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

INFRA TECTURE
THE IMPLEMENTATION OF A BUSINESS SUBSTATION PROTOTYPE IN THE PORT OF NAGOYA, JAPAN

by
BLAINE BROWNELL

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

APPROVED, THESIS COMMITTEE:

Mark Wamble, Chairman
Assistant Professor of Architecture

Albert Pope
Gus Sessions Wortham Professor of Architecture

John J. Casbarian, FAIA
Associate Dean, School of Architecture

Houston, Texas
April, 1998
"It's time we junked those conical hats with the stars and crescent moons, and strapped on our motorcycle helmets."¹
(Bruce Sterling)

As a way to alleviate record levels of urban congestion in Japanese cities, urban planners have developed extensive land reclamation projects in Tokyo, Osaka, Nagoya, Kobe, and other major ports. Initially planned as centers for heavy industry and distribution, these landfill sites are gaining popularity as new live/work environments. Without the geographical constraints and overwhelming density of the mainland, these zones serve as a veritable tabula rasa for new waterfront development.

The port of Nagoya offers a particularly promising site for new city planning, as it has remained largely untouched by the kind of less-than-successful new projects built in Tokyo and Osaka. However, current plans for a highly sophisticated enterprise zone complete with a new international airport, train terminals, office parks, housing blocks, and hypermarkets are characterized by the all-too-familiar imagery of the outdated Western city plan (as has already been implemented in Tokyo and Kobe).

In fact, one could generalize that large-scale development outside every major city in the world has assumed a similar homogeneous, atomized quality; and yet a substantial amount of business is now conducted outside of traditional city centers by an increasingly itinerant work force. Moreover, the nature of construction in these environments has assumed a greater scale, an increased level of complexity, and a shorter time-frame, with architects playing less of a role (if any) in the whole process.

In response to these challenges, I have attempted to develop a small, interdependent prototype for a business substation within a proposed transportation terminal in Nagoya Port as a way to consolidate the various necessary programs into a conscionable unit. Conceived as the insertion of a new kind of urbanity into this horror vacui, the BSP would be inextricably tied to - and defined by - the greater infrastructure of the site, and as such would merely be a small hot spot of activity within the nervous system of the new city. The implementation of the BSP would require that the architect become a kind of specialist, working in conjunction with planners and engineers throughout the entire process of development. Thus, the potential for the architect is to help conceive the fundamental systems that shape the new city at a tangible level (rather than providing a limited, cosmetic service toward the end of the process). In this way, the BSP provides not only an alternative work/live design model, but also a new strategy for architecture.
INFRATECTURE

The Implementation of a Business Substation Prototype
in the Port of Nagoya, Japan

by Blaine Brownell

Copyright
Blaine Brownell
1998
This thesis developed out of the thriving incubator of ideas about the post-industrial urban phenomenon which is the Rice School of Architecture. I am therefore indebted to the many faculty members and students who have contributed to the content of this project, whether directly or indirectly. I would like to thank the members of my thesis committee: Mark Wamble, for his ingenious development of a new fertile territory for architecture based on complex programming and the circuit and the cell; Albert Pope, for his ground-breaking work on post-war city growth and the idea of urban implosion; and John Casbarian, for his thorough development of methodological processes in architecture. I greatly appreciate the encouragement, patience, and critique which they all generously supplied. I would also like to thank Lars Lerup, Dean of the School of Architecture, for being an unspoken fourth committee member, as well as other teachers who inspired and challenged me: Michael Bell, Yung-Ho Chang, Elysabeth Gamard, Diane Ghirardo, Richard Ingersoll, Keith Krumweide, Robert Mangurian, Eric Ragne, Mary Ann Ray and Alex Wall. Essential to my experience at Rice were my fellow students, and I would like to thank them all. I would especially like to thank Shelly Pottorf and Ben Thorne for two unforgettable design collaborations, and the thesis “project team” (in order of appearance): Brian Burke, Nicola Springer, Logan Ray, Tim Gordon, and Kyle Morrow for all their help during the home stretch. I would like to thank Dean Lerup retroactively for his encouraging words which persuaded me to choose Rice in the first place: “The decision to join us in Houston demands energy, and it may demand courage, but the prospects are exhilarating: the struggle for a city, the discovery of the Other Coast, and the chance to truly excel.”

I would like to thank the family of John T. Mitchell for generously supporting my travels to Japan, as well as my mentors and friends who provided so much for me there: Charles and Yuri Kite, Seiji Ogawa, Miyata-san, Setsuko Fuchigami, Shima-san, and Yoshimura-san.

Ultimately, I am indebted to my wife, Heather Brownell, for her tireless and loving support, as well as her insights about the future of design and technology in the workplace. This thesis is dedicated to her.
Abstract
Acknowledgements
Preface

One

5 Suspending Judgment: The Post-Industrial City Transformed [1L1]
6 The Japanese Urban Continuum [1L2]
8 Industrial Archipelago [1L3]
11 The Port of Nagoya [1L4]
12 Interchange
13 Enterprise Zone
15 Terminal
17 Kinjo Pier Logistics Terminal
19 Interface
20 The Bridge of Hesitation
23 Strategies of the Void
26 Workplace

Two

29 Generic City [2L1]
35 The Ville Radieuse Legacy [2L2]
36 The Radiant City in Japan [2L3]
38 Agents of Transformation and the “Death” of Urbanism [2L4]
39 Nagoya’s New City [2L5]
41 Mobility vs. Proximity
42 The Problem of Quantity
44 Preeminence of the Decorated Shed
46 Dead Space
47 Defunct Strategies
48 The Fourth Skin
49 Trauma of the New Interior
51 Death of the Façade
52 Zero-Degree Architecture
54 The Workplace Revisited
Three
57
Staging Uncertainty [3L1]
61
Vivicitles [3L2]
62
Infratecture [3L3]
63
Unveiling the Hidden Order [3L4]
66
The New Fringe [3L5]
69
Cité Post-Industrielle [3L6]
76
Wiring the City
81
Complex Program
86
Eye of the Storm
105
In Place of the Public?

109
References
This project is concerned with urbanism – not in the sense of what we already know and take for granted – but in the formulation of new conceptions of urbanity, which has become increasingly important in the wake of inestimable change. As our cities dissolve into the megalopolitan field, we are faced with fundamental questions about the role of architecture in the second machine age. Many have turned their faces from this inevitable future, seeking solace in past urban traditions: the piazza, the street, ‘downtown.’ Meanwhile, we are thrown headlong into a world where geopolitical boundaries are eroding, capitalism is pervasive, and deregulation is the norm – a world inhabited by five billion tourists, fed by a global digital nervous system and propelled by the automobile – in which the very idea of ‘place’ is now questioned. The terrain we inhabit – called sprawl – has essentially become a single, generic, atomized city on the scale of the globe; although we can now live and work anywhere, everywhere is strangely the same. Faced with this disturbing condition, how can we maintain the genius loci while “all that is solid melts into air?” Furthermore, how can architecture prevail, when the discipline is being marginalized by the forces of capitalism and ignored by a visually illiterate society?

For architecture to have a place in this brave new world, we must face these ineluctable challenges. While it is important to understand past theoretical and formal traditions, we will not find answers within the accepted architectural canon. We must instead turn to face the horror vacui, and struggle to fill it with meaning. Innovation is, after all, much more difficult than emulation. However, innovation is essential.

Thus, I have decided to direct my attention toward the contemporary city and the economic, social, and technological forces that shape it. After isolating major areas of conflict and drawing from their potential, I have tried to grapple with this void in order to secure a place for architecture in the post-industrial megalopolis. Whatever limitations exist in the design proposal should be balanced by the open-ended nature of the ideas. This thesis is a strange hybrid between analysis and synthesis, caught somewhere between a history lesson and a manifesto (yet inadequate as either). Its structure is similarly unconventional; I have taken the idea of a three-dimensional frame by which to organize the text, such that multiple narratives may be read along three major axes – process, scale, and specificity – within a single narrative. This multi-dimensional framework speaks to the digital paradigm of the ‘web,’ and allows for freedom in interpretation of scope. It also gives a spatial dimension to an otherwise flat medium. Like the cinematic jump-cut, the splicing of the text into multiple narratives conveys the sense of a smorgasbord of ideas, in which each idea is only partially developed before a sudden ‘shift’ in scope delivers a new idea. As a whole, the text is a complex interweaving of ideas, scales, and sequences, much like the post-industrial city which is its subject.

Finally, this project is about Japan. Faced with incredible urban challenges as they enter the next millennium – including high levels of congestion, skyrocketing land values, increased dependency on outside resources, impending natural disaster, and economic instability – the Japanese maintain an indomitable spirit and optimistic sense of enterprise. From my days as a young boy living in Hiroshima to the study of Japanese language and culture in college, I have always carried a special interest for our Sister Nation in the East. Moreover, despite the comparatively extreme cost of construction, the Japanese promote highly experimental and innovative architecture, a fact which should make the design-impoverished U.S. ashamed.
Explanation of the multi-dimensional text structure:

Like architecture, the organization of the text is intended to reflect and enhance its content. I have established a nine-square grid which corresponds to the first two dimensions, process and scale. "Process" is broken down into: 1) analysis, 2) isolation of problems/conflicts, and 3) resolution or synthesis. "Scale," in the OMA tradition, is simply 1) large, 2) medium, and 3) small. The z axis, then, consists of varying stages of specificity, in whatever number is appropriate for the topic. This text-structuring device is intended to provide an alternative to the singular narrative convention, allowing the reader to move freely within multiple narratives along the three-dimensional matrix. This framework is similar to Mark Wamble's theory of the circuit and the cell, which I will present later in the text.
To tell you about Penthesilea I should begin by describing the entrance to the city. You, no doubt, imagine seeing a girdle of walls rising from the dusty plain as you slowly approach the gate, guarded by customs men who are already casting oblique glances at your bundles. Until you have reached it you are outside it; you pass beneath an archway and you find yourself within the city; its compact thickness surrounds you; carved in its stone there is a pattern that will be revealed to you if you follow its jagged outline.

If this is what you believe, you are wrong: Penthesilea is different. You advance for hours and it is not clear to you whether you are already in the city’s midst of still outside it. Like a lake with low shores 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-tooth 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 may mean “Here,” or else “Farther 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 others 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 fails; 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 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 leave it?29
1L1. SUSPENDING JUDGMENT: THE POST-INDUSTRIAL CITY TRANSFORMED.

Capitalism and neo-capitalism have produced an abstract space that is a reflection of the world of business on both a national and international level, as well as the power of money and the ‘politique’ of the state. This abstract space depends on vast networks of banks, businesses and great centres of production. There also is the spatial intervention of highways, airports and information networks. In this space, the cradle of accumulation, the place of richness, the subject of history, the centre of historical space, in other words, the city, has exploded.

(Henri Lefebvre)

Before most of us have been able to detect it, what we have been calling a city has already changed. I’m not referring to the medieval walled city, which has been long dead. I’m discussing the modern or contemporary city, which has culturally, politically, and physically metamorphosed beyond previous standards for recognition. To some, this transformation has warranted the creation of new terms. In the past, the word metropolis was used to describe the extended twentieth century gridiron, which bristled with skyscrapers. Today the term megalopolis is used to describe the bewildering sprawl of mass transit systems, technology parks, entertainment complexes, strip malls, and bedroom communities which extend from older city edges, annihilating previous physical distinctions between city and hinterland, as well as previous geopolitical boundaries. To the majority, however, the elusive word city still suffices to describe any settlement of particular size and socio-economic significance. The irony is that what we call a city is no longer inherently urban, or suburban, or even exurban. It is all these things and more. We would perhaps do better to describe the countryside, like the goatherd in Calvino’s Cecilia 4, or whatever is antithetical to the city. In any case, what we must realize is that our old definition of city has been modified to address new forms of human development. It goes without saying that the technological instruments of physical and virtual mobility, the automobile and telematics, have driven this transformation, allowing unprecedented levels of freedom and connection, as well as urban fragmentation and atomization. Today, we are bombarded with the trite image of a corporate executive leaving her downtown office for a quiet pasture in the country, powered by an off-road vehicle, laptop computer, and cellular phone.

Indeed, these technological developments (and the infrastructures required to power them) have made this image possible, but it is unreal. Despite popular notions about exurban mobility and the resulting decay of cities, evidence suggests that cities are not only here to stay; they are growing at an unparalleled rate. According to a 1995 survey in The Economist, the global urban population
will rise by about one billion in the next fifteen years, and although seventeen of the world's twenty-one largest cities by the year 2000 will be in the third world, major cities in industrialized nations are experiencing a rebirth as well.\textsuperscript{5} The survey goes on to suggest that as the mobility of capital and information in cities increases, the static factors, which include "housing, public services, infrastructure and, above all, distinctive political and cultural traditions" become more important: "Many people have concluded... that cities are finished. This survey, by contrast, has argued that cities have revived over the past decade partly because these immobile factors are precious resources in an increasingly mobile world. Their resilience suggests that cities are likely to continue to thrive in a post-industrial world."\textsuperscript{6} Like molecular gravitational models, centrifugal forces in cities may be balanced by equal centripetal ones. Saskia Sassen corroborates The Economist survey in suggesting that "the widely accepted notion that density and agglomeration will become obsolete because global telecommunications advances allow for maximum population and resource dispersal is poorly conceived. It is, I argue, precisely because of the territorial dispersal facilitated by telecommunication that agglomeration of certain centralizing activities has sharply increased. This is not a mere continuation of old patterns of agglomeration; there is a new logic for concentration."\textsuperscript{7} Indeed, it is this new logic for concentration which is determining the future shape of cities, and inherent to the logic is an understanding of how these mobile and static forces interrelate at a fundamental level. Sassen continues: "Cities are preferred sites for the production of [finance and advanced corporate] services, particularly the most innovative, speculative, international service sectors. Further, leading firms in information industries require a vast physical infrastructure containing strategic nodes with hyperconcentration of facilities; we need to distinguish between the capacity for global transmission/communication and the material conditions that make this possible."\textsuperscript{8} Thus, an understanding of the technological instruments of mobility and the infrastructures that channel them is paramount to predicting future urban form.  

1L2. THE JAPANESE URBAN CONTINUUM. Since World War II, Japanese cities have experienced a particularly harrowing transformation. In 1945, about 55 percent of the Japanese population was urban, and 45 percent rural. By 1980,
however, only 13 percent lived in the country. What is more, this massive population shift was concentrated in the Tokaido megalopolis, which spans between Tokyo and Kobe (somewhat like the BosWash corridor in the U.S.), and by 1980 was home to about 40 percent of all Japanese - roughly 50 million people. 

In order for these figures to be better understood, one must be familiar with Japan’s geographic limitations. As of October 1992, the total land area of Japan was 377,800 square kilometers, roughly the same size as the U.S. state of Montana. In 1994, Japan was reported to have the seventh largest population in the world, with over 124 million people. Because approximately 70 percent of Japan is mountainous, with alluvial plains occupying only 13 percent of flat land, Japan’s density per unit area under cultivation is the highest in the world, with 334 persons per square kilometer in 1992. Moreover, some 23.4 percent of Japanese live in the Tokyo Metropolitan Area, which occupies only 2 percent of the total area. By 2015, the World Bank estimates that 28 million people will live in Greater Tokyo. The Tokaido megalopolis is the physical and psychological heart of Japan, and includes the three largest cities, Tokyo, Osaka, and Nagoya, in addition to Yokohama and Kobe. It originated as the last stage of the silk road, having developed as the connective tissue between these major urban centers on the main island of Honshu. It is now perilously close to becoming all of Japan that matters. According to Robert Christopher, the Tokaido megalopolis is now home of “the central government and all its agencies... the headquarters of nearly every large industrial and financial institution, two-thirds of Japan’s universities (including virtually all the ‘good’ ones), all of the major publishing and communications groups and an overwhelming concentration of the people and institutions that shape Japan’s cultural life.”

Christopher offers this description: The Tokaido megalopolis is a monument to unplanned urban sprawl, and riding through it on one of Japan’s famed ‘bullet trains’ is reminiscent of riding the Metroliner through the grim landscapes through northeastern New Jersey. At intervals, traces of the old Japan are visible... but the dominant impression is one of industrial society at its worst: factories built without the slightest concession to architectural aesthetics, warehouses that look like
Quonset huts afflicted with gigantism, enormous boxlike concrete apartment buildings and interminable clusters of shabby-looking Mom-and-Pop shops, auto-repair establishments and other small enterprises. Despite efforts to decentralize industry and relieve urban congestion, such as Kakuei Tanaka’s Plan for Remodeling the Japanese Archipelago in 1972, Japanese cities have only become more dense and chaotic. High-speed rail lines and highways have transformed the Japanese urban landscape into a seamless corridor. Indeed, much of Japan’s infrastructural technology is dedicated to the creation of faster, uninterrupted flows of traffic between all major urban centers, particularly those lying between the mountains and the eastern seaboard of Honshu island.  

1L3. INDUSTRIAL ARCHIPELAGO.

Faced with worsening congestion in their cities, the Japanese have had two practical choices for urban expansion: the hinterland, and the sea. As I mentioned earlier, over two-thirds of Japan is mountainous, and the steep foothills that surround every Japanese city make rural expansion problematic. Japanese builders and engineers have proven themselves to be exceedingly industrious, however, as indicated by the impressive railroad and highway systems which connect every major city, for which extensive networks of tunnels and bridges had to be built. Because mountainous terrain typically rises sharply from the alluvial plains, however, large-scale hillside developments have proven very difficult and costly. As a result, a large percentage of commuters must live one or two hours from their workplace in a major city, because the superior infrastructural network allows them to do so.

The sea has proven to be viable territory for urban expansion. Despite the high cost and labor involved with so-called land reclamation projects, the Japanese have demonstrated that land is valuable enough to warrant seaward expansion of an unprecedented scale. Every coastal city in Japan has a highly-developed port built on landfill; in fact, it is rare today for one to see natural Japanese coastline, particularly on the Eastern seaboard. In Tokyo, Yokohama, Osaka, and Nagoya, land reclamation has actually moved the original waterline many kilometers away from its original location. Preserved gateways and shrines which once marked the entrance to cities hundreds of years ago are now surrounded by dense development, separated from water by entire urban districts. Until recently, the purpose of land reclamation in Japan has been to support heavy industry and trade. Much of Japan’s post-war economic success has been attributed to the expert transformation of imported raw materials into immediately marketable export goods. Today,
Japan imports as much as 80 percent of its natural resources; thus, it has made practical sense for centers of production to be intimately linked with port distribution systems. Moreover, due to the vast space requirements and zoning concerns of factories and power plants, it has been equally practical to build such facilities away from city centers and tightly-packed residential neighborhoods. Therefore, iron, steel, and shipbuilding industries, as well as automotive, petrochemical, precision machinery, and electrical and optical equipment industries constitute vast territories of artificial landfill outside major Japanese cities, and are located adjacent to container yards and shipping/distribution centers. As such, mixed-use waterfront development which has become increasingly popular in Western coastal cities (such as New York’s Battery Park City or London’s Docklands) has been practically nonexistent in Japan. But the situation is changing. Lately, Japan has been experiencing a hollowing out of its industry based on a shift of manufacturing jobs overseas; a change which seems to follow the natural evolution of economic development in other first world countries, from primary industries (agriculture, forestry, fisheries), to secondary industries (mining, manufacturing, construction), to tertiary industries (transportation, communications, retail and wholesale trade, banking, finance and real estate, business services, personal services, and public administration). The change in Japan’s industrial structure has thus led to physical transformations in its cities, most notably in the port areas. In an atavistic reoccurrence of Metabolist aspirations, city planners, developers, and architects are projecting new Utopian waterfront cities with gleaming office towers, hotels, exhibition halls, apartment blocks, shopping centers, parks, and amusement complexes. Outmoded steel plants are being demolished to make way for new financial and service institutions, housing, and cultural amenities. Despite the danger of liquefaction of landfill in the event of an earthquake, in addition to the necessary environmental cleanup of industrial sites, the artificial island is an attractive site for new urban development of this kind, when one considers its characteristically flat, generously-scaled spaces, well-organized street grid, and proximity to water. There has even been enough unoccupied land (used for shipping yards and distribution facilities) in the Japanese industrial archipelago that it
presents a veritable *tabula rasa* for new planning. Indeed, one can easily decipher the sharp contrast between the disorderly urban congestion of the mainland and the highly-structured agoraphobia of the reclaimed landscape. ■ Perhaps the most well-known Utopian land reclamation scheme is Kenzo Tange’s Tokyo Plan of 1960, in which he envisioned a marine city in the form of a linear complex of highways leading from the concentric core of Tokyo to Chiba across the bay. The plan intended to improve infrastructural problems and augment a dwindling housing supply within a model city for the coming ‘information society.’ The megastructural office and housing blocks were designed collaboratively by URTEC, a team of architects and engineers which Tange founded in 1961. Tange’s Tokyo Plan of 1986, a revision of the 1960 scheme, proposed the development of a multi-core urban zone with two new sub-cities, one along the coast and one in the bay. The next phase will involve extending the projected axis further to meet Kizaru on the opposite shore. Looking at Tokyo today, it is fascinating to see the extent of Tange’s influence on the development of the coastline. ■ Abandoned only months before its scheduled opening due to a political controversy, the World City Exposition, 1996 was planned to show off Tokyo’s latest architectural wonders on a string of manmade islands called ‘Teleport Town.’ Among the many innovative projects to be seen were Nippon Sogo’s Telecom Center, Katsuhiro Kobayashi’s mixed use development/recycling plant called Ariake Clean Center, Kenzo Tange’s giant lattice-like Fuji Television Building, and Sato Corporation’s Tokyo International Exhibition Center and Congress Tower. ■ About 25 kilometers to the southwest of Tokyo lies Minato Mirai 21 (or port future 21), at the mouth of Yokohama. In 1992, a group of architects and planners (including OMA) was invited to propose designs for a collection of five sites along the coast which could be redeveloped to form a ring five kilometers in diameter. Yokohama plans to host an exhibition in the next decade similar to the failed Urban Frontier project in Tokyo, 1996. ■ Other well-known examples of innovative uses for land reclamation sites include Kobe’s Port Island and Rokko Island (1990), Yokohama’s Nexus World project (1991), and Osaka’s Kansai International Airport (1994), which was built on an 510-hectare artificial island five kilometers from shore.\[15\] ■
1L4. THE PORT OF NAGOYA. Nagoya is the fourth largest city in Japan, located in the middle of the Tokaido megalopolis between Tokyo and Osaka. A center for high-tech industry, it was bombed heavily during World War II, and has been rebuilt according to modern planning principles. The economic and industrial activities of the greater Aichi prefecture, of which Nagoya is the focus, account for approximately 1 percent of the global economy. Due to the exaggerated emphasis placed on Tokyo and Osaka, however, Nagoya remains overshadowed by these cities culturally and politically, despite the fact that it is in many ways more advanced urbanistically. As a result of Nagoya’s ‘second-rate’ city status, its vast extent of reclaimed land has been preserved for industry and distribution. Without the kind of international attention and government investment in experimental projects found in Tokyo and Osaka, Nagoya has maintained a completely functioning, production-driven port. However, this is about to change. Several of the currently active manufacturing operations are technologically outmoded, and will soon be shut down to make way for other uses of the land. Future plans similar to those implemented in Tokyo and Osaka will transform the port into a more sophisticated business and culture center. The Aichi International Exposition, scheduled for 2005, will be held in Seto City, located twenty minutes northeast of Nagoya. Nagoya will now be a major recipient of massive government funding for new infrastructure, including a new shinkansen railway to parallel the Tokaido line, a string of three large suspension bridges to connect a new loop road, a new international airport and cultural center on an artificial island in Ise Bay, new local railways to connect the airport to the city, and jet foil terminals in the port. Like the enormous undertaking to make Nagano accessible to the 1998 Winter Olympic Games, Aichi prefecture anticipates a similar feat to prepare for the 2005 Expo, which is also located in a remote mountain site. Moreover, because the port of Nagoya will serve as a gateway from the new airport, much of the construction will occur within the port itself, on route into the city. The question remains, however, whether city planners will follow in the footsteps of the other cities, or seek originality in their designs.
1M1. INTERCHANGE. Ever since the Cardo and Decumanus were used to establish the major crossing in colonial Roman cities, the interchange has been the driving force in urban development. In fact, one can look at any city, historical or modern, and learn much about its origins and growth from its major traffic hubs. One is familiar with the nostalgic image of the crossing, a site for public interaction and commercial enterprise. Naturally, as transportation technology has developed, the interchange has evolved as well. The interchange plays just as dominant a role in city-making today, but in a very different fashion. With the introduction of the automobile at the turn of the century, the initial course of implementation was fairly straightforward. The automobile simply replaced the horse-and-buggy, occupying a place in the same tight road network. As automotive technology developed, however, it became clear that the car had more potential as a transportation device, and that it had greater demands. Different types of roads were developed to accommodate different speeds, the fastest speed obviously being the most anti-pedestrian. The car suggested a different scale and character of roadway altogether, as well as a new language of safety laws and codes for communication. To many, the automobile represented a new age of speed and alienation, simultaneously horrifying and exhilarating. Filippo Tommaso Marinetti’s Foundation Manifesto in 1909 revels in the adrenaline rush of this new machine, as well as the locomotive: We all started up, at the sound of a double-deck tram rumbling past, ablaze with multi-coloured lights, like a village in festival dress that the flooded Po tears from its banks and sweeps through gorges and rapids, down to the sea. But afterwards, the silence grew deeper, and we heard only the muttered devotions of the old canal and the creaking of the arthritic, ivy-bearded old palaces until - suddenly - we heard the roar of famished motor-cars beneath the windows... We drew near to the snorting beasts and laid our hands on their burning breasts. Then I flung myself like a corpse on a bier across the seat of my machine, but sat up at once under the steering wheel, poised like a guillotine blade against my stomach... I swung the car round in its own length, like a mad dog trying to bite its own tail, and there, wobbling towards me were two cyclists, as confusing as two equally convincing arguments, right in my line of travel. I pulled up so short that the car, to my disgust, looped into the ditch and came to rest with its wheels in the air. 0 maternal ditch, brimming with muddy water - 0 factory drain! I gulped down your nourishing mud and remembered the black breasts of my Sudanese nurse. And yet, when I emerged, ragged and
dripping from under the capsized car, I felt the hot iron of a delicious joy in my heart.\textsuperscript{16} The Futurists were infatuated with modern devices for transportation, not only the automobile and locomotive, but also the aeroplane and the elevator. In collaboration with Antonio Sant’Elia, Marinetti published Futurist Architecture in 1914, in which they offer an image of the Futurist city and the Futurist house: We must invent and rebuild the Futurist city: it must be an immense, tumultuous, lively, noble work site, dynamic in all its parts; and the Futurist house must be like an enormous machine. The lifts must not hide like lonely worms in the stair wells... and [instead] must climb like serpents of iron and glass up the housefronts... the street, which will no longer stretch like a foot-mat level with the porters’ lodges, but will descend into the earth on several levels, will receive the metropolitan traffic and will be linked, for the necessary passage from one to the other, by metal walkways and immensely fast escalators.\textsuperscript{17} On a grand scale, the Futurists presaged the modern multi-vehicular transportation hub of today. Now we have train terminals with multiple subterranean levels, connected to department stores, hotels, and office buildings; multi-tiered, elevated highway systems which soar above the ground; airports which have become cities in themselves, integrating restaurants, shopping malls, conference centers, chapels, and hotel rooms. These are our new interchanges. This is our new city.

\textbf{1M2. ENTERPRISE ZONE.} Early visions of today’s city are manifest in Tony Garnier’s Cité Industrielle, first exhibited in 1904, which clearly described the fundamental technical and economic precepts for establishing and organizing the modern city. In what many consider to be the first act of \textit{tabula rasa}, modern master planning, Garnier designed a self-sufficient settlement for 35,000 based on industry, with various functions zoned in discreet areas, connected by multiple infrastructural systems; a railway, a canal, roads, and an airport. The renderings of Garnier’s project foreshadowed a new, sprawling urban scale defined by the practical zoning requirements of the latest industrial and transportation technologies. Garnier’s Cité made a strong influence on Le Corbusier, whom he met in Lyons in 1908, and anticipated the zoning principles implemented in the CIAM Athens Charter of 1933.\textsuperscript{18} Today, the spirit of the Cité Industrielle appears in the unlikely manifestation of the post-industrial enterprise zone.
For better or worse, the enterprise zone represents the most likely model for tomorrow’s city. Conceptually, it is a sophisticated interchange comprised of a variety of transportation infrastructures, home to the branch offices and factories of powerful corporations, and characterized by particular economic and political trade freedoms. It is likely to be located outside of traditional city centers, where land costs are low and the planning of large developments is relatively unrestricted. Such high volumes of international trade are now conducted in enterprise zones that they are the focus of logistics, a young school of business concerned with distribution analysis and scheduling. Enterprise zones are typically connected to airports which handle large quantities of freight cargo.

Alliance Airport (1988), located north of Fort Worth, is a private facility owned and operated by Ross Perot, Jr. which feeds a 12,000 acre complex of private research and development companies, distribution operations, residential communities, and various amenities. The heart of the Alliance development is the Intermodal Transportation Center, located at the confluence of the Santa Fe railway and NAFTA corridor (Highway 35W), adjacent to the airport. Of particular significance is the free trade zone status of the ITC, which allows tax immunity on merchandise exchanged within its gates. The freeport tax exemption makes the site attractive economically to product development corporations as well as shipping companies, who are eager to reduce freight costs. With help from the City of Fort Worth, Alliance Corporation develops all of the required infrastructure on site, and maintains a speculative warehouse and building program for companies who decide to move there. These companies can feed from the plentiful labor pool and other resources offered by Fort Worth, while conducting less restricted business outside of the city. In many aspects, Alliance is a leech on the city; in other aspects, Alliance is the new city. The technopole is one form of enterprise zone, described by Manuel Castells and Peter Hall to be the mine and foundry of the informational economy. As in the case of Alliance, technopoles are generally planned developments. Some are pure private sector real-estate endeavors, but most are the products of cooperation between the public and private sectors. Technopoles are characterized by the partnership of research institutions and companies with the common goal of generating “the basic materials of the informational economy.”
include Silicon Valley; Tsukuba Science City, outside of Tokyo; Cartuja, Seville; Hsinchu, in Taiwan; Tunisia Technology Center, Tunis; and Izmir Environmental Technology Park, Izmir, Turkey. Technopoles are all strangely similar despite their existence outside of virtually every city in the world, and in affecting powerful socioeconomic transformations, have begun to redefine the course of urban development. \[1\] M3. \textbf{TERMINAL.} The train terminal is one of the most familiar industrial-era typologies.

Like the transformation of our definition of city, however, the terminal has assumed a broader meaning in our vocabulary. Today, terminals boast access to, and exchanges between, several different means of transportation. Equally important is the fact that transportation terminals have evolved into complex, multi-dimensional social condensers which are effectively urban microcosms. Airports, train stations, subways, bus stations, and ferry terminals have all advanced far beyond their typological origins into a new species, in most cases replacing the \textit{piazza} as the new ‘civic’ space. \[2\] This is certainly the case in Japan, where airports and ferry terminals occupy their own artificial islands, and train stations are typically the largest, most diverse urban complexes for collective activity, usually sprawling across many city blocks. Every major city on the eastern seaboard of Honshu island possesses a sophisticated train terminal with virtually every function and amenity. Barthes writes of the station as being the “spiritually empty” center of the Japanese city.\[21\] He describes his experience in the train terminals of Tokyo in the 1960’s: \textit{The station, a vast organism which houses the big trains, the urban trains, the subway, a department store, and a whole underground commerce - the station gives the district its landmark which, according to certain urbanists, permits the city to signify, to be read. The Japanese station is crossed by a thousand functional trajectories, from the journey to the purchase, from the garment to food: a train can open onto a shoe stall. Dedicated to commerce, to transition, to departure, and yet kept in a unique structure, the station (moreover, is this what this new complex should be called?) is stripped of the sacred character which ordinarily qualifies the major landmarks of our cities: cathedrals, town halls, historical monuments... To cross the city (or to penetrate its depth, for underground there are whole networks of bars, shops to which you sometimes gain access by a simple entryway, so that, once through this narrow door, you discover, dense and sumptuous, the black India of commerce and pleasure) is to travel from the top of Japan to the bottom, to superimpose on its topography the writing of its faces.}\[22\] Because these stations are all connected by the
arterial Tokaido corridor, the average Japanese (and especially tourist) spends a significant amount of time in them. In fact, a one to two hour commute is common for millions of Tokyo workers five to six days a week. In her article “Contagion,” Sandra Buckley offers an understanding of the Japanese city as a “complex spatiotemporal configuration constituted in and out of movement.” She provides this description of the complex infrastructural systems serving the Japanese commuter: High-tech railroad systems speed commuters on express trains from the most outlying suburbs into central exchanges where they transfer onto the underground system that runs three and four layers deep at major hubs. The management of the flow of millions of commuters through this subterranean net requires technical precision at every stage, from the scheduling of trains and the speed of escalators to the surface to detailed evacuation procedures, sophisticated ventilation, back-up electrical generators large enough to run a small town, automated ticket machines, and wickets. On the major freeways huge computerized screens warn drivers of road hazards and delays and flash recommended alternative routes. Trucks, commercial vehicles alike frequently sport a satellite-controlled in addition to providing traffic information, offers up-lists hotels, restaurants, and other facilities in an area movement is ordered to create a smooth and predictable flow of traffic and to avoid arterial blockages. Buckley writes of commuter space and the movement through it as being unproductive and unremarkable; “dead time, vacuous space.” Because commuting occupies such a significant place in the typical Japanese schedule, it has traditionally served to separate different sides of Japanese life, such as home and work. However, Japanese commuter space has increasingly offered artificial means for mollifying this distinction, in an attempt to fill the dead time, in the form of surrogate socio/cultural experiences. In his essay titled “Architecture in a Simulated City,” Toyo Ito describes the kinds of artificial experiences which this smooth, ‘in between’ space allows, as part of the larger notion of what he calls ‘vacant brightness’ in the contemporary Japanese city: Simulated life is based on the saran wrap of society. For instance, men and women stop at places before going home after work in order to eat, sing, dance, talk, watch movies, go to theaters, play games, or shop. The time and space positioned somewhere between office and home for such activities are fully functional. People eat whatever is served there as if the dishes were cooked by their mothers; sing and dance as if
they were movie stars; discuss topics with whomever happens to be there as if they were best friends; shop to cultivate rich dreams; and exercise in an artificial space as if they were running in a field or swimming in the sea.

All are simulations, from the space to the actions to whatever experiences one gains there. 1 M4. **KINJO PIER LOGISTICS**

**TERMINAL.** Kinjo Futo, or ‘Golden Castle Pier,’ is a 1.91 square kilometer artificial island which is strategically located at the heart of Nagoya port. Designed in 1960, construction was finally completed in 1994, and the pier now represents the southernmost extent of an urban armature leading directly into the city. The Nagoya Port Authority considers Kinjo Pier to be “a key area in international trade and information.” possessing one of the port’s two container terminals, as well as the Nagoya Port Vessel Traffic Center (NAVTC), a surveillance and communications tower built at the southern tip of the pier in 1994. NAVTC aids the Nagoya Port Operation Center, which was established by thirteen port and harbor transportation service companies in 1989, in providing navigational information to guide vessels passing through the port. In the minds of Nagoya city planners, Kinjo Pier will act as both the muscle and brains behind many port operations. Blessed with a 6,350 meter long quay, the pier will allow up to 35 large-size vessels to dock simultaneously, and the pier also maintains four public container ship berths with four gantry cranes. Every year, Kinjo Pier handles 3,900 ships and 11.9 million tons of cargo. At the same time, the pier is now home to the Nagoya International Exhibition Hall, an enormous exhibition and entertainment complex, which gives many companies unprecedented opportunities for publicity. According to the Nagoya Port Authority, “Kinjo Pier continues to grow rapidly as one of Japan’s centers of trade and business.” Kinjo Pier is indeed changing rapidly.

Construction is nearly finished on two of three large suspension bridges which will connect the pier to the east and west sides of Nagoya port via the Ise Bay Highway, completing the Nagoya Ring Road.
around the city. Before the Aichi Expo in 2005, a new railway will connect the new international airport, located farther south in the bay, to the city on the mainland, with a major station on Kinjo Pier. With the addition of a ferry and jetfoil terminal, the pier will effectively become a major public interchange, in the middle of a sophisticated distribution and communications center. The existing International Exhibition Hall is only one of many new public facilities planned for the island. An elaborate, highly-manicured park stands just east of the exhibition hall complex, which is the future site of a ‘hypertower’. A large visitor’s center will be constructed to the north, adjacent to a small vessel anchor pier. Straddling the main north-south thoroughfare on the island will be a kilometer-long string of new business facilities, including a logistics center for port administration and commercial enterprise, a hypermart, a convention hall, a hotel, and waterfront commercial and entertainment facilities flanked by a public promenade, all extending from a new train and jetfoil terminal, which is located across the street from the exhibition hall. Because most of the current trade operations will remain active, including the container terminals, distribution yards, and NAVTIC, Kinjo Pier will represent a kind of experiment in the integration of the public and private, ‘front and back door’ ‘aspects of the port’s economic engine. As Nagoya Port in general is transformed from an industrial center to a place for new business and leisure activities, interesting juxtapositions will emerge between the existing operations and new ones. Located at the junction of new infrastructures which will complete long-anticipated connections between the industrial archipelago and the mainland, Kinjo Pier will be a valuable, thriving interchange at the heart of a new city.
INTERFACE. Earlier I made the statement that it is critical to understand the juncture at which the mobile and immobile factors of cities meet; like a truck and a loading dock, or electronic money and an automatic transfer machine. It is at this level of engagement that cities can be read, made tangible, and understood. It is at this confluence of dynamic and static forces that architecture finds its greatest potential. To artists, critics, and scientists alike, this juncture is called the interface. Nicholas Negroponte describes the less-than-auspicious origins of the interface in the development of the computer: The evolution of computing has been so fast that we’ve only recently had enough low-cost computing power to spend it freely on improving the ease of interaction between you and your computer. It used to be considered wasteful and frivolous to devote time and money to the user interface, because computer cycles were so precious and had to be expended on the problem, not the person. Scientists would justify stoic interfaces in many ways. In the early 1970’s, for example, a handful of ‘scholarly’ papers were published on why black-and-white displays were ‘better’ than color. Color is not bad. The research community just wanted to vindicate its inability to deliver a good interface at reasonable cost or, to be a bit more cynical, at the expense of some imagination... We are still paying the price today. While Negroponte is referring specifically to the inadequate level of attention paid to the GUI (graphical user interface) in computing, his statement could be expanded to address design issues in general. I would suggest that a large percentage of the design/build community which shapes our physical environment, including developers, planners, engineers, and architects, is likewise eager “to vindicate its inability to deliver a good interface at reasonable cost... or at the expense of some imagination.” If the first place of engagement between a city and its visitor in antiquity was the city wall, then what is the border that stands between the modern city and its occupant? With the development and proliferation of transportation and communications technologies, walls and other physical territorial markers have given way to other proprietary lines, which are often invisible or subject to rapid fluctuations. In his article “The Overexposed City,” Virilio addresses this change: ...since men began using enclosures, the notion of what a boundary is has undergone transformations which concern both the façade and what it faces, its vis-à-vis. From the fence to the screen, by way of the rampart’s stone walls, the boundary-surface has been continually trans-
formed, perceptibly or imperceptibly. Its most recent transformation is perhaps that of the interface. The question of access to the city, then, should be asked in a new way: Does a greater metropolis still have a façade? At what moment can the city be said to face us? The subject of the modern city is at ill odds to read it legibly. Clearly inscribed stone walls have given way to temporary/portable structures, transparent and reflective glass, neon and flashing lights, and most importantly, a new variability in the distance between boundaries and edges which indicates the dissolution of the former territory of the wall. “Thus, differences in positions blur, resulting in unavoidable fusion and confusion... If... the city from now on is to be deprived of doors, it is due to the fact that the urban wall has given way to an infinity of openings and ruptured enclosures.” According to Wim Nijenhuis, it is precisely the “dissipated and immanent frontier that informs the ‘urban’ together with the fusion of reality and nonreality in perception [which] signify the rise of a new world frontier, namely, the interface.” This ‘new world frontier’ is manifest in the new media which define the urban threshold: The representation of the contemporary city is thus no longer determined by a ceremonial opening of gates, by a ritual of processions and parades, nor by a succession of streets and avenues. From now on, urban architecture must deal with the advent of a ‘technological space-time.’ The access protocol of telematics replaces that of the doorway. The revolving door is succeeded by ‘data banks,’ by new rites of passage of a technical culture masked by the immateriality of its components: its networks, highway systems and diverse reticulations whose threads are no longer woven into the space of a constructed fabric, but into the sequences of an imperceptible planning of time in which the interface man/machine replaces the façades of buildings and the surfaces of ground on which they stand. Thus, the modern gateway to the city is the internet access terminal, the money machine, the dashboard, the cellular phone, and the ticket counter. We live in a paradoxical age in which the city has simultaneously reached its ultimate dissolution and its ultimate ubiquity. In other words, it is nowhere and everywhere at once. THE BRIDGE OF HESITATION. In Japanese culture, there has historically been another kind of interface; a psychological border between two opposed poles of awareness, which serves as a third, mediating element. I will suggest that this mediating element is described metaphorically in Kazuo Ishiguro’s An Artist of the Floating World: On three or four evenings a week I still find myself taking that path down to the river and the little wooden bridge still known to some who lived here before the war as ‘the Bridge of Hesitation’. We called it that because until not so long ago, crossing it
would have taken you into our pleasure district, and conscience-troubled men - so it was said - were to be seen hovering there, caught between seeking an evening's entertainment and returning home to their wives. But if sometimes I am to be seen up on that bridge, leaning thoughtfully against the rail, it is not that I am hesitating. It is simply that I enjoy standing there as the sun sets, surveying my surroundings and the changes taking place around me.\(^{16}\) Japanese art has long been characterized by a strong duality between sensuality and ritual. In the passage above, *ukiyo-e* artist Masaji Ono describes the bridge of hesitation as a physical threshold between his residential neighborhood and the 'floating world,' the nocturnal realm of pleasure, entertainment, and drink which served him in his youth as a place of escape and redemption. This literal description of different physical zones within Ono's city may be taken as a metaphor for this inherent polarity in Japanese culture. Alex Kerr writes, "On one hand, there is Japan's freewheeling sexuality, out of which was born the riotous *ukiyo* (floating world) of Edo: courtesans, colorful woodblock prints, men dressed as women, women dressed as men, 'naked festivals,' brilliantly decorated kimonos, etc... At the same time, there is a tendency in Japan towards over-decoration, towards cheap sensuality too overt to be art. Recognizing this, the Japanese turn against the sensual. They polish, refine, slow down, trying to reduce art and life to its pure essentials. From this reaction were born the rituals of tea ceremony, Noh drama and Zen. In the history of Japanese art you can see these two tendencies warring against each other."\(^{37}\) Although this 'war' is more ambiguous today, it continues to take place. Garish pachinko parlors and late-night pornographic television abound, while sterile concrete structures and raked-sand gardens constitute a reactionary movement towards simple refinement. The duality extends far beyond these extreme examples, however, into the realms of consumer culture and mass media. In his essay titled "Architecture in a Simulated City," Toyo Ito discusses the increased homogenization of society as a result of widespread media technology and its focus on the consumer. He describes contemporary Japan as a borderless world of reality and illusion, in which the post-industrial subject leads a simulated life in an environment filled with 'vacant brightness.'\(^{38}\) He writes: *Media technology has isolated words from goods and diluted the reality of goods. We are able to develop images only by words or video images bereft of real entities. Thus simulated life has proliferated in other areas. Communication through media or, in other words,
communication without entity has become a necessity in our daily life to the extent that communication without the media network is impossible. Communication that was once deeply rooted in an area or a local community has lost its significance. What is thriving in our cities is based on a network of instanteous, ephemeral, and unspecific but numerous media that eradicate physical distance. One might conclude, therefore, that media technology has afforded a new manifestation of the ‘floating world,’ an abstract realm of words, lights, and images, in opposition to the reality which it attempts to usurp. Here we are reminded of McLuhan, who says that “societies have always been shaped more by the nature of the media by which men communicate than by the content of the communication.” With regard to the age-old media vs. substance argument, it is important to note that as the boundaries become blurred, there is potential for increased diversity of experience. As I mentioned earlier, Ito suggests that the urban space on the commute between work and home in Japan is ripe for such diversity. McLuhan adds: “Students of media [in our case, designers of the modern city] are persistently attacked as evaders, idly concentrating on means or processes rather than on ‘substance.’ The dramatic and rapid changes in ‘substance’ elude these accusers. Survival is not possible if one approaches his environment, the social drama, with a fixed, unchangeable point of view - the witless repetitive response to the unperceived.” Given these conditions, is there a place in contemporary Japanese culture for a ‘bridge of hesitation?’ What is the role of a third, mediating element? In his book Rediscovering Japanese Space, Kisho Kurokawa mentions the Buddhist concept of sunyata, which assumes a third viewpoint between existence and nonexistence. He also describes the importance of the engawa, an intervening space between inside and outside, in Japanese architecture. For Kurokawa, Japanese culture is multi-dimensional, and the so-called ‘gray space,’ or third element plays an important part in negotiations between opposing views or positions. To cite another example - in his description of Kabuki theater, Alex Kerr suggests that Kabuki has the perfect balance between sensuality and ritual. He describes a third element - the pause - which is essential to this balance: “[Kabuki] began as a popular art, and is rich in humor, raw emotion and sexual appeal. At the same time, after hundreds of years, it has been slowed down and refined to the point where, within the sensuality, there is that timeless ‘stop’ - the meditational calm which is Japan’s special achievement.” Returning to Ito’s description of life in a simulated city, I would suggest that it is architecture which serves as the mediating device between the real and the ephemeral. Ito describes architecture as being caught between these two poles, facing contradictory problems. On one hand, how can we create a work of
architecture as a physical reality at the same time that goods and consumer products lose their meaning, or that the demands for flexible, immediately accessible spaces escalate while local neighborhoods vanish and communications networks appear and disappear? On the other hand, how can we create a work of architecture as fiction given the physical nature of the medium, not to mention the ever-increasing need for habitable and culturally-enlightened space? It suggests that we face the seemingly impossible challenge of building “fictional and ephemeral architecture as a permanent entity.” Despite the inherent implausibility of such a pronouncement, I would argue that it is possible to carry it out. In the spirit of the ‘bridge of hesitation’, then, architecture should serve as a vehicle for mediation between the substantive and the ephemeral in the three following ways: first, in terms of how physical and nonphysical systems are organized, considering the interface between the individual and the network; second, in terms of the instability of form, and the interplay between opposing geometries, as well as solid and void; and third, in terms of the membrane or skin and its invested capabilities for transformation.

STRATEGIES OF THE VOID. The monumental interior of the industrial age has continued to inspire, and be integrated into, a diverse range of modern building typologies. Since Paxton’s Crystal Palace (1851) proved that vast volumes of space could be enclosed within relatively inexpensive, quickly fabricated structures, architecture has continued to provide interiors sufficient for mass congregation. Essentially, the mall has replaced the piazza. At the same time, the awe-inspiring, morality-inducing interior of the Gothic cathedral has found a new form in the modern, secular space for mass collection. In this space, however, the religious icon has been usurped by the corporate billboard. Our predisposition towards the modern interior has purely pragmatic roots. The great train sheds, warehouses, and exhibition spaces of the 19th century were constructed to facilitate transportation and circulation at an unprecedented scale, and relied upon advances in bridge technology and the development of iron as a building material. In fact, we are told that rotary steam power and the iron frame originated at around the same time, at the end of the 18th century. Thus, this interior was operational in nature, as it evolved in parallel with the vehicle which occupied it. Walter Benjamin offers this description of the development and application of iron: With iron, an artificial building material appeared for the first time in the history of architecture. It went through a development whose tempo accelerated during the course of the
century. This received its decisive impulse when it turned out that the locomotive, with which experiments had been made since the end of the 'twenties, could only be utilized on iron rails. The rail was the first unit of construction, the forerunner of the girder. Iron was avoided for dwelling-houses, and made use of for arcades, exhibition halls, railway stations, buildings which served transitory purposes. Simultaneously the architectonic areas in which glass was employed were extended. But the social conditions for its increased utilization as a building material only came into being a hundred years later. In Scheerbart's 'Glasarchitektur' (1914) it still appeared in the context of a Utopia.\footnote{Benjamin: 'After Nature: The Nineteenth-CenturyLAS', in: 1981-82 Review, ed. by Martin Jay, pp. 170-171.} Modern architects and engineers embraced the iron frame and, like the medieval master builders before them, sought to push the limits of its potential. Guimard, Berlage, Wagner, Garnier, Behrens, Gropius, and others made important contributions to the development of the iron, and later steel and ferrocement, enclosed space. Several decades later, Buckminster Fuller proved it possible to carry the technology of the structural enclosure much further, with his geodesic structures that stretched the maximum efficiency per unit weight of material to an astonishing high. The technological heroism that Fuller inspired had a profound influence on a new generation of architects captivated with the urban potential of buildings, including Archigram, Superstudio, and the Metabolists. Fumihiro Maki, one of the original Metabolist members, developed the notion of a 'city room' in the form of a vast, enclosed collective space with direct connections to the city. He considers "the most important factor in group form... [to be] the treatment of mediating public spaces," and writes that "creating organic public places centering on traffic focal points throughout the city would significantly affect the rehabilitation of city centers... In terms of urban design we must create city corridors, city rooms, and transportation exchanges at strategic points in the city; and second we must realize that these new focal points become urban energy generators."\footnote{In his explanation of the Très Grande Bibliothèque competition entry (1989), titled "Strategy of the Void," Rem Koolhaas suggests that volumes which are conceptually carved out of buildings offer the greatest potential for collective activity. He says, "liberated from its former obligations, architecture's last function will be the creation of the symbolic spaces that accommodate the persistent desire for collectivity."} In his explanation of the Très Grande Bibliothèque competition entry (1989), titled "Strategy of the Void," Rem Koolhaas suggests that volumes which are conceptually carved out of buildings offer the greatest potential for collective activity. He says, "liberated from its former obligations, architecture's last function will be the creation of the symbolic spaces that accommodate the persistent desire for collectivity."\footnote{Rem Koolhaas, Rem Koolhaas: 1983-1995 (2000), New York: The Monacelli Press, 2000, p. 104.} The project consists of a simple, rectilinear, multi-story tower filled with a regular grid of storage, from which various voids are subtracted, or 'suspended' within the solid. "In this block, the major public spaces are de-
fined as absences of building, voids carved out of the information solid. Floating in memory, they are multiple embryos, each with its own technological placenta... the most important parts of the building consist of an absence of building."

Koolhaas’ Paris Library project is a very provocative diagram, and suggests a new realm of potential for the modern collective space, but one must ultimately question the operability and flexibility of the voids, which are too pure and uncompromising in their geometry.

The monumental interior has gained a new level of popularity in Japan, indicated by an incredible array of new architectural projects conceived in the ‘megastructural’ spirit.

Raphael Vigñoly’s Tokyo Forum (1997) possesses a mind-boggling, hyper-engineered atrium space which puts both George Lucas and Hara’s new Kyoto Station (1997) has a similar monumental space, inspired by 19th century terminals, although cluttered with gratuitous decoration and clumsy forms. His impressive Umeda Sky Tower (1996), in downtown Osaka, consists of two skyscrapers which are connected at the top by a thick bridge-slab, through which a giant hole is ‘punctured’ so that escalators - suspended over the void - can carry bewildered visitors up to the ‘sky garden’ above. Kenzo Tange’s Fuji Television Building (1996) in Tokyo is inspired by a similar fascination for the urban-scaled void, and consists of a megastructural lattice in which a sphere - containing a restaurant and viewing deck - is suspended above a giant plaza.

While these and other projects indicate a new scale and spirit present in international architecture, they also possess a particular deference to the void which has always been present in Japanese cities. In Barthes’ Empire of Signs, he discusses Tokyo as having “this precious paradox: it does possess a center, but this center is empty. The entire city turns around a site both forbidden and indifferent... Daily, in their rapid, energetic, bullet-like trajectories, the taxis avoid this circle, whose low crest, the visible form of invisibility, hides the sacred ‘nothing.’”

This ‘empty center’ is actually the Imperial Palace and its expansive grounds - most of which, unlike Central Park in New York, are off limits to the public. Like other Japanese feudal cities, Tokyo grew radially from a centrally-located stronghold, which today has lost its traditional political and cultural
significance. “One of the two most powerful cities of modernity is thereby built around an opaque ring of walls, streams, roofs, and trees whose own center is no more than an evaporated notion, subsisting here, not in order to irradiate power, but to give to the entire urban movement the support of its central emptiness, forcing the traffic to make a perpetual detour. In this manner, we are told, the system of the imaginary is spread circularly, by detours and returns the length of an empty subject.”

**WORKPLACE.** As we enter a new millennium, the workplace has become an increasingly valuable focus for study. Technological developments and lifestyle changes have transformed how we work and live dramatically, and these changes have only begun to affect the design of the office and home. With the complete globalization of capitalism and the deregulation of the world’s economies, new opportunities have emerged for businesses, as long as they are both flexible and adaptable. As evidenced by the wild fluctuations in the Asian stock market in the fall of 1997, and the closing of Japanese brokerage firms which had previously guaranteed lifetime employment, large companies with regimented, hierarchical structures are being replaced by smaller, more flexible, outsourced firms. More than ever before, business today is characterized by complexity and unpredictability.

In their article “How We Work: The Future,” Daniel McGinn and Joan Raymond suggest that good jobs will require an unprecedented level of training, and full-time positions will give way to freelance contracting. Kevin Kelly suggests that the future shape of companies is that of a pure network with the following characteristics: distributed, decentralized, collaborative, and adaptive, and says that “a 100 percent networked company would consist solely of one office of professionals linked by network technology to other independent groups.” Many multi-million dollar businesses are now run from one office with two assistants, and some have no office at all. Here we are reminded of the Superstudio concept of a Utopian society in which physical and political barriers give way to a worldwide network, in the form of a grid covering the landscape. In this scheme, the new ‘nomadic society’ would be free to travel anywhere, tapping into unlimited energy, communications, and instant information.

In the business world, this transformation has largely taken place. Kelly describes the example of the large advertising firm of Chiat/Day, who is “working on dismantling its physical headquarters. Project team members will rent hotel conference rooms for the duration of the project, working on portable computers and call-forwarding. They’ll disband and regroup when the project is done. Some of these groups might be ‘owned’ by the office; others would be separately controlled and financed.” In a similar vein, Kelly constructs the scenario...
for “Upstart Car, Inc.” which plans to compete with the big three Japanese car companies: A dozen people share a room in a sleek office building in Palo Alto, California. Some finance people, four engineers, a CEO, a coordinator, a lawyer, and a marketing guy. Across town in a former warehouse, crews assemble 120-mpg, nonpolluting cars made from polychain composite materials, ceramic engines, and electronic everything else. The hi-tech plastics come from a young company with whom Upstart has formed a joint venture. The engines are purchased in Singapore; other automobile parts arrive each day in bar-coded profusion from Mexico, Utah, and Detroit. The shipping companies deal with temporary storage of parts; only what is needed that day appears at the plant. Cars, each one customer-tailored, are ordered by a network of customers and shipped the minute they are done. Models for the car’s body are rapidly shaped by computer-guided lasers, and fed designs generated by customer response and targeted marketing. A flexible line of robots assemble the cars. Robot repair and improvement is outsourced to a robot company. Acme Plant Maintenance Service keeps the factory sheds going. Phone reception is hired out to a small outfit physically located in San Mateo. The clerical work is handled by a national agency who services all the other groups in the company. Same with computer hardware. The marketing and legal guys each oversee (of course) the marketing and legal services which Upstart also hires out. Bookkeeping is pretty much entirely computerized, but an outside accounting firm, operating from remote terminals, tends to any accounting requests. In total about 100 workers are paid directly by Upstart, and they are organized into small groups with varying benefit plans and pay schedules. As Upstart’s cars soar in popularity, it grows by helping its suppliers grow, negotiating alliances, and sometimes investing in their growth.56 This hypothetical business story reinforces the importance of strategic alliances and the quality and efficiency of communications between the multitude of interdependent groups. In this example, Kelly focuses on the dozen-person headquarters, but what about the branch office? What relationship do other permanent employees who work elsewhere have to the parent company? Brad Wieners and David Pescovitz declare that one-fifth of U.S. workers will telecommute by 2003 (“‘The term telecommuting refers to replacing the conventional commute to work... with telecommunica-
ations’”).57 The telecommuters who need workspace at the home office on a temporary basis practice hoteling, which means that they have no permanent office, but are allowed to store a few necessities in a locker. 22,500 employees of AT&T are already full-time telecommuters, and workplace management experts suggest that the national number will
I predict that telecommuting will become the norm, not the exception. The demands for workplace adaptability (not to mention restrictions on air quality) will drive this transformation. ‘Downsizing’ has already become common as a way for corporations to reduce overhead costs, and workers typically have less and less office space. The branch office may already be doomed; if a majority of branch office employees conduct business on the road, it becomes a huge waste of real estate. Stephen Acker corroborates, stating that “twenty-five percent of assets locked into real estate could be freed with the virtual office.” However, I do not anticipate that the home will serve as a workable office for many people; group interaction and direct client service are too important for business. Instead, a new form of office will emerge to serve an escalating, international population of telecommuters. Franklin D. Becker predicts that “a variety of easily accessed telework centers are likely to function as well as or better than an office.” This ‘telework center’ is the workplace of the future.
If on arriving at Trude I had not read the city's name written in big letters, I would have thought I was landing at the same airport from which I had taken off. The suburbs they drove me through were no different from the others, with the same little greenish and yellowish houses. Following the same signs we swung around the same flower beds in the same squares. The downtown streets displayed goods, packages, signs that had not changed at all. This was the first time I had come to Trude, but I already knew the hotel where I happened to be lodged; I had already heard and spoken my dialogues with the buyers and sellers of hardware; I had ended other days identically, looking through the same goblets at the same swaying navels.
Why come to Trude? I asked myself. And I already wanted to leave.

“You can resume your flight whenever you like,” they said to me, “but you will arrive at another Trude, absolutely the same, detail by detail. The world is covered by a sole Trude which does not begin and does not end. Only the name of the airport changes.”

2L1. GENERIC CITY.

The post-industrial urbanized world has all begun to look very similar. With the mass dissemination of capitalism and the widespread adaptation of similar urban development techniques, regional and geopolitical distinctions have succumbed to the generic. Economic efficiency and comprehensibility are killing cultural specificity and the genius loci. Today, we all live in one city: the international city.

Ironically, this ultra-homogenization has occurred at the same time that tourism has reached an unprecedented level; according to some sources it is the largest industry in the world. Like Italo Calvino’s description of Marco Polo’s perpetual visit to the city of Trude, the international traveler today harbors a slight disappointment. Cities, and especially heavily touristed sites, all seem uncannily similar. This quality is only exacerbated by the exploding tourism industry itself, which sells the same weekend excursions and souvenirs everywhere.

Nowhere is this similarity more evident than in the exurban megalopolis, or the sprawling continuum of transportation corridors, office parks, and suburbs evolving outside of traditional city cores. Manuel Castells describes the familiar image of this post-industrial phenomenon, compared to the picture of the industrial-age city:

There is an image of the nineteenth-century industrial economy, familiar from a hundred history textbooks: the coal mine and its neighboring iron foundry, belching forth black smoke into the sky, and illuminating the night heavens with its lurid red glare. There is a corresponding image for the new economy that has taken its place in the last years of the twentieth century, but it is only just imprinting itself on our consciousness. It consists of a series of low, discreet buildings, usually displaying a certain air of quiet good taste, and set amidst impeccable landscaping in that standard real-estate cliché: a campus-like atmosphere... Scenes like these are now legion on the periphery of virtually every dynamic urban area in the world. They appear so physically similar – outside Cambridge, England or Cambridge, Massachusetts; Mountain View, California or Munich, Germany – that the hapless traveler, dropped by parachute, would hardly guess the identity of the country, let alone the city.12

In his article “Cityscape and Landscape,” Victor Gruen describes four species of cityscape which now prevail over the traditional notion of the city as “an orderly pattern of substantial buildings, avenues, boulevards, filled with hustling people.”63
There is technoscape—an environment shaped nearly exclusively by the apparatus of technology in its respectable and less reputable forms. It is a cityscape dotted with oil wells, refineries, high voltage lines, derricks, chimneys, conveyors, dump heaps, auto cemeteries.

There is transportation—featuring the tinny surfaces of miles of cars on the concrete deserts of highways, freeways, expressways, parking lots, clover leaves, tastefully trimmed with traffic signs, garlands of power lines, and other dangling wire. Transportation also includes vast arid lands of airplane runways and railroad yards.

There is suburbia—in all its manifestations from plush settlements of more or less historic mansions to the parade grounds of the anonymous mass housing industry where dingbats are lined up for inspection. Suburbia with its phonograph, respectability and genuine boredom effectively isolated from the world by traffic jams.

And there is subcityscape—a category covering probably more acreage than all the others combined, a collection of the worst elements of cityscape, technoscape, and transportation—‘the red and green light district of our major cities—the degrading facade of suburbia, the shameful introduction to our cities, the scourge of the metropolis...

Subcityscape consists of elements which cling like leeches to all our roads, accompanying them far out to where there was, once upon a time, something called landscape: subcityscape—consisting of gas stations, shacks, shanties, car lots, posters, billboards, dump heaps, roadside stands, rubbish, dirt, and trash."

Although ‘master planning’ has purportedly been battling this ‘subcityscape’, the realities of the impotence and homogeneity of master planning have only contributed to its growth. The ‘subcityscape’ is connecting all cities, and becoming all cities. In his article titled “The Generic City,” from which this chapter gets its name, Rem Koolhaas addresses the homogenization of cities, asking “Is the contemporary city like the contemporary airport – ‘all the same’? Is it possible to theorize this convergence? And if so, to what ultimate configuration is it aspiring?” Despite the fact that urban design as a profession has dissolved, cities have become ruthlessly standardized. The developer and city planner live and breathe the same economic language, which subsequently gives form to the same physical language. Ironically, however, this similarity exists despite the fact that no individual, developer or planner or politician, has total control over urban evolutionary processes. Thus, the challenge of urban design today is not to establish a ‘universal language’ which would accommodate similar global technologies and lifestyles, but to generate
dissimilarities and disjunctions in the megalopolitan field, based on some remaining hint of cultural or geographical difference. Koolhaas declares, however, that “The Generic City presents the final death of planning. Why? Not because it is not planned — in fact, huge complementary universes of bureaucrats and developers funnel unimaginable flows of energy and money into its completion; for the same money, its plains can be fertilized by diamonds, its mud fields paved in gold bricks... But its most dangerous and most exhilarating discovery is that planning makes no difference whatsoever.” His point is further justified in this description:

Buildings may be placed well (a tower near a metro station) or badly (whole centers miles away from any road). They flourish/perish unpredictably. Networks become over-stretched, age, rot, become obsolescent; populations double, triple, quadruple, suddenly disappear. The surface of the city explodes, the economy accelerates, slows down, bursts, collapses. Like ancient mothers that still nourish titanic embryos, whole cities are built on colonial infrastructures of which the oppressors took the blueprints back home. Nobody knows where, how, since when the sewers run, the exact location of the telephone lines, what the reason was for the position of the center, where monumental axes end. All it proves is that there are infinite hidden margins, colossal reservoirs of slack, a perpetual, organic process of adjustment, standards, behavior; expectations change with the biological intelligence of the most alert animal. In this apotheosis of multiple choice it will never be possible again to reconstruct cause and effect. They work — that is all.”
2L2. THE VILLE RADIEUSE LEGACY.

Le Corbusier would find it ironic, if not horrifying, that the piecemeal, organic, and uncontrolled processes of urban development which he so loathed are carrying out many of his design principles—and his architectural imagery—today. Our contemporary city closely resembles his, with glass office towers and high-rise housing blocks set amid grass fields with curvilinear paths, but without the order and urban focus that he desired. Le Corbusier established a precedent for the war against the dark, overcrowded, and unsanitary fabric of the pre-industrial city, which he believed could be swept clean by the heavy hand of the ‘elite’ master planner, who would instead provide new offices and residences with light, air, and greenery for an enlightened society. According to Robert Fishman, Le Corbusier simply “did not believe in piecemeal planning,” and felt that “the planner needed open spaces in which he was free to create his own urban order. He must be master of the whole environment. ‘Nothing can be undertaken properly without a view of the whole.’ ...Only then could a collective order—beautiful and efficient, ‘worthy of the age’—emerge.”

We are now all too familiar with the critique of his Plan Voisin and Ville Radieuse, which bear responsibility for countless urban disasters executed in their spirit. Jane Jacobs’ bitter rejection of Le Corbusier’s “urban surgery” still resonates within the design profession: “His neatly arranged skyscrapers in the park,” she argues, “are a terrible oversimplification of urban order. Their rigid separation of functions makes a true diversity impossible; their inhuman scale and vast empty spaces kill off the close-knit vitality of an attractive city.” To Le Corbusier’s defense, he is taking blame for many failed works executed by far less skillful architects, with far less ability to understand ‘the whole’. Ultimately, however, his plans for the city of tomorrow are merely diagrams carrying a radical message, which have proven disastrous in the wrong hands. Jacobs’ response to the projects inspired by Le Corbusier’s vision is an inversion of his original polemic: “the high-rise housing projects and business districts are the dying ‘unsanitary islands’ of the modern city, and the dense, complex districts that Le Corbusier wanted to level are the true sources of urban health.”

Why, then, are we still carrying out his schemes today? Perhaps he had strong intuitions about the form that the future city would comfortably assume. After all, he was pursuing the next zeitgeist, and embracing the technological and social change that would inform it. Ironically, we are still captivated by the ambitions and forms which characterize his schemes, which are naturally of his time—not ours. The world has seen considerable change since the 1920’s, and is influenced by an entirely new set of technological phenomena and sociopolitical conditions. Thus, it would seem logical that we try to make sense of our time, and to project new schemes (with hopefully fewer harmful effects) accordingly.

2L3. THE RADIANT CITY IN JAPAN.

Japanese city planners love the Radiant City because they can identify with its original intentions. To the Westerner, the typical Japanese city is a congested, chaotic mess which has evolved in true piecemeal fashion. City planning is actually an incredibly young profession in Japan; codes and ordinances were first implemented in most cities only a few years ago. With the incredible density and frenetic sprawl that characterize the Japanese urban experience, it is no wonder that Corbusian notions of order and ‘light, air, and greenery’ have had a tremendous influence.

Within the last decade, the Japanese industrial archipelago has become a kind of experimental test site for Western-style master planning. The vast land reclamation developments in the ports of major cities are obviously flat (a rare luxury in Japan), possess an appropriate scale, and have been provided with well-planned infrastructure, including networks of broad, rectilinear avenues – qualities which are conducive for (if not suggestive of) Utopian visions à la Le Corbusier. Existing industries and container yards have been incrementally replaced by new offices, apartments, and commercial and entertainment facilities. These new developments hardly resemble Japanese cities at all. In fact, the Japanese consider the artificial islands and people who live and work there to be foreign.

In Tokyo’s ‘Teleport Town’, which I mentioned earlier, one is struck by the diverse collection of office and residential high-rises set within a wide, grassy plain. A new monorail and suspension bridge provide easy commuter service to the island, which is often visited as a theme park attraction by incredulous Japanese. Even to a Western
visitor, the ample spaces which separate the isolated structures appear empty and desolate; the entire scene is like a variation on a De Chirico painting. Nothing, in fact, could seem less Japanese, yet this kind of urban vision is embraced like so many other Western influences.

Port Island and Rokko Island (named after Rokko Mountain, from which landfill was removed to build it) in Kobe were designed to have a diversity of functions from the outset. They closely resemble variations on the Plan Voisin and Ville Radieuse, with central office towers separated by a grand plaza, surrounded by residential high-rises and schools in well-landscaped yards, which in turn are surrounded by a continuous green belt. Outside of the green belt, at the perimeter of the islands, are working factories and container terminals, which can be heard clanking away from a safe distance. For any student familiar with urban design and planning, these islands represent astonishing manifestations of Howard’s Garden City as well as Le Corbusier’s City of Tomorrow. Naturally, it is no less astonishing to know that they are built on artificial islands. They may in fact be the closest realizations of Utopia that we have seen.

Considering the population crunch and scarcity of land in Japan, what practical sense is there in emulating models of ideal Western cities, which seem strangely inappropriate in that context? Albert Pope made the wise suggestion that the artificial islands could support much higher levels of density, given the ample open spaces provided by the sea, and that much-needed pockets of space could be created retroactively within the congested fabric of the mainland. In any event, the Japanese might profit more by continuing to develop cities their way, based on the piecemeal, ‘organic’ evolution of infrastructures within confined spaces. Despite the fact that many consider the results of this kind of growth ugly or haphazard, as Yoshinobu Ashihara states in his book The Hidden Order, the bottom line is that the Japanese city works: “The [Japanese] townscape built for shade and cool breezes has an ambiguity not found in the West, but it is endowed with a warmth and friendliness all its own. The crowded conditions and diverse architectural styles that coexist in Japanese cities may not be very attractive in form, but in content they embrace a certain hidden order. It is that hidden order that makes possible the vitality and prosperity of our cities today.”71

2L4. AGENTS OF TRANSFORMATION AND THE “DEATH” OF URBANISM.

Beginning with the formal establishment of their movement at the World Design Conference in Tokyo in 1960, the Metabolists declared an allegiance to the uniquely organic Japanese city and its complex evolutionary processes. With an optimistic fervor, they sought to develop a new language for architectural and urban design which would be sensitive to the changeability of space and function, as opposed to previous notions of fixed form and function.²² The projects that the architects Kiyonori Kikutake, Fumihiko Maki, Masato Otaka, Kisho Kurokawa, and others developed were concerned with alleviating problems of urban congestion, meanwhile embracing futuristic visions of cities with moving and interchangeable parts, similar to the work of the contemporary Archigram Group in London. Unlike the members of Archigram, who were more theoretically oriented and stood in opposition to the establishment, the Metabolists promoted the established design and building professions in Japan, and sought to work with the increasingly eager and capable construction companies to realize their designs.²³ Many of the projects, such as Kikutake’s Floating City (1960) and Kenzo Tange’s Tokyo Plan (1960), involved urban-scale megastructures built above the sea or on artificial land in order to ameliorate worsening urban conditions.

Toward the end of the decade, the Metabolist movement came to a close, as a new generation of Japanese architects turned their backs on mega-scale urban complexes, instead focusing on smaller, contextually-sensitive projects. The Metabolists had planted the fertile seed of heroic urban pragmatism, however, which has continued to influence the imaginations of Japanese city planners and developers in subsequent decades. Nevertheless, the so-called death of urbanism (which was, by all accounts, a global event) has led to the complete abandonment of urban design, at a time when cities could benefit most from it.

What caused this death? On one hand, once optimistic planners and architects were involved in too many failed projects in the latter part of the twentieth century which left blighted or malfunctioning urban landscapes, resulting in the notoriety of Modernism. On another hand, the proponents of urban design discovered the countless social, political, and economic forces that shape cities in a fundamental way to be hopelessly beyond their grasp. Rem Koolhaas highlights this paradox: “Only 25 years ago architects were shamelessly projecting new cities. Now they...”
invest the same amount of energy in regretting the disappearance of the existing city. The profession that once thought of itself as shaping the world no longer truly believes it has anything to add." Thus, in an act of humiliating acquiescence, advocates of the ‘vernacular’ and the historic in architecture gave in to mediocrity and led the design profession down the luddite path we now call Postmodernism. In retrospect, however, if the International Style suggested a frightening world of homogenization and sterility, devoid of regional and cultural differences, Postmodernism only succeeded in exacerbating the situation by thematizing the past, thus emptying culture of its significance and transforming the world into a global Disneyland. What is more, Postmodernism is completely unreal. Not only is its imagery escapist, but at an operational level it completely ignores the technological advances and lifestyle transformations of our time. Thus, if Modernism resulted in a fight, then Postmodernism only led to flight. And, like the collapse of the artificially inflated bubble economy it fed, the empty age of design which Charles Jencks christened has reached its own end. We have learned our lesson well, and now know that the answer lies somewhere between the global and the regional, the heroic and the ordinary, the machine and the shed.

2L5. NAGOYA'S NEW CITY.

As I mentioned earlier, the Aichi Expo 2005 will bring many changes to Greater Nagoya. A new international airport, a new shinkansen railway, new local railways, a new urban expressway connected by three large suspension cable bridges, and new bus systems will provide transportation to all the events. General improvements have been planned for sites throughout the city, but the port will experience the greatest transformation.

In 1987, the Nagoya Port Authority drafted a thirty-year long-range plan, highlighting three major goals: "(1) Increased promotion of international trade and upgrading of distribution facilities; (2) Helping the Nagoya Region further develop as a major center for sophisticated technology and industry; (3) Continued waterfront development to make the port a more attractive area to the public." The potentially contradictory nature of these goals raises a question: how does can a city grow and shrink its port simultaneously? In other words, how can Nagoya increase the prowess and sophistication of the trade and production facilities in its port, yet introduce new attractions for public enjoyment at the same time? The answer probably lies in the fact that the Japanese possess an uncanny ability to resolve and mediate conflict.
Central to the plan is "a trade and distribution center and a maritime business and administrative headquarters all within a giant complex." This complex is to be constructed on Kinjo Pier, the island located at the heart of the port which I mentioned earlier. Not surprisingly, this complex will be located at a major new interchange, which will unite a local route with an international corridor. It would seem desirable, then, that such an interchange be provided with a diversity of functions and activities, conflicting or not. In fact, great potential exists in the juxtaposition of new work/live activities with existing industrial ones. The form that these functions will take, however, remains to be seen.

Kinjo Pier Future Development Map (1997) - future projects are shown on the right.
2M1. **MOBILITY VS. PROXIMITY.**

Generally speaking, the more developed man's technologies have become, the more open and distributed his cities have become. Advances in transportation and communications technologies have led to increased sophistication in the networks that carry them; as with the simultaneous development of the steam engine and the iron frame, the *vehicle* and the *vessel* have evolved in parallel. This increased sophistication of networks has had a major spatial impact on cities. Take, for example, a cloverleaf expressway interchange compared with its simple 'crossroads' predecessor, or the international airport compared to the original landing strip. The increased spatial demands and idiosyncrasies of the *vessel* have developed with the increased speed, endurance, and capacity of the *vehicle*. These transformations have stretched and extended cities far beyond their original limits. (Communications technologies obviously have different spatial demands, but like transportation technologies, they have been developed to eradicate distance and make more efficient use of time.)

As our cities become thinner, and our travel (physical or virtual) more fluid, destinations become all the more important. Today we hunger for meaning and substance ("57 channels and nothing on"), and physical proximity has likewise become increasingly important. Contrary to what some have said, the spectacle has not died, but instead has expanded its influence. It would otherwise be difficult to explain the record numbers of attendants at movie theaters, concert halls, sports stadia, and conference centers, as well as the increasing capacities of the venues themselves. Technology has *not* replaced the spectacle; it has instead informed us about it, allowed us to get to it more quickly, enhanced our enjoyment of it, and preserved a record of it for our continued satisfaction. If anything, *technology is pushing the limits of the spectacular*, bombarding us with more information, greater speeds, and more opportunities for collective interaction than ever before. As a result, urban populations are increasing, and the influence of the megalopolis is broadening.

We are left with a strange quandary. Quantity is making us starve for quality. The forces of capitalism, in fact, would like us to mistake the former for the latter. Increased desire has led to accelerated satisfaction. Suspense is intolerable (whatever happened to foreplay?). We now crave more *things*, more *opportunities* for interaction, and more mood-enhancing *experiences*, with far less patience to wait for them. Desire has exploded our trade and communica-
tions networks, bringing us ‘just-in-time’ manufacturing, satellite teleconferencing with no perceptible delay, and relatively affordable supersonic flights. We simply want more of each other and the products we create, more often, and within a shorter time frame. The paradox, then, is that the city is expanding and contracting simultaneously. I'm not suggesting that traditional city centers are all becoming more dense; in many cases, other ‘centers’ have developed to replace or complement them. What I am saying is that mobility and proximity have increased in importance simultaneously, and that the two are intimately related. Thus, the centrifugal and centripetal forces of civilization are expanding at equal and opposite rates, leading to a condition of greater instability.

2M2. THE PROBLEM OF QUANTITY.

Technology is indeed a two-faced animal; one side offers delicious promises of speed and freedom (Futurism), and the other gives us alienation and instability (“All that is solid melts into air...”). Technology feeds on itself, giving us more speed, more tools, and more opportunities, more and more often; hence, the problem of quantity. The spatial consequences of quantity are obvious. Today, networks are broader, buffer zones are wider, and areas allocated for temporary storage (parking lots, container yards) are larger than ever before. How, then, will our cities meet our demands for accessibility as they expand further away from us? Furthermore, how can cities (and technologies) become more comprehensible and easier to use while they grow more complex? We can only answer these questions if we understand the interdependencies between mobility and proximity, and project means for their successful physical implementation.

As a result of the spatial consequences of quantity, the sprawling, uncontrollable megalopolis that we call the post-industrial city is an atomized, fragmented, and incomprehensible organism. Peter Papademetriou offers this explanation of Houston: “Characteristic of the new city are the dynamics of growth, change, and an expanded scale of space and time. Houston as a totality is demanding because its very boundaries exist at a dimension greater than simple human experience.”77 One is reminded of Roger Caillois’ “psychasthenic” subject, who feels engulfed by space, unable to discern his/her place within it, and therefore cannot distinguish between the limits of his/her body and of space. With regard to this disabling agoraphobia, we have no choice but to address the new city on its own terms. Papademetriou says that “in the spread-out environment of relatively low density which the evolving city has become, the nature of these patterns of association demands an expansion of personal consciousness.”78

77 Papademetriou, Peter Houston an Architectural Guide American Institute of Architects, 1972: p 1
78 Ibid, p 2
The new city poses a number of challenges to architects. Developments are characteristically greater in scale, with a higher level of complexity, than ever before. Furthermore, time-frames for project execution are shorter than ever before. Architects, who are by nature at odds with the notion of quantity, have had a pathetically minimal role in shaping the new city. It is instead the territory of the developer, the bureaucrat, and the engineer. The results are, as one can easily see, mediocre at best.

The post-industrial city is home to a new type of building. It is structurally simple, largely prefabricated, inexpensive, and relatively flexible. More importantly, it is big. In a lecture made at Rice University in 1991, Rem Koolhaas observed the following:

*In a building beyond a certain size, the scale becomes so enormous and the distance between center and perimeter, or core and skin, becomes so vast that the exterior can no longer hope to make any precise disclosure about the interior. In other words, the humanist relationship between exterior and interior, based upon an expectation that the exterior will make certain disclosures and revelations about the interior, is broken. The two become completely autonomous, separate projects, to be pursued independently, with no apparent connection.*

The second characteristic of this new, mutant scale of architecture if the fact that within such a building, the distances between one component and another, between one programmatic entity and another, also become so enormous that there is an autonomy of independence of spatial elements. 19

A year later, in his investigation of the port of Yokohama in 1992, Koolhaas wrote, “At Minato Mirai we saw the emergence of a particular building typology, one we will soon have to recognize as the dominant typology: a completely inarticulate container with no architectural pretensions, whose only purpose is to accommodate certain processes or offices, and which simply represents a massive quantity of square meters imposed on an urban site without any more positive contribution.” 20 This is precisely the new typology I have been addressing. With few differences, it is the same throughout the world. The circumstances for development in new enterprise zones such as Minato Mirai are conducive for this type of building: it is fast, cheap, and easy.

In his evaluation of the Alliance Development north of Fort Worth, where this typology is ubiquitous, Mark Wamble posits that “it is possible to think of a building as having an interior without an exterior.” He uses the electronic/biological metaphor of “the circuit and the cell” to describe a new territory of architectural potential, in which one could conceptualize “a vast interior landscape of cells according to the circuitry of an even larger field of activity.” This metaphor proposes a rethinking of Hilberseimer’s cell within a condition of interiority. The resulting strategy is “to develop the cells – each extra-small by comparison to the overall structure – without an imageable relationship to the whole... the objective [is] to develop the relationship between the cellular disposition of the interior as a work environment, and the operative circuitry of its global terrain.” Such an approach necessitates the ability to comprehend a multiplicity of scales within the spatiotemporal framework of the enterprise zone – a true challenge for the average architect.

2M3. PREEMINENCE OF THE DECORATED SHED.

In the latter half of the twentieth century, architects have become trapped in the ‘decorated shed’ problem. Coined by Robert Venturi and Denise Scott-Brown in 1971, the term refers to a condition “where systems of space and structure are directly at the service of program, and ornament is applied independently of them.” This definition is vague enough to include most buildings; however, it is a familiar term which applies to a very familiar building type. The decorated shed actually reaches far back in history: the Parthenon, Pantheon, and Chartres Cathedral all fit the mold (these buildings, however, are also ‘ducks’ by the Venturi definition). Today, it is most clearly represented by the sea of cheap commercial and industrial buildings that surround us. The buildings that occupy the enterprise zone—the same buildings in Gruen’s new urban landscapes—are decorated sheds.

The problem with the decorated shed is not that it exists; the justifications for its widespread use are all too clear. The problem is that as architects have become less involved with the space, structure, and program of a building, they have focused primarily on the ornament. In our time of widespread standardization and unquestioning pragmatism, the program, siting, massing, structure, and general floor layout for a building are already decided by the
time an architect is hired to finesse the details of the curtain wall. Realizing the limitations of the architect, Cesar Pelli has become a champion of the skin. Herzog and De Meuron have followed in due course. In the day of the triumph of the corporate logo, it has become all too tempting to leave one’s stamp on the box, without much consideration for what happens inside it. And, as building development processes become more complex, increasingly specialized, and faster paced, architects are hard-pressed to keep up, applying their talents solely to the creation of an image, which is manifest in a thinner and thinner envelope.

I am not suggesting that the wrapper is inconsequential; it is unfortunately only too rare that the envelope of a building be truly beautiful. However, _substance is more important than skin_. In their 1971 treatise on “ugly and ordinary” architecture, Venturi and Scott-Brown distinguished between “urban sprawl” and the “megastructure”, which they presumed to be opposites. As Koolhaas and Wamble have said more recently, however, a new type of building has emerged which is so massive in scale that the exterior has little or nothing to do with the interior. Today, urban sprawl and the megastructure have collided. _They are now one and the same._

It is therefore time for architects to face this new typology head on. It is time for architects to grapple with the new processes of development and the forces which have brought this typology into existence. It is time for architects to reinsert themselves into this process, so that they can be part of the collaborative journey of development, instead of providing an irrelevant service at the end. Scenario planning, programming, site selection and operational structuring are all conceptual, non-image related activities which are imperative to the development of innovative, well-functioning spaces. In order for the endeavor of architecture to relate to the new zeitgeist, it must put the substance of _operational processes_ before the image, and allow such processes to generate the image. This strategy is easily defensible, because it simply makes sense. Thus, like Venturi, I would argue that it is important for architects to be aware of the realities of the developmental processes which shape our built environment. Unlike Venturi, however, I believe in the role of architect as _innovator_; one who is not bound up in the trivialities of image-making based on outdated ‘styles,’ but who instead leads the search to comprehend, and give new form to, the megalopolitan order.
2M4. **DEAD SPACE.**

The economic organization of visits to different places is already in itself the guarantee of their equivalence. The same modernization that removed time from the voyage also removed from it the reality of space.⁸⁵

In her appraisal of the Japanese train station, Sandra Buckley says that “commuter space and commuter movement through that space are generally assumed to be conservative and unproductive, a matter of uninflated movement, an unremarkable space. Dead time, vacuous space.”⁸⁷ As most travelers are aware, this description could be applied to the common transportation terminal typology everywhere. A vast, unconscionable complex comprised of endless, homogeneous corridors lined with fast food chains, pay phones, newsstands, and rest rooms (the necessities of existence?), the ubiquitous modern terminal is utterly predictable, and, therefore, utterly banal. It is a microcosm of the new city which it has spawned, “built on economics rather than ethnicity, on convenience more than culture.”⁸⁸

Understandably, airports and train stations are planned to promote organized, efficient flows of vehicles, people, and goods. But given the massive scale and homogeneity of such terminals, architects should acknowledge the reason for their existence—the traveler—and establish a new spatial legibility, derived from the specific, idiosyncratic traits of the various circulation systems themselves, and a re-articulation of the module as the elemental basis for conception. Martha Rosler writes that the airport “is not organized as a signifying space that creates a public any more than the aeroplane itself is—unless we accept the message of the plane and the terminal equally to be human docility, homogeneity, replaceability, transitoriness.”⁸⁹ The challenge in creating significant space, then, is to emphasize the qualities of the terminal that make it a destination, as well as a place of transit. Unfortunately, because our places of travel are generally not unique, differentiated, and empowering, “the more desperately we seek the unfamiliar, the more familiar it all becomes.”⁹⁰

---

⁸⁷Spiegler Marc, *Planes of Evidence* in Metropolis July-August ‘95, p. 16.
2M5. **DEFUNCT STRATEGIES.**

Preliminary schemes for the transformation of Kinjo Pier in Nagoya Port are unimaginative. Watercolor washes depict glass office towers surrounded by empty plazas and grass fields. These images could easily be mistaken for Greenway Plaza in Houston, or any other Western office park of the latter half of the twentieth century. Given the incredible potential for a conflation of various programs on the site, one wonders why Nagoya city planners choose to embrace outdated Western planning models which separate different functions along rigid proprietary lines, effectively killing off urbanism. The existing modern Japanese city, with its frenetic, variegated landscape is actually a much better model for urbanism; however, the Japanese see potential for a new city which is more organized and less congested.

Nevertheless, the corporate Ville Radieuse model is hardly appropriate. While it would provide a greater sense of legibility and more breathing space than the Japanese are used to, it would ultimately hinder the goal of creating a more sophisticated and integrated port. New plans should highlight *connectivity, centrality* (in terms of physical hubs or interchanges), and *engagement*; factors which characterize existing Japanese cities and which have played an important part in the success of the modern Japanese economy. Naturally, the new cities built on reclaimed land would need to acknowledge the spatial demands and organizational requirements of new transportation technologies and work/live strategies; however, 'new' need not imply 'Western.' I would challenge Japanese architects and planners to envision a new city which is distinctly Japanese; one which maintains the qualities that function well in existing Japanese cities, while adapting to meet new needs.
THE FOURTH SKIN.

Current conceptualizations of the internet and digital cities are pure and metaphorical. Like the first, widely popular GUI distributed by Apple in the form of the Macintosh computer, which used virtual representations of physical tools and organizational systems we are all familiar with – desktops, file folders, paintbrushes, erasers, etc. – the world wide web is often portrayed as a virtual representation of a city, in which networks are roads, and bandwidth is prime real estate. The companies, institutions, and individuals that maintain homepages frequently use urban metaphors, such as the chat room or forum, the market or shopping mall, the newsstand or library, the CBD or financial center, and even the red light district. The appropriation of physical metaphors allows the electronic world to become more understandable and accessible. It is odd that in the spaceless world of digital communications, we feel the strong urge to apply spatial attributes. However, the physical world is obviously our first realm of experience, and will always remain so.

Today, reality is seen in opposition to virtuality; the strong duality between the world of atoms and the world of bits simply strengthens the notion that cyberspace is a surrogate for space. In the future, however, this strong distinction will fade, as molecular and digital worlds coalesce and hybridize. As we see the internet assuming the shape of the city, we will also see the inverse occur. Currently, however, the personal computer is an incredibly limited threshold between the two worlds, endowed in most cases with one-way access (you see the world wide web but it does not see you). Educated as an architect, Nicholas Negroponte says, “I have found many valuable concepts of architecture feed directly into computer design, but so far very little in the reverse, aside from populating our environment with smarter devices, in or behind the scenes. Thinking of buildings as enormous electromechanical devices has so far yielded few inspired applications.”

He suggests that “buildings of the future will be like the backplanes of computers: ‘smart ready’ (a term coined by the AMP Corporation for their Smart House program). Smart–ready is a combination of prewiring and ubiquitous connectors for (future) signal sharing among appliances.” I would add that buildings of the future will also take on qualities of the frontplanes of computers, projecting virtual space into physical space with large video displays and holographic imaging technologies. In any case, the concept of the interface will expand and become more complex. What is now confined to the realm of the laptop will one day be manifest in the body, clothing, and architecture. A fourth skin will penetrate the first three.

In *City of Bits*, William Mitchell says that “Rooms and buildings will henceforth be seen as sites where bits meet the body – where digital information is translated into visual, auditory, tactile, or otherwise perceptible form, and, conversely, where bodily actions are sensed and converted into digital information.” At first, buildings will simply be wired for power and communications, but eventually “keyboards and mouse pads will cease to be the only bit-collection zones; sensors will be everywhere. Displays and effectors will multiply. In the end, buildings will become computer interfaces and computer interfaces will become buildings.” Mitchell goes on to suggest the future role of architects:

Architects of the twenty-first century will still shape, arrange, and connect spaces (both real and virtual) to satisfy human needs. They will still care about the qualities of visual and ambient environments. They will still seek commodity, firmness, and delight. But commodity will be as much a matter of software functions and interface design as it is of floor plans and construction materials. Firmness will entail not only the physical integrity of structural systems, but also the logical integrity of computer systems. And delight? Delight will have unimagined new dimensions.

**TRAUMA OF THE NEW INTERIOR.**

When the horizon disappears, what then appears is the horizon of disappearance. (Dietmar Kamper)

Like the internet, the new mega-scale building typology which is ubiquitous in the post-industrial age has been fertile territory for the implementation of urban metaphors. This phenomenon can be found in the shopping mall which assumes the form of a city arcade, or in the office building atrium which attempts to be an urban piazza. As we become engulfed by an increasingly large building envelope, it would seem that the clumsy appropriation of traditional urban spaces in this new interior has sufficed to keep us oriented and to make us believe that no transformation has actually occurred. In this way, we disguise the new with the mask of the old, most likely in order to maintain sanity in the wake of accelerated change. Thus, we live in Ito’s ‘Simulated City,’ and confront Baudrillard’s ‘Death of Reality.’

---

94 Ibid. p 105
95 Ibid. p. 105
Former distinctions between public and private typologies have dissolved. As privatized space reigns supreme, it has coopted the formal language of public space, leaving its important sociopolitical dimensions behind. The post-industrial megastructure actually houses, and therefore represents, the new company town. Nortel’s recently completed 400,000 square foot corporate headquarters outside of Toronto is laid out like a city, with ‘public spaces’, streets, and neighborhoods. HOK devised the concept because they desired to subdivide the vast space and “wanted to infuse this workplace with the richness of city life.”  

To their credit, HOK’s design has largely been a success for Nortel employees who feared a sea of cubicles instead. However, I feel that the project is least successful where it strains to mimic some idealized gestalt of the traditional city: “the architectural vocabulary is limited; it all has a cleanly coordinated look, much as the elements of a mall or airport look alike regardless of their function. Colors are harmonized, calm tones and textures blend together—and, naturally... everything is the same age. And with virtually all the structures being of consistent heights, a distinctly nonurban uniformity prevails.” In the design for a 515,000 square foot New York Times printing plant (1997) in Queens, Polshek and Partners and Parsons Main, Inc. led a workshop “in which they constructed model toy cities as an exercise in team building.” The exercise resulted in the design of a colorful interior ‘urban’ environment which incorporated “a yellow metal gatehouse, a plaza paved with a crossword puzzle, a red canopy, yellow filter boxes, and a blue metal wall on the north end of the building to enliven the plant,” among other things.

In the article “Globalization and the New Interior,” Mark Wambe describes the relationship of the new interior to geography, claiming that the middle ground of the city has lost its role as a mediating device. The gestalt of the city has forever changed, and as a result, the traditional building façade has also lost its role as a mediator. The resulting trauma evoked by the inability to read the city therefore results in the fabrication of such simulations, so that the inhabitant of the new interior may quickly comprehend a high level of information based on intuitive responses. This trauma reinforces the importance of the terms of engagement to architecture. Currently, these terms are often met with design solutions which only mimic old forms, rather than projecting new ones which relate to the complete change in circumstances.

---

97 Speigel, Mark. “Company Town” in Metropolis p. 72. 
99 Wambcd, Mark. “Globalization and the New Interior” Quotients
DEATH OF THE FAÇADE.

As the ‘trauma of the new interior’ would suggest, the façade is no longer a predominant issue of architectural concern. The decorated shed has become irrelevant; the mechanisms and operations of the interior take precedence. The traditional, institutional models for architecture (best represented by Ledoux’s or Rossi’s typologies) have broken down in the wake of this globalized interior. As geopolitical boundaries become irrelevant, our former monuments and symbols of power are questioned. With mass distribution of digital networks, the very idea of a building-as-object representing a particular function is dead. Where, for example, is the library now ‘housed’ when the internet is one giant card-catalog for an ever-increasing world of digital information? Where is the stock market located if not within every Bloomberg Box in every airport lounge in the world? Where is the university or office or hospital embodied, if not in the remote-access tools used by the telecommuting student, employee, or doctor? I am not suggesting with these examples that architecture has become irrelevant; nothing could be further from the truth. However, our comfortable notion that the skin of a building conveys a particular symbolic, functional representation is outmoded. William Mitchell corroborates:

At an urban scale, [buildings] make vivid social distinctions by creating readily identifiable, physically discrete domains. But categories lose their clarity, and rites of passage require redefinition, when the uses of built space are no longer permanently assigned and depend from minute to minute on software and the fleeting flow of bits.

Thus there will be profound ideological significance in the architectural recombinations that follow from electronic dissolution of traditional building types and of spatial and temporal patterns… [a transformation which will] alter the basic fabric of our lives.101

Today, architects’ perpetual assertion of the façade as the predominant design issue is a failure. While the skin of a building is obviously important, the mechanics of the interior take precedence. Yet, architects fail to recognize this issue, and continue to design shells which are later filled with generic, poorly functioning spaces. With the advent of the interior city, we are spending more time indoors than ever before. Yet architects largely concentrate on aspects of a building which are further and further removed from our realm of experience. The job of many

architects is now reduced to placing the corporate logo on the side of a tilt-up concrete box facing the highway, to be viewed only by the passing commuter. Meanwhile, our experience of the new interior is one of sheer ennui; without the understanding and enhancement of operational diversity and complexity, as well as the various potential innovative and legible forms which these qualities inspire, the interior will remain a vast, homogeneous wasteland. We live in an age of recombinant architecture. This architecture must be designed from the inside.

ZERO-DEGREE ARCHITECTURE.

In his assessment of the Western office building, Rem Koolhaas says that “Typical Plan is an American invention. It is zero-degree architecture, architecture stripped of all traces of uniqueness and specificity. It belongs to the New World.” Indeed, the ubiquitous workplace today is defined by its very lack of character; with its empty grid of columns, carpet and ceiling tiles, and fluorescent light fixtures. Typical Plan, the product of SOM, Mies, and Raymond Hood, was the ultimate triumph of flexibility, but also the “End of Architectural History.” for if all plans are ruthlessly indeterminate, then what exists is an ‘architecture without qualities’. Koolhaas says that “Typical Plan is as empty as possible: a floor, a core, a perimeter, and a minimum of columns. All other architecture is about inclusion and accommodation, incident and event; Typical Plan is about exclusion, evacuation, non-event.” Because of its relentless enabling, Typical Plan has produced the Trauma of the New Interior. Koolhaas says, “Suddenly, the graph blamed the graph paper for its lack of character. It was as if Typical Plan created the castrated white-collar caricature, suppressed family photos, frowned on the fern, resisted the personal debris that now – 20 years later – makes most offices ghastly repositories of individual trophies, packed with alarming assertions of millions of individual mini-ecologies. An environment that demanded nothing and gave everything was suddenly seen as an infernal machine for stripping identity.”

What, then, is the antidote to Typical Plan? What architectural affirmations of diversity and identity can stand up to the unforgiving efficiency of The Grid? Who can advocate friction and contamination in an utterly smooth, antiseptic interior world? The best answer lies in the re-examination of the operations of this interior. Typical Plan does, after all, possess some specificity, in the form of The Core:

103Wu, p. 336
104Koolhaas, p. 344
105Koolhaas, p. 346
“Ingenious architectural arrangements of miniature, very understandable labyrinths organize the traffic between the exalted and impure zones of Typical Plan. These spaces – restrooms, urinals, pantries, service stairs, trucking bays – are the sanctuaries for all those primitive aspects upon whose exclusion the correct unfolding of business depends.”

Of course, Koolhaas is being ironic here. Business could not take place without The Core; the elevator has in fact supplied the possibility for the existence of Typical Plan.

As the metropolis gives way to the megalopolis, however, we see the skyscraper tilted on its side. The ‘new interior’ I have been describing is, in fact, a horizontal one, defined by the sprawling perimeter of the mall, the airport, the factory-turned-office, the warehouse-turned-domicile, or the ‘big box’ superstore. This transformation in typology has opened up new possibilities for architecture. What other means for movement, then, or other occupational necessities exist in the ‘horizontal skyscraper’? This new building evolved according to mobility considerations. Even the elevator, with its relatively unlimited vertical flexibility, cannot compete with the Free Section. It would stand to reason that the mass movement of people, vehicles, and goods occurs most efficiently on the ground; hence the relocation of downtown offices to suburban office parks – not only is land cheaper, but so is the construction. What would otherwise seem a subsequent step in the complete homogenization of our physical environment, however, promises new potential for architecture. For where the section is reintroduced, so is the promenade.

Because of its particular formal disposition and vast size, the horizontal skyscraper relates directly to the automobile, where the tall building did not. This is a crucial factor, for the speed and directional capabilities of the car defy the grid. Cloverleaf interchanges and curvilinear, suburban road networks attest to this fact. To many, the freedom of movement that the automobile represents is synonymous with the escape from the inner city grid. The road can follow the irregular flows of natural terrain, and is not confined to the regimented control of the bidirectional grid. In what way, then, will the automobile reshape architecture? As the car is internalized, the horizontal skyscraper will utilize two systems of formal organization: the grid, and the roadway. One system is rectilinear and generic, while the other is curvilinear and idiosyncratic. Both systems are inherently repetitive, but the space in which they commingle is specialized, and offers great architectural potential. This space harbors the friction and contamination which is necessary for diversity and identity. This space is our architectural horizon.
This new world seemed to force upon us an entirely new – or at least different – type of geometry... that first broke with the conveniences and classical pieties of homogeneous, linear, or isotropic space; these were the protogeometries of a new, still-premature form of reason, one predicated on causality, deformability, creative diversification, and active variability. Though it took nearly another century to reach a threshold, the crisis of geometry and reason finally arrived.107

THE WORKPLACE REVISITED.

Despite the new potentials that the horizontal megastructure affords, quantity is still quantity. Architects fight a common battle against quantity, trying to subdivide it, qualify it, color it, and differentiate it. This battle is waged in the interest of the agoraphobic, post-industrial nomad, who has lost his/her sense of place relative to quantity. In the workplace, this phenomenon is best perceived by the familiar field of identical cubicles which stretch to the horizon of the office floor. As the office floor expands, the field likewise expands, with no differentiation or relief for the occupant.

However, there is a counter-balancing device to this field: the entryway. The corporate entryway (or atrium, lobby, foyer, etc.) serves to establish a mediating space between public and private activities. In the corporate world, this semi-public space which acts as a reception area is as predictable as the offices it serves. It establishes a front door to the world, through which access and movement can be easily monitored and controlled. It is the new façade. The entryway presents the best public face of a company or organization, and is therefore afforded the most design attention (a strategy also found in the suburban house). Predictably, while the entryway is often endowed with luxury, the office space is treated economically; a phenomenon which I call the ‘back burner’ effect. Ironically, the important operations of the company take place in the zone with the least architectural investment. An equivalent strategy would be to disguise a mediocre engine with a fancy car body, or to apply makeup to a sickly person. As I have said before, it is not that appearances are unimportant, but a healthy appearance should radiate from a healthy body, just as a beautiful car should have a well-built engine, and a masterful work of architecture should possess a well-designed interior. And, as with the analogies of the body or the vehicle, good design means operation-based design.

107Kwinter, Sanford. ‘The Renunciation of Geometry’, in Assemblage 16, p 84
Proponents of corporate strategic planning question the current situation from a similar viewpoint: "If we are willing to invest our cars with his and her thermal control, ventilation control, operable windows, task air and task light for two hours a day, why are we unwilling to invest in our workstations where 8 to 10 hours of productive work must take place?" This question should not only apply to the workstation, but also to the workplace. John Seller discusses the importance of design in the office:

Influencing behavior is almost all of what management is about, and buildings influence behavior. Failure to wring every benefit out of the most expensive capital asset most companies ever have would not be countenanced in any other aspect of corporate life... Taking advantage of the behavior-stimulating opportunities in buildings requires an understanding of corporate strategy and an interest and skill in making buildings share the burden of implementing strategy.

Indeed, why are buildings not invested with the same level of service, support, and comfort — not to mention aesthetics — as automobiles? One reason might be that automobiles are mass-produced, and therefore more economical; yet most building components are also mass-produced. Another reason comes from the prolonged schism between architecture and engineering, with architects positioned at the top of the building-production hierarchy. Mike Ablon, the architecture-trained vice president of Alliance Development Company once said that "if you skimp on the engineering, you can put more money back into architectural details [of a building]." The problem with this mentality is that it asserts that outward appearance is more important than interior function (it is no surprise that he worked for Robert Venturi for several years). Perhaps he prefers a well-decorated, tasteless cake to a delicious one with a simple appearance. In any event, this attitude — which leads to design-impoverished buildings — is widespread, and makes little sense considering the attention we pay to the 'engineering' of our vehicles, our machines, and our bodies.

One begins to question, then, if Typical Plan evolved purely in the interest of flexibility, or in the interest of economy. Given the question above about why workstations are not invested with the same features as a car, I would argue the latter. The simple fact is that if the workplace — in which technology has always been of fundamental importance — were better engineered, it could only be better architecturally. And, as with the vehicle, the machine, or the body, good engineering and good design are mutually beneficial (and in many cases, indistinguishable). Given

---

107 John A. "Architecture as Work" in Harvard Business Review
this viewpoint, one could imagine a workplace in which production is streamlined, and the act of working is facilitated by high quality services and amenities. Design should be considered integral to, not separate from, the implementation of these services and amenities. Furthermore, when we consider the shift in importance away from the physical façade, we need to shift the focus from the entryway to the workspace, and from the ornament to the substance. In their study entitled “A Vision of the New Workplace,” Francis Duffy and Jack Tanis offer this point:

[Currently] little or no linkage exists between the strategic view of the organization and the design of physical space. Management consultants rarely focus on the importance of physical space as a means of facilitating behavioral and organizational change. The new gurus talk about vision or strategic intent of companies, but usually architects and suppliers of physical space are not given much opportunity to link the process of designing office space with such strategies. Architects... can be strategically vital in addressing these issues, but management is not tapping into these resources.\(^\text{110}\)
From the high balustrade of the palace the Great Khan watches his empire grow. First the line of the boundaries had expanded to embrace conquered territories, but the regiments' advance encountered half-deserted regions, scrubby villages of huts, marshes where the rice refused to sprout, emaciated peoples, dried rivers, reeds. “My empire has grown too far toward the outside. It is time,” the Khan thought, “for it to grow within itself,” and he dreamed of pomegranate groves, the fruit so ripe it burst its skin, zebras browning on the spit and dripping fat, veins of metal surfacing in landslips with glistening nuggets.
Now many seasons of abundance have filled the granaries. The rivers in flood have borne forests of beams to support the bronze roofs of temples and palaces. Caravans of slaves have shifted mountains of serpentine marble across the continent. The Great Khan contemplates an empire covered with cities that weigh upon the earth and upon mankind, crammed with wealth and traffic, overladen with ornaments and offices, complicated with mechanisms and hierarchies, swollen, tense, ponderous.
"The empire is being crushed by its own weight," Kublai thinks, and in his dreams now cities light as kites appear, pierced cities like laces, cities transparent as mosquito netting, cities like leaves' veins, cities lined like a hand's palm, filigree cities to be seen through their opaque and fictitious thickness.\(^\text{111}\)

3.1. STAGING UNCERTAINTY.

It is now time for us to reinsert design into the urban milieu. We are faced with exploding urban populations, most of which are in third world countries, and can forecast threatening levels of congestion, environmental destruction, and geographic dispersal (spread). In the next twenty years, we will see the populations of Bombay, Lagos, Jakarta, and Shanghai double, from ten or fifteen million to twenty or thirty million people. Koolhaas asks a significant question: "How to explain the paradox that urbanism, as a profession, has disappeared at the moment when urbanization everywhere - after decades of constant acceleration - is on its way to establishing a definitive, global 'triumph' of the urban condition?" Given the failures of Modernist urban planning, he suggests this future for urban design:

If there is to be a 'new urbanism' it will not be based on the twin fantasies of order and omnipotence; it will be the staging of uncertainty: it will no longer be concerned with the arrangement of more or less permanent objects but with the irrigation of territories with potential; it will no longer aim for stable configurations but for the creation of enabling fields that accommodate processes that refuse to be crystallized into definitive form: it will no longer be about meticulous definition, the imposition of limits, but about expanding horizons, denying boundaries, not about separating and identifying entities, but about discovering unnamed 'natures'; it will no longer be obsessed with the city but with the manipulation of infrastructure for endless intensifications and diversifications, shortcuts and redistributions - the re-invention of psychogeographical space.

In the end, Koolhaas warns, "Our systematic self-doubt is suicidal: at the moment when issues of quantity are engulfing us like an avalanche, it is essential to define a positive relationship with quantity." I believe that it is also essential that we reinsert ourselves (architects) into the greater processes of development and transformation which have been taking place without us.
3.2. VIVICITIES.

In the book Out of Control, Kevin Kelly presents the hypothesis that machines will become more lifelike while life simultaneously becomes more mechanical. The argument is that man’s first machines were primitive, clumsy, and inefficient, but as technology has become more sophisticated, complex, and adaptable, it is beginning to mimic life. Simultaneously, as technology augments and enhances life, it becomes a part of it; genetic engineering, for example, has already transformed the evolutionary process dramatically. Kelly calls the complex, synchronous models of the made and the born “vivisystems.” Whether a beehive or the internet, a prairie or an economy, vivisystems all possess similar values: “[1] The absence of imposed centralized control, [2] The autonomous nature of subunits, [3] The high connectivity between the subunits, and [4] The webby nonlinear causality of peers influencing peers.”

Life is, after all, an excellent role model for the manmade: it is adaptable, evolving, resilient, boundless, and always new. However, its negative characteristics have been especially daunting: it is nonoptimal, uncontrollable, unpredictable, and ultimately incomprehensible. One could argue that the New York Stock Exchange or the city of Tokyo possess all of these life-like qualities, both good and bad. However, man continues the struggle to control, to organize, to predict, and to understand. These seemingly inherent urges are not negative or self-defeating unless they are applied improperly to vivisystems.

There are many examples of awkward battles to control or understand vivisystems. As the internet connects all local and national governments, for instance, the conflict between differing regional laws has generated many new controversies, with governments worrying about censorship, encryption, and intellectual property. The post-industrial city is another good example; a vivisystem which planners, developers, politicians, and architects are always trying to control. The so-called Death of Urbanism may have resulted from the fact that no one can fully understand, or control, the city. But instead of abandoning the effort, the players involved in shaping the city should understand the fundamental rules of vivisystems. From observations gleaned from the evolving science of complexity, Kelly declares the Nine Laws of God: “distribute being, control from the bottom up, cultivate increasing returns, grow by chunking, maximize the fringes, honor your errors, pursue no optima; have multiple goals, seek persistent disequilibrium, change changes itself.” Once these rules are understood relative to the post-industrial city, we can engage with it effectively.
3L3. INFRASTRUCTURE.

Traditional urban planning in the West has produced the decorated shed, which is equivalent to the first generation of clumsy machines mentioned above. Ideal cities of the renaissance were depicted as perfectly organized collections of buildings whose façades were matching and well-proportioned. Louis XIV demonstrated the manifestation of power in the axis at Versailles, which Haussmann subsequently utilized in his restructuring of Paris, cutting large swaths through the urban fabric and establishing regular lines of building façades. The baroque plan and the gridiron similarly established dominance over the landscape, ignoring the natural geography and its inherent variety. The gridiron in America freed buildings from the all-encompassing fabric, creating a field of multiple objects. Today, office parks and suburban neighborhoods are planned in with predictable organizational principles, based loosely on the campus plan; a well-organized collection of dispersed buildings with complementary façades endowed with familiar symbolic references to function - whether the domestic gable, the glazed corporate lobby, or the shopping arcade. Western urban planning is thus characterized by the application of pure, platonic geometries, and by the predominance of the façade. With few exceptions, the city has always been conceived externally, from a pedestrian or God's Eye view. City planners and architects continue to play compositional games with groups of object-buildings, paying extra attention to the pure geometries and close matching of their façades, regardless of programmatic or functional variances.

If cities are indeed complex, adapting, evolving organisms; in other words, like life – then why have the planning and design professions typically ignored this fact? Life is diverse, complex, irregular, and multifaceted. Planners instead seek homogeneity, regularity, and one-dimensionality. Kelly says, “In heterogeneity is creation of the world. A uniform entity must adapt to the world by occasional earth-shattering revolutions, one of which is sure to kill it. A diverse heterogeneous entity, on the other hand, can adapt to the world in a thousand daily minirevolutions, staying in a state of permanent, but never fatal, churning.”

Most importantly, life must be understood on a cellular level, and from its intricate internal mechanisms that lead to more complex forms. As Kelly says, “The only way to make a complex system [for example, a city] that works is to begin with a simple system that works. Attempts to instantly install highly complex organization – such as intelligence or a market economy – without growing it, inevitably lead to failure... Complexity is created, then, by assembling it incrementally from simple modules that can operate independently.”
What, then, would be a simple module from which to create a city? Buildings are no longer reliable; they have grown too large and fragmented for us to treat them as understandable modules. The simple module – the cell – must therefore be within our realm of comprehension. It must have a tangible scale and easily recognizable function. It must be engageable. The cell might be a room, in the traditional Hilberseimer sense, but is likely to suggest one or multiple operations, such as a restroom or mechanical closet. A cell might actually not be inhabitable, like a loading dock, ATM machine, or cooling tower; these devices are, after all, fundamental units which collectively allow the operation of the post-industrial city. A complex cell is a collection of inhabitable spaces and functional devices that behaves more or less interdependently from other cells, but this interdependence does not suggest outdoor spatial separation.

The lifeline which connects the cells, like the circulation of nervous system in the body, is the circuit. The circuit in architecture is analogous to infrastructure; roads, sewers, gas and water lines, etc. In terms of architectural vocabulary, however, the definition must be extended to apply to above-ground services such as elevators or escalators, corridors, and various mechanical and electrical services. Because these architectural devices also convey the life-blood of the city, they are therefore part of the circuit. City planners have long known the importance of high quality infrastructure ("all roads lead to Rome"), yet it is too often downplayed in the process of urban development. Bruce Webb and William Stern make the following point:

The city's need to repair, augment, and expand its infrastructure is an unglamorous technical necessity, akin to working on the plumbing in a house. Yet the infrastructure constitutes the most pervasive (if often hidden) part of the public environment. Most American cities have pushed the infrastructure problem into the background, relying on buildings to create the city's postcard image. But inattention to the quality of our streets, drainage systems, and utilities is the ultimate form of urban neglect... and efforts to improve the situation will not be helped by short-term solutions or by considering infrastructure to be a compartmented series of technical problems to be solved. Rather, improvements and expansions of the city's infrastructure should be thought of as opportunities for collaborations between engineers, designers, and planners sensitive to the needs and desires of the city's districts.
In architecture, as well as urban design, the circuit is downplayed. While it may be considered an “unglamorous technical necessity,” the circuit in architecture is no less important than it is to the body. A blood clot or stroke, after all, can be fatal. Likewise, improperly designed or maintained infrastructure can have a similar devastating effect. Why, then, are the professions of architecture and urban planning so one-sided? Unlike the medical profession, which tends to the needs and problems of all bodily functions, the design profession is heavily weighted toward the skin. Architects and planners are preoccupied with performing plastic surgery, “relying on buildings to create the city’s postcard image,” instead of the neurosurgery which is often much more important. Architects’ abandonment of the body for the skin is ultimately a failure because there is no longer a tangible connection. When architects apply make-up to a diseased body, architecture is no longer sustainable. Michael Bell asks, “How can architecture not represent the topological, but instead take part in averting its disciplinary machinations?”

I call the pervasive circuit, which is both architectural and infrastructural, infratecture. Infratecture collapses the traditional divisions between architecture and engineering, vertical and subterranean development, and what is exposed and what is hidden. Infratecture suggests that form follows function, but based on diverse, multi-dimensional, operational mechanisms – unlike the generic, one-sided qualities of Modernism. As opposed to Typical Plan, infratecture is varied and idiosyncratic – like life itself – and related to specific processes and functions. Rather than ending at the envelope of a building, infratecture extends throughout the urban continuum, and therefore is not limited to one scale or one level of complexity. Infratecture recognizes the biological characteristics of cities, and their need to adapt, evolve, and become more complex. Infratecture is not to be understood from the outside, but from within. The infratect does not master plan the city with a heavy hand, but designs it incrementally with tangible modules that vary based on context and use (like life!). Infratecture is the threshold between atoms and bits; it is the interface at the megalopolitan scale. Infratecture is essential to the understanding of cities as vivisystems and the globalization of the interior. With infratecture, architects can invert the traditional master planning process, and reach beneath the skin into the body of architecture.
3L4. UNVEILING THE HIDDEN ORDER.

The modern Japanese city has evolved with an emphasis on infrastructure, in a piecemeal, haphazard fashion. The methodical, modular implementation of the cell and its connecting circuit was given precedence over any “postcard image” that the urban fabric might generate out of the careful manipulation of building façades. Westerners therefore typically view the Japanese city as an ugly, chaotic organism, contrasting it with Paris or other ‘beautiful’ Western cities. To make matters worse, the Japanese seem to have an intuitive understanding of the circuit, based on the fact that streets are typically unnamed and that buildings are numbered based on the date they were constructed, as opposed to their location. What would seem a recipe for complete anarchy in the West, however, is actually a streamlined, efficiently-operating system of urban organization for the Japanese. How else would one explain Japan’s astonishing rise from the ashes of World War II to become a world superpower in two decades, or the incredible stability and tight control of the Japanese government? The question that many Westerners and even Japanese pose, then, is just how does the Japanese city work? The answer lies in Kelly’s explanation of the vivisystem and its fundamental properties, which I mentioned earlier.

The particular physical characteristics that define the modern Japanese city have many origins, a few of which I will attempt to explain. The first Japanese capitals, Nara and later Kyoto, possessed symmetrical, gridded plans, emulating Chinese city models. These cities were laid out in a tabula rasa fashion, like Roman colonial cities, with the added influence of feng shui. The second, and much more pervasive, type of Japanese city plan developed during the feudal era, and consisted of a smaller settlement which radiated concentrically from a central castle. The city of Edo, now Tokyo, developed in this fashion. Like medieval European cities, feudal-era Japanese cities were tightly knit and somewhat disorderly, owing to the breakdown of national control and the focus on regional defense mechanisms. The patterns of growth, however, were distinctly Japanese, owing to their particular systems of land allocation and architectural sensibilities.
Developed during the Taiho Era (702), the systematic subdivision of land known as the jori system was an allotment strategy aimed at the equitable distribution of rice fields. The widespread establishment of the system indicated a rise in the agricultural population and an economical approach to the cultivation of the Japanese countryside, which consists of sparse, flat valleys surrounded by mountains. While this system generated a type of modified grid, there is a distinct difference between the jori system and the Jeffersonian grid in America. Because of Japan’s extremely limited area of arable land, framed sharply by steep, mountainous terrain, the jori system was essentially a qualitative strategy toward land compartmentalization; whereas the Jeffersonian grid represented a quantitative method for land expansion. Because of this primary difference, contemporary urban sprawl in Japan contrasts sharply with sprawl in the U.S. Shun Watanabe describes Japanese sprawl with the metaphor of a silkworm, which methodically chews up bits and pieces of the landscape in small increments; versus his depiction of the American giant, who is stretched out lazily across a vast land area. Western city planners equate sprawl with residue and the inefficient or improper use of land, like Lars Lerup’s dress, which consists of dead, leftover holes in the urban fabric. There is no dross in Japan; there simply is no room for it. The ‘countryside’ that Japanese friends have shown me I consider to be urban; despite the presence of rice fields, it is tightly-compact and filled with a diversity of structures, including houses, factories, shrines, shopping centers, and driving ranges. The urban continuum in Japan, then, is a pervasive stim, counter-balanced by other ‘holes’ in the form of rigid scheduling patterns (most functions of downtown areas, including the subways, shut down around midnight), and curfews are routinely implemented in company dormitories; both methods of providing much-needed breathing room in an otherwise constant field of activity).

Despite the implementation of the grid as the ordering mechanism in the first Japanese capitals, subsequent Japanese growth patterns have been irregular, asymmetrical, and diverse. Since the terms polarity, duality, dichotomy, and synergy do not suffice to describe these patterns, I will suggest the word diergy, composed by György Doczi from the Greek words dia (across, through, opposite) and energy, to describe the over-riding organizational system, which is irregular yet harmonious. The pattern of the jori system is actually quite similar to that of the modular composition of traditional Japanese architectural plans. The plan of the Katsura Imperial Villa in Kyoto, for instance, “which is a free combination of diversely shaped and sized rooms, shows how the use of the modular tatami mats creates a rhythmic and harmonious unity and wholeness, without becoming monotonous or forced.” While it is doubtful that the modern Japanese city possesses “harmonious unity” or “wholeness” in its outward appearance, the dinergic system which characterizes its modular, haphazard growth suggests connectivity and freedom of mobility within a tight network. Thus, the operations of the Japanese city are all intimately related within a dense, diverse, unfolding urban framework.
3I5. THE NEW FRINGE.

What, then, is the future for the Japanese industrial archipelago? It certainly does not involve dinergic growth. Planners and bureaucrats are intent on carrying out Western-style plans, with well-organized collections of object-buildings separated by wide boulevards and grassy lawns. While these plans offer much-needed breathing room and logical patterns of arrangement, they are inappropriate in this context. Not only do they eliminate the possibility for close physical connectivity that is fundamental to the successful operation of the Japanese economy, but they lack the richness and diversity of the existing city which is so crucial to the welfare of Japanese society, much more so than it would be to that of Western society. Moreover, the blind emulation of another culture's urban patterns is a foolhardy strategy, especially with the high value of scarce land.

To the Japanese planners' credit, much of I have been calling a Western urban pattern has been implemented due to functional concerns. In the post-industrial megalopolis, the new 'enterprise zone' - with its familiar industrial park image - has proliferated around the world, and can be seen on the outskirts of every major city. The logic of quantity now governs the scale and complexity of transportation systems, distribution patterns, and buildings. While I am skeptical of the utilization of the Ville Radieuse model for this territory, I am also not advocating the continuation of traditional Japanese urban patterns. There must be something new, which speaks to technological and economic imperatives yet maintains the essential spirit of connectivity and diversity.

Kelly suggests that "Diversity favors remote borders, the outskirts, hidden corners, moments of chaos, and isolated clusters. In economic, ecological, evolutionary, and institutional models, a healthy fringe speeds adaptation, increases resilience, and is almost always the source of innovations." This fringe is Japan's industrial archipelago. For those willing to innovate rather than emulate, it presents an incredible opportunity for new urban development.
The Port of Nagoya has the potential to become a hybrid industrial/post-industrial city, with old and new functions closely inter-related. As outmoded factories are removed or relocated, new offices and research centers will take their place alongside industrial plants which still function well. Some of the existing container terminals and distribution yards will be occupied by new entertainment complexes or cultural centers, but most will remain and only become more sophisticated. Nagoya Port promises to be a thriving, multifaceted new center where locals and tourists, and blue-collar and white-collar workers, will commingle. Like Garnier’s Cité Industrielle, zoning separations will be maintained where necessary, but whenever possible, varying functions should be overlaid, conflated, and blended, to provide new urban milieus. Planning should not take place exclusively along proprietary lines, but also between them. In this way, urban ‘functionalism’ can be replaced with urban ‘operationalism’, emphasizing connections over boundaries, and activities over things.

Unlike Tokyo or Osaka, which developed their ports early, Nagoya evolved inland – as a station on the Tokaido corridor – and developed its port later. The narrow inlet which connects Nagoya’s port to Ise Bay is an unfortunate geographical configuration; as opposed to the ideal port of Kobe, for instance, which stretches out along a wide shoreline, the port of Nagoya is cramped, possessing little room for development. City planners have taken advantage of the strong axial line framed by the narrow mouth of the port, however, and the artificial extensions which have been developed suggest an evolving linear city. With an international airport planned to the south off the coast of Tokoname, the linear extension of the city will present an effective urban armature to a large number of international visitors. Planners should develop the potential of this new north-south corridor en route to the heart of the existing city. Port administrative functions are already slated to migrate south along this corridor to a new site on Kinjo Pier, which is strategically located at the center of the port.
At present, the reclaimed land extensions off the Nagoya coast are strikingly evident, not only for their predictable geometrical outlines, but also for their particular scale and zoning patterns, which contrast sharply with the character of the mainland city. The factories and power plants which have traditionally occupied this territory have been strongly separated from the housing and commercial districts on shore, and as a result have maintained a separate existence from the public affairs of the city. With the coming transformation of this area, however, it will be crucial to form strong connections not only between artificial and natural land regions, but also between the opposite sides of the port. The nearly completed Nagoya Ring Road will provide the first such connection, and another road is planned further to the south. As opposed to the north-south international corridor, these new ‘cross-stitches’ will introduce much needed east-west local corridors.

New interchanges will be located where these separate systems meet. These intersections possess the greatest potential for new urban development. Edward Hall writes about the importance of the interchange to the Japanese psyche: “The Japanese name intersections rather than the streets leading to them... The route itself from point A to point B seems almost whimsical to the Westerner and is not stressed as it is with us. Not being in the habit of using fixed routes, the Japanese zero in on their destination...” As is evident in the patterns of urban life in Japan, “the concept of the center that can be approached from any direction is a well-developed theme in Japanese culture.” Thus, these new crossings hold important futures for the development of a new post-industrial city.

In the spirit of ‘infrastructure’, then, I have projected new systems of circuitry which will stitch together what is currently a fragmented and inaccessible area, allowing the majority of development to occur along arterial lines, with emphasis on interchanges. This scheme proposes a distributed system of ‘hot spots’ for the incubation of new, varied forms of urbanism, which will become future centers for public and private life.
armor
a new urban appendage which will
localize the southern migration of
administrative functions and harness
the flow of future public traffic

stitch
future pathways which will bridge
the eastern and western seamounts,
allowing for the completion of urban
ing roads

interchange
anticipated nodes of heavy traffic;
and sites for immediate commercial
development

transplant
industrial sites slated for augmentation
or replacement by new programs
Computer model views of Nagoya Port infrastructural projection, looking south and north
Model views of Nagoya Port looking north and south
WIRING THE CITY.

The new interchanges within this distributed network will be framed by two systems of transportation — roads and railways — in addition to nearby water transportation. New train terminals will be constructed at these sites within extended commercial complexes, in anticipation of future traffic. The ‘nervous system’ proposed for the entire port will similarly define the structure of the terminal buildings, which will mediate the exchange between the different networks.

Looking at Kinjo Pier specifically, the West Nagoya Port Liner will run parallel to Mexico Boulevard, with a station located across from the existing International Exposition Hall. Fronting the water on the other side, the station will also provide access via jet foil and other watercraft. The long stretch of land on the east side of Mexico Boulevard will be filled by new offices and commercial facilities, which will extend to the north as part of Kinjo Pier Station. These facilities will include a center for port administration and commercial enterprise, a convention hall, a hotel, and a shopping/entertainment center. Beginning formal propositions for this .8 kilometer long, 1,110,000 square meter complex were founded on infrastructural considerations, and design consisted of experimentation with the internal mechanisms necessary to negotiate this vast, interior terrain. Thus, instead of considering this building as a symbolic object to be perceived from the exterior, I consistently treated it as an inverted urban landscape which would only be understood from within.
My isolated treatment of the ‘wiring’ as form-generator has many precedents, particularly from the latter half of the twentieth century. In Louis Kahn’s proposed plan for Philadelphia (1952), he isolated movement patterns in a kind of abstract system of ‘traffic architecture’, which he deemed a necessary first step towards quantitative and qualitative solutions for existing traffic problems. His reductionist focus on circulation patterns finds its origins in projects by the Futurists, who were the first to consider flow to be an abstract, frozen element. In their Soho Route Building and Road Net (1959), Alison and Peter Smithson promoted a ‘net’ structure as the system of movement, which they felt would best serve an urban environment with minimal interference and maximum flexibility, connected to a ‘route building’ equipped with a system of internal travelators. This dual system ‘was to provide ‘the structure for a scattered city’ which was on a gigantic enough scale... to give urban identity.”

This concept led to a focus on the ‘interchange’, a complex problem of arranging different movement systems to provide maximum efficiency and fluidity at their conjunction, exemplified by Richards and Chalk’s project of 1966. Brian Richards’ Comparative Anatomy of Systems (1966) and other such transportation studies “showed a shift in thinking away from the Utopian and a priori approach. Instead of laying down a master plan dependent on a few fixed variables, architects now began proposing flexible strategies.”

The Interchange project bears a striking resemblance to existing train terminals in Japan, which are sprawling underground complexes that harness the traffic flows of the city, and represent culminations of urban movement and interaction. The Japanese terminal developed in the way proposed by Richards and the Smithsons, where a variety of new movement systems were to be incrementally overlaid onto existing networks within dense urban contexts. The interchange has reinforced the idea of a polynuclear field within Japanese cities, where each station assumes qualities of a small city in itself and defines a different district or locale within the urban whole. In this way, the interchange defines a destination by means of the culmination and interrelation of systems of mobility, and each destination is perceived to have its own particular character and ambience.
While this concept of interchange has been conceptualized and tested within existing urban conditions, its potential within exurban contexts has been largely ignored. What has become clear, however, is that the 'horizontal skyscraper' typology of exurbia is an appropriate site for a new generation of interchange. The sprawling terminal complex projected for Kinjo Pier, for instance, presents such a possibility. Using a similar method of isolating movement systems, the Kinjo Pier terminal is represented by the densification and collision of networks. The vast scale of the building and arrival patterns make it possible to conceptualize the internal mechanisms as having little or no relationship to the building envelope; therefore, the envelope is not part of the study. Instead, the interior is shaped by the design of the infrastructure. Because the infrastructural system operates on all scales, the building is not conceived as being independent or separate from its context, but rather a spatiotemporal moment of heightened density within a distributed field.

An enclosed microcosm of the port itself, the terminal has its own microcosms, in the form of 'hot spots' or 'ganglia' which represent mini-interchanges, or mini-enterprise zones. These ganglia are the densest and fastest components of the entire scheme, designed to be engaged by the post-industrial subject. Inter-dependent of the terminal complex, they represent the culmination of complexity in program and engineering, and would require specialized development in parallel with the design of the 'body' of the building. In this way, the architect designing each ganglion would be collaborating with planners and developers throughout the entire process of building, and the 'hot spots' would take shape as moments of hyper-specificity within an otherwise generic shed.
Logistics terminal model, looking south and north
COMPLEX PROGRAM.

The ganglia mentioned above inherited their formal characteristics from a process which Mark Wamble calls complex programming: “Complex Program is hyper-urbanism: a combined ethos and technique which enables one to navigate the space that exists outside of and beyond a given structure.” Complex programming is actually a kind of pre-programming, which is rarely carried out in the profession of architecture, yet is essential to design in this era of uncertainty. Complex programming is not based on spatial assumptions of functional occupancy, but instead suggests new spatial configurations based on projected social, economic, political, and technological milieu. Wamble posits that “Space in this sense does not exist outside of that which is already accessible to each of us through this idea of Complex Program; a ‘vacant ecology,’ a civil realm poised, receptive and available to be experimented with, and eventually occupied.” This realm is conceived through the process of Scenario Planning, developed by Lawrence Wilkinson, which allows us to predict multiple futures based on existing circumstances.

Scenario planning derives from the observation that, given the impossibility of knowing precisely how the future will play out, a good decision or strategy to adopt is one that plays out well across several possible futures. To find that ‘robust’ strategy, scenarios are created in plural, such that each scenario diverges markedly from the others. These sets of scenarios are, essentially, specially constructed stories about the future, each one modeling a distinct, plausible world in which we might someday have to live and work.

Yet, the purpose of scenario planning is not to pinpoint future events but to highlight large-scale forces that push the future in different directions. It’s about making these forces visible, so that if they do happen, the planner will at least recognize them.

Scenario planning predicts a complex program by its all-encompassing nature. In the same way that infratecture promulgates the idea that the architectural experience is not bound within a limited spatial framework, scenario planning promotes an openness of ideas which inevitably leads to new spatial possibilities. The complex program derived from scenario planning is based on multiple projected actions and their particular spatial implications, rather than object-related assumptions. The following scenarios, then, consider the subjects of the new international corridor in Nagoya Port, and imply new work/live strategies based on plausible hypotheses of itinerant occupation:
The assistant to the executive vice president of Enron has scheduled a meeting with several representatives of the Chubu Power Company in Nagoya to discuss the joint development of alternative fuels at a test site in Nagoya port. She will arrive at the Nagoya International Airport at 15:00, and take the subway directly to the terminal at Kinjo Pier.

Before the 17:00 meeting, she will need a place to shower and change clothes, as well as a place to store her luggage. She will require an isolated area to add some finishing touches to the report which she completed on her laptop during the flight, as well as a place to print out several hardcopies for her meeting. During the meeting, she will need an interpreter as well as a multi-media projector to display graphics. Since she anticipates that the meeting will run late, those present at the meeting will want to order several plates of sashimi and beer. After the meeting is over at 20:00, exhausted from jet-lag and work pressures, she will want to go immediately to sleep.

The personnel division of Daido Industries Inc. plans to hold a job fair at the Kinjo Pier International Exhibition Center, which has a large auditorium, and wants to conduct interviews at the terminal across the street, where there are more adequate small-scale meeting facilities.

Four teams of engineers will require secluded interviewing spaces with the ability to conduct computer examinations to screen potential employees. Since many of these prospects are international students who have never been to Japan, several guides have been appointed to show off the area, and will benefit from having a travel office as well as visa office to discuss the details of their stay in the country. The interviewers will want a place to get a quick bowl of udon during their break. They will also want to be connected throughout the day to the main office, making phone calls, sending faxes of resumes, and wiring computer test results.
A retired chemistry professor from Singapore has been invited by an old colleague to participate in a three-day think tank session being held in Nagoya to discuss the development of a new material for use in the space industry. The professor and his wife decided to take a cruise, with their final destination being the terminal on Kinjo Pier. Being close to a particular research and development plant, the colleague has scheduled the think tank meetings (in which twelve people will participate) at the terminal itself.

*Before meeting his old friend, the professor will want to buy a present. Because these meetings will run throughout the entire three day period, the participants will want several places to eat nearby. During the day, the professor's wife will want to run errands and visit some local sites, and thus will want to be close to the subway and bus stop. After the long, tiring sessions, the professor will want a place to take a hot bath, and would like a garden in which to meditate, both close to the place he and his wife will spend the night.*

Ten partners from the software company Cadsoft plan a meeting off-site to discuss plans for a potential merger with Bentley Systems Inc. Worried about inside information leaking out and influencing the stock market, leaders of both companies know that it is critical to maintain utmost secrecy. Given their busy schedules, however, the company leaders need a meeting place that is fairly accessible. At least two partners from Microstation will fly in from Seattle for the meeting. The leaders plan to hold the meeting at the Kinjo Pier terminal in a secured conference room at 21:00.

*Participants arrive via different modes of transportation; some by taxi, some by subway, some by bus, and some by jet. They all require a secure, inconspicuous entrance to the meeting place. As they will be coming straight from their respective offices, they will also need a late dinner of sushi, tempura, and sake delivered to the room. If the deal goes well, they might want to enjoy a few rounds of karaoke in a small club room.*
A famous U.S. physicist has just embarked on a lecture tour to promote her new book on magneto-optical storage media. She will be visiting Japan for the first time, and is scheduled to speak at universities in Nagoya, Osaka, Fukuoka, and Tokyo over a six-day period. As coincidence would have it, she has also agreed to participate in a new research project being conducted at a physics laboratory in Nagoya port. The project will require her active participation for a four-week period, beginning a week after her lecture circuit. The physicist will have a fair amount of luggage for the six-week trip, and her husband is planning on joining her for the first two weeks.

They will need a room for their first night in Nagoya, and a place to drop off most of their bags before they leave for the other cities. As they plan to travel for the week after the lectures, they would benefit from visiting a travel office before their trip. After they return to Nagoya, the physicist will need a temporary apartment for the next four weeks, complete with a workspace and kitchenette for convenience. She will also need a place to do laundry and buy food and toiletries. If she has a problem with her computer or the network, she will require an on-duty computer consultant. She will need a small conference area for impromptu meetings on site as well.

A team of the far east liaisons division of Volkswagen is planning to visit Nagoya to discuss establishing an offshore factory in the Nagoya port area. They will be meeting executives from several Japanese car manufacturers as well as a few government officials. Twenty-two people will be expected at the meeting, which is scheduled at a conference area in the Kinjo Pier terminal. The Volkswagen executives are expected to fly into Nagoya International Airport around 9:00, but the meeting will not occur until 13:00.

After a long flight, the team will want a place to rest, but they won’t be spending the night, so they will need more temporary accommodations. They will also want to shower and change their clothes before the meeting. During the meeting, some of the Japanese car company executives have ordered several new assembly robot prototypes to arrive for inspection and discussion. They will need a loading dock and automated lift to transport the robots to the meeting area. After the meeting, some of the Japanese executives may wish to practice their swing in the virtual driving range.
The Japanese Prime Minister is expected to visit Nagoya port to inspect preparations for the Aichi International Exposition, to be held in 2005. He will be escorted to several sites, including the new Nagoya International Airport and the new port island, and will require suitable accommodations at a central location, preferably at the Kinjo Pier terminal.

The Prime Minister will be arriving in a limousine from Tokyo, accompanied by several attendants and security guards. He will require a secured entrance to his hotel room and a place to leave his luggage. After his tour, he will return to the hotel and make a televised announcement from a video conferencing room. Before his scheduled dinner with other government officials at a small yakiniku restaurant, he will want to enjoy a small tea ceremony and take a bath. The Prime Minister's room should also be provided with an impressive view of the port.
EYE OF THE STORM.

In their design for the central sector of the Lille complex, OMA proposed an architectural intervention which was not an addition but a subtraction: "at the point of greatest infrastructural density, an absence of building reveals the highway, railway, three levels of parking, and the metro, which dives underneath the whole complex, in one overtly metropolitan moment – Espace Piranesien." In the effort to reveal the infrastructural complexity of the project, OMA decided to carve out a void within the most congested area; the eye of the storm. This void represents a much-needed breathing space within the post-industrial megastructure. It is the medieval courtyard transformed for our time; the next iteration of Portman's atrium. OMA's void is actually a simple, rectangular space punched out of an otherwise complex matrix, adjusted to the vast scale of the building (roughly 50m by 50m). Like the Paris Library project, the space is volumetrically pure, and does not relate to the formal qualities of the circulation it was intended to reveal. Richard Ingersoll has noted that the void is not the success its designers intended it to be, perhaps because truly Piranesian space is not possible at such a large scale and with such a simplistic volume. Nevertheless, OMA had a good idea.

For architecture to be the next interface, it must engage the subject. Engagement requires a sensibility to scale and attention to operational mechanisms not found in architecture today. The time has come for design of the second machine age. Such design is informed by complex program and the articulation of unprecedented configurations of spaces based on scenario projection. One-dimensional, object oriented spaces give way to overlapping zones of activity ("the city is not a tree"); design between proprietary lines is at last freed to 'ride the diagonal.' The circuit usurps the predominant position of the cell; the circuit at last becomes the cell.
The small 'hot spot' of maximum density within the distributed field is what I call the Business Substation Prototype. The BSP is a telework center which responds to the itinerant production/consumption models projected in the previous scenarios. The various necessary programs are conflated and interconnected within one seamless experience. The BSP inhabits an interior section of the terminal, anchored to minor roads which run perpendicular to the terminal axis. In this configuration, several BSPs occupy space along the terminal complex, marking larger programmatic thresholds; each one varies in form and use based on independent contextual adaptation. The ganglion is actually the BSP circuit – its form is determined by the specific character of each infrastructural system and the interrelation of the systems – it is an interchange at the human scale. Because the circuit defines the cell, the traditional distinction between servant and served spaces becomes blurred. The servant spaces also serve.
The BSP frames a hole within the terminal complex. At the center of congestion – the height of programmatic climax – appears a spatial denouement. Unlike its precedents, the BSP void is both subtracted and ‘added’ – its form is not derived from pure geometries but rather from the intricacies of the networks that frame it – it is an operational volume.
The BSP is designed to be engaged by the post-industrial subject: within the atomized, psychasthenic landscape of the megalopolis, the BSP provides reorientation, accessibility, and accountability. It is a destination defined by a space of mobility. Steven Holl presages the spatial experience of the BSP in his description of the yet-to-be-built city:

Consider the city as it might appear in a series of cinematic images: zoom shots in front of a person walking, tracking shots along the side, the view changing as the head turns. At the same time, the city is a place to be felt. Notions of space, shifting ground plane, plan, section, and expansion are bound up in passage through the city...

In the modern city the voids between the buildings, not the buildings themselves, hold spatial inspiration. Urban space is formed by vertical groupings, terrestrial shifts, elongated slots of light, amages and vertical penetrations of a fixed horizontal. Urban space has a vertical 3 dimension equal to, or more important than, the X-Y plane. This perpendicular spatial order is amplified by a range of viewpoints from various levels. From a roof terrace, a subway platform, the upper floors of a tower, or an underpass, vertical urban perspective is experienced on a shifting ground plane.12

In this way, the BSP represents the insertion of a new kind of urbanity within the exurban megalopolitan field. Unlike the proliferation of projects which are based on traditional urban imagery ("architectural necrophilia"), the BSP is shaped by the conflation of diverse activities into a vertically-oriented, perpetually shifting spatial experience. The design of the BSP recognizes that "processes and events have shapes of their own."125 The BSP subverts the vestigial dermatophilic tendencies of architecture; the façade is turned inside-out. At an urban level, the BSP operates from within the circuitry of the distributed network, shaping the macrocosm with the microcosm.
In the spirit of technological advancement, the BSP is an effort to “digitize, synthesize, and miniaturize” architectural form.136 Necessary activities are arranged according to a logical procession: [level 0] rail platform; [level 1] loading, parking; [level 2] orientation, preparation, storage; [level 3] production, meeting; [level 4] relaxation, consumption; [level 5] roof - helipad. Taking organizational cues from airport layouts, the main public entrance is located on the second level, accessible via elevated roadway. Secondary public entrances, as well as secured private entrances, are located on all other levels. Logical processional routes are organized such that the occupant is constantly oriented to the building; electronic message boards and video screens augment streamlined circulation systems. This conscious experience of the “shifting terrain” of the building ultimately empowers the subject; hence, the promenade is reinserted into the language of architecture.
level 3
Views of the preparation/orientation level
Views of consumption/relaxation level
IN PLACE OF THE PUBLIC?

Does the BSP's embrace of the corporate world signify the death of public space? Like the mall or the office tower, does the BSP cater to a controlled population? While the BSP contrasts significantly with historicist models of the public square, it is not wholly private or limiting. The significant provisions for public accessibility and the full-time presence of certain government offices provide a layer of openness and accountability not found in typical corporate environments; as such, the BSP is a public/commercial hybrid. More importantly, the BSP acknowledges that public space has extended into the global, electronic framework which is fueled by the interests of private organizations and institutions as well as public agencies. The physical character of the BSP addresses programs and activities on an intentionally limited scale; thus, spaces for mass collection have not been necessary. While the spatial qualities of the traditional urban square are not present, however, the operational devices necessary to promote a new urbanism are manifest. This urbanism acknowledges that as the mobile forces of capital, communications, and transportation erode the traditional city, new static infrastructures and sociocultural destinations have become all the more necessary. Thus, the BSP not only represents the insertion of an alternative work/live model into the exurban field, but also the hopeful proposition of a new strategy for architecture.
Now I will tell how Octavia, the spider-web city, is made. There is a precipice between two steep mountains: the city is over the void, bound to the two crests with ropes and chains and catwalks. You walk on the little wooden ties, careful not to set your foot in the open spaces, or you cling to hempen strands. Below there is nothing for hundreds and hundreds of feet: a few clouds glide past: farther down you can glimpse the chasm's bed.
This is the foundation of the city: a net which serves as passage and as support. All the rest, instead of rising up, is hung below: rope ladders, hammocks, houses made like sacks, clothes hangers, terraces like gondolas, skins of water, gas jets, spits, baskets on strings, dumb-waiters, showeers, trapezes and rings for children’s games, cable cars, chandeliers, pots with trailing plants.
Suspended over the abyss, the life of Octavia’s inhabitants is less uncertain than in other cities. They know the net will last only so long.
Bell, Michael, “Architecture’s Geometries: Movement” (unpublished)
Brunner, Kathrin, quoted by Spiegler, Marc, “Company Town” in *Metropolis* (February/March 1998)
Debord, Guy, *The Society of the Spectacle* (Detroit, 1970)
Duffy, Francis and Jack Tanis, “A Vision of the New Workplace” in *ID* (April 1993)
Katz, Barry M., “Going Nowhere: Tourism as a Global Economy” in *Metropolis* (July/August 1997)
Kelly, Kevin, *Out of Control* (Addison Wesley, 1994)
Kwinter, Sanford, “The Reinvention of Geometry” in *Assemblage 18*
McLuhan, Marshall and Fiore, Quentin, *The Medium is the Message: An Inventory of Effects* (San Francisco: Jerome Agel, 1967)
Spiegler, Marc, “Company Town” in *Metropolis* (February/March 1998)
Spiegler, Marc, “Planes of Existence” in *Metropolis* (July/August 1997)
Sterling, Bruce, from Foreword in Wieners, Brad and Pescovitz, David, *Reality Check* (San Francisco: Hardwired, 1996)
Wamble, Mark, “The Circuit and the Cell” (unpublished)
Wamble, Mark, “Complex Program: Drawing on Scenarios” (unpublished)
Wamble, Mark, “Globalization and the New Interior,” *Quaderns*
Wieners, Brad and Pescovitz, David, *Reality Check* (San Francisco: Hardwired, 1996)
Wilkinson, Lawrence, “How to Build Scenarios” in *Wired*