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The thesis project is a reaction to the alarming rate of building and development depreciation caused by foreign investment in the Middle Eastern city of Dubai. The intervention looks at how architects, developers, and planners can counteract this phenomenon by designing for speculation in order to mitigate future crises or successes. Understanding economic terms such as Joseph Schumpeter’s “creative destruction” and Brook Stevens’ “planning obsolescence” are imperative to help structure such a proposal. Though such terms were attributed to industrial products such as cars and electronics, they are today applicable in the context of Dubai and similar cities worldwide. Architecture and real estate products have become victim to this capitalist phenomenon.

The project is framed as an architectural reaction to the world’s increasing capability to make and accumulate in conjunction with a growing desire to be transient and global. Has architecture become a mere toy product which can be changed around as it becomes obsolete? Rather than be destroyed, how can architecture morph and be updated into something new? Architects are not in complete control of consumer wants and needs; these, too, continue to change at a dynamic pace. I argue that a synchronized system that can reflect flexibility is integral in order to maintain equilibrium in the urban economic model today. The project design is an infrastructure capable of harnessing capital inflow and outflow while withstanding volatility, temporality, and a population in-transit. Dubai is the core case-study and the thesis explores how such a generic system can adapt to cities such as Miami, New York City, and Juba.
What does it mean to invert the urban fabric? When figure becomes ground, and ground becomes figure, how does a neighborhood adapt to moving from extreme privacy to communal living? Despite the complete destruction of the existing fabric, the proposition immediately disallows a utopian, tabula rasa response. Although ghosted, the idiosyncratic identity becomes more identifiable and somewhat nostalgic; rather than the footprints becoming inhabitable buildings, they become holes in the built environment that one can walk out into (ground floor courtyard) or look down into (upper floor windows/terraces).

As one of the largest and most populated cities in the Middle East, the city of Riyadh is a clear example of a metropolitan city that is continuously growing in a low-density sprawl. This thesis aims to explore how we can reimagine the city in the already-built environment as a way of densifying the fabric.

Despite its metropolitan nature, importance, and large population, life in the city of Riyadh is more suburban than urban. The majority of residents live in stand-alone houses. This culture of habitation has, however, begun to adapt by this generation from segregated stand-alone houses, to duplex houses, to gated communities, and though minimally, to high-rise living.

The thesis project aims to push this slow transition into a faster trajectory towards a super-block megastructure. Different people come together under one large roof; programs come together and pull apart. A unified plinth acts as a mediator between different kinds of traffic, users, and spaces, blurring the lines between public space, religious space, housing, and work environments. The above-ground environment becomes a pedestrian space, while a lower level of the plinth pulls vehicular traffic below ground, and creates an expansive parking and road zone.
Coined as the ‘longevity revolution’, the global developed countries have witnessed an unparalleled extension to human longevity during the past 50 years. This dramatic increase in elongated morbidity, coupled with a declining fertility rate, will persist to see the world’s elderly population of 60 and above reaching 2 billion by 2030. While the sheer quantity and prolonged presence of elderly citizens in our urban environment may emerge as the controversy at hand under the guise of economic pressures, broken pension schemes, and infrastructural inadequacies, this issue of scale only exacerbates a much more fundamental problem with regards to how our institutions have socially constructed old age and death. More specifically, both must be acknowledged as an uncoordinated process that unfolds in space for decades at different levels, at different rates, and to different extents.

While the institutionalization of retirement was legitimized in 1935 upon a meta-narrative of people in their golden years spending social security funds to indulge in sheer leisure at retirement homes, the upcoming generation of 60+ strives to remain healthy, active, engaged, and contributing members of society. Activities previously considered exclusive to young adults —sports, sex, education, work, networking— are increasingly defined as prerequisites of successful aging. In other words, the sociocultural imaginary of aging is increasingly elongated, pluralistic, and unpredictable, but potentially purposeful, meaningful, and fulfilling.

The thesis argues for a re-examination of the architectural and urban production of spaces in the second half of life that continue to uncritically endorse the outlived paradigm of monastic hedonism. Instead of further expanding the paradigm of the aged as diseased, our urban environments ought to enable the pluralistic lifestyles of the active seniors who can continue to contribute to its communities. It will test new ideas of aging-in-the-city in South End, Boston, an increasingly gentrified and high-cost neighborhood occupied by a rapidly aging population with decreasing income levels. As more seniors elect to remain in Boston while another influx of suburban seniors yearn to move into the city, the urbanism and architecture of Boston will need innovative ways to sustain and empower its demographic diversity.

By challenging the prevalent assumptions of the modernist housing type, ranging from unit compositions, ownership models, occupancy stereotypes, and urban integration, this thesis seeks to invent a new dwelling typology as a field condition that combines ownership flexibility, collective living, and programmatic hybridization.
Architecture is not a machine. It is part of the body; it contains life. This project invents a new system of architecture which grants people the freedom of space, structure, and material.

*Freedom of Space*
feast of light, threshold, liminal space, tailoring

*Freedom of Structure*
self-growing bacteria, transportable, 1/8” THK, stackable

*Freedom of Material*
earth, sand, reusable, low cost

Inspired by the Statue of Liberty in New York, the system liberates the body of architecture from architectural authority by exploring new construction methods. Stitched laminate fabric filled with earth materials is inflated according to the gravity of material. After hardening a layer of earth material and fabric, the filled sand is removed. Therefore, the mass, volume, and properties of the material form a space naturally. This is an architectural dream that departs from heaviness, uniformity, and the horizontal window.
This thesis establishes a qualitative analysis of current playground design and challenges the minimal role that playgrounds play in education, spatial cognition, and the development of a child's understanding of space.

McDonald's playgrounds were introduced in the 1970s and proliferated across the nation (there are over 8,000 units). They created a model that has permeated American culture. This model is based on two paradigms: the creation of a totally risk-free world and a monolithic approach to playground design which relies on the "post and platform" construction model. Though this might be okay for a fast food pit stop, the user quickly loses interest. Historians attribute this design model to the loss of relevance of physical play.

This thesis attempts to understand what playgrounds could be if the focus of the design shifts from one that prioritizes safety and ease of assembly to one that amplifies a child's spatial experience and sensibility.

Models of learning through play are well documented and find their origin in the creation of the first kindergarten by Friedrich Froebel. However, these pedagogical tactics evolved separately from playgrounds and relied mostly on small toys that challenged children to understand and cultivate different areas of knowledge. Spatial cognition was rarely nurtured and broadly assumed to develop independently.

This thesis argues for the relevance of spatial cognition and grounds itself in the research of Jean Piaget, the father of developmental psychology. Through his research, Piaget outlined the different stages that a child goes through to develop an understanding of space. I focus on the first stage, the topological stage, where children, lacking an understanding of geometry, understand the world through relationships of containment, location, direction, etc. This innate knowledge quickly disappears as a child grows and develops an understanding of the world in terms of its geometrical parameters.

The abstract grammatical particles that describe spatial or temporal relationships in almost every existing language are called adpositions. They describe in a topological manner the contextual relationships we have, or that we understand objects to have, with other objects. It is through the creation of spaces that expose children to a broad array of adpositional conditions that this thesis offers the developing child the possibility of learning through and about space by instrumentalizing his or her world view.

Seeking a model that encourages participation and topological variability, this thesis proposes play spaces that inhabit a middle scale: mobile, modifiable objects that engage the child in different topological states depending on their position and orientation.
Yesterday’s desert is today your new home, is tomorrow’s strip mall. The West remains the American ‘way out’, a chance to reinvent oneself, ‘to make it’. Yet, the desert landscape is fraught with the politics of displacement, exploitation, and imposition. Our collective imprint on this uniquely American geographic region is staggering. ‘Going west’ still symbolizes the quest for freedom and opportunity regardless of the obvious damage that occurs when we choose to relocate ourselves and our un-revised modalities for living: our lifestyle.

This thesis seeks to investigate the proliferation of the single-family suburban house within the American Desert context in conjunction with aesthetics of the American Dream. Life Under the Desert Sun proposes the re-invention of suburban living in the American Desert based on two metrics: [1] an embrace of arid living via a reduction in the water consumptive lifestyle and [2] the logic, success, and desirability of the mass produced single-family home. The proposal focuses on the area of southern California within the Antelope Valley at the edge of both the Los Angeles Metro Area and the Mojave Desert; the region faces an extreme drought condition for the fifth year.

Following the housing boom of the late 1940s, the American suburban dwelling became the viral carrier of lifestyle imagery and was itself a representation of the ‘American Dream.’ This ‘Dream’ was imported to the Desert West at the onset of the post-war housing boom and has been relentlessly, whilst generically, transposed across the entirety of the American Southwest landscape.

Cities in the American Desert continue to grow. The desert houses over 20 million Americans—20 million Americans who often seek the oasis-desert city with dreams of 300 days of sunshine and greening its rugged barrenness. In domesticating the desert and welcoming an influx in population, we have altered and marked its landscape in strenuous and forceful ways. The question hence becomes, ‘how can we inhabit the desert?’ How can over 20 million suburban dwellers continue to inhabit the American Desert while subsisting an impending drought?

A crisis is a turning point, a decisive moment when tensions and instabilities peak. Change becomes inescapable. Crisis implies the questioning of beliefs and habits. As crisis and scaremongering foretell an impending drought, political leaders call for an increase in permanent and drastic infrastructural feats, including the desalination of seawater and the importation of icebergs from Alaska, instead of re-examining the persisting ‘way of life’ at the core of the issue. As it is understood today, the lifestyle persists while the resources, and all else, succumb to this ‘desire.’
The underground has been typically viewed as a utilitarian space of expansion. Modernism required an infrastructural underground; it was seen as a space of necessity. Historically, the underground has been a place of ceremony and ritual, an otherworldly escape from reality, or inhabited by the literary, carceral, or religious. The contemporary city calls for a reassertion of this ceremonial underground which extends beyond the infrastructural impulse. With populations rising and land a finite commodity, the body and the city call for a new space—one that is unachievable at grade. The city, with its many noises, sights, and smells, needs filtration. This thesis invites an exploration of the underground that brings into question conventional disciplinary notions of representation.

Working within the underground requires a different set of architectural operations. The underground offers freedom from existing architectural conventions. Carving becomes the tool of the architect, as the underground relies on excavation to create space. The underground becomes a zone of expression. The notation of the underground releases us from the banality of orthogonality. The underground enables the refusal of the rationalization of the city.

While mediating the path of the person, the underground public space offers a sensorium to explore, not a labyrinth to merely follow. This proposal allows for different experiential conditions not found typically at grade through manipulations of the perception of light, sound, materiality, and depth. In working within the constraints of no light or air, and construction by subtraction, architectures of transition become how one moves through the project. Thinking underground is an exercise in total interiority and provides an opportunity for reorienting the senses through sequencing, light, and scale. Entering the world of the subterranean subverts visual dependency as physical sensation underpins spatial cognition. This thesis positions the underworld as an unadulterated, highly stimulating, and sensorial experience.

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Sonic Impressions: LiDAR drawing showing the intersections between the visual and sonic representations of the domed spaces
Should the design of architecture be solely in the control of architects? Should architects trust the public to let them design with us? These are the core discussions concerning participatory design, a design approach which involves public effort. In theory, this democratic process should result in a more responsive and suitable project for users. Although the concept of participatory design works well in theory, there are constraints that stopped its wider application. How can architects collect a large number of ideas that can lead directly to a design solution? Will the result have any advantage compared to the traditional design process?

Building upon precedents, my thesis proposes an on-line participatory platform, a new computational tool that allows a large number of participants to be involved in the design process. Each user’s entry is translated into a set of data that represents their preferences in architecture. Then, I extract common patterns from the data pool to compute a result. The final goal is to calculate an optimized design that will suit most users’ desires. Will this public like what they designed collectively? The result will spark an interesting discussion.
Since the 1979 Economic Reform, the Chinese government’s authoritarian interference with land use development to serve developers and its own interests has led to incongruent development between industrialization and urbanization. This process of land commodification has resulted in the demolition of existing productive urban fabric such as urban villages. Developed cities such as Guangzhou, paradoxically suffering from both high vacancy rates and exorbitant property prices, exemplify the impending crisis wrought by this flawed mode of urbanization. Furthermore, the urbanization does not take into account the massive urban migration that fulfills the low-wage labor force necessary to sustain a metropolis. The native villagers, who collectively own rural residential land, have elected to house the urban migrants within their own buildings.

With high density, occupancy, and adaptability, the urban villages represent a resilient form of urbanism. The Xiancun village in Guangzhou is encircled by the Tianhe Central Business District (CBD) and epitomizes the utmost contradiction of an agricultural land enclave encircled by development. The CBD is the nexus of real estate development and also houses over 20,000 urban migrants who are excluded from accessing public amenities.

The villages have exhausted the capacity to grow as their expansion cannot encroach upon the boundary between urban and agricultural land. The rural-urban land ownership system also prevents the urban village from receiving governmental support to develop formal amenities. At the same time, the government cannot regulate the village with its current urbanization tools or its urban policy framework. The distribution of governance remains unresolved between the city government, the village committee, and individual villagers.

This thesis argues for the further densification of Xiancun and proposes an architectural framework to create a new social contract between the city government, the villagers, and the urban migrants. A series of anchoring structures with centralized infrastructure and amenities re-territorialize the distribution of resources and a strategy of architectural infill achieves higher densification. The Guangzhou government will finance the construction of the externalized infrastructure and amenities while gaining the right to monitor the floating population of the village; the village council will construct a sectional framework for a new ground on the rooftop to accommodate higher density; the villagers and urban migrants will negotiate among themselves to attain higher land use efficiency.
All around the world, old harbor areas stood empty once the city maritime functions began to wane in the early twentieth-century. Due to the excellent views, the location on the water, and the proximity to the city center, these areas have been rapidly redeveloped to facilitate urban expansion in the last three decades. The overlap of industrial decline and new revitalization has prompted new issues.

On the macro-level, because of the emptiness of the newly developed site, the density is not comparable and is difficult to evaluate in its integrated context. On the micro-level, an urban apartment is highly efficient means to provide living containers for urban dwellers; however, it sacrifices high living quality to enjoy sunlight, fresh air, the view, and private garden to every housing unit. A single family house symbolizes a success of personal life; however, it compromises urban public space and usually is exclusive to social activities in a shared economic era.

This thesis project addresses the issue of livability as part of the harbor revitalization in a transitional site of a rapid redevelopment district, empty industrial zones, and suburban residential areas. I aim to create a three-dimensional, micro-urban living system in which residential, commercial, recreational, educational functions are merged together.
This thesis project is a speculative proposal; it assumes that 3D printing technology is a major manufacturing and construction method in the future.

Technological advances in the last centuries have progressed in a way to standardize products by mass production. The valuable original was owned and enjoyed only by a minority. However, the advent of 3D printing technology dramatically reverses this relationship between the original and the product in that it can reproduce the original in an inexpensive, fast, and extremely accurate way. The original value can be easily propagated to a majority. Moreover, the new technology can add more details and meanings by transforming or morphing the original digital file.

This thesis illustrates different degrees of influence of the technology in the city of Sana’a, Yemen. The city has four distinct areas currently: the historical world heritage site, a partially protected area, a modernized area, and an informal settlement. The four distinct areas will be changed in different ways by different uses of 3D printing technology.

The tower house, which is one of the most significant building typologies of the city, is used to examine and compare the influences of the technology. More specifically, the ornament of the tower house and possible scenarios of transformation are the main design focus of the project. Ornament will appear in different scales and configurations in the future city of Sana’a, from high resolution ornament to inhabitable ornament.

Courtyard of Inhabitable Ornament
In the book *Silent Spring*, Rachel Carson argues that humans are the one species that could modify their surroundings so drastically as to cause damage to the Earth. Currently, as a consequence of accumulated modification, the rapidity of environmental change accelerates and causes hazards all over the world. Though the earth is always changing, the current speed of change is unprecedented and problematic.

The site of this thesis, the Rhone glacier and surrounding area, shows the drastic speed of change. The Rhone glacier, 11,500 years old, is one of the oldest glaciers in the Alps. However, scientists estimate that this glacier, along with 94% of all Alpine glaciers, will disappear in 100 years due to climate warming. When the environment changes slowly, flora and fauna can adapt to the change. However, species that are vulnerable to small changes become extinct.

Numerous disciplines document the alarming changes taking place including art, science, photography, and film. Each uses unconventional methods to document the rapidly-changing world. I call this new type of documentation culture the “culture of capture.”

Its preconditions are [1] a shared concern about the extinction of species and the loss of the landscape and [2] the use of new technology to document every detail of change.

This thesis argues that architecture is a unique medium that can both document the changing environment as well as have a positive impact on the physical form. I propose two architectural interventions: a ‘glacier blanket’ and a ‘mountain hat’ to delay change and to archive the physical remnants of the melting glacier and nival plants. The future scenario of the site, which consists of four aspects, Glacier retreat, Bio-Diversity, Tourism, and Infrastructure, is complicated and constantly varying. The architectural documentation will also be an intricate system that adapts its function and form.

Historically, architecture has been a repository of other media. In this thesis, architecture is both a medium to document and a space to archive. The architectural documentation will propose a new relationship between architecture and the environment by becoming a storehouse of the earth.
This thesis explores architectural drawings and representations appropriate to describe forms and spaces in zero and artificial gravity. Its focus is on the physical forces associated with life and motion in a rotating environment and the formal and geometric architectural response to those forces.

Orthographic drawing relies on a flat plane onto which lines are statically inscribed. This project hopes to speculate on an alternative drawing that can help to describe habitation and the uncanny experience of life in space. Without the constraints of gravity, architecture is no longer forced to have plumb walls, flat floors, or ramps with specific ratios. Zero gravity presents itself with its own challenges of disorientation and visual confusion.

This project will juxtapose the effects of zero gravity with the spaces imbued with artificial gravity generated by centripetal force. Human experience in outer space is tied to feelings of disorientation and distortion. This project seeks to understand these perceptual changes in order to adapt the human body to a new way of seeing. The visualization of movement through the presence of the human body and its role in orientation and perception will set the parameters for an experiential representation of life in space.
This thesis proposes an electronic waste recycling center in downtown Manhattan as the test site for a new ecosystem of material production and consumption. Discarded electronic materials represent the single fastest growing source of municipal waste; this waste is often illegally exported to developing countries such as Ghana, Nigeria, India, and China before being processed into reusable materials. As urban societies increasingly rely on digital devices and those devices become obsolete at rapid rates, a new model for managing e-waste is desperately needed. The thesis employs architecture to raise awareness, illuminate deficiencies in the current model of e-waste management, and orchestrate an alternative model to current practices.

The project is situated on the Gansevoort peninsula on the west side of Manhattan; the peninsula is built upon on a wasteland made from landfill and is the former site of a municipal waste incinerator. Micro-collection points throughout the island collect approximately 100 tons of daily e-waste that are then transported to the recycling center, which serves the entire island. The architecture transforms e-waste into commodifiable resources such as gold and silver to make new products. Not only is the architecture a machine for creating new material, it also becomes a site for exchanging knowledge, allowing the public to engage in and participate with the recycling processes. By exploiting the site’s latent symbolic and logistical value, this thesis proposes a new urban consumption cycle. “One man’s trash is another man’s treasure”; obsolete devices enjoy their second lives.
Imagine. How do we create an adaptive and customized space with no materials at all? Can the generic be customized and specific at the same time? This is the same daily route you travel and the same space you pass through. And it is not. Given extra layers of “light”, a compose-able architecture is yet to come. A building is a living, breathing space that is always moving and rapidly morphing; its animus is time. Take a closer look at the surfaces that enclose our space. There are screens with news, lectures, movie clips; there are windows, shadows, and shade created by lights of all different kinds; there are colors and ornamentations that inform us of the history of our architectural lineage. Sunlight naturally creates an evolving atmosphere with the change in time and the seasons; now, with new technologies, we can create even more dynamic atmospheres with light that engages and collaborates with the sun.

Light exists in two forms: natural light and artificial light created by technology. Sunlight creates our everyday perception of the physical world, and thus, our ability to understand and live in the space around us. Nevertheless, “digital light” is becoming an increasingly larger part of our lives as we perceive and create information through the medium of a screen. However, “digital light” does not always need to be flat. Through projection mapping, we can create a three-dimensional light that leaves the two-dimensional surface of the screen and is responsive to the environment of the physical world. Using this method, our perception of the physical space will not only change due to the passing of the sun, but also from our own agency in creating altered environments through designed projection systems.

This project creates a methodology and a toolkit to design dynamic spaces with natural and projection lighting that allows for customization and alterations of space. Through this system, the static building becomes an instrument to be played. This project also demonstrates these tools through investigating projections with light in the atrium of the MIT Brain and Cognitive Sciences Complex.
Nomads of Light: A New Housing Paradigm for the North

Hui Li
Advisor: Azra Akšamija; Readers: Brandon Clifford, Christoph Reinhart

Life in the North has changed dramatically in the past 60 years. The nomadic people of the North have been forced to settle down into permanent housing since the 1950s. Imported Euro-Canadian single-family housing replaced vernacular nomadic housing. The Arctic is and will undergo even more dramatic change from the south due to oil exploitation and the recently opened Northwest Passage. Will the North be overwhelmed with a Southern way of thinking through globalization? What is the housing paradigm for life in the North?

A nomadic lifestyle and light are two of the most important factors for life in the North. The nomadic lifestyle is defined by moving around within a smaller community; nomads are no longer solely searching for food. The community is still important in terms of a sharing economy and an identity.

Though no longer a nomadic people chasing food resources, the nomadic lifestyle of moving around within a smaller community is still important in terms of a sharing economy and community identity. There have been two modes of housing in the North: Inuit winter igloos and Euro-Canadian housing. Inuit igloo chambers are not constrained to a particular program or particular family; people wander around and utilize different chambers in their own way. According to anthropologist Peter Dawson, contemporary Inuits have transformed the Euro-Canadian housing model to fit their nomadic lifestyle.

In the North, light also determines the way people live and creates geographical identity. On one hand, winter light is so scarce that people are susceptible to winter depression and alcoholism. On the other hand, summer light is so abundant and full of highly-saturated colors that people find every possible way to enjoy the sunshine.

This thesis proposes a housing paradigm for the North—Nomads of Light. Like a light machine, the housing captures the light atmosphere at different times of day and different times of year. At the scale of the community, different families live in a nomadic lifestyle to chase the precious sunshine. At the scale of the body, a person adjusts himself to chase the sunlight in his own way. This housing model seeks opportunity; it maximizes the pleasure of living in the North and creates geographical identity.
The Cloud is the new public utility of digital networks that can be found in urban and rural areas that reaches both locally and globally simultaneously. These low-occupancy maximum-security infrastructures collect virtual exchanges, encounters, and interactions into physical manifestations known as data centers. Resulting from their high degree of computational power, the data center servers exhaust an extreme amount of heat. This thesis argues that the mass amount of waste heat generated from the servers can be diverted from polluting the air and instead funneled into newly added civic programs that inhabit the spaces of the Cloud. Such a diversion would turn the ultra-private architecture into public participants of the city in which they are embedded.

Although commonly found in large isolated buildings in the countryside, many data centers are in Manhattan along a single corridor adjacent to the Hudson river due to the landing of the Transatlantic fiber optic network cable. Each year more square footage is dedicated to housing these servers in one of the most densely populated cities in the world. The current trend is to create more security, fortify the servers against the city and its population, and close all physical relationships to the city. This demonstrates how our data is currently prioritized over the occupants of the immediate city that it serves. This thesis reverses the trend by creating public space from the Cloud, not in spite of it, allowing both to benefit from one another.

This research investigates a specific case by utilizing the construction eccentricities of the AT&T Long Lines building in Manhattan while consolidating and reorganizing its newly added data center servers to create a new thermodynamic symbiotic relationship. A public promenade inhabits the building and captures the excess heat. It winds upward and is comprised of programs of leisure and surplus that are defined by their heat as a physical collection of biomes from as far away as the Cloud reaches.
The essence of trauma is precisely that it is too horrible to be remembered, to be integrated into our symbolic universe. All we have to do is to mark repeatedly the trauma as such.
— Slavoj Žižek

This thesis reexamines the role of architectural preservation in a post-disaster era by speculating on the inherent tension between disaster ruins, psychological interventions, and collective memorialization. It challenges the conception that preservation must be static. I argue that the historicization of past events should not only manifest in the physical integrity of artifacts, but rather shape and be shaped by the present and future of a site. The thesis seeks to rethink the act of preservation as a means of integrating memorialization into the everyday experience of the inhabitants.

Sited in the 2008 Wenchuan Earthquake in China, the thesis proposes an alternative way to restore and memorialize the aftermath of the Beichuan town. By establishing a live memorial versus a frozen ghost town, the thesis positions the earthquake aftermath in a direct relationship with the contemporary citizens and thus projects the site towards its future.

The thesis traces the frozen ruins in both geographical and ideological terms. It explores preservation through memorialization by embracing future collapse, growth, and transformation. After analyzing the existing urban context, the thesis welcomes change as a positive element in the preservation process. The project adapts and recycles the building waste; transforms physical memories into resilient infrastructure; utilizes the secondary disaster to reshape the landscape; and celebrates the tectonic rubble together with natural or subnatural elements, such as debris, dust, mud, and annual flooding.
In an era of privatization, cities face a major challenge: investment in the public domain depends increasingly on the private sector. As a result of this reframed public agreement, the role of architecture is often reduced to a visual shape and leasable square footage rather than its potential contribution to a new educational, social, or civic dimension. One of the dominant constituents of the privatized city is the modern office building. Strict zoning regulations contain these buildings into highly concentrated areas, contributing to both longer average commutes as well as increased inequality in land values.

This thesis challenges the role of the office building within the city by adapting the emerging model of co-working as an urban device. With a rapidly growing class of entrepreneurs and freelancers as well as the prevalence of virtual work, the need for a traditional central business district becomes less clear. On a regional scale this proposal looks at under-utilized areas within Boston that could be developed with distributed work in mind. The office collective would pool the resources of the private and the public to create new shared infrastructure. On an architectural scale, the traditional office building is subdivided into zones with varying levels of public access based on both individual and site needs. Work space is now porous, generous, and a genuine neighborhood asset.
In the context of growing cultural tourism, water heritage becomes a unique topic for its inherently multi-scale cultural, social, and environmental aspects and its potential to become a “living heritage” by incorporating local participation in a comprehensive development. This is nowhere clearer than in China, where rapid development in urban and rural areas and large scale state sponsored water infrastructure projects create tension between heritage conservation, local economies, and environmental protection. Currently, there are very few examples of how architecture and landscape design can address this tension and potential. 

The thesis develops a twofold argument for an inter-disciplinary water problem. From the hydro-social and geopolitical perspective, the thesis continues to investigate the question raised by Karl August Wittfogel and his successors: how can a centralized state use water infrastructure as an apparatus for coordination and political control? How can the local people develop their own social norms and cultural customs in adaptation to the state project? From the architectural and cultural-geographic perspective, it embraces the indeterminacy and duality of water metaphorically and materially, following Charles Moore’s trajectory.

The thesis seeks to establish a mutually beneficial relationship between the state and the people by integrating cultural tourism in water-based infrastructural development. It also aims to develop a new water architecture which expresses the essence of temporality in material and stimulates “living heritage” through community engagement.
Pedagogical experiments played a very important role in shaping architectural discourse and practice in the second half of the twentieth-century. The architecture discipline developed and struggled for new territories by articulating its relationship to the technological, socio-political, and cultural transformations of the time. Education became a vehicle for these actions.

The rise of information technology created the sharing economy. Accessibility to spaces has been redistributed together with the notion of private and public territories. Though companies are starting to build platforms like AirBnB or Breather to accelerate multi-programmatic spaces, the spatial arrangement of institutional organizations tends to stay unchanged.

This thesis aims to push architecture schools to reimagine the spatial organization of education in the sharing economy by enabling architecture elements to access, curate, and reinvent space into pedagogical programs. Instead of a static campus, an architecture school should be a system within an ever-growing network of spaces as part of urbanization.
Nuclear Oasis: The Story of 10,000 Year-Old Trash

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Each year, we produce 9,000 metric tons of high-level nuclear waste to add to the other 270,000 that have accumulated over the last few decades. While there are no clear plans for its permanent storage, one thing remains certain: it will outlive us all and everything we know.

Current laws stipulate that “permanent storage solutions” must contain nuclear waste and its deadly radioactivity for 10,000 years though other estimates say 100,000 is likely more accurate.

We are now living in the Anthropocene—the self-proclaimed Age of Man. We have dubbed ourselves a “geological force” but lack the ability to comprehend the implications of our actions at geological scales of time. Some may perceive this as a persistent form of recklessness.

The challenge of nuclear waste directly confronts us with our own chronotopic inadequacies. Architecture is directly implicated here—challenged with the need for permanence—permanence in terms of both materiality and meaning.

This thesis investigates the nature of permanence. It will look far into the past and far into the future, recalibrating our sense of time, space, and scope in order to examine how architecture can reconcile scales of geologic and human time. This thesis asks: Amidst the dramatic, inevitable changes our world will see over the next 10-100 thousand years—changes more fantastic than any piece of science fiction could describe—is there a way for architecture to last? To communicate a consistent message across millenia?
The experience of the urban inhabitant in the NOW is a persistent crisis of time management. In the era of accelerated e-commerce, NOWness fulfills and entangles us further with every synaptic push of an Amazon dash button. Our desire increasingly relies upon a vast, networked engine of tightly coupled information management and material handling; it promises to move physical stuff through congested cities with the speed and fluidity of data and capital. Once consolidated and remote, this infrastructure must increasingly make contact with our daily lives, and the frictions therein, to ensure customer satisfaction NOW. Our patience contracts. Time intervals diminish. All mail becomes media mail and the city is further rationalized into a dynamic field of moving parcels.

At work is a fundamental redefinition of the basic spatial units of urban life within the space-time rubric of NOW, one that is predicated on a smoothness of mobility and logistics. New hybrid typologies of temporal infrastructure will mediate material culture and operate as social condensers to a public which lives, works, and consumes everywhere, and in the NOW. In the process, the egosphere is disaggregated into the urban; it is segmented into the functional voxels of our mobile life. These Parcels, the components of our urban time and life-support—the requisite volumes of storage, pickup, sharing, consumption and hygiene, proliferate and coalesce at the intersections of distribution networks all for the sake of efficiency. Here, we enact a strange form of commons, building cities at scale, NOW.
Filmmaking operates behind the closed doors of the studio system. Entire compounds of private space are devoted to the practice of film. Generic city streets, practical sets, and virtual environments substitute for real locations. This thesis proposal examines the inversion of this concept. What if the city were to be the new studio backlot for student filmmaking? How would filmmakers and designers frame the urban context with cinematic motion?

Greater London has its own film history, playing home to numerous period, fantasy, drama, and action set pieces. Its privatized industry hosts six major film studios as well as a multitude of smaller studios. More importantly, the city is host to a large number of performing arts and film academies.

The proposal approaches cinema through ascending scalar operations. A series of instruments explore design's agency within the scope of student filmmaking: [1] a helmet that incorporates a director's toolkit; [2] a diffuser for grips to light a scene to desired effect; [3] a set of participatory devices that facilitate paradigmatic cinematography in public space.

The final component of the proposal is a pop-up infrastructural framework that facilitates camera choreography. The dispersion of this framework across London's iconic fabric provides a platform for students to do any number of camera set-ups with enormous amounts of production value. The intent of this new framework is to provide new opportunities for ephemeral contexts, stages, and sets. The instigator of each framework is a site and a scenario that adopts the visual language of the action, fantasy, drama, or romantic comedy genre.
Racial and ethnic segregation has always been physically embedded into Los Angeles. The history of planning within the LA metropolitan area, the development of its highway infrastructure, and the demographic mix are all deeply intertwined. While the construction of the highway system, at its height in the 1940s-50s, allowed those who had the means to do so freedom to self-segregate, it also reinforced the racial divisions that were created with redlining practices and, thus, created a space of forced enclaves for the inhabitants near the center of the city. The passage of the 1965 Immigration Act created an influx of immigrants into the US, which raised tensions between different racial and ethnic communities. Exemplary of this are the Rodney King riots of 1992, which not only represent a key moment in LA’s black history, but are also the first instance of a riot against immigrants, as many Korean business owners in South Central saw their shops destroyed in the riots. The causes of the tensions between the growing Korean community and the black and Latino in this area were myriad and long-simmering, however, much of it was due to growing income inequality, racial biases, cultural and language barriers. Thus, while these ethnic and racial groups lived in physical proximity, enclave behaviors nevertheless prevailed.

In the Los Angeles of the present, racial animosity is less directed towards a disenfranchised black population, as many have now moved to the suburbs, but more and more toward immigrant populations with varying degrees of legal statuses.

Officially, LA’s Koreatown has a population of 115,000 people, according the 2010 U.S. Census and it is 2.7 square miles, but its size, population, and influence, much like Los Angeles itself, is amorphous and fluid. It is exemplary of both the racially and ethnically diverse nature of the city and of the sentiment of having a defined enclave for one’s own community. With the establishment of Neighborhood Councils in 1999, many ethnic communities in the Koreatown area proposed to officially carve out their own, albeit small, part of the neighborhood. Despite official boundaries, however, these enclaves often struggle to form a definite identity and make strong roots. Central to these struggles is most often the low income of the people within the community and the inability to develop an economic engine that can form the basis for a strong cultural identity. Through the lens of Koreatown, this project proposes a flexible infrastructural network of links, which aim to connect and strengthen the region as a whole through the legitimization of informal commerce prevalent throughout the area, and nodes, which act as programmatic crossings between one enclave and another.

The ultimate sentiment of the project grows from the idea that LA, with almost half of its population born in a foreign country, contains neighborhoods that are, what Douglas Saunders calls, “platforms for personal, family, and village transformation”, and are spaces that are potentially beneficial for not only the immigrants but also for the city itself.
The atoll nation of Tuvalu lies only a few meters above the seas of the equatorial Pacific, and is at high risk for inundation and cyclones due to climate change. However, in spite of the media narrative of “sinking” Tuvalu, when understood in broader contexts of time and space, the existence of atolls is highly temporal and dynamic, based on sediment hydrodynamics and coral reef production. The designation of Tuvalu as a ‘nation’ is also a narrow temporal framing of colonial origin. The inhabitants of Tuvalu’s atolls were historically highly mobile peoples, moving from island to island in response to resource or social concerns. Tuvaluans today continue to be mobile peoples, migrating between atolls and globally, but this movement is now limited by global territorial sanctions. Climate change creates the risk of uncertain territory and uncertain identity for Tuvaluans; the submergence of the islands below mean sea level threatens rights to their territorial waters (EEZ) as well as their nationhood status as they lose the space to practice their cultural identity.

The modern nation-state views its contents (population and geography) as relatively static. The inherently fluid nature of these components in Tuvalu, further amplified by climate change, problematizes the hard lines of territory and state drawn sharply in the contemporary era. When both ground and people are acknowledged as fluid entities, how do we reimagine the spatial and social form of the Tuvaluan nation? How can Tuvalu continue to exert territorial claims when both the subject and object of nationhood are in flux? And how can Tuvalu’s spatially oriented cultural identity be maintained as its population becomes increasingly mobile?

Instead of ceding territory to the rising waters of climate change, this thesis posits ‘seeding’ territory as an alternative. The project explores the propagation of the architectural ‘seed’ as a way to ‘grow’ territory in the context of migratory populations and unstable geographies. The seeds consider territory both in the sense of transnational legislation (per the United Nations Law of the Seas) but also in the cultural sense of Tuvaluans, as a collective space of shared resources and identity. The design of these seeds is then conceptually tested in future social and environmental scenarios both for both the in- and ex-situ nation.
Curvature has always been present in architecture though largely explored for structural purposes. It can be found in Roman arches and domes, in the catenary vaults of Antonin Gaudi, and in the hyper paraboloid shells of Félix Candela, as the result of form-finding techniques. Questions of materiality arose parallel to the development of these techniques, enabling the common use of concrete. Concrete allowed for the production of custom stones and replaced traditional hand-carving methods of making.

Concrete is one of the most ubiquitous materials in the built environment, yet it is often cast in orthogonal repeating parts. Why is such a supple and liquid material, capable of any form, limited to the conceptions of the industrial era? The building industry commonly assumes that formwork must be repeatable, yet the prevailing goal of the digital era is serial variability. Therefore, a gap exists between the goals of the computational revolution and the standards of material production.

This research states that it is possible to reconsider the role of concrete in the digital era via the aid of robotic fabrication. If formwork is commonly informed by the goal of efficiency and economics, this research asks what emerges when it is informed by environmental, structural, or formal concerns.

This thesis proposes a specific way of making that emerges from a computational understanding of spline geometries. The process allows the designer to materialize data into a complex geometry that has been programmed to perform one or more architectural parameters.

Fabrication methodologies today are leading architects to reclaim the role of the masterbuilder. This thesis argues that designing and making are part of a single process. Architects should not design materially uninformed architectural spaces; rather, they should design through the making process while integrating geometrical and material concerns. Therefore, what kind of architecture emerges when the spline is foregrounded in a process of concrete construction?
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