Intentionally Unsustainable Forms for Crisis Design: Planned Obsolescence

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Reliably Unsustainable Forms:

Planned Obsolescence

Intentionally Unsustainable Forms for Crisis Design:

Guidebook for Designing a Crisis
The ShutDownDC protest that stopped traffic on Monday September 23rd demonstrated a significant shift in the debate for climate justice. The movement targeted not only the culpable institutions but the physical infrastructures which both monumentalize and enable factors responsible for global climate change (in this case automobile infrastructure). This is a particularly relevant example of how built form not only reflects our cultural preferences for private transportation but also informs/enables the processes which are actively working against public good. In this example road infrastructure is both a symbol and an active player in the game of continued environmental injustice.

This thesis looks towards documenting / analyzing / making critical and projective forms (in the manner Michael Hays / Robot Somol and Sarah Whiting identify in their corresponding Perspecta articles) which would exist in the cultural context which is now being referred to as the “climate crisis”.

While the crisis undoubtedly requires technical “solutions” it also demands an incredible social / cultural shift to which our understanding of architecture is intrinsically connected. This thesis focuses on the overlap between built form and culture and how projective work can insert itself into/forward the discussion on climate change as well as any technical solution.
The earth is currently more than 1°C warmer than the pre-industrial average, setting us on a course for a 3°C increase by 2100.

This increase would not only lead to increased intensity and frequency of extreme weather events but completely flood cities such as Shanghai and Miami.

Staying below 1.5°C requires drastic reduction in emissions over the next decade and net zero emissions by 2050.

Intergovernmental Panel on Climate Change (2018)

“New spatial consciousness is entering into public debates on key issues as human rights, social inclusion-exclusion, citizenship, democracy, poverty, racism, economic growth, and environmental policy”

Edward Soja | “Seeking Spatial Justice” (2010)
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Research Completed by Daniel Hogan

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Fall 2019
All Research Completed as Part of the Syracuse School of Architecture's Thesis Preparation.
The “Spatial Consciousness” that Edward Soja described in his book *Seeking Spatial Justice* in 2010 is a central pillar of the contemporary environmentalist movement. Using the 1994 social / civil rights activist group “The Bus Rider’s Union” as a case study, Soja explores how their goals of fighting racial and class based discrimination in LA’s Mass Transit system is a fundamentally spatial issue. Similarly, Activist groups like ShutDownDC and Greenpeace often problematize space/form through their protests as a means of highlighting various physical dimensions of the issues they are trying to bring to light.

While activist groups tend to have a wide breadth of objectives beyond environmentalism (including social and economic dimensions of climate change) the two main pursuits of Climate Solutionists has been that of “Mitigation” and “Adaptation”. Mitigation being the ceasing and replacing of technologies responsible for carbon emissions, and adaption being the preparation of physical infrastructures to handle more extreme weather events. Many of these solutions lack the critical eye of the humanities in their quest “solve” climate change, working within preexisting cultural frameworks.
"Green New Deal
_Transform our Economy into 100% clean renewable energy by 2030
_Halt fossil fuel extraction, processing, and infrastructure
Respect for Indigenous Land and Sovereignty
_Honor the Treaties protecting indigenous lands, water, and sovereignty by stopping extraction, processing and infrastructure projects affecting or on indigenous lands
Environmental Justice
_A transition that invests in prosperity for communities on the "front-lines of poverty and pollution"
Welcome those displaced by the effects of the climate crisis
Protection and Restoration of Biodiversity
_"Protection and restoration of 50% of the world’s lands and oceans including a halt to all deforestation by 2030"_
Implementation Sustainable Agriculture
_"Investment in farmers and regenerative agriculture and an end to subsidies for industrial agriculture"

"Youth leaders from around the world have called for a climate strike and global week of action from September 20th-27th ... In Washington, DC we will be answering the call and building on the momentum of the youth climate strikes in a major way: On September 23rd, we are going to shut down DC."

ShutDownDC | StrikeDC.org (2019)

Activist Demands
The halting of fossil fuel use and implementation of renewable energy is only 1 out of the 5 objectives of the ShutDownDC movement. This is a commonality they share with other environmental movements such as Greenpeace.

Activist groups such as these understand that environmental injustices are co-morbid with social and economic injustices

Pictured to the right is a series of interactive GIS maps available on the movement’s website which enabled those participating in the protest or self organizing to optimize the effect of their protest through the use of spatial data. This data enabled the protesters to target key intersections based on volume and their proximity to "climate criminals" while avoiding vulnerable populations and key infrastructures such as hospitals
Critical Form

On Thursday September 12th, Greenpeace a nonprofit environmental activist organization staged a protest in which 22 protesters repelled off of the Fred Hartman Bridge, blocking ship traffic for 18 hours. This bridge spans the Houston Canal, the most actively used pathway of getting Oil in and out of the country. This protest is significant not only in that targeted physical infrastructure as both symbol and active player but it also resulted in a legislative response. A new state law was enacted to charge the protesters with the obstruction of “critical infrastructure”. According to the National Conference of State Legislatures, 9 other states have also adopted similar laws in response to staged protests by groups such as Greenpeace. This raises the question of what really is critical infrastructure? What is the difference between a profitable economic channel and a hospital?

“In all, 31 of the climate activists are now the first to be charged under a new law aimed at protecting the state’s pipelines, ports, refineries and other facilities deemed ‘critical infrastructure.”

Fred Hartman Protest| All Things Considered NPR (2019)

“Choose people over Oil”

Greenpeace | greenpeace.org (2019)
Mitigation

One of the main objectives of the environmental movement is mitigation or the ceasing of the use of fossil fuels as an energy source and the implementation of sustainable alternatives. While this is undoubtedly essential to preventing climate change, in the implementation of “new” technologies one runs the risk of what could be called over-engineering the problem. While technologies such as Carbon Removal Plants may become necessary, they once again place technology as a protagonist in the story of our environmental relationships. It is necessary to examine culturally how technologies such as fossil fuels evolve from a “welcomed miracle” to an environmental plague.

Nicholas Szczepaniak’s Thesis on the opposite page is in some senses a parody of technologies or infrastructures which may exist in the near future if our methods remain unexamined.
Resilience

Resilience is the goal of Adaptation. The aim being to adapt built environments to resist the effects of the disasters that those environments enabled.

Resilience is a topic that is positioned directly at the center of the intersection between culture and science. Not only asking the “how” in preservation, but resilience also begs the question of “what” we are preserving and ultimately why. It becomes a clear indicator not only of economic value but also of cultural value.

The alternative to resilience which has also been brought up is the concept of calculated retreat. It is crucial to examine both of these avenues from a critical lens. For example retreat is the classic capitalist solution to many problems: when resources are exhausted, simply move. But this fails to acknowledge the implicit inequity in mobility. What are we preserving? Who can move?

“Rarely does the threat of global warming provide the impetus to speculate intensely on these matters at the architectural scale. Provincetown provides such a case. Sea level rise portends not only the loss of the city’s particular form of historically determined intricacy, but also the grandfathered codes and permissiveness that they enable.”

GSD | Preston Scott Cohen (2018)
Adaptation

Adaptation is perhaps where there is the largest deficit in critical formal thinking. It has become more palatable to deal with the effects of climate change, than to address its root causes. Many design proposals offer comfortable solutions which preserve the status quo.

Many designers, developers, and architects seem to approach the Climate Crisis as a sort of opportunistic venture into a new market. Framing the discussion from the point of view of: We will not only stop planetary extinction but *we will get rich doing it too!*

While its necessary to consider all avenues towards preserving our planet, it needs to be examined whether the economic model which specifically positioned environmental harm as an externalized cost, is the best solution.

Projects like Oceanix City] are oftentimes posed as solving some big problem, when in many ways [they’re] an attempt to get away from the kinds of social and political realities of other places,”

Citylab | Kian Goh UCLA (2019)

“Stop Seeing Climate Change as an Opportunity for Architecture”

Failed Architecture | Joshua McWhirter (2018)

“The era of Big infrastructure is over”

Water Will Come | Kate Orff (2017)
Relevant Works +

Annotated Research

The collected and annotated sources that follow were selected because of their subjects falling at the critical intersection between culture and form, science and philosophy.

A full List of sources can be found in the annotated Bibliography section.

SOURCES INCLUDE:
BOOKS, ARTICLES,
VIDEO, FILM,
PODCAST

Cumulative emissions of CO₂ and future non-CO₂ radiative forcing determine the probability of limiting warming to 1.5°C

a) Observed global temperature change and modeled responses to stylized anthropogenic emission and forcing pathways

Global warming relative to 1850-1900 (°C)
Asger Jorn | Excerpt from Imagine et Forma (1954)

“A fork or a bed cannot come to be considered necessary for humanity’s life and health, and yet they retain a relative value”. They are “learned necessities” (4).

“Obviously we are not against modern technology, but we are against the notion of the absolute necessity of objects, to the point even of doubter their real utility” (4).

“In order for a form to have collective importance, it must be transformed from a unique phenomenon into a typical phenomenon” (5).

— It is incredibly dangerous to think of modern objects as necessary to human life, because it results in an inaccurate assessment of what really makes us happy/healthy.

— The rational “analysis” of structure and function produced “irrational architecture” because of the inaccurate assessment of absolute necessity.

— “Definitive Form” is found through use, not designed function.

Conservatism of Forms

“When a new ‘type’ is invented to satisfy a function, its form is influenced by the ‘type; it is replacing or by the form of other known, familiar types” (6). The first bicycles had horse heads as a reference to their proceeding form. This is an irrational step not in pursuit of what Jorn calls “definitive form”, but rather a conservative compulsion to satisfy humanity’s unease with new, unfamiliar form.

Radicalism of forms

If a new form is successful, its form bleeds out in a “formal radicalism” into familiar form. This is due to consumer’s dissatisfaction with familiar form. Jorn illustrates this idea through images of baby strollers/cars/irons in the 1950s being created to look like aerodynamic planes. Today this is seen through the interdisciplinary dissemination of forms such as Apple’s “Squircle”.

9. 10.
“For the other truism about infrastructure is that it exists in constant struggle with its own obsolescence. It can never be “timeless,” but is always integrally linked to its own technological milieu.”

“Though architects imagine themselves at the center of the making of the built environment, much or most of it is under the direct control of engineers and technocrats, not designers. Even “nature” within a typical city is managed by an assemblage of scientists and engineers: arborists, ecologists, public works engineers, urban foresters, wildlife ecologists, and resource conservationists. The built environment is mostly not designed, in the sense that architects think of design; it is engineered and then maintained.”

“In this essay I shall examine a critical architecture, one resistant to the self-confirming, conciliatory operations of a dominant culture and yet irreducible to a purely formal structure disengaged from the contingencies of place and time”
“there’s a terrible irony in the fact that it’s the very infrastructure of the Fossil Fuel Age – the housing and office developments on the coasts, the roads, the railroads, the tunnels, the airports – that makes us most vulnerable”
Nair argues that the solutions require new models, including a different form of government—one not co-opted by consumption and growth-driven corporations—so that living standards will improve in a manner that does not consume or abuse resources at a faster rate than they are replenished and that also preserves the right for future generations.

"Capitalism and free markets have failed to produce sustainability.

"In the strong state, rights are to "all the basic necessities of life: nutritious and clean food, clean water, sturdy shelter, access to energy, satisfactory health care, safety and security." The sustainable state (which is inherently a strong state) will need to treat resource management as the center of economic planning, rather than... as an afterthought to growth, consumption, and production."
"New spatial consciousness is entering into public debates on key issues as human rights, social inclusion-exclusion, citizenship, democracy, poverty, racism, economic growth, and environmental policy."
History of Amsterdam from Car - Centric City to bike focused

Witte Fietsenplan (White Bike Plan) 12.

Stop de kindermoord (Stop the Child Killing) in the Netherlands 13.

“Where streets were unsafe for children, the problem became the mother’s responsibility, and an injury or a death was the mother’s fault.”

‘Mary di Stefano, president of the Parents’ Association of P.S. 121, made their position clear: “They’ll have to kill us to get through here,” “baby carriage blockades.”

14.
Boston, NYC, London: “warring pressure groups cannot get out of one another’s hair because they are pressed together in a sacred labyrinth of cultural monuments and real estate values”.

“Come the day when the smog doom finally descends,” “…when the traffic grinds to a halt and the private car is banned from the street, quite a lot of craftily placed citizens will be able to switch over to being pedestrians and feel no pain.”

Reyner Banham | Reuner Banham Loves Los Angeles (1972)
As movements before it, the Shutter Down DC protest on Monday September 23rd targeted physical form (in their case automobile infrastructure) both as a representation of American cultural preference for private transportation but also as an active agent in the process of environmental harm. However, in response to this, some labeled this protest as moot due to “cars emitting more CO2 while idling”. Therefore, the protesters only contributed more to the pollution they were trying to prevent. However, while this is true that stalled vehicles do emit more pollutants, this argument is a fallacy. In fact, the statistic that congested traffic causes more pollution is a typical argument used by those financially invested in expanding highways as they are able to argue that “reduced congestion decreases overall emissions”. When in reality, the reverse is true. Increasing highway capacity will only increase cars on the road due to induced demand. This argument was disproven in Economist Anthony Downs’ “Law of Peak Hour Traffic Congestion in 1960” when he determined contrary to popular belief that “on urban commuter expressways, peak-hour traffic congestion rises to meet maximum capacity”

The object of study in this exercise is a typical US Interstate highway “Clover-leaf” interchange. The object has been manipulated to be both a monument and an active player in the world imagined by policy makers and investors in which increased traffic capacity will lead to lower CO2 emissions. While this object allegedly reduces emissions, it also represents Americans freedom for individuality (or rather their preference for private transportation). The object has been transformed into a structure resembling Thomas Heatherwick’s Vessel at Hudson yards, a monument of similar proportions which has been critiqued by art Critics such as Andrew Russell as “crystalizing, in a $150 million physical form, many of the most baleful issues of the present moment: the outsize influence of the wealthy, the fecklessness of elected officials, and the privatization of public space”.

Altered Artifact 01
An Exercise in Design Parody
While the first object in the series took a form which both informs and reflects everyday American life and amplified it, the second takes an object largely outside of the public sphere and reshapes it into a civic monument.

Hydraulic Fracturing or Fracking has been a controversial practice since its first modern example in 1949. However, hydraulic fracturing for Shale Oil has rapidly increased in the united states in recent years in areas such as the Permian Basin in West Texas. Out of the many environmental offenses this practice brings, one has stood out, both symbolically and actively as a primary crime: Natural Gas Flaring. Flaring is the intentional burning of natural gas which is the less valuable byproduct in the process of Shale Oil fracking. Flaring occurs in two cases: First, in cases where the necessary pipeline infrastructure is too far out of proximity of the well for it to be profitable. Second being cases in which gas prices have dropped low enough to a point where it costs more (financially) to attempt to sell the fuel rather than just burning it. Some argue that this could be an economic strategy to drive up prices by limiting the supply of gas. Since the wasteful and detrimental effects of Flaring have been brought to light by environmental organizations, fossil fuel corporations such as Exxon Mobil and BP pledged that they would reduce unnecessary flaring. Despite claims these very companies have significantly increased their amount of flaring. According to the New York Times “Last year in Texas, venting and flaring in the Permian Basin oil field alone consumed more natural gas than states like Arizona and South Carolina use in a year”

The object, A typical fracking drill rig and flare stack is deformed into a public monument resembling Gustave Eiffel’s steel frame for the Statue of Liberty. The monument removes the statue’s copper façade exposing the capital focused inner-workings of a machine designed to waste. The corporate face of these companies is removed in the production of an icon which celebrates profit at any cost.
Many designs specifically within the field of architecture have been opportunistic ventures under the guise of Utopian thinking. Current practice tends to have an over reliance on technological solutions to solve our problems, and preserve our current way of life. To truly “solve” the problem it is necessary to study the context in which we design, not simply design itself.

The issues of resulting from rising global temperatures are natural consequence of persistent negligence in seeing the connections between what we value as a collective culture and the physical infrastructures / technologies we design. The deficits in ongoing efforts exist at this critical intersection between culture and design, art and technology, philosophy and science. The following is a genealogy of designs and policy, both realized and theoretical, which had both an impact on the formal, and environmental landscape we inhabit today. The intent is to measure patterns and responses to realized events to plot a more informed path forward.

Timeline

Chronology of Built and Unbuilt Infrastructures

The extensive environmental damage seen today is the result of a critical lack of consideration for the unaccounted / externalized costs of capitalist development. A key component to these unaccounted costs is the cultural and social context in which created form exists. Infrastructure projects have an unintended ekphrasis, telling the story of how the current climate crisis was constructed (both materially and theoretically)

WORK INCLUDED:
ARCHITECTURAL / INFRASTRUCTURAL PROPOSALS,
NOVELS,
+ LEGISLATION
Images Cited: 17-xx.
(See Endnotes)
Federal Aid Highway Act of 1956
Dwight D. Eisenhower

Naked City
Guy Debord

Spatial City
Yona Friedman

New Babylon
Constant Nieuwenhuys

Tokyo Bay
Kenzo Tange

Dome Over Manhattan
Buckminster Fuller + Shoji Sadao

Plug-In-City
Peter Cook (Archigram)

Walking City
Ron Herron (Archigram)

Instant City
Archigram

Continuous Monument
Superstudio

Rail Passenger Service Act of 1970
Amtrak

Salvage of Italy’s Historic Centers
Superstudio
1973
Clean Water Act
U.S. Environmental Protection Agency

1973 Oil Crisis
N/A

The Big Dig
Metropolitan Highway System

2003
MOSE Project (Venice)
Consorzio Venezia Nuova

Eko Atlantic
South Energyx Nigeria Limited

Lily Pad
Vincent Callebaut Architectures

2009
The Seasteading Institute (TSI)
Patri Friedman and the engineer Wayne Gramlich

2009
A Defensive Architecture
Nicholas Szczepaniak

A New Urban Ground
landstudio (Susannah Drake)

2010
Oyster-ecture
SCAPE (Kate Orff)

2010
Makoko Floating School
Kunle Adeyemi

2012
Belt and Road Initiative (BRI)/Xi Jinping

2013
Questions of Reconstruction After WW2
Anxiety about Nuclear War
Anxiety about Industrial Pollution
Anxiety about Urban Sprawl
“We are not to trust walls wholly for our Defense, but stand in need besides of the Favour of Heaven”.

Walls are not simply physical barriers which stop enemies, but they are also the idea of protection they manifest, generated though their aesthetic (ex: rustication as an ornament). The Aesthetic of Safety.

Book VII: of The Ornaments of Sacred Edifices | Leon Battista Alberti (1452)

“Walls, dikes, and levees make people feel safe, even when they are not”

Water Will Come | Jeff Goodell (2017)
MOSE Project  
Consorzio Venezia Nuova  
2003-

WALL

Eko Atlantic  
South Energyx Nigeria  
2003-

WALL + TOWER + ISLAND

“Lily Pad”  
Vincent Callebaut Arch.  
2006

Oyster-tecture  
SCAPE (Kate Orff)  
2010

WALL?

Makoko Floating School  
Kunlé Adeyemi  
2012

WALL + ISLAND

Blue Dunes  
WEST 8 (Adriaan Geuze)  
2013

Great Garuda  
KuiperCompagnons  
2016

WALL

Seasteading Institute  
Patri Friedman  
2008-

LIVING BREAKWATERS

SCAPE (Kate Orff)  
2014

The Big U  
Bjarke Ingels Group  
2014

WALL

TE-1  
Ruy Klein  
2017

$60M

ISLAND

Living Breakwaters  
SCAPE (Kate Orff)  
2014

TE-1  
Ruy Klein  
2017

$335M

WALL

Seasteading Institute  
Patri Friedman  
2008-

LIVING BREAKWATERS

SCAPE (Kate Orff)  
2014

TE-1  
Ruy Klein  
2017

$60M

ISLAND

A New Urban Ground  
dlandstudio  
2010

The Futer of Provincetown  
Preston Scott Cohen  
2018

Great Garuda  
KuiperCompagnons  
2016

WALL

Seasteading Institute  
Patri Friedman  
2008-

LIVING BREAKWATERS

SCAPE (Kate Orff)  
2014

TE-1  
Ruy Klein  
2017

$6B

ISLAND

West 8  
Makoko Floating School  
Kunlé Adeyemi  
2012

“Lily Pad”  
Vincent Callebaut Arch.  
2006

Oyster-tecture  
SCAPE (Kate Orff)  
2010

WALL?

Great Garuda  
KuiperCompagnons  
2016

WALL

Seasteading Institute  
Patri Friedman  
2008-

LIVING BREAKWATERS

SCAPE (Kate Orff)  
2014

TE-1  
Ruy Klein  
2017

$335M

WALL

Seasteading Institute  
Patri Friedman  
2008-

LIVING BREAKWATERS

SCAPE (Kate Orff)  
2014

TE-1  
Ruy Klein  
2017

$6B
Formal Shift

Familiar Form

Novel Form

Inherent Obsolescence of Forms

Transformation of Novel Form from Unique to Typical Phenomena

Cultural Preference

Inherent Consumer-Based dissatisfaction with familiar form.

Gain of Collective Importance Through Useful Application

Gain of Collective Importance through Appeal to Novelty

Between Culture and Form

Inform

Culture

Form

Reflect

Culture

Form

Dissemination of Forms
Key References:

Additional References:


