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Urban reality; informing the project: An Environmental Center in the Houston Ship Channel

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Urban Reality: Informing the Project
An Environmental Center in the Houston Ship Channel

by

SALIM CARRIM CURRIMJEE

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Salim Carrim Currimjee - Abstract

In the introduction to his research on "The Contemporary City" Rem Koolhaas observes,

"the unavoidable fragmentation of the existing city, has led to a displacement of the centre of gravity of urban dynamics from the city centre to the urban periphery."¹

City peripheries now display common characteristics: an apparently erratic juxtaposition of seemingly incompatible building functions and types. Here the unknown can be rethought; there is no model. Opportunities for experimentation present themselves in fields of tension between empty spaces and isolated bodies which are not subordinate to any anachronistic concept of order, but accept separateness and divergence.²

The forces which shape the city of our times should be reinterpreted as the forces which generate the content and expression in our architecture.

The objective is not to camouflage the unresolved situation: but to deal with the City as it is.
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Introduction

"Contemporary architecture will be honest and true, when streets, open spaces, buildings and infrastructures reflect the image of urban reality, when the devastation of the city is transformed into fascinating landmarks of desolation. Desolation not as a result of complacency but as a result of the identification of the urban reality will develop the desires, the self-confidence and the courage to take and hold possession of the city and to alter it ... Architecture gains meaning in proportion to its desolation. This desolation comes from the act of using. It gains strength from the surrounding desolation."³

-Coop Himmelblau

The Failure of the Splendid Desolation

Since the middle of the nineteenth century, the formation of metropolises has marked a basic change not only in the reality of the urban phenomenon, but also in its perception. New forms of sociability, and of solitudes, have emerged in cities with ever stretching and blurring boundaries.

We are experiencing a new phenomenon that challenges conventional town planning regulations and twentieth century architecture ideologies: zoning patterns and functional types are disappearing under the combined pressures of deregulated economies and endless urban expansion. Today stylistic battles are increasing superficial. We have to intervene beyond the ideologies of functionalist planning and historic reconstruction. Urban design, in its original sense, is not
possible any more. Our cities are now built and we no longer have the political power to implement any grand schemes.

A contradiction is implied as we try and give a collective expression to the activities in the city which are becoming increasingly ephemeral and intangible. As Coop Himmelblau suggests, we have to uncover the potential of the "urban reality" and transform it as directly as possible to suggest new lifestyles within new architectural and urban spaces.4

Many American cities can be perceived as a collection of semi-autonomous fragments linked together by expressways. The expressways which originally were a mere factor of movement have become one of the few constants in the urban landscape.

The sense of disorientation, and the blurring and stretching of the boundaries of our cities is captured by Calvino in his description of Penthesilea in Invisible Cities.

"Penthesilea is different ... You advance for hours and it is not clear to you whether you are already in the city's midst or still outside it. Lie a lake with low shore lost in swamps, so Penthesilea spreads for miles around, a soupy city diluted in the plain; pale buildings back to back in mangy fields, among plank fences and corrugated-iron sheds. Every now and then at the edges of the street a cluster of constructions with shallow facades, very tall or very low, like a snaggle-toothed comb, seems to indicate that from there the city's texture will thicken. But you continue and you find instead other vague spaces, then a rusty suburb of workshops and warehouses, a cemetery, a carnival with Ferris wheel, a shambles; you start down a street of scrawny shops which fades amid patches of leprous countryside.
If you ask the people you meet, 'Where is Penthesilea?' they make a broad gesture which means 'Here,' or else 'Father on.' or 'All around you,' or even 'In the opposite direction."

'I mean the city,' you ask, insistently.

'We come here every morning to work,' someone answers, while other say, "We come back here at night to sleep."

'But the city where people live?' you ask.

'It must be that way,' they say, and some raise their arms obliquely toward an aggregation of opaque polyhedrons on the horizon, while others indicate behind you, the specter of other spires.

'Then I've gone past it without realizing it?"

'No try going on straight ahead.'

And so you continue, passing from outskirts to outskirts, and the time comes to leave Penthesilea. You ask for the road out of the city; you pass again the string of scattered suburbs like a freckled pigmentation: night falls; windows come alight, here more concentrated, sparser there.

You have given up trying to understand whether, hidden in some sac or wrinkle of these dilapidated surroundings there exists a Penthesilea the visitor can recognize and remember, or whether Penthesilea is only the outskirts of itself. The question that now begins to gnaw at your mind is more anguished: outside Penthesilea does an outside exist? Or, no matter how far you go from the city, will you only pass from one limbo to another, never managing to find it?"5

The shift in emphasis from manufacturing industry to service industry in conjunction with the phenomenon by which the public sector is being undermined in favor of outright private ownership presents us with programs that no longer
seem to have the power to generate direct formal expression as was the case in the age of mechanism. 6

The written portion of the thesis is divided into the following sections:

Section 1. Transformation of the City.

This is a general overview of the transformation that occurred in the city over the past century, when the city developed from its pre-industrialized condition to its present condition which can be referred to as the city in its second industrial revolution. The main emphasis is to set up a framework to understand how transportation technologies and concepts firstly affected and gave shape to the physical urban form of our cities and secondly its impact on public life.

Section 2. The Grid

This section deals with the impact of the grid in America and its effect in the making of the American city.

Section 3. Broadacre City and La Ville Radieuse

The general concepts of Broadacre City by Frank Lloyd Wright and La Ville Radieuse by Le Corbusier are discussed here to point out their significant impact on the present day city. For example, certain concepts of both theories exist as poles in the fabric of Houston.
Section 4. Houston

I propose to use Houston as the urban context for my thesis. This section is devoted to describe certain aspects of its urban development from its beginning to today.

Section 5. Photographic Essay

The use of a photographic essay is an analytical tool to introduce the context of my site, which cannot be adequately (and should not only be) described using traditional terms such as texture, fabric and street.
Section 1. Transformation of the City

In the European context, traditional building a city had very much to do with the building of monuments. (Fig. 7) The city "sought physically to embody stasis." 7

1. Ancient Rome by Pietro Bertelli in 1599 showing the city to be a collection of public monuments of various types and forms.

As Alex Krieger suggests "such a notion of the city never fully crossed the ocean along with the colonists: indeed the very act of immigration indicated a dissatisfaction with such coherences." 8 Some aspects of the transformation that took place in the European pre-industrialized city can be observed to a certain degree in the cities of North American, but their
births primarily in the nineteenth centuries makes them better examples of the outcome of the transformation than of the transformation itself.

The Pre-industrial City.

"A cardinal characteristic of the pre-industrial city - wherever located - is the fact that a significant portion of its social life occurs in the public realm."\(^9\)

Out of necessity, dwellers in the pre-industrial city, whether they wanted to or not, given the technology available to them, lived in the public realm. The city was of pedestrian scale and communication was carried out by moving among co-present human beings via the spoken word.\(^{10}\)

The Industrial City.

This second phase corresponding to the Industrial Revolution, brought about radical changes in the shape and landscape of the city. The rupture between modern reality and historic context is brilliantly captured in the painting by Hans Baluscheck, called "Railroad within cityscape."
2. "Railroad within Cityscape." 1890

The beginnings of the railway system, which scarred the city fabric with rail lines allowed cities to be much larger in area. Innovations in construction and communication technologies allowed the city to sustain a greater variety of activities. Together this allowed the separation of the workplace from residence, made possible more highly specialized and larger work places and also made possible the development of suburbia in a linear fashion along the railway lines. For example - the telephone allowed offices and industry (which had been together) to separate eventually allowing the office sector to form conglomerations - office blocks.¹¹

The technologies of this age of mechanization had the power to generate forms with direct formal expression. Railway stations, highrise buildings, emerged as distinguished architectural buildings, emerged as distinguished architectural types. The beginnings of the skyscraper in Chicago as a fundamental American building type was made
possible by new techniques of steel frame construction in conjunction with the mechanical elevator.\textsuperscript{12}

The Post-Industrial City

With the advent of the automobile, neighborhoods no longer limited in location by rail lines, proliferated outside the city. This began the process of decentralization. This new mobility allowed people to connect pieces of widely dispersed space without the necessity of actually being, in any socially meaningful sense in the intervening spaces.\textsuperscript{13}

The consequences of the two wars in Europe led to massive post-war building programs.

"In an unprecedented rupture, the wisdom of old building trades was thrown away, and the profession of architecture tried to re-educate itself from the scientific laboratory. Modern architecture provided a legend for this transformation."\textsuperscript{14}

In America, however, the effect was a great increase in the number of people moving to the suburbs. The underlying themes advocated the advantages of suburban living and the improvement of the quality of life, which were made possible by mass production.\textsuperscript{15} (Fig. 3)
"After total war can come total living"

A house with a future

3. American Revere Copper Company pamphlets 1945
Present Condition. The Second Industrial Revolution.

The dominant urban settlement experience in the United States is suburban. The suburban landscape favours the private and possibly the parochial realms over the public. The dependence of the automobile which is deeply ingrained in the American way of life is one of the primary factors in the development of the suburban landscape, resulting in an urban environment dominated by thoroughfares and highways. For many, the normal round of life consists of moving from one's suburban park like neighborhood, via private automobile, to one's suburban office park and back again. Only one's consumer demands force one to enter the public realm and in its most sanitized and highly controlled form the suburban enclosed shopping mall. These are built as individual pieces, are introverted and private and therefore cannot be connected to other buildings as part of an urban experience.¹⁶

"What has from the beginning fueled the American attitude toward urban monumentalism are a body of presumptions related to the origin of the nation, a constellation of fantasies and convictions related on one hand to democracy and the other to capitalization."¹⁷

The proliferation of the skyscraper in the central business district of the American city has led to the dilution and lack of authentic monumentality to this particular building type. We now have a city center of false monuments with the street level completely detached. Our cities have lost their relationship to the ground. Their skyline working
only in profile, displays the result of a pragmatic development of the contemporary city, satisfying our sense of perception when seen against the light. The city, when perceived from within the dimension of actual living, loses the continuity it has in profile.

Expressways have become the unifying elements which link the various fragments of the city together. They allow for a filmic understanding of the city. On the horizontal level, we have a new grand plane and on the vertical a slice through the fabric. We, as the viewers, are in motion constantly modifying the city.

City governments have been using incentive formulas embedded in zoning laws to encourage developers to provide indoor or/and outdoor open spaces. The indoor spaces which are privately held and managed are harbingers of the increasingly privitization of places offered for public use. There is an increase in the scale and concentration of control over the private places offered for public use. In these private places social control operate so as to reduce diversity often excluding "undesirables" with subtle and not so subtle clues. While lauded by most citizens this is an erosion of civil liberties.18

The latter part of the twentieth century also saw the emergence of the computer revolution referred to by William Mitchell as the Second Industrial Revolution. He states:
"Whereas the Industrial Revolution replaced human muscle power by machines that consume energy, the Computer Revolution is replacing human cognitive power by machines that process information. We are in an era in which the collection, processing, and dissemination of information increasingly dominates economic life. All this is beginning to change our notions of place, of habitation, and of construction."19

The LAN (local area network) and the dial-up database services (Minitel system in France) are beginning to emerge as important foci of community life.20 The public form has not been lost but relocated. Print and electronic media once operating in only one way broadcast mode have become fairly interactive, permitting audience members to reverse roles and be heard. Moreover, media distribution networks extend the number of people an individual may reach creating a more powerful form of public expression.21
Section 2. The Grid

"In the evolution of an American spatial order, the gridiron is the principal pattern to settlement, and the garden in its many guises, as man's bond with land and nature, have played dominant roles." 22

The grid in America is a mechanical ordering system, applied carte blanche to city plans throughout the nation regardless of topography. The confrontation with topography has created "so many of the visual frissons that characterize the large-scale North American landscape." It is open ended, neutral and having no center promotes the notion of nonhierarchical repetitive spatial structure. 23 (Fig. 4)
As George Baird points out in discussing the work of Mario Gandelsonas, the North American grids have "dimensionality and superimposition." They vary in size and there is the imposition of different layers of grid which can be read over the initial large scale land grid which was laid out in the process of colonization and agricultural land division.\textsuperscript{24} (Fig. 5)

"The potent linearity of the streets, the primary organizing devices of our cities" is what distinguishes the American grid from the European one. The urban fabric in Europe consists of the street, the square, and the lot. In America, the lack of center in the grid emphasizes the street.\textsuperscript{25}

5. Bond Storage, Port of Houston. 1990
Section 3. Broadacre City and La Ville Radieuse.

Frank Lloyd Wright's first sketches in 1934 showed 3 dominating functional elements in Broadacre City, roads, green/rural areas and suburban housing. These were the most important considerations for the physical structure of an American city according to the architect.  

Broadacre City's concept was one of self-sustaining communities defined and surrounded by rural farm or natural spaces and places all linked by transport systems. To quote Frank Lloyd Wright.

"The basis of the whole is general decentralization as an applied principle and architectural reintegration of all units into one fabric."

Using geometric rationale, the plan contained grided areas, but the principal organizing device was the cruciform, which was defined by major roads. (Fig. 6) Housing was in the center, the major heart and soul of Wright's concept. Each family was allocated a minimum of 1 acre of land and every citizen has his own car. The other areas of the cruciform were occupied by compatible functions.  

This idea was translated in architectural terms by isolating the city, then isolation of the recreational or community or administrative buildings from one another, and then surrounding them in a natural landscape. Single isolated towers isolated in green areas on the periphery of the city would be for government commerce and business. (Fig. 7) The
basic module of the plan was not each individual acre but 40 acres put together which formed a square. The Broadacres plan was not meant to be a linear city, nor was it meant to be repeated. What Wright postulated as an important aspect of his scheme was regionalism. This followed his own interpretation of how the horizontal line was "the great architectural highway" and the flat plane was to become the "regional field."  

Le Corbusier, in this plan for the Ville-Radieuse, developed between 1930 and 1935, recycled key elements of the Ville Contemporaine (office skyscrapers, the housing and use of a modular grid) and in some ways it can be seen as a critique of the later.  

The Ville Radieuse, whilst still axially aligned, adopted a linear plan, its key functions being set out in parallel bands capable, in theory of autonomous and limitless expansion. During the development of the Ville Radieuse, Le Corbusier became preoccupied with the idea of geometrical and the natural or organic as analgons; both offering systems of structural and hierarchical ordering. In the plan of the Ville Radieuse the geometrical order established by a grid is played off against the natural order expressed in the biological analogy - the head represented by the business center, the residential areas forming the lungs and the heart the cultural center and the feet are the heavy industry.  
(Fig. 8)
The idea also present in the Ville Radieuse was of the city raised off the ground on "pilotis" allowing the ground surface to become one continuous park where the inhabitants of the city would be free to move around as pedestrians.\textsuperscript{32} (Fig. 9)

Both Frank Lloyd Wright and Le Corbusier proposed to use the highway more effectively - or more emphatically but Le Corbusier's elevated roadways crisscrossed his city distributing traffic immediately within. A perimeter forest and green "protected zone" would be around his city, with industry dispersed. Wright's city was to be within a natural forested garden with industry integrated.

While Wright wanted to abandon the metropolis completely in favor of a series of unique, small towns, Le Corbusier wanted to recreate the metropolis in another form. both, however, believed that the state should distribute land and own public utilities. Le Corbusier was a typical European urban dweller; Wright was of the open lands in Western America.\textsuperscript{33}

8. Plan of Ville Radieuse showing zoning in parallel bands: from offices (top) via housing (middle) to industry.

Section 4. Houston.

In *Cities of the American West*, John Reps observes "towns led the way and shaped the structure of society rather than merely responding to the needs of established agrarian populations for markets and points of distribution." 34

Houston was conceived as an urban settlement from its beginning," and developed accordingly to the city as we see it today. Examination of the development of its transportation technologies and concepts is one of the most important mediums for understanding Houston's growth. 35

In the early nineteenth century, with the opening of the American West. There was no consistent criteria for settlement. Individual entrepreneurs, seeking profit through land speculation often led the way to the formation of new towns.

Augustus C. Allen and John K. Allen, two New York speculators arrived in Texas in 1832. The brothers encountering some problems in purchasing Harrisburg, moved further west to the point where Buffalo Bayou and White Oak Bayou come together. On August 26, 1836 they purchased the land and 4 days later announced the town of Houston. 36

Buffalo Bayou was easy to navigate in being both deep and wide, and the surrounding area lacking any other physical features was ideal for laying down a grid for the development of Houston. 37 "A key element of their scheme was promotion of
a townsite in conjunction with water transportation." The town was named after Sam Houston who was just victorious from the battle of San Jacinto and was also a leading candidate for the president of the new republic.

Wagon routes were created to link Houston to the hinterland by straightening the existing Indian trails. The radical pattern of these trails is still a major feature of the urban form of the present day city. Market square became the destination for the export as well as import of goods.

Although Galveston was still a bigger city and port in 1841, the City Council of Houston established the Port of Houston. The seal of the City became a locomotive engine even though no railroad system existed. Buffalo Bayou was still the only major link to the outside world through the steamboats which travelled along it. Private businessmen developed and undertook the building of wharfs along the bayou by Main Street. The bill approaching the Corporate Plan in 1856 gave Houston the leading edge over Galveston for the development of a railroad system to the rest of the country. The plan proposed that "Texas railroads would be seen as part of the transcontinental system designed by U. S. planners by which Houston stood to become the railroad center of Texas with trade routes to the rest of the country."

National railway connections were begun by 1873, and in the following years increased at a rapid rate.

Houston was already being referred to as "The iron ribbed city." From the 1890's onwards the City tried hard to turn Buffalo Bayou into a real port, by creating a turning basis and dredging and widening the bayou so that ocean-going vessels would be able to navigate right through. The efforts were culminated by 1914.

By the 1920's, economics related to the petroleum industries began to appear. Houston up till then was mainly a distribution center for cotton and lumber, but the developed railroads and ship channel provided the infrastructure to attract the oil industry which had been discovered at that time. It is during this same period that decentralization started evolving in Houston. The automobile was a prominent feature on the streets. The commercial and financial centers
of Houston was still the area around Market Square (Central District) but "secondary convenience centers began to emerge along principal arteries like Main Street." Smaller scale residential neighborhoods such as Houston heights, Deer Park, Pasadena which were representative of the rural past, were joined by communities such as Bellaire, Montrose and West University Place which were located outside but near the big city. Institutions such as Rice University, Museum of Fine Arts and the Texas Medical Center also began to locate themselves outside the Central District.

"Personal mobility and the sense of freedom which the automobile seemed to offer fit well into the myths of what the American city might come to represent . . . . the surge of consumerism which characterized the American lifestyles in the eras of the Eisenhower and Kennedy administrations found at least part of its expression in the evolution of the automobile."

The freeway represented in coming of age of a completely new urban form. In the age of 1930's the role of the expressways was seen in providing savings to motorists, increasing property values and encouraging additional development, and that "the question is no longer. 'Can we afford to build expressways?' but rather, can we afford not to build them." The Federal government in the 1940's launched a massive road-building program. The United States Interstate System was meant to link the major urban centers of the nation. This in turn created the need for a
complex pattern of connector roads within the city. The Gulf Freeway which linked Houston to Galveston officially opened in 1952 and was the case-study to implement construction of additional expressways in the city.49

"As far as the late twentieth century American city is concerned: Houston is it."50.

Three terms which are applicable in describing Houston today are "palimpsest, pluralism, and polynucleation." With an understanding of the historical circumstances that generated the urban form of Houston one begins to comprehend the present condition of the city. The radial plan of wagon routes which were based on the existing Indian trails have now been replaced by the plan of traffic arterials and freeways. The vastness, flatness and absence of natural features presented no barrier to urban growth, unlike other cities such as San Francisco adjusting to the Bay, Manhattan to the island and Los Angeles to the Valley.51

Houston is the only major American city that has never implemented a zoning policy. This as Dianne Ghirardo suggest "testifies not to an uncanny prescience about the ambitious results of zoning, but rather to the resistance of Houston's powerful development community to even the most rudimentary regulations."52 The primary characteristics are movement in conjunction with growth, implying unconstrained dispersal.
The condition is such that we have a framework in which everything can find a place.

"City, an idea suggesting centrality and focus, a wholeness and physical coherence of built fabric, is a definition unrelated to Houston."\textsuperscript{53}

The expressways are the unifying elements which link the various "nodes" of the city together. Spaces are developed in relation to vehicular movement and scaled to freeway speeds.\textsuperscript{54} Like in Le Corbusier's drawings of \textit{City of Tomorrow} we have highways ripping through agglomerations of gleaming towers. Being elevated from the street we have another vision of the city, one that is more reassuring, and not the reality of the streets and its people.

They allow for a filmic understanding of the city. On the horizontal level we have a new ground plane and on the vertical a slice through the fabric. We as the viewers are in motion constantly modifying the city. Rapid growth over the last twenty years has fueled a large number of monumental skyscrapers to be erected in the central business district. However the authenticity of these monuments is to be questioned. The individual buildings are objects on their own, completely isolated from one another and from the site they occupy, with no symbolical meaning attributed to them. They have no relation to the street, and have further destroyed the possibility of any public realm occurring at the
street level by the inclusion of underground passageways and skywalks.

"Only the poor, the undesirable are forced to use the streets. Walking on the street here becomes an urban delight than an index or poverty or low status."\(^{55}\)

An interesting feature of the different "nodes" is the specialization of each, in different functions.\(^{56}\) For example, along the Western edge of the 610 Loop there is the Galleria-Post Oak, the Southern edge features the Astrodome and Medical Center and also Greenway Plaza and Rice University.
Section 5. Photographic essay.

"Everywhere the city is chaotic and fragmentary, in jumbled muddle of objects. It is impossible to form a single, overall view... Disorder reigns. Most recent photographs of urban landscapes reveal just how much cities of the second half of the XX century resemble each other, wherever they may be. The impossible unity is last, such is the city. The city, which is not a work of art, becomes a work of art in its photographic image: a negative work of art."

The following photographs were generated as an analysis (deconstruction) of the material of the city and the site chosen for the project. Photography and the industrial city are contemporaries, both having emerged as symptoms of the same era (times). The city through the eyes of the photographer can be deconstructed in a variety of ways proposing new hybrid activities.

"Photography destroys our illusion that the city is something coherent, total, and consequently embraceable. The city is something dislocated, broken up (fragmented) and, in an apparent paradox, can only be reconstituted by means of an uninterrupted series of photographic reproductions. In this way, one illusion substitutes another."
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5. Courtesy of the author.


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Program

Architecture reflects and shapes the society in which it exists. In formulating the program one must try to question its relation to architectural and urban thought. For the program I am proposing to deal with environmental issues that relate to the city. At this point we have to start considering the limits of the earth's resilience as a habitable ecosystem with comprehensiveness and seriousness. Pollution has become a global problem. Environmental protection is no longer a matter of cleaning up, it has become a medical, cultural, economic and political issue of vital important to people in every part of the world.

The program is an Environmental Center which unifies the various scattered scientific services and includes a new form of public facility; playing an important role in developing public interest in the environmental crisis that we are currently facing which is a very long-term problem with no quick technical fixes or painless solutions.
Environmental Center Program

1. Research Center 68,000 sq. ft.
2. Interactive Museum 47,500 sq. ft.
3. Library 15,000 sq. ft.
4. Auditorium/IMAX 350 people 14,000 sq. ft.
5. Restaurants/cafeteria 5,000 sq. ft.
6. Telecommunication Tower/Visitors Platform 250m
7. Parking 200 cars @ 250 50,000 sq. ft.
10 buses @ 1,000 10,000 sq. ft.
8. Outdoor Gathering Spaces
9. Water Purifying Plant

Total 207,000 sq. ft.
1. Research Center

Water and Atmospheric labs/offices
80 @ 400 sq. ft. 32,000 sq. ft.
Labs are divided into 2 basic types
Applied research and Exploratory research
Most labs are 1 person labs, with adjacent office space. Some 2 and 4 person labs will also be provided.

Support Spaces 5,000 sq. ft.
These include the supply rooms, preparation areas, conference rooms, microscope, laser, and balance rooms.
Storage area for labs 4,500 sq. ft.
Monitoring section 6,000 sq. ft.
This includes offices, data input spaces and some labs for organizations like the Texas Water Commission and the Texas Air commission, which are responsible for monitoring the air and water quality in Houston

Computer Facility 3,500 sq. ft.
The main computer frame for all the island's activities is based here. Environmental satellite, Data and Information service.
Hazardous Response Team, Spill Team Facility

Office and living spaces
Heliport facility, ship docking facilities
Also including docking facility for the research and survey vessels.

National Weather Service

Meteorology, Nowcasting, Systems operations and development.

Administrative block

2. Interactive Museum Participatory/Modular System of Exhibition Lobby/staging multi-purpose Modules 5 @ 1,500 Modules experienced from inside and outside. Each with a different theme.

Classrooms 3 @ 500 with AV screens Observation Studio Storage

5,000 sq. ft. 2,500 sq. ft. 10,000 sq. ft. 47,500 sq. ft. 22,000 sq. ft. 4,000 sq. ft. 1,500 sq. ft. 750 sq. ft. 5,220 sq. ft. 2,000 sq. ft.
Receiving/loading 1,000 sq. ft.

Part of the research facility is integrated so that visits are possible.

Museum and Support Spaces. 25,500 sq. ft.
Exhibition halls 10,000 sq. ft.
Science courts/Environmental Glass Box 5,000 sq. ft.
Food services 3,000 sq. ft.
Conference room 2,000 sq. ft.
Administrative 3,000 sq. ft.

3. Library 15,000 sq. ft.
Shared by the Research center and the other Public facilities on the island.
Divided into three main sections:
Reading rooms. Stacks and Map and Chart room

4. Auditorium/IMAX - 350 people 14,000 sq. ft.

5. Restaurants/Cafeteria 5,000 sq. ft.

6. Telecommunication Tower 250 m height
Broadcasting and receiving antennas
Computer equipment
Satellite Operations
Satellite Data Processing and Distribution
Public viewing platform
Site

The site I have chosen for the Environmental Center is Brady Island in the Houston Ship Channel.

The Houston Ship Channel makes up an important part of the eastern edge of the city, penetrating through the 610 Loop and culminating in the Port of Houston Authority's Turning Basin Terminal only a few miles from the central business district. If we take the central business district as the center of the city, the 610 Loop defines one peripheral edge, linking the semiautonomous fragments or districts within the whole urban context.

Brady Island is nestled between the Ship Channel which forms its northern edge and the bayou on the other edges. It is in close proximity to the eastern part of Loop 610 as one crosses over the Ship Channel. At this site the inclusion of a vertical element in my program would allow for a complete marking and understanding of one's bearing in the city, with the Transco Tower at the western periphery and the Central Business District at the center. The visitors platform on top of the tower gives a new reading of the city. The island becomes an oasis in the Ship Channel which is both visually and physically accessible to the public.
Conclusion: Jury Comments

The jury was conducted on April 18, 1990. Present were Christopher Coe, Lars Larup and Judith Wolan as visiting critics, and Albert Pope, Anderson Todd, Alan Balfour, Bill Shearman and Peter Waldman from the faculty of the Rice University, School of Architecture.

My brief and incoherent introduction to my Thesis and Project made it difficult for any kind of discussion. Albert Pope asked me to explain the significance and form of my tower. The discussion then revolved around the subject of monumentality, not dealing with any issues of my project to the city.

The visiting critics felt that the idea of my Thesis were not well formulated and that they could not understand what I was trying to do. Peter Waldman tried to illicit further discussion, and tried to explain some aspects of my Thesis. The visiting critics acknowledged later that the design of the project was quite successful.
Appendix