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ΔT Exploring The Creative Agency Of Time In Architecture

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ΔT
EXPLORING THE CREATIVE AGENCY OF TIME IN ARCHITECTURE

by
Dorian Resener BaArchSci, Ryerson University, 2011

A thesis,
Presented to Ryerson University

In partial fulfillment of the
Requirements for the degree of
Master of Architecture
In the Program of
Architecture

Toronto, Ontario Canada, 2013
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Ryerson University

Master of Architecture

ABSTRACT

Architecture exists in time. This statement may appear to be a truism but this is not the way in which architecture is typically conceived. It is not acceptable to conceive of architecture within the abstract context of stasis, nor to consider the architectural project 'finished' upon the completion of construction. Praxis must engage deeply with the dynamic conception of architecture within an evolving context, throughout the life of a building in time, and as animated through occupation and constructive perception. This paper provides a theoretical overview of time as it relates to architecture and philosophy. An architecture of time designs the conditions for interaction between user and environment, resists the crutch of formal autonomy, and finds novelty through engagement and the faith in the ability of the user to appropriate the space in unexpected and serendipitous ways. In this way architecture becomes a medium for the creative agency of time.

ACKNOWLEDGEMENTS

This document represents an investigation in the fourth dimension in architecture that I have been pursuing for the past three years of my six year education at Ryerson University. It has benefitted from the guidance, support and inspiration of countless individuals who have left their mark on this work to varying degrees. I would like to begin by thanking my amazing panel: my supervisor Andrew Furman whose enthusiasm and endless support kept this process on rails, my second reader John Cirka who faithfully led me in to and out of countless debilitating yet fruitful philosophical explorations on the nature of time, and my program representative Vincent Hui who went beyond his mandated role to provide invaluable insight and support. I would also like to thank Arthur Wigglesworth who taught me that if it doesn't make you uncomfortable, it's not worth doing, and that when you are stifled by all of that discomfort sometimes you just have to "Just Do Something!". Countless others have helped me along this journey, from Colin Ripley and his impossible questions that teach you to be critical of the very logic of the work you are creating, to Marco Polo's wealth of academic knowledge that has led me down paths I would have never encountered myself. Lastly I would like to thank my colleagues and friends who I've learned and shared so much with.

DEDICATION

I dedicate this document to my family: my parents, Jeff and Karen Resener, whose love and support knows no limits, and to my brother, CJ, who has taught me more about life than I can put in to words.

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INTRODUCTION

IF WE REMOVE ARCHITECTURE FROM TIME, THERE IS NOT MUCH LEFT TO DO APART FROM PLAY WITH FORMAL AND TECHNICAL DEVICES.

JEREMY TILL, ARCHITECTURE DEPENDS, 2009

Architecture exists at the intersection of human life and the physical environment. It forms the interface between our will and desires and the external forces of the world. These stubborn forces are incredibly dynamic, and at the confluence of the two is a complex interaction that architecture tries to abate through autocratic order and feigned stability: creating insular, formal interventions that are ill-equipped to engage in an increasingly complicated condition. The approach of the architectural discipline has been largely ignorant of one key dimension of this interaction that has repeatedly thwarted our attempts at establishing stability, permanence or stasis: time.

Architecture exists in time. This statement, though deceptively simple, connotes a myriad of contingencies and uncontrollable complexities in which the architectural discourse has

recoiled from, introverting into formally driven autonomy. The dimension of time, although latent with indeterminacy, provides powerful tools to communicate and engage with the users of architectural space through the medium of duration. Architecture must embrace time, not only to withdraw from this cyclical melancholy of autonomous formal iteration, but to serve the public with designed spaces that truly increase their quality of life through the built interface with their environment.

The architectural project is eternally unfinished; it is repeatedly reinterpreted and re-appropriated by the individuals that assimilate it. Only by engaging in a meaningful way with this dialogue can architecture hope to remain relevant in a rapidly accelerating world.

SCALAR TIME: LOOKING BEYOND OURSELVES

I WANT TO BUILD A CLOCK THAT TICKS ONCE A YEAR. THE CENTURY HAND ADVANCES ONCE EVERY ONE HUNDRED YEARS, AND THE CUCKOO COMES OUT ON THE MILLENNIUM. I WANT THE CUCKOO TO COME OUT EVERY MILLENNIUM FOR THE NEXT 10,000 YEARS. IF I HURRY I SHOULD FINISH THE CLOCK IN TIME TO SEE THE CUCKOO COME OUT FOR THE FIRST TIME.

THE MILLENNIUM CLOCK, DANNY HILLIS, 1995

My interests in time arose when I was introduced to the world's longest ongoing experiment in a first year physics course at the University of Saskatchewan. Professor Thomas Parnell initiated an experiment at Queensland University, which is ongoing today. An amount of tar pitch, a solid polymer by-product of the refinement of oil, was melted into a funnel and left at room temperature to 'solidify'. If hit hard enough, the polymer will shatter; yet eight years later the first drop fell into a beaker below. Currently we are waiting for the ninth drop that is expected in December of 2013 and will be the first recorded, and first witnessed drip (after an unfortunate technical failure during the eighth drip on November 28th, 2000) (Farquhar, 2012).

Our perception of time is experienced through multiple lenses at greatly varying scales. We often use distinct events to construct time scales in which to frame our relationship to time. These range from nuclear timescales (used to estimate the lifetime of a star), to geological timescales (used to reference individual periods in the continual deformation of the earth), to the half-life of an exponentially decaying particle (used to estimate the time that it will take for a substance to reach a stable isotope). Events within these scales greatly change the world around us. A persistent rivulet of water, given the right context of relatively soft substrate (ie: sedimentary rock) erodes a pathway,

inviting the confluence of adjacent streams, following the path of least resistance around relatively harder materials, pervading for millennia to form incredible slot canyons, karst landscapes, and innumerable formations that, along with a multitude of other physical processes, have shaped the earth in which we live. These grand time scales can be appreciated as an ongoing process in which we participate for only a brief period. It is through this disparity of magnitude that we can unfold, and appreciate, the implications of time. It is through an understanding of time in its multitude of conditions in which a concept of time, as a lens, as a construct and as a medium, is formed.

The Long Now Foundation seeks to confront society with the implications of these varying scales of time. The group, founded by Danny Hillis, when faced with the coming of the new Millennium and the encroaching construct of 'the future', discerned a need to reframe a cultural perspective of the concept of 'the now' through the introduction of 'the long now'. They began by conceiving of a Millennium Clock, meant to tick every year and sound upon every new millennium (Hillis, 1995). This project aligns our perception of time along a continuum, an ever-becoming, a process in which the earth (and the universe) has been engaged in for a barely conceivable amount of time.

The Long Now Foundation shifts our attention to a larger scale which places our existence within a much larger continuum. The work of photojournalist Gerd Ludwig reminds us that all we have built will be forgotten in the expanse of time and continued erosion and deposition of the forces of nature. In his ongoing project, *The Long Shadow of Chernobyl*, Ludwig captures the Ukrainian nuclear site, and the near by town of Prypat, as not only an eerie tableau, but as part of a larger process. The roots of trees tear through

tilled floors and vegetation invades through every crevice like a page out of Alex Weissman's, *The World Without Us*.

These projects, by compounding upon our lived experience of time, expose the many enigmatic facets of this nebulous phenomenon of time: – how do we perceive it, how do we exist within it, how do we affect it, and ultimately, how should we seek to build in it.

LACK OF TIME: ARCHITECTURE'S WEAK ENGAGEMENT

Architecture must exist in time. I make this statement at risk of being immediately dismissed. Of course architecture exists in time! The Acropolis in Athens, the Coliseum in Rome, the Pyramids in Giza, all stand as testaments to architecture's triumph of time. These monuments exist in spite of time, as resilient testaments to a people who sought to conquer it, but how may we design with time? In his essay *Fluxions*, Andrew Ballantyne points out that the builders of the pyramids, whose lives were intertwined with the seasonal flooding of the Nile, built homes and cities that were much more engaged with the temporal aspects of their world, even if these traces of life were largely erased by the passing of time while their monuments persisted (2012). We, as a discipline, exert so much energy trying to subvert the forces of time, but how can we engage with it to create interactions better suited to the four-dimensional nature of our world?

“*Architecture depends on ordinatio, the proper relation of parts of a work taken separately and the provision of proportions for overall symmetry*

Virtruvius, *The Ten Books On Architecture*, 1452

Architecture is the masterly, correct and magnificent play of masses brought together in light

Le Corbusier, *Toward a new Architecture*, 1923

[Architecture must be] founded on eternal truths of ... order, space and proportion

Mies van de Rohe, *Bauen und Wohnen*, 1961

Places are stronger than people, the fixed scene stronger than the transitory succession of events. This is the theoretical basis ... of architecture itself

Aldo Rossi, *Autobiography*, 1981

-instead of form follows function, function follows deformation

Mark Wigley, *Deconstructivist Architecture*, 1988

From this unexhaustive selection of quotes by some of the most influential minds in contemporary discourse, it is easy to see that space, over time, has been the focus. Space has always been at the forefront of the architectural discipline. Architects are manipulators of matter, generating formal interventions within the world. Although these interventions will always find their manifestations in matter, the conception of architectural ideas must be rooted in not only space, but also in time.

Jeremy Till, in "Architecture Depends" examines architectural autonomy of both discipline and thought. He uses a criticism of a 'timeless modernism' to illustrate a pervasive ignorance to contingency in architecture prevalent since modernism. Till appropriates the work of the French philosopher Henri Lefebvre, who posits, "manifest expulsion of time is arguably one of the hallmarks of modernity" (Till, 2009, p. 88). Not only is this visible in the writing of the modernists (as shown above in the words of Le Corbusier and Mies Van de Rohe) but also in the way in which they chose to represent their work.

Till directs this argument to Corbusier's curated photographs of Villa Stien and Villa Savoye, the kitchen counter with a fish curiously placed as a sign of life within the calculated environment (See Figure 1). This is an example of architectural representation that removes architecture from time, reinforcing its purportedly eternal nature. It can be argued that these photographs may be divorced from the conception of the architectural idea, but this argument is defeated when in "Toward a New Architecture", Le Corbusier renders entire conceptual cities without the presence of people (see Figure 2). The only sign of human life in this image is a plane in flight – though this likely is due to Corbusier's technophilia and not as an indicator of life. Similarly, Mies van der Rohe had the 1929 Barcelona Pavilion photographed without people (see Figure 3). A pavilion is typically conceived of in anticipation of visitors torrenting through. Although there is no question that these are masterfully composed spaces they are un-lived, timeless environments, not to be contaminated by the contingency of human behavior or any other nebulous influence of time.

Figure 1: ON A COUNTER, A FISH SITS CURIOUSLY ON A COUNTER TOP, THE ONLY IMPLICIT SIGN OF LIFE SHOWN IN THIS TABLEAU

A CONTEMPORARY CITY

The centre of the city seen from one of the terraced cafés surrounding the Great Central Station. The station is seen slightly raised above ground level. Leaving the station the "speedway" is seen continuing to the right. The terraces contain a great deal of population and traffic; there is any amount of room for both. The terraces contain a great deal of population and traffic; there is any amount of room for both. The terraces contain a great deal of population and traffic; there is any amount of room for both.

The station can be seen between the two sky-scrapers on the left, only slightly raised above ground level. Leaving the station the "speedway" is seen continuing to the right. The terraces contain a great deal of population and traffic; there is any amount of room for both. The terraces contain a great deal of population and traffic; there is any amount of room for both. The terraces contain a great deal of population and traffic; there is any amount of room for both.

Figure 2: AN ENTIRE CONTEMPORARY CITY RENDERED WITHOUT PEOPLE. FROM "TOWARD A NEW ARCHITECTURE"

Figure 3: THE BARCELONA PAVILION IN SITU, 1929

Aldo Rossi's quote, "places are stronger than people, the fixed scene stronger than the transitory succession of events. This is the theoretical basis ... of architecture itself" (1961) best illustrates this design torpor towards time and contingency for the sake of autonomy. If places are stronger than people, it is because of the people, the co-authoring of experience that is latent in the condition of life, of duration, of time. The fixed scene, that Rossi adores, is a construct, a fabrication. The fixed scene does not exist. Architect, historian and philosopher Ignasi de Sola-Morales states: "The sense of disillusion experienced by many upon seeing a Rossi building derives from the fact that the building asks to be considered objectively or functionally, while its author tries to call attention instead to the process revealed in his drawings, so that the construction of the building is an episode in an architectonic discourse understood as autonomous and thus indifferent to construction or use" (Till, 2009, p.23). To misuse the architectural tool and to force human beings to occupy a conceptually static environment, such as Rossi's Civic Center in Perugia, is unethical (Figure 4). This misconception is further perverted by Mark Wigley; to Wigley, not only should the temporal nature of inhabitation be subverted in design, but that the generation of novel form through deformation should be the primary aim of architecture, and not the way in which it engages with the society in which it serves.

Figure 4: ALDO ROSSI'S CIVIC CENTER, PERUGIA

ENGAGING IN TIME

ONE STIPULATION OF THIS ARGUMENT IS THAT THE WORLD IN WHICH WE LIVE IS IRREDUCIBLE TO CARTESIAN SPACE ALONE. AS WE HAVE SEEN, ARCHITECTS OF THE MODERNIST AND POST-MODERN PERIOD HAVE DISPLAYED TENDENCIES OF OPERATING IN A TIME-LESS IDEALIZED ABSTRACTION OF THE WORLD. IN THIS REALM, PERFECTION AND STASIS, ACHIEVED WITHIN THE THREE DIMENSIONAL LIMIT OF CARTESIAN SPACE, IS A NOBLE ENDEAVOR. THIS IS NOT, HOWEVER, THE WORLD IN WHICH ARCHITECTS INTERVENE; THIS IS THE WORLD IN WHICH HUMANITY EXISTS. NOT ONE IN WHICH OUR BUILDINGS CAN STAND IN A UTOPIAN STATE OF STASIS, NOT ONE IN WHICH OUR BUILDINGS WILL ENDURE INDEFINITELY AGAINST THE RAVAGES OF TIME, AND NOT ONE IN WHICH THE USERS WILL BEHAVE AS WE INTEND THEM TO. DESPITE THIS OPPOSITION, WHY DO ARCHITECTS CONTINUE TO NEGATE THE CREATIVE AGENCY OF TIME?

Jeremy Till suggests that this is due to the inherent instability that is inherent in our concept of time: "Time's complexity, manifested most clearly in the tension between the cyclical aspects of life and the linear ones, brings uncertainty to architecture, and it is easier to look away from this than to embrace it" (Till, 2009 ,p. 79). Uncertainty and doubt are not characteristics in which architects are comfortable working with. The nature of discourse is such that architecture students rarely are able to see the effects of their manifest ideas, much less how they endure, so we relegate ourselves to this quantifiable realm of abstracted Cartesian space in which our effect can be easily conveyed. We concern ourselves with novel forms generated by the newest technologies, poetic symbolism, and

autonomous formal rhetoric. These endeavors are not without merit, but the discourse must engage in new, and deeply engaging architecture that is willing to accept doubt, accept uncertainty, accept contingency and find root in the medium of. In Sanford Kwinter's hopeful words: "What would it change in our arts, our sciences, and our technics if time were conceived as something real?"(Kwinter, 2001 , p. 4)

Perception of time is subjective and relative. Although we have tried to relegate it to comprehensible containers such as seconds, minutes, hours, days, weeks, months, years, decades... and so forth, we know and express that this quantification does not begin to qualify our

experience of duration. Although there is a notion of time apparently dragging on or passing too

quickly, this a phenomenon of retrospect and not of an instantaneous expression of duration.

PERCEPTION OF TIME

Time is fleeting, as I write these words I am engaged in a process that envelops me: a process that occurs within the medium of time. As I check the time (a concept which now seems strange) I notice that an hour has passed, an hour that slipped by too quickly. Our inability to constrain our experience of time as easily as a clock can, indicates a more complicated medium than our clocks would have us believe. This is the difference between a measured, and an experienced time: just two forms of an enigmatic condition of the universe. We attempt to rectify this partial understanding through constructs such as past-present-future, patterns such as successive, cyclical, seasonal, instantaneous, personal relations to time such as remembered and anticipated, societal conceptions, historic, projected time and a zeitgeist. The greatest barrier to a keen understanding is elucidated by Italian Sociologist, Alberto Melucci: "we live all patterns of time simultaneously". By abstracting 'time' to a single, comprehensible, facet, we destroy its very nature.

The cubist's sought to find ways to represent all aspects of an object simultaneously. This is a difficult task, as Philosopher David Morris elucidates, "We never perceive a thing as fully present all at once; things are present through limited perceptual aspects" (Morris, 2004, p.107). He further explains that for every material object we encounter, we are presented with a quasi-absence and that it is only through ongoing perception that the gaps generated by this persistent incompleteness are filled in. Similar to Cubist artworks, we assemble in our mind's eye, constructions of these solids that are created from a constant flow of information

gained through perception – over time. Morris' book is an exploration in how we perceive space, and he posits that, contrary to the camp of biocular vision, it is through movement that we interpret the world around us. By moving, the information received is altered slightly: moving towards an object causes information to stream outward towards the edges of our vision, more detail is visible in the object etc. (Morris, 2004, p.12). If perception is through movement, and space is sensed through perception, then it can only follow that architecture is movement. Again we have arrived at a truism – but yet this is not the way in which contemporary architecture is conceived. In *Architectureproduction*, Beatriz Colomina paints a dull image of the architectural discipline: "Until the advent of photography, and earlier of lithography, the audience of architecture was the user. With photography, the illustrated magazine and tourism, architecture's reception began to occur also through an additional social form: consumption. With the enormous amplification of the audience, the relation to the building changed radically" (Colomina, 1988, p.234). Architecture has become a commodity. This is highly evident in the Guggenheim Bilbao, where a failing economy turns to a consumable form of architecture to revitalize its tourist industry. As Colomina critiques, architecture has become image, conceived of through the lens of one marketable perspective. An architecture that is not meant to be experience, but catalogued. This is not an architecture of movement. This is an architecture of stasis.

FLOW VERSUS STASIS

By the time you have finished reading this thesis document, the world has undergone massive change. This may not be apparent on the surface. The world around us, the room in which you are seated, seems deceptively still, yet at the atomic level, each particle is frantically vibrating, electrons are constantly orbiting and being exchanged. Your body heat warms the surface on which you are sitting and it in turn begins to vibrate at a quicker pace. Your bodily respiration is pulling oxygen out of the room at a rate that is hopefully slower than the room's ventilation system can replenish. As Heraclitus posited in circa 540-475 BC, "You could not step twice into the same river; for other waters are ever flowing on to you".

Henri Bergson posits that "Space is not a ground on which real motion is posited, rather it is real motion that deposits space beneath itself." This is because time is, as Sanford Kwinter refers to it, an engine; it is an affecter of actual change, it expresses itself "by drawing matter into a process of becoming-ever-different" (Kwinter, 2001, p.4). It is under this position, that time, or rather Duration, is the most irreducible substrate for which the Actual (or what we abstract as existence, or life, including the universe around us) unfolds. This will be the philosophical platform to which all further positions will build. Kwinter builds upon the primacy of duration in the introduction to *Architectures of Time*: "in physics, the demise of absolute time is shown to give way to a theory of the 'field,' effectively superseding the classical notion of space as a substratum against which things occur, and consequently giving rise to a physics of the 'event', (Kwinter, 2001, p.i).

The relative component of time was discovered in the realm of physics in the late 19th Century. In her introduction to the second issue of the journal *Manifold*, Isabel Gass outlines the advancements in the field of physics that ultimately lead to Einstein denouncing the theory of "Absolute Time,"

"The lynch pin is jerked from the theory of 'Absolute Time' in the 1880's, when Albert Michelson and Edward Morley discover the speed of light remains constant regardless of the speed of its point of observation ... Einstein eventually uses this finding to reveal the fallacy of the 'Theorem of the Addition of Velocities,' ... irreducible to Absolute Time, inasmuch as the speed of light is constant -- time is not 'independent of the condition of motion' of light; rather, light maintains its own condition of motion, or its own time."

(Gass, 2008, p.12)

The repealing of the theory of Absolute Time means that each event carries with it a unique expression of time. Although it may seem as if the duration of the event is forced into standardized measurements, it is those measurements that distort to conform to the duration of the event.

Under the hegemony of Absolute Time, movement (of any time, including that of change) was simply seen to be related to time by measurement through a concept of simultaneity, a concept which Isabel Gass, in her introduction to the text, *Architecture in the Space of Flows*, describes as, "the notion that two events can occur 'at the same time' [which] relies on the relation of distinct events to a standardized temporal scale," (Ballantyne & Smith, 2012, p.8). This classical, or Newtonian model is diametrically opposed to the Einsteinian

model, whose findings show that each event is inseparable from its own individual expression of time (Duration).

Although the understanding of our world began to shift at the end of the nineteenth century, the architectural discourse continues to work primarily in the abstracted realm of the static. Performance Theorist Dorita Hannah criticizes architectural discourse for continuing to “rely on an ontology of stasis generating architecture figured by a timeless passivity of form,” (Yates, 2012, p.66) despite this shift to a world which is in constant flux. Our languid response to this shift towards what Sanford Kwinter calls, an event-based architecture, is deeply rooted in the primacy of form. Greg Lynn, in discussing an animated architecture, posits: “What makes animation so problematic for architects is that they have maintained an ethics of statics in their discipline. Because of its dedication to permanence, architecture is one of the last modes of thought based on the inert. More than even its traditional role of providing shelter, architects are expected to provide culture with stasis” and that, “This desire for timelessness is intimately linked with interests in formal purity and autonomy” (1999).

Le Corbusier, in *Towards a new Architecture* writes, “Architecture is the masterly, correct and magnificent play of masses brought together in light” (Le et al., 2007, p.29). This composition of form and light is seen as a static, if not idealized setting in which duration is not a factor.

Of course, the work of Corbusier promotes important notions of procession and movement, which begin to place an importance on temporal aspects of architecture. The planned procession of the Villa Savoye -- approaching by a motor-car, driving under a covered portico and rounding the curving wall of the first floor, slipping in to one of three intrinsically designed parking spaces -- suggests a deep concern with movement. The idea of procession is not, however, presented as one of Corbusier’s five points of architecture. Each point (elevated mass on pilotis, the plan freed of walls via columns, the free facade, ribbon windows and a roof terrace) speaks to spatial or aesthetic qualities. This illustrates the formally-minded regime that has shaped the discourse of architecture. A paradigm, not adverse to issues of temporality, but in which temporal considerations are an effect of architecture, conceived of as ideally static, if not for the user occupying the space.

ARCHITECTURE AND EVENT

It is not a question of space OR time, time OR space. As Brian Massumi puts forth in a conversation with Jason Nguyen and Mark Davis, they must be considered as phase transitions. We do not say ice contradicts water; water becomes ice and ice water. Each contains the other as its potential, (Davis, 2008, p.17). My interests in this topic is not to forsake the importance of the spatial realm in the quest for an existence in the purely temporal or the purely virtual, but to reshape the way

in which interventions in our spatial/temporal landscape are conceived. Not simply as formal responses to an ongoing grand-narrative that we mistakenly feel aligned to (via the styles), but as communicators in a realm of reverberation between buildings and processes, users and interfaces, event and ripple. This understanding of Bergsonian Space as a secondary order of duration, and of architecture as a Deleuzian Objectile, or in a constant state of becoming, would suggest that conception of

architecture must be fundamentally concerned with the temporal above that of form. Form must not serve to simply allow for the emergence of function and events, but conversely, event must be used as a tool in which to shape form, which in turn affects the unfolding of life that is influenced by what is built. It becomes a recursive dialogue.

The creative agency of time emerges from a concept of the Virtual. The Virtual and the Actual are inseparable from each other. Both participate in the persistence of becoming: the constant re-iteration and creation through the medium of Duration. It is not the dichotomous relationship between the two that is important, but the way in which they engage each other. Deleuze accepts that everything that is real or actual must be experienced; experience is defined as, “Having effects or taking effect,” as Brian Massumi elucidates (Davis, 2008, p.18). The idea of the virtual is difficult to grasp because we never experience it; it is only expressed through the manifestation of change. The Actual is only the experience of the effect of change that emerges from the Virtual. The Virtual can never be experienced because it is relegated to the period of the just-passed or the ensuing instance. Massumi states this well: “[The Virtual] is always in the gaps between chronological moments, in a nonlinear, recursive time of its own: just past - yet to come; future - past. ... You can only think it across its iterations, and the mark of each iteration is an Actual change” (Davis, pg 19, 2008). It is through this recognition of change that we are able to experience duration. The observation of change hints at the far more complex field in which we exist.

We have a tendency to either completely disregard

the difference between space and time (by simply coupling them together as a four-dimensional space-time) or trying to convert time into a spatial trope (either by breaking it up into segments that we can quantify and assemble, ie: seconds, or by thinking of it as a line, or other diagrammatic construct). This is only natural as we try to familiarize our self with such a nebulous concept.

Part of my thesis research involved the construction of an installation that combined the ideas of time, and the means of representing an idea wherein the means of representation conveyed the fundamental principle of the idea itself. I constructed an object that served two functions, the first was to erode as people moved by it, creating a physical tabulation of the way people move around the object. The second was to create dissonant rhythms to generate gaps of silence that were constantly changing. The effect of this is that the viewer mentally tries to reconcile the difference, straining and stretching the gaps to attempt to find some sort of equilibrium that was more harmonious. I believe this worked, as I was told several times that the installation had the effect of magnifying one's sense of either peacefulness in a passive experience of the tumultuous environment, or a magnification of the calamity in one's surroundings (Figure 5).

Figure 5: AN INSTALLATION DONE TO REPRESENT
TWO FACETS OF TIME, ITS EFFECTS AND ITS
IMMATERIAL NATURE

We typically experience time in retrospect, as a montage of internalized moments over varying scales and with varying degrees of clarity. In a system of ever-becoming, as soon as the Actual is effected by the Virtual, and real change occurs through duration, we experience a brand new Actual. The memory that we have of the just-passed is only expressed in the instantaneous Actual as what appears to be a palimpsest, an overwritten condition of matter, which seemingly retains many residual features of the fleeting. In fact everything has changed, even if only slightly. This is due to the nature of the virtual and field theory.

A useful model to understand this phenomenon of cause and effect within field theory (though derived from chaos theory) is the Butterfly Effect. This model is used to express how a small change in one part of a system can be magnified through various conditions to create a large change in a separate part of the system. The analogy is that the beating of a butterfly's wings on one continent can set in motion a sequence of events that eventually coalesce in to a hurricane several weeks later in a different part of the world. An unperceivable change in a system has the potential to affect major change throughout the system. Typically, systems have a tendency to return to their initial, stable state ("Butterfly Effect,"). This tendency is known as recurrence and can help explain why the constancy of ever-becoming can appear to be so static. Small changes may have the potential to have large effects but systems have a tendency to remain in balance. This leads to our general disregard for the affect of Duration; everything is constantly changing but the net result tends to resemble the initial state.

Deleuze generates models to explain the virtual, although each is incomplete, they attempt to

transfer a partial idea that can help to formalize the concept. A useful model for architecture to help explain the virtual is as follows: every change of the actual – which by process is the virtual since the actual is only expressed by a change enacted by the virtual - becomes a Singularity – a point. Together these singularities are conceived of as a constellation. This is a useful allegory as it creates a discrete grouping within an unlimited set of singularities – just like a celestial constellation. Each of these singularities extend towards each other, to create a dynamic extension that entangles each point. Every singularity affects and is effected by every other singularity. In this way, each extension becomes a curve which passes through every singularity. This creates a topological model, in which any point in the model is an expression of the characteristics of every other point in the model. Any change at any point in the model is influential at every point within the model – creating continuous dynamic movement, continuous adjustments as ripples of change continually course through the subset of an even larger and interconnected milieu.

This model, in its persistent-becoming, constantly affects the actual. The concept of time being a linear aggregation, of the actual world being a continual building upon a geometrical palimpsest, is shown to be false. The actual is re-manifested with every influential ebb of the virtual. We may construct a narrative based on a reflection of a seemingly linear journey in life, but this is only a convenient fallacy. Just as we are emancipated by a constant re-emergence, a persistent-becoming; so too should the conception of architecture be freed from a participation in a "grand narrative" of styles and culture and most of all, as a discipline primarily concerned the poetics of pure form.

Architecture instead should seek to find harmony not in platonic form, intercolumniation, rational order or social poetics, but through the forum of the dynamic field, one in which building and observer are hierarchically equal, both expressing change, absorbing change from the greater topography, and reverberating within this constant state of becoming. An architecture that is capable of this will never be out of style, it will never be culturally irrelevant, it will be all-inclusive and communicative without presuppositions.

But is it even possible? To do this, one would have to identify all possible agencies within the field and design a responsive mechanism in which to

engage them. This is, of course, impossible. But that does not mean that the attempt to further this exploration should not be made. Through a critical engagement in architecture as an intrinsically time-based creation, interventions can be made to be more engaging, more communicative, more relevant and more enduring than a discourse that views platonic forms, ionic order, horizontal windows or broken pediments as a means of interfacing with human beings and their environment. This approach will improve the level of engagement that people and buildings will have. No longer static, alien objects but resonating bodies within a shared dynamic field.

WONDERMENT AND PLAY

In order to understand how to intervene in this dynamic field, we must first understand how we experience and engage with the world. Children and adults experience the world in starkly different ways. In *Experiencing Architecture*, Steen Eiler Rasmussen explains a disparity that between a group of tourists being led to visit S. Maria Marriagione, and small local boys playing with a ball on the steps of the cathedral. Rasmussen concludes that, although the tourists have come to this place with the intention of learning about it, that these boys, through play and engagement, will understand the place more deeply than the tour group which passively receives information (Rasmussen, 1962, p.17). The children will understand the surfaces through contact, the dimensions through movement, and the volume of space through anticipating the ball's movement through it. In this way, the children not only form an understanding of space through movement as described by Morris, but also through tactile and

responsive interaction (the ball will return to them based on the angle of incidence in which it strikes a surface).

These children experience the space through appropriation and deep engagement. They experience it through vectors, motion, time and play. In a similar fashion, skateboarders and freerunners (or parkour athletes) engage in space to a much higher degree than the average pedestrian and they will know more about it's spatial qualities by measuring it with their bodies through time. Jeremy Till describes this action being performed by a lion in a cage, explaining that the lion does not pace its cage in anger at its limitations, but instead paces the cage to discover the limits of its confines (Till, 2009, p.78). At the Central Pavilion of the Giardini in the 2012 Venice Biennale, the Office for Metropolitan Architecture exhibited the work of public works architects in Europe. A mural replicating the London Undercroft surrounded the

exhibition. This unfriendly piece of infrastructure, originally conceived of for parking, has been taken over by a generation of skaters who have transformed the underutilized concrete cavern into a skatepark that allows them to engage in physical activity and recreation (Chipperfield, 2012). They engage with the space infinitely more than the typical Londoner walking to and from their parked car. Instead of using the space as intended, they re-appropriate the concrete embankments, steel pipe railings, and concrete walls to express themselves in vectors, both through their movements on a skateboard and their street art (graffiti) that adorns the stark concrete.

The world of parkour has become a viral phenomenon, appearing in silver screen blockbusters such as *Casino Royale*, on the small screen in season six of *The Office* and in a recent documentary entitled, “My Playground”. The documentary follows a Danish parkour team, Team Jiyo, as they re-appropriate the built work of Bjarke Ingels Group. They tumble down the Mountain Building in Copenhagen and explore the structural skeleton of the Danish Pavilion before its completion for the 2010 Shanghai Expo. A Team Jiyo athlete explains that through parkour, you can transform the city – even though it is fixed and static physically. You interpret its surfaces in order to move through it in exciting, dynamic and playful ways (Astrup Schröder, 2010, 00:11:15)(see Figure 5). Ingels in the documentary is fascinated by the ways in which the athletes reinterpret his spaces. He explains, “Architecture is the means and the goal is maximizing human life. We are trying to bureaucratically plan it. An architect thinks it is great to move in spaces, our Number 8 building is about expanding access and creating movement ... but the city should have room for the unorganized

and the spontaneous” (Astrup Schröder, 2010, 00:03:30). The spontaneous and unorganized are only fostered by embracing the temporal: by rejecting stasis and creating the condition in which dynamic spontaneity can occur.

The documentary was filmed by Kaspar Astrup Schröder who speaks to his surprise at how the athletes were able to reshape his conception of space:

“When I began doing these test shoots with the parkour teams, I started composing my pictures according to the buildings and the space, but with these guys moving in the space it became a totally different experience ... Bjarke came on board. I gave him the film and he was like, “This is amazing, we have never seen our buildings in that perspective. I want to be more a part of what you’re doing.” We began a discussion about perceiving space, exploiting space and how to show architecture in a film.

(Farrel, 2010)

Ingels, in an interview with the Danish Film Institute, states that being part of Schröder’s film allowed him to develop a new lens for conceiving architecture:

“Whenever you create a building or an urban space, you contribute to the future life of the city. In doing so, you also contribute to the future of the culture and lifestyle of the people who live there. “My Playground” is, of course, a film about parkour, but it is also very much about the intricate link between public life and architecture. Showing architecture, not as some static art form, with the typical architectural photography focusing only on how light falls on a wall, but architecture as observing human life and attempting to accommodate it ... it becomes a very dynamic way to experience architecture,

teaching you about urban space and urban life.”
(Farrel, 2010)

Ingels here argues against a static architecture and for an architecture of human life within a dynamic field. The title of this article “Rendering Architecture With Bodies” aptly speaks to both an architecture of movement and one of life –

not simply of image. An architecture that invites alternative interpretations, facilitates movement and change, and is conceived of beyond the limits of Cartesian space is an architecture that avoids stasis, denounces the power of “the fixed scene” and avoids autonomy by asking for public engagement and participation.

Figure 6: A PARKOUR ATHLETE RE-APPROPRIATES HIS ENVIRONMENT, ALLOWING THE VIEWER TO RE-INTERPRET THE ARCHITECTURAL FORMS.

ENGAGEMENT

Steen Eiller Rasmussen notes that children, often through play and engagement, are able to more deeply understand the nature of a place – even if they do not fully comprehend its significance. Ruari Glynn’s animated art installations also illuminate (often literally) the contrasting way in which children and adults appropriate information about the world around them. In an interview about his recent work, *Fearful Symmetry*, conducted for the Tate Modern, Glynn reflects that, “The most interesting thing is the difference between the way in which children and adults respond, and that’s really what the work is about. It’s about how we grow older we seem to lose that faculty, or a willingness to project life into things, but it seem that we are born with [the tendency to project life in to things] and I believe that it’s part of our innate, hard wired psychology”(Glynn, 2012)(see Figure

7). The installation is an elaborate delta robot, capable of moving along three different planes within a repurposed industrial tank. Despite the immense technical infrastructure, the experience of the installation is of a jubilant, luminous entity in a pitch-black room. As Glynn describes it, “As the only light source in the room, the tetrahedron acts as entertainer and guide to the space, dancing with the audience, and playfully encouraging them to become an active part of the performance” (Glynn, 2012). Here the art seeks to engage the user actively. The viewer does not simply observe the artwork from a static frame of reference but is enticed to follow the luminous tetrahedron. In doing so, they are re-composing the experience of the artwork and their fellow audience members become participants in the ongoing performance.

Figure 7: A YOUNG GIRL ENGAGES WITH GLYNN'S ARTWORK WHILE ADULTS STAND AROUND THE PERIPHERY

The most likely source of this disconnection from wonderment over time, is a hierarchical shift in one's place in the world. A child is emancipated by subservience to the world around him wherein an adult feels the need to master his domain within the world. An adult expects the world to work for him, this is especially true in the built world, the world in which we have built for ourselves. It is this position of power that Ruari Glynn's artwork challenges, erodes, and in its place we again find a childlike sense of wonderment that not only allows us to engage with the artwork in front of us, but temporarily reframes our engagement with the world in this moment.

In this way, Ruari Glynn's work operates as an aggravator. This theory of an aggravator comes from Michel Serre's *The Parasite*, in which he describes the parasite as an obscurity always defying a static set, bringing further complexity to it (Serres, 1982, p.17). He uses the allegory of a stranger that knocks on the door just as a family sits down for dinner. The stranger is asked to join the family for dinner and the presence of the stranger changes the dynamic of the rather routine conversation that was about to ensue before his arrival. It is in this way that the parasite, or aggravator, or other, is able to reframe an otherwise knowable, or routine event. In this way, architectural interventions can be made to aggravate a person's conception of a given space or routine. This has a double advantage, to make a user re-engage with a space that they may be dismissing as background noise, and secondly it causes them to become present in the moment, and share in the event with others.

This idea of an aggravator that forces people to react and thus reconsider their surroundings was the motivation for an earlier project called *Colossai*. Five large beings would live their lives within a public square, motivated to move by interrelations. This ever-changing condition would force people to re-appropriate their space as their hierarchy in the world fell from alpha position. At some points, the *Colossai* would serendipitously form usable outdoor venues while other times their presence would simply require transient humans to detour (Figure 8).

Engagement is critical in architecture. Architecture, along with landscape architecture and urban design, create the interface for humans to function within the city. Just as interface design anticipates the interaction between human and technology, so must architecture facilitate the interaction between human and program, space, environment, metaphor, and all other facets of this complex discourse.

Figure 8: THE AUTONOMOUS COLOSSAI WOULD ALLOW OR DIS-ALLOW TYPICAL USES OF THE SITE, CAUSING THE TRANSIENT HUMANS TO RE-APPROPRIATE THE SPACE

MOTION

Mark Wigley directs a studio at Columbia University entitled “Experiments in Motion” in which students are asked to reconceive of the city and architecture through a lens of motion. As an incubator for ideas, design professionals from the fashion industry, the interface design industry, web design, architecture and project management industries, were brought together to discuss their disciplines through this lens. The focus of the round table was on Mark Wigley’s opening inquiry: “motion is not the property of an object but is rather the effect produced by one object’s relationship to another, how can designers use architecture to reshape the way people experience motion?” (Wigley, 2012). Several insights arose including dualities between architecture and other design professions when they are faced with the concept of motion (and in such, time). Of note, Abe Burmeister of Outlier Tailored Performance Clothing, when asked by Wigley how fashion addresses motion, responded, “There is little foundation in the industry around motion in fashion even though we are constantly moving in our clothing ... the work flow is flat or static, draw pictures, draw flat patterns, make it fit on a standing mannequin, on a real model if possible. Sure it can walk down a runway but we don’t really think about what happens when you move your arm.” (Wigley, 2012). Here we see a correlation between the design of fashion and the design of architecture, limited to the view of an idealized static world. They represent two utilitarian design

fields that have become highly consumable and tailored towards image rather than function in the world. Of course there are always outliers to any trend. Burnmeister’s clothing company produces garments that use fabrics such as merino wool to provide the functional needs of a active lifestyle with the demands of consumer fashion (Burmeister, 2012). Their choice of representation reflects this philosophy – the garments are shown in motion and obscured by acts of living, not simply perched on a mannequin

Architecture is interpreted through movement yet our methods of representation are largely relegated to perspectival images that can easily be used to distort the geometric reality of the spaces in which they purport to assay.

Motion is an easily accessible entry point in which to explore the conception of architecture in time. As previously stated, architecture is typically deeply concerned with procession and the bodies movement through space. Peter Zumthor’s baths in Vals is a phenomenological journey wrapped along a very carefully constructed sequence of spaces and correspondingly warm or cold plunges that is intrinsically linked to the movement of a visitor through the project. Sanford Kwinter forwards the work of Antonio Sant’Elia as an architectural project that captures the continually emerging nature of time through the actualization of the virtual. In “Architectures of Time” he writes:

“The hydrodynamic themes of *La Citta Nuova*—the vectors, the concatenating sequences, in a word, its flow—also embody time in a way fundamentally different from previous schemas, including the existentially self-contained spectacle of Baroque architecture or the excessively narrative and romantic Picturesque ... because the city-system is based on the circulation of force (-lines) disencumbered from fixed reference or relation to an exterior ground or site, it must derive its first principle, or principle of differentiation, from something inherent to it (turbulence, interference, etc.) This inherent “First Principle” would be an immanent cause: an infinitely recurring, always virtual cause, based not on the absolute time of a fixed, exterior origin, but on a mobile and relativistic time that belongs to the concrete events that give it form.

(Kwinter, 2001, pp., p.95)

Sant’Elia’s *La Citta Nuova* is praised for a formal order based upon an internally emergent system of events. The architecture can be seen as a predecessor to mega-projects such as Berlin Central Station, where the volumes and interior space emphasize the motion, movement and animation provided by the transportation interchange that occurs on site. In *La Citta Nuovo*, the context is non-existent, and the project becomes entirely about movement and emergent growth. In these projects transportation infrastructure becomes an architectural expression of a culture-on-the-move. The architectural forms become legible in the context of the movement that generated them.

In an early design exploration I had looked at generating models in which human analogues were created using particle systems in animation software. Groups of particles were given characteristics that allowed them to act within a field of forces. Some

of these forces were obstacles that they could not pass, others attractors which would draw the human analogues towards them. In further designs I sought to use the information generated from these models to create form. The results were mixed, creating interesting forms but it was not clear what the forms were referencing (See Figure 9). I firmly believe that architecture must be legible by the people who use it every day for it to be socially relevant.

Jeremy Till in *Architecture Depends*, uses the music of Elvis Costello as an analogy to legible architecture. He recounts that Costello would record his music using state-of-the-art equipment, but would always master the final tracks using a low-fidelity speaker system. He would do this because he knew that the majority of his listeners would be experiencing his music, not through high-end hi-fi systems, but through affordable lo-fi systems. The corollary of this musical analogy is an architecture conceptually generated to be perceived, not by the critics, but by the people who engage with it on a daily basis. In *La Citta Nuova* and Berlin Central Station, the design is in service of movement, and through movement, is made legible. This is an architecture that is both conceived of and read through a lens based in time. Here it is the foregrounding of movement that allows the architectural discipline to begin to engage with time.

Figure 9: RESULTS OF AN EARLIER DESIGN EXPLORATION, USING PARTICLE SYSTEMS TO GENERATE FORM.

One of my first design inclinations was to reinterpret a dilapidated steel pedestrian bridge. The bridge's steel decking and support structure was unfit, but the concrete piers were still structurally sound. The project would be about ruination, these concrete

piers reclaimed to create a pedestrian crossing. The project however lacked intensity of use that could lead to exploration, it was simply a linkage and a poetic reformulation (Figure 10).

Figure 10: A SKETCH OVERLAY FOR A RECLAIMED PEDESTRIAN BRIDGE.

◆ ◆ ◆ MOVEMENT

Movement in the context of art typically conveys the sense of movement through a static image or form. While the cubists sought to encapsulate every angle of an object within one image, the futurists, sought to paint and sculpt the sensation of movement. Futurism began in the early twentieth century and explored themes tied to the rapidly evolving technological context in which they were working. Similar to LeCorbusier, the futurists became enamored with the car and airplane as icons of the technological advancements that were largely shaping their world. The urge to capture

this societal upheaval led to an interest in trying to capture the essence of movement, speed, violence and youth. Umberto Boccioni's "Unique Forms of Continuity in Space" (Figure 11) depicts a humanistic figure that suggests motion, as if it is a man walking in to the wind. Its static nature is in conflict with the fluid forms as if the statue is simultaneously extending forward and backward in time within this movement. It is in this way that a static object can be made to strongly suggest real movement.

Figure 11: UMBERTO BOCCIONI'S "UNIQUE FORMS OF CONTINUITY IN SPACE"; BRONZE CASTING; 1913

This prospect of connoting movement within a static form is conducive for architecture, where creating real movement on a building-scale becomes very problematic. In this way, virtual movement can allow architecture to suggest movement, and therein time, while remaining static.

Part of my thesis design uses this virtual movement to emphasize the latent movement throughout the site. Animation software is used to array a shell along a spline. The shell is scaled as it sweeps along the curve and its heading is increased at every point as to turn skywards. The gesture launches towards the sky, which is experienced vicariously by the pedestrian that walks beside the sweeping structure (Figure 12).

Figure 12: THE BRIDGING STRUCTURE IS GENERATED FROM SELF-SIMILAR FORMS, SWEEPED ALONG A CURVE, EACH ITERATION GROWING AND TURNING SKYWARD.

This virtual movement is what Geg Lynn calls Animation: “Animation is a term that differs from, but is often confused with, motion. While motion implies movement and action, animation implies the evolution of a form and its shaping forces; it suggests animalism, animism, growth, actuation, vitality, and virtuality” (Lynn, 1999, p.9). An animate form in this way differs from an idealized platonic form in the way that it has been shaped by forces. Lynn champions the design of Worlds’ Cup sailboat hulls:

“Although the form of a boat hull is designed to anticipate motion, there is no expectation that its shape will change. An ethics of motion neither implies nor precludes literal motion ... The particular form of a hull stores multiple vectors of motion and flow from the space in which it was designed ... Likewise, the forms of a dynamically conceived architecture may be shaped in association with virtual motion and force, but again, this does not mandate that the architecture change its shape. Actual movement often involves a mechanical paradigm of multiple discrete positions, whereas virtual movement allows form to occupy a multiplicity of possible positions continuously with the same form.” (Lynn, 1999, p.10)

When these shaping forces are apparent in the site context it becomes a legible process that can be read as an event that has occurred over time. If pedestrian flows are used as a force in which to shape the form, then the resultant will enter a dialogue with the moving pedestrian that experiences the built project. In this way, the form of the project is in service of a resultant condition.

The design of a Formula 1 car’s aero-body seeks a very objective outcome: airflow to critical aerodynamic forms (rear diffuser, rear wing etc)

or engine parts (air entering the engine through the side pods or increasing the flow rate of exhaust gasses by passing air over the exhaust ports, see Figure 14). Architecture as a cultural product is typically more concerned with subjective results of beauty, poetry or meaning. If the resulting Formula 1 car can be seen as beautiful because of an appreciation for the underlying result of speed, can an architectural construct be seen as beautiful for the effects it generates? If a building can be constructed to shape the flow of pedestrians, allowing them to coalesce in specific areas and move fluidly through others, can the result be read as beautiful? Or, like Formula 1 or the World’s Cup, is the barrier to entry of a wealth of knowledge too high to fully understand the beauty of the forms for the typical viewer? This raises the larger question of whether we design for the critic or the pedestrian.

Formula 1 bodies and the hulls of World’s Cup boats both exemplify another key method of designing animate forms: multiplicities. Greg Lynn states that the hull of a boat is meant to perform differently depending on its keel angle resulting in a boat that performs differently when it is tracking in a straight line or tacking along a curve (Lynn, 2009). Similarly, the design of Formula 1 cars allows them to perform differently under acceleration, breaking and turning. The aerodynamic body is designed in such a way that as the weight is transferred forwards during breaking, the angle of the body changes, pivoting downwards. The aerodynamics are designed to create as much down force in this position to generate as much grip while cornering. Conversely, under acceleration, where the weight is shifted rearwards and the body rotates upwards, as much down force is reduced to reduce drag and increase speed. In both of these examples, one static

object (the hull of a boat and the body of a car) are designed in a way that they respond differently in varying conditions. Architecture too must be thought of in this way, as it too must remain static in a fluid world. Lynn's work seeks to achieve this but it is the conception of the architectural discourse that must change to allow the promotion of these ideas. As Lynn states: "these assumptions

(about stasis) can be transformed once the virtual space in which architecture is conceptualized is mobilized with both time and force" (Lynn, 1999, p.13). Here again, time becomes the lynchpin between a stagnant architectural discipline, stuck in cyclical autonomy and an architecture that hopes to engage within a meaningful dialogue with the external world.

Figure 13: AN AERODYNAMIC ANALYSIS OF RENAULT'S 2009 F1 CAR USING COMPUTATIONAL FLUID DYNAMICS (CFD) DELINEATING AIR FUNNELED TOWARDS THE SIDE PODS TO BE FED IN TO THE ENGINE.

WORKING IN TIME

WE HAVE SO FAR DISCOVERED A LANGUID ENGAGEMENT WITH THE MEDIUM OF TIME, A LACK OF USER ENGAGEMENT, A PERVERTED VIEW OF THE WORLD IN STASIS, AND A LACK OF MOVEMENT CREATING INHUMAN ENVIRONMENTS THAT DO NOT RELATE TO THE CONSTANT FLOW OF OUR LIVES. WHAT HAPPENS WHEN ARCHITECTURE IS CONCEIVED OF THROUGH THE LENS OF TIME? WHAT TOOLS ARE AVAILABLE TO WORK IN THIS NON-PHYSICAL MEDIUM?

TIME FORWARD

The foregrounding of space tends towards its abstraction; against this, by positing time as the key context for architecture, space becomes active, social, and is released from the hold of static formalism ... thick time is time of the extended present that avoids mere repetition of past times (everyday time) or the instant celebration of new futures. Thick time is where the interception of recurrence and becoming provides the space for action, but not in an easy linear manner. To be in (thick) time, however, is to be in the world, not a world of static objects, but a world of social and temporal exchanges, and if these exchanges are reflected upon in the course of design, it is all the more likely that the resultant buildings will be able to accept the multiplicity of time in the future.

(Till, 2009, p.96)

Jeremy Till aptly provides a methodology in which to work in a manner that allows architecture to engage with the contingencies that time

introduces. Thick-time is the time scale of the event. A simplified model suitable to understand this concept is that of a trajectory. Once launched, a projectile is set along a path that is described, at any point of time along its path, by the initial conditions upon its launch and the time that has elapsed since that event. The initial conditions are known and the resulting conditions can be easily ascertained. The instantaneous time is informed by what has led up to this point and the nascent future. This model can be expanded from a two-dimensional model (in which time only exists during the event) to a three dimensional model in which the event is seen as a constellation within a much larger system. Recurrence, the tendency for the system to return to a state which resembles its initial state, and Bergsonian becoming, the nascent anticipated future, describe both the launch and the impact respectively of that missile. Now simply assume that missile has a will of its own, is mindful

of both the just-passed conditions of its launch and able to anticipate the about-to-unfold future. This missile would be in thick-time. Although the length of time varies from event to event (similar to the length of time a star will stay in existence, or the length of time an exponentially decaying particle will take to reach half of its mass) the scale of time in which the even unfolds is thick-time. When applied to humans, other facets of time are incorporated that create a much more complicated temporal milieu. Past experiences, conditioned reactions, connoted meanings, personal preferences et al. These combine to create a period of thick-time which roughly forms our individualized experiences of time, though this construction is too an abstracted version of a much more complex reality.

Architecture must then seek to create a purposeful intervention in this thick-time. This can be done by encouraging the missile to engage more closely with the trajectory they are traveling. Architecture and video games share many concerns when it comes to the movement of people (individuals and players respectively) through their environments. Both typically seek to guide individuals to specific areas where a great view may be present, or an event is set to occur. And each wishes to do this without the individual perceiving any limit to their freedom. Video games often use motion to capture the players attention, and light to draw them towards a specific area. These are useful tools in architecture as well and can be thought of generally as attractors. Similarly, repulsors can be used to shape the way in which an individual moves without making them feel corralled. In Frank Lloyd Wright's Martin House, in Buffalo NY, the ceiling height indicates the type of behavior that is expected in each room. The entry foyer has a very

low ceiling that ushers visitors through into the main public rooms that have the highest ceilings. In this way, the ceiling heights, lighting choices, and indicators of movement are all operators in thick-time, shaping the way in which an event unfolds through architectural suggestion. LeCorbusier does not engage with time in his writing, but much of his work is deeply engaged with this idea of thick time. The Villa Savoye, for example, is deeply rooted in the idea of procession. The architectural discipline has an affinity for the body moving through space, as typified by the seminal teachings of Duchampe's "Nude Descending a Staircase"(Figure 14) and the Frankfurt Kitchen (Figure 15).

Unfortunately, this is where LeCorbusier's (and the majority of the architectural discipline's) engagement with time is extinguished. This is no more apparent than with the "Law of Ripolin", as indicated by Mohsen Mostafavi and David Leatherbarrow in their book, "On Weathering", "Implied in Le Corbusier's understanding of the white building is a finality that manifests itself upon the completion of a construction, although anticipated at the beginning of the project. Accordingly, the duration that is to follow the completion of the building--the life of the building--is conceived as a subtraction from the ideal condition of the project realized before inhabitation and weathering"(Mostafavi & Leatherbarrow, 1993, p.82). LeCorbusier's insistence that buildings should be pristinely washed white indicates an unwillingness to conceive of time as an agent on a building's conception or existence. Figure 11 and Figure 12 show the limitations the law of ripolin when it is removed from the idealistic world in which it was conceived and forced to exist in a world subject to time.

Figure 14: MARCEL DUCHAMPE'S "NUDE DESCENDING A STAIR. NO 2." (1912).

Figure 15: A MOTION DIAGRAM FOR THE FRANKFURT KITCHEN, DESIGNED FOR AN ECONOMY OF MOVEMENT AND SPACE

Figure 16: THE VILLA SAVOYE IN 1931

Figure 17: THE VILLA SAVOYE 36 YEARS LATER IN 1967

◆ ◆ ◆ WEATHERING

Architecture exists in time. This means it is engaged in a myriad of interactions with the elements and its users, the forces of which are made visible in the physicality of the building through either subtraction (when material is taken away, such as the eventual erosion of marble staircases, indicating the most traveled portion of the stair's tread) or deposition (when material is added, such as a layer of oxide on copper, creating a patina). Mostafavi and Leatherbarrow's book is a celebration of these processes through time: "aged things as having value because they have lasted and represent the past - modern newness disavows this sense of recollection through association - manifest in surfaces not allowed to age" (Mostafavi & Leatherbarrow, 1993, p.84). These qualities can be seen in a high quality leather bag that has collected markings through use but has endured, verifying its quality. A weathered material, in this sense, not only connotes quality, but also marks the passage of time. Mostafavi and Leatherbarrow note that "architectural duration implies a past that is caught up in the present and anticipates the future" (Mostafavi & Leatherbarrow, 1993, p.64) and further, that, "Weathering marks the passage of time. This time is not the moment of a pre-occupancy photograph; time's passage in architecture includes a building's inception, construction, and inhabitation. The project, too, endures through these phases" (Mostafavi & Leatherbarrow, 1993, p.112). This

position on architecture is starkly contrasted to that of LeCorbusier (and, one could venture, the predominant contemporary work of the architectural discipline) and is vastly more relevant in a world where, as Jeremy Till posits, "Mess is the Law".

Weathering can be anticipated, designed for and used as a tool that allows architecture to act as a signifier of time-scales beyond the instantaneous perceived time, or the thick, experienced time of the user. The building, in this way, begins to speak about duration and becomes an indicator of time passed with returning every visit and begins to participate in a dialogue over larger time-scales with its occupants. Mostafavi and Leatherbarrow cite the John Deere building by Eero Saarinen, and the Banca Popolare di Verona by Carlos Scarpa as two projects which use the qualities of materials in time to contribute to the poetic message of the project. The John Deere building is constructed largely of cor-ten steel. Cor-ten is the trademark of a weathering steel which oxidizes to create a stable and protective barrier of iron-oxide (rust) to prevent further decay. Eero Saarinen uses this material extensively in the John Deere Building to create a warm aesthetic that fits in to the wooded surroundings of the site and imbues a sense of permanence to the tractor manufacturer's corporate image (see Figure 10).

Figure 18: THE JOHN DEERE BUILDING BY EERO SAARINEN UTILIZING WEATHERING STEEL

Mostafavi and Leatherbarrow indicate that when using metals that are intended to oxidize it is important to consider the surrounding materials. As water rushes over the material it will carry some of the oxidation away, and can wash over and stain other materials such as concrete or wood. They offer Carlos Scarpa's Banca Popolare di Verona as a project that embraces this fact. Foreseeing the problem of staining created by the oxidation of a window frame, Scarpa creates a vertical channel at the bottom of the circular window that collects the water, along with any staining sediment, and directs it along its length to a miniature scupper (see Figure 11). This detail creates a point of novelty, architectural articulation, but also ensures that the project's intent endures through time.

Weathering is not limited to steel. Other metals such as copper and zinc oxidize to form a protective patina as well: copper forms a bluish-green layer while zinc darkens in color. Woods react differently to the environments over time. Cedar, for example, begins as a vivid amber and greys over time as exposure to ultra-violet light degrades the lignin within the cellular structure of the wood. Mostafavi and Leatherbarrow write: "Paradoxically, weathering produces something already there by subtraction. This exchanges the roles of art and nature. In design, art is assumed to be the power or agency that forms nature; in the life or time of a construction, however, nature re-forms the 'finished' art work" (Mostafavi & Leatherbarrow, 1993, p.64). This creates an architecture that engages with the passing of time. Poetically stated: "Thought of in this way, weathering brings the virtual future of a building into dialogue with its actual present, as both are entangled in its past" (Mostafavi & Leatherbarrow, 1993, p.112).

Figure 19: WINDOW DETAIL FROM BANCA POPOLARE DI VERONA BY CARLOS SCARPA

PROCESS

Engaging in time requires new strategies: strategies that extend beyond mere static form. As Jeremy Till cautions, engaging in time (or contingency) opens the process up to unknowable complexity. This does not excuse us from disengaging with the topic. No matter how well a project anticipates future evolutions, and no matter how well an architect envisions its use, he/she will ultimately fail to fully conceive of the complexity of engagement that will occur in its use. But this is not a failure to perfectly predict the future, but a success in promoting a discourse that seeks to engage more deeply in the uncertainties and opportunities of time.

An example of the unforeseeable opportunities that exist in the life of a project is the Torre David in Caracas. This edifice began its life as a 45-story office tower, but after a series of events conspired, the death of the developer and the collapse of the Venezuelan economy, the project was abandoned as a structural shell partially enclosed with cladding. Over time, the tower has become a vertical slum, housing an estimated 750 families in a surprisingly functional community (Tank, 2011). The new residents have carved passageways through concrete walls in an effort to create a more suitable environment, modifying their inherited surroundings as necessary. Similarly, in his highly critical film “How Buildings Learn”, Stewart Brand presents LeCorbusier’s Pessac Housing complex as an architecture that has serendipitously become an adaptable housing typology (Brand, 1997). LeCorbusier’s intention was to provide housing amenable to the modern, minimalist life style. In doing so, he provided a robust and minimal infrastructure that the inhabitants would later

tailor to fit their lifestyle and needs. Garages were turned into workshops or extra bedrooms, covered terraces were constructed to create exterior livespaces, and the stark walls were adorned with picture frames and display cabinets. This is a humbling, but important lesson for architects: despite our best laid intentions, our buildings upon completion become open to interpretation and appropriation by the users that interact with them. This, as previously stated, does not emancipate us from attempting to design to these contingencies, but instead requires a different set of tools in which to work with.

In his essay, “Not Unlike Life Itself”, landscape architect James Corner argues this need to conceive of architecture in a new way: “to think solely in terms of ends is perhaps not accurate, for a good strategy [for design] remains dynamic and open and thereby assures its own longevity” (Corner, 2004, pg.32). Corner proposes the use of landscape and ecology as strategic models in which to address this complex external reality:

[landscape and ecology] both deal with time open-endedly, often viewing a project more in terms of cultivation, staging, and setting up certain conditions rather than obsessing on fixity, finish, and completeness. Landscape and ecology understand projects as dynamic, grounded temporalities, as context-specific unfoldings—becomings, durational emergences, themselves seeding potentials that go on to engender further sets of effect and novelty” (Corner, 2004, pg.32)

Corner’s process oriented design strategy is laden with Bergsonian influences and appreciates the

world as in a state of flux. Corner is proposing the design of conditions, not fixity and permanence. He is also heavily critical of the current state of the architecture and landscape architecture professions: “architecture and landscape are valued more as symbolic, aesthetic, or emblematic works rather than as modes of practice directed toward larger urban issues, physical planning, and social/public improvement” (Corner, 2004, pg.32). Corner’s criticism of architecture as being

relegated to symbol or aesthetic can be read as a criticism of architectural autonomy: an insular architecture that has become introverted and obsessed with formal manipulation. Through the design of conditions and the use of process, Corner believes, “[we can construct] a dynamic expanding field, literally a machinic stage for the performance of life, for the propagation of more life, and for the emergence of novelty”(Corner, 2004, p.34).

DURATION & PLACE

THE DISCIPLINE OF ARCHITECTURE HAS STRUGGLED TO TRANSCEND A PURELY FORMAL PRACTICE. ALTHOUGH INTEREST HAS BEEN SHOWN IN THE PHILOSOPHICAL WORKS OF BERGSON AND DELEUZE, AS NOTED BY SANFORD KWINTER, THESE ENDEAVORS HAVE YET TO BARE FRUIT. BY RE-FRAMING THE PROBLEMATIC DICHOTOMY OF TIME & SPACE AS DURATION & PLACE, THE ARCHITECTURAL DISCIPLINE CAN EXPLOIT A SET OF TOOLS THAT WE ALREADY POSSESS. WE CAN BEGIN TO DEEPLY APPROACH AN ARCHITECTURAL PRACTICE IN WHICH TIME HAS CREATIVE AGENCY, AND IN WHICH ARCHITECTURE BECOMES MORE THAN JUST AN OBJECT, OR CONTAINER, BUT AN EVENT THAT IS DEEPLY INTERTWINED IN TIME AND OUR LIVES.

WITHIN MY RESEARCH, I DELINEATE SEVERAL AREAS IN WHICH THE PURPORTEDLY STATIC WORLD OF ARCHITECTURE CLASHES WITH THE TUMULTUOUS REALM OF TIME. MANY OF THESE OPERATE IN WHAT JEREMY TILL DESCRIBES AS THICK TIME, THIS IS SIMILAR TO SANFORD KWINTER'S EVENT TIME. I LIKE TO THINK ABOUT THIS AS A PROJECTILE, IN WHICH AT ANY POINT ALONG ITS PATH, THE CONDITIONS OF ITS ORIGIN AND TERMINUS ARE CONTAINED WITHIN ITS TRAJECTORY. IT IS A COMPLETE EVENT THAT IS DISTINCT FROM THE EVENTS THAT SURROUND IT. IN THIS WAY IT IS LIKE BRIAN MASSUMI'S EXPLANATION OF DELEUZE'S CONSTELLATION OF SINGULARITIES.

ULTIMATELY, I BELIEVE THE INTERFACE BETWEEN ARCHITECTURE, TIME, AND THE EXPERIENCING BODY IS PERCEIVED CHANGE. THIS PERCEIVED CHANGE HAPPENS OVER VARYING TIME SCALES, FROM THE IMMEDIATE (THROUGH THRESHOLD CONDITIONS, CHANGES IN BACKGROUND NOISE, AIR QUALITY ETC) TO THE SEASONAL (GROWTH AND DECAY) AND THE ONGOING (WEATHERING, AND NARRATIVE).

Several facets of temporal concern can be grouped within four categories:

- Weathering,
- Narrative,
- Change
- and Movement.

Within these categories, the designer has varying degrees of capacity to affect temporal change or to create the conditions for the temporal change to affect the design. These capacities are grouped as:

- Direct Control, in which the designer has full control over the condition in which the facet of temporal change will be expressed
- Direct Influence, in which the designer will have influence over the way in which the temporal change will be expressed
- Design of Conditions, in which the designer can create a condition in which temporal change may occur beyond their control
- Contingent, in which the designer has virtually no control over the expression of temporal change in the life of the project.

The next section will provide case studies to elucidate several of these facets.

Time \\ Architecture

> Weathering

>> Deposition

As illustrated by the Villa Savoye example (see figures 16&17), weathering is a pervasive force. However, weathering can be anticipated, designed for and used as a tool that allows architecture to act as a signifier of time-scales beyond the perceived time of the user. The John Deere building is constructed largely of cor-ten steel. Cor-ten is the trademark of a weathering steel which oxidizes to create a stable and protective barrier of iron-oxide (rust) to prevent further decay. Eero Saarinen uses this material extensively in the John Deere Building to create a warm aesthetic that matches the wooded surroundings of the site and lends a sense of permanence to the tractor manufacturer's corporate image. Although Cor-ten is a pre-weathered material, other metals such as copper and zinc can be used which will weather over time.

Figure 20: EERO SAARINEN'S JOHN DEERE HEADQUARTERS MOLINE, ILLINOIS

Time \\ Architecture

> Change

>> Seasonal

Brays Bayou in Houston is less a bayou and more a concrete culvert. It is largely seen as an eyesore but is necessary to mediate flooding and to control the path of water through developed communities. Hydraulicity is a proposal by the Rice School of Architecture. Where as most proposals seek to return the bayou to a "natural state", Hydraulicity seeks to create a hybrid urban/ecological approach which uses the varying levels of water to create dynamic site use: cycling between allowing and disallowing leisure or recreational use while maintaining the necessary bio-remediation and flood control functions.

Figure 21: HYDRAULI[CITY] BY RICE UNIVERSITY

Figure 22: THE USE OF WEATHERED STEEL CREATES A WARMTH THAT ALLOWS THE STEEL BUILDING TO FIT IN TO ITS NATURAL SURROUNDINGS

Figure 23: BRAYS BAYOU AT LOW, AVERAGE AND HIGH LEVEL, ALLOWING/ DISALLOWING ACTIVITIES

Time \\ Architecture
 > Contingency
 >> Participation

Schouwburgplein is situated in the cultural heart of Rotterdam. The designers, West 8, intended the square to be both a social gathering point and an outdoor event centre. Its versatility comes from an array of modifiable lighting conditions including 4 large hydraulic cranes that can be controlled by pedestrians or fixed in place for specific uses. The ability for users to directly contribute to the space provides an invested connection to the space instead of a passive traversable open space such as Dundas Square.

Figure 24: SCHOUWBURGPLEIN BY WEST 8 IN ROTTERDAM

Time \\ Architecture
 > Change
 >> Growth

In his essay, “Not Unlike Life Itself”, landscape architect James Corner re-confirms this need to conceive of architecture in a new way: “to think solely in terms of ends is perhaps not accurate, for a good strategy [for design] remains dynamic and open and thereby assures its own longevity” (Corner, 2004, pg.32). Corner proposes the use of landscape and ecology as strategic models in which to address this complex external reality: “Landscape and ecology understand projects as dynamic, grounded temporalities, as context-specific unfoldings—becomings, durational emergences, themselves seeding potentials that go on to engender further sets of effect and novelty”. His proposal with field operations for Fresh Kills on Staten Island, proposed returning the landfill to a public park using ecological procession over the course of 40 years.

Figure 25: FRESH KILLS BY FIELD OPERATIONS IS A PROJECT TO RECLAIM A LANDFILL SITE THROUGH MANY PHASES OVER 30 YEARS

Figure 26: FOUR HYDRAULIC CRANES ALLOW USERS TO CHANGE THE LIGHTING CONDITIONS OF THE PLAZA

Figure 27: SUCCESSION PLANNING FOR EACH BIOME IS DEVELOPED IN ORDER TO CREATE SUSTAINABLE TIERED ECOLOGIES

Time \\ Architecture

> Movement

>> Kinetic Architecture >>> User Driven

Tom Kundig's Chicken Point Cabin features a large operable glazed wall that faces the lake and can be opened to create an indoor/outdoor space. Kundig's designs focus on, what he calls the "Gizmo", a user-powered device that drives movement and a change in the environmental expression of a space. These physical devices provide a more humane and invested experience to these operable devices as opposed to an electronic button powering a servo.

Figure 28: A GEARED HANDCRANK ALLOWS FOR THE USER TO DIRECTLY CHANGE THEIR SPACE, OPENING A LARGE GLASS WALL THAT OVERLOOKS THE LAKE.

Time \\ Architecture

> Movement

>> Arch. at the Point of Contact with Movement

Alvar Aalto's Villa Mariea, Noormarkku, Finland, 1939. Note the shape of the last tread of the staircase, empathetic to the curving direction of motion of one's trajectory upon reaching the stair's landing. Similarly the columns are wrapped at the human scale and the railings wrap around the columns, sympathetic to the movement of a body.

Figure 29: STEEL COLUMNS ARE WRAPPED WITH RATTAN OR BIRCH AT HUMAN SCALE ANTICIPATING A TRAILING HAND AS THE HOMEOWNER PASSES BY

Figure 30: VIEW OUT TO THE LAKE

Figure 31: THE BOTTOM TREAD ANTICIPATES AND DIRECTS THE DEVIATION IN MOTION UPON EXITING THE STAIR

LOCUS

Illus. 1: I CHOSE THE SITE AT THE LAYERED INTERSECTION OF BLOOR AND ROSEDALE VALLEY ROAD BECAUSE OF THE AMOUNT OF EXISTING MOVEMENT ON THE SITE, THE OPPORTUNITY PROVIDED BY ITS VERTICALLY STRATIFIED DIVERSITY, THE NASCENT NATURE OF MOVEMENT AND CONNECTION PROVIDED BY THE ACT OF BRIDGING, AND THE INCREASED ACTIVITY OF TRANSPORTATION INFRASTRUCTURE, THE CASTLE FRANK SUBWAY STATION ACTS AS A POINT OF ATTRACTION AS WELL AS AN INPUT/OUTPUT DEVICE. THE SITE PROVIDES AN INTERESTING CHALLENGE AS IT IS, IN ITSELF, A THRESHOLD CONDITION.

Illus. 2: THE PREDOMINANT, AND MOST VIOLENT TRACT, DELINEATED IN PINK, FEEDS IN FROM BAYVIEW AVENUE AND THE DON VALLEY PARKWAY, HEAVY TRAFFIC FROM PARLIAMENT AND BLOOR CONTRIBUTE TO A SIX LANE BRIDGE AND COMPLICATED THREE-WAY INTERSECTION.

Illus. 3: PROPOSALS HAVE BEEN PRESENTED TO INCREASE THE DENSITY OF THIS AREA INCLUDING SEVERAL NEW BUILDINGS, THE TALLEST OF WHICH IS 45 STORIES, COMPARED TO THE 12 STORY BOUNDARY BUILDINGS OF ST JAMES TOWN.

Illus. 4: THIS DOES NOT LEAVE MUCH ROOM FOR THE PEDESTRIAN REALM, AND WITH THE ADDITIONAL INTENSITY ADDED BY THE PROPOSED TOWERS, THE SIDEWALKS THAT STRADDLE THE BRIDGE ARE NARROW, AND ARE NOT SEPARATED IN ANY WAY FROM THE SPEEDING TRAFFIC.

Illus. 5: THE GESTURAL RESPONSE TO THE SITE BEGINS WITH THESE DESIRE LINES, PULLING FROM THE THREE MAIN CONTRIBUTING STREAMS TOWARDS THE ATTRACTOR POINT OF THE SUBWAY STATION, PULLING DOWN AND AWAY FROM THE CLAMOROUS ROADWAY AND NESTLED DOWN IN TO THE CANOPY

Illus. 6: THE RESULT IS A KNOTTED PEDESTRIAN NETWORK THAT PROVIDES AN EXPEDITED PATH TOWARDS THE SUBWAY (REMAINING ON THE BRIDGE BUT SEPARATED BY WOODEN BANDS) A LESS DELIBERATE PATHWAY THAT DESCENDS IN TO THE CANOPY, AND AN EXPLORATORY PATHWAY THAT PEAKS AT THE LOOKOUT POINT THAT HAS VIEWS DOWN EITHER SIDE OF THE RAVINE

Illus. 7: CURVING BLADES ARE USED TO CAUSE NON-LINEAR PATHWAYS THAT PROVIDE CONDITIONS FOR DISTRACTED EXPLORATION (CURVES, PERCHES) AND SPONTANEOUS LINGERING. THEY ARE CURVED BECAUSE AS CONTRARY TO A STRAIGHT LINE IN WHICH THE FOCUS IS THE DESTINATION. THE CURVE CAUSES A CONSTANT RE-FRAMING OF ONES

Illus. 8: THE CANOPY STRUCTURES ARE INFLUENCED BY THE TRAFFIC FROM THE EXTERIOR (JAN GEHL'S 60 MILE AN HOUR ARCHITECTURE) WHICH IS MEANT TO BE EXPERIENCED AT SPEED AND THE PEDESTRIAN FRAME OF REFERENCE ON THE INSIDE. THIS CREATES A BRIDGING GESTURE ACROSS THE THREE WAY INTERSECTION, REACHING THE LOOK OUT POINT.

FOCUS

MOVEMENT: REAL & VIRTUAL

PROCESS & INTERFACE

NATURAL PROCESS

While conceiving of a project in which to explore this nexus between the primarily static nature of architecture and the primarily temporal and turbulent world around it, I focused on 3 areas out of the facets of time listed previously (see page 46).

Movement, as discussed earlier, is a temporally inflected area in which the architectural discipline is well versed. Specifically I wanted to use latent movement across the site to provide opportunities for distracted exploration (curves, perches) and spontaneous lingering (terminus and turn landings). Virtual movement is used to imply motion. Gestural forms are used to cause the viewer to anticipate or infer movement visually.

Process implies a tectonic expression. Materials come together in a way in which the process is legible, ongoing or apparently unfinished. Edge conditions dissolve, thresholds are thick, layers delaminate. Interface is Architecture at the point of contact with movement describes the interface between the moving world and the static form of architecture. Railroad ties are used to emphasize movement along the pedestrian bridge. In other areas, grating is used to provide an aggressive surface in which to plant one's feet.

Lastly: natural process. Many of these tenets function within an instantaneous or thick expression of time. Natural process seeks to remind the viewer of larger time scales, seasonal and ongoing. Conditions for growth as well as the erosion and deposition of materials through weathering create an evolving stage in which life unfolds.

MOVEMENT

THE PROJECT ENTITLED ΔT WAS CONCEIVED OF AS A LABORATORY IN WHICH THE RELATIONSHIP BETWEEN ARCHITECTURE AND TIME COULD BE EXPLORED THROUGH AN EMPHASIS ON DURATION AND PLACE. MANY CONCEPTS OUTLINED EARLIER WILL BE REFLECTED IN THIS PROJECT BUT AS AN INTRODUCTION, IT IS MOST SUITABLE TO BEGIN WITH PROCESSION.

PROCESSION IS ONE OF THE FACETS OF TEMPORAL CONCERN WHICH ARCHITECTS WORK MOST COMFORTABLY IN. AS NOTED IN THE VILLA SAVOYE EXAMPLE, ALTHOUGH LeCORBUSIER FAILED TO ANTICIPATE THE TEMPORAL REALM OF WEATHERING ON HIS LAW OF RIPOLIN, HE WAS DEEPLY CONCERNED WITH PROCESSION BOTH TO AND THROUGH THE HOME. SOME OF THE MOST SCULPTURAL PIECES IN THE HOUSE ARE THE STAIRS AND RAMPS AND THE LAYOUT ITSELF IS DEEPLY TIED TO THE FUNCTIONAL LAYOUT OF ONE'S LIFE.

HERE, THE PROJECT IS NOT A HOUSE, BUT AN INTERMEDIATE SPACE SERVING AS A CONNECTIVE LIGAMENT ACROSS A RAVINE AND BETWEEN A DENSELY POPULATED AREA AND A SUBWAY STATION. THE SITE IS ON THE BLOOR VIADUCT IN TORONTO AND ENCOMPASSES FOOT, BICYCLE, VEHICULAR AND SUBWAY TRAFFIC BUT, AS WITH MANY INFRASTRUCTURAL CREATIONS OF THE TWENTIETH CENTURY, POSITIONS THE VEHICLE ABOVE ALL OTHERS MUCH TO THE CHAGRIN OF THE PEDESTRIAN WHO IS FORCED TO CIRCUMVENT THE ROADWAY AND RAVINE BY SKIRTING THE SIX-LANE TRAFFIC BRIDGE; A VOYAGE THAT CAN NOT BE OVER QUICKLY ENOUGH.

THIS PROJECT ASKS WHAT CAN BE DONE WITH THESE CONNECTIVE NON-SPACES? HOW CAN THEY BE CELEBRATED AS AN INTEGRAL PART OF OUR DAY-TO-DAY LIVES? HOW CAN TRAVERSING THEM BY EACH MEANS, BE IT BY CAR OR ON FOOT, BE MADE ENJOYABLE, EVEN MEMORABLE? I BELIEVE THE ANSWER LIES IN THE FORWARDING OF DURATION WHICH BEGINS WITH PROCESSION.

- ◆◆◆◆◆ Open Air Gallery
- ◆◆◆◆◆ Bookable Patio
- ◆◆◆ Look Out
- ◆◆ Stadium Seating
- ◆ Subway Entrance

PROCESSION AND DURATION

THE KEY TO PROCESSION IN THIS PROJECT IS TO SUBSUME THE TRANSIENT NATURE OF THE CONNECTIVE LIGAMENT THROUGH THE CREATION OF EXTENDED DURATION TOWARDS THE GOAL OF ENGAGEMENT. THIS IS DONE IN THREE

MAJOR WAYS:
KNOTTING,
FOCUS ON TERMINUS,
AND, ENCOURAGING EXPLORATION.

KNOTTING

Illus. 9: STEPS TO TIE A FIGURE 8 KNOT

If we think of the different types of movement on site (foot, bicycle, vehicular and subway) as different strands, then knotting can work to extend duration in several ways. The first is through the physical elongation of a strand.

My Brother lives in Kelowna BC so I visit him at least once a year, usually on the back of my motorcycle which affords me a genuine experience of the journey. It is a two day trip, with Calgary falling directly in the

middle. Despite this, the Calgary-Kelowna leg is always over quicker. By all empirical measure it is the longer leg but it is the more engaging one by far. There is two 90 degree turns on the highway between Saskatoon and Calgary and a handful of slow swooping corners but for most of the journey you can see ten minutes down the highway before you ever get there. The Calgary to Kelowna leg, however, carves around mountains, snakes up the sides of ravines and falls down in to fertile valleys completely distinct from the biome from minutes ago.. On the back of a motorcycle you feel the temperature

difference between the mountains shadow and its southern face. The road is constantly re-orienting your view maintaining your interest and engagement. You start to appreciate this dialogue that emerges with the river and railroad which are constantly shifting around and under you. You can't help but get off the bike wherever the road allows for a gorgeous view, which is often, and suddenly you realize that you have slipped from your planned schedule by an hour.

By knotting the different types of movement, you increase the length of the strand, but diversify its course creating a more engaging path. When this is paired with kinking as explained in the next section, opportunities for spontaneous lingering occur which greatly foster user engagement.

Illus. 10: SIMILAR TO THE POCKETS OF SPACE AT THE KNUCKLES OF EACH STRAND, THIS SMALL TURN OFF ON THE YELLOWHEAD HIGHWAY PROVIDES A BEAUTIFUL SPOT FOR SPONTAENEUS LINGERING BETWEEN CALGARY AND KELOWNA.

Illus. 11: THE BIKE PATHS ARE REMOVED FROM THE SHOULDERS OF THE BRIDGE AND INSTEAD TUNNEL DOWNWARDS TO PLATFORMS SUSPENDED BETWEEN THE 4 TRUSSES OF THE BRIDGE. ALTHOUGH THEY ARE INTENDED TO FLOW IN ONE DIRECTION, THEY ARE 2.5M WIDE TO ALLOW FOR TWO BICYCLISTS TO MANEUVER AROUND EACH OTHER

Illus. 12: THE EXPEDITED PATH OF MOVEMENT IS THE PRIMARY PATH FOR OCCUPANTS TO TRAVERSE THE SITE OR TO ACCESS THE SUBWAY FROM THE CANOPY ENTRANCE.

Illus. 13: THE SECONDARY PATH PROVIDES ALTERNATE ROUTES THAT OCCUPANTS CAN USE TO DIVERSIFY THEIR EXPERIENCE OF THE SITE.

- EXPEDITED
- SECONDARY
- LINGERING
- BIKE
- CAR
- SUBWAY

Illus. 14: WHEN THESE PATHS REACH THEIR VIEW-TERMINUS AND ARE REDIRECTED, AREAS FOR SPONTANEOUS LINGERING ARE PROVIDED, INVITING TO OCCUPANTS TO SPEND MORE TIME ON SITE AND TO FURTHER ENGAGE WITH THE PROJECT.

EXPEDITED
SECONDARY
LINGERING
BIKE
CAR
SUBWAY

Illus. 15: THE CENTRAL KNOT IS SHOWN HERE WITH THE INFRASTRUCTURE FOR MOVEMENT LIMITED TO A DISTANCE REPRESENTATIVE OF THREE SECONDS RELATIVE TO THE RESPECTIVE MODE OF TRANSPORTATION USED. PEDESTRIAN PATHS ARE THE MOST LIMITED FOLLOWED BY BICYCLE, CAR, AND SUBWAY. HERE, AN INVERSION OF JAN GEHL'S 60-MILE-AN-HOUR ARCHITECTURE IS USED TO CREATE DETAIL AND TACTILITY AT SLOWER SPEEDS OF TRAVERSAL ACROSS THE SITE TO FOSTER ENGAGEMENT.

FOCUS ON 'TERMINUS

The knotting is accomplished by creating bands of movement in concentric circles that intersect over top of and below other threads of movement. This creates knuckles, or kinks. The paths along curves mean that your view terminus is constantly changing as you rotate about a point. This is meant to keep the user present and engaged, instead of simply projecting their path to the terminus and then mentally divorcing themselves from the present in to their thoughts or social networks.

When one reaches either a knuckle, or the end of a stair well, an option to spontaneously dwell is present. It is important for these pockets to occur at these knuckles because this is the point in which the user is most mentally engaged with the possibility of lingering instead of carrying on with their transient course.

Illus. 16: (ABOVE) SHOWING THE MAIN PATH OF MOVEMENT TOWARD THE SUBWAY ENTRANCE AND THE TERMINAL AREAS FOR SPONTANEOUS LINGERING

Illus. 17: (RIGHT) AN ILLUSTRATION FOR A PLACE OF SPONTANEOUS LINGERING WITH VIEWS DOWN THE RAVINE AND INTEGRATED SEATING. THE GROWTH OF THE GRASSES ACT AS A PHYSICAL HISTORY OF USE.

MOVEMENT ALONG VIRTUAL MOVEMENT

The previous image illustrates another aspect of duration programmed in to the linkage which is virtual time. As noted previously by Greg Lynn, virtual movement involves an animate form which facilitates an anticipation of movement from the viewer. The main form of the covered walkway/gallery space is created through the animation of a series of planes, growing and sweeping through space (see figure 12 on page 28). This part of the linkage as well as the subway corridor (see figure 37) allow you to traverse along this virtual movement and feel the space swell around you. As in my previous installation (see page 14) the unitary rhythm created by the railroad ties juxtaposes against the slowing rhythm of the zinc shells above creating a dissonance that promotes engagement.

The second aspect of the virtual inflection of time is that of construction. As seen in figure 35 on page 58, the pathways are deconstructed as they terminate in to space to suggest the unfinished nature of the project; only time completes it.

Just as the deconstructed details suggest the virtual future of the project, the Cor-Ten steel bands suggest a virtual past. The pre-weathered material, as in Saarinen's John Deere Headquarters (figure 20, page 47), creates a natural warmth that subsumes the infrastructure in to the wooded backdrop and suggests a historical dialogue with the landscape.

Illus. 18: THE OVERLAPPING ZINC SHELLS ALONG THE PEDESTRIAN BRIDGE CREATE A RHYTHM THAT ELONGATES AS THE SHELLS ARE INCREMENTALLY SCALED UP TO CREATE A SYNCOPATION WITH THE REGULAR RHYTHM OF THE PEDESTRIAN'S FOOTFALLS.

Illus. 19: AT NIGHT, THE GAPS BETWEEN THE SHELLS CREATE A ZOETROPE EFFECT, ALLOWING BRIEF GLIMPSES IN TO THE ADJACENT GALLERIA SPACE

Illus. 20: THE GALLERIA CONSISTS OF AN OPEN AIR CONCOURSE AND PATIO SPACE THAT CAN BE RENTED OUT FOR EVENTS OR FITTED WITH INSTALLATIONS AND USED AS A SECONDARY PATH FOR THE PUBLIC TO USE TO TRAVERSE THE SITE

◆ ◆ ◆ ENCOURAGING EXPLORATION

I have always been fascinated with the similarities between video games and architecture. There are a myriad of similarities in the way that we represent our ideas and often the video game industry is years ahead when it comes to graphic depiction and the conception of future possibilities. There are also several similarities. One of the most interesting of these is the illusion of player freedom. This is an area that architects are also fundamentally concerned with: how to direct

users without coralling them. This is beautifully done in the game Journey, where the player has the illusion of total freedom, but by using movement and color, the player directs themselves along a predetermined path without knowing it. This is a similar approach to Bernard Tschumi's Parc De La Villette where colorful folleys are used to coax park-goers around the park with a non-hierarchical path system to follow at their own will.

Figure 21: IN THE VIDEO GAME JOURNEY, THE PLAYER FEELS LIKE THEY HAVE COMPLETE FREEDOM BUT ARE BEING LED BY MOTION AND COLOUR JUST OVER THE HORIZON

This network of knotted threads will be traversed, sometimes, twice or more a day by commuters and other neighbourhood users. It is important to provide a differentiated experience to maintain their engagement. Some of this will be provided by perceivable change through weathering, growth of plant life, and reconfigurable objects but other diversified experiences can be provided by taking one of several routes across the linkage. To

encourage exploration, visual connections to other pathways are created including perches and bridges that provide better views and a differentiated experience.

CONFLUENT

I don't believe that the needs of the pedestrian should negate the needs of the vehicle, but that both should be celebrated. Here, wooden bands not only provide a level of separation, but build to a crescendo as the driver passes under the new pedestrian bridge. Here the rate of speed of the frame of reference is indexed in the long wooden bands, where as the relatively frequent overlapping of the zinc shells reference the slower movement of the pedestrian.

DESCENT

As one moves through the linkage towards the subway entrance they descend from the clamorous roadway in to the tree canopy of the ravine where the relative silence is marked by the periodic passing of the subway trains which have been stripped of their tunnels and are instead threaded along open-air covered tracks. This allows subway commuters a brief respite from dark tunnels and a privileged view of the ravine.

Illus. 22: AS ONE DESCENDS TOWARDS THE SUBWAY ENTRANCE THE CONSTANT DRONE OF THE TRAFFIC AT GRADE IS REPLACED WITH THE PUNCTUATED CALAMITY OF THE SUBWAY PASSING BELOW FOLLOWED BY RELATIVE QUIET. THIS HELPS TO HIGHLIGHT THE DIFFERENT MODES OF MOVEMENT WRAPPED AROUND AND THROUGH THE SITE.

Illus. 23: A PHYSICAL MODEL BUILT TO DEMONSTRATE
THE ACT OF ASCENDING AND DESCENDING THROUGH
THE STRATIFIED PARKWAY SYSTEM.

PROCESS & INTERFACE

PROCESS AND INTERFACE DESCRIBE THE TEMPORAL INFLECTIONS OF MATERIAL PROPERTIES. PROCESS, IN WHICH FORM SUGGESTS THE PHYSICAL MANIPULATION OF MATERIALS IN TO THEIR FINAL STATE. INTERFACE IS THE POINT OF CONTACT BETWEEN MOVEMENT AND MATERIALITY. THESE INTERFACE MATERIALS THROUGH THEIR TACTILITY EXPRESS THE WAY IN WHICH THEY COME IN TO CONTACT WITH MOVEMENT.

ALONG THE BANDS THE HANDRAILS ARE CREATED BY MACHINE-ROLLING A STEEL PIPE AND THEN HAND HAMMERING A BRACKET AROUND IT. THIS IS THEN SLOTTED AND SITE-WELDED IN TO FINS THAT ARE ATTACHED TO THE STEEL-CORE OF EACH BLADE. IN THIS WAY, EFFICIENCIES ARE MADE USING MASS FABRICATION AND A HISTORY OF PROCESS IS GENERATED THROUGH THE HAND FINISHED MATERIALS AT KEY LOCATIONS. AT THIS POINT, HAND-CRAFT MEETS MACHINED PRECISION AND THE PHYSICAL EXPRESSION OF EACH PROCESS IN MANIFEST IN THE RESULTING TEXTURE OF THE ALTERED MATERIAL.

HANDRAILS ARE SMOOTH AS IF POLISHED BY MANY HANDS THROUGH TIME. ALONG EACH BAND THE GRATING'S BANDS PARALLEL TO MOVEMENT ARE SERRATED TO PROVIDE FOOTING AND SMOOTH PERPENDICULAR TO MOVEMENT TO ALLOW FOR SNOW TO BE EASILY CLEARED. RAILROAD TIES ARE USED ALONG THE PEDESTRIAN BRIDGE WITH SMALL GAPS ACCENTUATING MOVEMENT AS THE GAPS SWEEP BY YOUR LOWER PERIPHERAL VISION. ANYONE THAT HAS WALKED ALONG A TRESTLE BRIDGE WILL KNOW THIS FEELING. IT MAGNIFIES THE SENSATION OF MOVING AND IS SLIGHTLY UNNERVING CAUSING YOU TO BECOME HYPER-AWARE OF YOUR PRESENT SITUATION.

MATERIALITY \ MOVEMENT DIALOGUE

When I needed a break from the large scale aspects of the project I wanted to apply the same tenants to a smaller scale so I designed a bench meant to be positionable by it's users to suit it's positioning on site and the users preferences. Large brass conical rollers allow it to be rotated around the central table allowing either a view inward to the site or outward to the ravine. Here the concept of "process" is legible in the hand-hammered doubly-curved seat pans which connote a level of craftwork and tooling that leaves a tangible mark. The corten bands, as well as seating it in the context of the larger site, imbue a sense of permanence, and the cedar back rests will grey

The hand-holds in the table top create a pattern and visual indicator to the movement that may occur. The benches also speak to another intention of mine, to have human activities transcribed in the evolving materiality of the site. In this instance, if the benches are left in one configuration that is deemed well suited to their position on the site, grasses will grow up around them virtually locking them in place.

NATURAL PROCESS

AS I HAVE ARGUED, ARCHITECTURAL ENGAGEMENT IS STRONGEST WHEN TIME IS GIVEN CREATIVE AGENCY THROUGH PERCEIVED CHANGE. THE ARCHITECTURAL MEDIUM DOES NOT EXIST, AS WE MAY LIKE TO BELIEVE, IN CARTESIAN SPACE DEVOID OF OUTLYING FORCES BEYOND OUR ANTICIPATION OR CONTROL, BUT WITHIN DURATION WITH ALL OF ITS CONTINGENCY AND MESS. BY DESIGNING ARCHITECTURE WITH RESPECT TO DURATION WE CAN CREATE A DIALOGUE BETWEEN USER AND ARTIFACT THAT BECOMES AN EPISODIC NARRATIVE TRIGGERED BY PERCEIVED CHANGE.

THIS LINKAGE CORRIDOR PROVIDES A PERFECT STAGE TO EXPLORE THIS DIALOGUE AS IT IS TRAVERSED AT REGULAR INTERVALS. ON TEMPERATE DAYS, THE LINKAGE CAN BE TRAVERSED IN THE OPEN WHILE COVERED PATHWAYS ARE AVAILABLE TO FIND REFUGE FROM THE RAIN OR SUN. THE ACTION OF PATH-FINDING BECOMES PART OF THE NARRATIVE BETWEEN USER AND PROJECT THROUGH THE LENS OF THE TEMPORAL ASPECT OF WEATHER. THIS LENS OPERATES AT A RELATIVELY SHORT TIME-SCALE. IN THE FOLLOWING SECTION WE WILL EXPLORE HOW THIS DIALOGUE CAN BE TRANSCRIBED TO LONGER TIMESCALES, CAUSING THE USER TO REFLECT ON PAST EXPERIENCES OF THE SITE WHICH CONFLATES AND EXPANDS THEIR INSTANTANEOUS ENGAGEMENT WITH THE SITE.

◆ ◆ ◆

GROWTH

At my grandparents house there is a very special tree. It is a spruce tree, not unlike any other, but this tree was planted by my grandfather from a sapling on my birthday. As I grew up, so did it. Although my body has gone through many changes, it is the growth of this tree that impresses upon me the most as a manifest expression of time. I used to have to walk around the house to see it but now it can be easily seen standing over the roof of the house. The growth of this tree has indelibly tied me to this temporal dialogue with that place more than any other even that happened there and every time I see that tree I have this dense overlay of experiences flood back all at once imbuing the instantaneous with the weight of thick time.

◆ ◆ ◆

The majority of the pathways throughout the linkage are composed of a steel pan filled with growing medium and planted with wild grasses. A metal grate is suspended above this to form a walking surface and sheering agent. Where the paths are well trodden, numerous foot-steps trample the grasses against the grate, effectively mowing them down and creating a physical history of use. The parts of the linkage that are not used will become overgrown and will provide a new and more adventurous experience for those seeking it. Some areas may become overgrown providing habitats for birds and other creatures as well as pleasant meadow vistas - but the result will be perfectly calibrated through use to the desires of its users.

Illus. 24: PHASE I: THE STEEL PANS ARE FILLED WITH GROWING MEDIUM AND PLANTED WITH WILD GRASSES AND WHATEVER ELSE HAPPENS TO BLOW IN

Illus. 26: PHASE 3: USERS ENTER THE LINKAGE FROM
VARIOUS POINTS HEADING IN VARIOUS DIRECTIONS

Illus. 27: PHASE 4: THROUGH USE, USERS' ACTIVITIES ARE RECORDED AS THE GRASS IS TRAMPLED IN SOME AREAS, AND LEFT TO FLOURISH IN AREAS WHERE IT IS LESS TRODDEN.

Illus. 28: THIS AREA CREATED FOR SPONTANEOUS
LINGERING MAY BECOME WELL TRODDEN WITH USE OR
MAY BECOME OVERGROWN PROVIDING NESTING FOR
BIRDS AND A PLEASANT VIEW

◆ ◆ ◆

SEASONALITY & WEATHER

Seasonality sets up a cyclical dialogue between the site and the user. The trees in the ravine are taller than several areas proposed which creates a diversity of experience depending on the state of the tree canopy. In the growing months, being within the canopy allows you to feel enclosed and offers you the chance of spotting critters you would normally not see on grade.

From below, the amount of foliage limits the amount of structure you can see. During the winter months the structure is exposed and mimics the generally vertical nature of the leaf-less trees. In the summer the structure is generally hidden by vegetation and the project expresses itself as more of a series of floating pathways and platforms.

The behavior of the user is greatly predicated by weather. Sections of the network are covered which will draw the traffic of pedestrians in extreme conditions (snow, rain, heat) where as the uncovered pathways will draw more circulation in more temperate conditions.

The grating functions as an elevated surface on which to traverse over the grasses in the summer time, and as a high-grip surface in the winter. Parallel to the path of motion the grating is serrated for traction while the grating members running perpendicular to the direction of movement are smooth, allowing snow to be cleared towards the sides of the pathway where a gap between the guardrail and horizontal surface allows for snow to be cleared from the pathway.

Up-lighting at the railing attachment points illuminates the tree's canopy in the summer and its skeleton in the winter, illuminating seasonal change.

Illus. 29: THE PATHWAY IS SHOWN IN THE SUMMER AND WINTER CONDITION. LIGHTING ILLUMINATES SEASONAL CHANGE AS WELL AS ACCENTUATES HORIZONTAL MOVEMENT

WEATHERING

As opposed to the Cor-ten steel bands which are used to lend a sense of permanence and virtual history to the project, the zinc shells of the covered pedestrian bridge are designed to begin an ongoing dialogue with material, time, and the viewer beginning with the construction of the project and continuing indefinitely.

Zinc oxidizes to create a protective layer against further oxidation. It transforms from a slightly reflective light grey, to a dull, dark grey. The shells are lapped in such a way that water is channeled to a trough under the overlapping edge of the adjacent shell. This water is then directed down to the lowest-level shell where it is collected in a slow moving lateral trough with settling pockets where sediment can be deposited, creating, in time, small pockets of nutrient-rich alluvium. This process is not unlike the flood plains that embank the Nile and other rivers in which fertile lands generate crops with a high yield.

In this way, pockets of growth will occur along these trenches which are irrigated by the same process that has created them.

Illus. 31: PHASE 2: IN SITU, RAIN IS DIRECTED
TOWARDS THE GUTTERS BUILT IN TO THE SHELL
CAUSING ACCELERATED WEATHERING ALONG THESE
TROUGHS.

Illus. 32: PHASE 3: THE GUTTER FUNNELS WATER
TOWARDS THE EXTERNAL SHELL (FACING PARLIAMENT)

Illus. 33: PHASE 4: AS THE ZINC AGES IT BEGINS TO DARKEN AND LOSE ITS SHEEN. SEVERAL WASHES CAUSE THE GUTTER TO FILL WITH SEDIMENT AND WASH OVER THE SIDE, ACCELERATING THE WEATHERING OF THE LOWER PORTION

Illus. 34: PHASE 5: OVER MANY YEARS OF SEDIMENT
WASHING OVER THE SURFACE, ALGAE BEGINS TO
ACCRUE AND FURTHER WEATHERING OF THE ZINC
OCCURS UNTIL A STABLE CONDITION IS REACHED

Illus. 35: PHASE 6: AFTER A SUITABLE AMOUNT OF SEDIMENT HAS BUILT UP, BLOWN-IN SEEDS WILL BEGIN TO SPROUT CREATING A TESTAMENT TO THE DURATION OF THE STRUCTURE.

CONCLUSION

δὴς ἐξ τὸν αὐτὸν ποταμὸν οὐκ ἂν ἐμβαίης

“NO MAN EVER STEPS IN THE SAME RIVER TWICE, FOR IT’S NOT THE SAME RIVER AND HE’S
NOT THE SAME MAN”

HERACLITUS, AS QUOTED BY PLATO IN CRATYLUS, 384 BC

FUTURE PRACTICE

Throughout this argument against stasis, several tools for engaging with an architecture of time have been presented. Designing a building to weather intentionally allows natural processes of erosion and deposition to contribute, in time, to the project in an act that helps to endear the user to their built environment. Designing conditions, instead of focusing on a fixity of form can allow more robust and adaptable building to be embraced by time and the unpredictability of contingency. Engaging in movement infrastructure can create projects that, through use, dynamically participate in motion and time. Fostering engagement in users, and individualized interpretation and appropriation of space and use can result in a project that is constantly reinvented. Thinking of architecture in thick-time, or event scales and how the architecture can inform how the individual experiences this duration. These tools can be operatives in a praxis that engages in Jeremy Till’s conception of Thick Time, a Lo-Fi architecture that can engage with the public and not simply propagate formal autonomy.

The architectural discipline must shed its deluded belief that the architectural project is finished at the end of the construction process. It must deeply concern itself with the temporal process of user engagement, time as a creative agency, and the “mess” that is the deeply contingent reality of buildings in the world. This necessitates a new praxis, one more confident in its ability to operate as more than a symbol or an aesthetic or a simply formal practice. It must learn to operate in a state of self-doubt while it finds its legs in this chaotic medium of time.

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APPENDICES

APPENDIX 1: ANIMATION STILLS: SITE STRATEGY

APPENDIX 1: ANIMATION STILLS: SITE MOVEMENT

APPENDIX 1: ANIMATION STILLS: WALK ALONG BRIDGE

APPENDIX 1: ANIMATION STILLS: BENCH

APPENDIX 1: ANIMATION STILLS: SUBWAY PLATFORM

APPENDIX 1: ANIMATION STILLS: CONTINGENT GRASS

APPENDIX 1: ANIMATION STILLS: NATURAL PROCESS ANI-GRAM

APPENDIX 1: ANIMATION STILLs: INTERFACE ANI-GRAM

APPENDIX 1: ANIMATION STILLS: PROCESS ANI-GRAM

APPENDIX 1: ANIMATION STILLS: REAL MOVEMENT ANI-GRAM

APPENDIX 1: ANIMATION STILLS: VIRTUAL MOVEMENT ANI-GRAM

APPENDIX 2: TEST IMAGES

APPENDIX 3: SUBSTANTIAL COMPLETION IMAGES

APPENDIX 4: FORMAL EXPLORATIONS

APPENDIX 5: PHYSICAL MODELS

APPENDIX 6: PROCESS SKETCHES

$$\frac{100}{2} = 50$$

$$\frac{100}{2} = 50$$

$$\frac{100}{2} = 50$$

ACCESSIBLE
ELEVATED

40m
80m

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PEOPLE TEND TO
WALK ON THE SOUTH
SIDE OF THIS STREET
COMING FROM BELOW

APPENDIX 7: PROPOSAL ANI-GRAM: BERGSONIAN BECOMING

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