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Oasis in the Wasteland: A factory for production of plastic amusement and modern convenience

Grossman, Kate Rose, M.Arch.
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OASIS IN THE WASTELAND:
A FACTORY FOR PRODUCTION OF PLASTIC AMUSEMENT AND
MODERN CONVENIENCE

by

KATE R. GROSSMAN

A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE
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APPROVED, THESIS COMMITTEE:

[Signatures]

Peter Waldman
Professor of Architecture

Elisabeth Burns-Yates McKee
Assistant Professor of Architecture

Mark Wamble
Assistant Professor of Architecture

Houston, Texas

April, 1992
ABSTRACT

Oasis in the Wasteland:

A Factory for Production of Plastic Amusement and Modern Convenience

by

Kate R. Grossman

The idea of the Wasteland is a potent metaphor within architecture for urban and social decay. Le Corbusier's project for a City of Tomorrow, an idealized place of industrial production, exemplifies attempts by architects to define an architecture of production within the Wasteland. The project illustrates difficulties inherent in creation of architecture as production and limitations faced by the architect as creator. A factory for production of plastic products from oil has been designed as part of an industrial complex which has been sited, in a wasteland area, next to an amusement park, abandoned oil wells, and industrial warehouses. The architect acts as moderator of the difficult, controversial, given conditions of program and context which are embraced in the design solution in which the Wasteland is reclaimed.
Acknowledgements

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The Wasteland

The Wasteland is both a place and a human condition. Conception of one manifestation of the idea of the Wasteland is virtually impossible without that of the other. As location, the Wasteland may be either naturally occurring or of human creation. The Wasteland as place suggests the lives and minds of its inhabitants, who are affected by their surroundings. As human condition, the Wasteland represents loss of the affirmation of life. The embodiment of desolation, hopelessness and despair, the Wasteland of the soul in turn evokes the image of a physical place which represents those conditions. Thus, within the Wasteland humankind and nature are integrated, inseparable. However, because the Wasteland symbolizes loss of the affirmation of life or will to survive, it represents a separation from nature, the wellspring of life. Ironically, then, it is also within the Wasteland that humankind and nature achieve ultimate alienation from one another.

T. S. Eliot has been credited with coining the term 'wasteland', or at least with popularizing it through his 1922 poem "The Waste Land":

I. The Burial of the Dead

April is the cruellest month, breeding
Lilacs out of the dead land, mixing
Memory and desire, stirring
Dull roots with spring rain.

What are the roots that clutch, what branches grow
Out of this stony rubbish? Son of man,
You cannot say, or guess, for you know only
A heap of broken images, where the sun beats,
And the dead tree gives no shelter, the cricket no relief,
And the dry stone no sound of water. Only
There is shadow under this red rock.
(Come in under the shadow of this red rock),
And I will show you something different from either
Your shadow at morning striding behind you
Or your shadow at evening rising to meet you;
I will show you fear in a handful of dust.

Unreal City,
Under the brown fog of a winter dawn,
A crowd flowered over London Bridge, so many,
I had not thought death had undone so many.
Sighs, short and infrequent, were exhaled
And each man fixed his eyes before his feet.
Flowed up the hill and down King William Street
To where Saint Mary Woolnoth kept the hours
With a dead sound on the final stroke of nine.¹

These excerpts speak to a dusty, desiccated, natural wasteland in which
"the dead tree gives no shelter, the cricket no relief/And the dry stone no
sound of water." Eliot wanders through a place littered with "stony rubbish"
out of which possibility for new growth is questionable. Finding no water to
slake his thirst, the "son of man" sifts through "a heap of broken images" and
retreats, under the shadow of the red rock, in fear of what he has found,
which is perhaps what he has himself made. Hiding under the blood-red
rock, man confronts "fear in a handful of dust": his own death, the return to
dust.

"The Waste Land" speaks also to an urban wasteland, the "Unreal
City/Under the brown fog of a winter dawn." In place of the water that once
washed through this place, now only a crowd of humanity "flow[s] over
London Bridge, so many ...," with "each man fix[ing] his eyes before his
feet." The Unreal City perpetually chokes under a smoggy brown blanket,
whether at dawn or "under the brown fog of a winter noon."² The
inhabitants, whom "death had undone," do not inhale this air; they only exhale
"sighs, short and infrequent ..." This place, which might be called the City of Unreal Life, moves only one pace ahead of death. Even the clock strikes "with a dead sound on the final stroke of nine." Interpreted as the last month of gestation or first moment of life, the ninth stroke signals that in the Unreal City, the beginning of life is the beginning of death.

Both natural and urban wastelands address the human condition which is fused, respectively, with the landscape and the city. The individual in the former, and humanity in the latter, are depicted as lost, wandering and needy. The spectre of death is ever present, here breaking the stagnant silence with the rattle of bones:

The river's tent is broken: the last fingers of leaf
Clutch and sink into the wet bank. The wind
Crosses the brown land, unheard. The nymphs are departed.

But at my back in a cold blast I hear
The rattle of bones, and chuckle spread from ear to ear.
A rat crept softly through the vegetation
Dragging its slimy belly on the bank
While I was fishing in the dull canal
On a winter's evening round behind the gashouse
Musing upon the king my brother's wreck
And on the king my father's death before him.
White bodies naked on the low damp ground
And bones cast in a little low dry garret,
Rattled by the rat's foot only, year to year.3

The wastelands of nature and city come together as the narrator describes his reflections on death while "fishing in the dull canal/On a winter's evening round behind the gashouse." The "dull canal," an artificial river, and the gashouse are both used to fuel the Unreal City which burns like a pyre, casting a slow, hot light on the "white bodies naked on the low damp
ground/And bones cast in a little low dry garret." Unlike the narrator, the inhabitants of Unreal City seem oblivious to their situation:

Besides a public bar in Lower Thames Street,
The pleasant whining of a mandoline
And a clatter and a chatter from within
Where fishermen lounge at noon: where the walls
Of Magnus Martyr hold
Inexplicable splendour of Ionian white and gold.

The river sweats
Oil and tar
The barges drift
With the turning tide.⁴

The fisherman lounge inside the walls of Unreal City in a public bar, where the "pleasant whining of a mandoline/And a clatter and a chatter" drown the sounds of the moaning river which "sweats/Oil and tar" as "The barges drift/With the turning tide." The fisherman's retreat to the bar echoes the flight of the "son of man" under the red rock: they may realize that they stagnate in the Wasteland and in desperation choose to ignore it. Their underlying hopelessness is perceived by the narrator:

I can connect
Nothing with nothing.
The broken fingernails of dirty hands.
My people humble people who expect
Nothing.⁵

As the natural and urban wastelands merge within the mind of the poet, so do they merge with the Wasteland of the human soul. Hopelessness and fear have collapsed into death:

He who was living is now dead
We who were living are now dying
With a little patience
Here is no water but only rock
Rock and no water and the sandy road
The road winding above the mountains
Which are mountains of rock without water.  

From the "Dead mountain mouth of carious teeth that cannot spit," Death itself, "Gliding wrapped in a brown mantle, hooded" has emerged and claimed the last remnants of life clinging to survival the Wasteland.

In contrast to Eliot's wasteland of dust and rock, Theodore Roethke's poem "Lost Son" speaks to an organic, watery wasteland of decay:

At Woodlawn I heard the dead cry:
I was lulled by the slamming of iron,
A slow drip over stones,
Toads brooding wells.
All the leaves stuck out their tongues;
I shook the softening chalk of my bones,
Saying,
Snail, snail, glister me forward,
Bird, soft-sight me home,
Worm, be with me.
This is my hard time.

The narrator, wandering through a dank, swampy wasteland, is "lulled" by the sounds of the dead. As though saturated by wetness, the narrator seems to sink, corpse-like, into the dirt, to shake "the softening chalk of [his] bones" and commune only with snail and worm. Wallowing in the darkness, he is lost:

Tell me:
Which is the way I take;
Out of what door do I go,
Where and to whom?

Dark hollows said, lee to the wind,
The moon said, back of an eel,
The salt said, look by the sea,
Your tears are not enough praise,
You will find no comfort here,  
In the kingdom of bang and blab.10

The esoteric clues to redemption proffered by the dark hollows, the moon, and the salt cannot help the lost soul, who "will find no comfort here, in the kingdom of bang and blab." This "kingdom" references a manmade wasteland from which its creator cannot escape:

Goodbye, goodbye old stones, the time-order is going,  
I have married my hands to perpetual agitation,  
I run, I run to the whistle of money.

Money money money  
Water water water.11

The narrator has lived in "perpetual agitation" in the manmade wasteland which is dominated by money. He/she has run to exhaustion and drowns in the screaming "whistle of money," proclaiming "Kiss me, ashes, I'm falling through a dark swirl."12 The narrator has succumbed to the wastelands of the landscape, the mind and the soul.

The poetry of Eliot and Roethke elucidate the complex nature of the Wasteland, which can be broadly categorized as the place with no potential; the place with exhausted or destroyed potential; the place with abused potential; and the place with ignored or untrapped potential. The word "place," here encompassing the worlds of matter, spirit and psyche, may refer to physical location or human condition.

The place with no potential consists of the naturally occurring realm which is not a product of human intervention. The Wasteland without potential is directly opposed to the stereotypic image of the lush Garden of Eden, the original place of infinite potential. Such a wasteland is a barren place, a place which was never fertile, such as some perpetually-frozen
tundra, or a silent, burning desert. Hell is the quintessential wasteland of this type. Since the existence of an actual place created without any potential for life, hope, promise of growth may be difficult to determine, this Wasteland may exist most often as an idea within the human mind.

If the Wasteland was first conceived in the realm of property, its subsequent replication has become a substantial scientific enterprise. The remaining thee categories consist of wastelands which are products of human intervention. The second category, the wasteland of exhausted or destroyed potential, includes the used up or stripped place. Desecrated rainforests and oil soaked oceans have become such wastelands. Scattered with excavated mines, overworked farmland and abandoned oil fields, much of the American landscape has joined this category.

A wasteland of abused potential is a dumping grounds. It is a place which may not have been stripped of its own value, but which has been abused by the addition of some kind of refuse. Junk yards, toxic waste burial sites, and air polluted by burnt offerings are all wastelands of abused potential. Cities are often such wastelands. The high school graduate who cannot read is a product of this wasteland and becomes part of it. The human mind and spirit comprise a vast wasteland of abused potential.

A wasteland of ignored or untapped potential exists with respect to places with differing or opposing characteristics: It is "other." The desert becomes wasteland in the face of the oasis. The Wasteland of urban madness and decay seems harsher next to the lush greenery of the countryside; the unremembered, uncultivated, uncultured rural area becomes wasteland with respect to the sophisticated city. The landscape may be rendered a wasteland by the shopping mall which sits astride it, ignoring it in favor of its own
internal wasteland of consumption. Also included in this category are places which are perceived as useless but which may hold some potential that cannot be discerned or understood. The moon and Mars are both dark, remote and strange. They are wastelands because they do not fit the human image of fertility manifested as place; and because no one really knows them.

The Wasteland is located in both the material world and in the spiritual world of the human psyche. One may simultaneously walk on it and drown in it. Like the plastic debris scattered across it, the Wasteland is both real and unreal. As such, it bridges the gap between the material and the immaterial; existence and nonexistence; bright of day and dark of night; the tangible world and the world of fantasy; the wakeful world and that of dreams; the external world of the senses and the internal crypt of the psyche; the living and the dead. Finally, the Wasteland is a human construction, but it is a place within which humanity decays, losing its will to survive. The Wasteland ultimately embodies both human creation and its self-destruction.
A Study of Le Corbusier's City of Tomorrow

Le Corbusier outlines his principles of town planning in his book *The City of Tomorrow*, which argues for his vision of the city of the future. For Corbusier, the past is rendered a wasteland by the human mind, which resists change. Veneration of man's past achievements, Corbusier believes, "creates in us a restless solitude as if we were guarding the souls of the dead, as if we were watchmen in a cemetery."1 Population increase and the "age of machinery" have caused a breakdown of the city which Corbusier sees as his first problem in town planning.2 The second problem in town planning relates to the need for expansion at the city's boundaries, which have been "gnawed at as though by vermin."3

Therefore...the centres of our great cities must be pulled down and rebuilt, and ...the wretched existing belts of suburbs must be abolished and carried further out; on their sites we must constitute, stage by stage, a protected and open zone, which when the day comes will give us absolute liberty of action, and in the meantime will furnish us with a cheap investment....4

Figure One, from *The City of Tomorrow*, illustrates the issue of the problematic boundary. Corbusier's vision of the future city is intimately connected with his vision of production: "If we do not produce, we die."5 He distinguishes between the production peasants and that of other men.

[who] impelled by some force (the divine in man) to create with hand and mind, have laid the foundation stone of solidarity, and in getting away from mere individual achievement they are creating a collective manifestation. They are creating an immense structure of labor. This collective manifestation is united by the spirit of 'order,' the first necessity of all action.6
It is thus on principles of order that the city of the future will be based, a city of optimum production. Corbusier’s prescription for leisure also guides the future city. The town planner must provide for eight daily hours of recreation which follow eight hours of work. Every city dweller must have access to sport at his front door.7 His ultimate goal is to abolish what he sees as a "terrible present uniformity" in the city, creating in its stead a "constantly renewed variety."8

The line and the orthogonal hold sacred positions in the city of the future. The straight line symbolizes goal-orientation, while the meandering path of "line of least resistance" symbolizes lack of discipline. All continental cities, according to Corbusier, are based on the latter.9 The zenith of a civilization is marked by the supremacy of the orthogonal.10 The superiority of the line and the orthogonal, and of pure geometry, are for Corbusier
intertwined with human physiology and action. The right angle is not only superior over other angles, but also dictates man's thought and action. A line "broken, holted, irregular and constructed without rhythm," or a form "over-acute or bristling" hurts the senses and constitutes chaos and barbarousness; happiness is caused by regular and continuous lines. Figure Two, from *The City of Tomorrow*, illustrates city planning based on the supremacy of the line.

Figure Two

![Diagram of city planning](image)

A diagram showing the relative importance of streets in a great city. The black lines give the width of the streets. This system, which indicates what is needed under the new conditions, is absolutely contrary to the present state of things (see the diagram at the beginning of this chapter).

The strict and detailed rules of order for the new city focus on the metaphor of the machine. The beauty of the machine is "claimed as a new formula which will give results of a permanent order." Standardization and mass production are essential. The units of standardization are based on the human scale. Order would thus be established on every level, from the minute to the all-encompassing.
Corbusier's ideas involve not only cities, but also social order and behavior. Urban overcrowding, he believes, is caused by anarchy, weakness, and carelessness.\textsuperscript{15} Cities disintegrate and the ruling classes are toppled by heedlessness.\textsuperscript{16} Part of his prescription for a healthy, ordered city calls for a vertical rebuilding of the city. Offices in soaring skyscrapers will "give us the feeling of 'look-outs' dominating an ordered world. And these skyscrapers "will contain the city's brains."\textsuperscript{17} Meanwhile, on the ground, the individual maintaining of a garden would be prohibited. Corbusier declares that "Some people may call all this a form of healthy exercise. On the contrary, it is a stupid ineffective and sometimes dangerous thing. The whole thing is ridiculous."\textsuperscript{18} The remedy lies in his idea of the Garden City, in which low-rise apartment dwellings set on a green provide sunlight, fresh air, and ample communal space for sports. The individual watering can is not necessary; the green space is automatically watered. The inhabitants become participants in a collective agricultural endeavor in which they tend orchards which lie in between the dwellings.

Corbusier possesses ambivalence concerning the relative importance of the individual versus the collective. He strongly denounces "the harsh and futile individualistic rush for egotistical gratification, by which our great cities have been created."\textsuperscript{19} According to Corbusier,

the spectacle of individualism runs riot, fatal and inevitable. A weariness rising out of chaos! There is, and there will be, no common standard until such time as a new age of discipline, wisdom, and unanimity in the sphere of art, is born.\textsuperscript{20}

However, the spirit of the collective does not permeate the planning strategy for the future city at every level. The city would have much space allotted for
vast parking garages to accommodate individual transit. This inconsistency is not accounted for within the scope of the book.

Although most of Corbusier's arguments supporting his planning strategy focus on the masses, the individual can be seen to be considered essential. This is illustrated by Corbusier's comparison between the engineer and the poet:

The industrial achievements of our own age which impress us so profoundly to-day are created by placid and modest men, whose thoughts are limited and direct, engineers ... yet these men can bring those of us who have something of the poet in us to the very extreme of enthusiasm and emotion."

Here Corbusier begins to make a strong distinction between the engineer and the poet, and hints that the poet stands apart from humanity. Asserting that "engineers should not try to be poets, they should remain as calculators," Corbusier subtly makes a case for the supremacy of the poet, which he considers himself to be. For Corbusier, the engineer is "a pearl on a string," but the poet alone has the ability to see "the whole necklace."

Corbusier, as all-seeing poet, thus qualifies himself to pass harsh judgement on those with differing views from his own. He cries that your passion for twisted streets and twisted roofs shows your weakness and your limitation. You have no right to use the newspapers in order to impose your own stupidity and pretence on the more or less ignorant average reader.

Corbusier calls for a common standard in planning of the city and for "unity in detail"; this should effect a "magnificent tumult' in the whole." As though sensing the reader's doubts about how an orthogonal street grid, and massive, repetitive rectilinear buildings could produce more variety than the city which has grown organically and perhaps haphazardly over time,
Corbusier argues forcefully. The building of "immense geometrical barracks" would add infinite variety by creating "noble architectural perspectives" where the corridor street existed. While the facades of the setback dwellings would be uniform and rigid, the effect would be as a backdrop against which trees would be displayed. For Corbusier "uniformity in detail implies variety in the general effect." This seems intuitive to Corbusier but his arguments in the end are not persuasive. Equally difficult to accept are his basic premise and goal, to "replace the present terrible uniformity by a constantly renewed variety." It is not clear that existing cities possess a terrible uniformity, nor is it clear that Corbusier's city would offer more variety. The City of Tomorrow would provide a different sort of variety than do existing cities, but it is hard to believe that standardization from the smallest detail would create a less uniform effect.

Houses are considered to be cells and are thus an important basis for development of the city. As separate units, asserts Corbusier, they are ineffectual, but by grouping them into mass dwellings they would acquire a coherence and therefore a certain power. Each residential unit would have a maximum of fifty square yards of "hanging garden" or terrace, and surrounding common spaces for sport. Luxury dwellings would exist but would be constructed on the same principles of density as dwellings for poorer people. Figure Three, from The City of Tomorrow, illustrates the new building type. All buildings would have flat roofs to increase superficial area. The corridor street would vanish as great buildings would rise amidst wide green spaces. The productive city would require rapidly moving traffic, and "since business is in the center and there is no space for cars in the center, such space must be created by razing the existing structures."
itself would become a "machine for traffic."\textsuperscript{32} Great multileveled sets of streets would accommodate masses of vehicles. Winding roads would be allowed in areas without architecture, for recreational purposes only.\textsuperscript{33}

Figure Three

But people will say: "Your proposals will end in the horrors of the typical American town with its mechanical lay-out." Here is a comparison.

The plan of the future city calls for decongestion of the city center and augmentation of its density, increase in ways to move through and within the city, and increase of open space and parks. The center of the city would be occupied by an elaborate railway station. Corbusier's ideal site is level, with a river flowing to great distance. The City would exist within the site as a well-constructed entity. The Garden City would be situated on the periphery and would be less rigidly constructed. Between them would lie the "protected zone" of fresh air and woods.\textsuperscript{34}

Corbusier acknowledges two possibilities for the city: a slow, progressive growth with an element of chance, or "expression of a preconceived and predetermined plan embodying the then known principles of the science.\textsuperscript{35} His preference is clear. The planning strategy for the City of
Tomorrow is predicted on the erasure of history. The actual razing of great cities is not likely; unlikely also is the master planning and building of a city on the scale of which he speaks. The inclusion of the protected, green zone is a valuable gesture which speaks to Corbusier's instinct for preservation. However, such a zone would not allow for infinite expansion of the city. Ultimately, as would be especially likely in a city of such high productivity, the city would strain at its boundaries, recreating the original planning problem presented at the beginning of Corbusier's book.

Corbusier's planning strategy represents a detailed, well documented effort at grappling with real issues or urban decay. His planning principles encompass virtually every aspect of existence within the city, to the most detailed level. While the strategy is presented as a cure for urban ailments, the cure requires essentially destroying the entire existing city in order to replace it with something better. Corbusier details the ideal site, which is level and situated by a river which flows to great distances. What of the city built on a hill, far from the great, flowing river? What of the context in which there is no more green space to preserve, or room in which to expand? Because it would be improbably that a large, aged city would be razed to make way for Corbusier's planning ideas, the proposal for the City of Tomorrow is best viewed as a planning strategy for the new, master-planned urban or suburban development. The City of Tomorrow does not answer the pressing question of how to reclaim the Wasteland without denying its existence by razing it or paving it over to build on top of it.
Design Thesis: Proposal and Solution

At another place on Main Street—past the corporate towers, museums, and universities, beyond the ropes of many-hued cheap motels and fast-food chains—lies a wasteland littered with petroleum processing plants, vestiges of agricultural production, and railroads. Here in the shadow of Astroworld raw energy is prepared to be shipped up Main Street, or elsewhere via railroad, for consumption. This area is frequented only by those who must work here. It holds great potential for a project which would attract inhabitants of the city.

The proposed site is in Houston, Texas, within the area bounded by the South Loop (Highway 610), Holmes Road, Fannin Street, and Knight Road. The program includes the following:

a. oil refinery
b. chemical plant for manufacture of polypropylene
c. factory for production of plastic goods
d. studios for artists who work in plastic media
e. sculpture gallery
f. company store
g. clinic for treatment of inhalation of noxious fumes
h. cafeteria and recreational space
i. daycare center for children of workers

Plastics are controversial as fact and symbol. They are imbued with inherent irony. They are complex organic compounds but are largely perceived as the embodiment of all that is not organic and therefore not real: they are "fake". In Houston, a city with a petroleum based economy, plastics are literally the stuff of which its inhabitants are made.
The conception of plastics as "fake" is underscored by their complete infusion into "real" life. Absolute irony lies in the impossibility of reconciling the usefulness, or good, of the material with the health threat, or evil, regarding the carcinogenic byproducts associated both its creation and destruction. Thus the physical material itself -- real and unreal, good and evil -- embodies the idea of the difficult whole, and acts as a potent metaphor for an architecture of opposites.

Petroleum is processed into plastics, which are formed, recycled and transformed through various processes into a host of products such as toothbrushes and art objects. Within the proposed compound, plastics will exist in all phases from raw material to formed, and re-formed, product. The metaphor of phases illuminates exploration of the simultaneous expression of distinct phases or forms of the single concept of production within the realm of architecture.

Of primary concern to this project is the creation of an oasis of production in the wasteland: a workplace. Production and consumption are mutually dependent; one exists only in relation to the other. Within the theatre of production and consumption, the artist may take cues less often from inspiration than from supply and demand. Postulation of art as commodity blurs the distinction between sculptor's studio and factory, between the museum and the trinket shop. Such suggestion also broadens the definition of the workplace and expands possibilities for architectural speculation concerning connections between not only disparate aspects of culture, but also between disparate architectural types. This project speaks to interplay between the museum, a cultural institution the existence of which is predicated
on display or consumption of objects, and the factory, a cultural institution association with production of objects.

This project additionally explores the injection of an aspect of culture removed from daily life into an area mired in it, the cultural focal point of which is an amusement park. The juxtaposition of factory with Astroworld and the Astrodome against a backdrop of the ceaseless transporting and transforming of crude oil affords opportunities for study of relationships between these elements. Here different facets of a culture meet; here production meets consumption. Here laborer and sculptor come together, pounding, stretching and molding their point of commonality in a ritual of perpetual production.

The factory is to produce polypropylene, a type of plastic commonly used in a wide variety of products. Understanding the process by which polypropylene is manufactured from oil was made possible by a tour of the Exxon, U.S.A. facility in Baytown, Texas. The first stage of production occurs at the refinery, where oil is processed after removal from the ground. In a pipe, a quantity of crude oil is boiled from the bottom while the top condenses. Along the pipe various light end, or light density, gases are drawn off. These gases are byproducts of the refining process and may include propane, ethane, methane, and hydrogen. Catalytic light ends operation fractionates propane and propylene, sending a stream or mixture of the two across the plant. Pipe racks, elevated about thirty feet, are conduits for such gaseous streams which are blown through the pipes by pressure. The polypropylene concentration unit superfractionates the mixture in towers which are about one hundred feet tall. The resulting product is sent to the plastics unit. One hundred and fifty to two hundred foot tall flair stacks, held
in tension with cables, are used for burning chemicals in emergency situations.

The second stage of production occurs at the plastics unit. The entire operation is electronically controlled from a separate, windowless building with explosion-proof doors. The control building houses computers and computerized visual monitors which are constantly eyed by workers who stay alert to potential problems. When outside the control building earplugs and hardhats must be worn at all times. Propylene and a small amount of oil combine with a catalyst to form a vaseline-like paste which is fed through one hundred foot tall reactors. Polypropylene granules form by accumulating around each grain of catalyst much as a pearl forms around a grain of sand; each granule assumes the shape of the catalyst. All area units are connected on a steel grid. From the reactors, the granules are sent along the grid to machines which separate them from unreacted polypropylene, which is recycled. The granules are moved to a handling stage in which venting occurs. They are sent to a huge, damp tin-sided shed for extrusion into polypropylene pellets. Part of the shed is occupied by a six-level tower in which extrusion occurs. Granules are fed through the roof of the tower into large blending tanks. They are propelled by gravity into a feed bin on the next level where they mix with additives at a rate of 20-40,000 pounds per hour.

On the next level the homogenizer mixes the ingredients with water. The separator on the next level separates polypropylene pellets from water. On the next level the classifier separates pellets by size and spins off 150-degree water. On the ground floor the extruder shapes pellets for shipment to customers. Secondary material, or scrap, is melted down and reshaped to be sold at a lower cost.
The design solution is comprised of a synthesis of the elements of production, comprised of Raw Materials, Buildings, Pools, and Populations. The Raw Materials are crude oil, fantasy, and difficult facts. Buildings include the refinery, which processes crude oil and is not designed by the architect; the big wall, which stores plastic pellets and plastic goods; the plastics factory, which produces injection molded plastic goods and art made by blue-collar laborers and artists, respectively; the pavilion, a gathering place for the various populations associated with the complex; and the oasis, a garden for the enjoyment of the workers and daycare center for their children. The Pools include the black lake, which holds treated or untreated nontoxic residue from the refinery and chemical plant; the clear pool, which holds filtered wastewater used in the plastic goods production process and cools the factory; and the secret pool, a subterranean vat with a large but finite capacity which holds untreatable, toxic waste from the refinery, chemical plant and plastics factory. The Populations include laborers, who run the refinery, chemical plant, and plastics factory; artists, who work with plastic media; and visitors, who tour the complex and attend occasional flea markets held there.

The visual presentation of the design thesis is comprised of drawings documenting all design phases from site analysis to building sections. Figures Four through Seven comprise large scale site breakdown into orthogonals, non-orthogonals, solids and liquids, respectively. These categories make reference to qualities of plastics.
Figure Four

Figure Five
Figure Eight shows the untouched site, with Astroworld to the west, South Loop to the north, warehouses to the east, and field with oil wells to the south. Astroworld lies directly north of Astroworld, beyond the ramp leading over the highway.
Figure Nine shows an early conception of the idea of contrast and interplay between the amusement park and the factory, worlds of leisure and of production. The drawing suggests that there may be as many similarities as differences between them.
Figure Ten shows the site plan of the final design. The big wall stretches north to south along the eastern edge of the site. A ramp leading over the highway from the north end of the big wall connects the complex with the city. The black pool is situated at the southwest corner of the big wall. The refinery lies in a pocket at the southeast corner of the amusement park and is connected to the big wall by the chemical plant. The plastics factory protrudes from the big wall, stretching westward to Waterworld. The clear pool lies on the north side of the factory, and the pavilion lies to the south. The oasis, and beneath it the secret pool, lie in the center.
Figures Eleven and Twelve are roof and floor plans, respectively, of a portion of the big wall, the factory, the pavilion and the daycare center in the oasis.
Figure Eleven
Figures Thirteen, Fourteen, and Fifteen show elevations of the plastics factory as it stretches from the big wall to Waterworld. Figure Seventeen shows a section through the plastics factory. Figure Eighteen shows a combination plan/section taken longitudinally through the big wall. Storage racks can be seen at regular intervals along each level; smoke bellows from the heads of the giants on the stacks.
Figure Sixteen
Figure Eighteen is a photograph of the site model which was constructed entirely from plastic.

Figure Eighteen

The final presentation of the design thesis was begun with the reading of the following narrative, which is intended to relate the various parts of the design solution; to detail methods of construction and materials used; to give a sense of the overall context in which the project is located; to suggest the project's place within history and time; and to establish a sense of the spirit in which the project was undertaken.

I.

Light comes as a stream of revelers find their way over the highway from the Astrodome parking lot and descend on the amusement park, an unreal, fantastic, plastic, 'Astro' world, a world with no particular order save
that of its purpose, and no purpose save the production of pure and mindless amusement.

Your stomach hits your mouth as you ride the wave to the Viper to its apex, and for that split second of motionlessness before plummeting to the depths your eyes lock on a panorama of movement to the East: trucks, steel, glass and concrete, people and oil, water and smoke. A flash in your head tells you that maybe there is someplace else you should be. Then you dive, and it's gone.

Screams from the roller coasters and Ferris wheels mix with gray smoke pouring from the heads of giants as a whistle shrieks to announce the start of another shift. As the people ride the Cyclone, the workers ride their shifts. Either way, it's a 24-hour affair -- midnight to eight, to four, to midnight; light, to dusk, to dark.

II.

I can't tell you how long that old overgrown field sat there with all that rusted out junk strewn across it before they built the factory. I just know one day there were hundreds of men and machines tearing up the ground. The first thing erected was the oil refinery, built into a huge pit at the southeast corner of the amusement park. I don't understand what the problem was, because experts had proven the absolute, irrefutable scientific fact that modern methods of processing oil leave the public at no significant risk of danger. Anyhow, where else would they have found to put it?

From the Holmes Road railroad a spur was added which ran through the field of abandoned oil wells to the refinery. Crude oil was brought to the site in this manner for processing. While the refinery began production, the
chemical plant was built, and at its edge, the large black lake. Gases produced as byproducts in the refining process were sent to the chemical plant to be converted into plastic pellets. All nontoxic liquid residues from the refinery and chemical plant were to be fed into the lake. The lake was especially beautiful at night when moonlight was reflected off its oily surface.

As production at the chemical plant commenced the hollow wall was built, 2000 feet long, 200 feet tall, and 80 feet wide. It was situated on the easternmost edge of the factory site, across from a row of warehouses, and ran virtually the entire length of the property from north to south. Its composite formation was of poured in place concrete and steel. Sections eight feet in height were poured, one per day, for 25 consecutive days, after which time union requirements mandated three days of rest for the workers. A stainless steel formwork was required which, when removed, left a thin, metallic sheen. Night shift workers would stop to watch colors, lights and moving patterns from the amusement park bounce off the surface. Five gargantuan statutes of Everyman were commissioned for the top of the wall, and smoke would blow out of their heads via stacks on which these figures were impaled. Inside the wall, a delicate frame of prefabricated, fireproofed steel trusses was erected to hold numerous heavy-gage wire racks in which plastic goods were to be stored. Plastic pellets formed at the chemical plant would be sent to the big wall. From there, the pellets would be shipped out by truck while any excess would be stored in the wall at ground level. Glass lights located at intervals on the west side would illuminate the interior; loading bays located at intervals on the east wide would accommodate trucks for shipping purposes. Parking for employees was located along the length of the west side of the wall. From the roof of the north end of the building, a
thin walkway stretched over the highway, terminating in a 300-ft. high flair stack, with attached elevator, located in the midst of a parking lot. Visitors to the complex could park here and access the site by riding up the flair stack; their first view of the complex would be from the top of the wall as they walked through Everyman's legs. Visitors who had accessed the site via Astroworld might take the reverse path and be shuttled back to the Dome lot from the base of the tall stack. From the southern end of the wall, at ground level, dirt trails would lead the curious through the field of abandoned oil wells.

With this building almost completed, other workers moved in to construct the plastics factory, which would produce injection-molded plastic goods. Plastic pellets were fed from the big wall through the roof of the factory. Anything could and would be made here: toothbrushes, zippers, dustpans, cosmetics bags. Twenty feet wide and almost 900 feet long, this building ran in 40-ft. bays from the storage wall to the western edge of the factory site, terminating at the edge of the amusement park. A loading zone at this end accommodated trucks. Production was high; most of the goods were shuttled back into the wall for storage in racks above the plastic pellets. At the end of his shift, a hot, dirty worker could exit via a narrow stair protruding from the end which would lead him over a main entrance road and down into the cool wetness of Waterworld. The structure was comprised of round steel columns connected in pairs by trusses and placed at 40-ft. intervals. From this framework were hung panelized walls of glass and textured, self-insulating aluminum. Floors were poured concrete. The topmost level was where the plastic goods would be made. The level beneath would house service equipment, most notably the purification system for water used at high
temperatures in the production process. Purified water would move down from this level past an open arcade on the ground floor and into a long, clear pool, where it would evaporate and cool the building above it. On the north side of the building a service corridor was cantilevered from the main structure, its thin, ribbed coppery metal face bolted into curvature. This surface was shockingly bright on sunny days as light bounced back and forth between it and the clear pool. Hung from this northern face, and anchored by cables attached to the steel columns, were a row of small artists studios made variously of glass, of tin, of brick, concrete block, or wood. Here optimists using lightweight plastic media would work with a view over the clear pool and towards the Astrodome and the heart of the city. On the south side, skeptics would shape their heavy media in studios cut deep into the ground, light sifting down through tall, narrow slits.

On the south side of the plastics factory, a large bipartite pavilion was erected. Its roof was a thin plastic membrane held in curvature by cables strung from tall steel trusses. Glass walls allowed a view of the entire industrial complex. The east side of the tent was to house a cafeteria and lounge space for the laborers and artists; the west side, a gallery to exhibit the artists' sculptures. The pavilion would also serve as the location for special social events and company meetings. The floor of the gallery was comprised of a grid of removable metal panels laid over trusses. Removal of the panels revealed a deep, poured concrete pit which allowed accommodation of tall sculptures. Occasionally, a corporate-sponsored lecture or musical event would be held here; from the bottom of the pit, an honored speaker or musician might play to the crowd hovering above. Once a month, a public flea market would be held here to sell surplus products. Within the plastic
pavilion, factory workers could mingle socially with the artists and with visitors to the complex. Attached to one end of this structure was a utilitarian concrete block building which housed a medical clinic, administrative offices, a credit union, and a company store from which employees might purchase plastic goods at a reduced price. The space between the pavilion and the factory, covered with translucent, arched fiberglass panels, acted as an open air meeting place where employees often gathered during their scheduled breaks.

From the earliest stages of construction of the complex a hole had begun to be dug somewhere in the center of the property. No one talked about it much; it just got deeper and deeper. Men with huge earth-sucking machines worked diligently on this hole as the buildings around them were born. One day the hold was gone. From the central spine of the pavilion a path had been cut to the middle of the unlandscaped field where the hole had been. Now a great, rounded, raised earthen space, held by a panelized circular concrete retaining wall, had been formed. Under the direction of a master landscape architect, grasses, trees, and flowers were brought in to create a lush oasis for the enjoyment of the workers. In the midst of the refuge, a number of tall steel columns were driven deep into the ground, their tops connected by a lattice of slender steel beams and cables which held translucent laminated canvas membranes in tension. Platforms were built into some of these areas. Underneath, and connected to, these sorts of treehouses were built a series of boxlike, steel and glass rooms to serve as a daycare facility for children of employees. Eventually a cable-car connection was made from the top of one of the aerial platforms to the existing cable-car ride at the amusement park, providing a convenient method of escape from the
something underneath the garden, but management never would say anything about it. Eventually it came out that underneath was a vast, impenetrable container that had been built to hold all the waste from the industrial complex which was toxic and unable to processed for release into the environment. I don't know what all the commotion was about, though, because experts had proven the absolute, irrefutable scientific fact that once you bury something in one of those subterranean vats it can never, ever get out.

III.

Someone's dream of perpetual production was made real in this place, all those years ago. What I really want to know is what they're planning to do with this lot, now that it's just a pile of crumbled, rusted-out junk, shreds of plastic flapping in the wind.

The design thesis provides one answer to the difficult question of the role of the architect in creation of an architecture of production within a current, real, and problematic site and circumstance. The choice of context speaks to a desire for redemption of the wasteland. The choice of site speaks to the legitimate problem of lack of ideal sites, and perhaps more urgently to the lack of choice of the architect. The architect rarely has the luxury and power of choosing site and program. The architect is not a savior but a problem-solver, and perhaps a creator of temporary solutions at best. The architect succeeds if he creates even fleeting meaning from context, site, and program.
Notes

The Wasteland


2Elliot, p.59.

3Elliot, p.58.

4Elliot, p.61.

5Elliot, p.62.

6Elliot, p.64.

7Elliot, p.64.

8Elliot, p.65.


10Roethke, p.54.

11Roethke, p.56.

12Roethke, p.57.

A Study of Le Corbusier's City of Tomorrow


2Corbusier, p.96.

3Corbusier, p.98.

4Corbusier, p.98.

5Corbusier, p.243.

6Corbusier, p.88.

7Corbusier, p.199.
8 Corbusier, p.136.
9 Corbusier, p.11-14.
10 Corbusier, p.43.
11 Corbusier, p.27.
12 Corbusier, p.23.
13 Corbusier, p.64.
14 Corbusier, p.54.
16 Corbusier, p.18.
17 Corbusier, p.187.
18 Corbusier, p.202-203.
19 Corbusier, p.63.
20 Corbusier, p.73-74.
21 Corbusier, p.188.
22 Corbusier, p.50.
23 Corbusier, p.57-58.
24 Corbusier, p.53.
26 Corbusier, p.81.
27 Corbusier, p.134.
28 Corbusier, p.234.
29 Corbusier, p.136.
30 Corbusier, p.72-73.
31 Corbusier, p.117.
32 Corbusier, p.123.
33 Corbusier, p.208.
34 Corbusier, p.162.
35 Corbusier, p.93-94.
References

