INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6” x 9” black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI
A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700  800/521-0600
RICE UNIVERSITY

INHABITING DOWNTOWN HOUSTON:
DENSITY AND HOLLOWNESS IN THE CONTEMPORARY CITY

by

DAVID J. MARINI

A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE
MASTER OF ARCHITECTURE

APPROVED, THESIS COMMITTEE

Albert Pope, Associate Professor, Director
School of Architecture

Michael Bell, Assistant Professor
School of Architecture

Richard Ingersoll, Associate Professor
School of Architecture

Houston, Texas

May 1995
ABSTRACT

Inhabiting Downtown Houston:
Density and Hollowness in the Contemporary City

by

David J. Marini

This thesis is an investigation of urban form, specifically urban form that allows for architectural interventions at a variety of scales, as well as an architecture that is at once, dense and porous. The idea derives from an interpretive reading of the city of Houston, as well as a predilection for modernist urban strategies that have these same concerns at their core. Aspects of scale and density are explored for their potential to register the subject into the city, establishing a reflexive relationship between the body and architecture. The self-service gas station is seen as a modern urban artifact that serves as a spatial model for testing these ideas. The thesis is explored through the design proposal for a small institution - a vocational school with housing, dining, and research facilities that occupy two vacant blocks in the southeast periphery of downtown Houston.
ACKNOWLEDGMENTS

I wish to acknowledge the members of my committee, Albert Pope, Richard Ingersoll, and Michael Bell for the challenging and invaluable insight they provided to me with regards to scholarship and clarity of intention, as well as for their investment in the development of the project. I would also like to thank Lonnie Hoogeboom and Peony Quan for their generosity and the skill and dexterity with which they assisted in the production of the graphic material.
TABLE OF CONTENTS

ABSTRACT ii

ACKNOWLEDGMENTS iii

LIST OF ILLUSTRATIONS v

CHAPTER 1:

Houston, Texas: The Atomization of Coherent Urban Form 1
The Self-Service Gas Station: Modernism and the Market 5
Case Study: Terragni's Porous Perimeter 11

CHAPTER 2:

Programming the Urban Institution: A City Within a City 14
Scale, Resonance and Urban Dwelling: The Box Within a Box 15
Project Documentation 17

BIBLIOGRAPHY 31
LIST OF ILLUSTRATIONS

1. Downtown Houston, aerial views, circa 1970 and 1990 p. 4
2. Self-service gas station, Houston, Texas p. 5
3. Mobil gas station, Houston, Texas p. 7
4. Gas station typology: evolution from 1910 through 1990 p. 8
5. Roof canopy configurations circa 1950 p. 9
6. Casa del Fascio p. 12
7. Palazzo dei Congressi (project) p. 13
8. Furniture Box p. 17
9. Site Model p. 18
10. Site Plan p. 19
11. Preliminary massing model p. 20
12. Perspective p. 21
13. Ground floor plan/street elevation p. 22
14. Second floor plan/longitudinal section p. 23
15. Transverse sections/elevations, sequential west to east p. 24
16. Exploded axonometric of the housing slab p. 25
17. Exploded worm's eye axonometric of the roof canopies p. 26
18. Furniture Box p. 27
19. Model of the housing unit p. 28
20. Perspective p. 29
21. Perspective p. 30
Houston, Texas: The Atomization of Coherent Urban Form

"The form of the city is always the form of a particular time of the city; but there are many times in the formation of the city, and a city may change its face even in the course of one man's life, its original references ceasing to exist. We look upon the house of our childhood as unbelievably old, and often the city erases our memories as it changes."\(^1\)

The transitory, ephemeral spatial quality of Houston is one of the primary generators of the thesis. Aldo Rossi's account of the city as a "repository of history"\(^2\) is vigorously defied in Houston, where the perpetual cycle of neglect, demolition, speculation, and development methodically erase the past in the rabid pursuit of continual transformation. Here, a more apt description might be Robert Smithson's account of the "junk heap of history,"\(^3\) a new kind of eternal city, deriving its monumentality from the spoils of consumer culture and the seemingly infinite suburban sprawl of the shopping center.

Houston does not lend itself as readily to conventional methods of reading the spatial character of cities, and by this, I refer to the often cited urban taxis of figure/ground analysis, solid/void, object/field, or Rossi's own account of the city as being comprised primarily of tissue and monument. Discerning contiguous built form in Houston is an elusive proposition, with the vast

---

\(^1\) Aldo Rossi, "The Architecture of the City," p. 61.
\(^2\) Ibid., p. 127.
\(^3\) Robert Smithson, "The Writings of Robert Smithson," P. 55.
spaces required by the automobile being the single most coherent aspect of the environment. Again, Smithson’s observations of post-war urban America as the “holey city,”⁴ that is, a city full of holes, has particular relevance to Houston. The proportion of solid to void is considerably less than what is conventionally considered “urban” and this (partially) comprises the spatial character of the city.

The urban strategy that I’m employing attempts to take into account the variegated density of Houston, as well as the abrupt shifts in scale as a result of the predominance of the automobile, the advent of the freeway, the frequency of vacated city blocks, as well as the absence of zoning. This last feature allows for unpredictable, often discordant juxtapositions of building types and uses, which indelibly mark the experience of the city.

I have deliberately attempted to choose a slice of the city that has these characteristics in evidence. The site is located near the Convention Center, the last gasp of prosperity and rapid development that occurred in the 1980’s. The Convention Center itself is exemplary of the megalopolitan project, it’s building envelope occupying six full city blocks, with a large civic park directly in front, and blocks of surface parking at its flanks. The building backs up to the elevated freeway, which continues to loop around, encircling and delimiting the downtown area.

West of the Convention Center, high-rise towers comprised of offices, a hotel, and shopping mall make up part of a proposal called Houston Center. This ambitious project, only partially realized, manages to obliterate the grid by dumping parking and services on the street level, while the building masses

⁴ Ibid., p. 55.
span between blocks above, rendering the street level as a dark cavern. Elevated sky walks that span between the blocks and building programs that resolutely turn inwards further insure that little activity will occur on the street. The building density is high, but it seems both contrived and forbidding, with blank service walls at the base of the towers.

Where these recent building projects stop, there is an abrupt transition to a sparse, low density fringe of the city. My intention was to work within one of these leftover regions along the periphery of downtown. Here, vestiges of a low-rise, pre-war urbanism remain, in the form of storefronts, two-story apartments, and industrial sheds. Surface parking remains a conspicuous component to the area, and pure infra-structure is represented in the control center for the electric company that occupies a city block which abuts the site. The fabric is uneven and gap-toothed, with vacant lots punctuating the blocks. The well-manicured Convention Center area starkly contrasts the rusty industrial sheds, overgrown, empty parcels, and broken-pavemented parking lots.

One of the intentions of working within this site was to promote more ground level activity by keeping the base of the block permeable and public. This strategy allows for a linking of existing park spaces in the north/south axis, strengthening their reading in the city, while still allowing ample automobile access. The open spaces are contrasted with aspects of density in the project that mirror the spatial schizophrenia of the environs.
1. Downtown Houston, aerial views circa 1970 and 1990
"Through territorial competition, standardization, product packaging and marketing, oil companies aggressively sought to insert themselves into the American landscape and psyche." 5

In a place like Houston, where the oil companies are so embedded in the psyche of the city, and have so much to do with the way the city looks and works, the image of automobility assumes a presence that is both iconic and ubiquitous.
The relationship between the gas station and post-war urban development is of interest on a number of levels. On a formal level, the stripped-down functionalism aspired to modernist European building design.

"The new (post-war) gasoline station design follows loosely the edicts of the new "international" style of architecture championed by the Bauhaus school in Germany. Marketing engineers (as most companies called their architect-designers) took pride in introducing streamlined modern stations..."  

The advent of the automobile age coincided with, and subsequently fueled the rapid growth of industrial design as a profession in America.

"Some of the nation's leading industrial designers were challenged with raising gasoline station architecture to a higher plane. Industrial design was a newly emergent profession charged by American manufacturers with configuring products with maximum sales appeal. Walter Dorwin Teague, hired by Texaco in 1934, created a new look for the company: white "streamlined" boxes that were thought to give impressions of speed, modernity, and progress. Some 10,000 of these stations were ultimately constructed. Norman Bel Geddes likewise created for Socony-Vacuum an exciting new prototype clearly influenced by the European-inspired International style."  

The self-service gas station is one example of a modernist building type, modernist in its form, materiality, and its conception of space, that has been completely absorbed into mainstream consumer culture. As a product of mass-production, standardization, and infinite reproduction, its high modern pedigree has attained the dual status of roadside vernacular, while being adapted to the dictates of the market and land speculation.

---

6 Ibid., p. 145.
7 Ibid., p. 146.
3. Mobil Station, Houston, Texas
In Houston, the ubiquitous, but often striking self-service gas stations that appear on virtually every corner of the city can be seen as a kind of conceptual model for the type of spatial character of the city previously outlined. The most prominent architectural element is the soaring cantilevered roof canopy, which delimits more open space than enclosed building volume. The canopy is functional in providing shelter from the elements, but the exaggerated depth of the boxed-out structure functions on a more rhetorical level - making the building perform as a sign and addressing the scale (and speed) of the automobile. The majority of what the roof covers is asphalt, the enclosed building volume is comparatively diminutive, transparent, and architecturally rudimentary. The stalls of gas pumps anticipate the (mobile) subject.

4. Gas station typology: evolution from 1910 through 1990
A notion of multiple scales is implied where the large over-riding gesture of the roof canopy is broken down successively: linear lighting fixtures attached to the underside define lanes or rows of circulation (usually double-sided). Within the rows, pumps are arrayed, scaled to the body, replete with manual and visual interfacing.

5. Roof canopy configurations circa 1950
"The gasoline station came to symbolize change...More important, (they) were in the vanguard of commercial strip development. They were the colonizers whereby commerce invaded previously residential neighborhoods in cities. They were the pioneers whereby commerce expanded outward at the edge of cities. Gasoline stations have always stood for flux in the American scene."  

The self-service gas station is utilized in the thesis project in two ways. The first is a direct and literal appropriation of the formal and spatial strategies of the roof canopy as a datum plane, an organizational device, defining circulation, space, and building volume, while imparting a sense of legibility and coherence on an urban scale. Their role in the project as formal constructions is called attention to by their slippage in relation to the spaces they define.

On another level, I am utilizing the self-service gas station as a conceptual model for the kind of spatial phenomena typical of post-war American cities such as Houston. The self-service gas station, and the various off-spring it has spawned can be seen as exemplary of the spatial condition found in Smithson’s city of holes. The soaring, cantilevered roof canopy is monumental, emphatically so, yet it is also thin and hollow. Thus a reading of monumentality is tempered by one of spatial ambiguity, and this is ultimately what I’m after in the thesis. The intent is for the project to be assertive and legible, yet porous and diaphanous.

---

Case Study: Terragni's Porous Perimeter

The spatial strategy of the gas station is one way of obliterating the perimeter organization of the pre-war, humanist-inspired cities, by only suggesting its limits above the ground in the line of the roof canopy. The ground plane is rendered in a centrifugal fashion, the building stepped back to allow a considerable amount of voided space around it. The theme of the void, and the hollowing out of the perimeter block is a strain that can be found in various configurations throughout modern architecture. A different approach to this same spatial idea, and one of interest to me in the thesis, is that found within the work of Italian Rationalism.

Unlike the more de Stijl-inspired gas station, the work of Terragni, Lingeri, Cattaneo, and their contemporaries rely more on the perimeter wall as an edge, yet these edges are made thin, skeletal, and ambiguous. Structure and skin alternate, often existing on the same plane, defining aspects of framing and transparency that subvert the solidity of the building wall of the humanist city.

The plan-making is relatively straight-forward and typologically-derived, while spatial richness is achieved primarily through judicious sectional manipulation. The voided center figures prominently, with centripetal organization of secondary functions at the perimeter. The impulse to hollow-out the building envelope can be seen as a motivating strategy, as seen in the slippage between interior volumes and structure, exterior skin, transparency, layering, rooms within rooms. Peter Eisenman describes the method as a
combination of both additive and subtractive operations on the building mass that render the space both expansive and contractive.\footnote{Peter Eisenman, "From Object to Relationship II," p. 39.}

"In Terragni's work, conceptual ambiguity is developed from the use of two basic and opposing conceptions of space. The first considers space as subtractive, or cut away from a solid. In this context space is considered to be metaphorically hollowed from an abstract solid volume. The second conception of space, which has Renaissance antecedents, considers space as additive, made up of a series of layers, much like a deck of cards. Subtractive space implies a center and is centripetal in conception; additive space is concerned more with the periphery, with edges and corners, and is centrifugal in conception."\footnote{Ibid., p. 41.}

6. Terragni's Casa del Fascio
"In Terragni’s work an ambiguous condition is developed by superimposing an additive on a subtractive process—where both solids and voids carry a charge—which can be read simultaneously as oscillating between positive and negative. Thus while the dual reading resides in the percept, its effect is not so much an aesthetic one, as it is to provide a notion of deep level structure. It is through such a method which shifts from a concern for the qualities of ‘object’ to a concern for relationships between objects that the subsequent potential for these relationships to carry new meaning can be proposed."  

An unbuilt competition entry by Terragni, Lingeri, Catteneo, et al for the Palazzo dei Congressi all’Eur looks deceptively like a perimeter block building, but is radically reduced to pure structure at it’s edges—porous, sponge-like, diaphanous. A vast matrix of columns, seemingly infinite, stretches to the edges of the building, the rooms are treated as figural volumes suspended within the structural grid. The resulting reading is one of monumentality, yet hollowness, dense but thin and skeletal.
Programming the Urban Institution: A City Within a City

Somehow, I feel that there is an analogy to be made between Houston and these rationalist conceptions of space. The vacated spaces found in-between the buildings in Houston, and the ephemeral, de-materialized architecture itself, are not unlike the existentialist voids of Terragni's projects, which invite retinal occupation, while conveying physical displacement.

Also relevant are Terragni's urbanistic strategies, which tend toward the allusory rather than the literal. The buildings are characterized by their mute, autonomous forms, but are contextual through their alignment and orientation, as well as through the selective use of transparency. The transparency affords views of the surrounding context, framed by the reticulated structural grid, while in turn, allowing this context to leak into the project.

The program of a vocational school allows for a variety of types of spaces, public and private, individual and collective. Urbanistically, the intention is to stitch the project into the existing grid of the city, establishing a legible, ordered precinct on the western block that gradually erodes and spills out in the adjacent east block. The ground floor is porous in form and public in program to allow the city to leak into the block, and the buildings spill into the city on the east block.

The idea of the gas station roof canopy is inverted for the western elevation at the housing slab by tipping it on its side and hollowing it out. Here, it acts as
an urban screen wall, continuing the street corridor definition on the dense side of the site, and organizing the individual housing units into a cohesive, yet porous edge.

The strategy of the institution occupying multiple blocks in the city is opposed to the obliteration of the grid espoused by the adjacent Houston Center, and is instead akin in spirit to local projects like the University of Saint Thomas and the de Menil Museum. These projects achieve urban collective identity through strong formal moves that register within the existing street grid.

In my proposal, I attempt to acknowledge and adhere to the spatial properties extant to the site, with its ratio of solid to void. However, the project attempts to be more deliberate with the residual spaces of the project, in their shape, form, and their relationship to the building, so as to augment the programs and activities of the interior spaces. The slots and voids occurring from the early proposals throughout the project are ways of extending the rather modest spaces, allowing visual occupation, while providing selective views out towards the city. They also afford an ambiguity to the distinctions between spaces- suggesting an intermediate layer between public and private.

Scale, Resonance and Dwelling: The Box Within a Box

"The gate serves as a prodigious hinge between the interior place and the space of the remaining world - separation that overcomes separation, limit that at all times also presents to man the possibility to fling himself beyond into the open. The window demands that one look outside, into the open; it is 'a road for the gaze' towards the well, the tree, the fruit - a road that unites the things collected inside with
those clustered in the surrounding places. Endlessly, the interior empties itself outward and the exterior inward: the jar."  

The intention of the housing component of the project was to work within the constraints of the party-wall configuration and the relative modesty of the single-room dwelling, while attempting to give spatial richness and ambiguity. This is achieved through the modulation of the glass curtain wall that is open to the north and a view of the city, then wraps to flank the party wall and delimit a private, shaded open slot of space. This space is oriented to take advantage of prevailing breezes and is proportioned so as to allow activity and occupation to spill out from the enclosed interior volume. The structure is separated from the skin and marches through the room uninterrupted, thus rendering the envelope as a light, non-structural membrane. This membrane is comprised of opaque (plywood) sheathing on the south face that abuts the public corridor, and is transparent on the interior face except where the plumbing core attaches itself to the mullion system. This core, cubic and translucent, appears suspended within the liquid spaces of the room. The curtain wall of the unit is crowned by a continuous glass transom that is operable to allow for ventilation, and further emphasizes the non-structural reading, floating beneath the slab.

The units themselves alternate in the width of the bays to allow for some units to have private kitchen facilities, and lend a staccato rhythm to the facade. The units at the top are floor-through with sleeping lofts above and adjacent roof decks. The intention here is to allow for a variety of unit types and sizes within a limited material palette of industrial, pre-fabricated

---

mullion frames, as well as thematizing the possibilities of repetition and difference behind the regulating urban facade of the screen wall.

The plywood cabinet box is an attempt to give scale and spatial definition to the rooms. The idea is of furniture as a free-standing autonomous object within the room, dense and compact. This object floats independent of structure and wall, and by its placement, suggests a subdivision of spaces within the universal space of the room, defining primary and secondary spaces, public and private sides, service and circulation around the object. In turn, these spaces inflect upon the box- one formalized, public face, with domestic program and need asymmetrically carving up the other sides.

8. Furniture Box
9. site model
10. Site Plan
12. Perspective
13. Ground floor Plan/ street elevation
14. Second floor plan/ longitudinal section
15. Transverse sections/elevations
16. Axonometric of housing slab
17. axonometric of roof canopies
18. furniture box
19. model of housing unit
20. Perspective
21. Perspective
BIBLIOGRAPHY


Tafuri, Manfredo, "Giuseppe Terragni: Subject and "Mask,"


