

Toward New Tracts for America the House and its Serial Deployment

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Bachelor of Arts in Architecture, Columbia College
New York, New York
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Submitted to the Department of Architecture on
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Levittown, NY

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Toward New Tracts for America the House and its Serial Deployment

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Submitted to the Department of Architecture on January 14, 1994 in partial fulfillment of the requirements for the degree of Master of Architecture.

Abstract

This thesis is a proposition for suburban tract housing in the United States. A brief critical history of the production of suburban housing and some precedents for architecturally motivated responses to its shortcomings provide the basis from which a set of design principles is established. These principles are then applied to the (re)design of a block and a half of Levittown, NY and a prototypical pair of houses which comprise it. Working within the immutable system of land subdivision and its resultant seriality of minimal houses, the goal is to create a condition that supports habitability and flexibility of spatial, constructional and programmatic systems at all levels, from house to neighborhood.

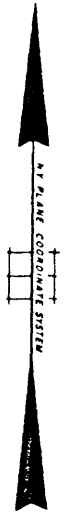
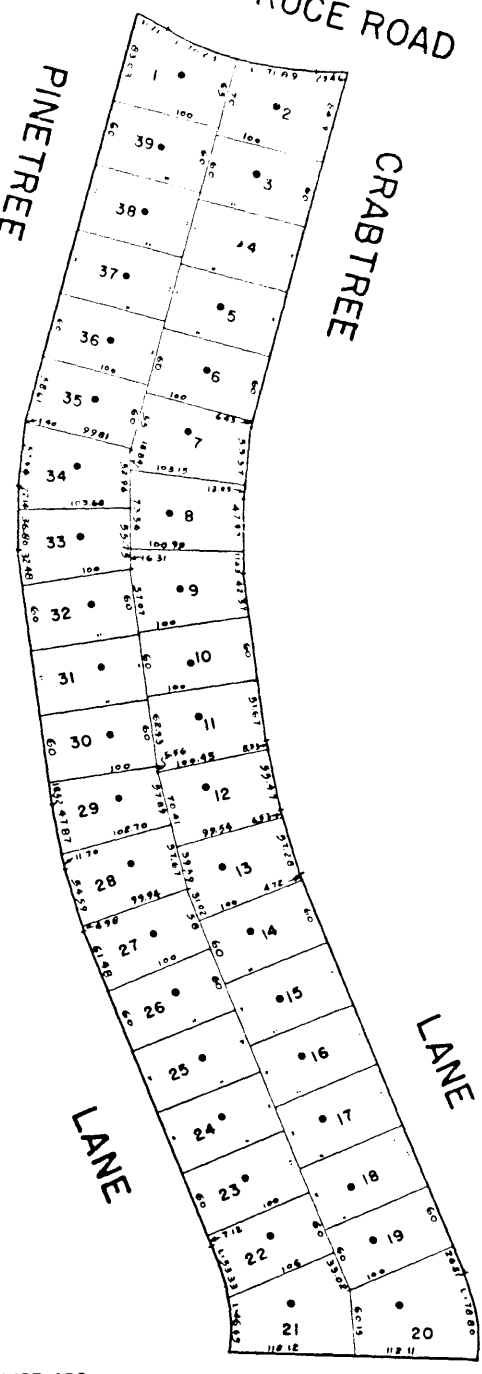
Thesis Supervisor: Roy Strickland
Title: Associate Professor of Architecture

N 184,700

BLUE SPRUCE ROAD

PINETREE

CRABTREE



E 2,127,850

N 183,450

LANE

LANE

BIRCH LANE

E 2,128,400

1
Levittown, NY

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WFNX+WBUR
for Pearl Jam and the BBC

Mom
Dad
Ursula
the Russells
for truth and beauty (and smiles)

Emma
Rosie
for sound body and mind

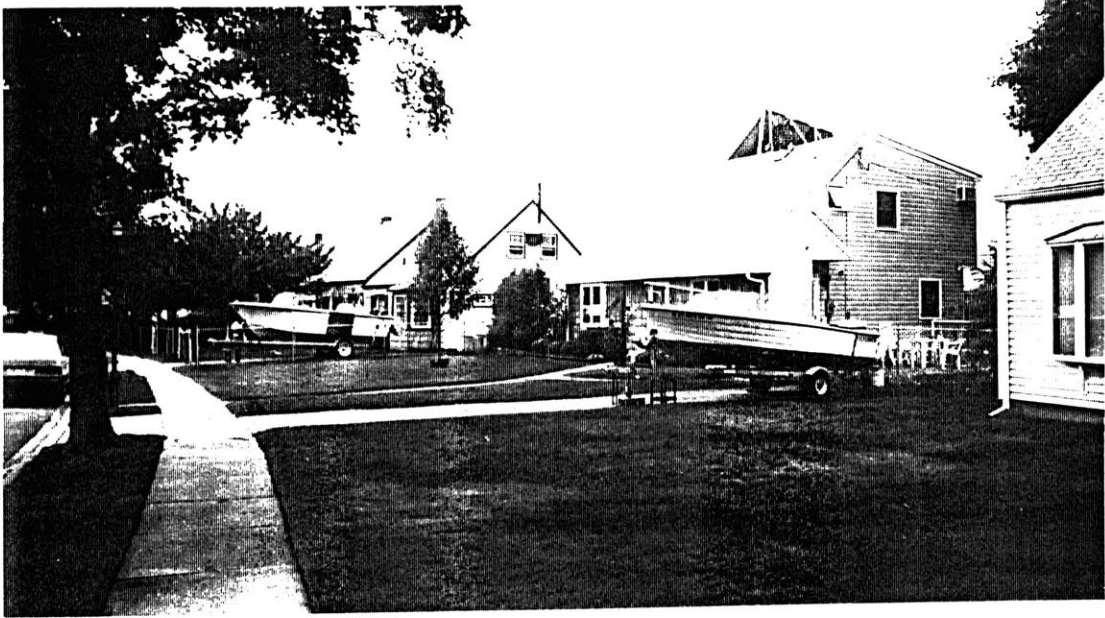
Introduction

Suburbia- you either hate it or you can deal with it. Many, in fact, choose it. The non-urban, non-rural environment of strip malls, tacky-tacky houses, and inaccessible open space that makes most designers shudder, is home to over half the population of the US. The typical American suburb is the sloppy realization of the English Garden City. It is a place to avoid the dirt and crime of the city, and the inconvenience and harshness of the country. It is also a place to avoid neighbors, landscape, culture and diversity.

Most of the buildings in suburbia are single detached houses. They quite literally define the character of suburbia as a whole. Usually they are developed *en masse*, using only the minimal definition of land subdivision law as their major architectural organization, while the houses themselves are given about as much design attention as a speed bump.

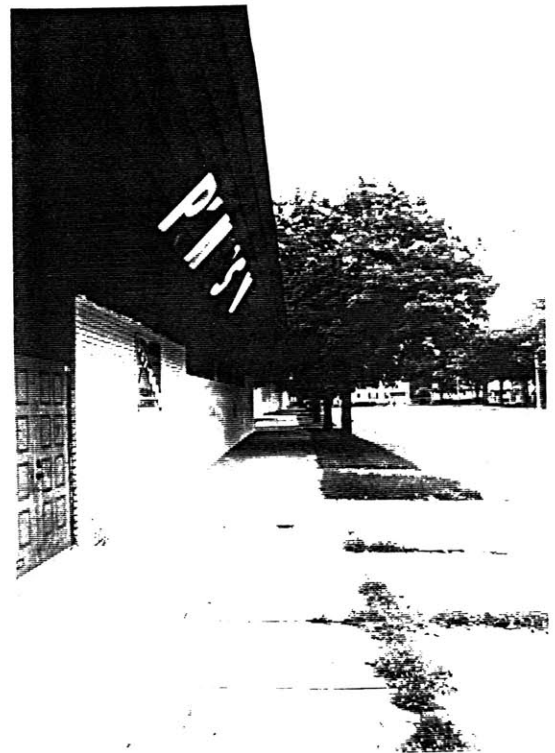
The following is a consideration of some of the forces that have shaped suburban tract development in the US, and a proposition for a more livable alternative. The site for the design is a block and a half of Levittown, NY about 15 miles from Manhattan on southern Long Island.

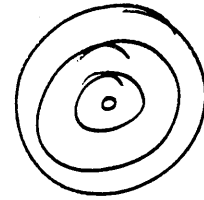
Part 1- Site



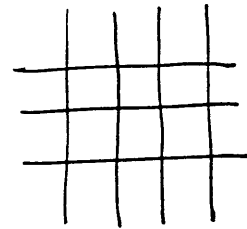
4
Crabtree Lane
Levittown, NY

5
Levittown, NY





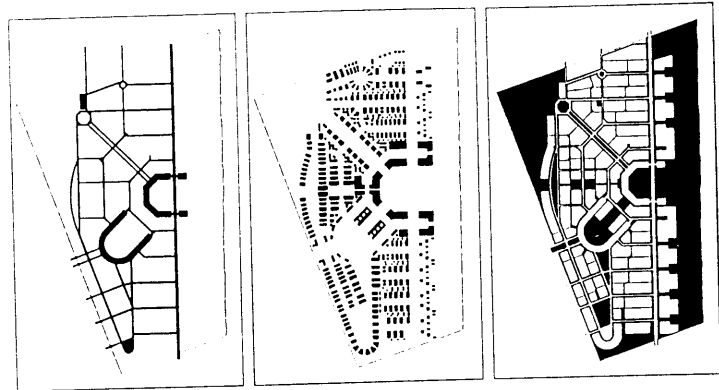
Covenant and Grid



There have been few eras of architectural production in the twentieth century of such impact or magnitude as that which occurred at the outskirts of America's cities at the close of World War II. The GI Bill and the building boom it detonated were the impetus for the creation of a sprawling and often heavily criticized new American landscape. Among the indictments against this Levittown brand of subdivisional development are included: wastefulness of land and other natural resources, with a corresponding irreversible entrenchment of the automobile in American culture; visual and experiential sameness as manifest through the mass production of "little pink houses" and their commercial and infrastructural support; destructive social and moral conformity as well as the subjugation of women and institutionalized racial discrimination; and an overall lack of progressive cultural, recreational and educational resources associated with more urban and rural environments. (fig. 5)

Consequently, the suburbanization of America, which in effect was achieved in 1960, when the residents of this new condition outnumbered their counterparts in either

6
Seaside, Florida
Duany and Plater-Zyberk



7
Pedestrian Pocket
Peter Calthorpe



urban or rural areas, has been decried as one of the greatest tragedies in our nation's development. (Rowe, p. 4) This perception has led to a number of recent architecturally-motivated responses (or antidotes) to suburbia. However, the pedestrian pocket (fig. 7), neotraditional town (fig. 6) and other post-modern models for suburban repair seem the result of a fainthearted nostalgic utopianism rather than any sort of engaged critical rethinking of the problem. Generally, they ignore the existing fabric as well as precedents for retooling it and instead propose that future developments take the form of small gated enclaves amidst the post-industrial sprawl to be linked by commuter trains. Exposing some of the intrinsic qualities and trends in the development of suburbia, particularly relative to systems of land subdivision and settlement patterns in the history of the US, and methodically examining the spatial structure and access systems of some representative bits of suburbia will allow for an indirect debunking of some recent reactionary proposals and form a critical position from which propositions for new forms of tract housing might be forwarded. In essence, two underlying principles, the covenant and the grid, will be shown to be the determinants in suburban development and settlement patterns and hence, the proper basis for an operational design framework.

8
Untitled
Francis Guy
1817



Much of what constitutes a particularly American manner of settling new territory can be inferred from a cursory examination of some of the earliest Anglo-American examples. In her book *Building the Dream*, Gwendolyn Wright begins with a discussion of Puritanism, its texts, and their impact on early American town form. She notes that above all, Puritanism and its constituents placed exceptional emphasis on describing what was seen as the inherent structure of all things in the universe. Their model consisted of a complex hierarchical order composed of sets of dichotomies referred to in whole as the covenant. (Wright, p. 7) This structure provided the basis of an understanding not only of the divine, but also of social, political, economic and physical systems. Hierarchies were nested within each other— as the congregation was a covenant, with the minister in the role of God’s chosen governor, so too was the family, with father at its head. The concentricity that this nesting suggests was made explicit in regard to town-planning in an anonymously authored document titled “The Ordering of Towns.” Here a townscape was described in which six concentric circles were arranged within a square, six miles to a side. In the center circle was the meeting house, followed by houses and finally, farmland as the outer layer. This configuration served not only as a rational planning tool, and a means of creating a defensible enclave against the elements and hostile parties, but also was a clear spatial expression of the covenant and its socio-political implications.

Although there are undoubtedly many more sources to consider, it is clear that the Puritan example serves as an illustrative model (almost a parable) for understanding the fundamental qualities of an important strain of non-urban American settlement which is characterized by a village green, church, and Main St., and which serves as the talisman for the neotraditional town movement. This closed-form, campus-type planning, resplendent in well-defined public places, recognizable districts or neighborhoods, rich spatial hierarchy and cognitive-mapability is also integral to such historical examples for suburban development as the Garden City and New Town, which feature public centers, radial growth and greenbelt insulation. In short, the covenant represents the suburban ideal, (whereas the grid will be argued as the suburban real) as a community of farmers, craftsmen and professionals realizing their freedom and creative potential within a mutually-supportive spatial and social hierarchy.

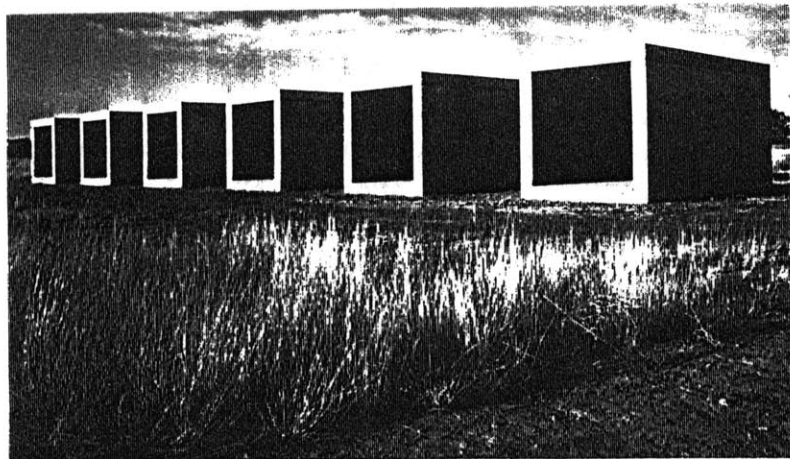
Whether they grew tired of each other's company, or simply wanted to find the place where the sun disappeared at the end of the day, some Americans left the covenant. Enough of them did so such that in 1785, Thomas Jefferson (notably, the designer of an exemplary covenant/campus) produced a system of land subdivision, the National Survey, consisting of a six mile (!) grid to be settled and inhabited in a absolutely free and totally non-hierarchical way. (Wright, p. 21) "America thus lives on a grand gridiron imposed on the natural landscape by the

early surveyors.” (Reps, 1965, p. 216) Each grid block would be a township, and each block would consist of 36 one square mile sections. Section lines evolved into town roads. Sections were then often subdivided in halves and quarters, establishing a finer network of local streets which eventually defined single residential blocks.

The spatial, constructional, habitational, social, and political implications of this invention were and remain vast. The inherent meaning of the grid vacillates so easily from neutral container to freedom and equality to conformity and oppression. Perhaps the most salient characteristic of the grid, in light of these issues and American suburbia, is its potential to support minimalism. For this reason it seems more informative and interesting to pursue the notion of minimalism for a moment, than to hash out the historical effects of the grid on the American landscape, i.e. mass produced suburbs. The following short discussion of minimalist art can and should be read as a criticism of the suburban house and its serial deployment, particularly due to the fact that the minimalists were actively engaged through their work in a criticism of the surrounding environment, and the effect of industrialization upon it. (Spahr, p. 24)

The minimalists, a group of predominantly male sculptors whose works in the US during the 1960's and 70's is characterized by the use of everyday or industrial materials rendered in rigorously preplanned serial or unitary geometric schemes, were reacting against the idiosyncratic

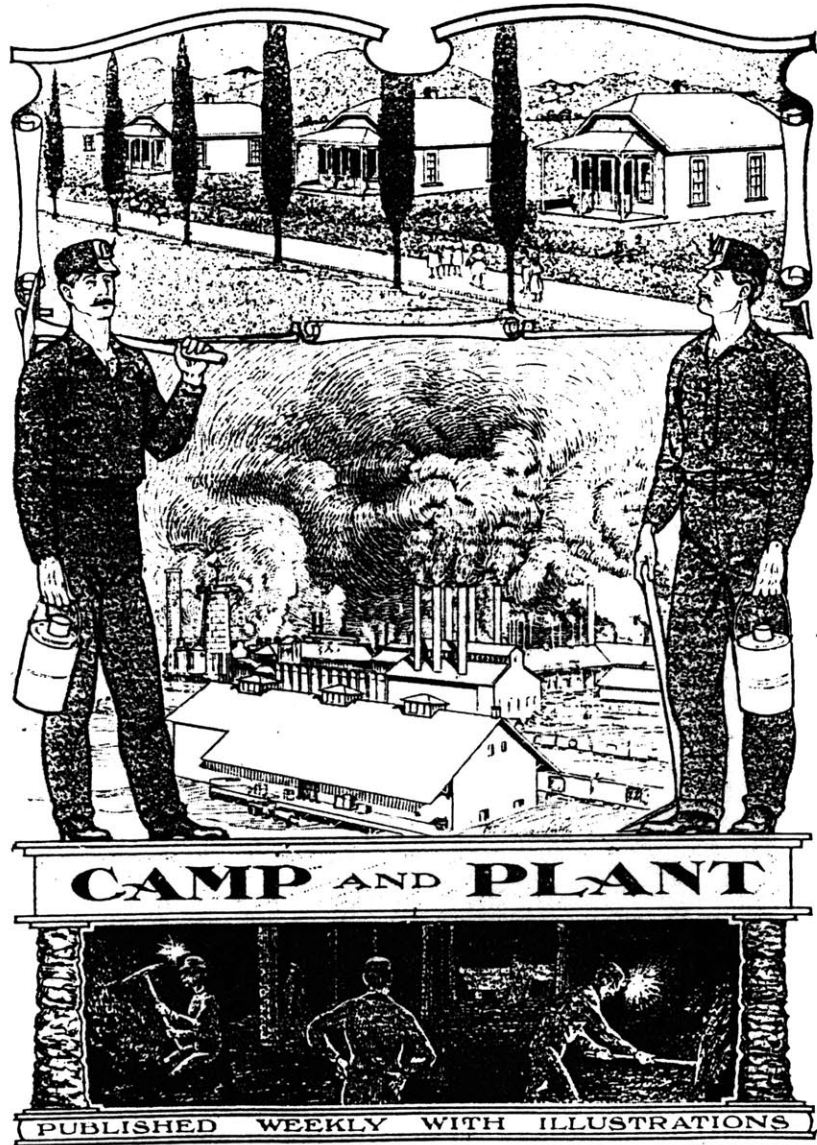
9
Untitled
Donald Judd
Marfa, TX



10
typical tract of
single-family
houses
1970



and personal vocabulary of forms employed by the abstract expressionists, whom they complained were interested purely in the “pictorial object as a metaphor for human emotions.” (Spahr, p. 25). Geometry, ratios, progressions and systematized permutation are the underpinnings of minimalist art. The works often employed modularity in order to allow the projection of complex and extended structures unprecedented in twentieth century art. Ultimately, the dimensions of Minimalist sculptures began to conform to simple divisions or multiplications of the standard sizes of the materials used. The artist’s function was to generate a concept, while the actual realization of the work could be left to an able craftsman. The catalogue for a 1966 exhibit at the Jewish Museum titled Primary Structures makes note of the “symmetry, lack of traces of process, abstractness, non-hierarchic distribution of parts, non-anthropomorphic orientations and general wholeness.”(Spahr, p. 25) As a way of creating “real” objects, they provided, according to critic E.C. Goosen, “democratic ordering of similar parts brought together into a totality... Hierarchical passions and dynamics are left behind, and we are faced instead with a self-evident, crystalline structure, the objectively (instead of subjectively) real.”(Spahr, p. 25) In 1976, Donald Judd, one of the group’s most prolific artists, showed a group of 15 plywood boxes. They all had identical external dimensions and materials, yet their interior structures were distinct. Further, the plywood grain provided for a previously unachieved effect, namely the fingerprinting of each individual object. They presented a “profoundly



11
 cover of weekly
 publication issued by the
 Colorado Fuel & Iron Co.
 April 26, 1902

simple and non-representational analog of human individuality: their common condition of being at once similar and as different as possible."(Spahr, p. 26)
 Concurrently, Judd's objects were criticized for using up space pointlessly and celebrating nothing but the artist's refusal to exploit the expressive resources at his disposal.

If the covenant and the grid can be said to represent two polarized forces acting on the American suburban fabric, it can also be argued that in order to achieve the potentially evocative results of the synergy between the two, they

should be directed at one another, rather than channeled away from each other. There are indeed some examples of the (intentionally?) destructive effect these elements can render when combined. Consider the case of the early twentieth-century company town. This period offered (like minimalist art) unparalleled opportunities to carry out projects based on rational planning and industrialized production. Scientific management and standardization in the production of housing were superimposed on the centralized hierarchy of Beaux-Arts town planning in such industrial suburbs as Firestone Park and Goodyear Heights. (Wright, p. 184) These were cases of minimalism at its meanest: the provision of minimal worker comfort and freedom (through land-holding) tempered by overall spatial and political authoritarianism. The result, though undoubtedly accommodating to some, was a well-engineered construct for the commodification and pacification of a vast and inflammable work force.(fig. 1 1)

Nonetheless, there are a number of historical examples of the integration of the covenant and the grid which, due to their progressive intentions and thorough consideration of the spatial nuances of either system have produced exceptionally livable suburbs and consequently serve as valid models from which a set of design principles relevant to the present situation can be culled.

12
Radburn, NJ
Stein and Wright
1929

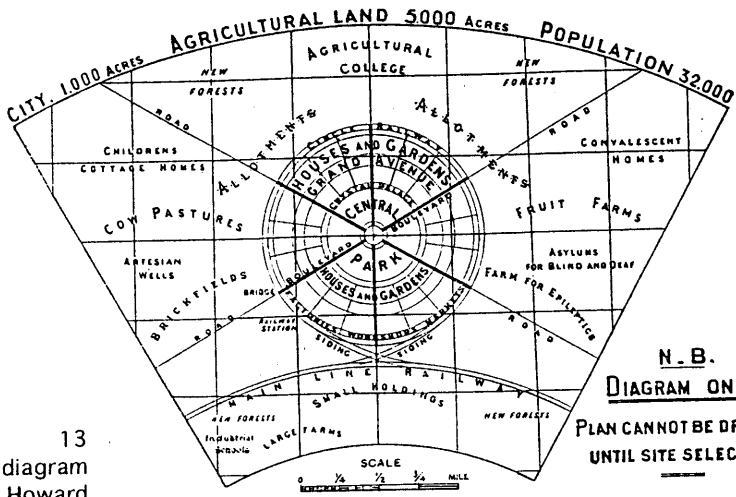


Precedents

The following is intended to make explicit the spatial qualities generated by systems of land subdivision, vehicular and pedestrian access, territorial claim (private <> public), and primary structure (bearing walls, plumbing, etc.) in several landmark twentieth-century American suburban developments which exhibit varying degrees of covenant/grid integration.

By the turn of the century, suburban development was booming in the US. "Community builders" as they are sometimes referred to, were in the business of turning raw pieces of agricultural or previously unusable land into grand residential schemes. (Weiss, p. 1) To a large extent, these early developers, since they were working with "unimproved" land, were operating very much within the system of land surveying and subdivision outlined above. The grid was almighty. In Chicago, Samuel Eberly Gross completed 40,000 lots, developed 16 towns and 150 subdivisions, built and sold over 7 thousand houses, all between 1880 and 1892. (Wright, p. 100). Adequate transportation and accessibility were crucial to the success

- N^o 2 -
GARDEN CITY



N. B.
DIAGRAM ONLY.
PLAN CANNOT BE DRAWN
UNTIL SITE SELECTED

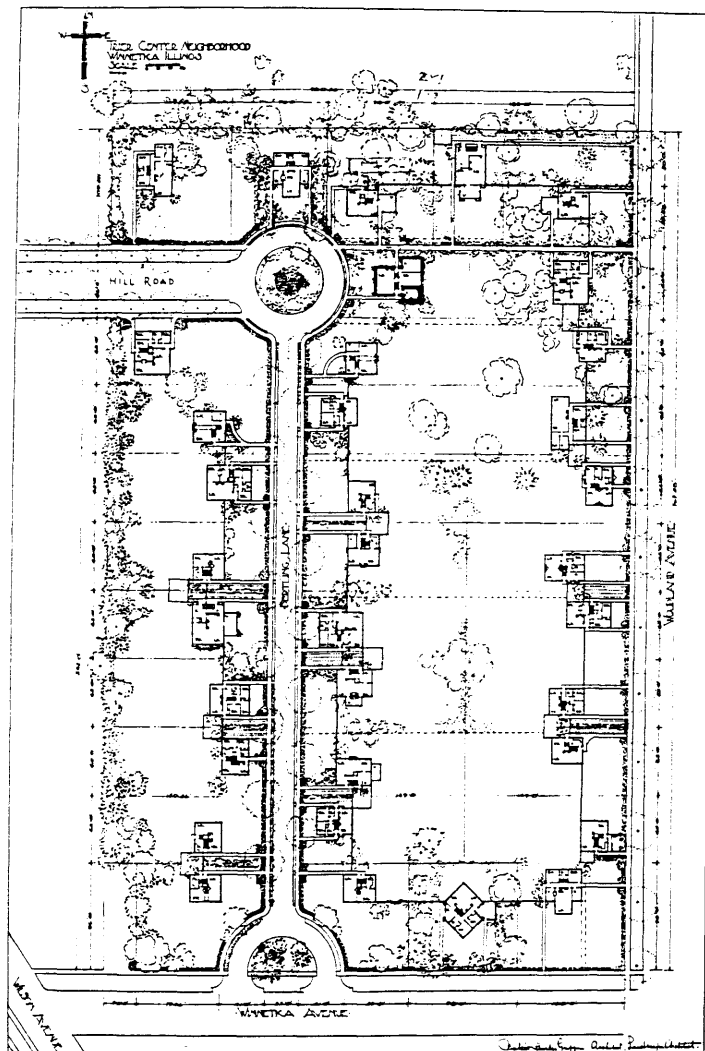
13
 Garden City diagram
 Ebenezer Howard
 1902

GARDEN CITY AND RURAL BELT

of these ambitious projects. A few of the subdividers subsidized transit lines, while many were responsible for building streets and establishing other necessary infrastructure. In most cases lots were sold in bulk to builders who capitalized on the rush of advances in the factory production of building components ranging from uniformly sized and graded lumber to shingles, moldings, windows, stairs, fixtures, hardware and paint. Curiously enough, and obliquely relevant to the discussion of covenant vs. grid, particularly in the figurative sense, the public who occupied these mass-produced Victorian cottages ignored the evidence of standardization and saturated their homes in individualized ornamentation and signs of personal inhabitation. (Wright, p. 102) In essence, the development of the typical turn of the century subdivision, despite or perhaps because of the rigorous systemization of the primary supports (land parceling, roads, infrastructure, and building process) allowed, appropriately, for hierarchy and covenant to be achieved at the house scale. It seems reasonable to attribute the durability of these suburbs to their capacity to support "fingerprinting."

The suburban building boom in the US which followed the one discussed above was characterized by the utmost concern for the reconciliation of the covenant and the grid.

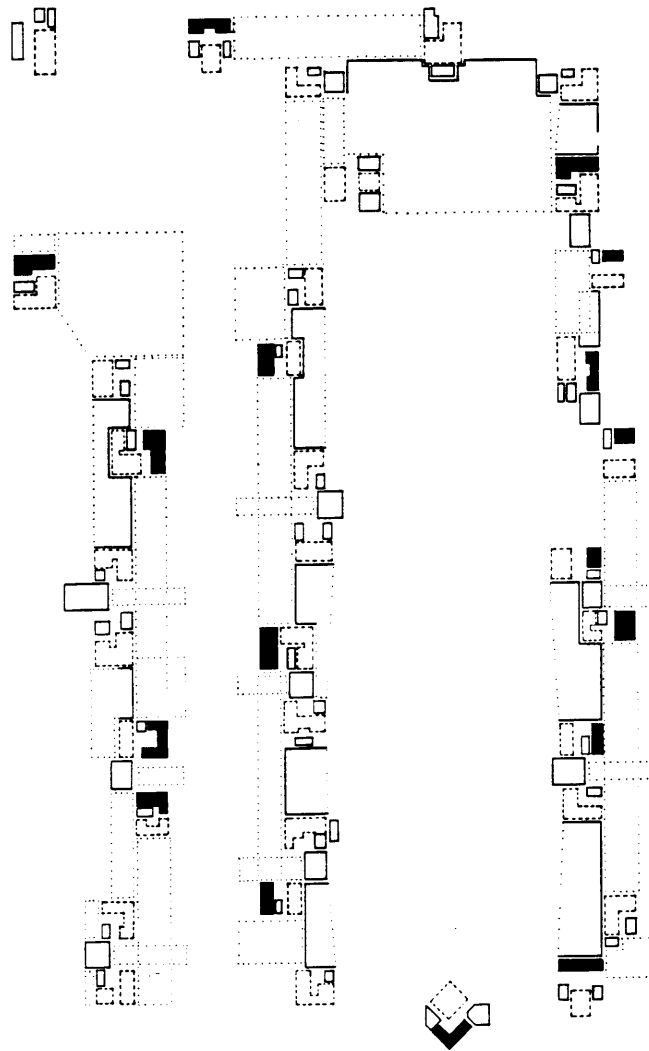
14
Trier Center Neighborhood
Winnetka, IL
Walter Burley Griffin
1913



Trier Center

Trier Center Neighborhood in Winnetka, IL by Walter Burley Griffin is one of the most provocative suburban tract housing proposals made for the US., particularly for its visionary design at the 2-6 house scale and rigorous attempt to address the complex problem of tempering the land subdivisional grid with a range of experiential and territorial overlap and covariance.(fig. 1 4) Griffin's general design methodology is characterized by consideration of the site as a whole followed by the consideration of the functions to be integrated with the site. (Johnson, p. 26). In the words of Griffin himself, "land in this sense is accorded the respect due to a highly developed and

This diagram describes the degree to which Griffin is able to generate well-defined collective outdoor space at the 2-6 house scale by pairing houses and subsequently deploying these pairs in alternation relative to setback from the street.



15
Territorial Claim

private

semi-private

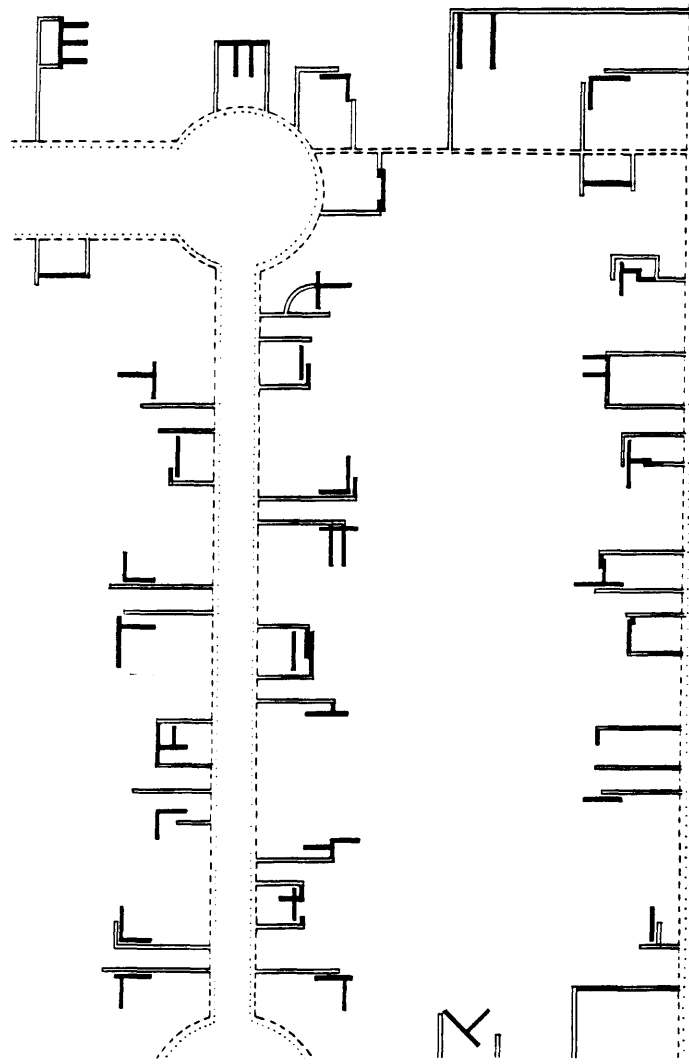
semi-public

public

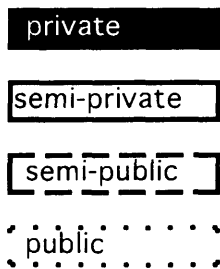
perfected living organism not to be exterminated nor treated as dead material, or as a mere section of the map.” (Griffin, p.24)

Trier Center, designed in 1913, and only partially constructed, is the result of an attempt to resolve systems of access, both vehicular and pedestrian, to private and community spaces, as well as to maintain freedom and informality. One-story houses are arranged in various paired configurations, most of which allow for shared pedestrian and vehicular access from the street. These pairs are then deployed as units along a retaining/garden wall which serves as the primary containment of the

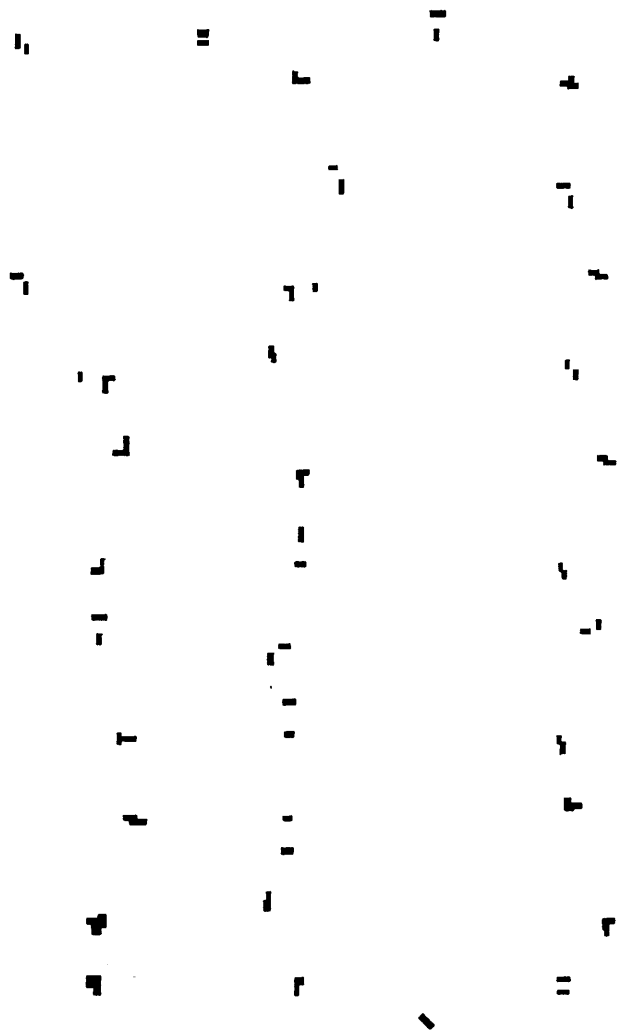
Access, particularly at the pedestrian level, further defines the spatial covariance established by the built edges.



16
Access



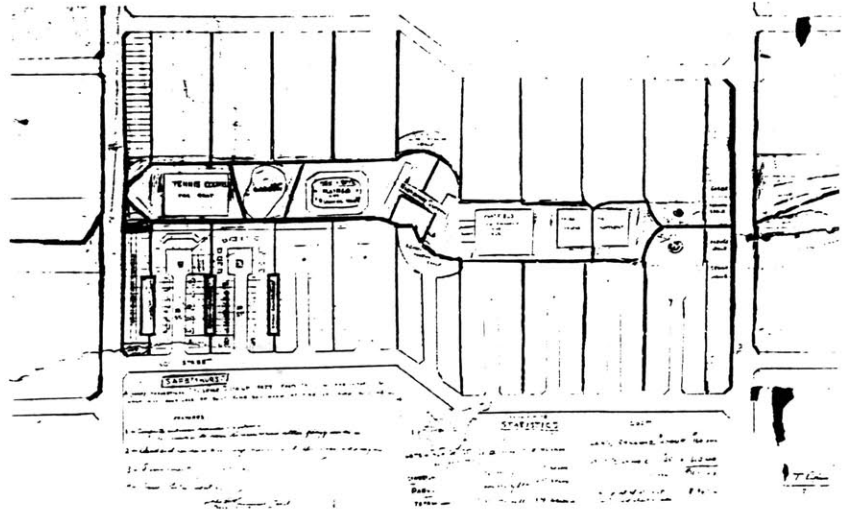
internal community park-like space. The pairs of houses, which are arranged relative to each other to maximize the containment of common outdoor space are subsequently alternated back and forth across the street in terms of their setback dimension. This provides a high degree of spatial articulation, both on the street edge and on the park frontage, at the scale intermediate to the house and the landscape. Small, shared courtyard spaces mediate between the two houses of each pair. Further, the living spaces of the houses are oriented to the internal green, resulting in a more open architecture on this landscape side, while the bedrooms, with their denser containments, are pushed to the street edge where they so appropriately



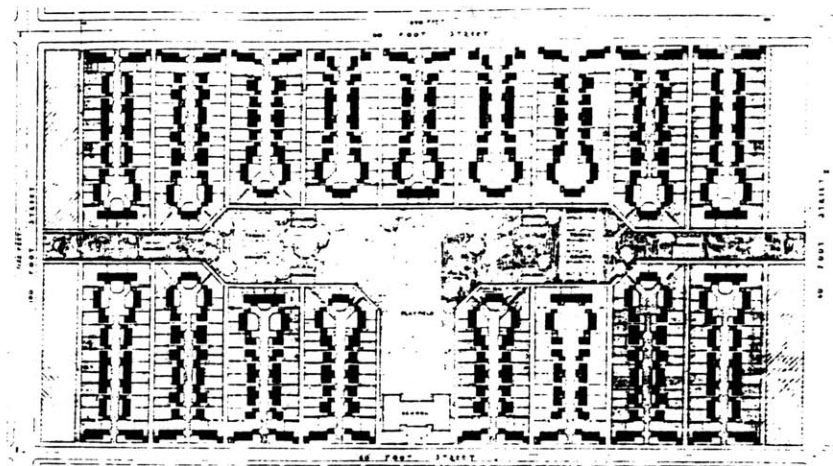
17
Minimal Structure

define a strong edge to the cars and provide for the neighborly articulation described above.(fig. 1 5+1 6) At a density slightly lower than that of Levittown, Griffin worked the plan of the block to create a spatial hierarchy and generosity at the elusive scale between house and landscape while also making profound implications relative to efficiency and rationality of production.

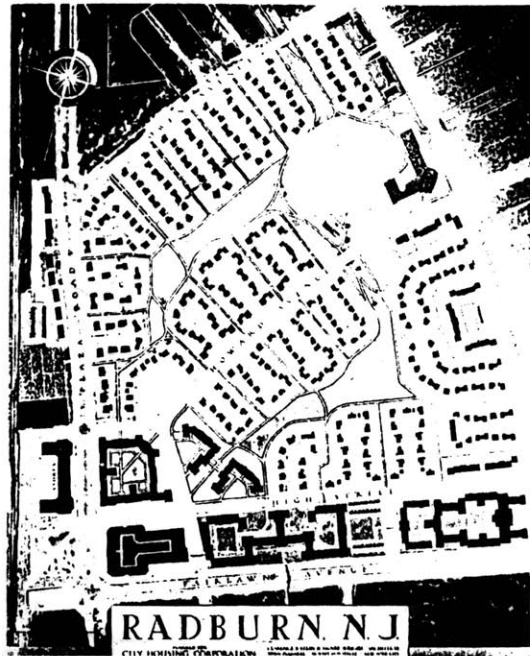
18
Herbert Emmerich
"Safetyhurst"
1927



19
Stein and Wright
superblock study
1928

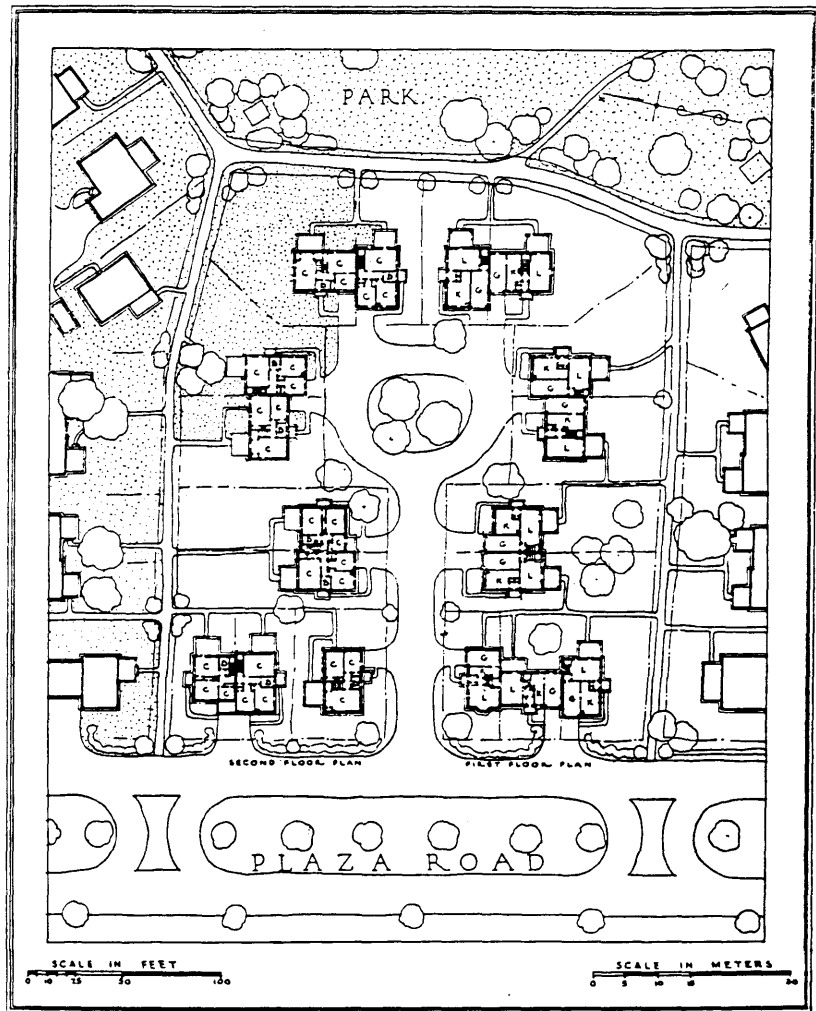


20
Stein and Wright
Radburn, NJ
Plan of the residential
districts
1929



Radburn

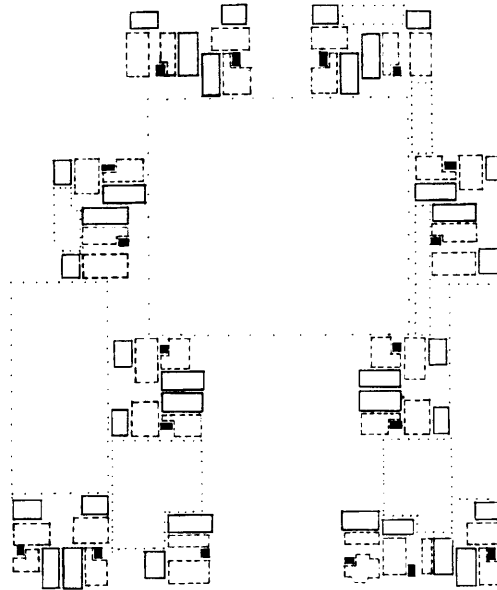
The progressive, “planned community” movement of the 1920’s, forwarded by Clarence Stein and Henry Wright was an American interpretation of the Garden City proposition. In 1902, the Englishman Ebenezer Howard published his tract titled *Garden Cities of To-morrow* in which he proposed the development of new self-contained and self-sufficient towns of roughly 32,000 inhabitants and eight square miles as an alternative to the meanness of the extremes of country and city living. He further proposed that these towns be planned concentrically around a civic and residential core, with eighty percent of the land set aside for agriculture, forestry and recreation at the periphery. This wholly hierarchic, microcosmic scheme harkens clearly to the Puritan covenant, though Howard notably does not cite “*The Ordering of Towns*.” He does, however, make explicit reference, even in his schematic diagrams, to the superimposition of the circular Garden City pattern onto the land subdivision grid.(fig. 1 3)



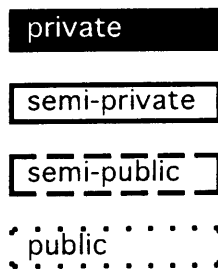
21
Burnham Place

It was Stein and Wright's stated goal in the design of Radburn, NJ. to create nothing less than America's first Garden City. However, as it turned out, they were primarily concerned with creating "a town in which people could live peacefully with the automobile- or rather in spite of it." (Stein, p.37) The separation of vehicular and pedestrian traffic became such a distraction to Radburn's designers that it led to substantial compromise in the realization of both Garden City ideals and the potential for a high degree of spatial covariance amongst the houses of each cul-de-sac "lane." In fact, the sketch plan by Herbert Emmerich, a young, non-architect administrator describing a system of superblocks comprised of identical automobile-separating

Despite a relatively high degree of formally articulated public/vehicular space, the relationship of the paired houses to each other and to other pairs results in residual space rather than functionally-activated common outdoor territory.



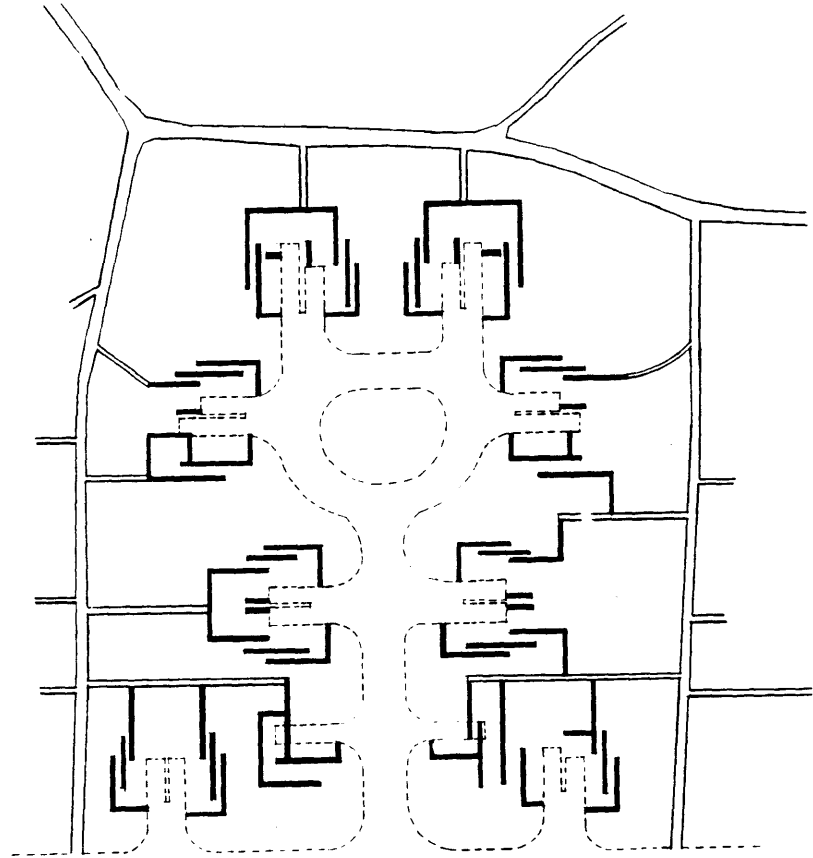
22
Territorial Claim



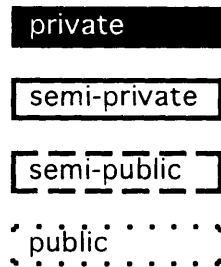
cul-de-sacs fingering in towards a large central park was rigorously adhered to by Stein and Wright in their development of the conceptual plan and final scheme for Radburn.(fig. 1 8+1 9) In their discussion of the project, the architects enumerate their strategies relative to access: superblocs in place of narrow, rectangular urban-grid blocks; service lanes for direct access to buildings; and complete separation of pedestrians and automobiles.

In describing the spatial structure of Radburn at the scale of the house and its surroundings, Henry Wright relates, “I learned then that the comforts and privacy of family life are...to be found...in a house that judiciously relates living

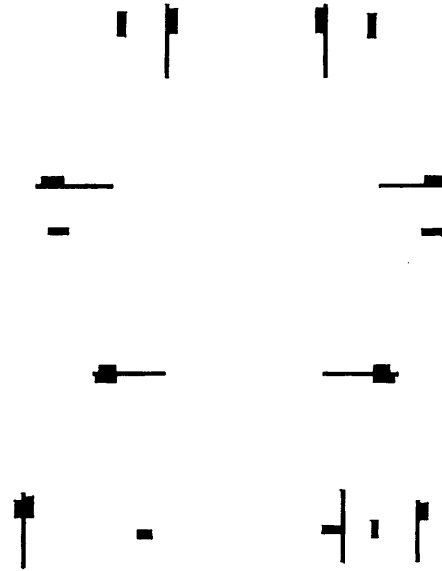
This plan is choked with access. Paths and roads cut directly through collective outdoor space rather than help to define it.



23
Access



space to open space, the open space...being capable of enjoyment by many as well as by few.”(Stein, p. 48) This testimonial exposes the architects’ disregard for spatial definition at the scale of a small grouping of houses. Though the architects are careful to zone the houses themselves relative to the nature of the exterior, i.e. kitchen and garage facing service court and living and dining facing garden, the relationship of houses to each other are not considered in such spatio-functional terms. The house sits adjacent to a park, while the adjacencies of houses are discussed in the following terms: the “disorderly, loose appearance of the freestanding houses in relation to each other, and the insufficient space left on either side of the small buildings, lead us to join houses by coupling garages.” (Stein, p. 54) Thus it is clear that the pairing of houses comes not out of a need to generate



24
Minimal Structure

more generous semi-public outdoor spaces (which they do not), but instead to avoid the image of clutter.(fig. 2 2) Nonetheless, perhaps because of the horse-shoe shape of the cul-de-sacs or possibly as a result of the lush central green and pedestrian paths, Robert Hudson, Radburn’s recreational director has observed that the development “often reminds one of a college campus or people’s campus.”(Schaffer, p. 174) It seems this effect could have truly been achieved had the “pedestrian” sides of the houses been provided with the highly articulated, figural courtyard, while the cars moved through the residual space behind the houses. Instead, in sharp contrast to the architects’ valid intentions, the cars win at Radburn, and to a certain extent so too does the vehicular grid, despite the formal trappings of the covenant. (fig. 2 3)

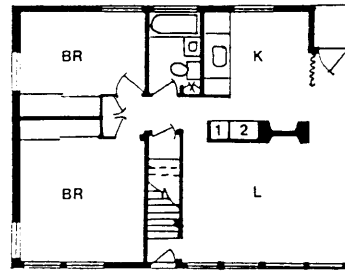


25
Levittown, NY
1955

Levittown

At the end of World War II, the American government encouraged the production of large scale suburban housing projects for lower income veterans. The resulting large, mass-produced, almost exclusively residential developments which spread across the country are mythologized in the single, massive undertaking of Levittown, NY.(fig. 2 5) In 1949, Levitt and Sons, Inc. assembled the land necessary in Hempstead, Long Island, to realize a community of 17,500 4-room cottages on standard 25'x30' concrete slabs. (Kelly, p.22) Like the massive subdivisions of the early twentieth century, the primary design decisions were made at the extreme scales of the infrastructure and single unit. Here, however, the figural variation at the house size was forgone for the sake of absolute efficiency in the production process. The identical houses were built in stages by roving gangs of

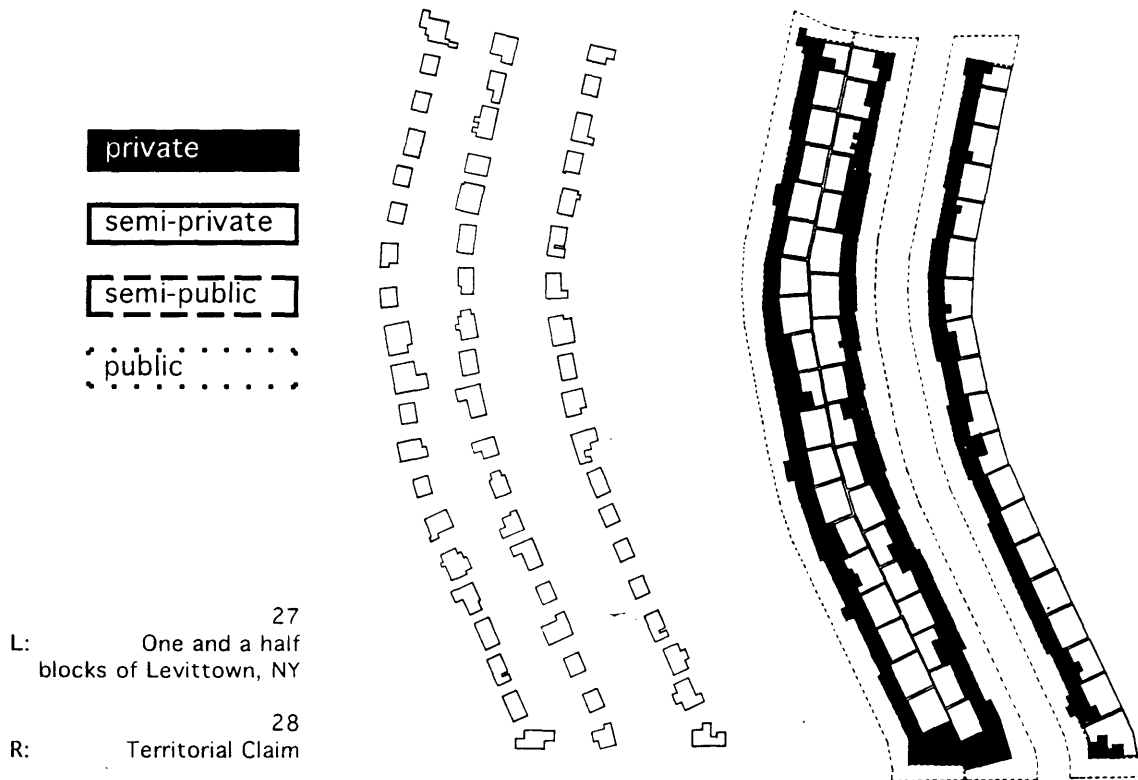
26
Plan of a Levitt house
1952



uniformed technicians at a peak rate of one house every sixteen minutes. Each house was centered on its own plot of 6000 square feet.

At the infrastructural level, the generative tool was a subdivided grid. The largest blocks of the grid, referred to as masterblocks, were focused around a uniform distribution of schools/recreation areas. Each master block was subdivided into 3 or 4 residential neighborhoods defined by broad, straight arterial roads. The streets internal to the neighborhoods were arranged in picturesque gradual curves. As Robert A.M. Stern has suggested the grid, curved gently, “adapts the reality of real estate to the illusion of country living.”(Stern, p.113) In the case of Levittown, this criticism is pointed. The Levitts relied on the curving streets to simply allude to pastoralism, and hence, the suburban ideal. What Levittown lacked in spatial covenants, it made up for in written ones. A sampling of the deeded restrictions included the prohibition of fences and of hanging laundry out to dry on weekends. (Kelly, p.68)

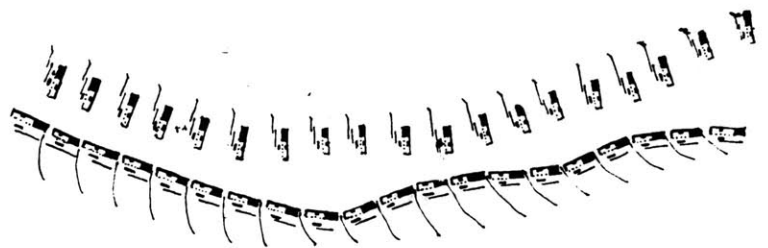
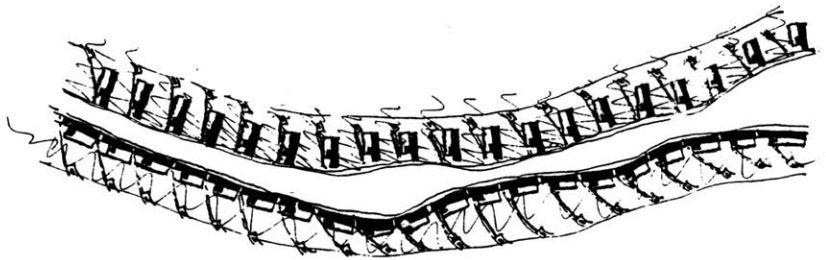
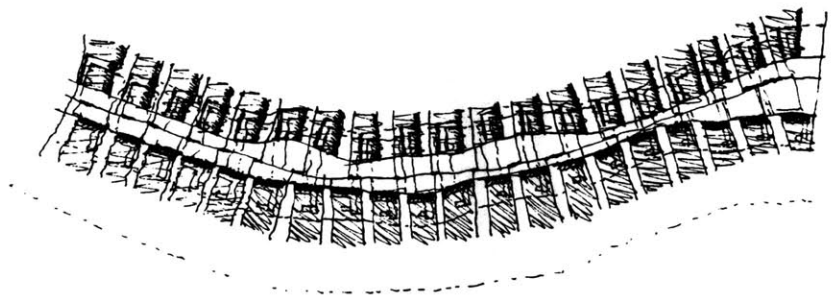
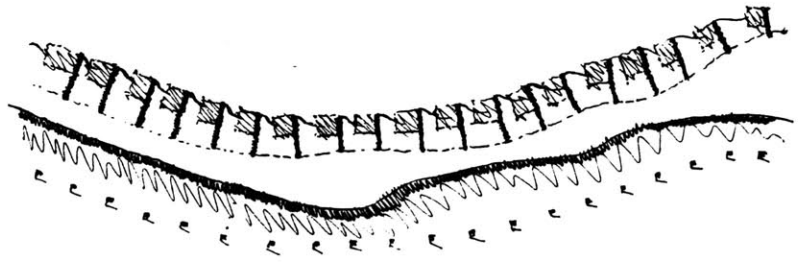
The resulting system of territorial claim at the block level is overwhelmingly monolithic- a swath of unoccupiable “public” space made up of the seamlessly adjacent ornamental front yards is followed by a relentless alternation of completely contained privacies (the houses) and finally another wide swath of semi-public backyards, many of which have been fenced-in over the years. There is no physical definition whatsoever at a neighborly size



(~2-6 houses).(fig. 28) Not even do the side/kitchen doors face each other. The kitchen entry was placed on the right of every house, where it faces the doorless wall of the house next to it.

Despite the generally reductive nature of Levittown, there has been a reasonable degree of satisfaction on the part of its residents. This group has exhibited great resiliency in its gradual manipulation of the crystalline suburban structure. Further, the Levitts, their proponents, and critics have invoked the Garden City tradition in discussions of the project. Note the following excerpt from a promotional pamphlet: “[Levittown] has been planned to be

a place of incomparable beauty...[it] is intended to be not just a collection of houses. Our purpose is to make of it a complete, integrated, harmonious community.” (Kelly, p.36) Though to a limited degree, this has become an accurate description of Levittown, there is still the sense that a more thorough consideration of the relationship of houses to one another, to the landscape, and to access systems would have increased the capacity of the development to support community and its covenants without taxing the individual freedom associated with the unassuming banality of a single house on its own lot or adding dollar costs to its construction. Pairing the houses, for instance, not by means of a party wall, but simply by pushing two houses closer to their mutual lot line such that they share a common driveway or footpath, or turning groups of houses perpendicular to the street, such that they have large side-yards instead of small backyards, or allowing pedestrian access through and along the interior of the block would be some low-cost strategies for generating new territories and spatial diversity.



29
Seriality studies for a
block of Levittown, NY



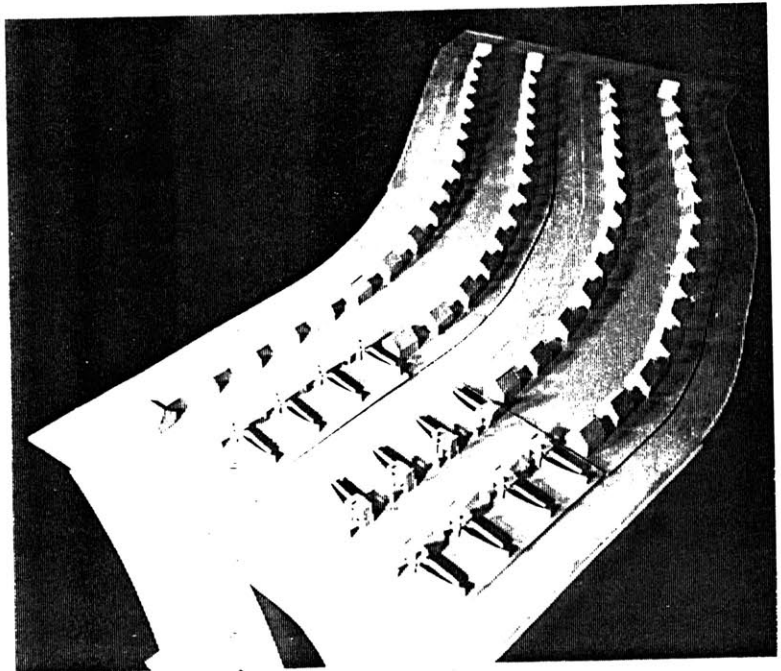
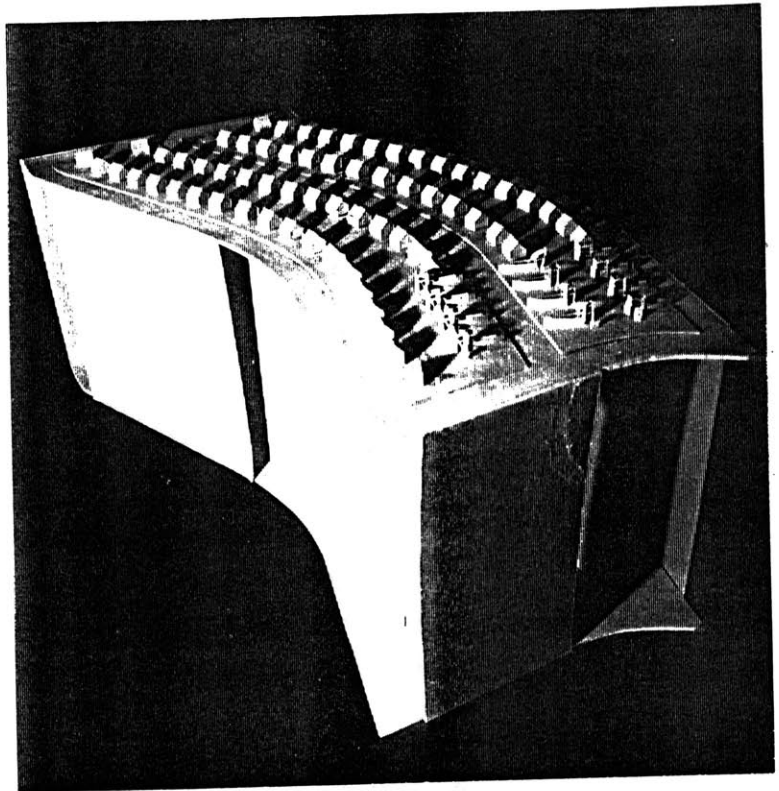
Seriality



30
A tract in California
William Garnett
1955

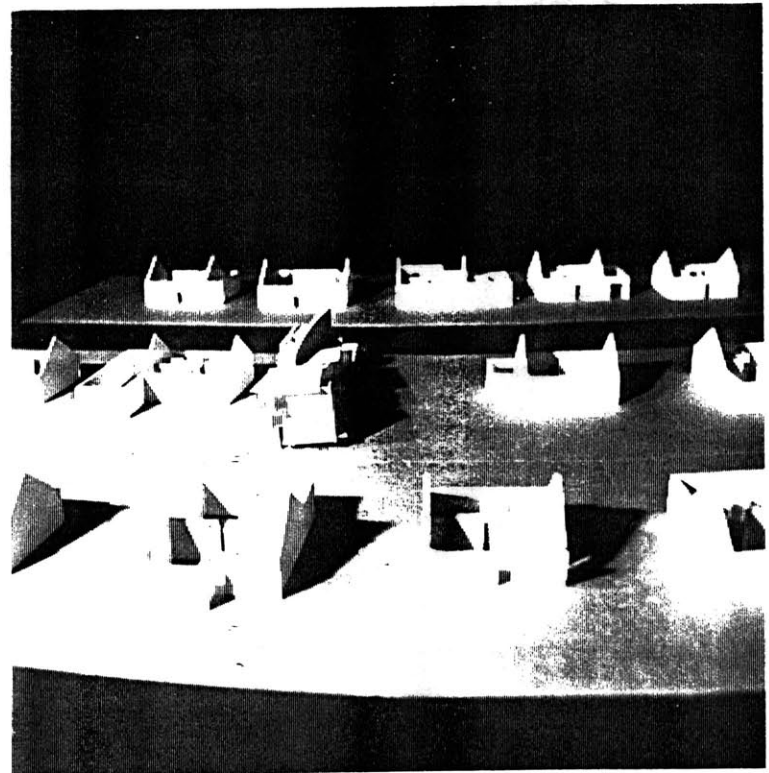
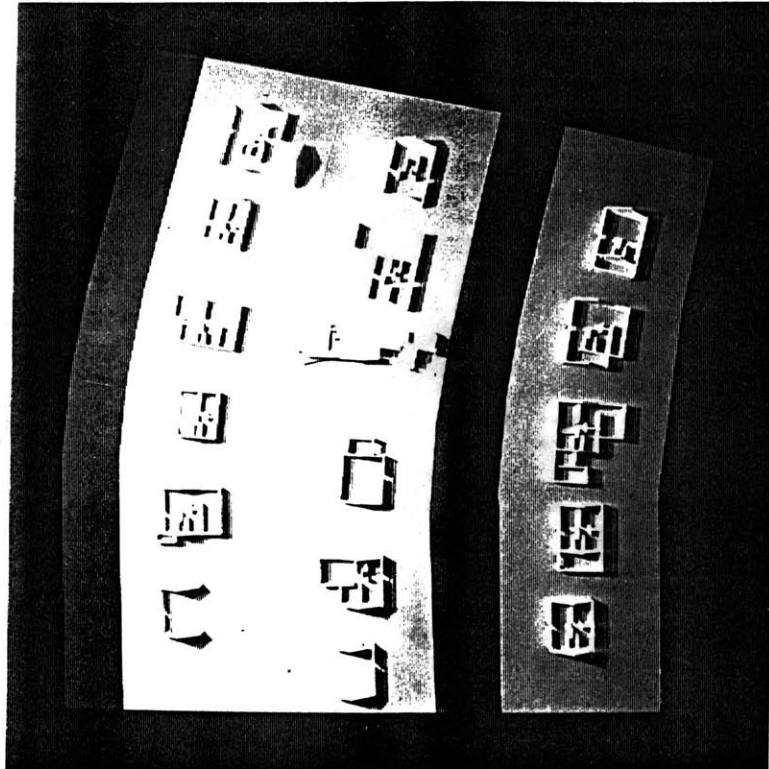
Whether seen as the yoke of conformity or the freedom of anonymity, the seriality of suburban tract housing is its most salient spatial and constructional characteristic. (fig. 30) In examining a block and a half of Levittown, it was shown that the seriality is both relentless and simple. There is virtually no capacity for experiential variety. It is, however, precisely this non-hierarchical organization which Levittown's residents, and most other American tract housing dwellers value for its implied democracy. Private land ownership, a comparatively pastoral setting and single detached dwellings, in a recognizable, albeit reductive, house vernacular are some of the inalienable rights of middle-class Americans. Despite economic, environmental and sociological trends which in their collective whole provide the basis for a valid argument against the sustainable growth of this housing condition, the values outlined above are so widely held and subject to only the most epochal, evolutionary change that it seems necessary not only to provide alternatives *to* the existing condition, but also *within* it. This notion, combined with the previously noted potentials of minimalism suggest that the serial deployment of houses is worth further consideration, particularly with an eye toward addressing the need for spatial and programmatic diversity, as well as environmentally and economically low-impact constructional systems.

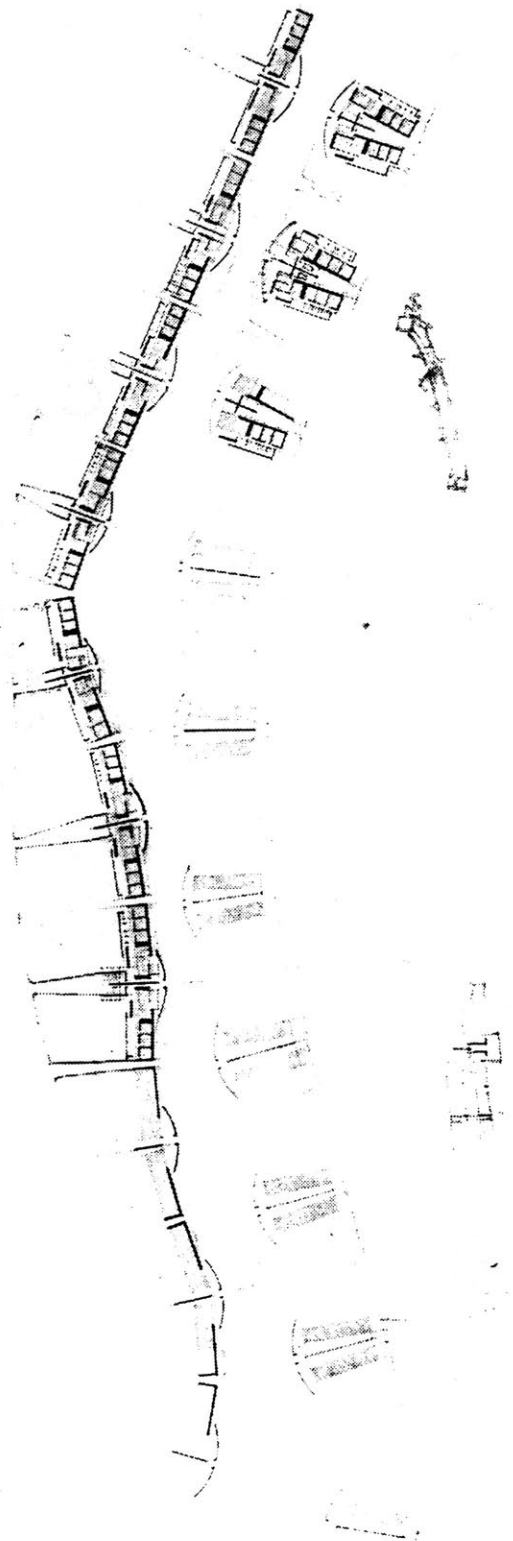
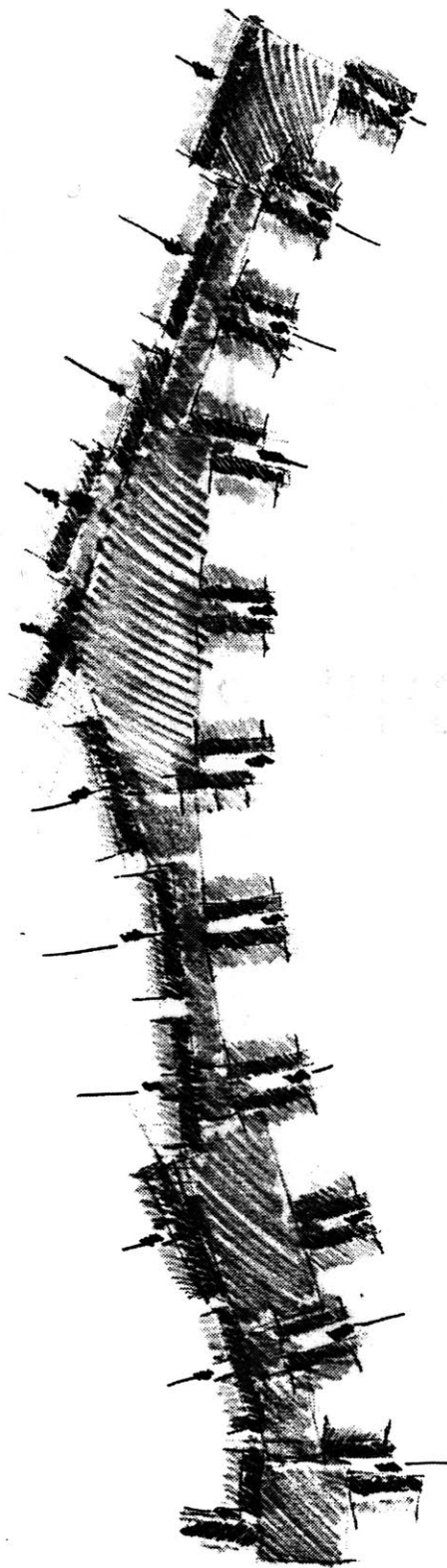
This model of a block and a half of Levittown explores the use of seriality as a generative design tool. By working within the existing lot lines, a new serial pattern is introduced which is aimed at creating a stronger connection between neighboring units as well as between each unit and the landscape. Through this study, principles are developed relative to the definition of the depth of the lot, the spatial interdependence of the units (as opposed to the mere repetition of isolated pieces), and the potential for a unifying public space running the length of the block's interior.



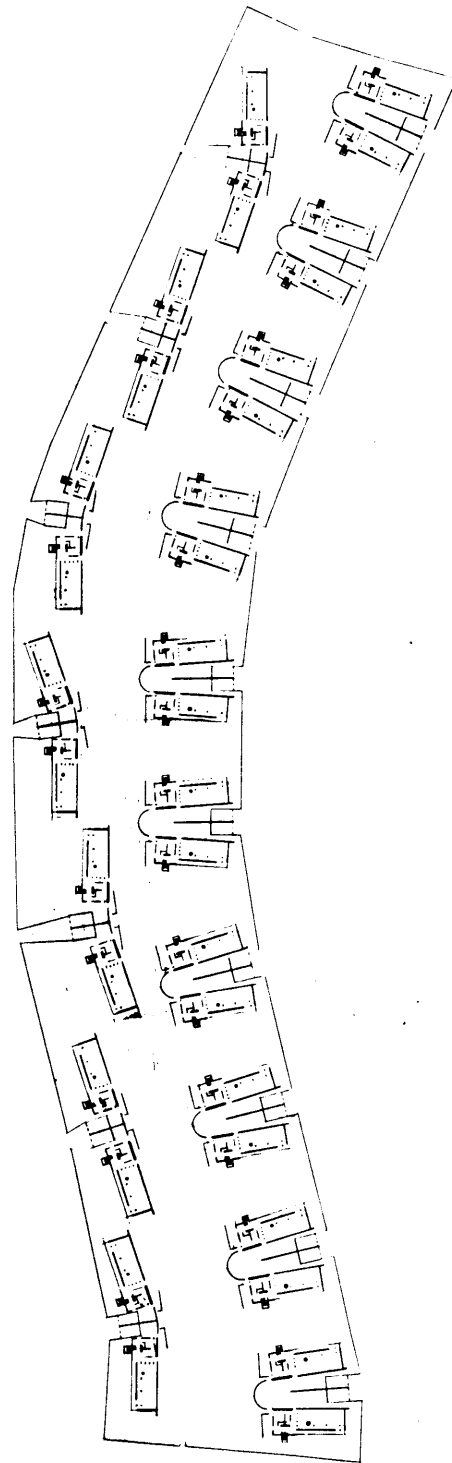
Taking some of the principles derived from the previous study on seriality, here an anomolous house is proposed as a critique of the spatial organization of its surroundings.

Presented as a foreign body, it suggests how a single contradictory gesture might infect the overall system.





These plans represent an initial proposal for the redesign of a block of Levittown, NY. Paired houses sharing a driveway, garden wall and contained courtyard space, are deployed serially either end-to-end or side-to-side. The result is the creation of a block which features a landscape wall on one side delineating a public meadow, and a series of discrete units on the other, allowing for pedestrian access off the sidewalk into the meadow.

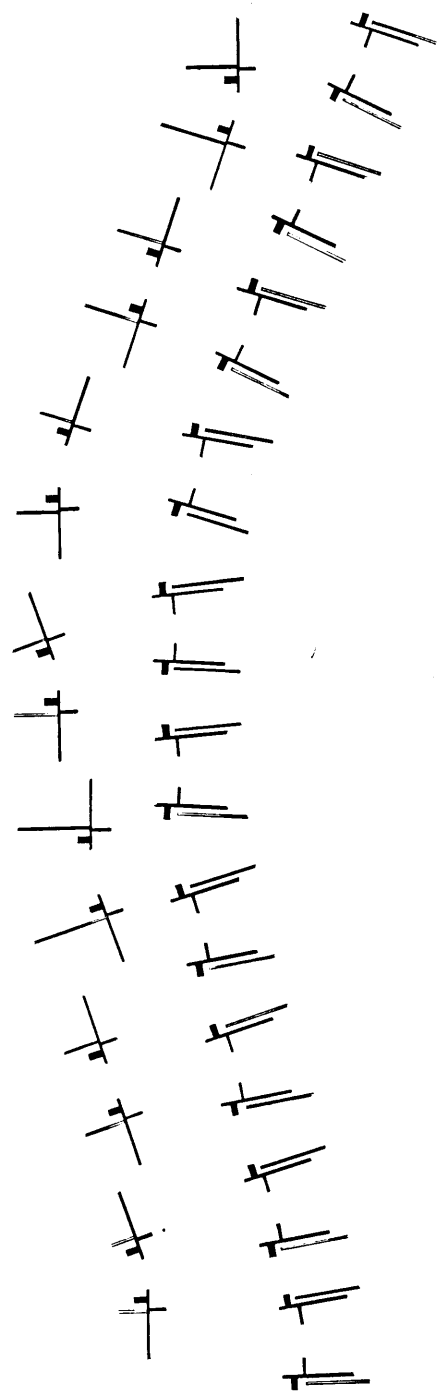


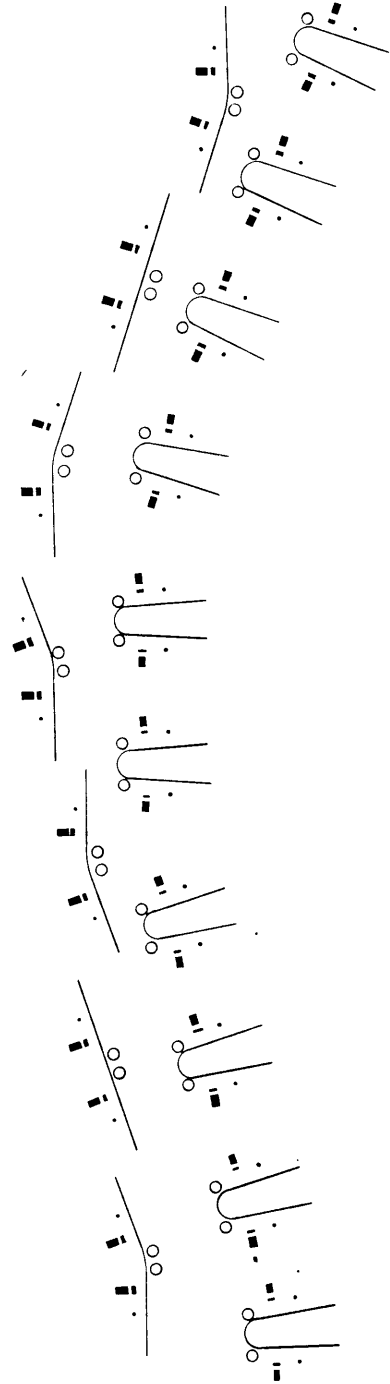
private

semi-private

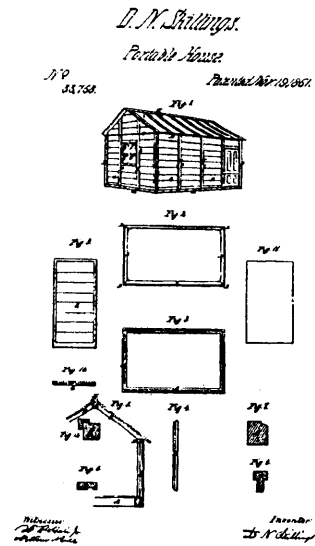
semi-public

public





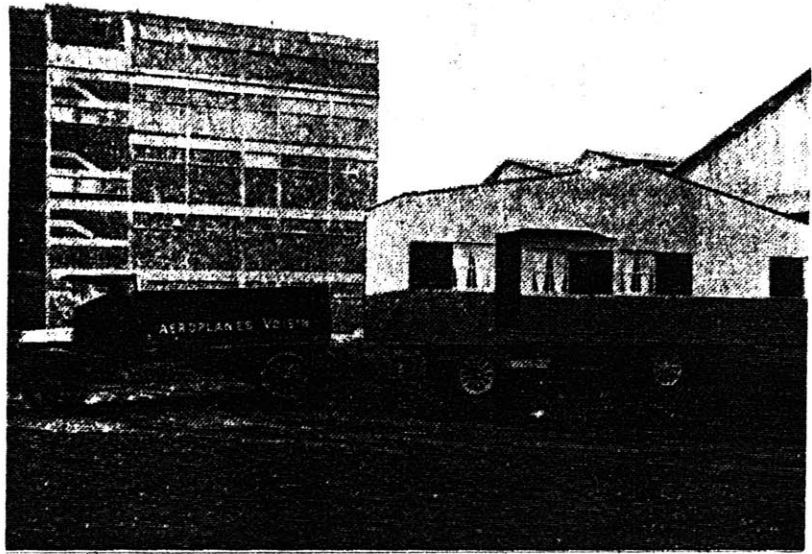
Part 2- House



Now that a position has been taken regarding the organization of the block and the general disposition of the houses within the block and relative to each other, the house itself should be examined as a means toward a further integration of the spatial, programmatic and constructional implications of the covenant and the grid.

First, an examination of the "grid" potentials of prefabrication in the context of the industrialized house project will provide the basis for a critical design stance relative to mass-production and flexibility. This will be tempered by a discussion of the house as institution with emphasis on the degree to which covenant, both spatial and figural, affect the cultural legibility and acceptability of a house design. Finally, all of these notions, as well as a reconsideration of the neighborhood size, will be synthesized into a final design proposition for the block and a prototypical house.

33
"Les Maisons Voisin"
Le Corbusier
1920



Assemblage

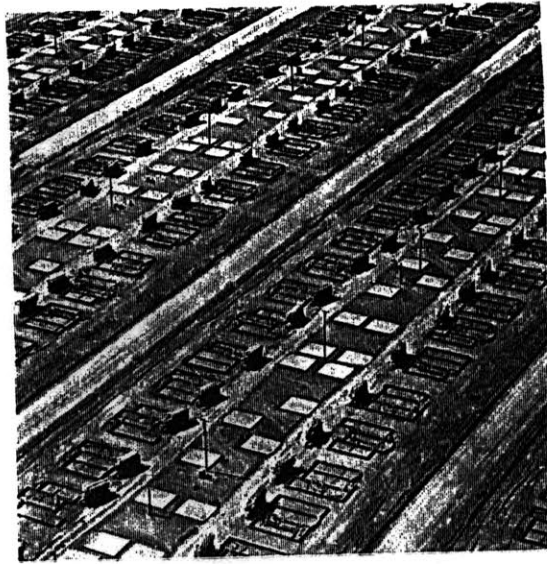
Notions of prefabrication and industrialization of housing have been floating around, particularly in Europe, for at least seventy years. Mobile, modular, and panelized systems incorporating lightweight metals, plastics, and plywoods are still being explored today as what are popularly considered “futuristic” alternatives to the traditional stick-built house. Yet, in 1920, Le Corbusier wrote, in the article “Les Maisons Voisin”:

[It is] impossible to wait on the slow collaboration of the successive efforts of excavator, mason, carpenter, joiner, tiler, plumber...Houses must go up all of a piece, made by machine tools in factories, assembled as Ford assembles cars, on moving conveyor belts...Aviation is achieving prodigies of serial production...It is in aircraft factories that the soldier-architects have decided to build the houses; they decided to build this house like an aircraft, with the same structural methods, lightweight framing, metal braces, tubular supports.(fig. 3 3)

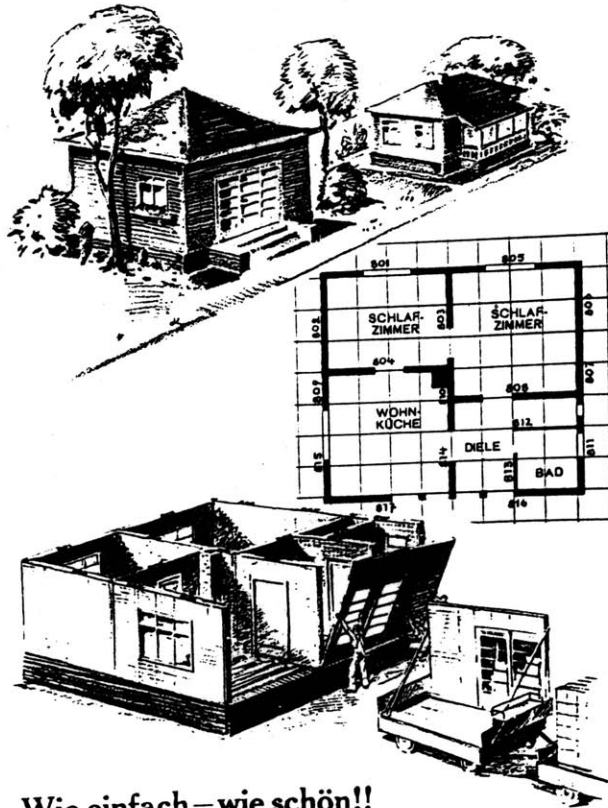
(Le Corbusier, 1920)

In the 1940's, like the 1990's, the United States was faced

34
A tract in California
under construction
copyright William Garnett
1955



35
Hirsch Kupfer-und
Messingwerke
copper house
1931



Wie einfach – wie schön!!

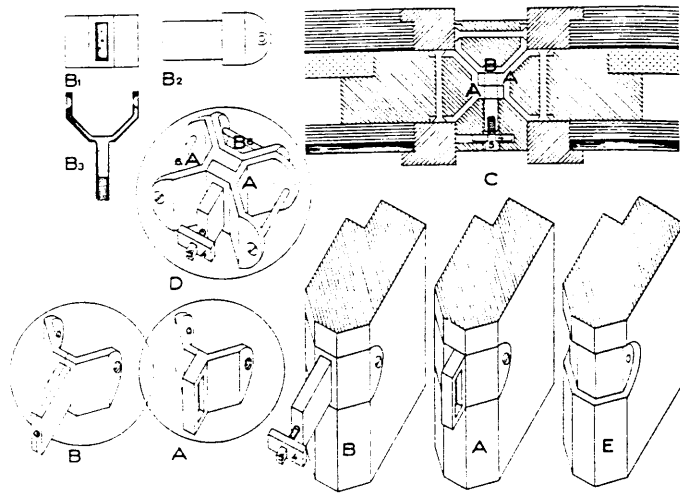
with a housing crisis and the homecoming of a military technology and workforce. Builders like Levitt and Sons, though they replicated the traditional stick-built house, did it by means of a system much like that described by LeCorbusier. As previously noted, the houses were built serially by teams of task-specific laborers. The builders moved down the conveyor belt instead of the houses. Though the resulting Cape Cod cottages appealed to the tastes of the returning GIs and their families, they were not assembled in a way that made them more constructionally accessible or rational to the occupants. In this way they fell far short of the “flexibility” potentials of the industrialized house. They did not even support the kind of decorative “fingerprinting” made possible by the Victorian kit houses. In order to gain a more critical understanding of the potentials of the industrialized house project it is important to examine some of its landmark achievements and failures.

The heroic years of house prefabrication, led by Walter Gropius during the twenties and thirties are widely regarded as being the pioneering effort— the birth of a movement. There is however, a “prehistory” to the industrialized house project. Since the turn of the nineteenth century, particularly in the context of colonial development, there was a substantial amount of componentization. From these early days of factory produced buildings, the house was the predominant product, filling the need of immediate shelter in frontier settlements. Their production often relied on timber

Packaged House
 36
 R: metal connector
 Konrad Wachsmann
 1941

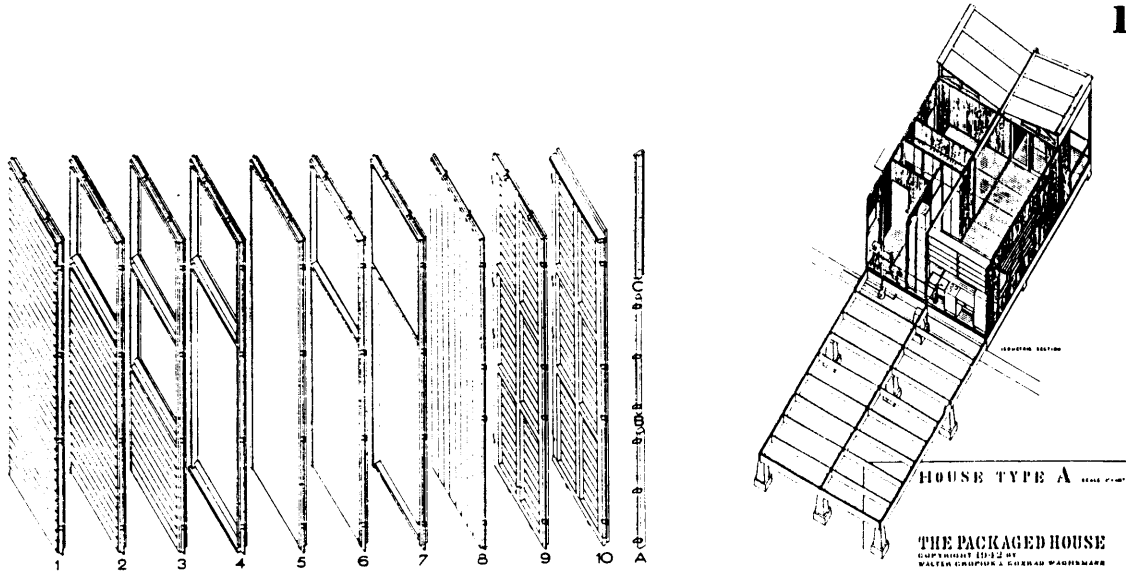
Opposite:
 37
 L: panels
 Konrad Wachsmann
 1941

38
 R: House Type A
 Gropius and Wachsmann
 1942



framing, supplemented by corrugated and cast iron, and eventually steel and reinforced concrete. Glass was used more and more liberally, as were synthetic cladding, flooring and roofing materials. Distribution relied on new modes of transportation, particularly the train and steamship, as well as an extensive banking and advertising network. Notably, during this era prefabrication was considered a remedy to a crisis, rather than a sustainable or desirable mode of production.(Herbert, p.11)

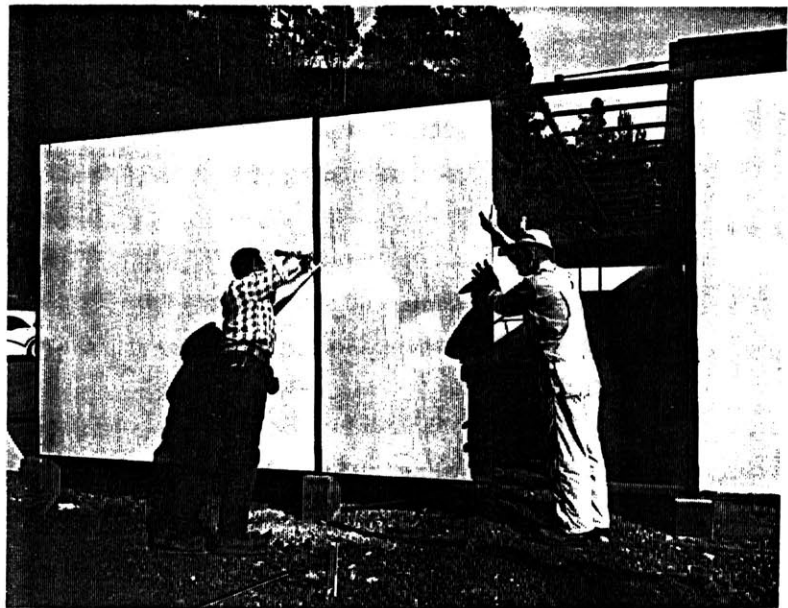
It was the mission of Walter Gropius and Konrad Wachsmann to bring about the sustainability and desirability of the industrialized house. In essence, they hoped to raise a mundane production system to the status of Architecture, with its implicit spatial, cultural, and artistic sophistication. While Gropius pursued a visionary integration of art, technology, and life, Wachsmann made wide inroads to the building industry. In Gropius' descriptions of the advantages of his early prefabricated houses, he repeatedly emphasized the "flexibility and dynamic nature of the system." (Herbert, p.138) Specifically there is mention of: "mobility, or the ease of transportation and adaption to various locations and



climes; adaptability, or the capacity to generate many house types and variations, through the interplay of standardized components; and growth, or the expandability of the house, horizontally through the addition of further rooms, or vertically through the addition of another floor.” (Herbert, p.138) Further, the notion of phasing, from primary service core to built-out house, had become a major consideration.

By the early 1940’s, Gropius and Wachsmann were working in the United States on a project called the Packaged House, which they patented in May 1942. It was an entirely self-contained, closed system. They did not attempt to reconcile it with any industrially-produced building components then on the market, nor with the dimensional standards of the industry. There was great attention given, however, to constructional, and thereby programmatic and spatial flexibility within the system itself. Materially, the Packaged House consisted of load-bearing panels, weatherboarded externally, flush-panelled internally and thermally insulated, to be incorporated with each other by means of intricately designed, Y-shaped metal connectors.(fig. 3 6, 3 7+3 8) The system was ultimately

39
Craig Ellwood
Case Study House #18
under construction
Beverly Hills, 1956



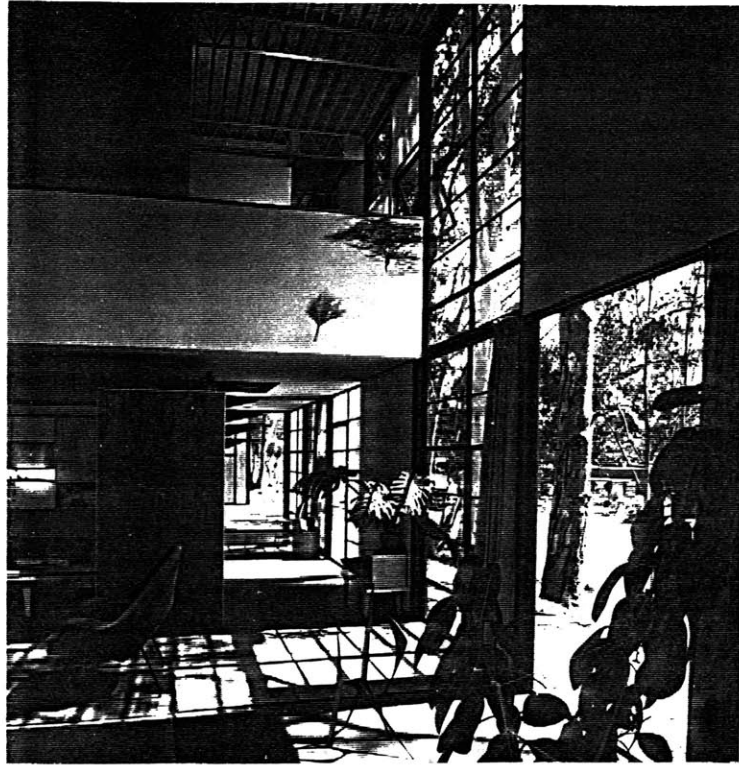
mass-marketed under the corporate name General Panel. Model houses were built in Somerville, MA in 1943 and Queens, NY in 1946. By 1947, a General Panel plant in Burbank, California began production. A paltry number of houses sold. The company folded and so too did the industrialized house project, at least in its steel frame and panel incarnation. There were other noble forays into this daunting realm.

In 1944, John Entenza, editor of *Arts and Architecture*, a monthly journal published in Los Angeles, ran an announcement in the January issue that sought to address the problem of postwar American housing. What resulted was the Case Study House program, an effort to define the cutting edge of new single-family housing production in the US. The following is an excerpt from the program description of January, 1944:

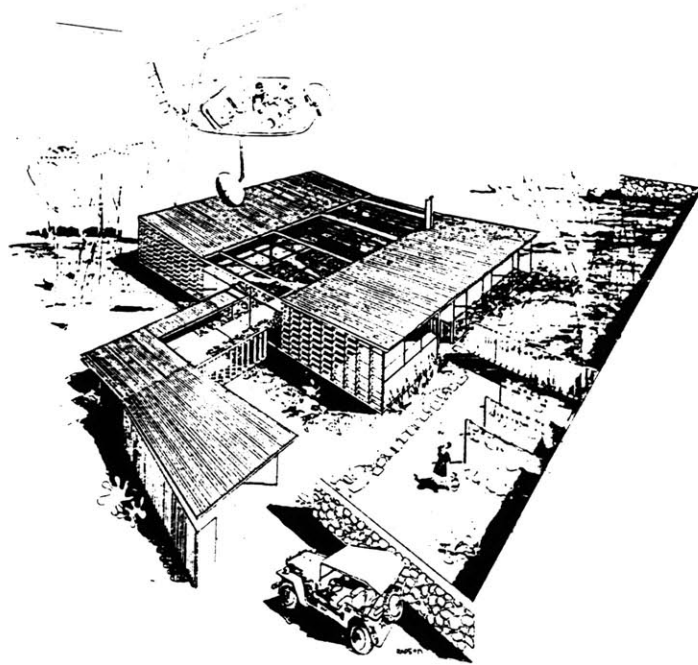
Eight nationally known architects, chosen not only for their obvious talents, but for their ability to evaluate realistically housing in terms of need, have been commissioned to take a plot of God's green earth and create "good" living conditions for eight American families.

It is to be clearly understood that every consideration will be given to new materials new techniques in house construction. No attempt will be made to use a material merely because it is new or tricky. On the other hand, neither will there be any hesitation in discarding old materials and techniques if their only value is that they have been generally regarded as safe.

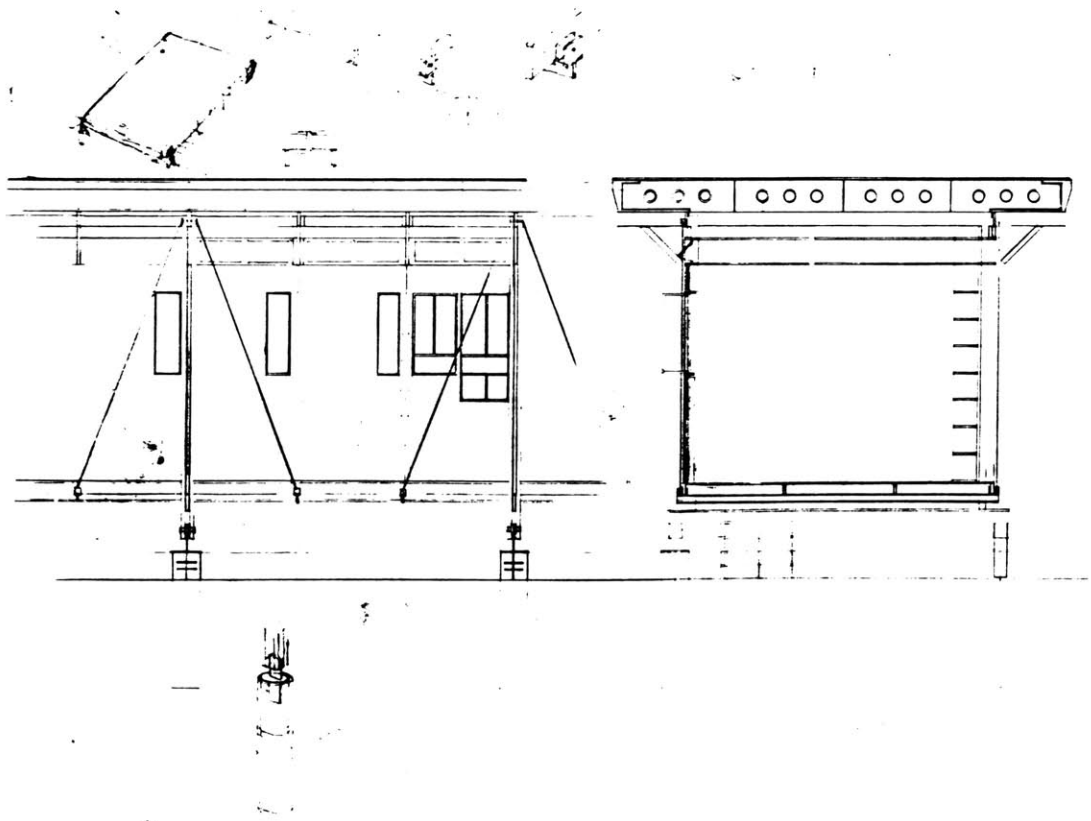
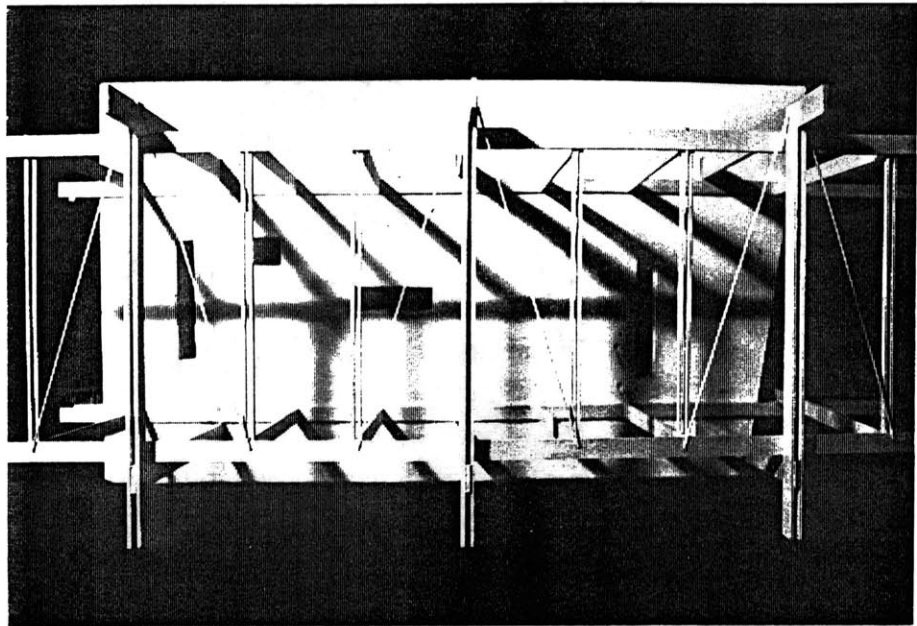
40
Charles and Ray Eames
Case Study House #8
Pacific Palisades, 1945-49



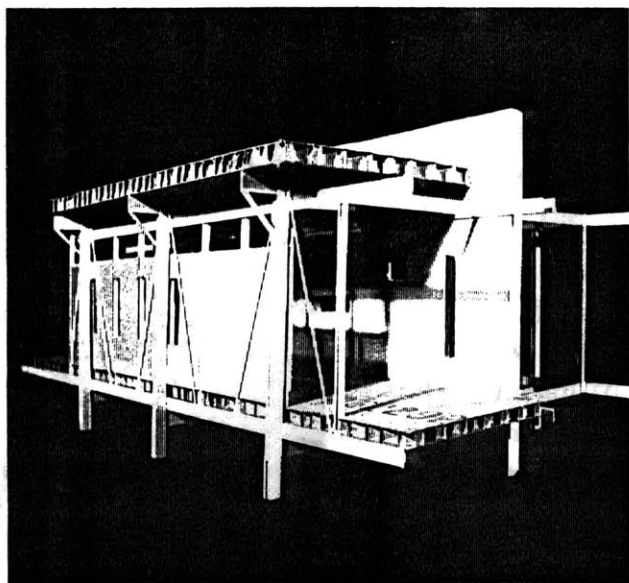
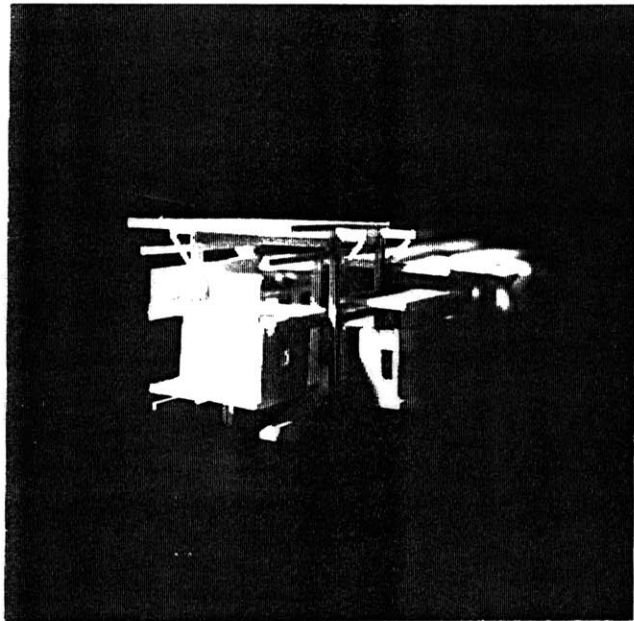
41
Ralph Rapson
Case Study House #4
"Greenbelt House"
1945



The program far exceeded its initial goal of sponsoring only eight houses- more than twenty designs were executed. They ended up becoming hallmarks not only of new trends in design and construction, but also as trendy new designs, to be consumed by the artists and celebrities of Southern California. Further, though each architect purported to be reinventing the wheel, the projects shared a formal vocabulary and a limited palette of new materials and techniques. Among the new ideas about living arrangements, leisure-time, household services, and the aspirations of the peacetime middle class were more practical concerns related to prefabrication, assemblage, flexibility, environmental controls and energy efficiency. Most of the innovations in terms of structural , constructional, spatial and programmatic systems which showed such promise in several of the Case Study houses, such as Eames' #8 (fig. 40) and Rapson's "Greenbelt House,"(fig. 41) never became socially acceptable or, evidently, practically feasible. Further, though there have been several efforts since the 1940's directed toward prefabrication, in the form of mobile, modular, panelized, log and dome systems, no "breakthroughs" (to borrow the name of a mid-seventies US Government study into prefab) have stood the test of time as real alternatives to the conventional, labor-intensive, on-site, ground-up, stick-built method. Perhaps prefabrication should be considered as a supplement to, rather than a replacement of, this method.



These assemblage studies represent a brief investigation into the potentials for standardization of constructional components and methods in a way that is visually and technically accessible to the dweller, while still maintaining a degree of cultural relevance and figural legibility. A braced timber frame on point foundations, integrated with a masonry (CMU) privacy wall, support, through dimensional modularity, a system of structural panels with built-in windows and doors. This constructional system is envisioned as a supplement to a more closed panelized system (based on traditional stick-built methods) which would house privacies and services.





42
House and family
Levittown, NY
1948



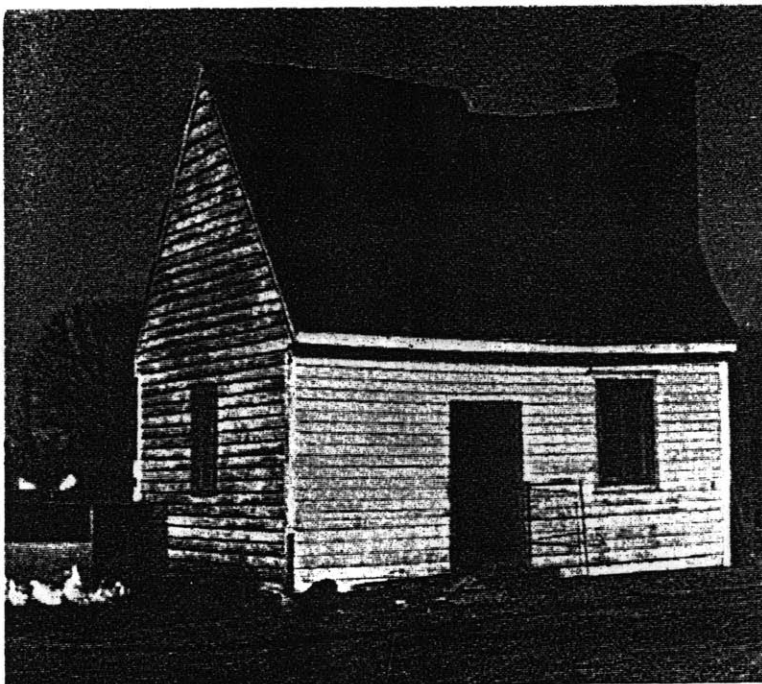
43
House and family
Levittown, NY
1950

House as Institution

44
Quincy Jones
Bentwood, Los Angeles
1946-50

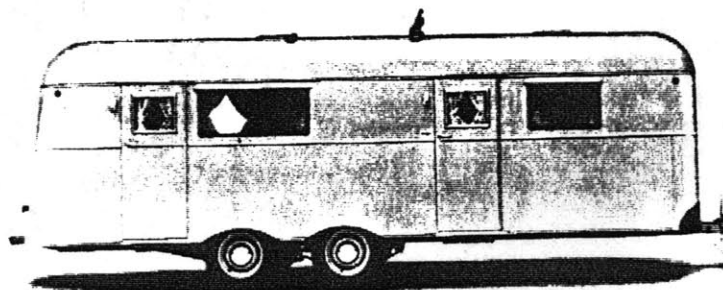


The industrialized house project failed in the United States because of the population's refusal to embrace the notion of the house as a 'machine for living'. As John Habraken has noted: "No two things are further apart than the dwelling and the machine. For the purpose of the machine is to perform certain actions for us, while dwelling should enable us to perform certain actions ourselves." (Habraken, p.18) Houses, such as those produced by the General Panel Corporation were perceived as inferior, simply because they were prefabricated and mass-produced. Surely if houses could be rationed in wartime, like butter, they would come in the form of a modest Gropius and Wachsmann Packaged House. Further, the design of the ideal middle-class suburban house is probably the worst place to propose architectural or technological innovation. After all, even today the creation of dwelling is a conservative operation, meant to conserve privacy, family, and associated values and traditions. Therefore, the house should not be a tool for social engineering, but instead should adapt to societal change.

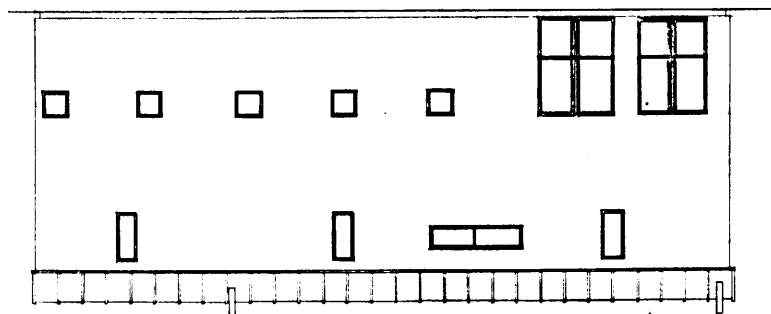
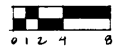
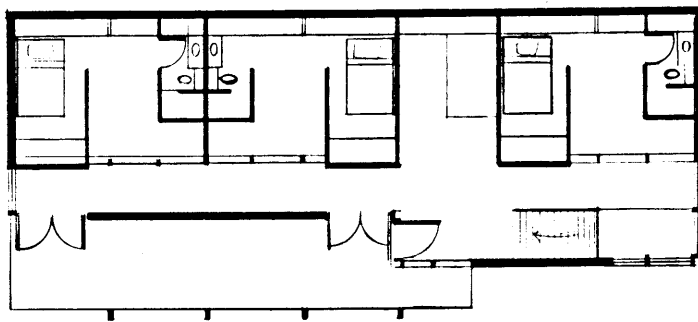
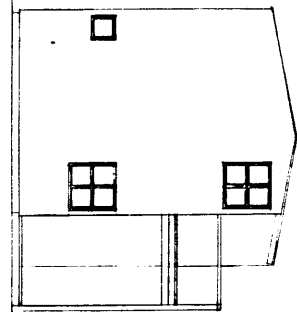
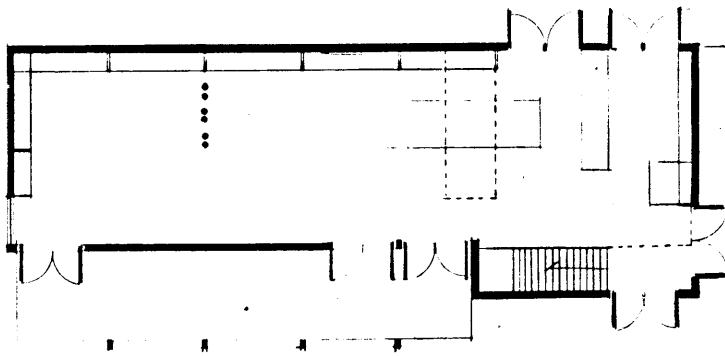
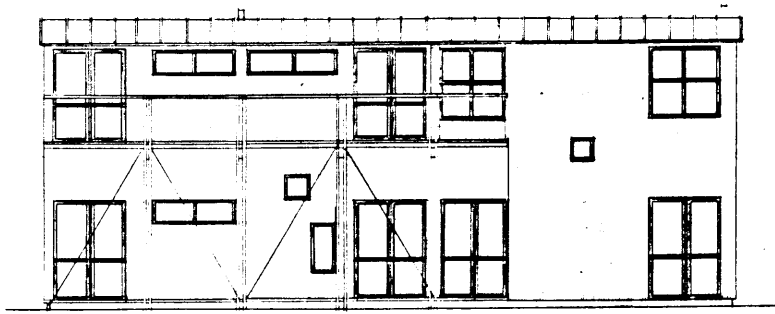


45
Northampton County, VA

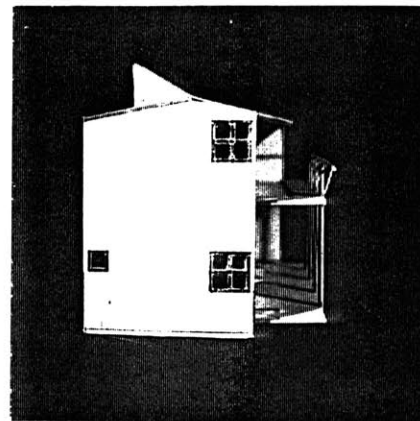
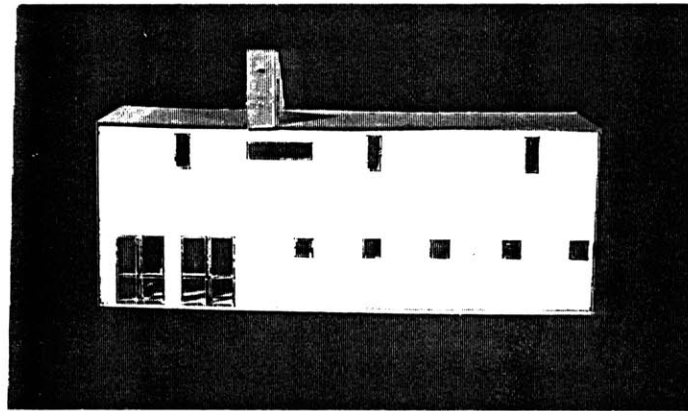
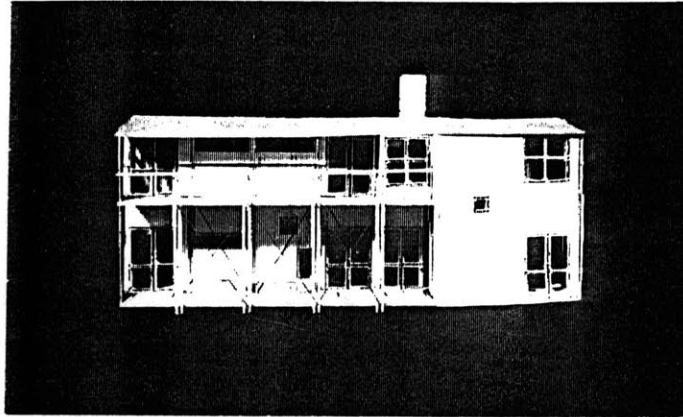
46
trailer home

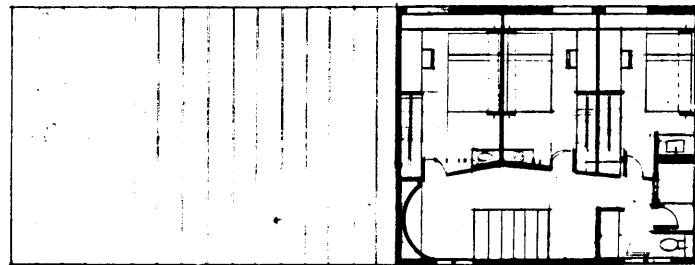
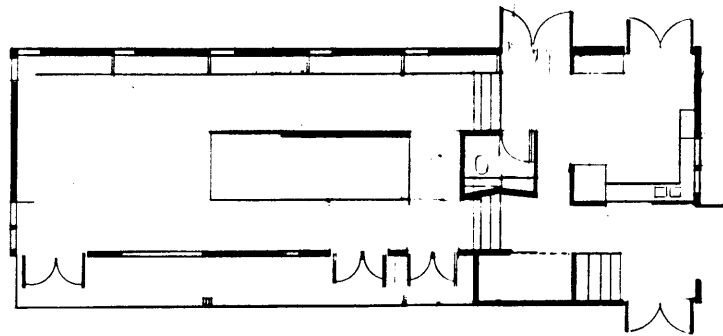
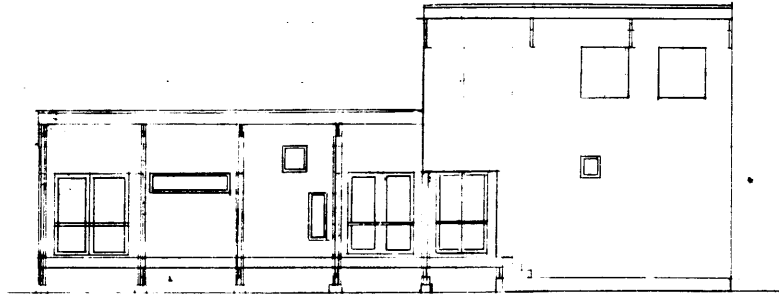


The open plan of the Case Study houses, which had previously been a trapping of the architect-designed Modern villa, proved to be ahead of its time. The diversity of living groups in today's housing market (the generic one of which might, for the purposes of designing a generic house, be defined as three people, with at least one over the age of 18) merits a reconsideration of more open or flexible spatial structures, particularly as a supplement to the necessary privacies and services which constitute a traditional subdivided "cottage". As long as the "room of one's own" persists, with adequate space to support a bed, armchair, desk and storage, the rest of the house currently requires less functional delineation than it has in the past. Note the "suburban loft" phenomenon, wherein an individual or small living group moves into a typical developer's cape and completely guts the interior, save the plumbing core, in order to achieve spaciousness and flexibility. In such a condition, elements which formerly served particular rooms, such as a refrigerator, wood-burning stove, dining table or bookcase are now instilled with a heightened spatial and figural capacity. These elements, traditionally referred to as fixtures, furniture, and amenities, become *the* architectural definitions in an otherwise neutral container. The exterior walls of the house are left with the task of keeping out the elements, letting in the light and signifying, in a culturally readable way, the idea of home. This seems like a reasonable way to conceive of a mass-producible suburban house for today, provided there is a well-defined neighborly system, perhaps predicated on paired houses sharing driveways, contained outdoor space, garden walls and access to a pedestrian spine, in which to serially deploy it.



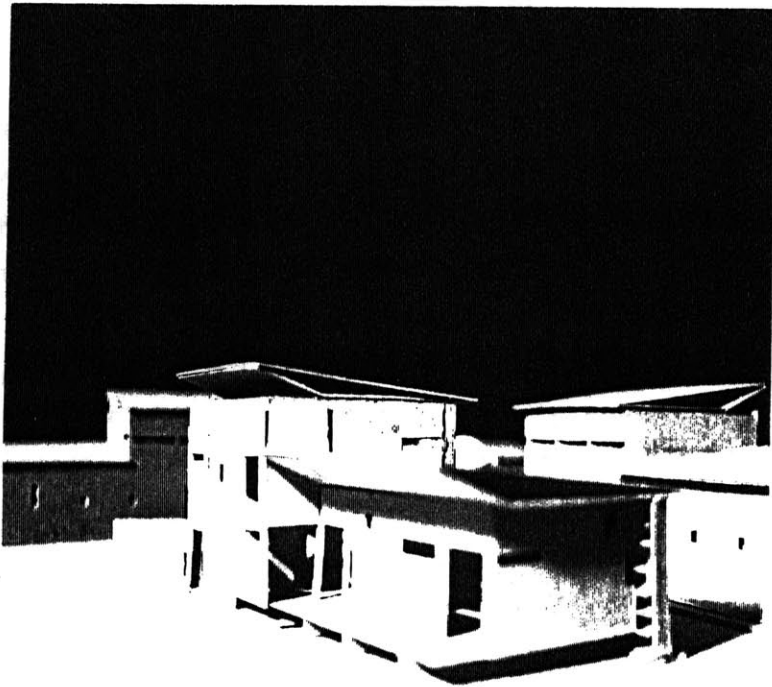
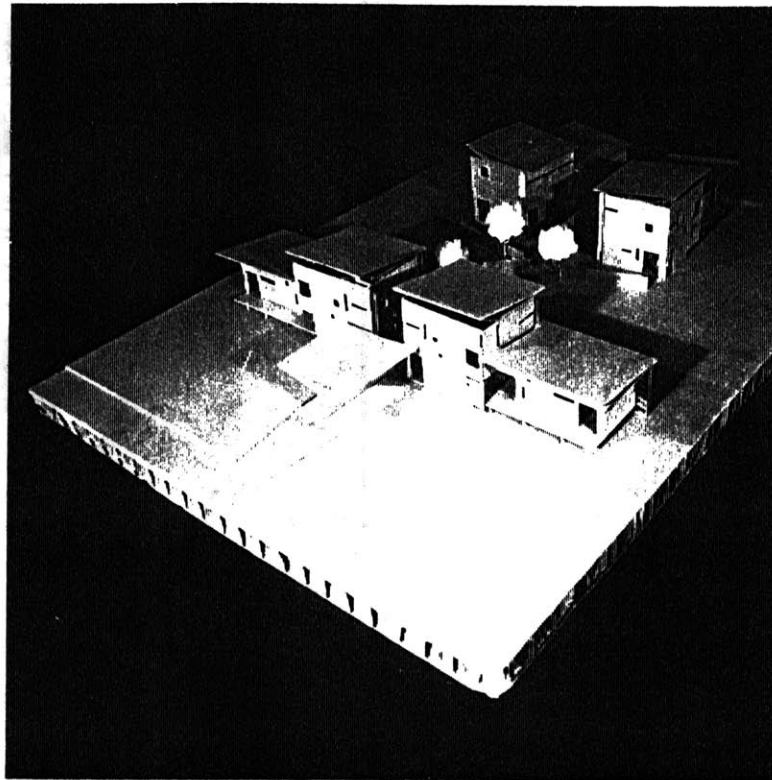
Working within the parameters of a recognizable vernacular, this house study, intended to be part of the paired, serial scheme developed earlier, seeks to accommodate each inhabitant with a compact living suite, each with its own shower, toilet, sleeping and sitting area. The compactness of the privacies yields a large unprogrammed "loft" on the ground level with an accompanying kitchen space. Further, a porch on both levels faces the street or side yard respectively.



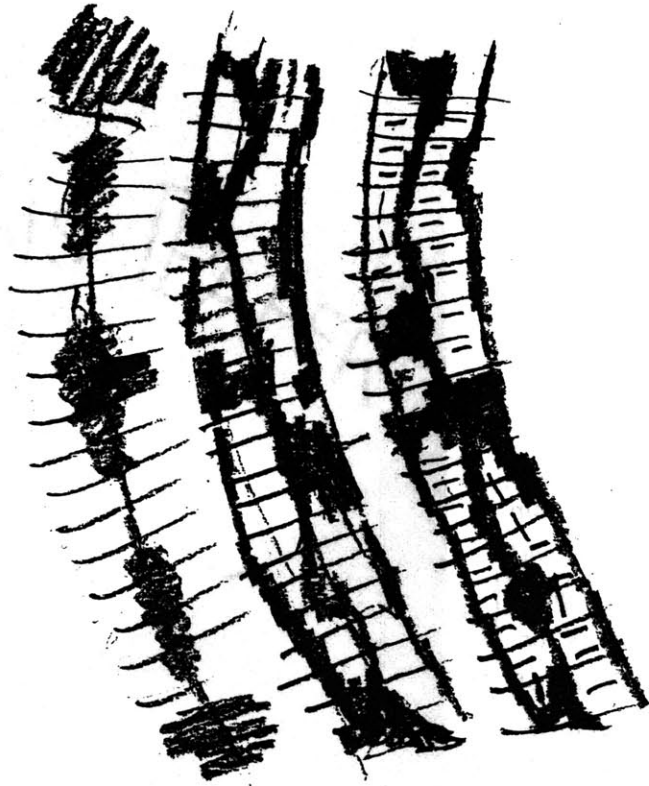


0.124 6

In this development of the house study, the privacies are further compacted, each room having only a sink, with a shared shower and toilet. This allows for greater articulation of the ground level loft, which now causes the house to be read as a tripartite organization: garden/storage wall supporting two story living core and single story, slightly elevated living loft. This three part organization will be further exploited in the final scheme.



view from street

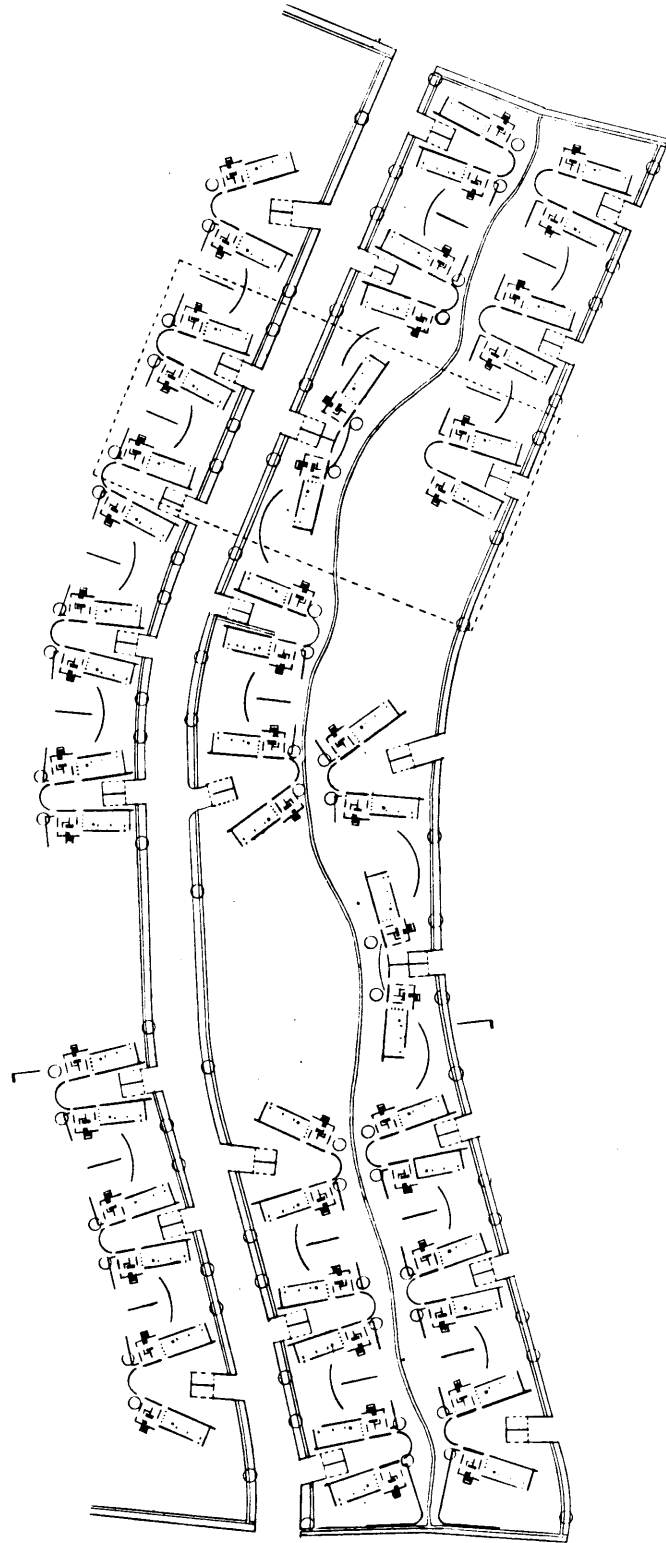


context plan study

Minima

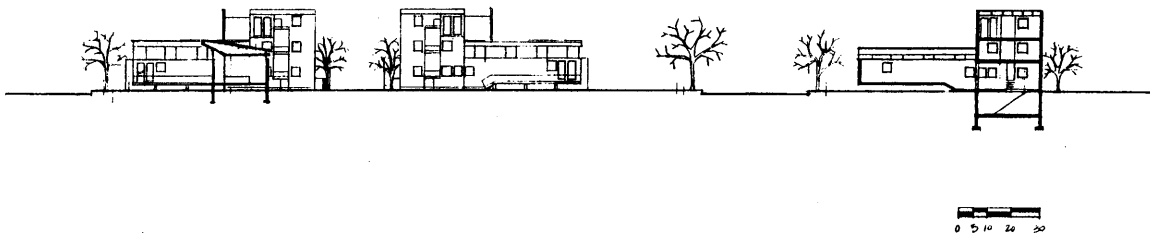
In 1964, Melvin Webber suggested that it is an outmoded, traditional and culturally-ingrained idea that spatial proximity and hierarchy are tied so closely to notions of community. (Webber, p.74). Further, the French intellectual Jean Baudrillard equates the unassuming banality of much of the contemporary American landscape with a sense of expressive freedom. (Baudrillard, 1988) (Rowe, 1991, p.58). On the other hand, “the newest idea in development is the nineteenth-century town” (Langdon, 1988, p.1). Reductively speaking, notions regarding the appropriate pattern for suburban development in the US at the end of the twentieth century are extremist. They suggest we pursue the extremes either of the “poetic” of the grid or the “readability” of the covenant. Some sit on the fence, proposing a mute “modern pastoralism.” The commonality of these positions is their framing of the problem in visual terms. The *spatial* implications of the covenant and the grid demand that a holistic position be taken relative to the automobile, the subdivision of land,

At the block level, this final scheme realizes a public meadow running the length of the block's interior which opens up to larger open spaces meant to support gathering, play, and pedestrian access through the blocks, perpendicular to vehicular traffic. Further, there is an attempt, through the pairing of houses and their subsequent relatively high-density serial deployment, to generate a range of private and public outdoor spaces to support spatial covariance at the 2-6 house scale.



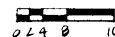
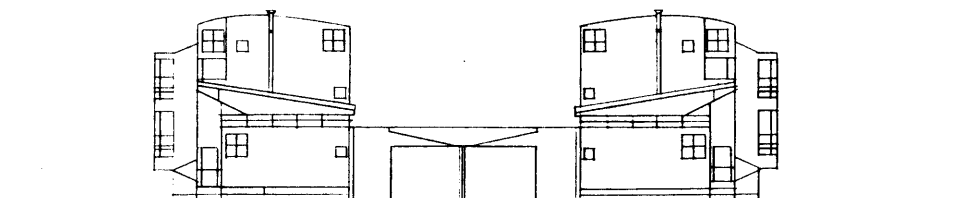
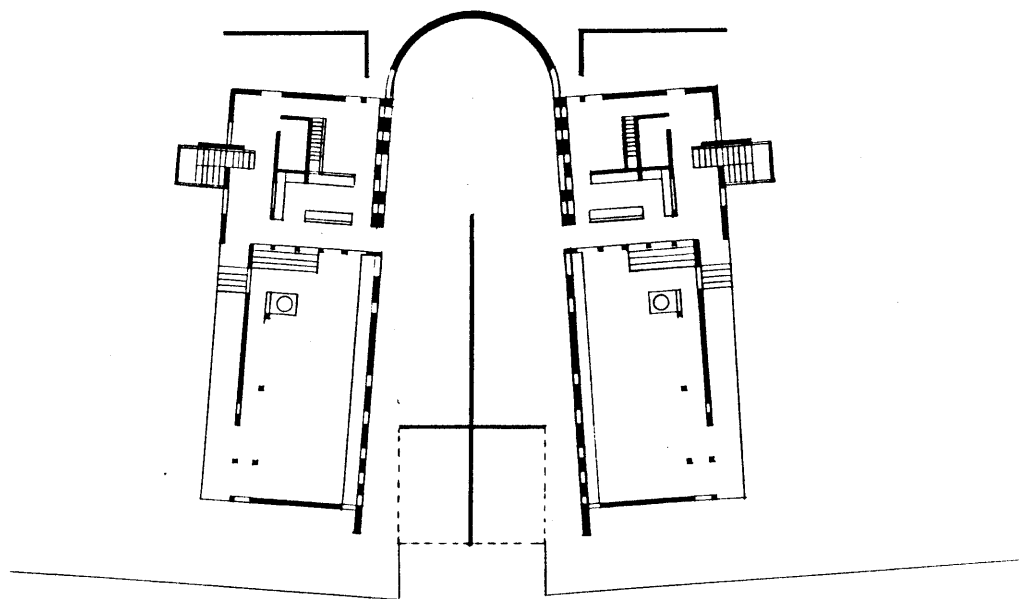
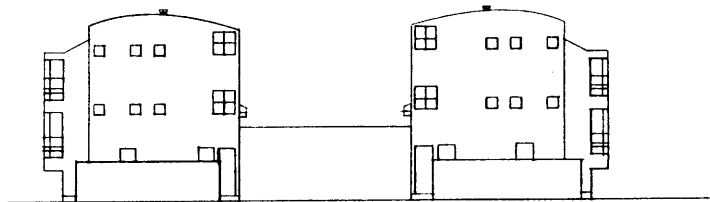
Site plan



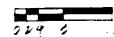
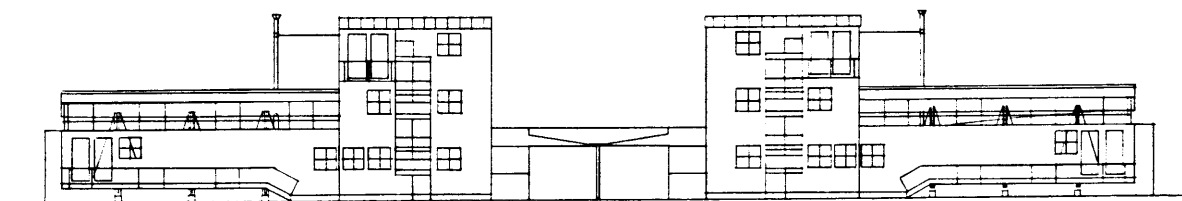
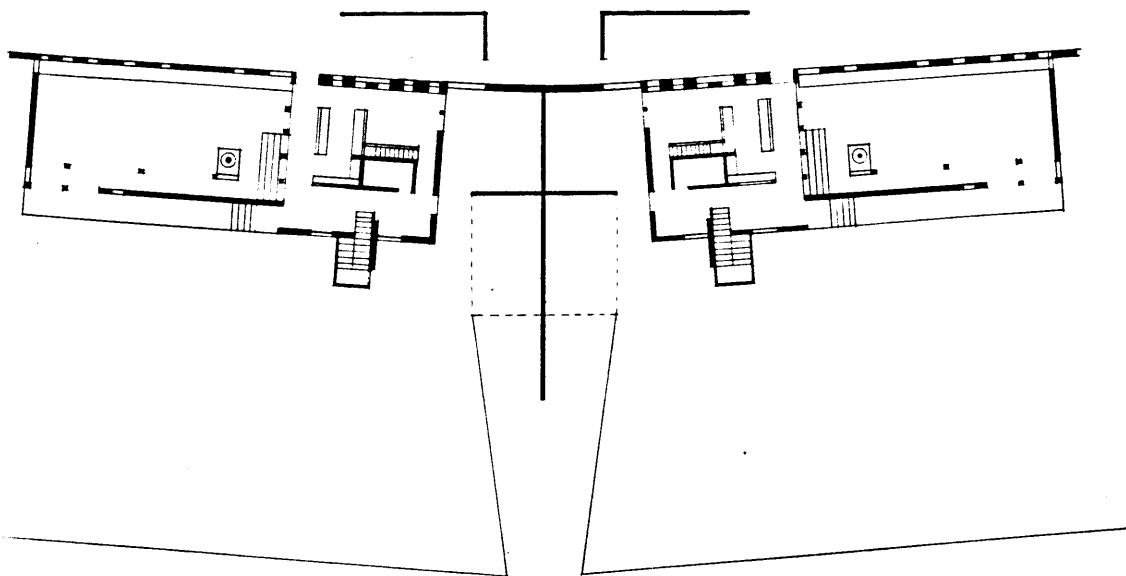
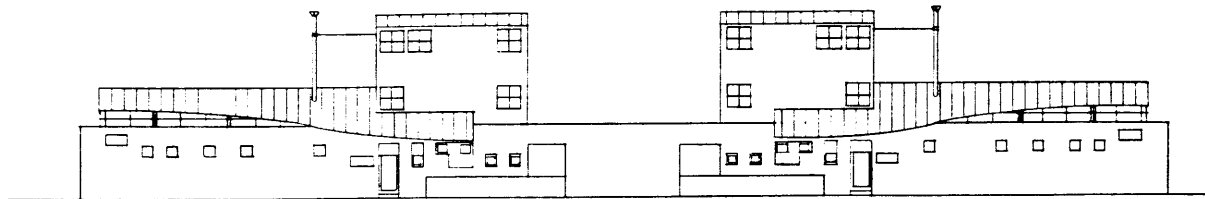


site section

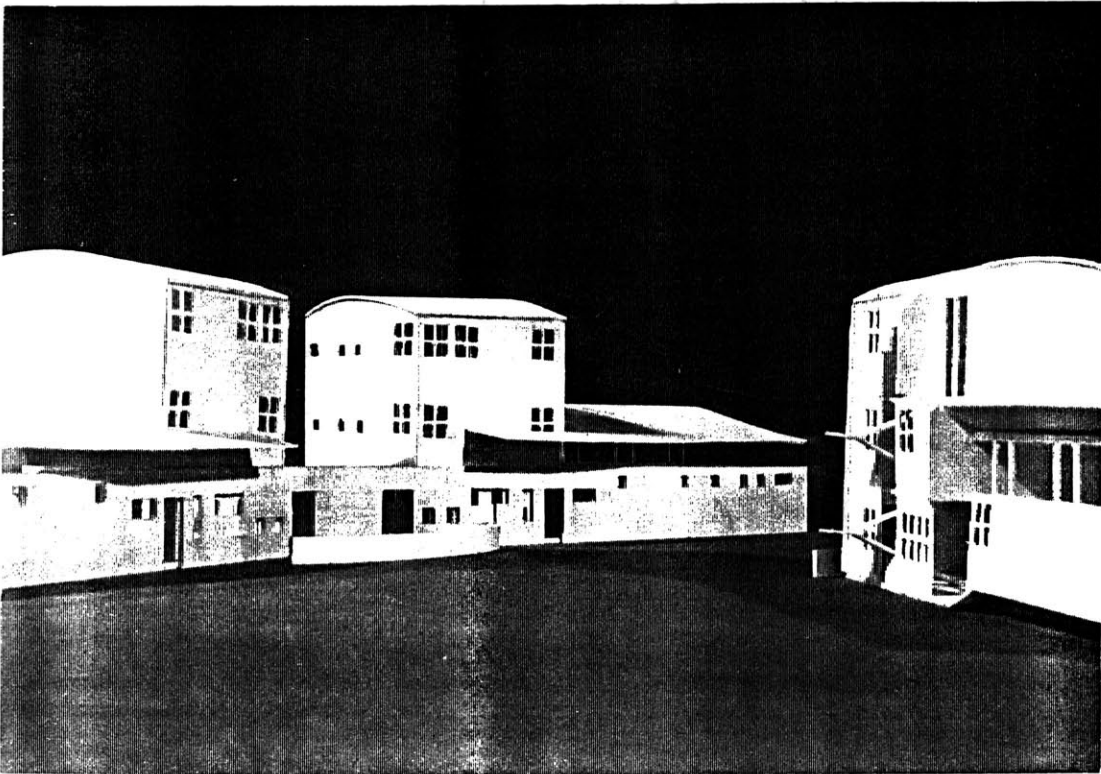
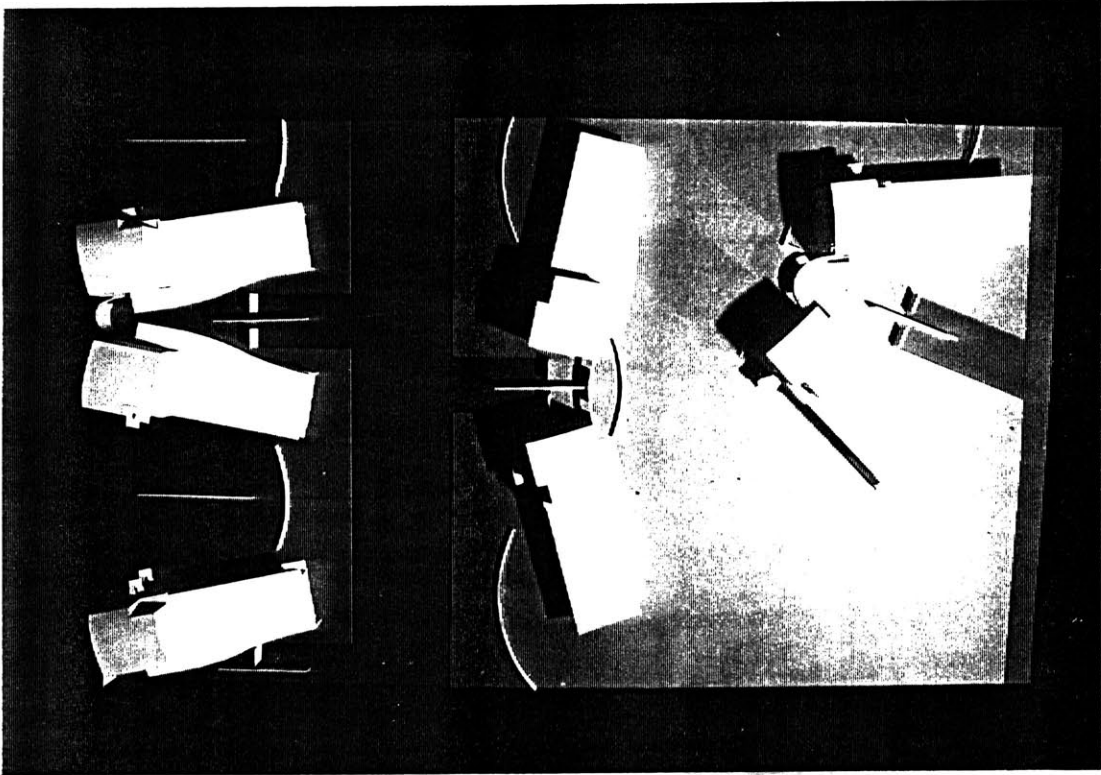
the need for public places, the condition of neighboring, the plan of the house, and the production process. These elements should be considered interdependently with an appreciation for the impact that decisions made at one level have on all the others. In *Theory of Good City Form*, Kevin Lynch offers the following definition which suggests the need to grapple with the complexity of the problem at hand: “certain identifiable characteristics of the performance of [housing]...are due primarily to their spatial qualities and...are measurable scales along which different groups will prefer to achieve different positions.”(Lynch, p.32) The best suburban form is achieved when it is conceived of, as it is by Griffin, “as a continuous structure of elements in space,... [or] as a spatial structure.” (Chow, 1993, p.4)



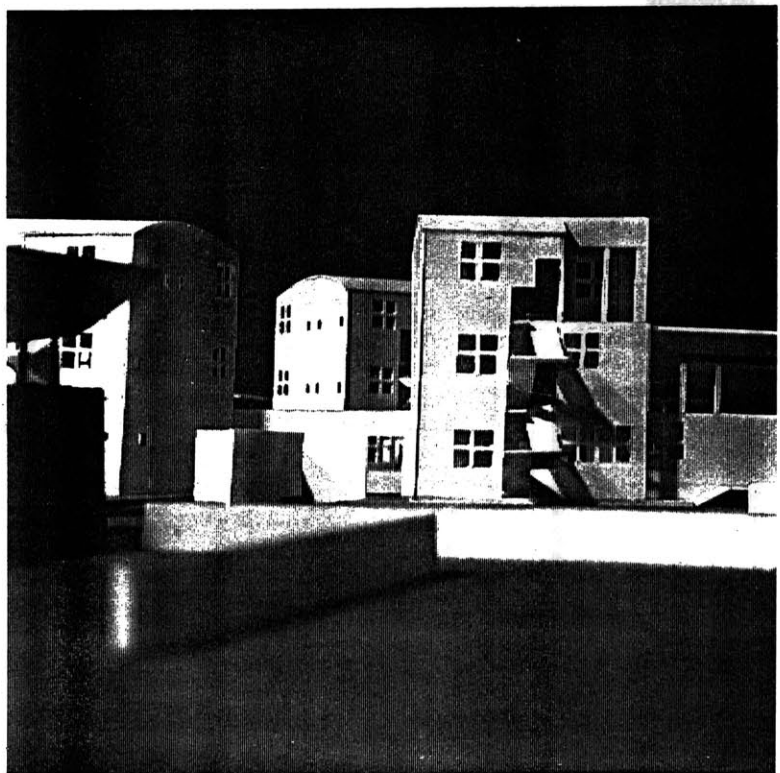
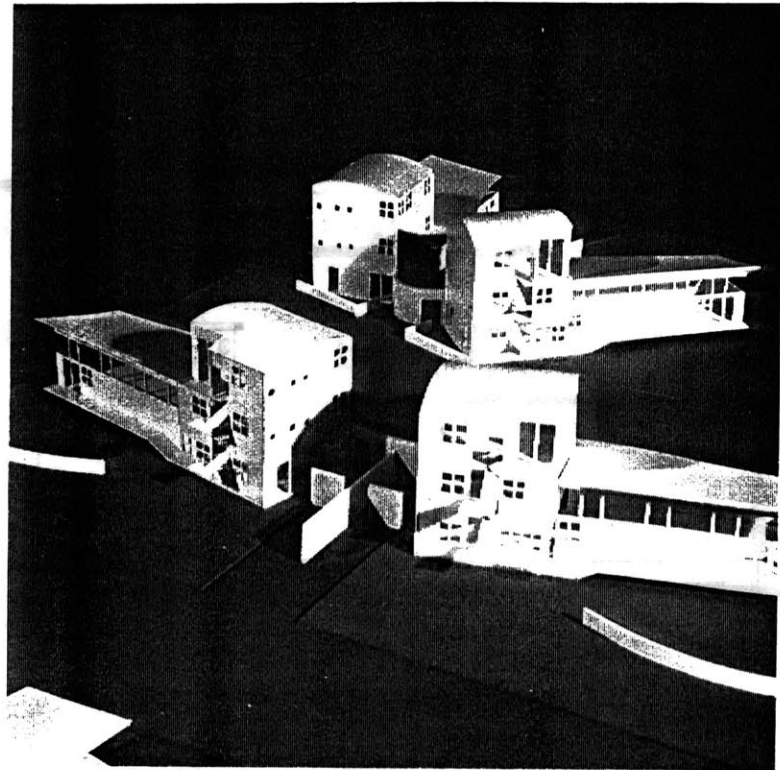
protoypical pair 1

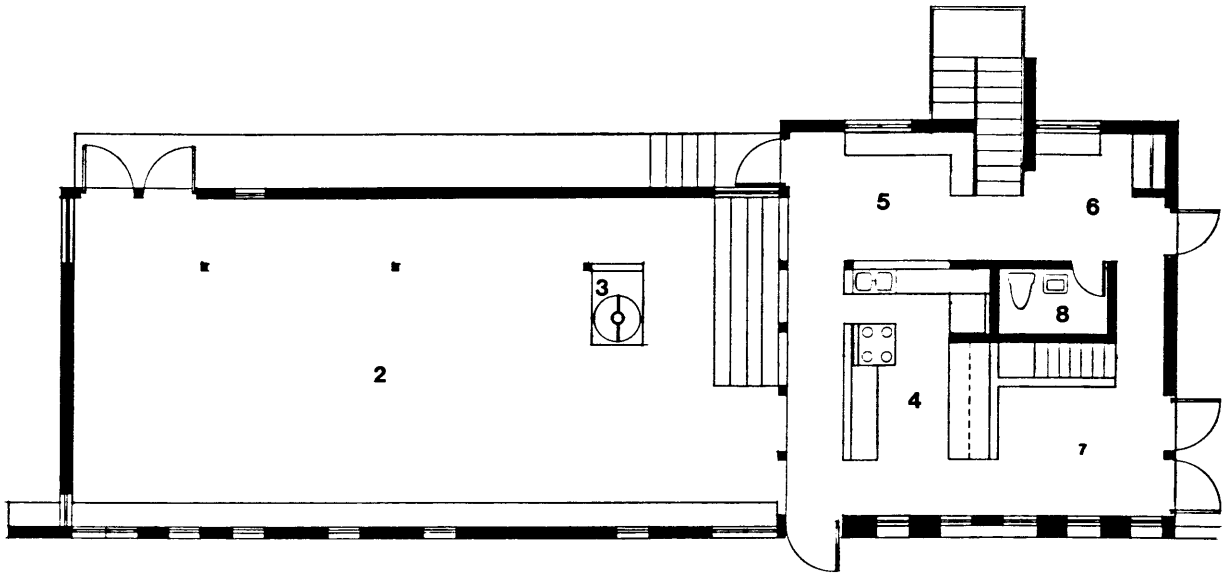


prototypical pair 2



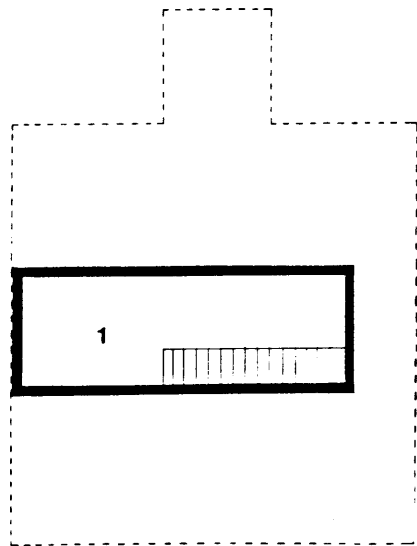
In this final scheme, the tripartite organization has been further clarified. A 3-story living core supports privacies and services and is built of a panel system which echoes traditional stick-built methods and which guarantees a measure of vernacular readability to the "cottage" portion of the house. The single-story loft, built of a braced timber frame on point foundations provides spatial generosity and constructional flexibility as a supplement to the cottage. A 10' CMU privacy wall provides material and spatial support to the other two elements, and defines public outdoor space.

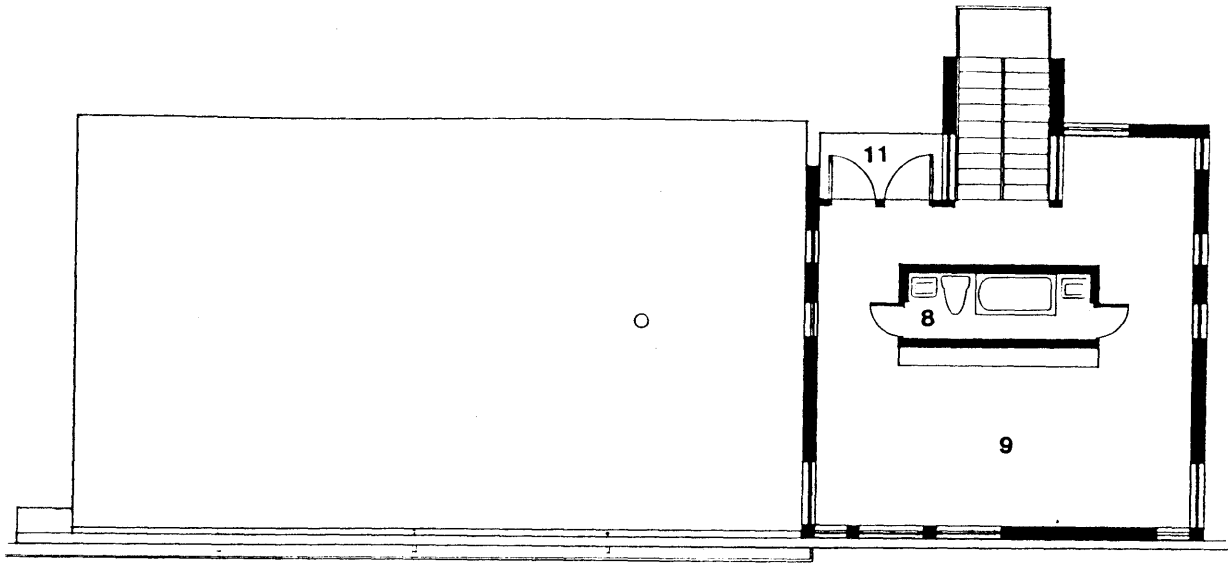




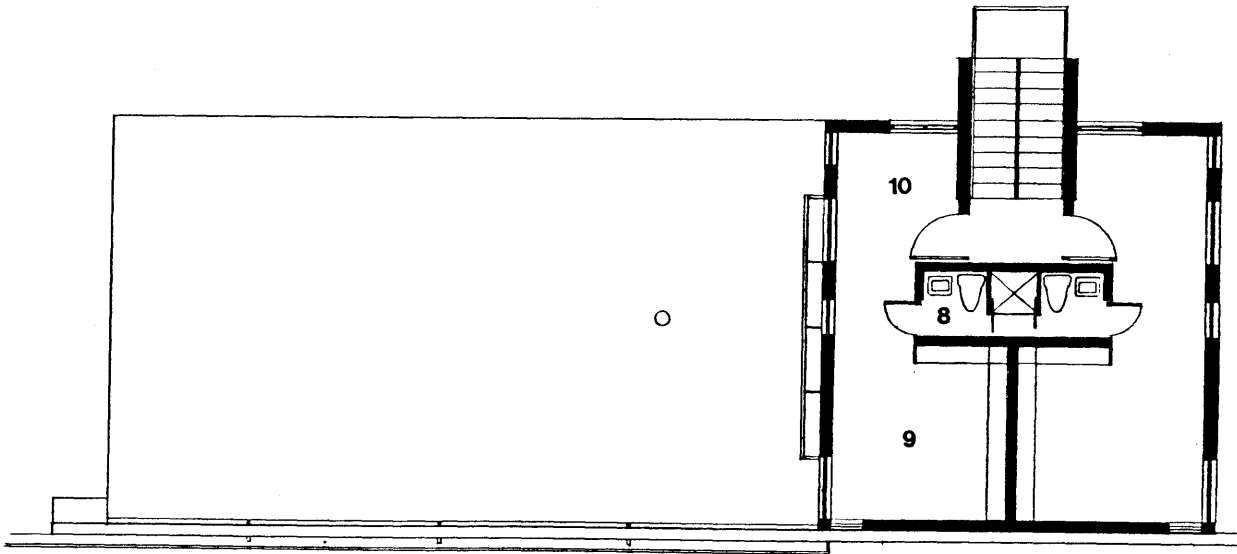
first floor

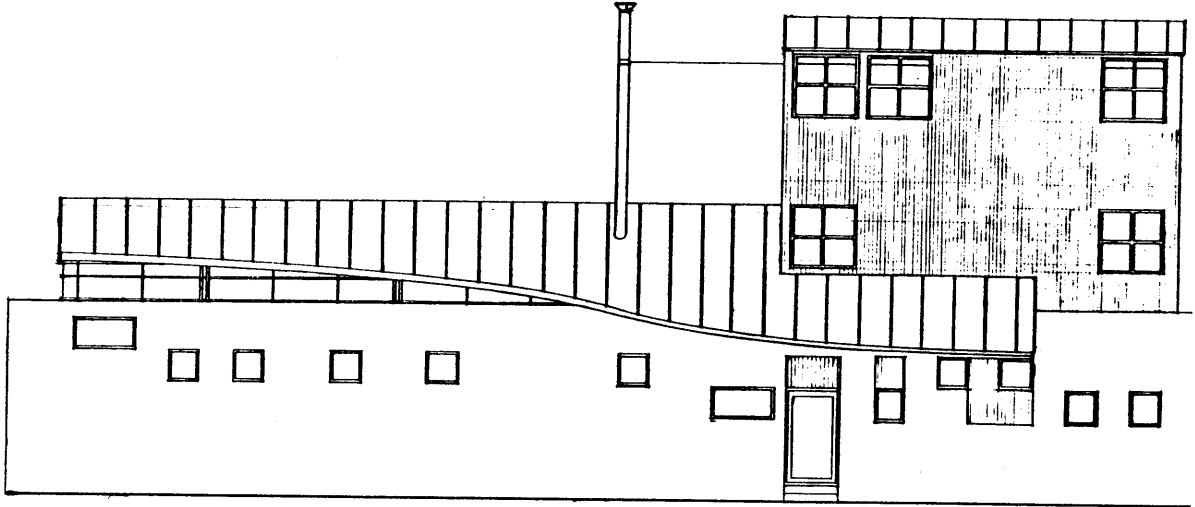
basement





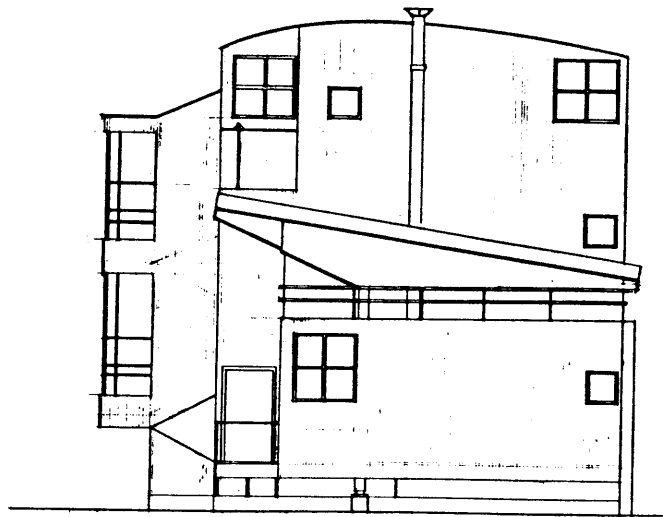
basement 1	kitchen 4	eating 7	sitting 10	third floor
loft 2	entry 5	bath 8	balcony 11	
woodstove 3	mud room 6	bed 9		second floor

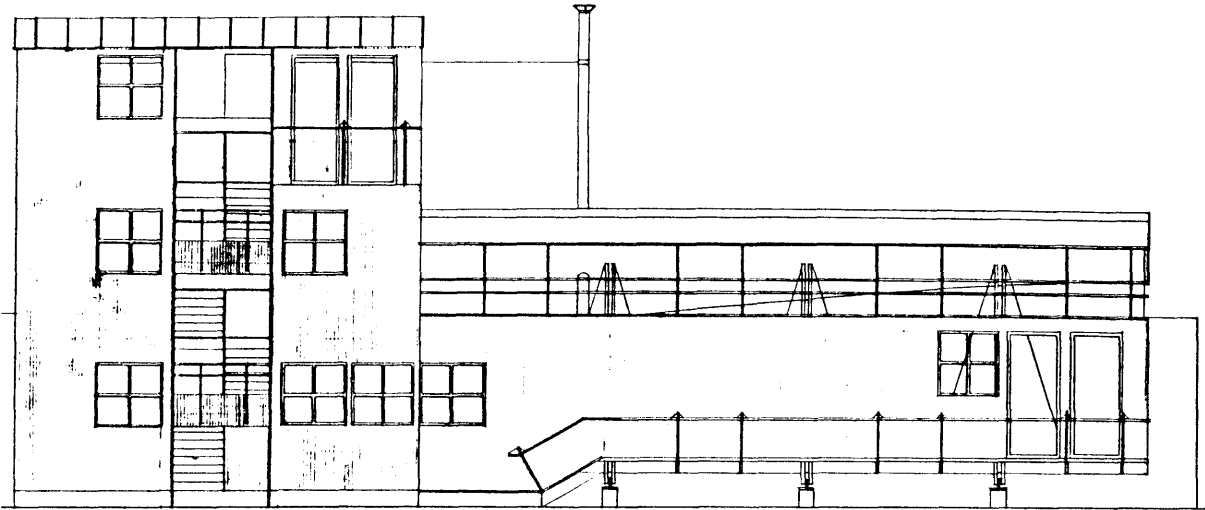




garden/driveway
elevation

street elevation

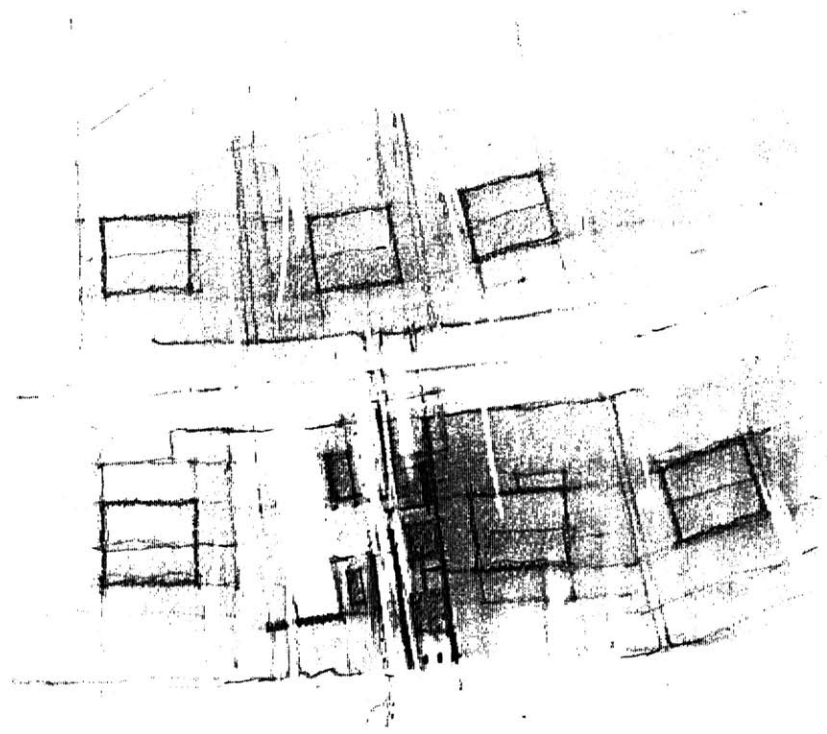




street/sideyard elevation

garden/driveway elevation





anomolous house
plan study

Conclusion

The prehistory of this thesis was marked by a romantic predisposition toward the potential for applying a case study house approach to the problem of designing a "solution" to the spatial and constructional inadequacies of American suburban housing, as well as toward the types of solutions proposed in the Entenza program. What has become at least partially clear from the work partially represented herein, is that no matter how violently the system is shocked or how subtly the seed is sown, a single house won't make the difference, particularly if it idealistically turns its back on the significant culturally ingrained idea of the American house.

Further, though the design of a house is an extremely enticing design problem, and is surely the grist of many thesis mills, the design of the ideal suburban house is not, it seems, a useful exercise, unless it is part of a more ambitious, holistic agenda for an entire suburb. For all their outdatedness, and social incorrectness from a revisionist perspective, the "progressive" precedents outlined in Part 1 were so successful because of the scale at which they were able to operate, as well as the extent to which they concerned themselves with the issue of reconciling spatial complexity (or at least vastness) with constructional clarity and cultural relevance.

Illustrations

1	Nassau County Tax Assessor
3	Nassau County Tax Assessor
6	Rowe, p. 208
7	Calthorpe, p. 9
8	Wright, p. 28
9	Haskell, p. 142
10	Hayden, p. 180
11	Wright, p. 187
12	Stein, p. 58
13	Howard, p. 52
14	Johnson, p.29
18	Stein, p. 38
19	Stein, p. 38
20	Jellicoe, p. 311
21	Stein, p. 56
25	Hayden, p. 37
26	Hayden, p. 37
30	Hayden, p.37
33	Mäkelä & Miller, p. 40
34	Hayden, p. 36
35	Herbert, p. 116

36	Herbert, p. 250
37	Herbert, p. 251
38	Herbert, p. 261
39	MOCA, p. 3
40	MOCA, p. 24
41	MOCA, p. 21
42	Rowe, p. 52
43	MOCA, p. 209
44	MOCA, p. 35
45	Holl, p. 9
46	Herbert, p. 322

all other illustrations supplied by author

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