definite improvement in apartment planning on city lots, particularly as to light and air. In 1876, Alfred T. White built in Brooklyn his Improved Dwellings for Laboring Classes. None of these more ambitious apartments had much influence on the prevailing plans for low cost housing.

Speculative building of tenements continued to speed up during the century. The need for more buildings led in 1879 to a design competition of a tenement house for a typical lot of

25 feet by 100 feet. The program stated, "Capilalists won't invest unless they can get a return of at least seven percent of their investment...Strive to plan a sanitary building which will bring in the most revenue."[5] The "Dumbbell Tenement" was the result; the name described the shape of the building, the center of which tapered in like the handle of a dumbbell. It crowded the land with rentable rooms in such a way that adequate air, light, and privacy were impossible. Three hundred ninety-nine buildings from this design were built in the following year and thousands later. What was considered a model tenement in 1879 was thought the curse of the city twenty years later. In 1901, its construction was forbidden - too late to prevent completion of numerous buildings that still stand today in New York City's slum areas.

The availability of transportation opened up the suburbs to the average person in the mid nineteenth century and this seemed at least a temporary retreat. Living sites were no longer confined to the area surrounding the belt line and industrial sites no longer restricted by the old limitations of power and transportation. Available land was released for development, miles from the source of power, and the same patterns were set up in the newer areas as existed in the older parts of the city.

The classic mode was destined to remain the immage or order

5. Ibid., p. 9.

during the nineteenth century. Almost all city planning or build-
ing that was aesthetically worth attention before the middle of
the nineteenth century followed classic lines: the work of
Schinkel in Berlin, the Adam brothers in London and Edinburgh,
or that of L'Enfant, Bulfinch, Jefferson and Latrobe in America.
Many fine houses were built. Those town houses built in and
around London demonstrate the quality design and craftsmanship
of the period. New York, Philadelphia and Boston have excellent
examples also. A Parisian town house typical of the nineteenth
century is the Hotel Rue du Cherchi-Midi which has a central
entrance that is a porte-cochere leading into the inner court-
yard. This arrangement, aside from its beauty, gives light and
air to a large portion of the house. There were more examples
of quality housing during this period than the social reformist
recognizes in his blind condemnation of tenement houses as the
symbol of the era. Large areas in cities such as Boston and
Philadelphia still retain nineteenth century houses in which a
high standard of living was and is still enjoyed.

By 1900 eleven metropolises with more than a million in-
habitants had come into existence, including Berlin, Chicago,
New York, Philadelphia, Moscow, St. Petersburg, Vienna, Tokyo,
and Calcutta. Thirty years later, there were twenty-seven cities
with more than a million population.[6] The same problems of the

6. Mumford, Lewis, Op. cit., p. 225.

preceeding century existed in the twentieth century, except that
the situation was more acute now. First attempts to write pro-
tective legislation for the city dweller were realized at this
time.

Feeling the need to eliminate slums and congestion, archi-
tects and planners were stimulated to search for solutions to
the cities' problems. The modern movement in architecture was
based at least in part on social precepts growing out of the
movement for better living environments. Le Corbusier proposed
schemes with high concentration and openness by the use of slab
buildings. One of the first towns built which consciously
attempted a solution was Radburn, New Jersey, in 1927, though
the scheme bypassed the problem of high density. Planned by
Wright and Stein, this project differentiated between foot
traffic and wheeled traffic, giving them each independent systems.
Other objectives of the project included provision of a dis-
continuous street pattern and concentration of social life in
civic nuclei, beginning with the neighborhood school and play-
ground. From such proposals as this and Ebenezer Howard's
scheme in Selwyn, England, which uses the cul-de-sac street
system, came the new conception of a balanced urban environment —
what was first called the garden city. Frank Lloyd's Broadacre
City, an extremely decentralized scheme, contained a minimum of
one acre of land for each family.

These proposals were largely overcompensated protests against

city congestion and reactions to the existing housing standards,
though most of them failed to face the real problem of concen-
tration by proposing decentralization. Even the concentrated
schemes, which achieved a high ratio of people housed to land
used by the use of multi-story buildings, seemed to take as
their guide the approximation of the garden city by distribution
of elements in a studied casualness. They undertook a systematic
eradication of not only the buildings of the existing city
(regardless of merit), but also the understandable street system.
Although this was called the new urban form and thus attempted
to nullify the conventions of the city, it would appear to be
rather an oversimplication of the problem.

The concept of the shopping avenue or street mentioned in
the Baroque period remained throughout the eighteenth and nineteenth
centuries accelerated by individual enterprise and competition.
With the twentieth century came the "shopping center." The idea
of putting all shopping facilities together, separate from
living places, could not have come about if the automobile had
not begun to play such a vital role in society. With the pre-
sent arrangement of buying it is no longer practical to walk to
and from stores. The system serves to accommodate a society
dominated by the automobile.

The impetus that was given to housing by the shortage
following World War II and the resulting federal aid firmly
established the trend toward spreading slab apartments among

open spaces and the results have become further standardized

by regulations governing housing. Even the average commercially

motivated designs, which have a strong continuity of purpose

with their nineteenth century predecessors, have broken the

visual continuity of the city.

An exception to this break in form, there is an essential

continuity between Amsterdam of the seventeenth century and the

early modern housing developments like that of Oud in Rotterdam.

Amsterdam is an important example of a city that effected the

transition that came with the industrial revolution without

losing form. It proves that rapid commercial expansion and

physical growth need not raise insurmountable obstacles to

order. Throughout its main period of expansion, Amsterdam did

not lose its unity or deteriorate, though its medieval quarter

decayed. In the large-windowed houses the builders produced a

domestic form that remained stable until the growth of the

nineteenth century working population turned the speculative

builder to laying out tenements of an inferior quality, though

better than much of the current housing built in the United

States today. As a whole, Amsterdam with its tree-lined canals

and continuous building fronts retains its unity and charm.

This is in sharp contrast to the attempts at individual

expression of the American architects evidenced first by indis-

criminate small scale individual efforts without regard to

surroundings, and more recently the conglomeration of large

scale individual efforts without regard for the continuity of the city.

No further development of more recent housing will be pursued here since a more detailed examination of twentieth century housing will be developed in subsequent headings.

To sum up the development of housing succinctly, let us use Charles Abrams' statement: "America's present physical pattern is the end product of a sequence of attitudes prevalent in separate phases of its history. During each phase physical patterns were formed. Each pattern reflected the dominant social atmosphere of its own time."[7]

7. Abrams, Charles, The Future of Housing, p. 3.

B. The Present Urban Housing Types

About the earliest form of urban housing was communal
shelter which expanded to accommodate more families as new rooms
might be added to a house. Placement of the rooms was restricted
by site limitations. As this form grew to accommodate many
families, it provided lines of demarcation between units, and
generally followed a linear pattern of cellular growth along a
foot path or traffic artery for access to individual units.
Although very elementary, this system or some variant of it
constitutes the most common type of housing in the more densely
inhabited portions of large American and European cities even
today.

The type is characterized by common walls between units
perpendicular to the street, and window walls on the street and
back side. A basically rectangular space is enclosed, varying
in proportions determined by street frontage, depth of lot, and
height or number of stories. In its most common variety, it is
called a row house; or in the case where the earlier row house
built to accommodate one family has been "adapted" to house many
families, it is a tenement. Tenements are quite often filled in
to the very limit of the depth of the lot which allows windows
in the rear rooms. As long as row houses were two rooms deep,
they were all right; but as soon as the need for more dwelling
space grew, the natural line of expansion was not laterally, to
embrace a second costly plot, but backward, to eat up the backyard

and to increase thereby the sunless interior space.

The earlier American versions of the row house such as those red-brick three and four story walk-up units still seen along the streets in the old Society Hill area of Philadelphia have elegance and provide a rather high standard of living with their rear gardens, large rooms with ample light and simple dignified fronts. Row houses become absurd, however, when the limits of the type are not recognized, and the rectangular masses are overcrowded for speculative reasons.

Although row housing is the dominant type in the cities of the present it is not being built to any extent, because of its bad reputation brought on by association of the type with overcrowding. In the fringe areas where land costs are less and densities can be lower than near the urban center, garden apartments (so called because of a general open or garden city appearance), two and three story walk-ups, or some duplex units are built; however the majority of urban housing which is of recent construction is of the multistory slab type.

Single family dwellings, detached from other such dwellings and sitting on a private or separate plot of ground, suburban by their very nature, obviously cannot be considered as a type appropriate or feasible for the urban scene.

The multistory slab building then seems to have become the dominant modern housing form in cities. This type was made possible by developments in construction techniques and principally

by the mechanical elevator which facilitated vertical circulation within the building. Its advantages are in being able to house many people in relation to a given site and to provide light and air to all rooms, with portions of the site left open to serve other purposes such as providing play space for children, parking for automibiles, etc.

In the United States housing of from five to eight floors is not common, because this range is too high to be walk-up apartments and not high enough to make an elevator feasible economically. In Europe, walk-up units of six floors are quite common, even ones built in recent times; however, in the United States they never seem to go over four floors and federally financed public housing is usually not over three floors.

In approaching the problem of design of urban housing, architects tend to think in terms of the predominant types and perhaps to be limited by them, partly because of control measures, partly by force of habit, and mainly because the types have been developed to the extent that they are predictable and safe economically and involve less risk than ventures into less familiar areas. In most cases the slab apartment is still considered an innovation, and certainly by comparative time in use it is; however there is no doubt that it is a habit of thought to many and a fore-drawn conclusion, regardless of what rationalization can be given to show that its application evolved purely from a program of requirements without premeditation.

The other factors which assure the perpetuation of a few basic types are the city building codes and zoning laws, written to control standards of construction and health, but perhaps unconsciously definitive of a limited range of types. To quote Charles Abrams again, "(Existing types) shape urban landscapes for centuries ahead. Equities, public investments, mortgages, savings, and city revenues become vested and the effort to improve living conditions at their expense is not easily achieved. The patterns are not only fixed in brick and mortar but they are also propped up and preserved against modification by judicial precedents laid down in former years that influence judicial thinking for generations ahead."[8]

8. _Ibid._, p. 4.

C. Observations on Urban Living

In taking a close look at the city and its types of housing
one might pose certain questions regarding the nature of urban
life. Let us examine what distinguished it from other ways of
life and also what the city's visual and physical characteristics
are.

What is a city, anyway? Henry S. Churchill gives the
following answer: "It is, of course, a place where people congregate
and earn a living. It is also a place where people are interde-
pendent because of an extreme degree of occupational specialization.
It is also a place in which there is an enormous variety of things
and people among which to pick and choose. Its essence is gre-
gariousness and anonymity. The small town is the opposite of a
city. Its essence is propinquity and nosiness. The suburb is
just the bastard of the two."[9]

The city represents the maximum possibility of humanizing
the natural environment in that nature has been completely trans-
formed in the city to comply with human uses and needs.

The individual enjoys greater freedom under the urban way
of life than is possible under ruralism. There are more choices
to make under urbanism, and they are choices which the individual
himself must make. We might say that urbanism tends to "individuate"

9. Churchill, Henry S., Op. cit., p. 45.

people[10], to put them in a position favorable to making choices
and being creative according to their ability. The individual
and not the family is the unit. Without exception in every
country the expanding influence of urbanism has been disturbing
to the traditional status of the family. In the past that unit
has had its best climate for growth in rural society. Urban
man must learn to live with groups of people and to associate
with others on levels of intimacy ranging from friendship to
anonymity.

In this respect the superficiality of his associations
with others tends to make the city dweller mobile. He also is
faced with fewer demands for conformity in the name of "neighbor-
liness." This is often considered an objectional fact which
needs correction; however, it is more accurately an example of
the urbanite's possibilities for choice. He chooses to be
neighborly or not; he can pick his friends. It is variety as
opposed to uniformity available in the city which causes many
people to gravitate there - away from the socially integrated
community.

Many of the inadequacies in living conditions one generally
puts up with in the city have been amply covered under the section
on development of urban housing. As far as cost of living is
concerned the urban dweller must accept the ever increasing costs

10. Anderson, Nels, The Urban Community, p. 23.

of public services and higher prices for rents. The services
available are greater, but desirable apartments which provide
gracious, or even adequate living accommodations, are rare. In
regard to adequate facilities for children these certainly do
not correspond to facilities possible in low density communities –
this fact is responsible at least in part for the attraction of
families away from city centers.

Carl Bridenbaugh in reference to the expansion of New York,
Boston, Philadelphia, Newport, and Charleston in the middle
eighteenth century said that compactness if not congestion
typified them all, and that living in close proximity in the
environment was the marrow of urban existence[11]– indeed this
is still true.

A word must be said about the most obvious advantages of
urban life. The urbanite can avoid costly and tedious hours
of commuting daily to work, which the suburbanite must endure.
Urban families are near to museums, theatres, the concert hall,
and the opera house. With a minimum of effort and expense their
lives can be enriched from these cultural oases. The core of
the shopping district, accessible to the city dweller, offers
the greatest opportunity for selective and all inclusive buying.

The physical pattern of the city, because of its evolution-
ary process, tends to be cellular regardless of street configuration,

11. Bridenbaugh, Carl, Cities in Revolt, p. 419.

reflecting the many forces that have influenced its development,
principally its composition of infinite private ownerships,
change and spot alterations. Even in areas of relative uniformity,
i. e. brown stone or brick row houses of Boston and Philadelphia,
the cellular, individual quality shows through and one sees a
primary visual reading of a unified mass which has visual con-
tinuity lining the street. The individual unit or house is
distinct as a secondary reading within the whole street facade.
The two mutually determine each other; the unit composes the
whole and the pattern of the whole defines the properties of
the part. The components or units of mass (individual houses
between party walls) which make up the residential areas of
large cities have a size consistency quite often which is a re-
flection of the sizes of individual, privately owned plots of
ground. Though all units are not the same size or composition,
there is generally an architectural scale characteristic of a
neighborhood if not of whole residential divisions of each city.
A high degree of mass concentration also is characteristic of
urban areas whether for living or otherwise. What open spaces
exist within the concentrated areas of the city are generally of
definite shape and of limited size. The spaces generated by the
similar building masses lining regularly layed out streets have
a strong linear direction but distinct visual boundaries. Like
the cellular scale of the units of mass themselves, the city
spaces also have a size if not scale consistency.

These physical characteristics of the city are often over-
looked, but it seems that they, like the social facts of city
life, are of great importance to a meaningful evaluation of
urban housing.

D. The Suburban Trend

The overall trend in population distribution which affects
housing of all kinds is seen in the progressive spread of the
metropolitan population outward, with density decreasing consis-
tently from the center to the periphery (with a slight exception
for the innermost one-mile circle.) The process is not only
one of decentralization, but also one of centralization: the
influence of the city extends farther and farther out, the pop-
ulation distributing itself in a pattern, dominated by the center,
which engulfs and flattens out previously independent centers of
population and consumes enormous quantities of land.

In speaking of Philadelphia, Blumenfeld observes that
despite the fact that this decentralization has been going on
for about a century, density in the one half mile concentric
zone is still one hundred and seventy-five times the density
in the eighteen to twenty-five mile zone. Within three miles
of the city center now, as in 1900, are almost a million people,
constituting one fourth of the metropolitan population against
about one half of the total fifty years ago.[12]

In embryo, the modern suburb already existed in the six-
teenth century. The function then as now can be briefly summed
up as a desire for pure air and water, sun, quiet, space and
soil. The suburb alone meets the needs of a good environment

12. Blumenfeld, Hans, "The Tidal Wave of Metropolitan Expansion",
        p. 13.

for rearing children.

At first the possibilities of suburban living were limited to those who could afford a horse and carriage of their own, or who could make the daily journey to town by public coach. By the early nineteenth century a new environment, composed of less wealthy people, was taking shape on the outskirts. When the impulse reached the lower middle classes and manual workers, the form of the suburb had changed, too, into a caricature: rows of cramped cottages, with small grass lawns in the rear and an even smaller green area in front, half an hour or more away from the place of work. However, the trend toward the suburb continued to grow in intensity.

The housing shortage at the end of World War II gave momentum to the suburban trend, aided by government financing programs and the opening up of farmland and open country sides around cities. Improved highways also facilitated the movement to the suburbs, and the wasteful sprawl mushroomed over an ever widening area. In fact, the suburban community has become the dominant factor of contemporary American living.

Some characteristics should be noted about this new type of community. First, the suburb is a one-class community. It is also a segregated community, not merely set apart topographically from the central areas of a city, but its occupants are segregated from other economic classes as well. Suburban living encourages a complete separation of consumption from production. In the

suburb, the illusion of an innocent world can be preserved,
without encountering inconvenient reminders of social inequality.
The contemporary suburb is a collective attempt to live a private
life, an effort to make the city tolerable by enabling the sub-
urbanites to have the best of city and country both.

The suburban dweller is beset by demands on his energies,
time, and budget not always considered in comparisons of sta-
tistics on urban and suburban living. He must plant, develop
and maintain a yard - usually too large and poorly related to
house, street and surroundings to be beneficial except as a
symbol of modern life. He must of necessity engage in "do-it-
yourself" projects because of the cost of services to his vast
possessions. He undertakes fixing equipment, painting, repair-
ing and being general handy man in order to "afford" the neces-
sities of suburban living, such as an automobile or now more
generally two (in order for the housewife to perform her role
also.) This is a standard not universally appealing as a way
of spending liesure time, but one that is socially acceptable
and now an established mode of life.

To enjoy the pleasures of suburbia one must endure the
displeasures and exasperations of commuting to the place of
work or to the concentration of activities of the city to which
the suburb is a satellite.

The suburban trend is wasteful of land in the extreme. It
is not uncommon for zoning restrictions to require one acre plots

for each dwelling unit. Around such cities as Los Angeles the
rich farm land is being usurped at an appalling rate to create
new houses. The rising cost of suburban land is making dev-
elopment there less and less reasonable economically, also.

In terms of its physical characteristics, suburbia defiles
the countryside and nature is subjected to a much worse mani-
pulation than the baroque geometric gardens, in that it is
usually standardized into grass lawns, shrubs, trees and flowers
without the art that can control and mark sharply the limits of
control, nor a respect for nature in its uncontrolled state. The
green lawns of suburbia, like the formless layout of its streets
and meaningless distribution of monotonous units, characterize
and reflect the diluted senses of its inhabitants, who are no
longer acute to or respectful of true nature. They mistake for
a rewarding retreat from the city the circuitous wandering
through expressways and miles of suburban blight to a lot raked
clear of all natural vegetation, topographical irregularity and
in fact all life. Actually many a modern suburbanite no longer
questions the trend or considers seriously the alternatives to
suburbia simply because it is an established way of life, just
in the same way that almost any slum dweller can become accustomed
to the inconveniences inflicted on him.

E. Evaluation of Housing Trends

In an effort to form a clear basis for study of an alternative urban housing type it is necessary to evaluate the current trends in housing at least on a general level and to draw some conclusions which act as a guide for programming and clarify the assumptions which are the framework for the study.

In spite of the mass exodus to the suburbs in the last few decades, the problem of providing urban housing still exists; particularly the problem of improving or renewing blighted areas of the city. The new housing being built is almost all an over-compensated attempt at duplicating low density schemes in high density areas. This is accomplished by making the apartment buildings higher and spreading them apart, and rationalized in terms of light, air, and openness; but it is a negation of many of the desirable aspects of the city, both physically and socially. To point to some of the attitudes which illustrate this approach I would like to quote what one prominent advocate of the garden city said,

"The pattern of the future city should provide for more open spaces around the main business center and for the rebuilding of blighted areas for all income groups...The future metropolitan district should bring about a synthesis of the city and the country."[13]

13. Hoyt, Homer, "The Structure of American Cities in the Post War Era", p. 475.

The synthesis of the city and country without regard for the unique qualities and advantages of each seems to be the objective of current schemes for housing and urban renewal. This approach threatens to bring about a standardization of all living situations. City and country are separate entities and are made meaningful by the contrast of one to the other. Planners who really believe in the city as a physical phenomenon worth preserving and as a focus of social life, when in existence, are still only partly effective. There is, however, evidence of ideas which run counter to the trend of leveling everything out to garden suburbs or even low density communities as the goal of all planning, but there are few if any architectural schemes which support such ideas in a visual way consistent with the traditional city. If the conventions of the city are to be discarded in favor of the new visual pattern, then the result will ultimately be the distruction of the urban pattern as we know it.

The trend toward negation of the existing city form and approximation of suburban conditions as the panacea of all ills in the urban environment is a stereotype approach which may account for a certain amount of failure to revitalize urban areas as desirable places to live. It is also one which is short sighted in that the new schemes have cut themselves off from the myriad activities of the healthy urban neighborhoods which surround them, and in so doing threaten to stiffle them-

selves and the city center on which they depend. Seldom are these schemes sufficiently attractive to convert anyone to urban living.

An ambiguity grows up in modern urban housing designs. In their attempts to recreate the small town in the city the designs are foredoomed because they represent a contradiction of purpose. The city and the small town do not mix, except as each serves as a vacation-land escape for the other. Again to quote Churchill, "(City planners) forget that what makes them queasy is to many the only reason the city has for its existence, a vast confusion in the midst of which opportunity, honorable or other, offers its golden charms and where melting away among other unknown failures is the solace for those who muff their chance. The city therefore should remain the city."[14]

Churchill goes on to discuss the hordes of people who are getting out of the cities, turning alleged green pastures into the asphalt corrals of the suburbs. They are looking for sunlight, air, quiet, decent schooling for their children, a place to park their cars – the very things the planners want to give them. But these people try to keep the opportunities and pleasures of the city by commuting. They would be horrified at the suggestion that they should move to a small town, or to the country, to live and work. Neither would their children be content to stay in such places after they grew up.

14. Churchill, Henry S., _Op. cit._, p. 46.

People who want the attractions of the city should be able to live comfortably in urban housing. They should have more than inferior row houses and multistory slab apartments from which to choose. Although the advantages of spreading buildings apart are obvious in terms of light, air, and individual freedom, the reverse situation of placing building units close together does not necessarily produce the reverse effect, provided the organization of the elements is carefully worked out. This is in effect saying that living in close proximity to neighbors is not inherently bad. Furthermore, there are the advantages in concentration of facilities and short distance of movement in the urban scene.

If the urban pattern is to be preserved, architects and planners must attack its problems with new imagination and insight. Because of an inability to find ways to build on the traditions of the city in its most attractive aspects, the architects present new schemes which over-simplify urban problems and omit important factors, such as the cellular quality and the related type of human scale. There is a tendency to forget the importance of variety and intensity of human activity in favor of order and architectural prismatic purity. There is no focus unless the degree of activity varies and retains diversity. The vision of a few elegant slabs faced with graph paper curtain wall, standing free among green lawns, has blinded the designers to the facts and promises a future of uniformly mono-

tonous buildings and spaces (to be appreciated only at the high
speed of the automobile) covering thousands of acres of American
soil.

The new urban housing schemes have as a rule accepted their
fate as some variety of the pattern mentioned above and have been
content to explore only those variables of interior spacial con-
figurations possible within the slab or tower and the patterns
of layout of these tower apartments among large open spaces.
Some of these schemes have reached a high standard of architec-
tural achievement within their own chosen limitations. The
Eastgate Apartments in Cambridge, Massachusetts designed by an
association of several architects eliminates corridors on alter-
nate floors and provides well arranged apartments, a high per-
centage with balconies. The Helix Apartment designed by I. M.
Pei, but never built, was a circular tower with wedge-shaped
apartments radiating from a mechanical and circulation core,
the apartments stepping up in a spiraling relationship. The
Marseille Block by Le Corbusier achieves a high degree of spacial
ingenuity which gives richness as well as a rarely found through
orientation for cross ventillation and view for each apartment
with a skip-floor corridor arrangement. These designs are all
well conceived in a spacial sense to gain variety as well as
efficiency in the relationship of units. In sharp contrast are
such designs as the project at Fresh Meadows, Queens, New York,
which is astonishingly two-dimensional in concept for such a

large group of buildings. Unfortunately, the latter is typical
of what predominates among designs built within the last two
decades.

It is hard to find examples of multistory slab apartment
groups which make good visual use of the exterior space generated
between masses, or the site itself, for that matter. Astonish-
ingly enough, it is also rare to find designs which make good
functional use of the left over site. By placing slabs free of
each other and without consideration for the inter-action be-
tween these masses and the space between them, both become an
arbitrary two-dimentional pattern, which may find partial justi-
fication in having "openness"; though it does not have one of
the essential qualities of good architecture: economy of means.

Large open spaces can be used to great advantage for play
areas for children, recreation for adults, etc., but do not
necessarily have to surround each apartment house as a green
belt. It seems advantageous for children as well as adults to
have a variety of types and sizes of visual surroundings to
choose from for their activities. The monotonous spaces between
large apartment blocks are neither controlled spaces nor nature
unimpaired, but simply what is left between buildings and gen-
erally forbidding and impersonal in scale. This type of space
usually has no real identity and is little better for play or
recreation than a city street in the slums, particularly where
it is cut up by pedestrian and vehicular circulation paths into

useless patches of ground cover requiring maximum maintenance.

Many of the New York slum clearance projects examplify this

waste. Quite often a small area will be fenced off with wire,

like a pen, for children, while vast unused areas of "land-

scaped" lawns bear "keep off the grass" signs. This would seem

a kind of inhuman planning, doubly ironical because it is usually

alleged to give physical and psychological freedom. This type

of freedom is derived from the formula that as distance between

slabs increases light, air, and desirability increase also.

Obviously an oversimplification of this sort can become a crutch

for the planner or architect which blinds him to other factors

involved. It is certain that the approach in question grew out

of the concern for crowded, unwholesome conditions grown up in

cities in the last seventy-five years. When and if designs of

this kind are well thought out and in harmony with the existing

city, they may provide a significant and desirable contrast;

however, it is their universal application to all situations

that is in question. It seems that all planning from lack of

imagination has been reduced to a kind of spreading out of

activities and building masses. Planning standards and codes

now even compel such solutions.

What is needed at the present is a design for a type of

housing based on the physical and social facts of the urban

environment - one which offers another choice for living accom-

modations rooted in, rather than opposed to, urbanism, since

there seem to be few attempts to salvage the urban way of life
in contemporary designs. In providing housing based on this idea
it might be possible to attract many people – perhaps even
families – provided certain amenities were available now lacking
in urban apartments. No attempt should be made to console the
tenants for having to live in the city by similating ruralism
or suburbia; but rather there should be an attempt to encourage
them to choose by pointing sharp contrasts between the two
diametrically opposite forms of living.

It should not be overlooked that at the present time the
composition of urban population, except in worker areas, is
largely city oriented adults who are single, childless married
couples, and aged.[15] This population composition could con-
ceivably change to include families, if a housing type were
provided which gave a high standard of living and recognized
some of the less conspicuous reasons for the attraction of
suburbia. This point will be developed under the following
heading.

It is generally more costly to build comparable space in
an apartment in the city than to build a single dwelling unit
in the suburbs. Although extensive studies have been made on
the cost of urban building and ways of gaining economies, the
fact still remains that because of the high land values, con-

15. Downs, James C., Jr., "Are Apartments Economically Obsolete?",
    p. 72.

struction costs, and particularly financing costs under the
present economic system of the city, apartment units are not
competitive with space outside high-density areas except when
reduced to the bare necessities and space inadequate or stifling
to the psychological well being of the individual.

It may be stated then that it is unlikely that a new type
could compete successfully on an economic basis. Rather than
put all efforts into attempts to gain economy which retrace well
worn areas of study that tend to limit results by an incredibly
small number of possible variables, one might attempt to find
more lasting architectural values and might reach toward goals
which transcent trivial day-to-day requirements. In so doing
certain facts might be revealed which make it justifiable to
circumvent present economic trends.

Competetion has not always produced the best results on a
long term basis. The cities themselves, products of centuries
of private enterprise, are having to take corrective steps
where competetion failed to produce the correct location, the
best time-sequence in development, the necessary standards for
public facilities, etc. There is also a prevailing prejudice
against supplementing private with public enterprise. The
attitude is that social and governmental functions in housing
should conform to the structure of the private enterprise formula,
a point of view which is dangerous to human welfare.

This system has become so ingrained that an impasse has

been reached for a solution to the problem of mounting costs and the more dominant pressures by private enterprise have been extended into long term policies. Even strong public pressure for housing exerted during housing shortages is diverted into means of increasing private profits at government expense. The public welfare has been improved in increased standards of health, but not in the matter of protection from exploitation or from denial of quality living accommodations.

Still it can be observed that shelter cost today is the one and only major element in the cost of living indices that is actually lower than in previous eras of prosperity. Shelter cost has been declining, practically steadily, during the past forty years, measured as a percentage of total consumer expenditures. This reduction in shelter cost has contributed in a large way to the capacity of average American families to acquire many other goods and services that have greatly enhanced their material living standards.[16]

Let us also bear in mind that there is tangible evidence of increasing demand for housing above minimum economy standards. This fact is apparent by the rising volume of single-family houses built on owners' order for owners' occupancy. City apartments, to compete with the attractions of spacious suburban living, will be obliged to adopt more generous floor plans,

16. Architectural Record, editors of, "Building Types: Apartments: Reference Studies on Design and Planning", p. 129.

more convenient space arrangements, and more outside open space.

If a new housing type were sufficiently vital in design, it might rejuvenate the urban environment and create a demand which would nullify present economic trends. It is conceivable that over a period of time people might be brought to a point where they would be willing to spend a greater percent of their income for better housing.

II. Program

The basic purpose of this project is to find through a design a way of providing desirable urban housing by organizing individual units in such a way as to retain the advantages of urban life and still provide a high standard of living.

The scope of the study is restricted to exploration of a system or type of housing which retains adaptability to varying conditions. In this respect the concentration is on the study phase rather than the detail development phase; and it is for this reason that the project is called "A Study for an Urban Housing Type", rather than "A Proposed Urban Housing Type."

The emphasis is not placed on finding economical ways to build in the city, but rather on finding architectural ways to help the individual fulfill his needs and potential within the city.

A. Basic Human Needs

The physical requirements for human activities are amply
presented in many reference books if not standardized to the
point that they are no longer questioned. These requirements
should occasionally be re-examined since it is obvious that all
possible conditions can not be covered by such reference sources;
some are inadequate for their purpose, as is evidenced by the
standard leg space in counter seating; some are overlooked; and
many such requirements change from time to time. Changes come
with technological developments and other evolutions related
to functional requirements, such as the dimensions of automo-
biles, plumbing fixtures, etc. To accept the stereotypes of
physical planning as to arrangement, size, spacing, etc. may
tend to strait-jacket designs and produce a kind of banality
common in federal housing projects and builder sub-divisions.

A report by the Committee on Hygiene of Housing of the
American Public Housing Association called "Planning the Home
for Occupancy" states that ample space is one of the great
needs in housing; that we need bigger if not better housing.
The standards for square footage they recommend for health-
ful housing are as follows:

for one person	400 square feet
for two persons	750 square feet
for three persons	1000 square feet

for four persons   1150 square feet

for five persons   1400 square feet

for six persons   1550 square feet

The report further states that our progress in home sanitation, in heating and ventilation, in improved household equipment has been revolutionary, while at the same time space provisions have retrogressed to an equally phenomenal extent. In the opinion of its authors, "Normal and happy and fruitful family life is possible without modern plumbing and deep-freeze equipment. It is not possible without a reasonable modicum of space. The sense of inferiority due to living in a substandard home is a far more serious menace to the health of our children than all the insanitary plumbing in the United States."[17]

Adequacy of space is not the only relevant quality of dwellings, even though it is of prime importance. More often over-looked, efficiency in space distribution can produce a generous and dynamic arrangement within the same spacial limits that ordinary apartments have. This type of arrangement is not suggested or even intimated in the mere collecting of minimal standards for component parts, but rather requires an objective look at basic human needs.

The needs of the individual and family in their living places are somewhat conjectural except for those which derive

17. _Architectural Record_, editors of, "Building Types: Apartments: Reference Studies on Design and Planning", p. 124.

dimensions of the human body and its movements; and even these
are not always agreed on. Polls taken of complaints which
people have about urban accommodations reveal the following
facts:

Housing Characteristics	Proportion Complaining	Proportion Indifferent
Amount of closet space	33 %	0 %
Open space about the house	28 %	6 %
Street noises	23 %	16 %
Amount of room	22 %	2 %
Heating equipment	16 %	0 %
Rent (or maintenance)	15 %	1 %
Nearness to friends or relatives	15 %	15 %
Amount of air or sunlight	14 %	2 %
Kind of people around here	13 %	9 %
Amount of privacy	12 %	1 %
Nearness to church	9 %	8 %
Travel to work	8 %	10 %
Kind of schools around here	6 %	41 %
Shopping facilities	6 %	1 %[18]

These facts would undoubtedly be entirely different if the
pattern of housing were altered, but they do reveal popular
reactions to existing standards. The reactions are interrelated,
and if one important element changed it might produce in effect
a chain reaction until the complaints would take on a different

18. Rossi, Peter H., Why Families Move, p. 82.

relative importance, though technically certain things remained the same.

For example, many observers believe that units which allow a relatively flexible utilization of space to accommodate easier to family size and age shifts are of prime importance. If such adaptable space were available it might offset some of the criticisms of the structure of the building itself, since inconvenience in arrangement of space and the dissatisfaction which results may lead to general dissatisfaction. In this case attention is called to petty grievances overlooked in a more satisfactory general arrangement.

Another defect in apartment housing is the disregard for the powerful human need for outdoor living space and a chance to have something growing, regardless of how small the space is. Decorative balconies are inadequate or useless, however, and provision for private outside space should accordingly not be limited to a few apartment units but be provided for all. It is a misconception that outdoor space in the form of balconies should be limited to warm countries, as shown by the Eastgate Apartments in Cambridge, Massachusetts and by the long experience in Sweden.

Housing should foster widely diverse opportunities for wholesome outdoor as well as indoor social activities. But gregariousness also breeds a demand for privacy. The plan that fails to give sanctuary to the individual who wishes at times to

escape even the most congenial group is guilty of as serious a
shortcoming as that which neglects the public parks and play-
grounds. The tendency to throw open buildings to the daylight
and the outdoors, overlooks the need for darkness, for inner
privacy and retreat. The cloister is a constant element in the
life of people in cities. Without formal opportunities for
contemplation, even the most externalized life will suffer.

An extensive search for the psychological and emotional
needs – indeed, those needs which are not really measurable –
would perhaps aid the designer or planner; but the translation
of such needs into architectural form may not be entirely pos-
sible, at least to any real degree of completeness, because
the desires and requirements are generally at cross purposes.
Only through design initiative and insight can a partial syn-
thesis of needs with physical form be attained.

One observation of psychological need which has often
been overlooked or ignored, but which has become a basis for
the design presented here, is the psychological advantage of
visual unit recognition in total building mass. This aspect
is suggested by the rather impersonal nature of the large slab
building. In a sense, the individual should have pride in his
own domain – difficult to single out in many urban projects;
thus difficult to take pride in also.

This lack of recognition is at least partially a problem
of architectural scale. An individual unit may be found in a

slab only by counting windows or balconies, but be impossible

to distinguish visually as a unit. Since this situation exists

most occupants probably would not even know their own unit from

the exterior of a large building - lost as it is in a peg-board

of openings. Although recognition of each unit might seem un-

important, it is surely the pride of being able to point out

ones own area of control and ownership that is partly responsible

for the suburban trend. This pride in ownership is one of the

more subtle appeals of suburbia mentioned previously. It is

obvious that unit definition rather than marked differences in

appearance from neighbors is the important factor, as evidenced

by the lack of variety in subdivisions. A different color trim

or door, awnings, a slight materials variation suffice for the

average occupant. So long as his house is set apart, is it

really necessary to separate it literally? Having only minor

variations can be advantageous in unifying the environment.

The visual divisions should be evident through more

organic means than merely fenestration. However, gaining scale

through window openings is better than no scale division at all,

as in the case with the average curtain wall wherein no recog-

nition whatsoever of interior spacial organization exists. The

facade nullifies everything behind it and is a flat scaleless

surface. The curtain wall approach gives no importance to the

individual, but loses him in the desire for clean geometry.

This anonymous approach is also consistent with two dimen-

sional planning of interior rooms of such buildings and points to another need, less easy to quantitate. That is the need for interpenetration of spaces to give real life and richness as opposed to superficial decorativeness to a building. This need goes into the individual search for value or truth and suggests that the outside of a building should have something to do with the inside visually, for the sake of continuity and unity.

The provision of a rich and integrated living environment can undoubtedly transcend many physical limitations which inevitably occur. Separation of physical and psychological needs in housing is difficult and perhaps unnecessary.

What is suggested is that merely satisfying of physical or material requirements in planning is insufficient. Julian Huxley phrases it this way, "At present our approach is concerned almost entirely with economics, social security, and physical health. This material approach is frankly not enough; however adequately it deals with the foundations of life, it leaves out all its upper stories. Our new view of human destiny insists that emotional and intellectual and spiritual satisfactions must also be taken into account."[19]

As basic program objectives, therefore, considerations not only of adequate space, but of flexible and well organized space

19. Weinberg, Robert C., "Not by Bread Alone: an Evaluation of the Design Element in Large Scale Planning", The Future of Cities and Urban Redevelopment, p. 55.

should be taken into account. Varied provisions for outdoor living and community activities should be included, as well as accommodations for privacy and solitude. The principal of variety within the concept of unity is essential, as is individual unit identification: an important factor giving scale. Another vital scale factor is the interpenetration of masses which also imparts meaning to the entire structure.

B. The Environment

Individual living conditions are shaped by the environment
of the city in which they are framed, and more particularly by
the environment of the neighborhood or district. Those elements
of environment which have formed a basis for this study will be
described briefly here.

An infinitely complex set of conditions contribute to the
environment; however, the more important factors which relate to
the individual dwelling or housing group can be seen in terms of
physical surroundings and use of these surroundings. Although
it is not really possible to separate completely use from physical
form, the major environmental influences will in some cases be
broken down this way where it helps to give a more lucid view of
the general milieu.

The physical scene consists principally of the pattern
and size of streets and buildings; the size and shape of city
blocks and open spaces; the natural solar patterns and character-
istics of air currents; and other climatic conditions. The uses
of this physical configuration are described in terms of dwel-
lings, traffic patterns (both pedestrian and vehicular), automobile
parking, play and recreation for children and adults, facilities
for shopping, laundry, services, etc.

The cities to which this study would apply consist generally
of geometric patterns of streets and blocks, most often recti-

linear. The grid pattern in cities has produced various sizes of
blocks. Those that repeat in order to constitute a pattern
usually have some consistency in size over wide areas of a city.
In Manhattan the grid pattern produces blocks of around 220
feet street to street, broken down in a typical case as follows:
10 foot setback for sidewalk, 75 foot depth of brownstone house,
15 foot back yard, 20 foot alley; then another yard, house and
sidewalk opposite the alley. The other dimensions along the
block vary greatly but consist of 20 to 25 units of 20 to 25
feet wide or around 500 to 600 feet, sometimes much more. In
the Back Bay area of Boston the same pattern produces blocks of
250 feet in depth (including a 25 foot alley), by 380 feet,
500 feet, 600 feet, etc. In Washington, D. C., the blocks are
deeper, around 320 to 450 feet, 620 to 700 feet. These dimen-
sions are only selected as being typical for sake of study.

The streets themselves are from 25 to 100 feet wide as an
average, and this should be considered in designating relative
importance within the traffic system (which is considered later).
The buildings mentioned in the city block system are usually
from one to six stories, in residential areas frequently four
or five stories.

The open spaces produced in this system are primarily
linear (streets and alleys) or in the case where blocks or parts
of blocks remain open the space is rectilinear and sharply
defined by building masses. The other open spaces in the grid

system are as a rule sharply defined in outline, such as Central Park in New York or the Boston Common. Parks, playgrounds, the opening up of traffic arteries, parking lots, etc., more often form a contrasting system which interrupts the general grid pattern of masses and spaces. The juxtaposition of the two systems can produce a rich configuration as seen in the contrast between the Back Bay of Boston with its grid pattern and Storrow Drive parkway.

Recent housing projects tend to take as a basic goal the destruction and ultimate elimination of the grid and its regularity. One of the objections to the grid is its lack of discrimination in terms of relative importance of traffic. Other objections are its lack of consideration for pedestrian circulation, its monotony and regularity, and the lack of freedom in locating, orienting and relating building masses in it.

Although the objections are formidable, the alternative amorphous patterns presented by many recent designs make the grid seem not so objectionable, if reconsidered with certain alterations. The new designs generally disrupt the imageable or visually understandable grid pattern of the city to which a person must look while within for his bearing or direction, and they do little to replace the old ordering system with anything even remotely as clear. Also the scale of these new designs, though in sharp contrast to the old, does not sufficiently relate to the individual in any personal way as does the relatively

intimate scale of the street lined with buildings and shops,

giving incentive and meaning to walking as a means of trans-

portation as well as for pleasure. In the new schemes the

automobile almost entirely replaces walking as a means of

transportation - somewhat ironical in the "pedestrian havens"

created by such designs where the only purpose for walking is

as recreation. It is possible in the grid pattern to plan

interruptions and other devises in order to give a heirarchy to

vehicular circulation, and retain the residential street as a

local traffic artery, with through traffic removed and concen-

trated.

With careful study individual units can be organized in

the grid system to allow for through circulation of air and a

variety of orientations to sun as readily as they can in other

systems. In this regard it is desirable to allow each unit to

receive direct sunlight during some portion of the day, a con-

sideration often not realized in many slab buildings because of

the limited physical arrangements or orientations possible for

the buildings, if they are to allow all apartments to get direct

sunlight. These buildings cast long shadows also, making certain

areas around the building perpetually dark. Such spaces can

even be desirable, provided they are intentional and not too

extensive; in the matter of extent of dark space, the problems

decrease somewhat as the height of a building decreases. The

resulting unity a regular grid can contribute to the urban

environment may far surpass in value the rather nebulous variety
or even transient novelty of the schemes which aim at its
distruction.

The city seems to produce its own special kind of views
distinct from the broad rolling countryside of the rural view.
This is sometimes overlooked, or considered something which
needs correction. The view of the street and buildings across
from the balcony of a Paris or New Orleans apartment is as
compelling as any pastoral landscape, but in a different way.
What a shame it would be if both did not exist. It is true
that the view can be depressing from the window of a tenement
into the dark and dirty "yards" or streets; but broad vistas of
green fields is not the only alternative to it.

In the slum areas of cities the parallel facades of the
streets receive light, sunshine, and air across channels of
noise, dust and noxious fumes which form the traffic arteries.
Above the sidewalk is a confusion of signs and entanglement of
poles, wires, canopies, etc., and through this is seen a ribbon
of sky. It is partly the awareness of this scene and the view
of the urban street as a playground that promotes the elimination
of the street as an element of life in current planning schemes.
The desirable aspects of the street overlooked; such as the
animation of human movements, the chatter of the shopping parade,
the street vender, the organ grinder, and the variety of appeals
and enticements within the sense of enclosure of the urban

residential-shopping street. Assuming that recreation and play

areas as well as living areas could be assigned their own space

apart and distinct from the street, and that vehicles could be

limited to local traffic, it would be desirable to try to retain

the activities which would sustain the street as an element of life

and richness. The main contributing elements would be small

shops: provisions for laundry, beauty and barber shops, deli-

catessens, etc. Although against most zoning ordinances, having

commercial elements in a residential area contributes to and is

characteristic of the urban way of life.

Outdoor recreation and play space is necessary to the

adult as well as child and should be an essentail element in-

separable from the general configuration of units. This is to

say that such facilities must belong to the scheme by nature

and not be arbitrarily assigned to one area as easily as another -

always appearing to be in danger of encroachment by structural

additions. This has to do with the physical form of the space

independent of its use. Local community recreation should be

available, but not imposing. In suburbia the local community

life, lacking in variety, is often not only the only source for

social outlet, but also difficult to avoid. The organization of

the community, therefore, is to some of its inhabitants an

imposition. Through architectural means a person should find it

easy to be drawn into a pattern of activities associated by

proximity with his dwelling; however, he should also find a

graceful way to seek activities elsewhere, without being con-
spicuous in doing so. One way of accomplishing this is to plan
in such a way that the individual is not drawn through the
activity area when he goes to his unit, but finds this area
quite accessible when he wishes to participate in its life.
If possible, the play space for small children should lend
itself to control with a minimum of effort. Outdoor spaces
should be designed to facilitate the genuine pursuit of enjoyment
in a variety of ways and not appear to be the mechanical pro-
vision of requirements by law. A variety of sizes of outside
spaces is desirable: from small private terraces to large play-
fields.

In the original program for this study it was suggested
that specific sites in Boston be selected in order to show the
adaptability of the final scheme to various urban situations.
Since that time and after discussions with the Boston City
Planning Board, it was decided that this approach would be
inappropriate to the main purposes of the project, since it
would inevitably become involved with planning considerations
to such an extent that either they would tend to dominate the
study or they would have to be treated superficially. Either
alternative was not considered attractive; therefore, it was
decided to de-emphasize the specific planning problems of par-
ticular sites in favor of concentration on developing a housing
type, adaptable to many sites.

As a way of describing the system, however, at least one
hypothetical site must be shown, merely to show the physical
characteristics of the units in relation to a typical urban
setting; rather than to show a proposed solution to the intri-
cate and far reaching planning problems necessary and unavoidable
in a particular site situation.

C. Design Requirements

Although comparative statistics on urban housing have
been studied and some are presented here, they in no way form
a rigid set of limitations on which the design solution is
based. Instead the compilation of information on urban densities,
etc., provides a guide or general framework to give significance
to the study. It was decided in the early phase of study that
if building codes, zoning laws, existing standards for space and
construction were firmly adhered to, it would limit the possi-
bilities and channel the design to too great an extent to allow
for the development of a housing type not already in use at the
present time.

Overcrowding and living in close proximity to neighbors
are not necessarily the same thing in urban housing. Although
by using multistory buildings there is practically no limit to
the number of people that could be and are housed on any given
site, there may be a limit to the density of population which
is humanly tolerable for any area.

In slum clearance projects such as New York's Penn Station
South, the density runs as high as 374 persons per net residen-
tial acre. Net density represents the number of persons per
acre, excluding streets and non-residential uses. Existing
densities in the South End in Boston are as high as 350 persons
per net residential acre. The average family unit size is 2.8,
which means there is an average of 125 units per acre. Even

in the Back Bay area of Boston the existing density is 192

persons per net residential acre, with the average family size

2.2, or 87 living units per acre. In the Mill Creek Area of

Philadelphia the multi-family housing is designed for a density

of 85 dwelling units per net acre. Even the new West End

Development in Boston is planned for economic reasons for a

net density of around 75 units per acre.

According to Abel and Severud, the Federal Public Housing

Authority considers a density of 50 units per acre appropriate

for three story low cost housing, with a lot coverage not to

exceed 30 percent. Furthermore, where densities exceed 50 units

per acre the lot coverage should be decreased; however, densities

up to 100 units per acre are permissible.[20]

Density figures vary greatly both in existing urban con-

tions and new proposals. Zoning laws often control density by

means of an allowable square footage of floor area to lot size

or floor-lot ratio. In the urban areas of Boston this new ratio

is two; i.e. two times the lot area is permitted in building

floor space. The figures for any type of housing vary accord-

ing to the particular design, however some types have a rather

typical or recurring figure: twenty units per acre for two

story row housing, for example. Fifty units per acre seems

20. Abel, Joseph H. and Fred N. Severud, Apartment Houses,
       p. 123.

to be a reasonable figure for new urban housing, particularly

where elevators are not used, and this figure serves as a

guide for the present study. Taking the overall average family

unit size of 3.5[21], this would give 175 persons per net acre.

The amount of space in individual units is generally

based on what the market will allow; however this minimum does

not produce dwellings that are adequate for human occupancy as

was pointed out in the section on human needs. The table of

sizes recommended there by the Committee on Hygiene of Housing

of the American Public Housing Association (see page 51) may

give some idea of a desirable goal for unit space requirements.

In my original program a set of figures was given resulting

from observations on the sizes of the more generous existing

urban apartments. These are as follows:

<div style="padding-left:2em">

Bachelor Apartments   -   650 to 1000 square feet

1 Bedroom Apartments -   880 to 1200 square feet

2 Bedroom Apartments - 1000 to 1320 square feet

3 Bedroom Apartments - 1150 to 1500 square feet

4 Bedroom Apartments - 1250 to 1600 square feet

</div>

These figures were intended to correspond roughly to low income

at the low end and high income at the other.

To break down apartment sizes by income levels becomes too

involved with economics and is inconsistent with the approach

which developed after initial research. It was decided to work

21. Boston City Planning Board (verbal).

with a range of unit sizes representing an average.

A minimum gross area per room is around 210 square feet, based on an analysis of recommended unit plans by Abel and Severud. This means that the following range of sizes represents an appropriate minimum.

3 Room Apartment (1 Bedroom) —   630 square feet

$4\frac{1}{2}$ Room Apartment (2 Bedrooms)—   950 square feet

$5\frac{1}{2}$ Room Apartment (3 Bedrooms)— 1150 square feet

$6\frac{1}{2}$ Room Apartment (4 Bedrooms)— 1350 square feet

The range of sizes selected as a basis for this study and believed to be commensurate with a good standard of living (rather than reflecting income levels) is listed below. Allocation of unit size to income level would be left to the application of the housing type when it is used in a particular situation.

1 Bedroom —   800 square feet

2 Bedrooms — 1100 square feet

3 Bedrooms — 1300 square feet

4 Bedrooms — 1500 square feet

In addition to this enclosed space each apartment should have some private outdoor living space separated from general or public open space. The composition of the total housing scheme as to percentage of each size of apartment would depend largely on the local demands and intentions of the project. In the original program a set of figures was given. Although it

is desirable for the type to be flexible enough to produce a
set breakdown, the scheme should also be able to be divided
into any number of possible combinations in order to be useful
as a type. On reconsideration it seems reasonable to increase
the accommodations for childless couples and single people
who now make up the majority of urban population. This is not
inconsistent with the desire to attract families, since it is
felt that neighborhoods which vary in composition are more
stable than neighborhoods composed of all large families or
all single people.

Parking requirements for urban housing vary from city to
city and range from one car per unit to one car per five units.
In the new zoning ordinance proposed for Boston, the parking
requirements are keyed to the floor-lot ratio as follows:

Floor-Lot Ratio	Parking required for each 10 units
.8 to 1.0	9
2	8
3	7
4	5 [22]

In the original program for this study it was stated that
one offstreet parking space should be provided for each two
dwelling units, and if possible additional parking should be
included. This requirement is based on the fact that today

22. Boston City Planning Board, Proposed Zoning, p. 46.

one out of every five persons in the United States owns a motor
vehicle. Suburban areas are more dependent on the automobile
than urban areas, which would reduce the figure for the city.
Since the average family is 3.5 persons, city parking for fifty
percent of the living units seems reasonable.

One of the important restrictions set down in the early
stages of study was that the scheme should be adaptable to
varying site conditions, but geared primarily to the grid pat-
tern of the city. It was assumed that traffic patterns could
be controlled to keep through traffic off local streets - per-
haps even by interrupting the system so as to discourage speeding,
if not make it impossible. Retaining the local streets makes it
possible to use these streets for services, such as delivery,
garbage collection, etc.

Also of primary importance from the beginning of the
study was the consideration of the local shopping street as an
element of life and richness worth preserving, if its undesirable
characteristics, mentioned previously, could be eliminated.

Consistent with the needs of the individual and family,
outdoor common space is required as an essential element in
the design, amounting to approximately thirty percent of the
lot area, exclusive of private outdoor spaces, parking, and
other non residential uses of the site.

III.   Objectives of the Design Solution

No detailed description will be presented of the design resulting from this study — rather the drawings should suffice for explanation.

The objectives of the design solution need to be stated here nevertheless, and since there are too many factors contributing to the final design for all of them to be summarized simply, only the objectives which assumed primary importance will be presented.   These objectives are as follows:

1.   TO CREATE AN URBAN HOUSING TYPE WITH OPTIMUM DESIRABILITY AND HIGH LAND COVERAGE BASED ON, RATHER THAN IN CONTRADICTION TO, THE URBAN ENVIRONMENT.   This system should be more universally applicable than a specialized solution to a particular site problem.   Since housing is seen by planners largely in terms of building types there may be some advantage in having a wider variety of types in order to maximize human choice, particularly to present a desirable alternative to suburbia.

One of the distinguishing characteristics of the design is its cellular base.   The configuration is organic in that the total building mass is built up of units, rather than cut up into units.   The unit and its relationship to the next unit is the determining factor in the building pattern or geometry, as opposed to assuming a geometry of the whole, such as a slab, and letting its limits determine the individual part.

This is not to suggest that either approach is inherently
superior, since each can produce sound systems, but rather to
point out a distinction of this design.

Because of the cellular quality of the design, it is
flexible and can be combined in small numbers of units; yet
it can become a type only when a sufficient number of units
have been put together to form a repeating pattern and allow
the central space to develop. This is not unlike other housing
types. The slab certainly is not possible unless there are
enough component units to justify an elevator and row houses
by their very name are characterized by being combined in
adequate numbers to form rows.

The system is more closely related to row houses than
any of the other existing types in that it uses a party wall
as division between groups of units. Too, each unit is at
right angles to the street and is based on the predominate
existing grid pattern. It is unlike the average row house in
building shape and in that even the units above the ground
level have private outdoor spaces.

It is unique in that it utilizes the possibilities
resulting from urban excavation to a maximum degree. Almost
any site on which the design would be built would have basements
under existing buildings to be razed and little if any natural
topography. In clearing such a site the base level is at the
basement rather than the street level. The design utilizes this

fact not just to build new basements, but to allow entrance from the street on what is actually an intermediate level in relation to the base plane and lowest unit level. One then goes up or down to the units and an extra level is gained for apartments. At the same time the communal space below street grade becomes more secluded.

Approximately fifty units per net acre is a reasonable average to assume for the system, if five units are stacked vertically. The design creates a physical continuity within the total building mass, unlike the discontinuous relationship of single masses commonly found in urban housing proposals.

2. TO GAIN AN ARCHITECTURAL ECONOMY OF MEANS IN TERMS OF INTERRELATIONSHIP BETWEEN ENCLOSED SPACES AND BETWEEN BUILD-ING MASS AND OUTSIDE SPACE. Quite commonly spaces between buildings are seen as what is left of the site after the build-ings are located and then are "adapted" for use. "Adapted space" is a term frequently used by planners and reflects the widespread conseption of space as a left-over element. Such space more often than not has no identity.

In this design an attempt has been made to make buildings, landscape, and open spaces form an architecturally unified whole. An interdependence between spaces both within the building mass and between the mass and the exterior open spaces is essential to the system; they mutually determine each other and cannot be separated in concept. This is in a sense an extension of the

Gestalt principle of figure-ground ambivalence projected into a three dimensional framework. The space is not merely open space, but a more meaningful or structured space, whose limits are marked in such a way that any particular space has visual boundaries seen from a point of view; but as the observer moves another related spacial reading, again with limits, may become apparent - thus the ambivalence. It is believed that this type of visual and spacial experience gives meaning and order to the environment. It is hard to measure such values in terms of use, but it is felt that efficiency in functional terms is directly related to visual efficiency. Part of the meaning imparted by the visual readings may be in terms of a clarification or articulation of uses or purposes for spaces.

In this sense the many possible readings of the central community space make it adaptable to various types of activity defined by varying heights, degrees of lightness and darkness, cover and openness. Similarly the interior space of apartments can be "interpreted" many ways, and by a few simple reinforcements in terms of furniture arrangements, screens, etc., can be transformed to comply with individual desires and needs. A minimum of permanent partitions is placed in the units, and even closets could be movable; yet the space is not merely an open warehouse for "do-it-yourself" planning. There is a definiteness about the spacial organization to aid the occupant, rather than confound him.

The unit facade to the central community space is not merely a two dimensional enclosing surface, but develops sufficient depth to generate visual interest. In this way continuity is achieved between the inside and the outside of the building. To the street side the step-back system of terraces creates a funnelling of outside space into individual units. Similar to the other facade, the depth of the enclosing wall forms a transition between the outside and inside, linking them more closely.

3. TO DESIGN A RICH ENVIRONMENT ATTRACTICE ENOUGH TO DRAW PEOPLE TO OR RETAIN THEM IN THE CITY AS A PLACE TO LIVE. Even families should find city living desirable. It is felt that adequate playgrounds, light, and air are not the only things needed. The best of urbanism should be perpetuated as a way of life, distinct from ruralism, and a design, truly urban in concept, might help provide the needed impetus. In this design study an attempt is made to provide not only many amenities now lacking in the city, such as private outdoor living space and more generous floor areas, but also a vital environment for living. This has partially been covered in the previous paragraphs, but other points need to be mentioned here.

The individual's relationship to the community created by this design could still range from anonymity to participation because of his close proximity to, and thus identification with, either the local community or other parts of the city. The

more social functions of the private dwelling are projected
into the inner, community space, whereas the private spaces are
to the outside - detached and individualized - and thus more
appropriately identifying with the city as a whole. The step-
back system reduces to a minimum noise and undesirable qualities
of the street which might effect private dwelling space. An
apparently reasonable assumption of many current designs is that
they provide private space in the most inner part of the scheme
and public space toward the outside. The opposite seems to be
more fitting for the city, if a community area is developed
centrally. Spaces near the central area are more public and
those opening onto the city identify with anonymity.

Each unit has a space for family activities, detached from
the main social living spaces, and related to the outside terrace.
Outside space is open to the sky and would receive direct sun
at some time during the day. These areas are comparable in
size to suburban patios and are adequate for the cultivation
of some plants and for children's play. The terraces are detailed
in such a way that complete privacy from other units is retained,
yet there is a direct eye level view (except in the bottom floor
apartments) of the city scape and the outside world.

One of the objectives of this project is to free the
individual from the oppressiveness of the horizontal band of
space. The aim is to liberate him from the eight foot ceiling
and to initiate a vertical consciousness, not only in interior

spacial relationships, but also beyond the physical limits of the living unit. From the private terrace the eye is directed toward the sky; from the living room the eye is directed down toward the community space.

The stair complex is conceived as not merely a means of access, but to provide a rich experience in the sequence of ascending or descending. At each stair landing one is brought farther into the central space and the consciousness of climbing is minimized. A recurring view of the community space from different vantage points is the dominate feature.

The central open space would contain recreational facilities for both adults and children, and be completely free of automobiles. As the type is expanded to take in several blocks, easy connection can be achieved between community areas below street level and larger playfields outside. As the situation warrants, the type of development of the central space can be varied; however, it would certainly generate a high intensity of human activity simply because of its physical relationship to the individual units. It could easily be controlled as a play area for small children because of the limited number of access points and change level from the street. There would be a rich environment in the community space because of the range of intensity of light. The play of sun and shade would be continually changing from the many light sources above and to the side, satisfying varying demands for shaded and sunny

space.

Parking space is provided for from fifty to one hundred percent of the units. Automobile parking in the design scheme is on cross streets not used for through vehicular circulation. This arrangement makes the automobile accessible, yet inconspicuous from both the units and the main street.

4. TO PLACE A HIGHER PRIORITY ON RATIONAL DESIGN IDEAS AND GENERAL CONCEPT THAN ON COMPLYING WITH CURRENT ECONOMIC TRENDS. No attempt is made to create a design competitive in the housing market. It is felt that designs are generally based on economy, efficiency and health, almost exculsively, without accepting the responsibility for the way of life implicit in the design. Certainly the social and intellectual values to the individual and community should always outweigh temporary financial advantage. Recognition of this is considered sufficient justification for deviating from the present economic trends.

The best achievements of man have not always been derived from or applied to purely utilitarian needs. Some of the greatest technical achievements have been motivated by other than practical desires. For example, in the seventh century the most powerful waterwheels and hydraulic pumps were perfected in order to work the fountains in the Gardens of Versailles. Fischer von Erlach's first steam pump to be used in Austria,

did not work a mine, but the gardens of the Belvedere Palace in Vienna.[23] This did not prevent the application of these inventions to more utilitarian purposes later. It is not always the solutions to problems of the most urgent needs that are most beneficial in the long run. Proposals of a less practical nature often enlarge the magnitude of knowledge and experience. Design consepts not immediately realizable, such as the step-back apartment system presented here, may in some way help to expand the vocabulary of architecture.

The step-back arrangement of apartments is not a new invention. There have undoubtedly been many variations on it and particularly noteworthy are the proposals by Le Corbusier and Marcel Breuer. In both of these cases it was applied to buildings of many floors. Parking and common facilities were on the ground floor in Le Corbusier's scheme, thus maximizing length of unsupported columns. The project was also sited in large green fields, not related to the present urban pattern.

The step-back system develops more periphery which would make it expensive to build. There are many factors which make it reasonable in other ways, as applied here, such as the relatively high density for walk-up housing and the high degree of space utilization both internally and externally. Lobbies and hallways can be eliminated and the enclosed space is almost

23. Mumford, Lewis, Op. cit., p. 173.

exclusively devoted to apartments, except for first floor mechanical rooms and storage.

The system would seem feasible only if the height is limited in order to minimize the length of unsupported columns. It is apparent that the system could not logically go above a certain height (around six floors) unless an efficient structural system could be found to reduce the number and length of supports.

In this design the party walls are basically load bearing, resolved into piers in the open space. The possibilities of prefabrication of the units as cellular structures fit between walls has been considered, but not developed because it, like the structural system, is not of primary importance to this study and would be a worthwhile study in itself. For purposes of design completeness, therefore, certain assumptions have been made in these matters.

Keeping the basic unit relationship and site cross section, the system is adaptable to many different configurations, partly determined by circulation patterns. The two basic patterns are first the co-ordinate system in which stairs connect the street and common space to horizontal arteries or halls at each unit level which in turn serve each apartment. This system can be used without sacrificing through orientation for each apartment and can eliminate some costly stairs; however it develops more depth of building because it introduces corridors and results in a slightly lower density. It also requires that smaller

apartments be inside, thus getting no lateral light. The second

is basically a peripheral system in that stairs connect the

outside street and common space directly to the apartments.

This system requires a slightly greater number of stairs, though

ten units per stair does not seem unreasonable, as is the case

with the scheme in which five units are stacked vertically.

Each apartment in this system has windows in three directions.

Like some housing types now in existence, the one studied

here would have to be initiated as a high income project until

sufficient economies could be found and/or sufficient demand

created by public pressure to affect changes in costs allowing

it to apply to middle or low income. Mies Van Der Rohe's Fro-

mentory Apartments, built as a high income venture, set the pace

for urban renewal and slum clearance projects in Chicago, because

of its low construction cost. Although construction costs of

this system are undoubtedly great, economies can be found through

its space efficiency. It is not unreasonable to assume that

something which starts as a luxury eventually can become commonly

available. As was pointed out previously, shelter costs have

dropped over forty years from 19 percent of the family budget to

$9\frac{1}{2}$ percent. Alcoholic drinks, tobacco and amusements take more

of our income than basic shelter at the present time.[24]

It is not unreasonable to venture that people might be

24. Architectural Record, editors of, "Building Types: Apartments:
Reference Studies on Design and Planning," p. 128.

willing to put a larger percent of their income into housing

than they now do. In fact, the trend might change considerably

if people could find apartments that had more worthwhile qualities.

One way this apartment project might be handled economi-

cally is through cooperative ownership. This system is certainly

feasible for the scheme presented here since the units truely

lend themselves to pride in ownership, which is necessary for

the success of cooperative projects. Living costs could be

considerably lower under group or cooperative ownership than

when under private management.

But to repeat the initial premise: the purpose of this

study is not to work out all the practical considerations neces-

sary before the scheme could become an actuality. The problem

is to explore through design study what better housing might be.

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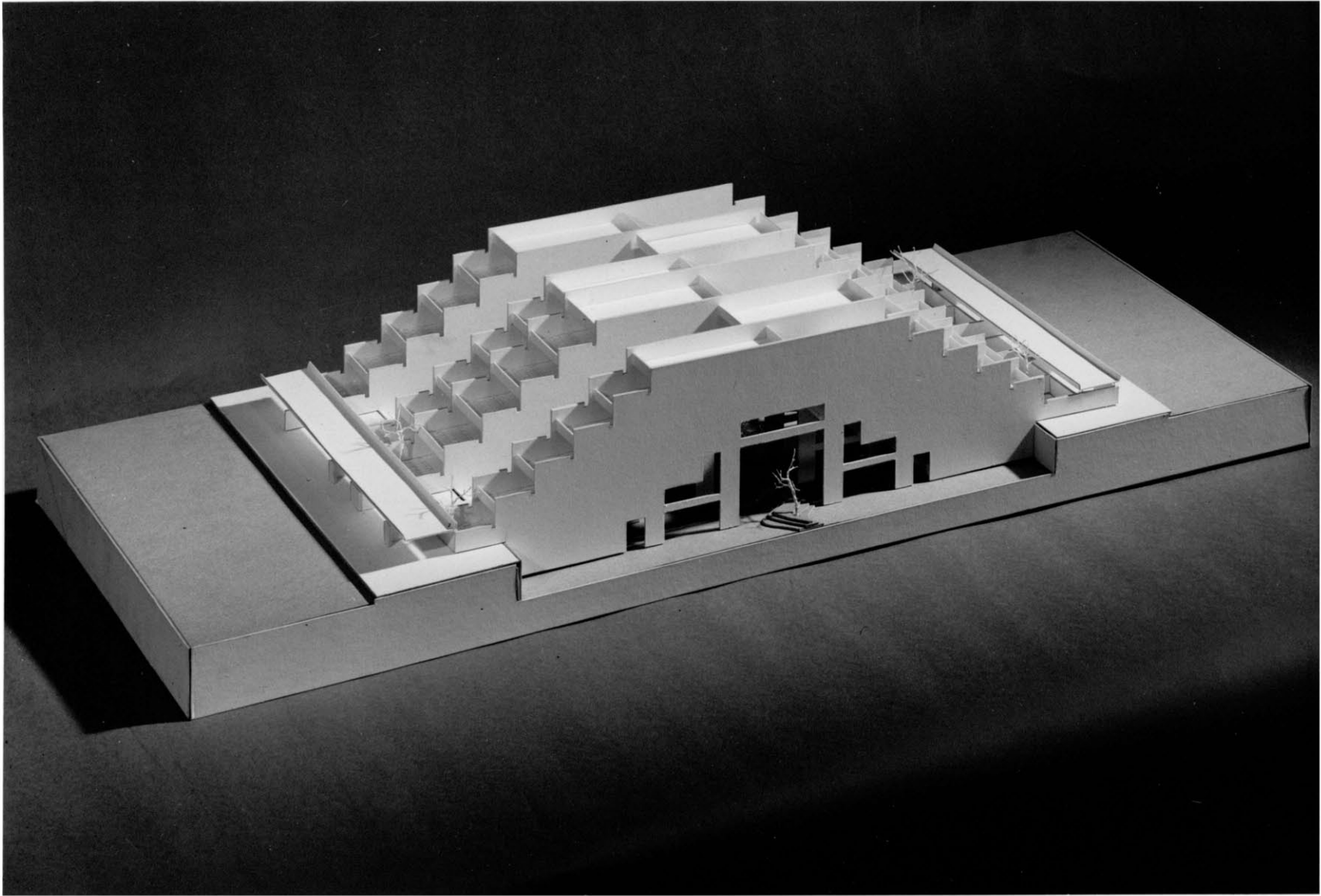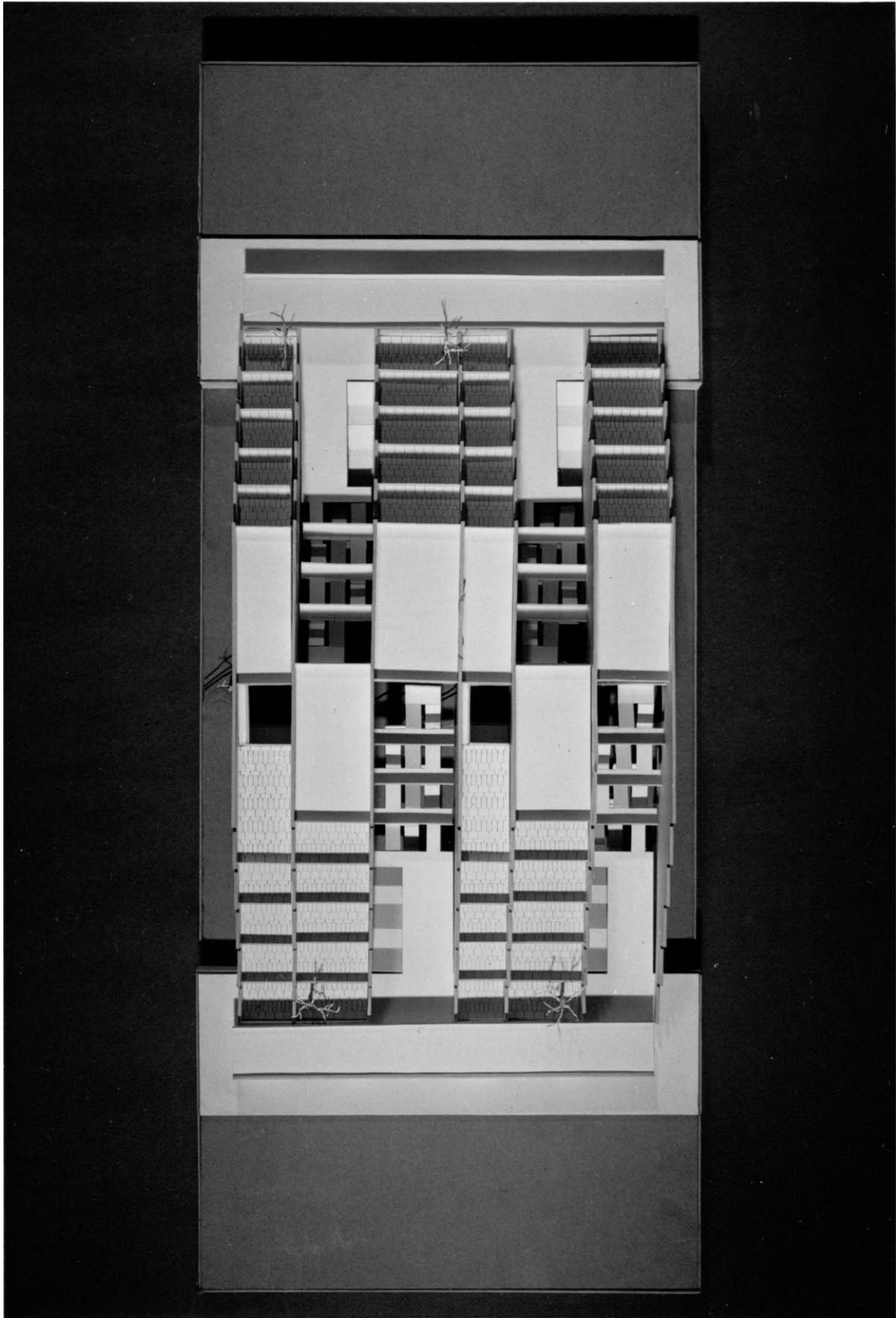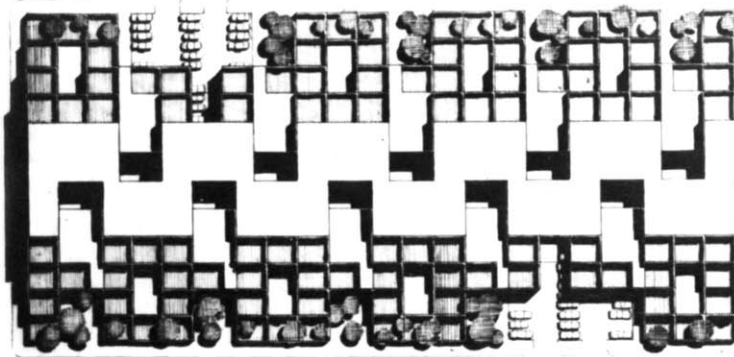
POSSIBLE CONFIGURATION OF UNITS
CORRIDOR SCHEME — 4 UNITS HIGH
DENSITY APPROX. 45 UNITS PER ACRE NET
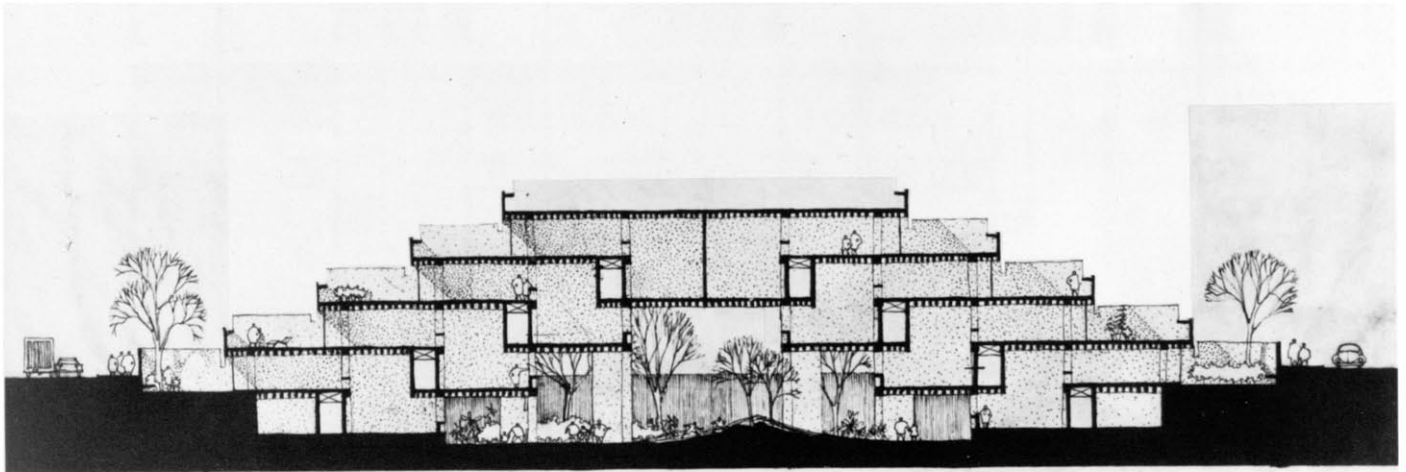
SECTION — CORRIDOR SCHEME, 4 UNITS HIGH

ONE BEDROOM UNITS
880 S. F.

TWO BEDROOM UNIT
1140 S. F.

FOUR BEDROOM UNIT
1510 S. F.

BACHELOR UNITS
820 S. F.
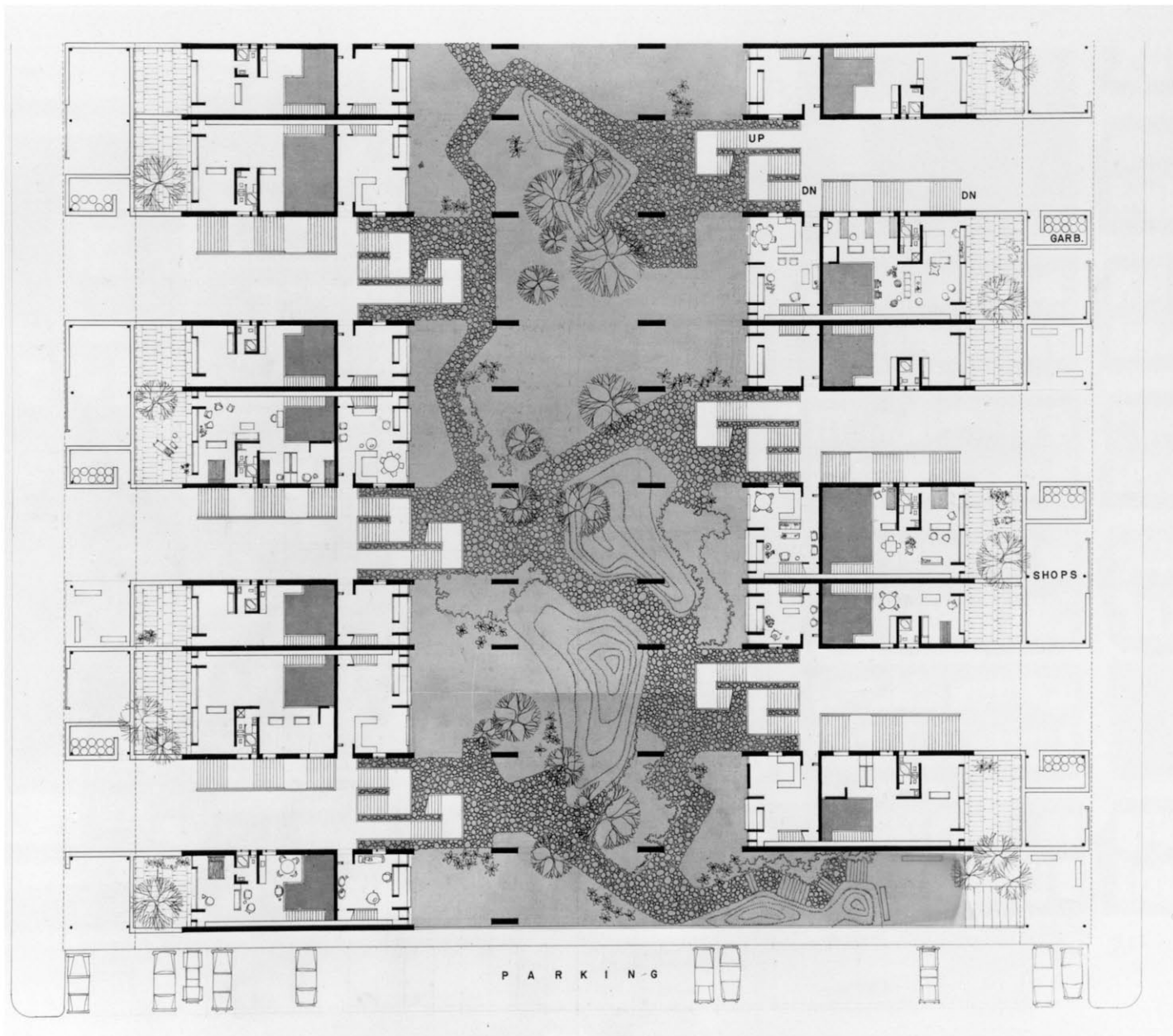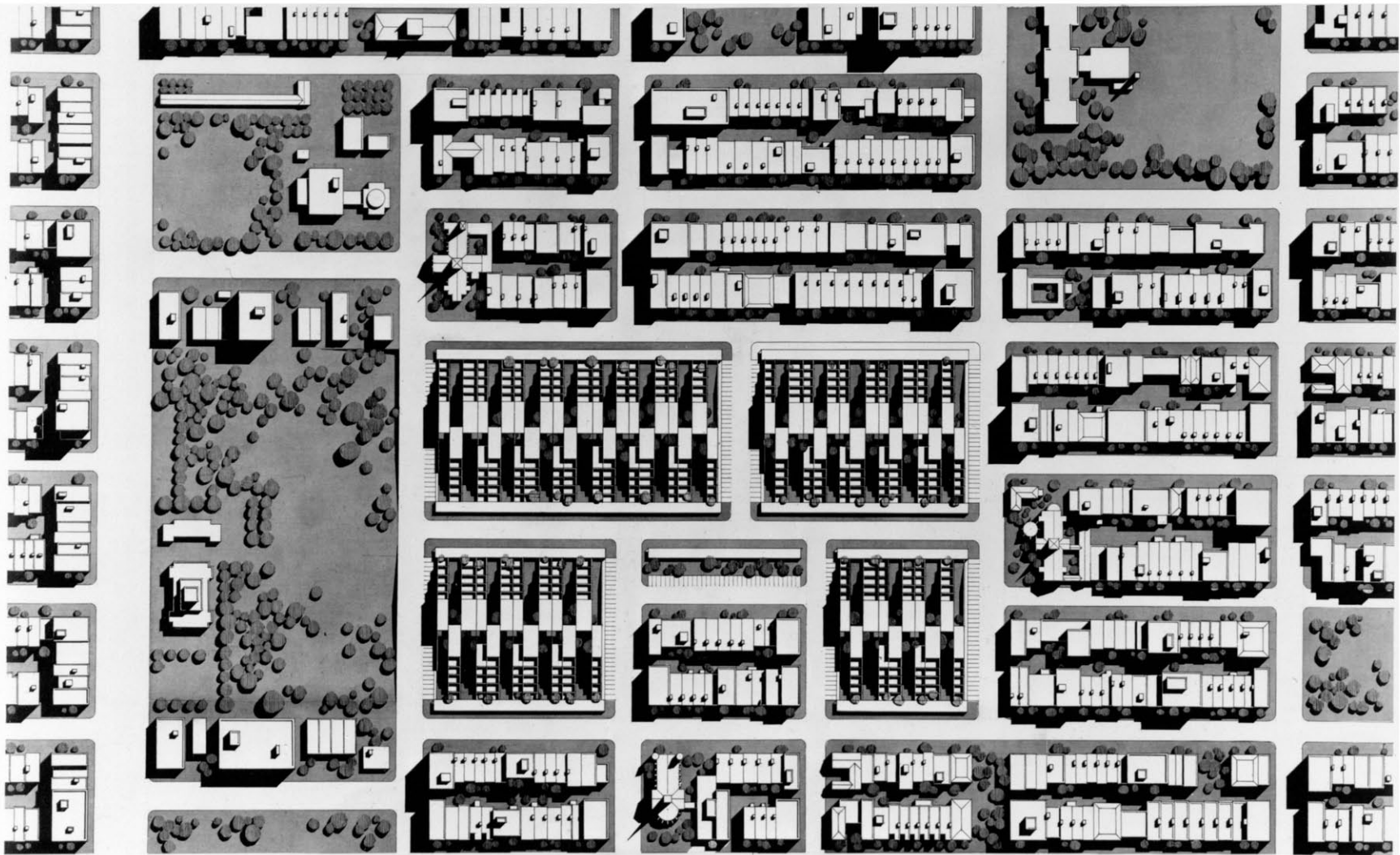
THREE BEDROOM UNIT
1330 S. F.
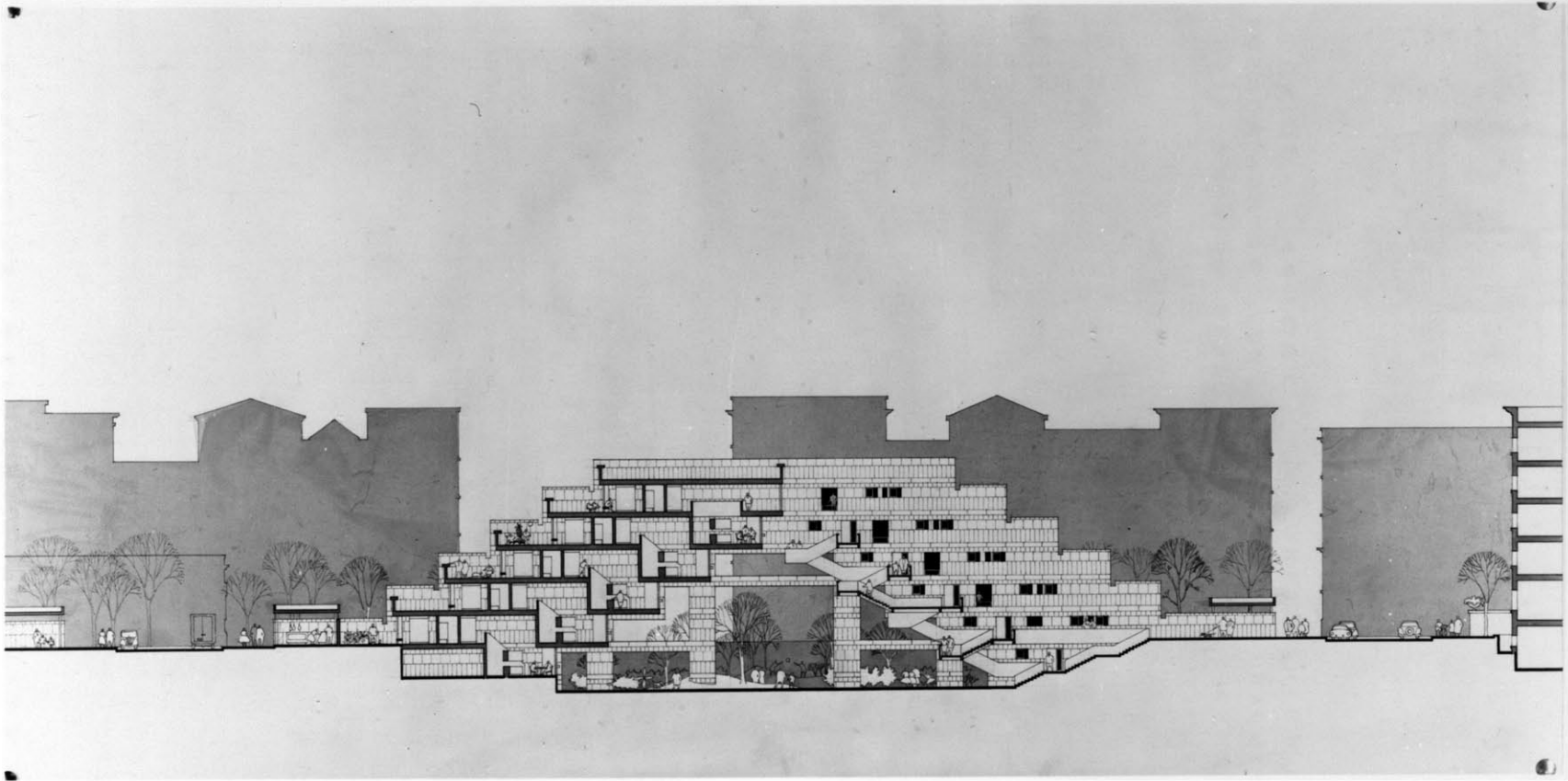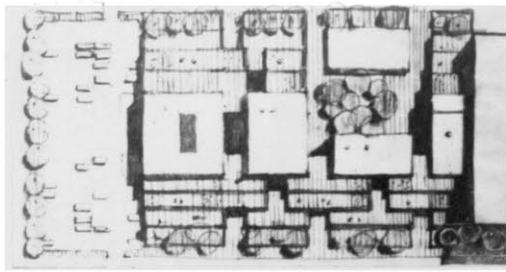
2 BR

BACH.

4 BR

3 BR

1 BR.

UNIT PLANS
1/16"

UP

DN

DN

GARB.

SHOPS

PARKING

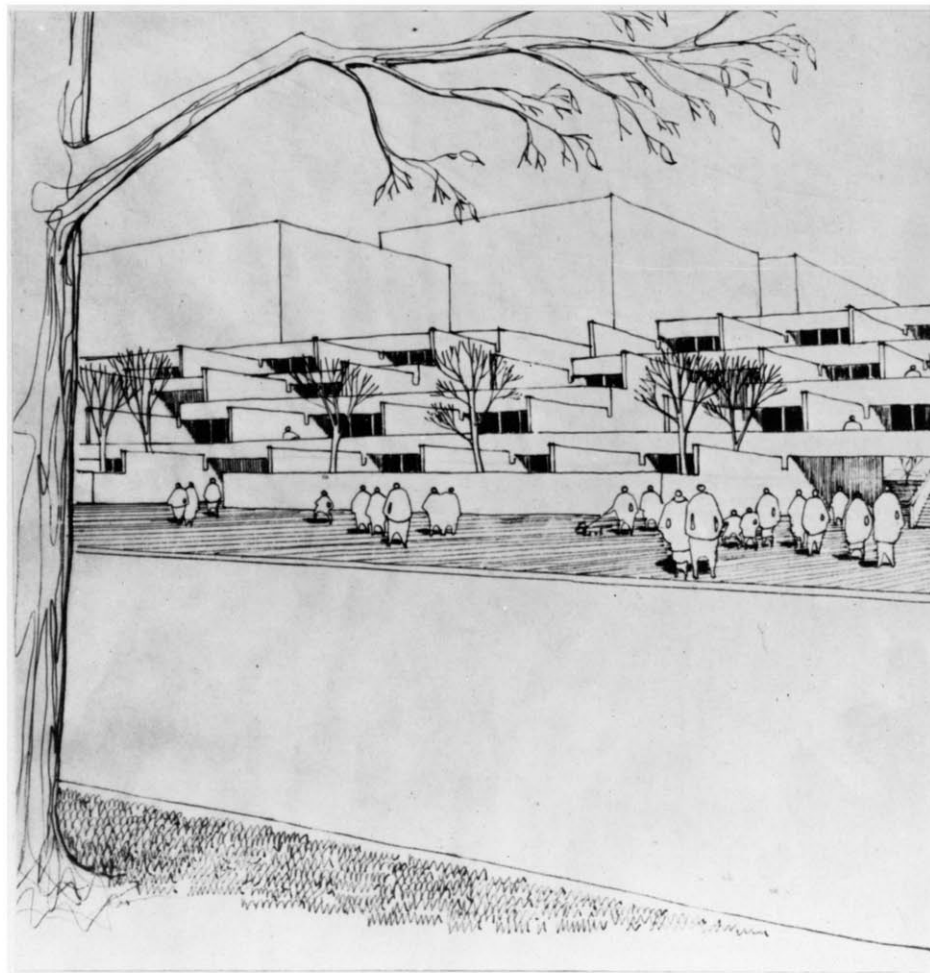SITE   PLAN   SCALE   1" = 100'

CORRIDOR SCHEME 4 UNITS HIGH OF
PREDOMINANTLY ONE BEDROOM & BACHELOR
UNITS SHOWING FREE USE OF BASIC GEOMETRY

PERSPECTIVE SKETCH — 4 UNITS HIGH