Contrarian Urges:

Suggestions for meaningful applications of animation in architecture based on a critical analysis of existing techniques.

by

Jason Cave

A Terminal Project Presented to the Faculty of
The College of Architecture at the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Master of Architecture

Major: Architecture

Under the Supervision of Professor **Jeff Day**

Lincoln, Nebraska
May, 2008

Original Statement of Intent

Jason W. Cave

"Dynamic Form: Architectural design strategies for use with animation software"

Mentor: Jeff Day

April 9, 2007

Painterly experiments with animation: Picasso, Duchamp, Braque respectively.

Statement of intent:
Historically, the default space of architectural design has been one of neutral Cartesian coordinates. However, in other design fields, (such as aeronautical, automotive and naval) the design space is conceived as an environment of forces and motion such as flow, turbulence, viscosity and drag. Architecture, as a static object, has much to gain from a design process that conceives of form in a virtual environment in motion.

The focus of this thesis will be to develop an iterative architectural design process that utilizes techniques in animation software. The purpose of generating architectural form through animation software is to allow architectural form to be influenced by a virtual environment that more closely resembles our own: that is one of forces and motion.

Once developed, this process will then be applied to the design of a new mixed-use high rise, located on Q Street, between 13th and 14th streets, in Lincoln, Nebraska. The initial programmatic elements for this building consist of a parking garage, to occupy the rear of the site, street level retail space and a mixed-use, commercial and residential tower. This project has the potential to add to the city an influential and culturally relevant work that will, in turn, generate economic growth. A contemporary piece will fit in with Lincoln's eclectic mix of architectural styles as well as add to its traditional of excellence.

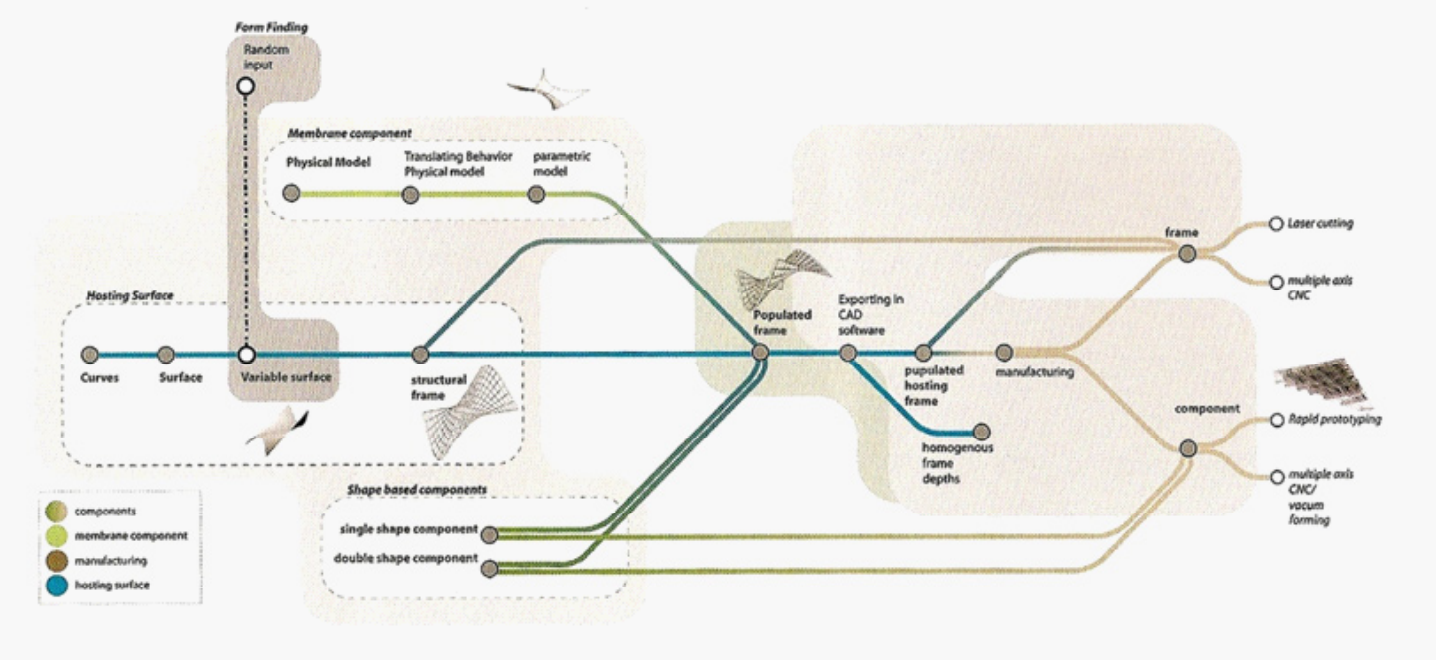
Site highlighted with Q Street to the north.

Site Description:

The proposed site is located on Q Street between 13th and 14th streets, in Lincoln, Nebraska. The site is bounded by Q Street on the north, P Street to the south, 14th Street to the East and 13th Street to the west.

This site has been given high priority for development and renovation by the City Council and the Downtown Master Plan. The site is only a few blocks to the south of the University of Nebraska. It is only four blocks from the Downtown Haymarket District and six blocks from the capitol.

The site is zoned B-4 Central Business District by the Lincoln Planning department and has a height restriction of 275 feet.



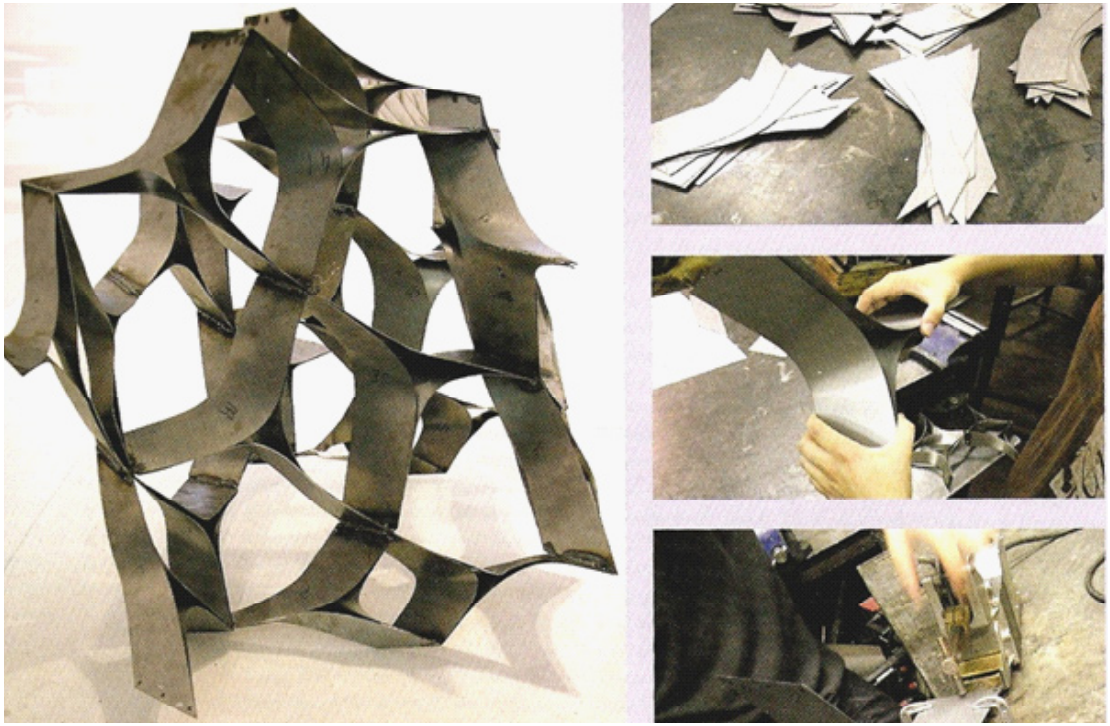
Giannis Douridas and Mattia Gambardella, Associative Component Structures, 2005

Methodology:

The initial work that is done will be research intensive. The chosen topic has seen a flurry of activity in recent years. As a result, multiple animation techniques for architectural applications have been developed and tested. It is important to understand these before initiating my own research. This part of the process will be done prior to the start of the fall semester and will manifest itself in the final product.

The first phase will consist of generating a virtual environment in which architectural form finding can take place. From here geometric particles that change their shape according to the influences of forces will be introduced to this virtual environment. This technique utilizes irreversible time as opposed to key-framed time. Meaning, the geometric particles change over time as a result of forces that flow in one direction of time (forwards) instead of simple key-framing techniques that work in two directions (forwards and backwards). Once introduced to this environment, the geometric particles can make visible the invisible forces that occupy the site. Next, through the use of surface analysis tools, the resulting digital surfaces will be populated with structural and membrane components.

Finally, the resulting frame and enclosure will be exported to CAD software for rapid prototyping. This phase will take advantage of the laser cutting and CNC technologies available at the college. The generation of multiple physical models is crucial to understanding the work done, in prior phases, in the virtual realm. It is intended that this process take place quickly and repetitively thus forming a feedback loop aimed at producing an architectural solution that is self-referential, innovative, and flexible in use, yet precise.



Scale mock-up generated using laser-cutter

Process:

This loosely describes the intended process, but it is important to note that the development of this process, itself, is part of the intentions of this thesis and, as such, is subject to change. In the end, this process should take graphic form and act as a guidepost for further explorations in this area as well as help to further describe the logic involved in the project.

NAAB Criteria
The criteria listed in black are those that I intend to fulfill. These criteria are considered primary points of emphasis for my thesis. Criteria listed in grey are those that do not directly relate to the main emphasis of my thesis. As a result, grey criteria will require further exploration in order to be fulfilled.

ARCH 613
1. Speaking and Writing Skills:
-Achieved by researching and further developing design processes and theories as it related to the intentions of this thesis. Program statement, site analysis and design process will be documented.
-Weekly meetings with mentor and other faculty.
2. Critical Thinking Skills:
-Applying research to the development of design process that emphasizes animation techniques. Also through filtering through prototypes and directing the design process, after each cycle.
3. Graphic Skills:
-These will be developed in process as well as for a final representation of the thesis. These consist of computer renderings as well as appropriate CAD drawings.
4. Research Skills:
-Achieved by exposing myself to precedents for digital design in this area of emphasis. Also by gathering all site information attainable through the City of Lincoln as well as personal site documentation.
5. Formal Ordering System:
-The development of a logically process that utilizes animation software integrally in the design process will be the grounding system for this thesis.
6. Fundamental Design Skills:
-Basic design theories will be applied to the generation of architectural form. Also, the programming of a tower will require basic design knowledge of how a mixed-use building functions.
11. Use of Precedents:
-Research will be done on recent projects that have utilized animation techniques specifically tower projects. Precedents in the application of structural and enclosing elements to generated surfaces will also be researched.
12: Human Behavior:
-Achieved through proper understanding of forces and movements across the site as well as by integration of design with programmatic considerations.
16. Program Preparation:
- A complete program statement will be developed in accordance with the client's wishes for the development of the site. All relevant city codes and ordinances will be researched and applied.
17. Site Conditions:
-Documenting the site as it stands in the Lincoln Commercial District will complete this objective. Appropriate zoning and setbacks will be noted and respected. Conditions will also be addressed in terms of access and accessibility.

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12: Human Behavior:
-Achieved through proper understanding of forces and movements across the site. Also achieved by integration of design with programmatic considerations.
14. Accessibility:
-Achieved by providing for the physically disabled in terms of ramps, elevators and sitting areas.
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23. Building Systems Integration:
-Building systems will be introduced into the final scheme and will help to inform how the final form functions environmentally.
28. Comprehensive Design:
-Achieved through relentless effort throughout the whole of the project.

[i] Lynn, Greg. Animate Form. New York: Princeton Architectural Press, 1999

Table of Contents

Thesis Statement

Animation techniques are currently one-dimensional and under-productive as design tools. Their ability is limited to shaping conceptual form. Emergent techniques in animation must apply to a broader range of topics. These topics may be conceptual, contextual, or programmatic. This thesis proposes the development and implementation of these new animation techniques within the architectural design process.
To do this one must take a critical eye to existing animation techniques. Through analysis and criticism, new techniques can be generated that may broaden the architectural discussion around animation techniques.

Site Update:
The vehicle chosen for this study is an urban in-fill development in New York City. Many areas of this vast and sprawling city are going through major changes. The neighborhood of west Chelsea has recently seen an influx of gentrification due to the new Highline Park that is being constructed, by Diller Scofidio + Renfro, on an old elevated train track. This attraction has caused real-estate prices to rise in this neighborhood and started forcing many residents out. All of these dynamics make this site a good candidate for a proposing new techniques in animation.

Top: Photos of Highline taken on site visit
Bottom: Diller Scofidio + Renfro Rendering

Precedent Research

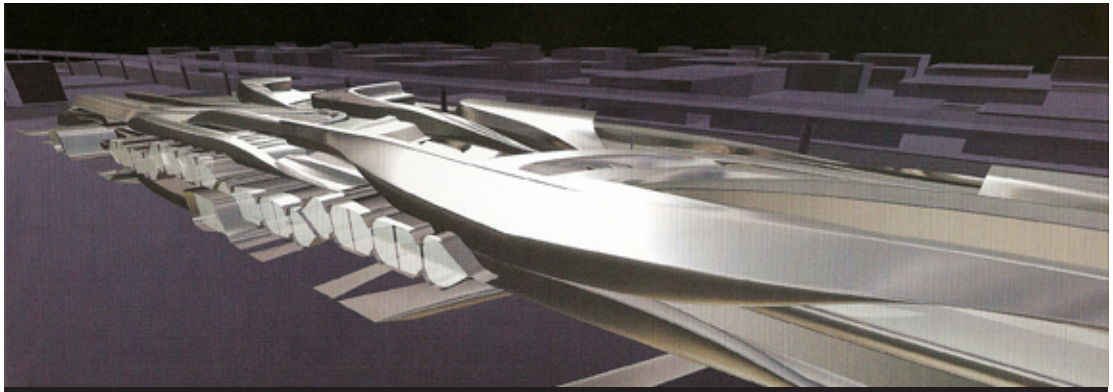
CS 01: Confluence of Commerce [CAP]

The *Confluence of Commerce* by Ali Rahim, of Contemporary Architecture Practice (CAP), showcases an interest in temporal time, and dynamic forces as generative devices. Rahim describes temporal time as key framing in animation software in which forces only move forward in time and unfolds in a similar fashion to real world events which are unreversible. This project demonstrates the firms' goal of stimulating cultural transformation by altering users' behaviors and habits through new techniques in architecture.

The *Confluence of Commerce* is essentially a shopping mall. However, CAP chose not to organize the mall in a traditional manner, with department stores anchoring the ends of the mall and a series of smaller shops in between. Instead, this organization was reversed. Shops of the same economic potential were formed into homogenous fields and grouped together on the site.

These economic potentials are then simulated as forces acting upon the site to generate form. A series of surfaces are deformed by forces with the help of digital animation software. Rahim bases his technique in what he calls temporal time. Basically, within animation software there is the capability to treat time as reversible or non-reversible. Non-reversible time, Rahim argues, provides opportunities for the development of new organizations that are nor possible in reversible time animations.

Ali Rahim, principle of Contemporary Architectural Practice (CAP). Formal interations based on animate studies.



The *Confluence of Commerce* (2000) project, Karachi, Pakistan.

This is because forces in the software act like explosions; moving in one direction in time and yield unexpected and unpredictable results.

In the firms' first monograph, *Catalytic Formations*, Rahim describes his design methodology and its use of animation software. First, a concept is formed. This provides the basis for decision making throughout the process. Next, a surface is composed, within animation software, that will respond to multiple stimuli. Then, forces are created based on the original concept. In the case of *Confluence of Commerce* one force was applied in the horizontal axes to investigate occupancy and economic intensity. Another force was applied along the vertical axes to "deterritorialize" the program vertically.[1]

In the end, this project takes an unconventional form that directly reflects the programmatic forces that have been applied to it. The initial concept seems to be overshadowed by the sleek, alien-like form of the building. There would probably be more of an affect created by the building form itself, than the experience of the new programmatic arrangement.

There seems to be a lack of honesty in the project. The goal is primarily about changing human behavior and interaction under the pretense of a solution that is primarily about a programmatic organization. However, the solution is wholly about form and new formal arrangements.

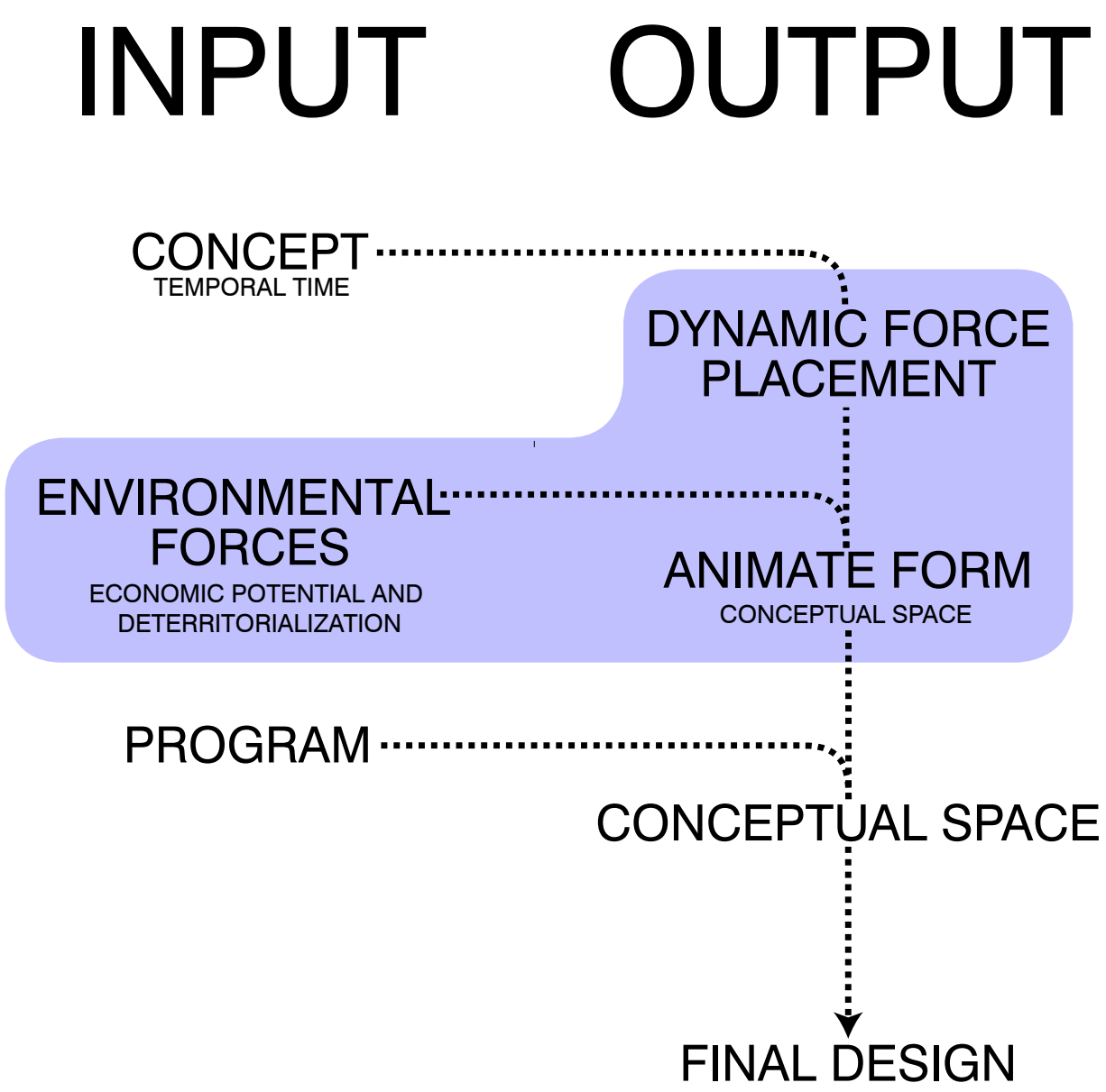
So why is it necessary for the building to take such an unconventional form? Could the animation process help to inform a programmatic diagram instead of the form of the building?

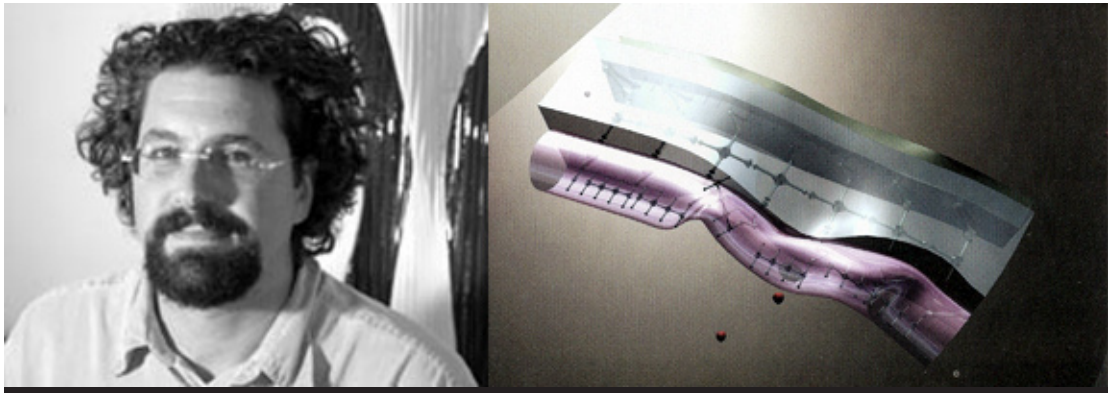
Furthermore, the idea of invigorating cultural transformation itself seems misguided. **What is wrong with the present culture? Why does it need transformation?** If one is to evaluate their methodology, it would be helpful to understand the specific intentions for a new cultural architecture. Instead, this project comes across as overcompensating for a lack of context (not content). It also seems to reject any type of formal contextual ism in hopes of creating a larger cultural disruption.

Ali Rahim

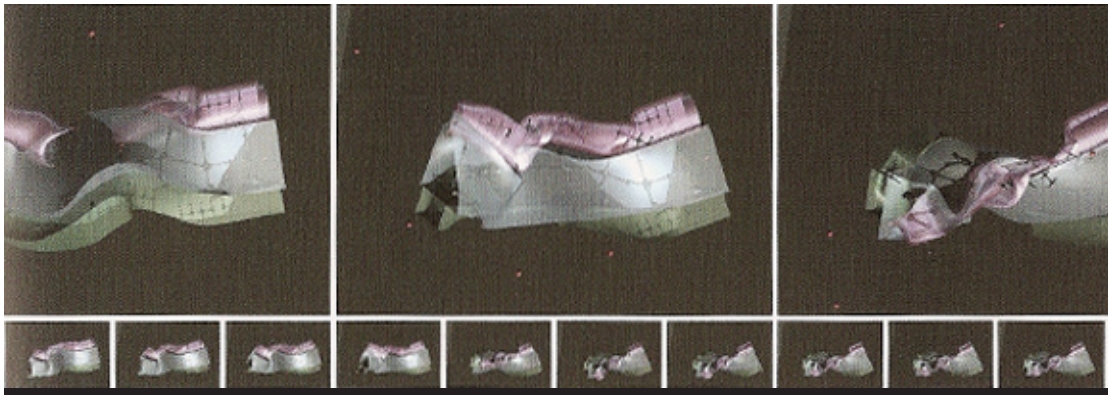
Confluence of Commerce - 2000

Economic forces are identified and assigned forces which influence the spatial and formal arrangements within the project.





Greg Lynn, principle of FORM. Final prototype as seen with internal skeleton.



Frame sequence of final prototype deformation in animation software.

CS 02: House Prototype in Long Island [Greg Lynn]

In Greg Lynn's book *Animate Form*, he describes a prototype house in Long Island. Lynn uses this project to explore his interest in animation as a generative tool for architecture.

The introduction to his book provides a argument for why animation is important and relevant to the field of architecture. He states that every other area of design and production has developed a more sophisticated understanding of the physical world, specific to their trade. Many practices still design buildings based off of a uniform Cartesian grid. The knowledge of our world as a place that is in constant motion and continually under the influence of a multitude of forces, has not been incorporated into the architectural design process. As a result, his practice takes on this new understanding of the physical world and attempts to shape architecture within it.

Lynn's *House Prototype* is a good example of an architecture shaped by its surroundings. Lynn describes the process as beginning with a site analysis. He then proceeds to map forces in animation software. These forces are derived from various visual obstacles and attractors. The objects selected are the existing house, an oak tree, the neighboring house, the driveway, and the coastline. Then he proceeds to place house prototypes within this new field of forces and an iterative process begins. As each successive prototype is deformed, modifications are made to make the ensuing prototype more successful.

Here, the forces initial created by Lynn remain constant, while the form is interchanged to create new possibilities. This process seems to be the inverse of Rahim's where the forces are adjusted and the surface remains constant. As prototypes are examined, Lynn adds a skeleton to the house to prevent excessive deformation. The skeleton is composed of elastic joints, which bend but do not break, and are attached to the surfaces of the house. This stabilizes the form and prevents chaos from emerging.[2]

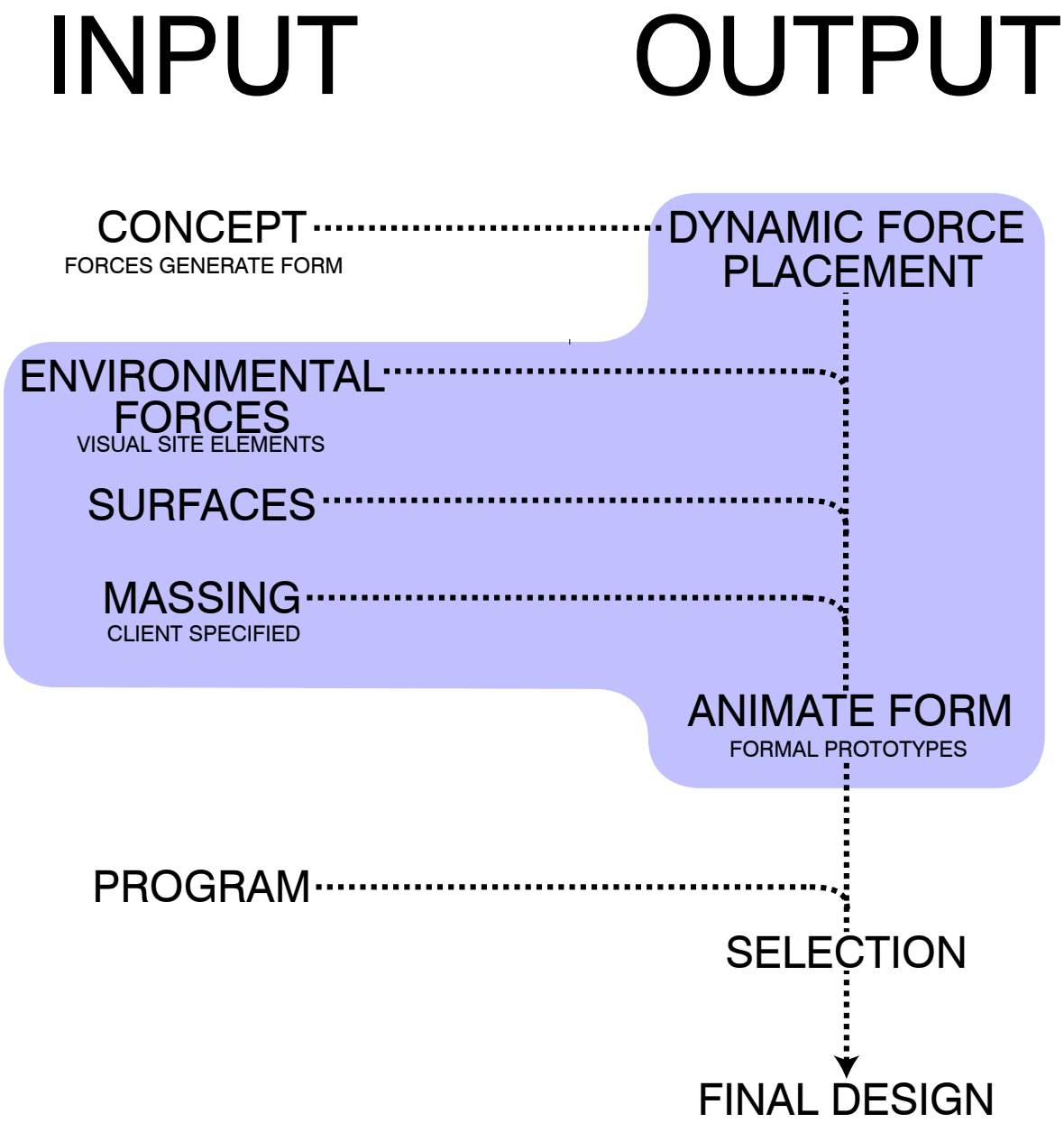
Sterolithography models of the final prototype in successive stages of deformation.

Lynn's final prototype appears less chaotic than previous iterations, but no more legible in terms of spatial functions. One interesting note is that throughout the process, the site itself was never modeled. **After placing so much emphasis on the site why does it become visually absent?** There never seems to be an interest in visually evaluating the project within its context. **Why is this?** Even the renderings of the project display only the building; not the building on the site. This is curious do to the contextual origins of the project.

In the end, this project seems to showcase an overindulgence of mapping, **What is the benefit of formal creations from environmental forces?** Jesse Reiser points out that such moves often try to provide thematic justification for the use of form. This can stem from a confusion between process and product.[3] In Lynn's case, the site and its potential visual forces should be used to generate diagrammatic potentials which then influence the form, but are not the form itself,

Greg Lynn

House Prototype in Long Island - 1994

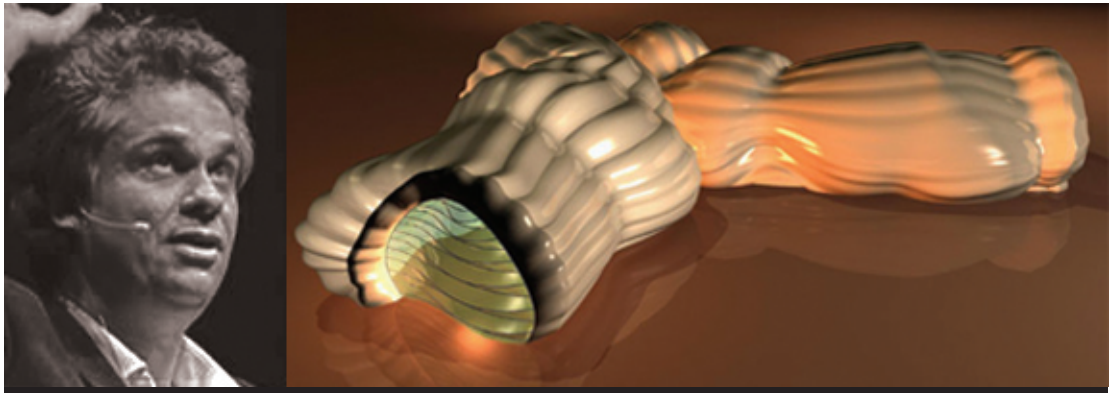


Forces take the the form of site views and adjacencies which help to adjust the frame to its site; providing openings and accomodation for nearby site elements.

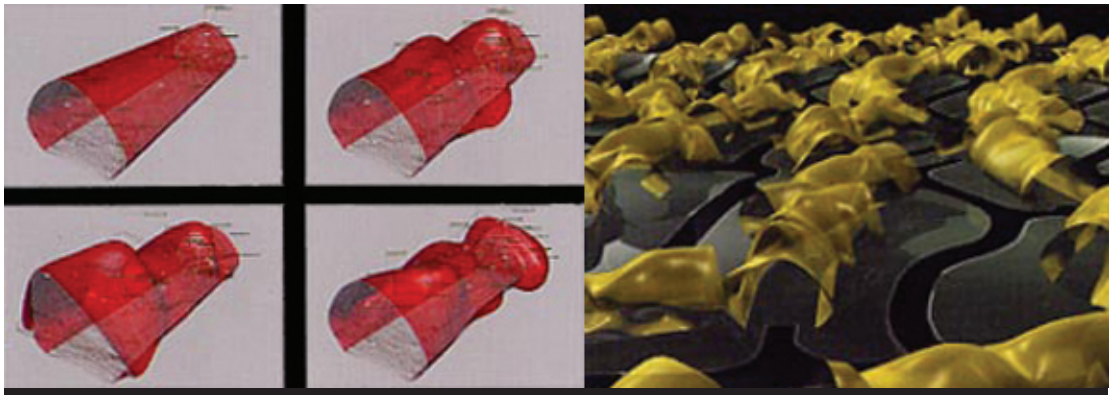
CS 03: Off-The-Road (5-Speed) [NOX]

Lars Spuybroek is the principal of NOX, a young Dutch architectural firm. His methods have been described as experimental and innovative. In the project: Off The Road (5 Speed) Spuybroek researches possibilities for non-standard prefabricated housing near a highway in Eindhoven, The Netherlands. The goal for this housing is mass-customization; being able to order a prefabricated home that is not pre designed. The project takes place at 5 scales and each sale deals with interpreting motion into architectural form.

The first scale covers the whole site which is adjacent to a four lane highway. In animation software a new topography was placed over the housing development based on a surface that was deformed by forces that represent traffic on the highway. This surface is then divided into lots and units are placed on it. The second scale deals with the arrangement of these units. They vary in type across the whole site providing a gradient of density and type. The third scale is that of the program which has a formal determinism in it. The houses are basically shells which cover the whole of each lot. These flexible tubes are then deformed based on the activities within. In real-time over the internet, users can develop their house through pushing and pulling the walls of their house based on programmatic needs and desires. In this way mass-customization is achieved. The fourth scale is that of manufacturing. Spuybroek proposes a hard foam which would be sprayed on a mold.



Lars Spuybroek, principle of NOX. *My House,* a component of *Off-The-Road*.



Formal manipulation of individual houses based on interior activites. Site perspective.

The fifth scale is that of living. This provides another opportunity for customization as the interior of each house is able to be divided with interior floors or walls.[4]

The project addresses motion in architecture at multiple scales and ends up creating more questions than answers. A lot of emphasis was placed on the development being shielded from traffic noise. **At an urban scale why is the site deformed according to the activity of the highway?** This seems to embrace the interference that is directed from the highway.

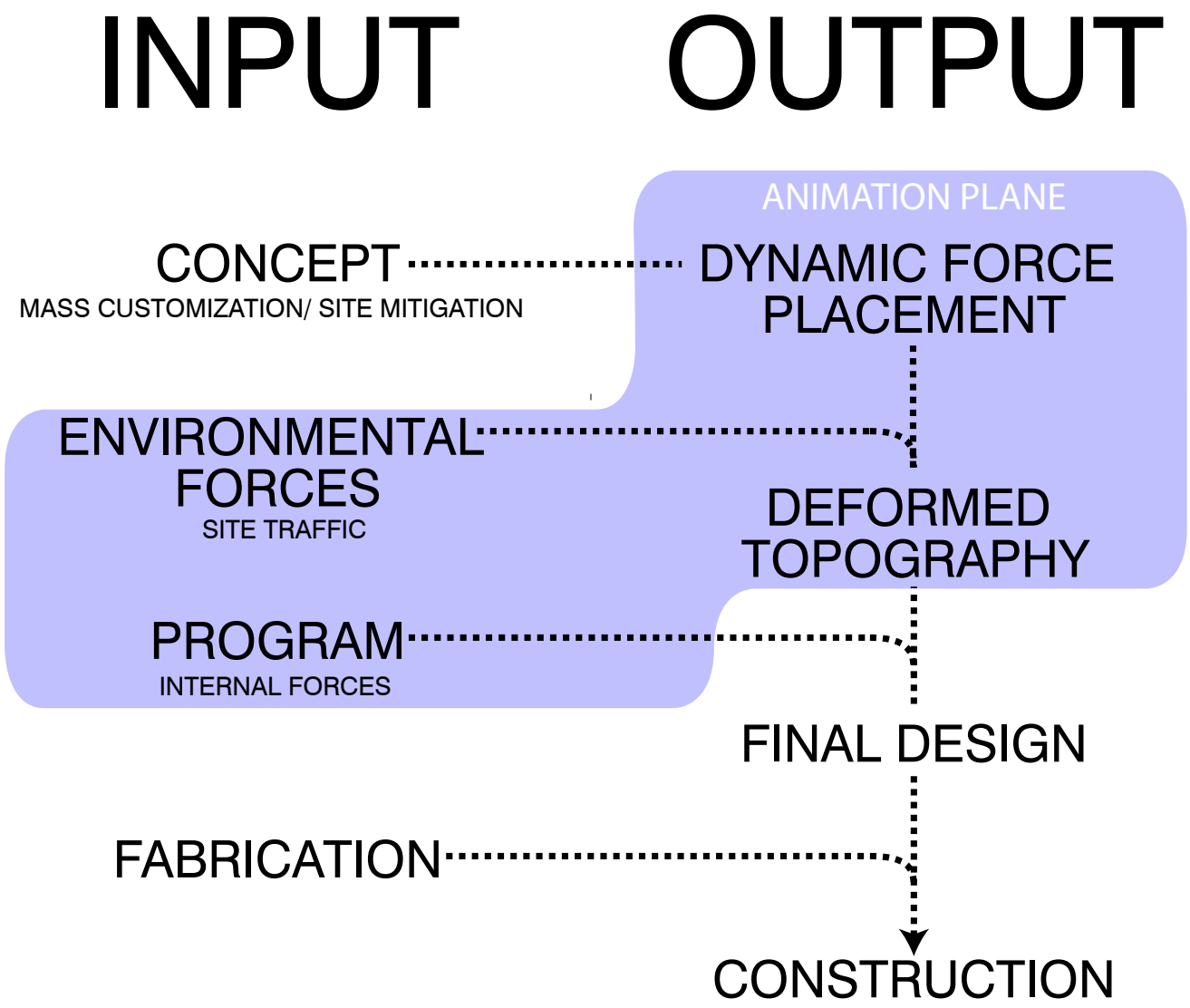
Animation techniques are applied to represent program within the house. **How does one judge these seemingly subjective formal moves?** If indeed each user is allowed to design the entirety of their home; this poses questions about the role of the architect. It seems the architect, in this case, is the designer of a system instead of a building. The system, which is flexible, allows an unlimited amount of variation while still operating within the architect's intentions. However, the selection of the operative criteria is never critically addressed.

In the end, this project's use of animations seems superfluous. A very real and affordable mass-customization technique could be a useful tool for simplifying the design process for potential users. This raises an interesting question: **Can animation be used to gain a clearer understanding of space rather than a more complicated one?**

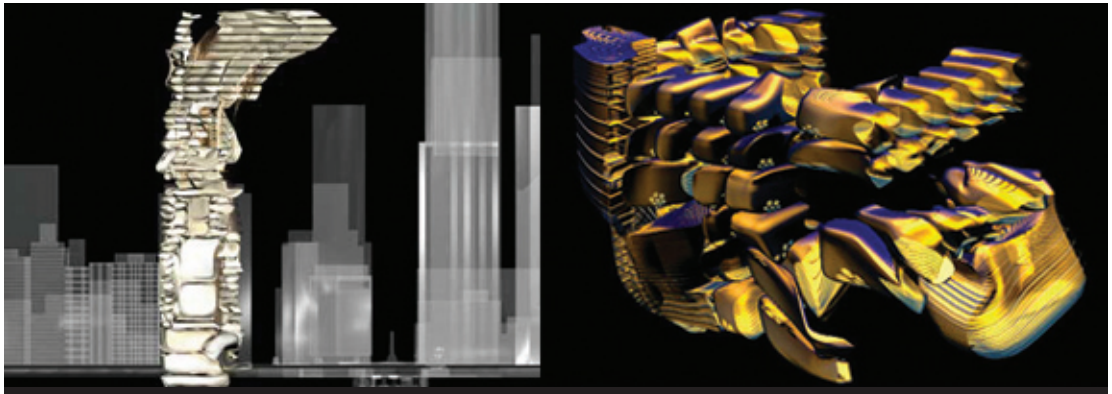
Lars Spuybroek

Off The Road (5-Speed) - 2000

A nearby road generates forces which ripple across the site. On a smaller scale; physical activities inside the house determine spatial conditions.



Sulan Kolatan and William Mac Donald, partners of KOL/ MAC Studio. Resi/ Rise tower perspective.



Section showing pod system. Detail of pods.

CS 04: Resi/ Rise Tower [Kolatan Mac Donald Studio]

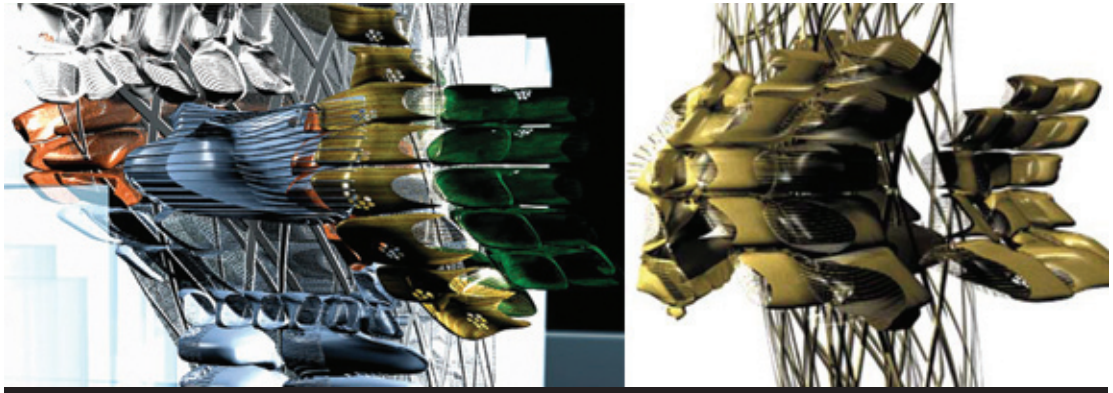
Sulan Kolatan and William Mac Donald lead an architectural studio out of New York City.

Proposed less as a tower, and more as a “vertical urbanism”, the Resi /Rise tower rises out of Manhattan soil and takes shape according to the maximum allowable zoning envelope in NYC. The tower is composed of two main elements. A space-frame that acts as the structural component as well as serving as a frame for leasable units. The other element is the fully-customizable living pod.

The idea behind this project is that the tower itself would act as a frame for activity. Buyers can then purchase “lots” within the tower, as one would buy a lot in a housing development. Next, users build a pod for living which fits into their lot in the tower. The tower has a gradient of different sized lots to allow for multiple income levels and multiple uses within the tower (i.e.. housing, office space, storage etc.). The tower is then filled as tenants move in and out and buy and sell their lots.[5]

It must be noted that the structural frame is somewhat deformed. This is due to the fact that the tower, while being generated from the maximum allowable zoning envelope is also deformed to take into account site influences such as adjacencies and views. This gives the form a fluid appearance as if it were frozen in motion. It is also evidence of the animation techniques Kol/Mac Studio employed in this project.

There seems to be tempos of animation within this project. The first tempo is that of the animation used in the design of the building. A structural frame was created, initially, and then forces were introduced to act upon it. Forces representing certain site characteristics were mapped based on the designer's discretion. Finally, the animation was paused and the motion in the frame captured. **Is this tempo of animation really necessary in the towers ultimate set of goals?** In this case the forces are creating setbacks from the maximum allowable envelope to provide views and allow for privacy from neighboring buildings. However, one cannot help but think that this project would have been just as successful without its warped appearance.



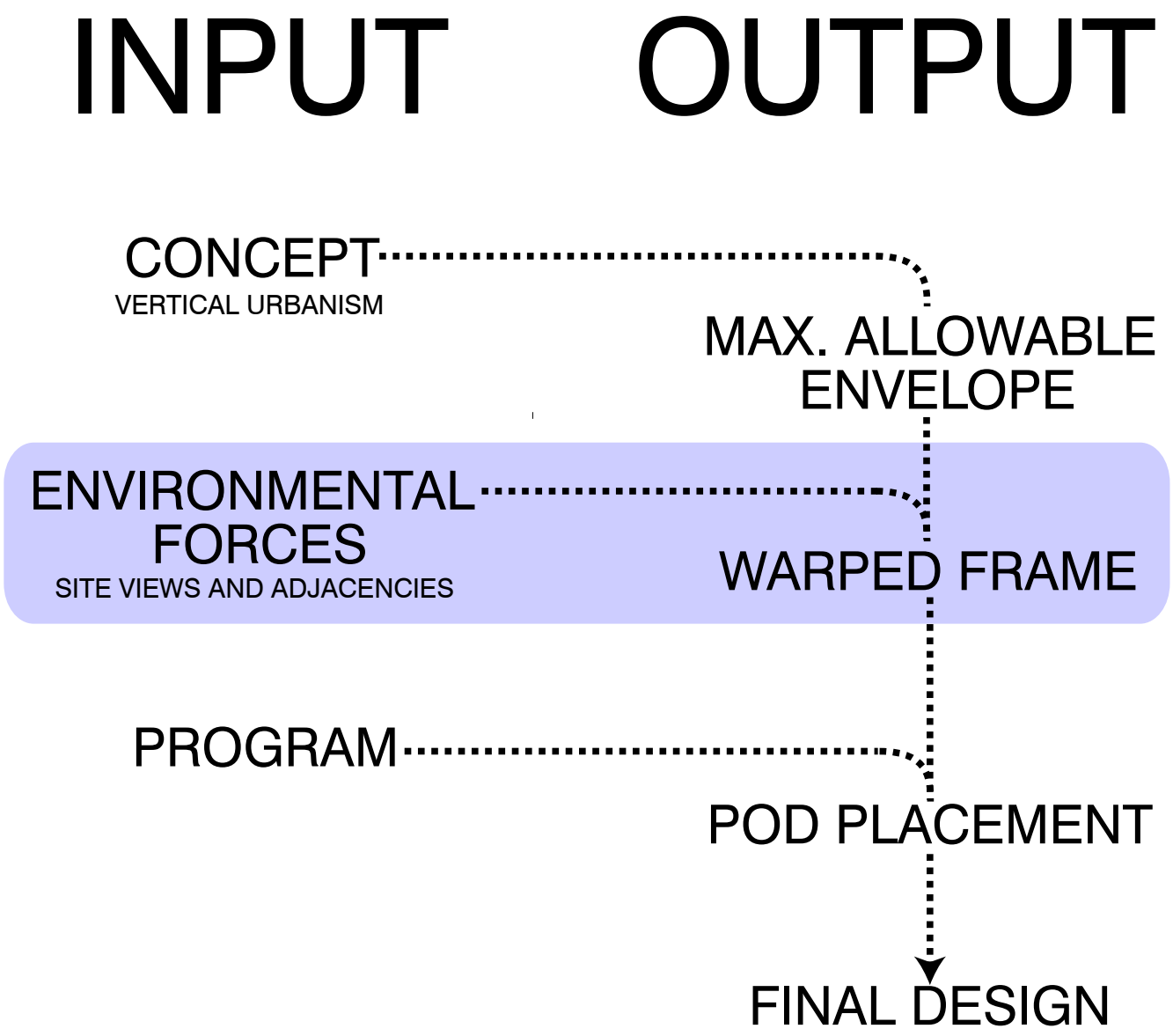
Perspectives of frame system with differnt living unit arrangements.

The second tempo is that of the animate form of the building itself over a large period of time; say five years. This tempo is not perceivable to humans on a daily basis. However, if one were to photograph the tower every day for five years and then view the images over five minutes; one would see pods being installed and removed throughout the building which would give the appearance of movement. This tempo is important to recognize as it operates on a larger wavelength than one normally considers. **How does the tower benefit from this slower tempo of animation?** It is possible that this tempo will allow for visual, social and economic flexibility as aesthetics change, neighborhoods shift and market values fluctuate. It is possible that this tempo is an untapped capacity within animation.

Physical models of sturctural frame, and frame with pods.

KOL/ MAC Studio

Resi/ Rise Tower - 1999



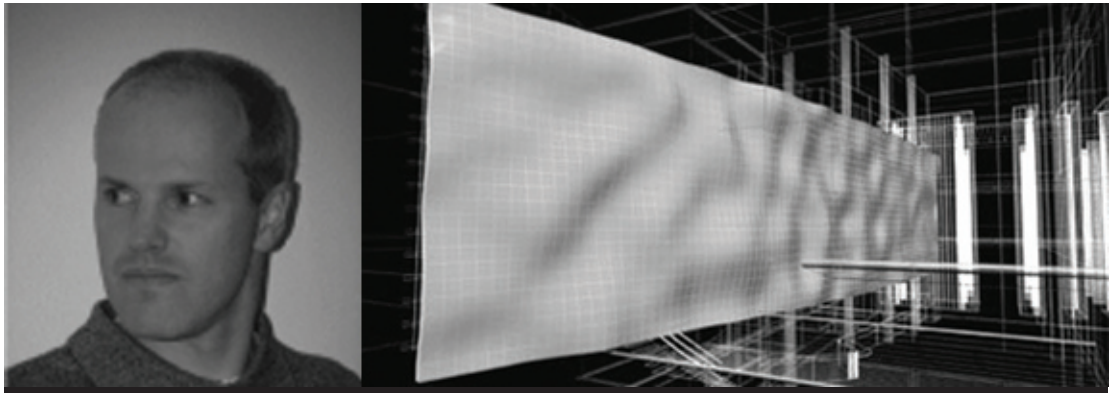
Forces take the the form of site views and adjacencies which help to adjust the frame to its site; providing openings and accomodation for nearby site elements.

CS 05: Aegis Hyposurface [dECOI]

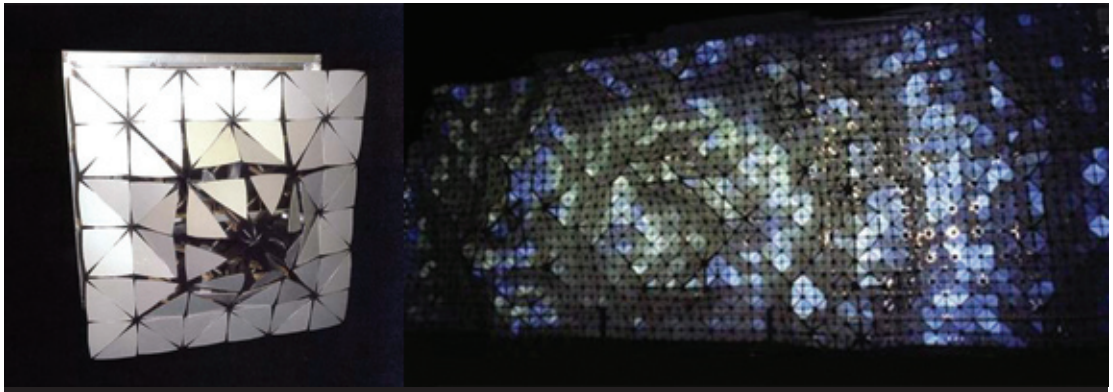
Mark Goulthorpe created dECOI in 1991 with the express purpose of developing entries for architectural competitions. Since then, the practice has developed a reputation for thoughtful and elegant design work suggestive of new possibilities in architecture.

The Aegis Hyposurface demonstrates dECOI's interest in the animate as well as new possibilities in digital fabrication and technology. Goulthorpe's use of the term "hypo" brings to the surface an otherwise invisible reading of this project. The term hypo means low, beneath, or below normal as opposed to hyper which means over, above or excessive. In this project Goulthorpe presents the notion of a "hyposurface" as an element in our surroundings which does not capture our attention directly, but leaves us in a state of trauma; not knowing how to interpret a new set of experiences. The hyposurface, in this case, is intended to provide a backdrop for activity, creating more of an architectural affect than a spectacle. The reality is that such an installation only serves to draw attention to itself as a spectacle.

The project was initially created as a competition entry for an inter-active art work in the foyer of The Birmingham Hippodrome Theatre. It was intended that the surface respond to a series of electronic stimuli from the environment around it and then re represent that information spatially.



Mark Goulthorpe principal of dECOI. Redering of Hyposurface in animation software.



Detail of individual moving parts, each with its own computer controlled piston. Fully assembled Hyposurface.

This intention describes a shift form the auto plastic (determinate) to the allo plastic (interactive) space.[6]

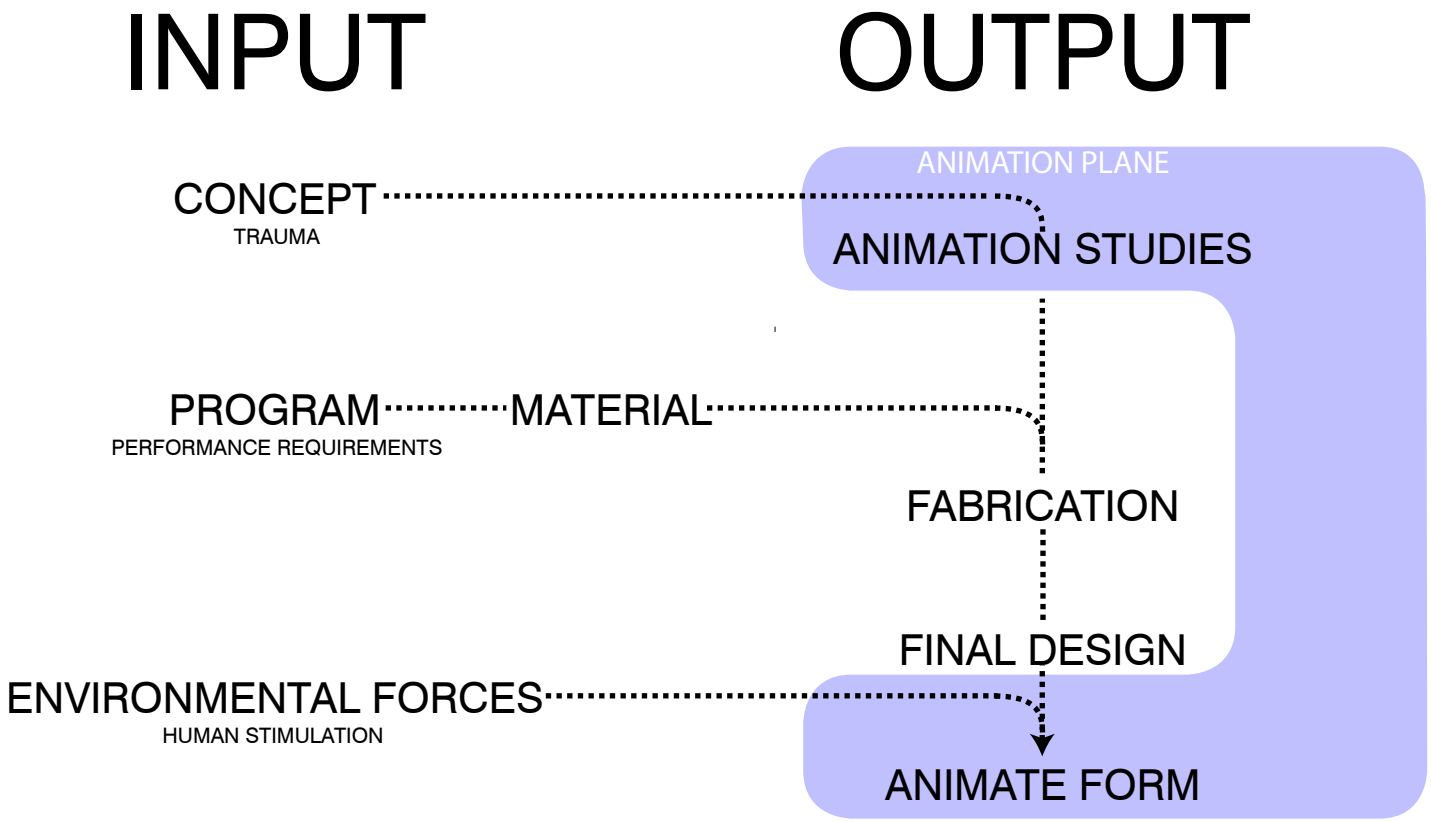
As an installation, the hyposurface provides insight into the interaction between users and their environment through the computer processor. Its use of animation comes into the process at the very end when the surface moves.

The surface, itself, is composed of a series of computer controlled pistons which operate independently of one another. Their link is through a computer program which provides the commands for creating the illusion of smooth forms rippling across the surface, which in itself is the very definition of animation. This may cause one to pose the question: **Is this simply animation for animation's sake?** The process of detecting stimuli and re-representing it to the user seems redundant. **Is it possible for real-time animation to provide two-way interaction, rather than one-way?**

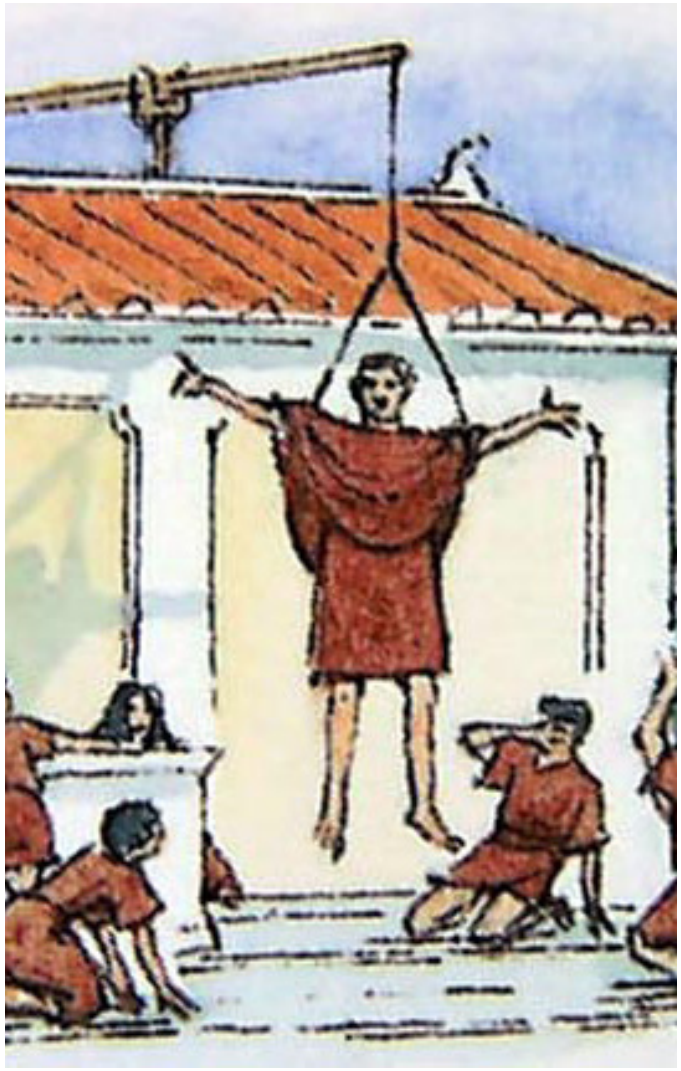
Mark Goulthorpe

Aegis Hyposurface - 2000

The animation in this project takes place in the "real world". Processors analyze human stimulation in real-time and generate form on the hyposurface.



Deus Ex Machina: A criticism for current animation techniques in architecture.

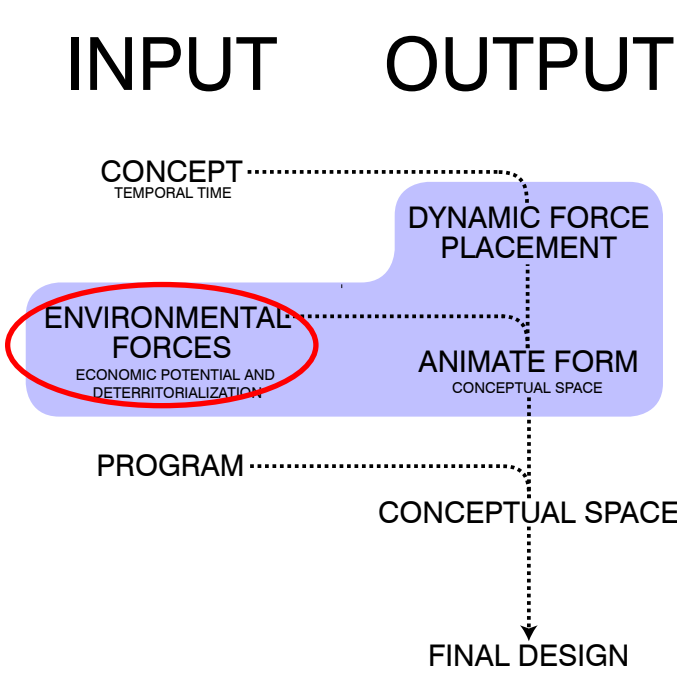


"Deus ex machina" is a Latin phrase that literally means "God from a machine". It is a phrase that is used in playwright criticism and refers to an improbable device, that the writer introduces, that resolves the plot. The Greek playwright, Euripides, is known for using this plot device for resolving a seemingly hopeless situation. AKA When James Bond just happens to have the perfect device on his person to save him from a seemingly hopeless situation.

Aristotle first uses the term in his criticism of Euripides, and his play Alcestis. In the play, the heroine Alcesitis agrees to give herself to Death in exchange for her husband's life. In doing so, she imposes a series of unreasonable promises upon her husband. He then is forced to chose between letting Alcestis die, and obeying these promises. To resolve this, Euripides inserts Hercules, who comes down from the heavens to rescue Alcestis from Death and free her husband from the unreasonable promises. Aristotle provides two suggestions for meaningful storytelling. Plot consists of: Complication and Unraveling. Structure should follow what is: Necessary and Probable.[7]

Aristotle's criticism of this device is on the premise that it arises from outside the narrative of the play. The due ex machina was not simply a plot device that resolved hopeless situations; it was also a technological device. In order to accomplish the task of suddenly introducing a god to rescue a powerless character, the Greeks would use a crane or hoist to lower the god as if descending from heaven. This explains the alternate translation of dues ex machina as "God on a machine".

Architects are storytellers. Contemporary animation techniques act as a Deus Ex Machina to the architectural design process. Animation is used to generate outside forces, which then act on the architecture to resolve the form. The user is left bedazzled and disillusioned. In the end, the outer form of the building has little to no effect on the interior spaces. The building also has no internal dialog, but represents a preformed notion of what digital architecture should be. Instead, attempts should be made to resolve architecture from an internal logic in the design process. This may be accomplished by developing a design process that is cyclical instead of linear.



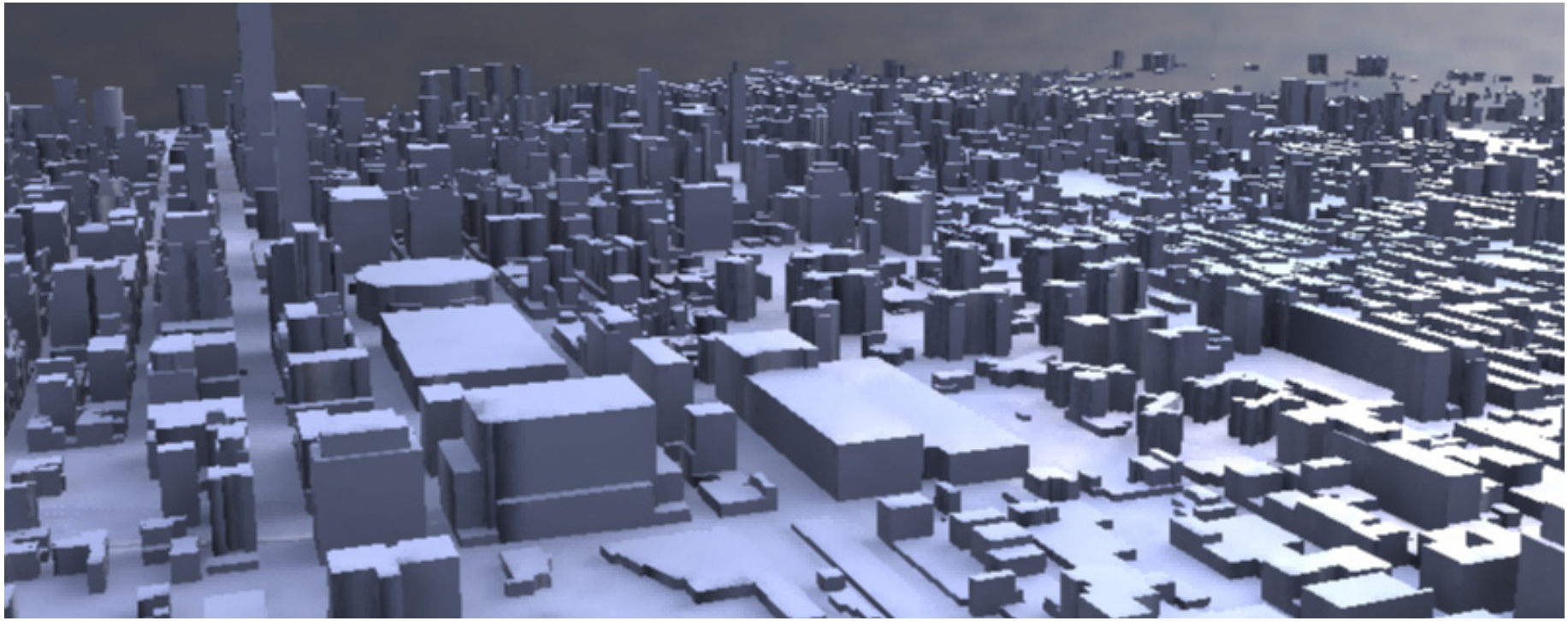
In a linear design process, the designer is focused on origins and the particular justification of form. In contrast, a truly cyclical design process frees the designer from determining origins, which are sufficiently random to be insignificant and allows them to focus on choices. Allowing the designer to focus on choices brings the buildings internal logic to the surface and grounds it in itself.

The flow chart to the right describes the basic process used by each of the five preceeding architectural firms in their use of animation software. The chart is broken up into input and output functions. In each case the architect is responsible for placing information into the input side of the chart. The computer, through animation software, is responsible for creating the output. The blue area of the chart marks activity that takes place in animation software.

A crititcal analysis of this design process reveals the limited decision making in resolving the process. Highlighted in red is the perpetraitor. In all the analyzed schemes, environmantal forces are given divine power to resolve formal problems. Decisions are made by the architect reletive to force placement and intensity. After determining these values, the animation is set in motion. From there, the creation of form is determined solely by the software. This process short-circuits architectural decision making by acting as a *deus ex machina*.

Looking forward, one must seek to insert an avenue for decision making between rounds of animate form generation. The diagram must be revised to allow the architect to maintain control of the narrative and empower him to resolve the problem internally.

Site Analysis + Programming



The site for this thesis is located in New York City, New York. Chelsea is a neighborhood on the west side of Manhattan north of Greenwich Village and south of the Clinton neighborhood. Currently this post-industrial neighborhood is home to a mix of cultures including a large art community, a substantial gay community, and many bars and clubs. Currently, it is undergoing gentrification due to the rehabilitation of the Highline elevated railway into a new public park.

The nature of this new park will be a pedestrian oriented elevated landscape running through the middle of New York City. Extensive landscaping will highlight various local flora and fauna. Water features will be incorporated as well. The Highline structure will also be highlighted as visitors ascend through the structure on stairs and elevators.

Photo of Site Taken from the Empire State Building

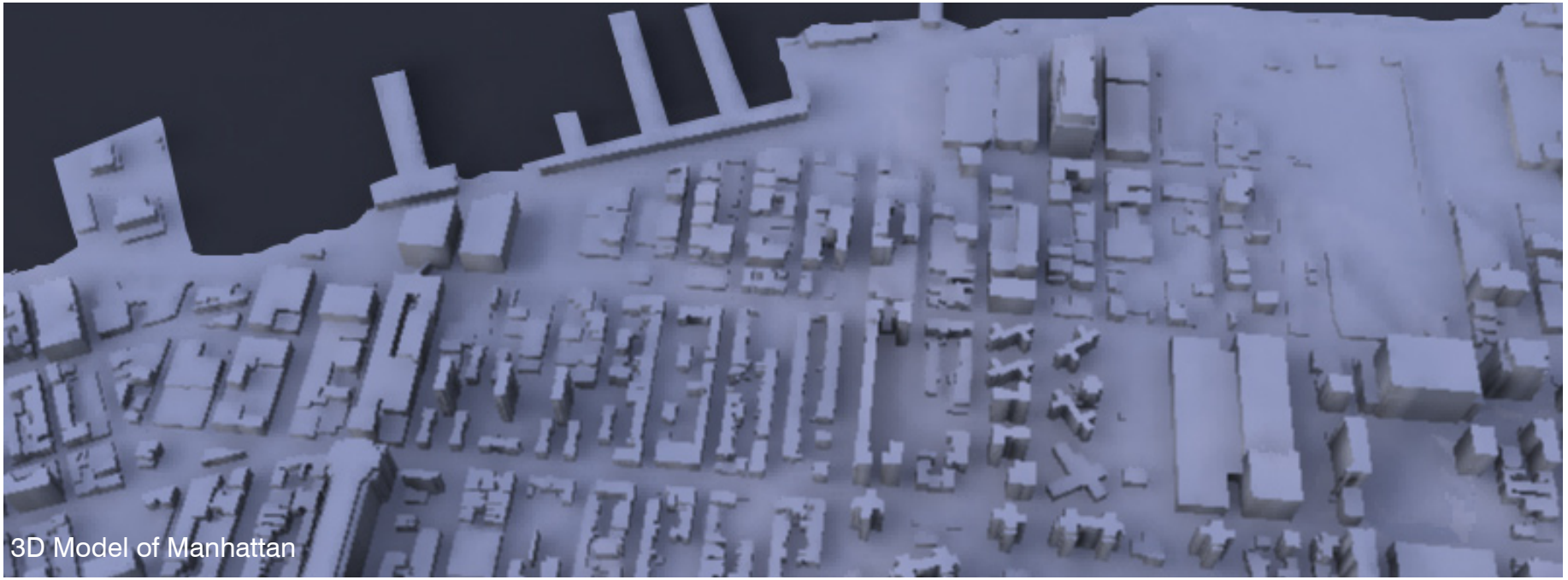

3D Model of Manhattan

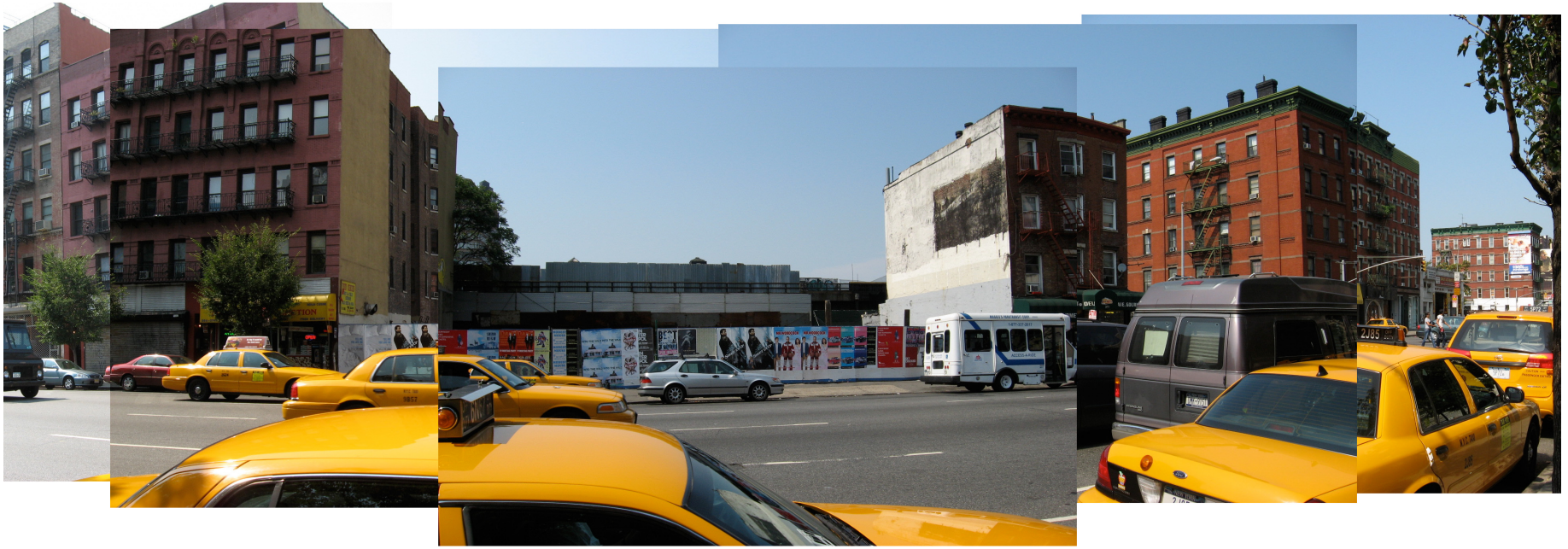
Image of site taken in November, 2007.

Image of site taken in January, 2008.

Image of site taken in March, 2008.

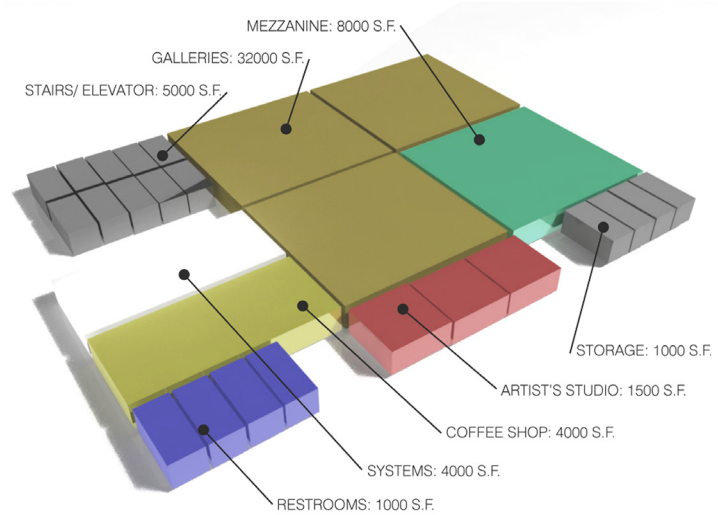
Site visits in November, January, and March have yielded a well rounded understanding of the site. Situated on the west side of Tenth Avenue, the site is neighbored by a deli to the north and an Indian restaurant to the south. To the east is Chelsea Park: a large, fenced-in green space with accommodations for soccer and baseball. The “green” is actually an Astroturf material but suits year round activities.

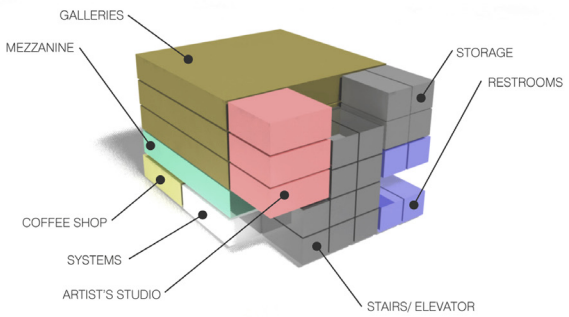
The Chelsea art gallery district is home to over 200 art galleries. For many art enthusiast this may be the mecca of modern art. But traversing Manhattan’s western edge can be exhausting even for the physically fit. The bulk of Chelsea’s galleries are located between Ninth Avenue and the river, and between 15th Street and 30th. There are no subway lines at hand, and public rest rooms and restaurants are few and far between.



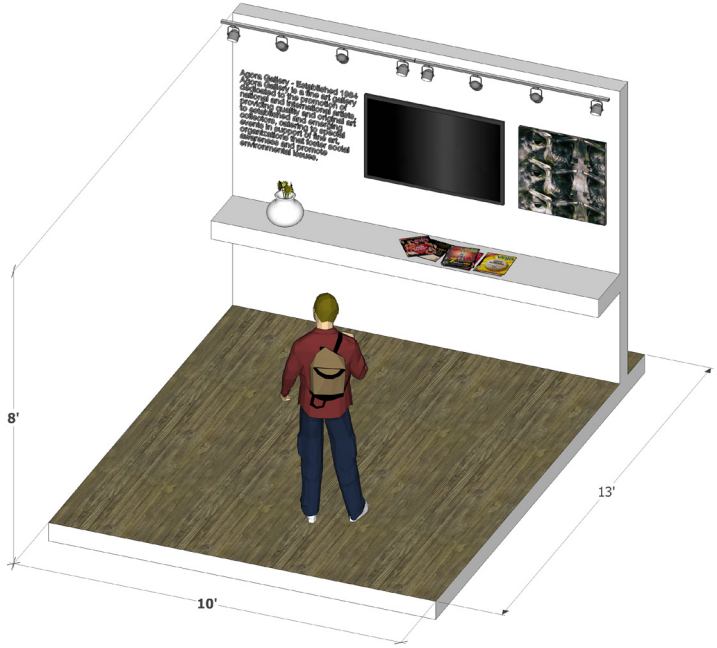
View of Site from the East side of Tenth Avenue

View from Site to Chelsea Park



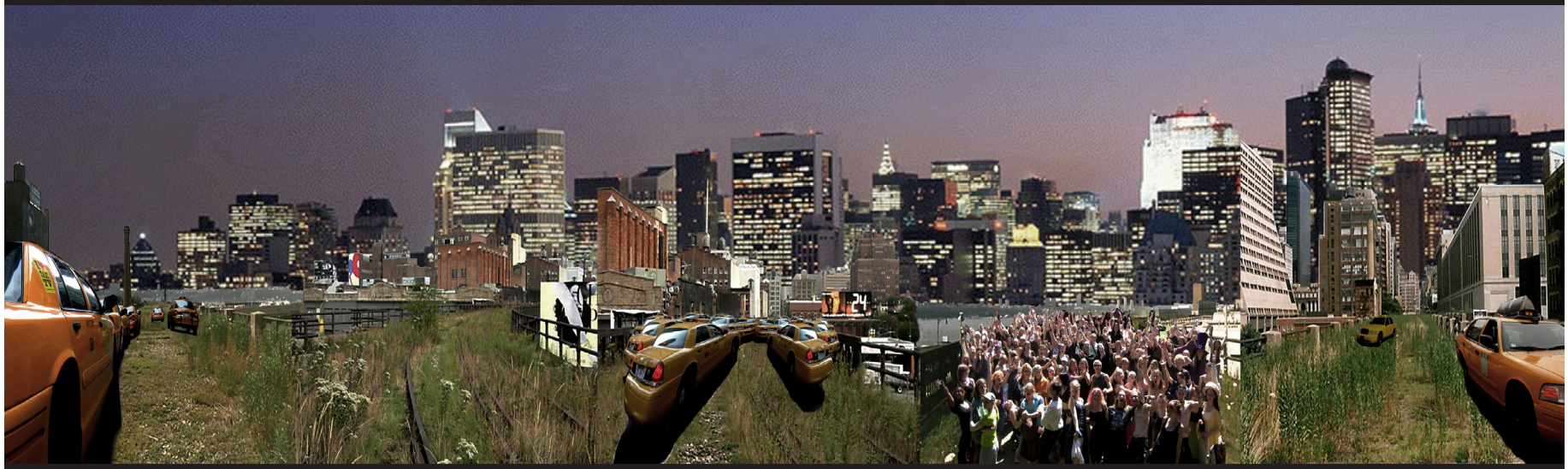


This thesis proposes the construction of a physical gallery that contains references for each of the 206 galleries in Chelsea. The program consists of gallery space, public plazas, a coffee shop, an artists studio, and public amenities such as rest rooms and circulation corridors. Within the building, each gallery will be allotted 100 square feet of digital display space within the proposed building. Galleries will then present their work through video on the screens allotted to them. In this way users can navigate through the displays and familiarize themselves with each of the galleries and their artists.



Aerial View of Site + Local Art Galleries

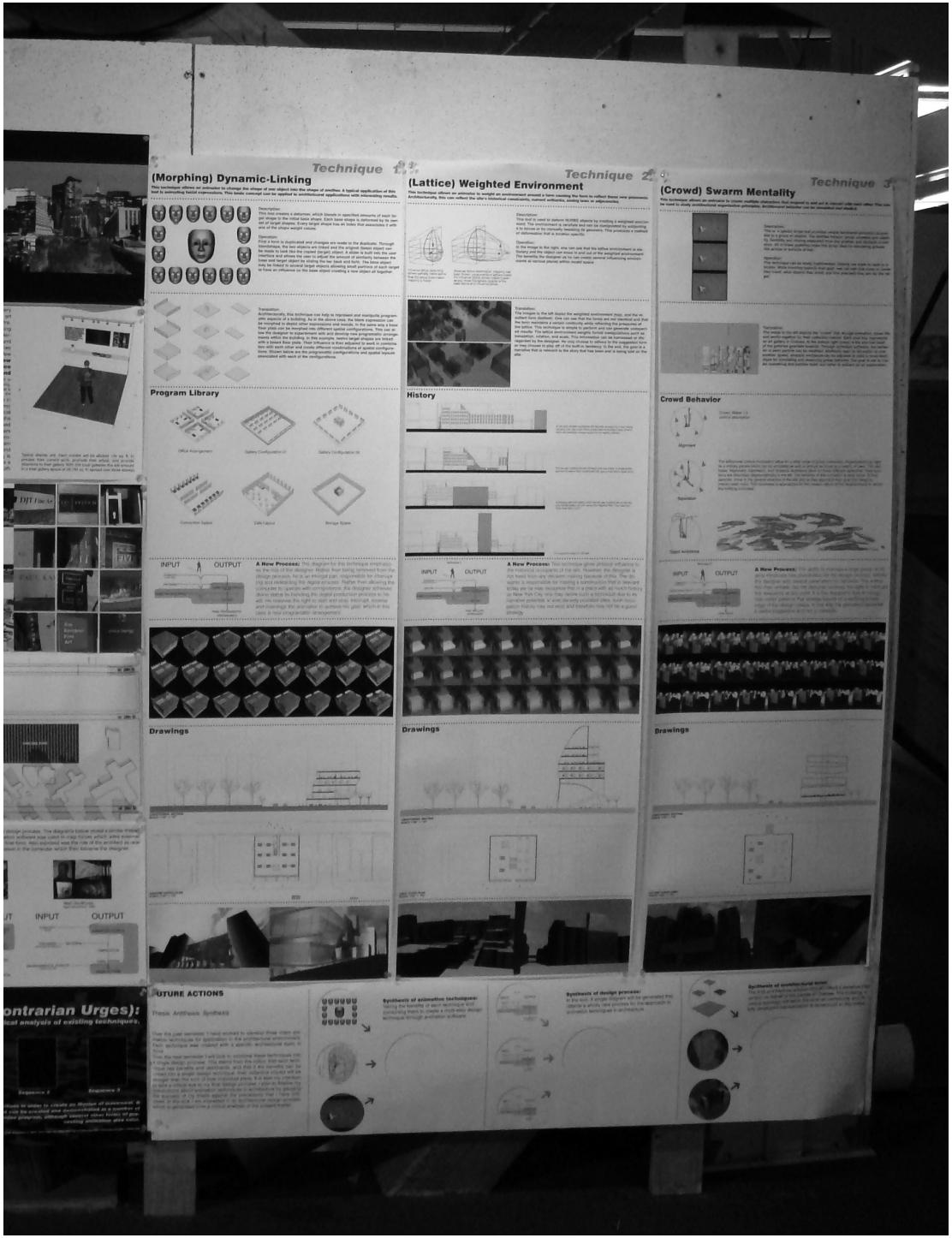
East Elevation of Site



Eidetic Image based on the nature of the Highline Park as a new Traffic Corridor

Conceptual Design

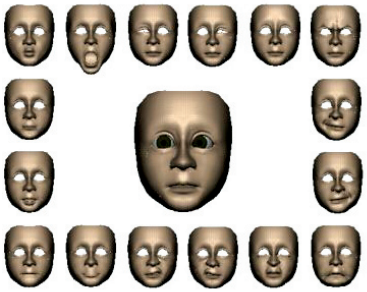
The December pin-up was well received by the faculty. Some critical responses challenged the design process as “open-ended” and questioned whether there was anything new about the techniques generated up until this point. That said the tone was optimistic as the project moved into the Spring Semester. The work in this section is what was presented in December.



Technique 1

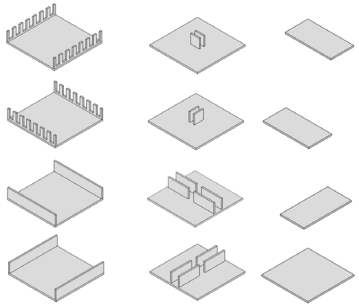
(Morphing) Dynamic-Linking

This technique allows an animator to change the shape of one object into the shape of another. A typical application of this tool is animating facial expressions. This basic concept can be applied to architetcural applications with interesting results.



Description:
This tool creates a deformer, which blends in specified amounts of each target shape to the initial base shape. Each base shape is deformed by its own set of target shapes. Every target shape has an index that associates it with one of the shape weight values.

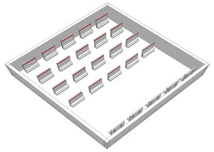
Operation:
First a form is duplicated and changes are made to the duplicate. Through blendshape, the two objects are linked and the original (base) object can be made to look like the copied (target) object. A slider is built into the user interface and allows the user to adjust the amount of similarity between the base and target object by sliding the bar back and forth. The base object may be linked to several target objects allowing small portions of each target to have an influence on the base object creating a new object all together.



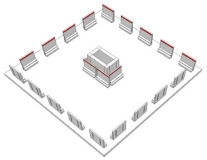
Translation:
Architecturally, this technique can help to represent and manipulte programattic aspects of a building. As in the above case, the blank expression can be morphed to depict other expressions and moods. In the same way a base floor plate can be morphed into different spatial configurations. This can allow the designer to experiement with and develop new programattic arrangements within the building. In this example, twelve target shapes are linked with a based floor plate. Their influence is then adjusted to work in combination with each other and create different combinations of spatial configurations. Shown below are the programattic configurations and spatial layouts associated with each of the configurations.

Program Library

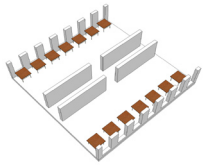
Office Arrangement



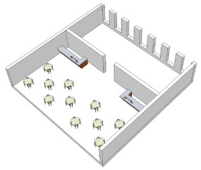
Gallery Configuration 01



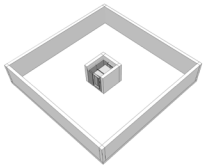
Gallery Configuration 02



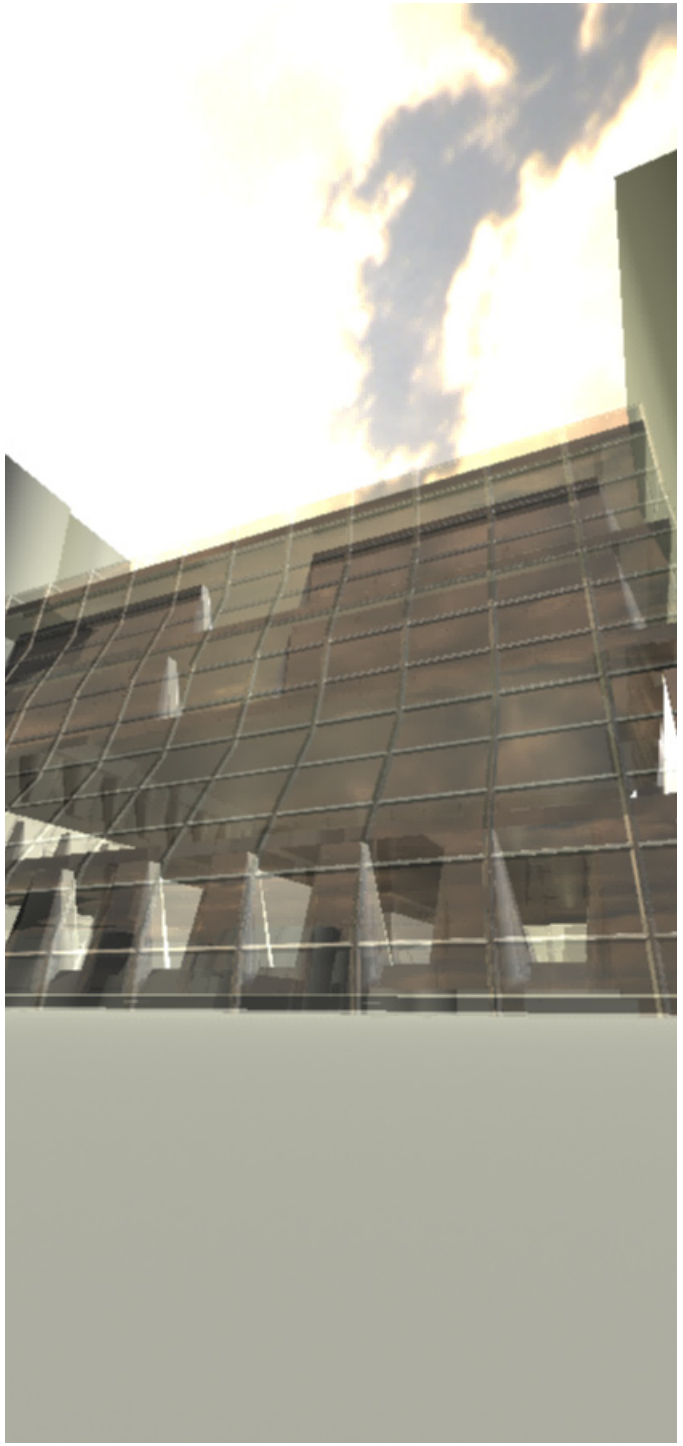
Convention Space

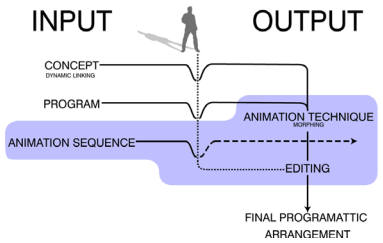


Cafe Layout

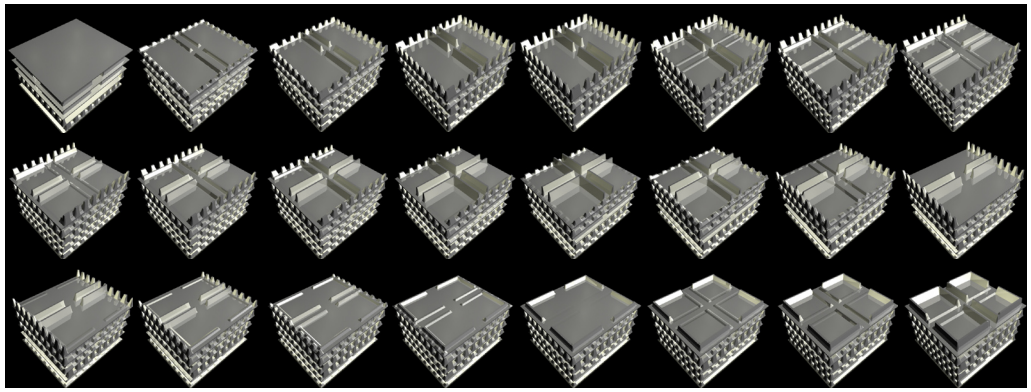


Storage Space

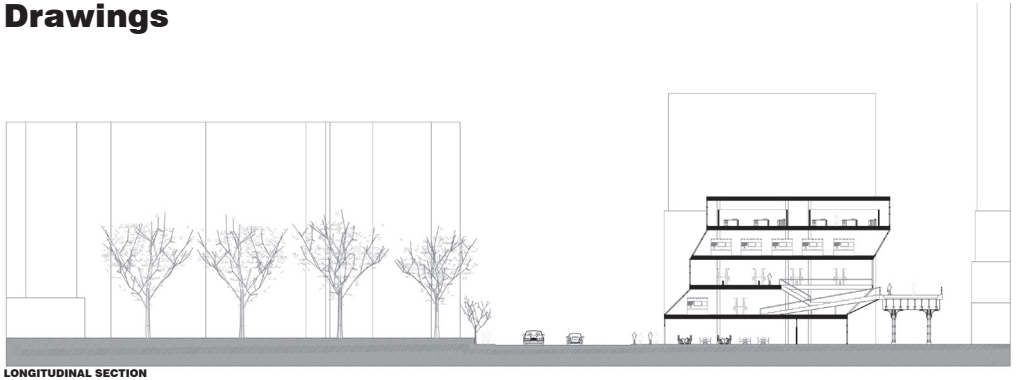




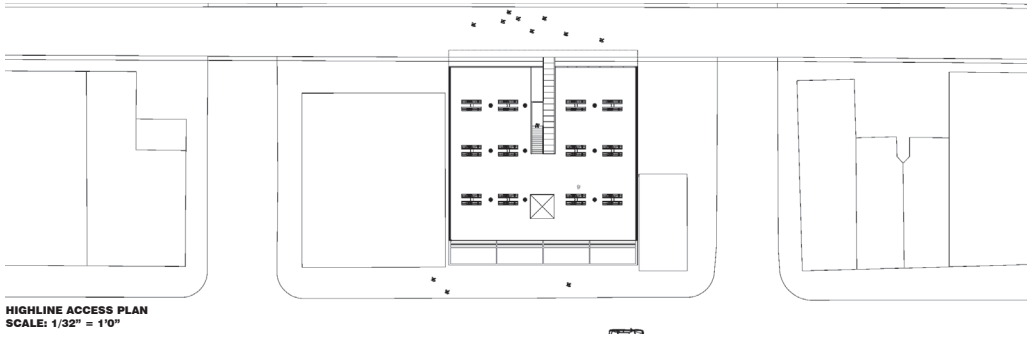
A New Process: The diagram for this technique emphasizes the role of the designer. Rather than being removed from the design process, he is an intergal part, responsible for interrupting and redirecting the digital process. Rather than allowing the computer to operate with omnipotence, the designer achieves divine status by bending the digital production process to his will. He reserves the right to start and stop, interrupt, reverse and rearrenge the animation to achieve his goal; which in this case is new programattic arrangement.



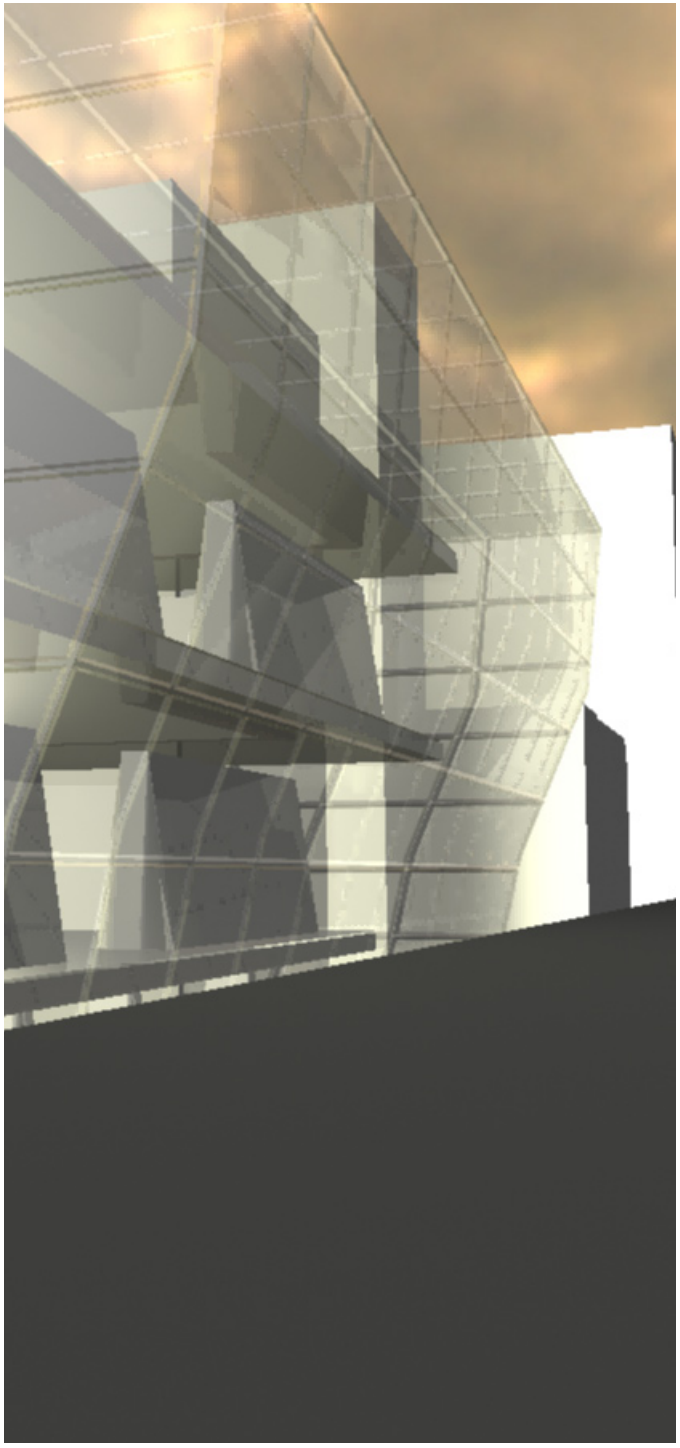
Drawings



LONGITUDINAL SECTION
SCALE: 1/32" = 1'0"



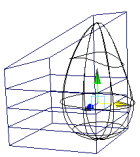
HIGHLINE ACCESS PLAN
SCALE: 1/32" = 1'0"



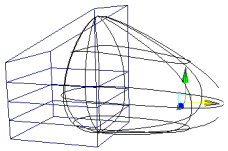
Technique 2

(Lattice) Weighted Environment

This technique allows an animator to weight an environment around a form causing the form to reflect these new pressures. Architecturally, this can reflect the site's historical constraints, current setbacks, zoning laws or adjacencies.



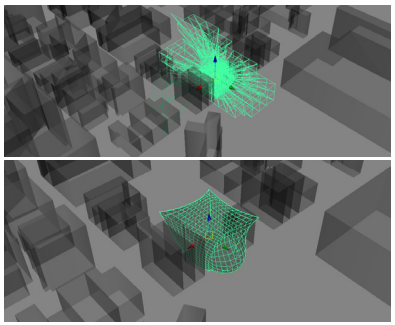
Influence lattice deforming sphere partially inside lattice. Now the lattice deformation mapping is frozen.



Because lattice deformation mapping has been frozen, components of sphere inside the influence lattice remain inside it even as you move the sphere outside of the base lattice and influence lattice.

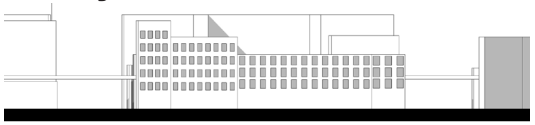
Description:
This tool is used to deform NURBS objects by creating a weighted environment. The environment is versitale and can be manipulated by subjecting it to forces or by manually tweaking its geometry. This produces a method of deformation that is location specific.

Operation:
In the image to the right, one can see that the lattice environment is stationary and the object can move in and out of the weighted environment. The benefits the designer as he can create several influencing environments at various places within model space.

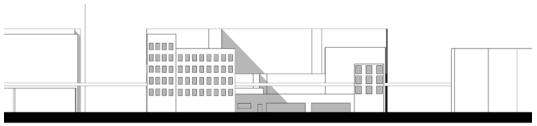


Translation:
The images to the left depict the weighted environment (top), and the resultant form (bottom). One can see that the forms are not identical and that the form maintains a certain continuity while reflecting the pressures of the lattice. This technique is simple to perform and can generate unexpected results. The lattice environment weights formal manipulations such as translation, rotation, and scale. This information can be harnessed or disregarded by the designer. He may choose to adhere to the suggested form or may choose to play off of the built-in tendency. In the end, the goal is a narrative that is relevant to the story that has been and is being told on the site.

History



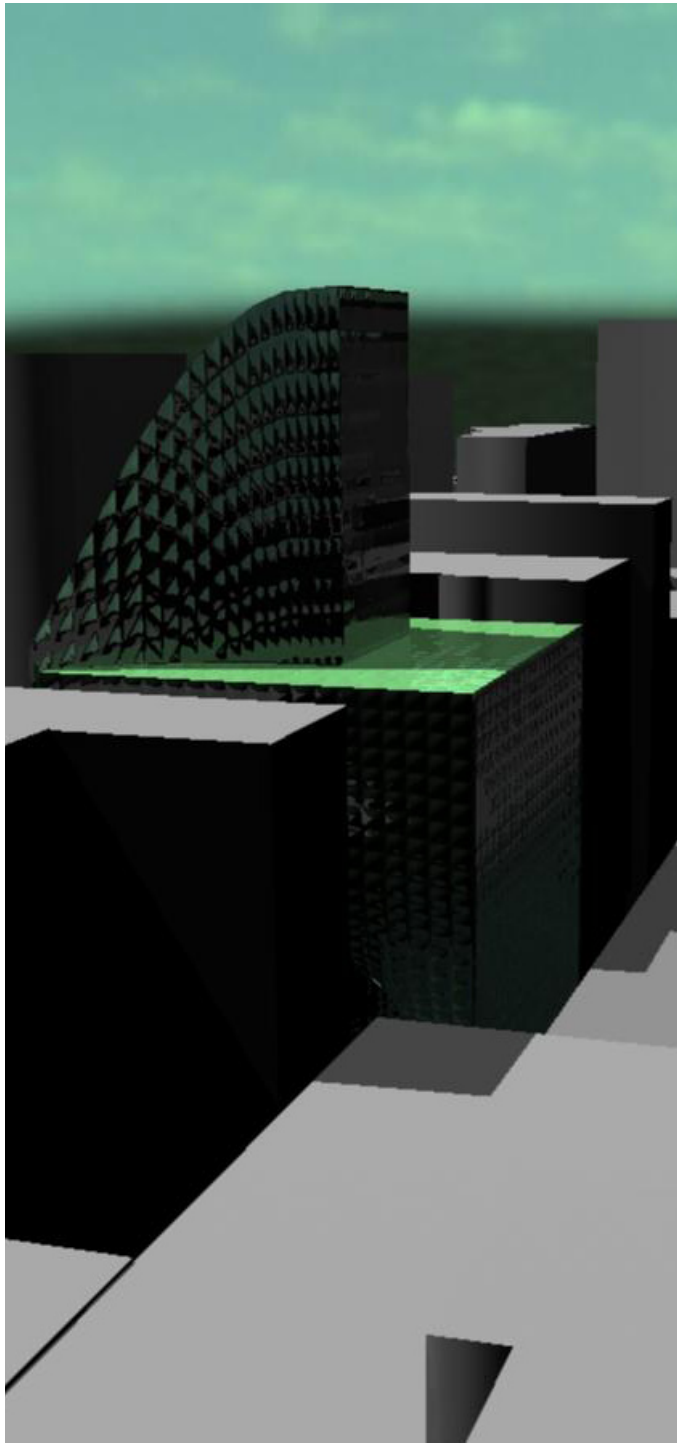
In the early ninteen hundereds the site was occupied by a four storey housing unit. Like most of the construction at the time it was faced in brick and probably housed worker for the nearby railroad.

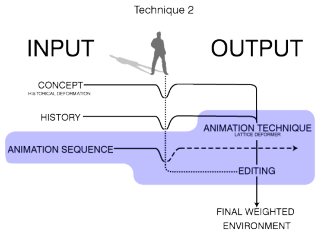


The pre-war building fell into disrepair and was razed. A single-storey automotive station was constructed with gas pumps and a repair shop.

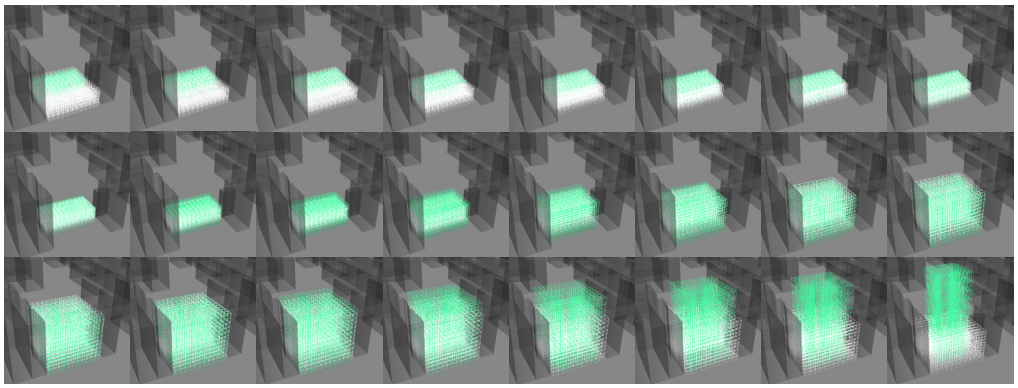
In keeping with the history of the site the new building will tie into the new transportation corridor along ther HIghline Park. The maximum Floor Area Ratio is 5.0

The maximum height is 125 feet.

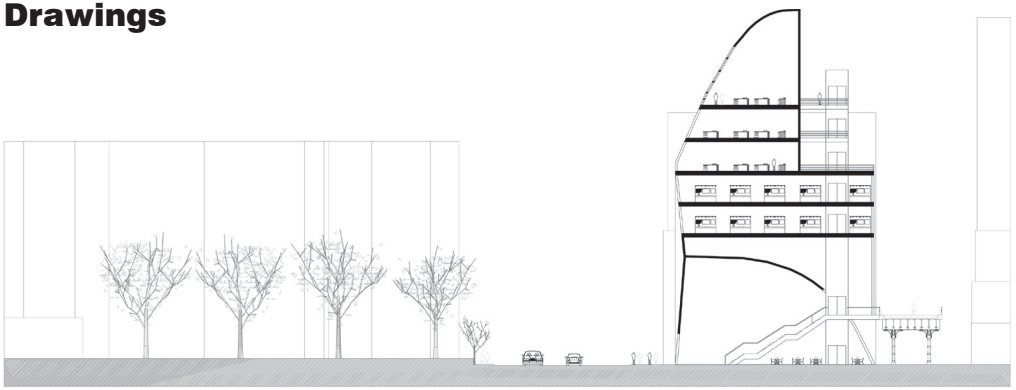




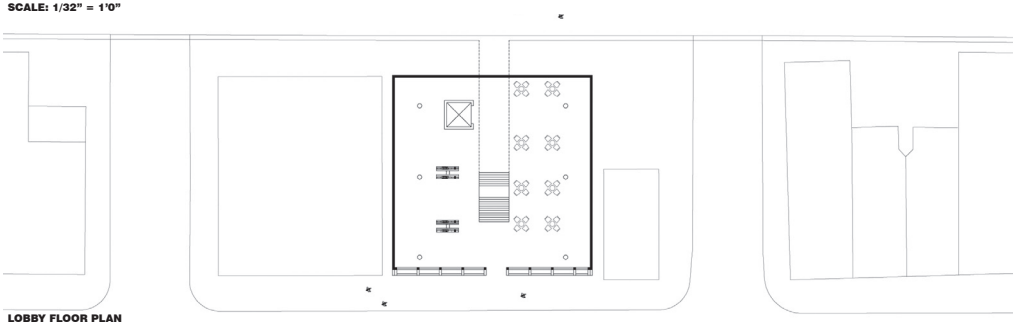
A New Process: This technique gives phtsical influence to the historical occupants of the site. However, the designer is not freed from any decision making because of this. The designer is responsible for making a construction that is relevant today yet he may recognize that in a place with as much history as New York City, one may desire such a technique due to its narrative potential. In less densely poulated sites, such occupation history may not exist and therefore may not be a good strategy.



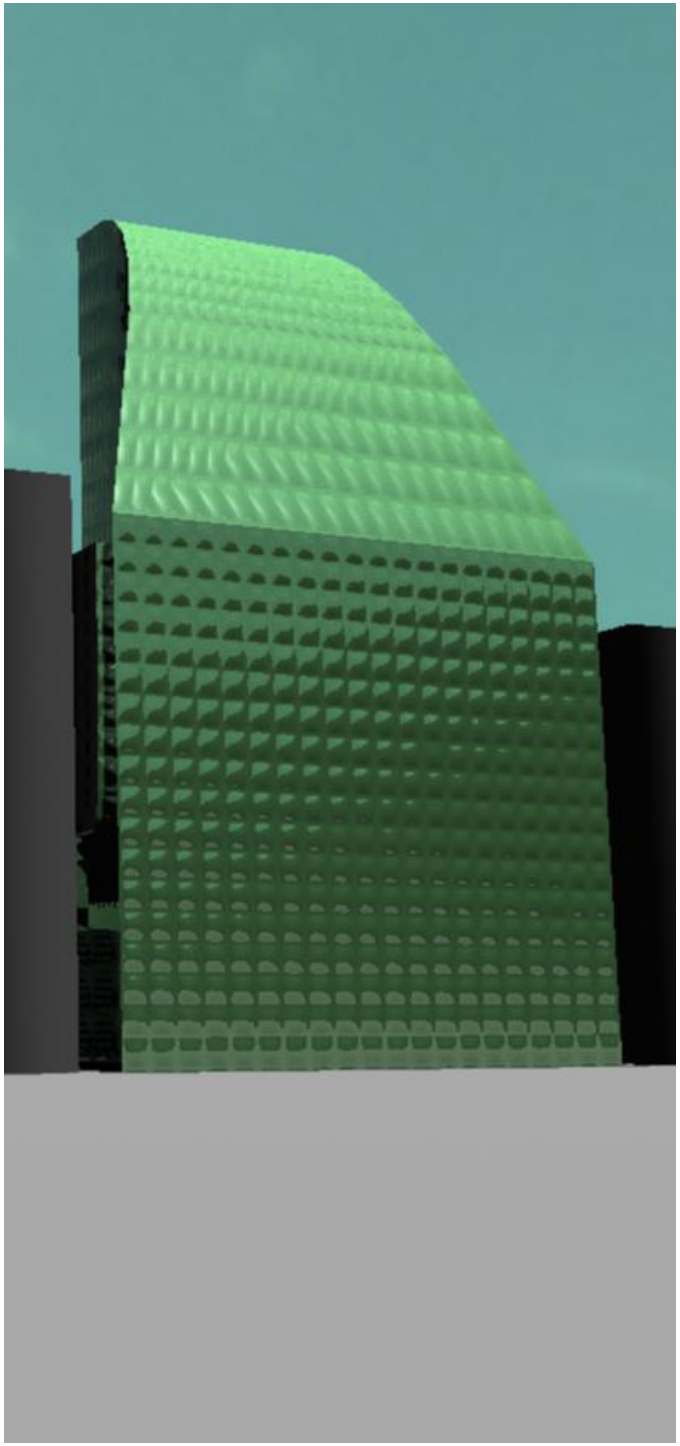
Drawings



LONGITUDINAL SECTION
SCALE: 1/32" = 1'0"



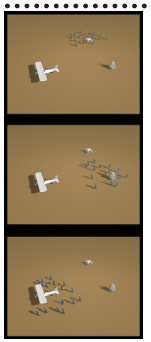
LOBBY FLOOR PLAN
SCALE: 1/32" = 1'0"



Technique 3

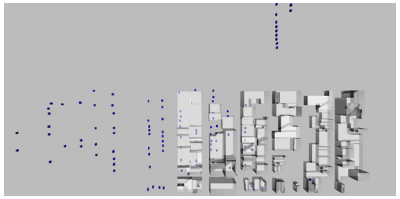
(Crowd) Swarm Mentality

This technique allows an animator to create multiple characters that respond to and act in concert with each other. This can be used to study architectural organization principles. Architecural behavior can be simulated and studied.



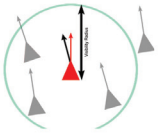
Description:
This is a special script that provides unique behavioral animation properties to a group of objects. The abilities include: group cohesion and stability, flexibility and staying seperated from one another, and obstacle avoidance. All of these qualitites make this script ideal for simulating groups like armies or schools of fish.

Operation:
This technique can be easily implemented. Objects are made to seek to a locator. While traveling towards their goal, one can edit how close or loose they travel, what objects they avoid, and how precisely they aim for the target.



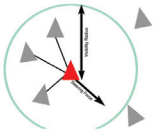
Translation:
The image to the left depicts the "crowd" that, though animation, takes life and works together for their collective interest. Each blue box represents an art gallery in Chelsea. At the bottom right corner is the site that each of the galleries gravitate towards. Through animation software, the behavior of each particle can be modified. Attributes such as attraction to one another, speed, obstacle avoidance can be adjusted to yield a novel technique for simulating and observing group behavior. The goal is not to create something that justifies itself, but rather to embark on an exploration.

Crowd Behavior



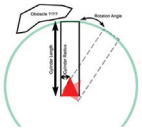
Alignment

Crowd_Maker 1.3
control description

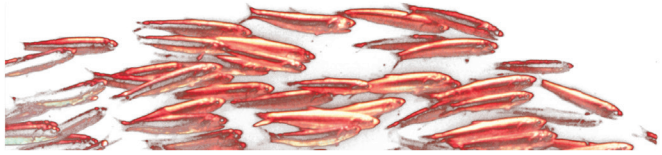


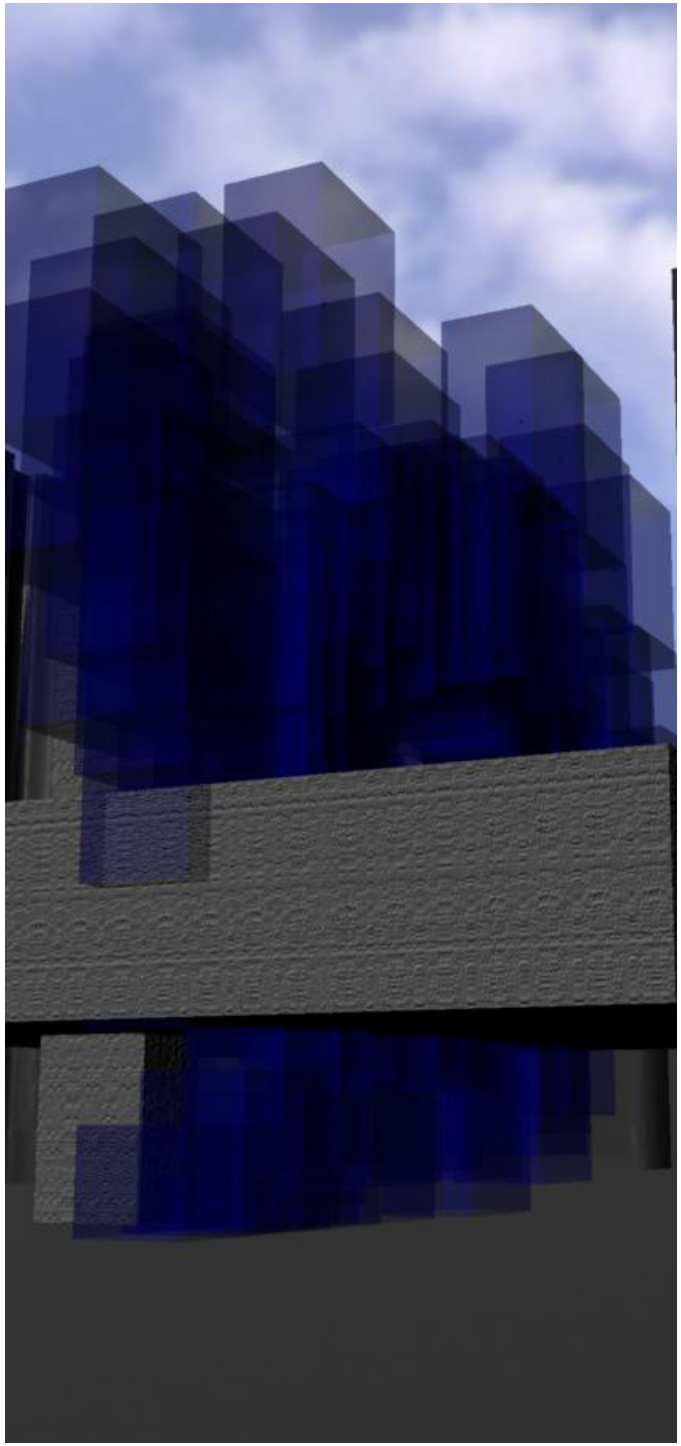
Seperation

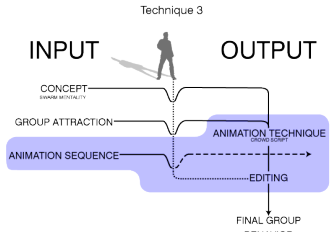
The behavioral control modulators allow for a wide range of group interaction. Organizations as tight as a military parade block can be simulated as well as groups as loose as a swarm of bees. The attributes: Alignment, Seperation, and Obstacle Avoidance allow for these different behaviors. Their functions are described diagramattically to the left. The behavior of this animation is fairly loose. At first, particles move in the general direction of the site and as they approach their goal they begin to interect even more. This looseness is appropriate for the relaxed nature of the neighborhood in which the building is located.



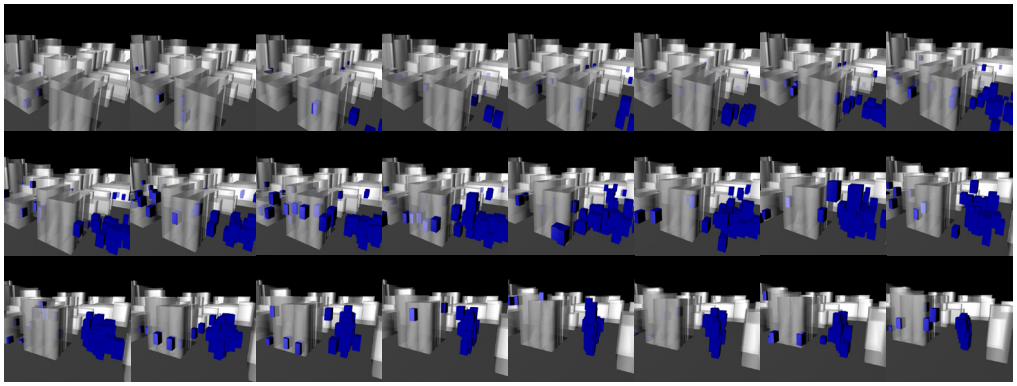
Object Avoidance



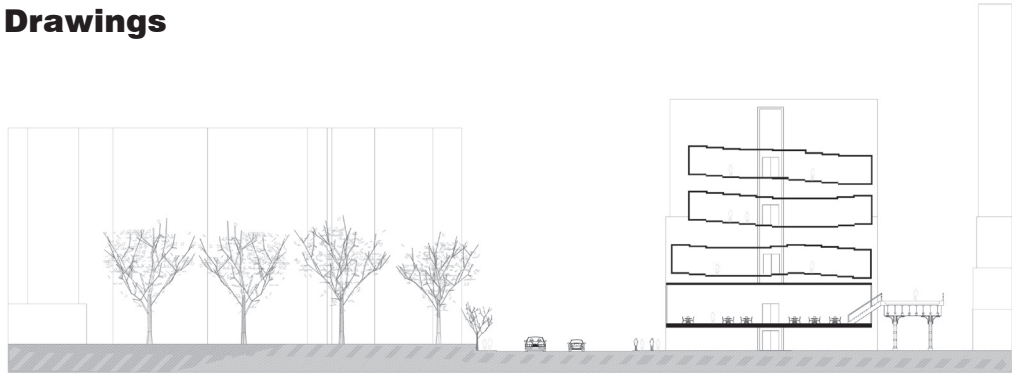




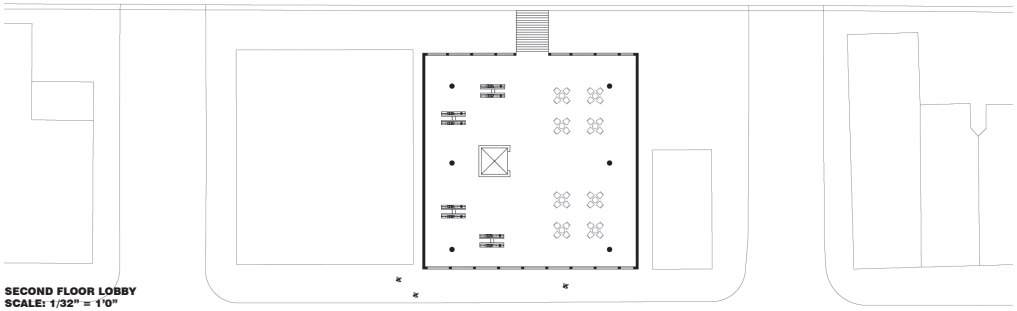
A New Process: The ability to manage a large group of objects intoduces new possibilities for the design process. Initially the designer sets several parameters for behavior. The animation then unfolds, but the designer reserves the right to interrupt this sequence at any point. It is the designer's duty to recognize useful patterns that emerge based on a working knowledge of the design criteria. In this way the animation becomes a useful suggestion and not a mandate.



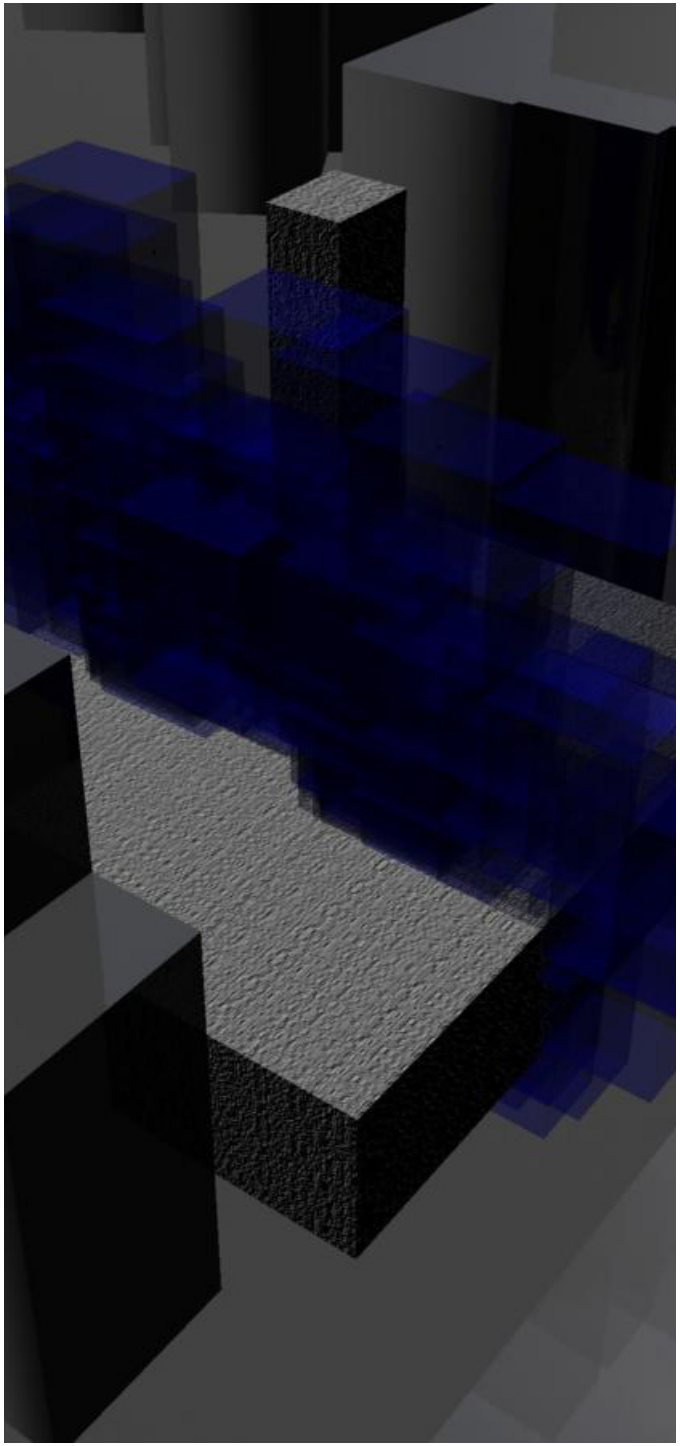
Drawings



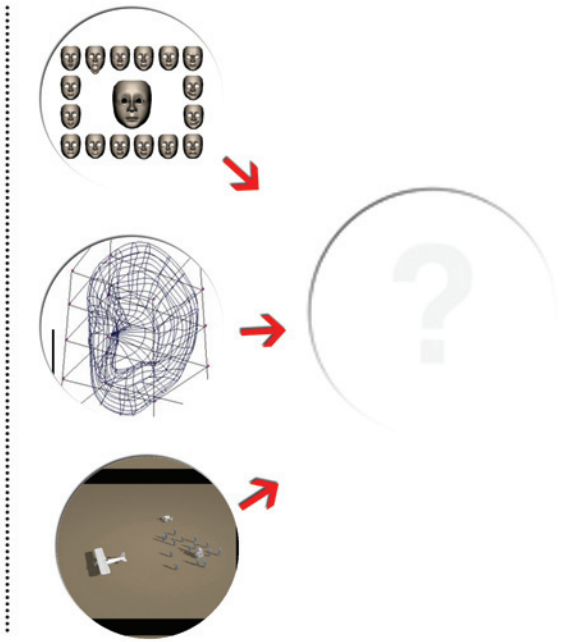
LONGITUDINAL SECTION
SCALE: 1/32" = 1'0"



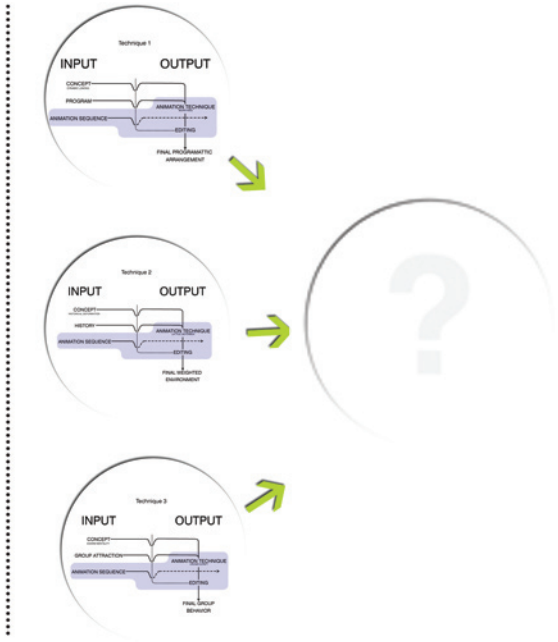
SECOND FLOOR LOBBY
SCALE: 1/32" = 1'0"



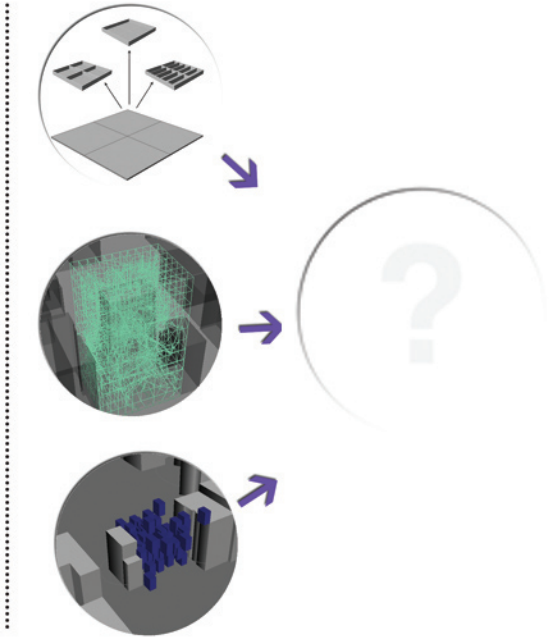
Process Documentation



Synthesis of animation techniques:
Taking the benefits of each technique and combining them to create a multi-step design technique through animation software.



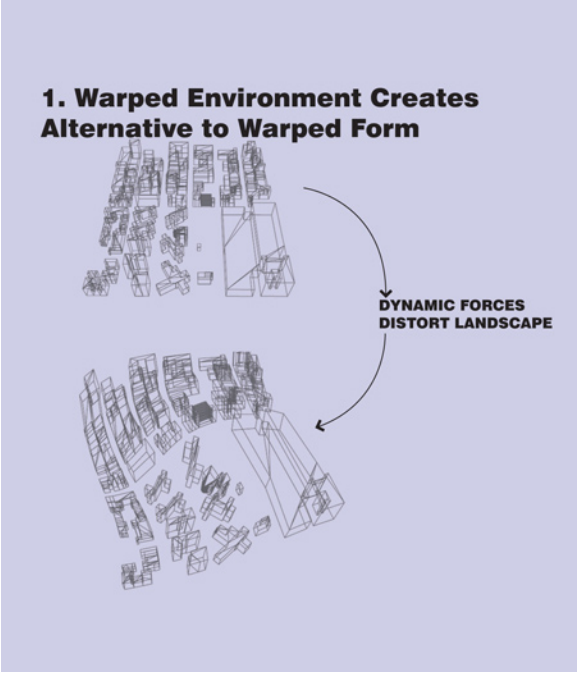
Synthesis of design process:
In the end, A single diagram will be generated that refelcts a wholly new process for the approach to animation techniques in architecture.



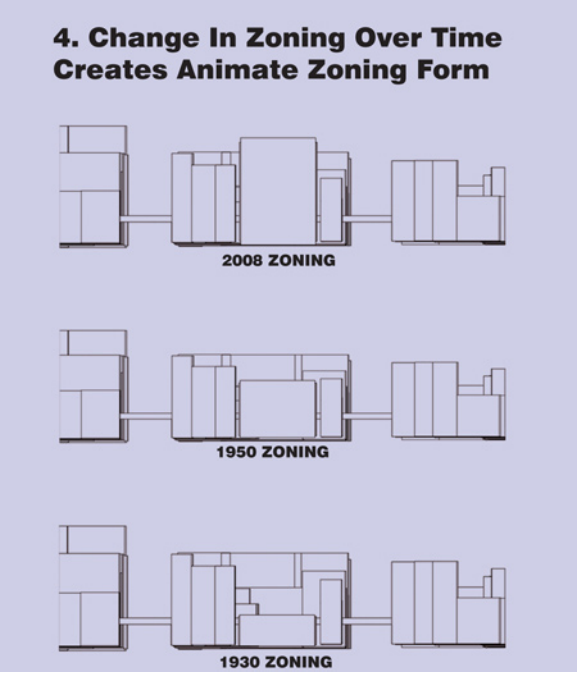
Synthesis of architectural form:
The final architectural solution should reflect a sensitive intervention on behalf of the people of Chelsea. The building, a unique typology, will serve the local art community and its fully developed representation is critical to this thesis.

Thesis. Antithesis. Synthesis.

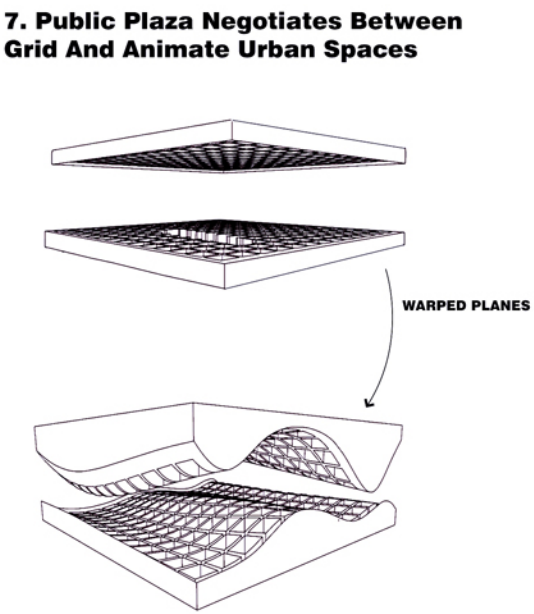
The work of the first semester was to develop three major animation techniques for application in the architectural environment. Each technique was created with a specific architectural topic in mind.
The focus of the second semester was to combine these techniques into a single design process. This stemed from the notion that each technique had benefits and detriments, and that if the benefits could be united into a single design technique, their collective impact would be stonger than the sum of their individual parts. It was also my intention to take a critical eye to the final design process. The final conclusion about animation techniques in architecture will be guaged by the success of this thesis against the precedents that have been criticised. In the end, the interest of this thesis is in an architectural design process which is generated from a critical analysis of the subject matter.



This first animation technique attempts to warp the urban landscape of New York City. This would allow for the architect to design within a new environment that reflected the energy and activity in the city. The design itself, however, would not necessarily need to be generated through animation.

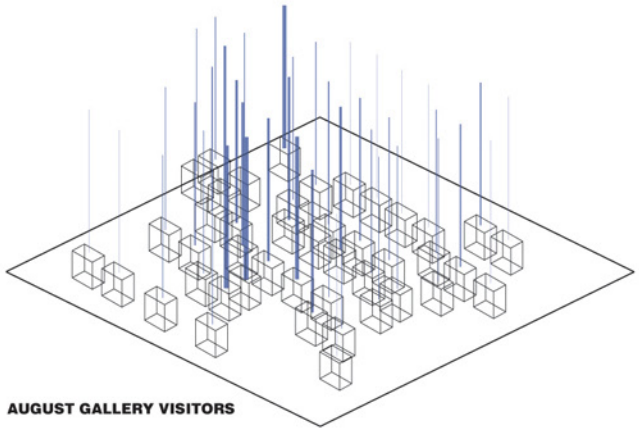


This technique reflects the change in zoning laws, on the site, over the last 70 years. These spaces were then animated to show their change over time.



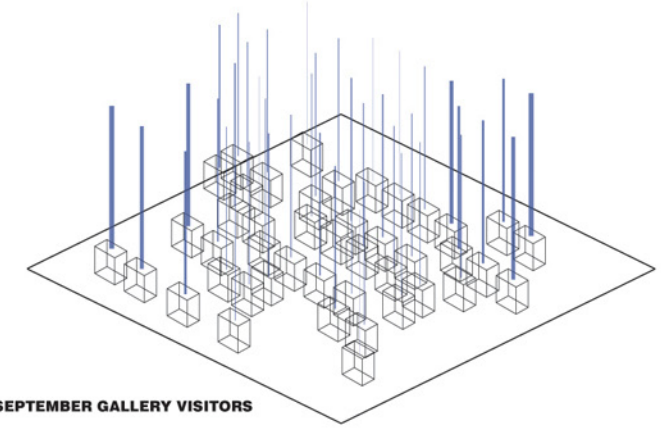
This design element of the building reflects the intent of the animation techniques that cam before it. The public plaza is a warped plane reflecting the energy and activity of the site while creating a gap between the first and third floors which represents the “tacking on” of additional floors allowed by new zoning laws.

Early attempts to engage animation in the design process stayed close to the criticized attempts found in the initial research of this project. Most gestures are purely formal in nature. Soon though, the ideas behind these techniques would quickly emerge.

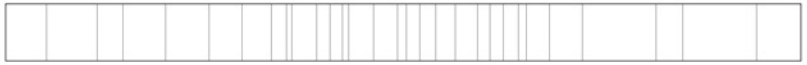


AUGUST GALLERY VISITORS

AUGUST DISPLAY ALLOTMENT



SEPTEMBER GALLERY VISITORS

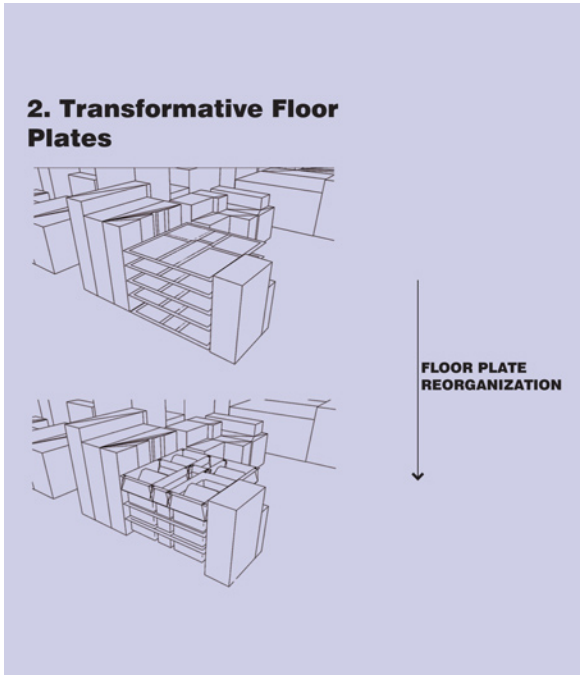


SEPTEMBER DISPLAY ALLOTMENT

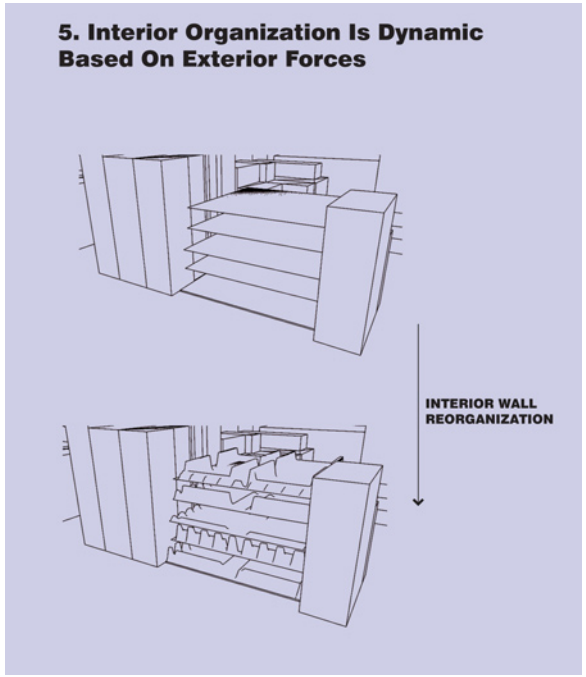
The Chelsea Art Gallery requires a decision-making Board of Directors. These critical members are composed of community activists and artists. The board's role is to oversee the distribution of amenities at the Chelsea Art Gallery. They are responsible for programming the functions exhibited in the galleries as well as selecting artists for residence and display spaces.

The Chelsea Art Gallery is managed by a Board of Directors which chooses how the galleries are managed on a month-to-month basis. This board may choose to highlight any number of functions within the local community such as gallery revenue, gallery attendance, web site hits or various other things.

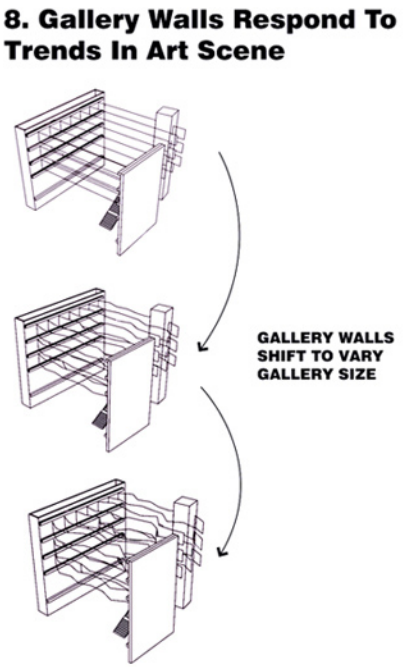
In the diagram above, the digital displays are shown fluctuating over the course of one month. Depending on the function chosen by the board, the displays will shift in size to reflect the change of each individual gallery. In this way, the gallery spaces become animate over time without physically shifting in space.



This technique allowed for a flexible floor plan to be manipulated at will and to be changed over time as activity within the building changes. These morphing floor plates were then stacked to create the building whole.

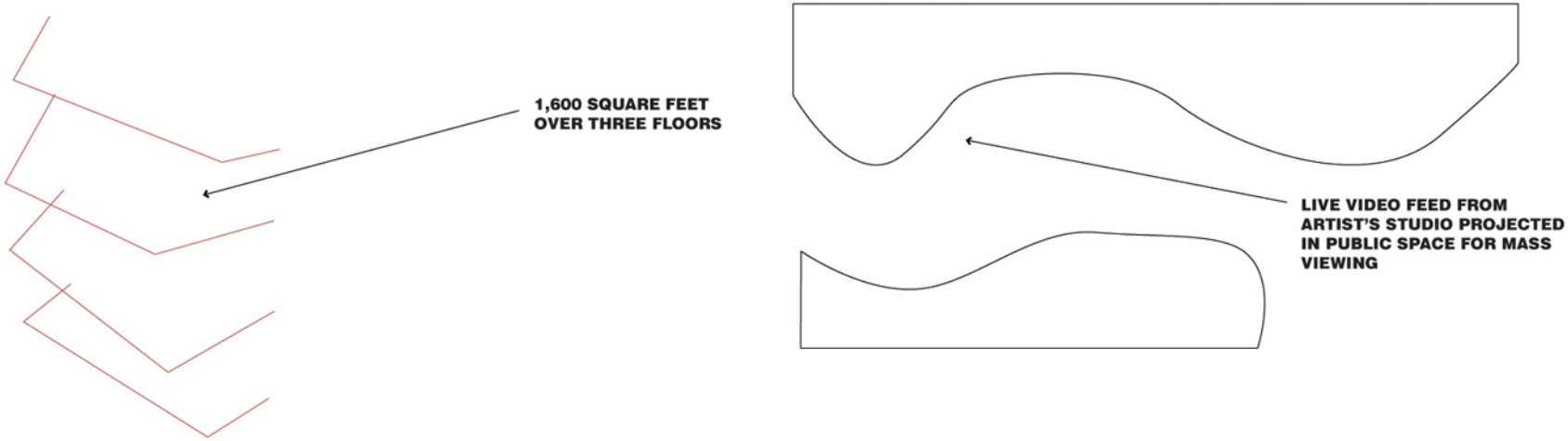


Building off the previous example, this technique differentiates between the interior walls and the exterior skin of the building. In the same way the walls are able to shift according to activity change, however, the exterior skin remains autonomous of these changes and is able to shift and move on its own.



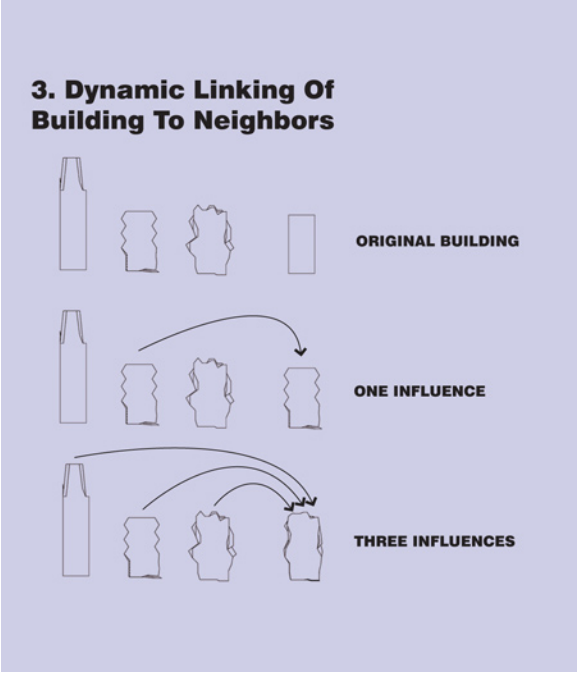
The final iteration of this technique is applied to the art gallery spaces. The actual gallery spaces shift within the space to create an ever-changing space within which to view art.

A second iteration of these techniques honed the conceptual potential of each of them. Three main ideas emerge: a relationship between the building and the urban forces around it; a separate yet dynamic relationship between the internal organization and external forces; a collective mentality between the Chelsea Art Galleries and the users of the building.

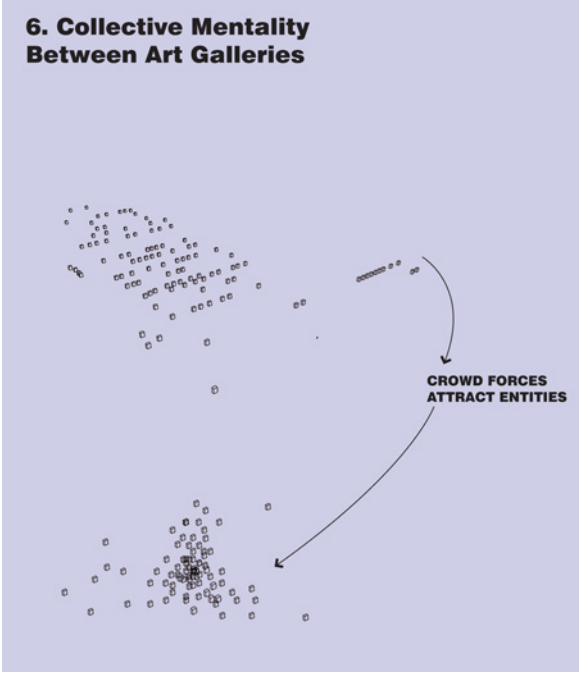


The Chelsea Art Gallery requires a decision-making Board of Directors. These critical members are composed of community activists and artists. The board's role is to oversee the distribution of amenities at the Chelsea Art Gallery. They are responsible for programming the functions exhibited in the galleries as well as selecting artists for residence and display spaces.

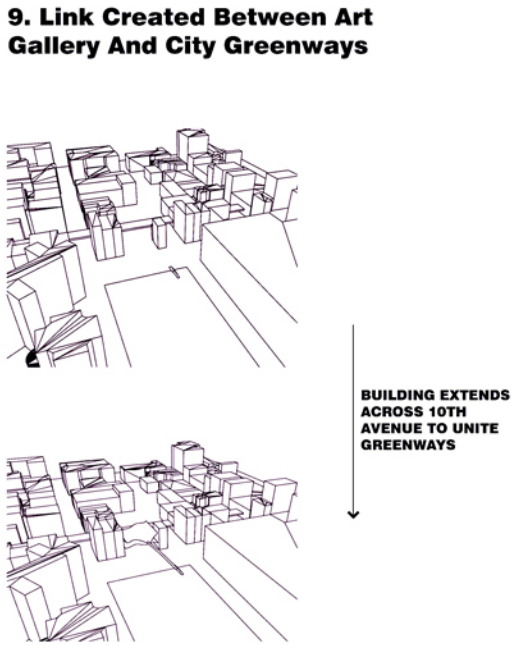
The diagram above shows another tool provided to the Chelsea Art Gallery Board of Directors. Upon their discretion, they may choose to lease the artist studio space to an artist of their choosing. This artist is free to come and go as he or she pleases. The culmination of their tenure will be an outdoor public viewing of a video of their work while in the studio space. This can be done to highlight a talented young artist that does not have the backing of a local gallery. I this way, the Chelsea Art Gallery can reach out to underprivileged artists and engage the community with public events.



This technique depicts a building acting as a chameleon. The physical qualities of neighboring buildings can be assumed and merged into one state by dynamically linking the existing buildings with the new building.

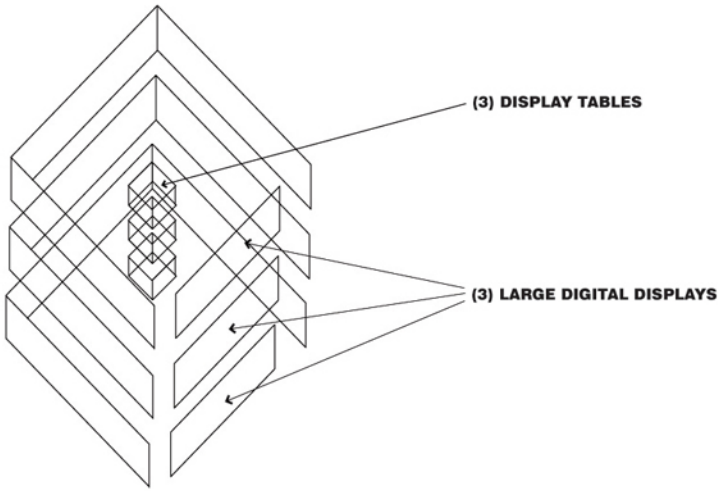


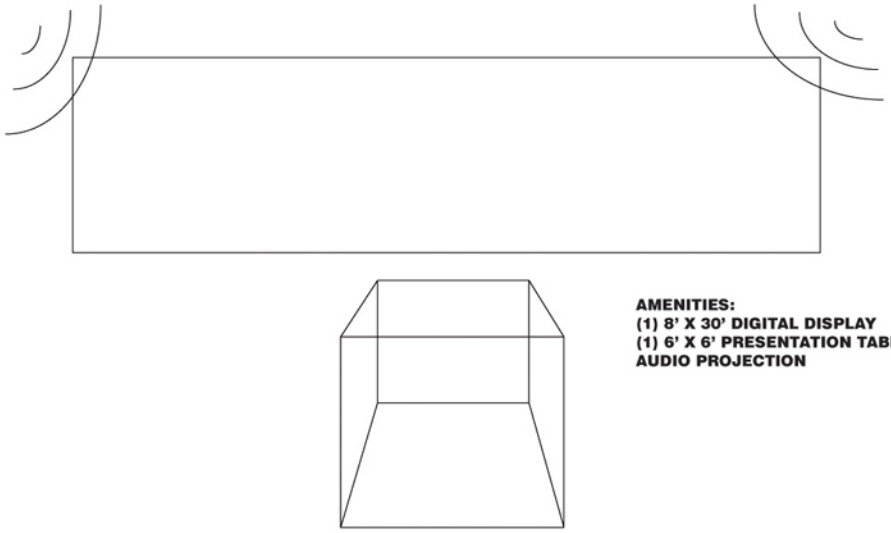
This technique utilizes the idea of “shape shifting” but at a smaller scale. Small bits, representing each of the 200 art galleries in Chelsea, gather together to protect their interests. As they collect at the site they swarm together to create a hive of communal interaction within their profession.



The diagram above shows the Chelsea Art Gallery reaching out over tenth Avenue to connect with Chelsea Park. Literally and figuratively, the Chelsea Art Gallery seeks to connect and unite the local community through its physical presence as well as its programmatic capabilities.

As the program becomes more refined the conceptualization process gets streamlined. The major concepts have been solidified and animation software has served its role in generating these concepts. The role of animation, in the end, was used to generate and refine conceptual ideas through formal diagrams.



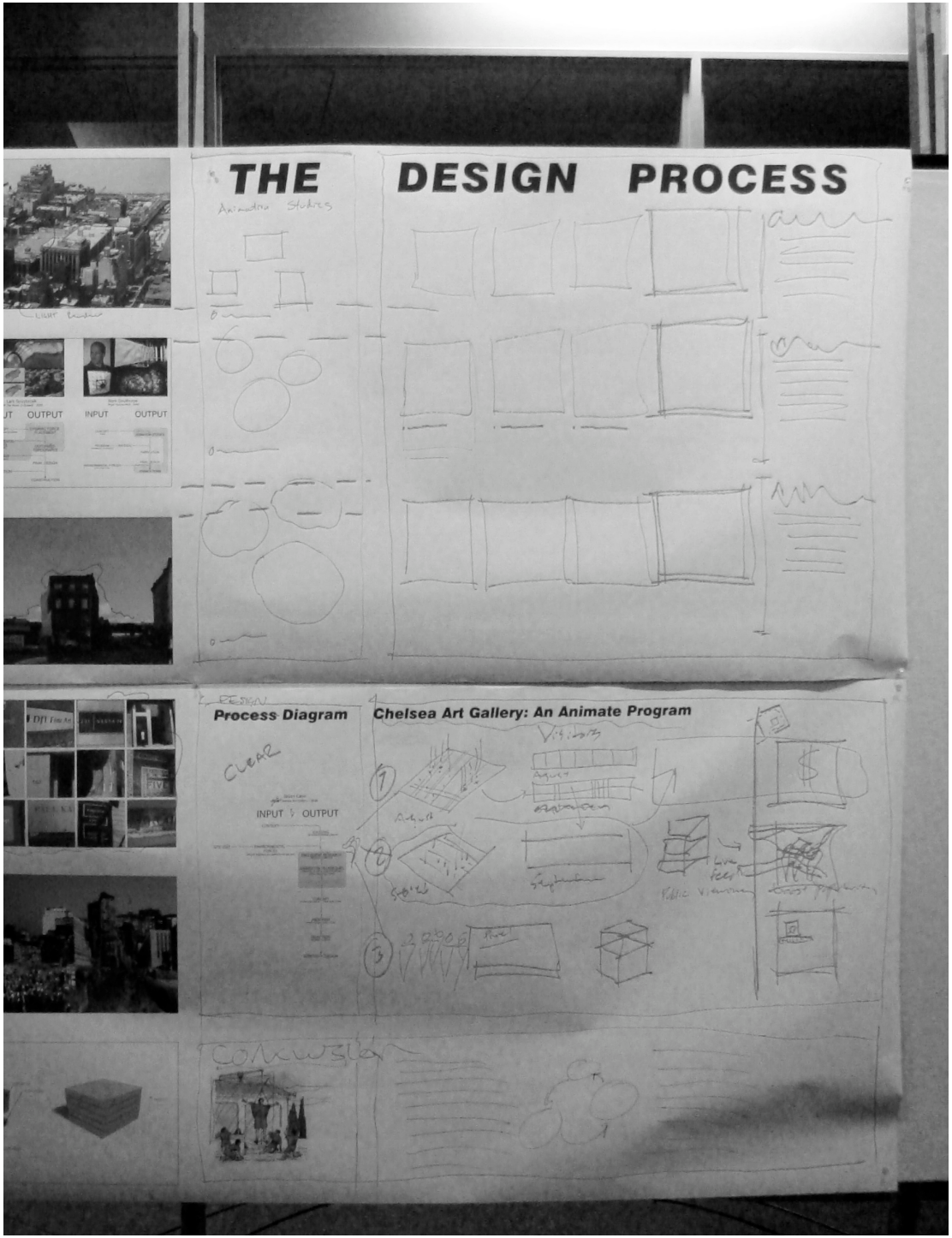


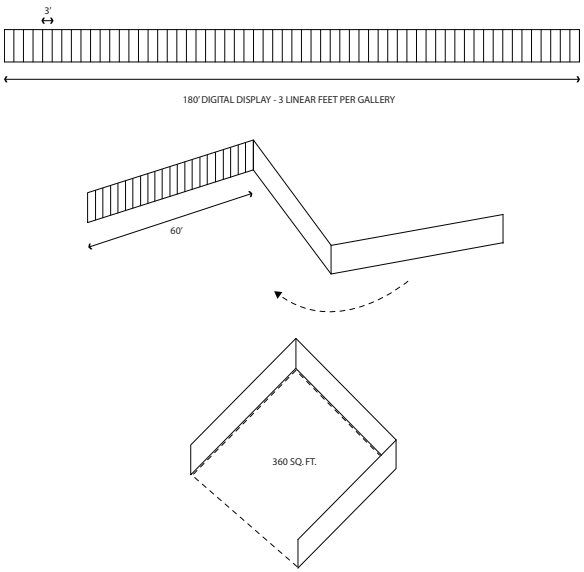
The Chelsea Art Gallery requires a decision-making Board of Directors. These critical members are composed of community activists and artists. The board's role is to oversee the distribution of amenities at the Chelsea Art Gallery. They are responsible for programming the functions exhibited in the galleries as well as selecting artists for residence and display spaces.

The gallery spaces of the Chelsea Art Gallery can be configured to highlight one specific artist or gallery per the discretion of the Board of Directors. On each floor all four walls of digital display as well as physical display space and audio presentations can be accommodated. This demonstrates the flexibility of the gallery spaces and their ability to highlight local artists.

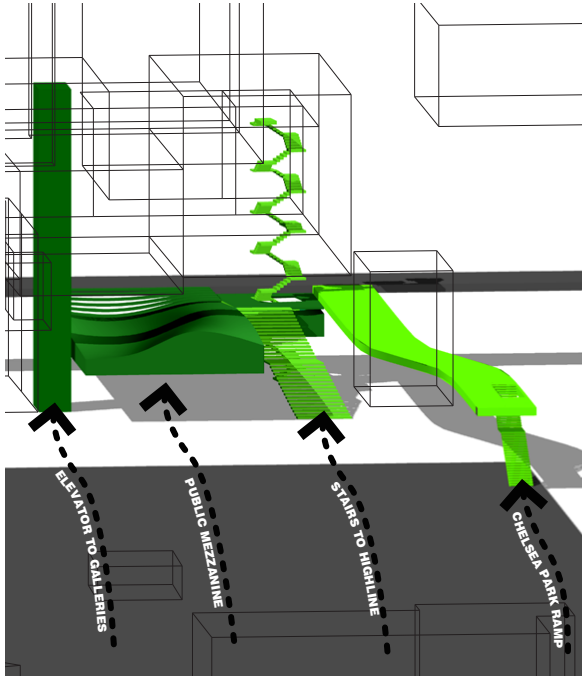
Final Design Documentation

The final presentation of this thesis consists of one part theory and one part design. The design process is summed up and presented in a linear fashion. The Chelsea Art Gallery is shown in a polished, finished state. The goal being to present a sound case for a new process that yields a novel result. The work that follows is what was presented for final review in April.

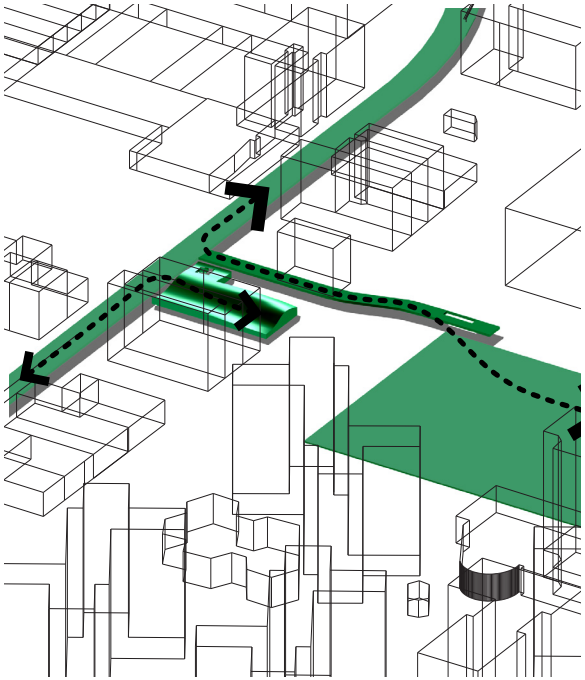




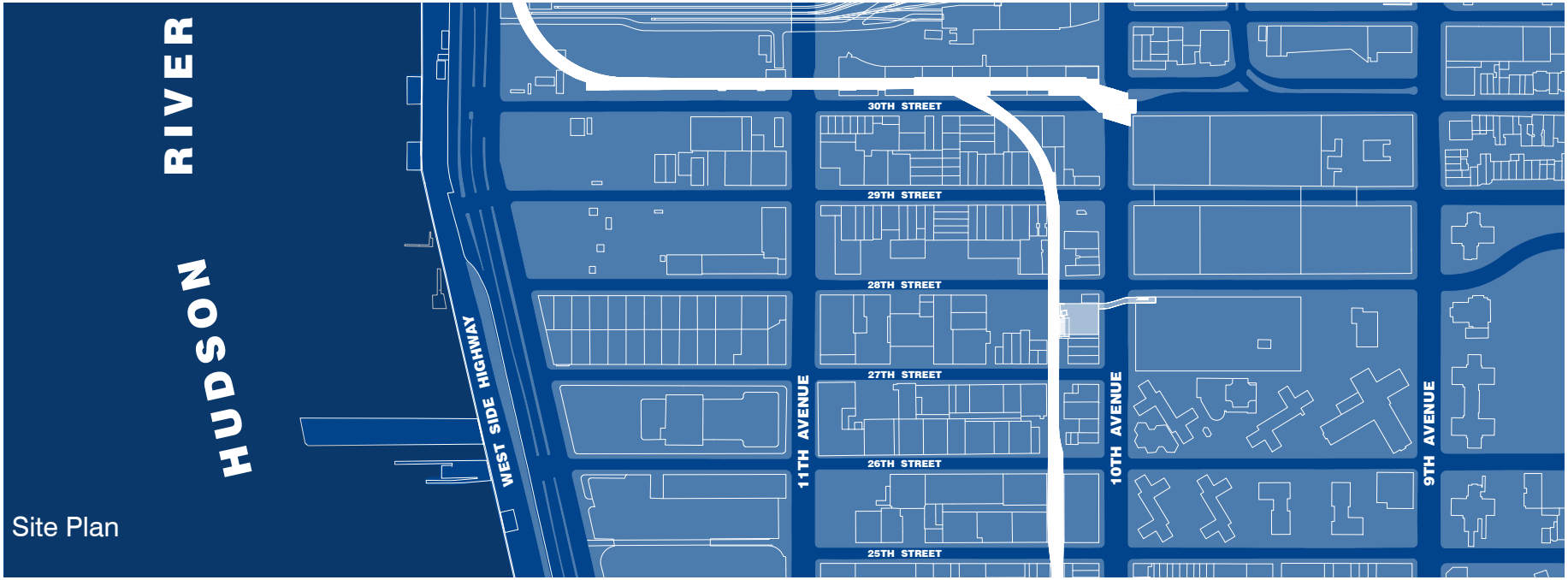
The digital displays in the Chelsea Art Gallery consist of a 180-foot, floor to ceiling, media wall. This wall is divided into three-foot sections which are then given to individual art galleries through the community. The fluctuation of these displays are controlled by a community art board. In this sense, the galleries act more as a physical web site that is updated daily with information reflecting the current state of the art community in Chelsea.



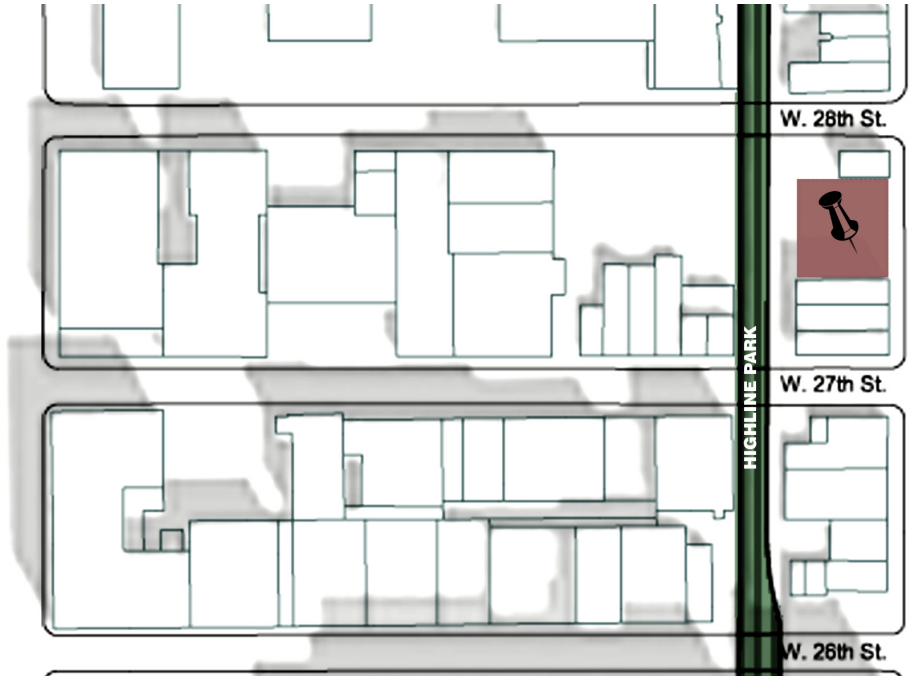
Circulation is of primary importance to the Chelsea Art Gallery. Access is granted to pedestrian traffic from Tenth Avenue, the Highline Park, and Chelsea Park. An elevator on the south side of the building can be accessed from Tenth Avenue or the Highline. A fire stair runs through the artist's studio overlooking the Highline and a pedestrian bridge extends over Tenth Avenue to Chelsea park. All of these traffic streams converge at the Chelsea Art Gallery in hopes of providing visitor volume for the galleries.



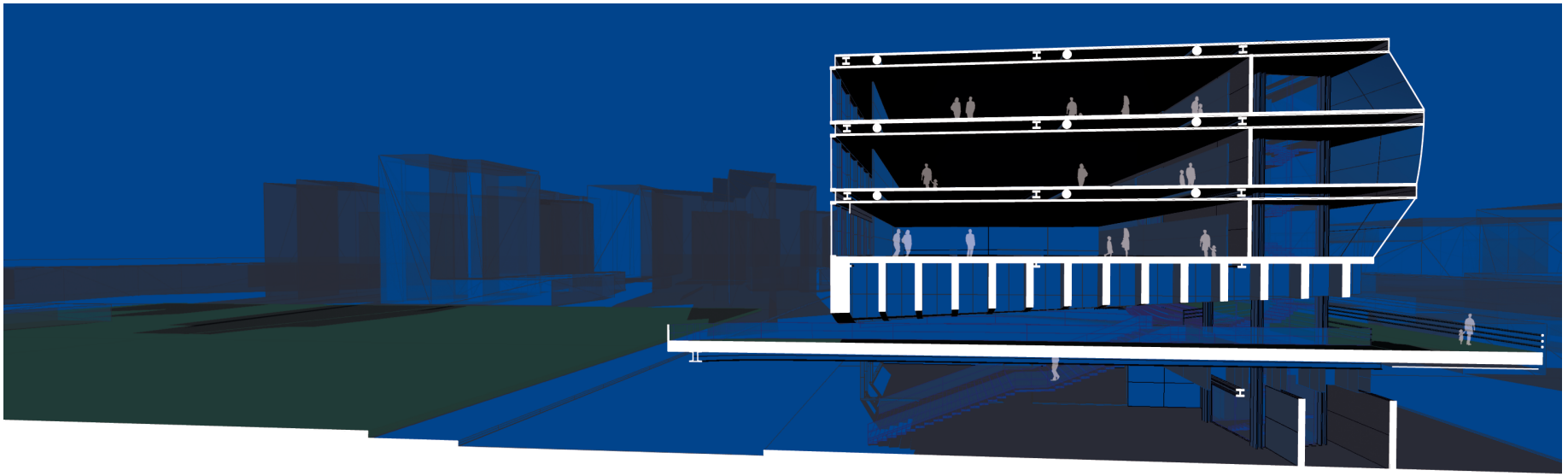
The Chelsea Art Gallery strives to emerge as a "Confluence of Community" within the New York urban network. A second floor public plaza acts as a "living room for the Highline" and also provides an on-ramp and off-ramp to the new park. A pedestrian bridge over Tenth Avenue serves to unite the two public green spaces of the Highline Park and Chelsea Park.


HUDSON RIVER
WEST SIDE HIGHWAY
30TH STREET
29TH STREET
28TH STREET
27TH STREET
26TH STREET
25TH STREET
11TH AVENUE
10TH AVENUE
9TH AVENUE

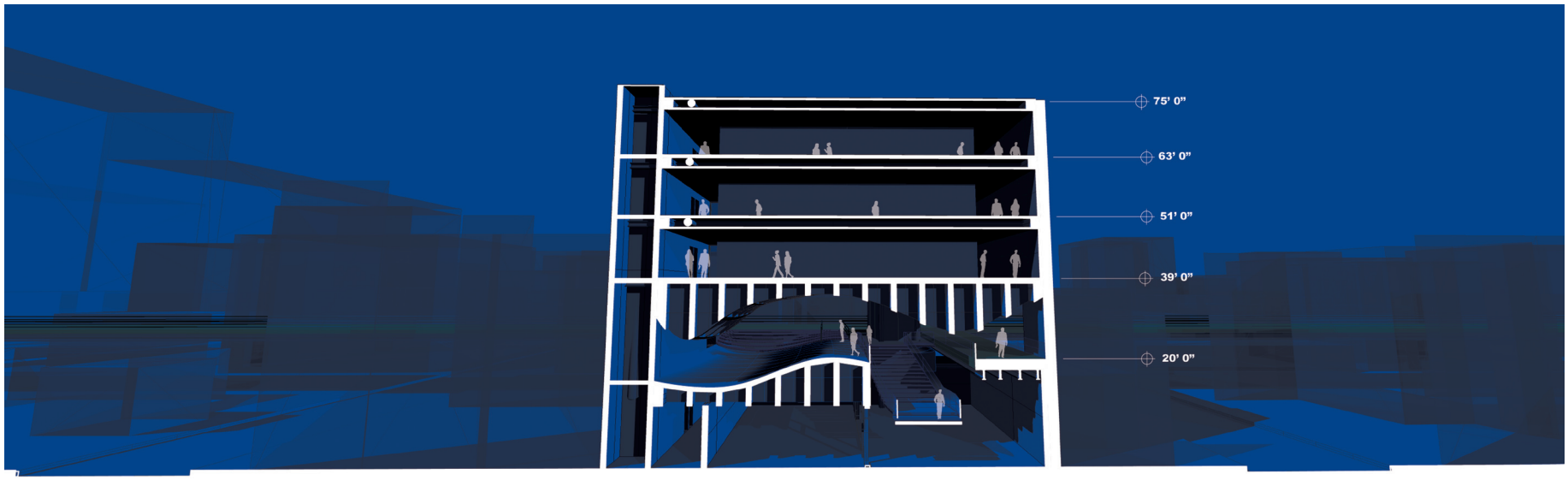
Site Plan


W. 28th St.
HIGHLINE PARK
W. 27th St.
W. 26th St.


W. 28th St.
CHELSEA PARK
Tenth Avenue
W. 26th St.



Section A-A

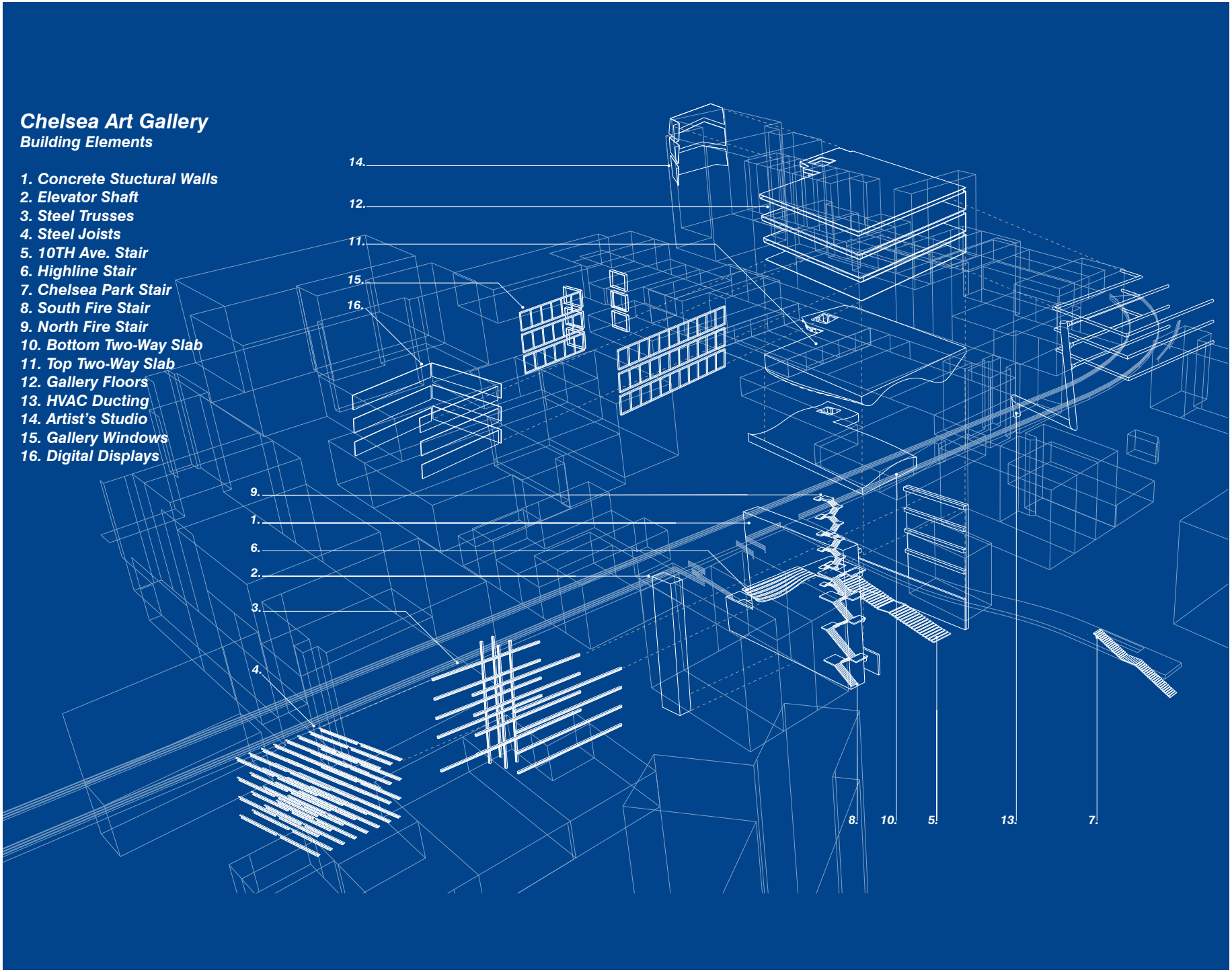


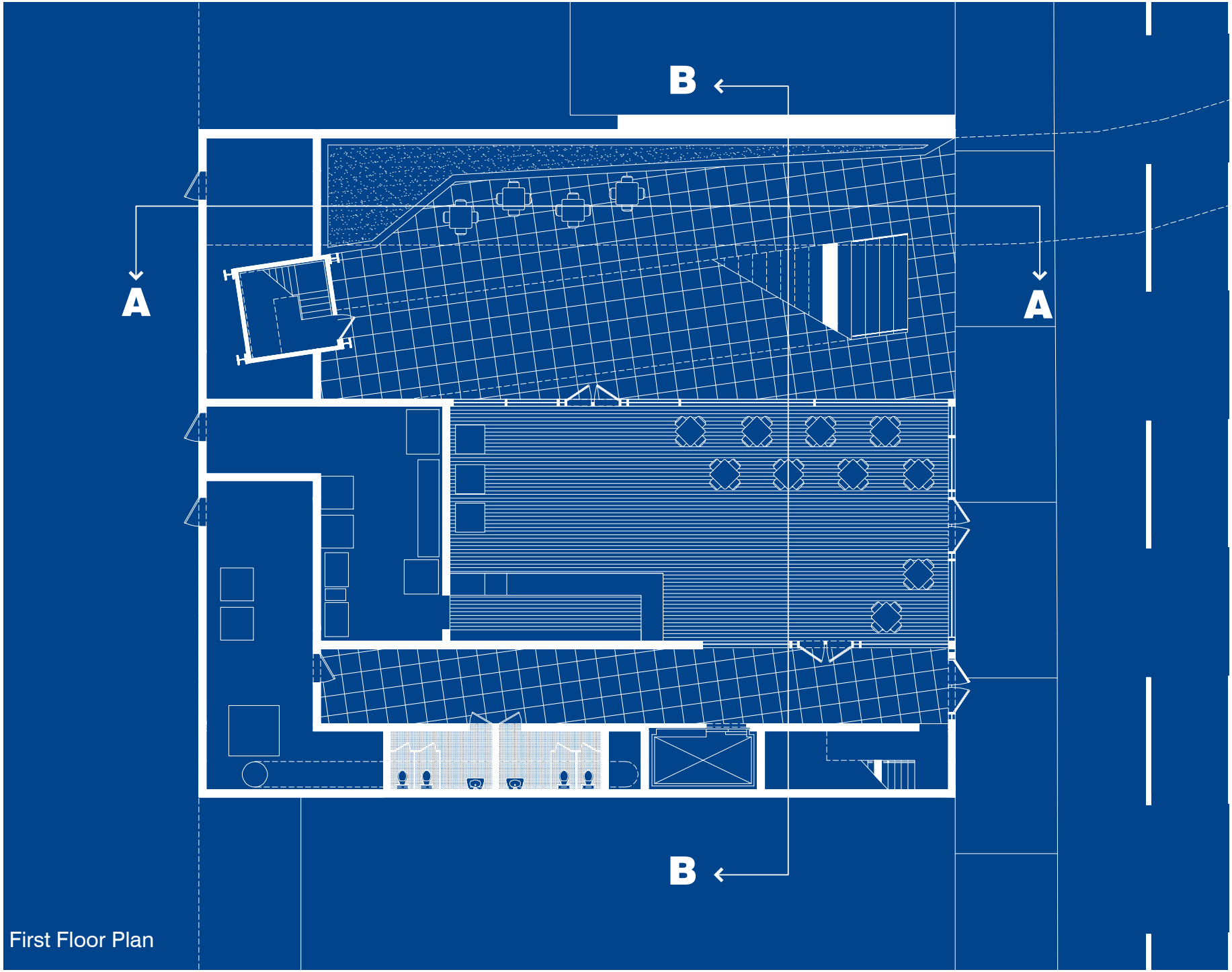
Section B-B

Chelsea Art Gallery

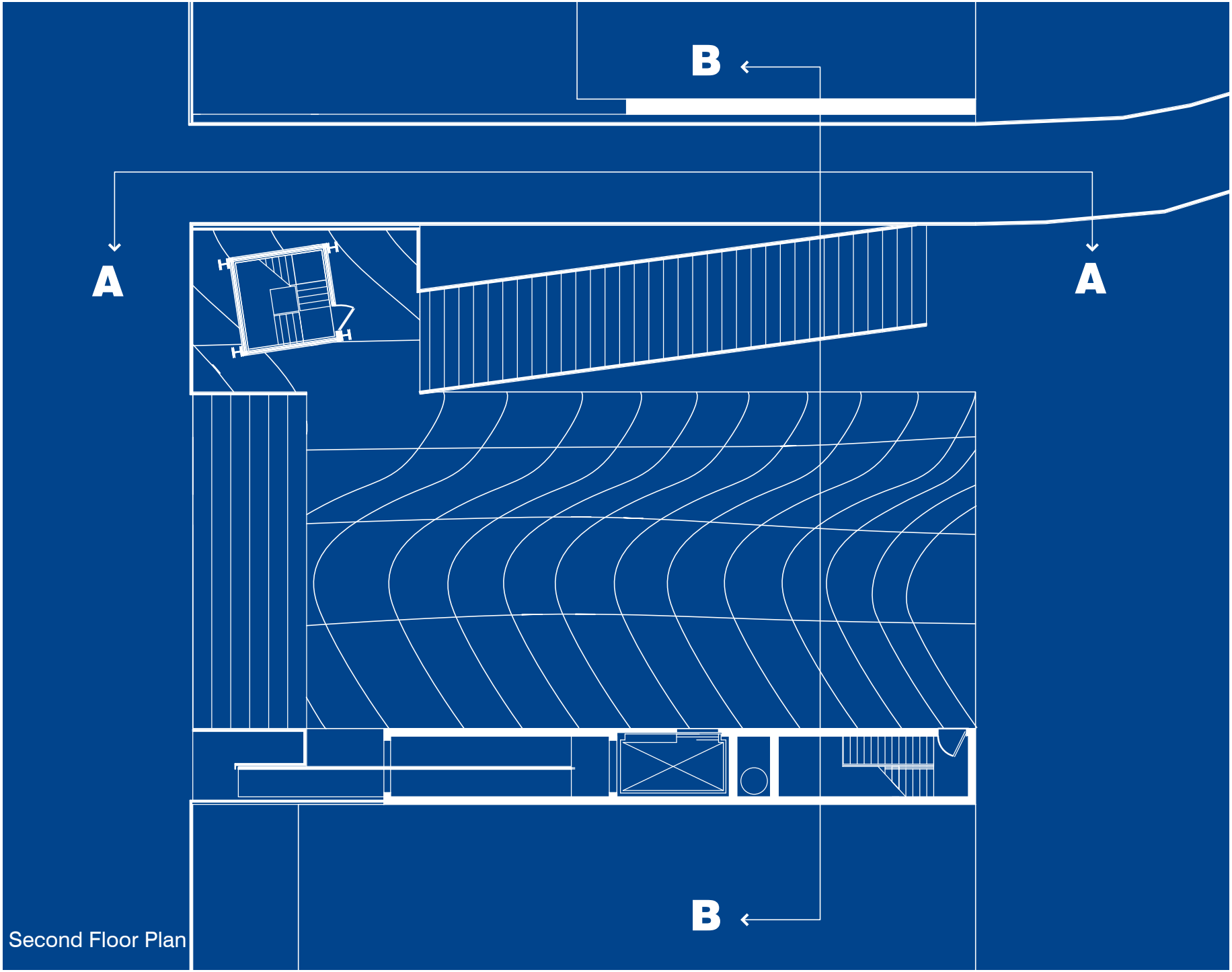
Building Elements

1. *Concrete Stuctural Walls*
2. *Elevator Shaft*
3. *Steel Trusses*
4. *Steel Joists*
5. *10TH Ave. Stair*
6. *Highline Stair*
7. *Chelsea Park Stair*
8. *South Fire Stair*
9. *North Fire Stair*
10. *Bottom Two-Way Slab*
11. *Top Two-Way Slab*
12. *Gallery Floors*
13. *HVAC Ducting*
14. *Artist's Studio*
15. *Gallery Windows*
16. *Digital Displays*

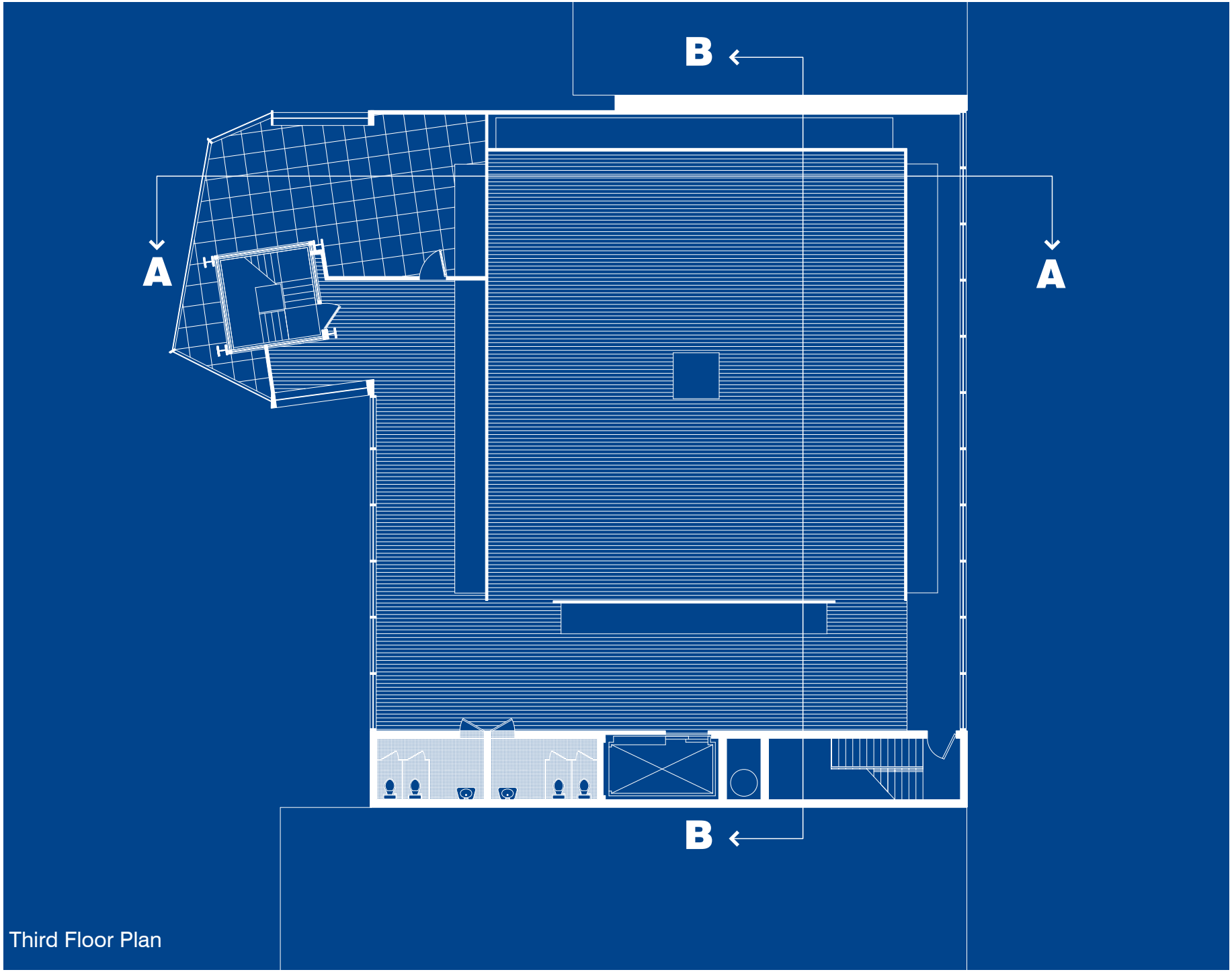




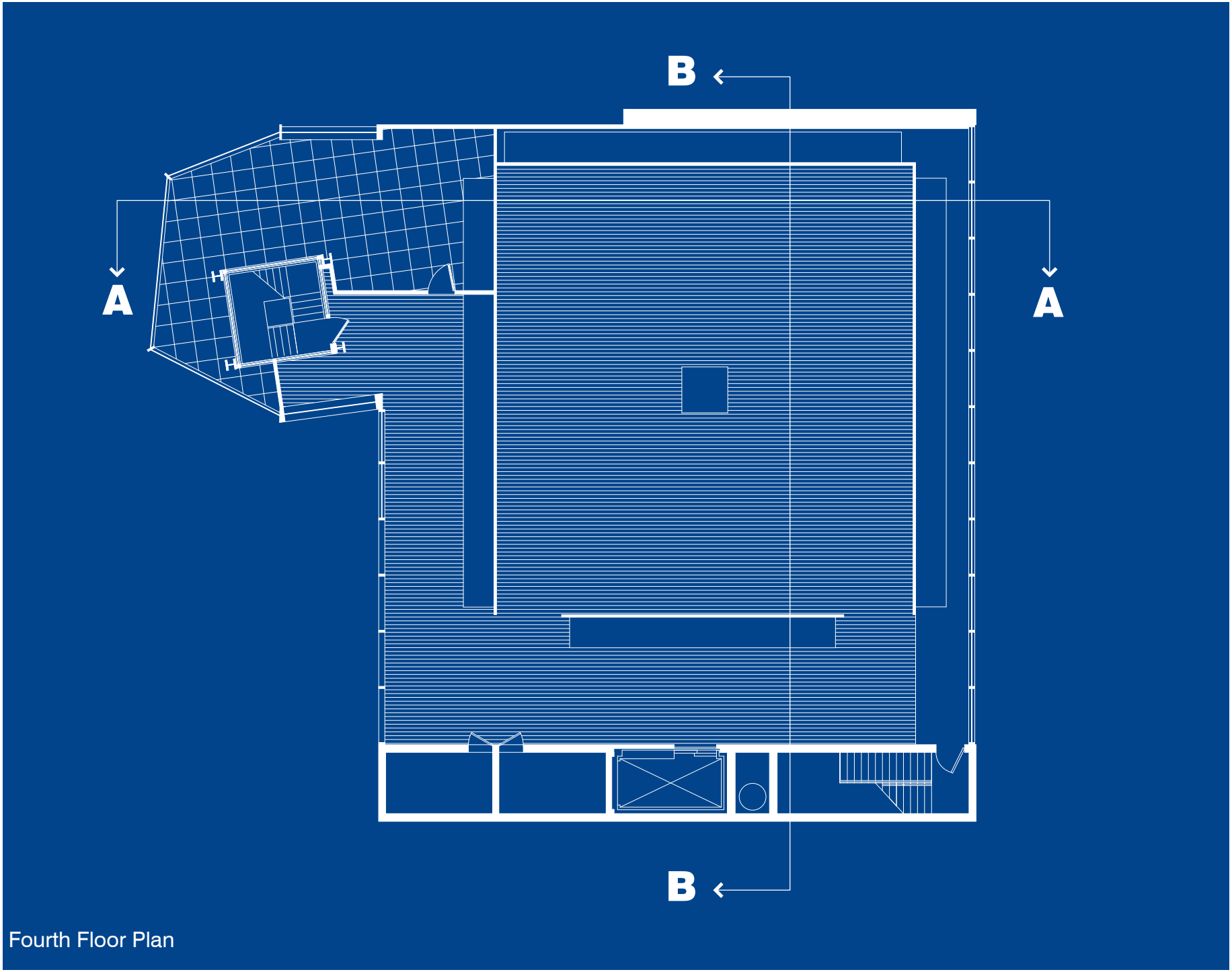
First Floor Plan



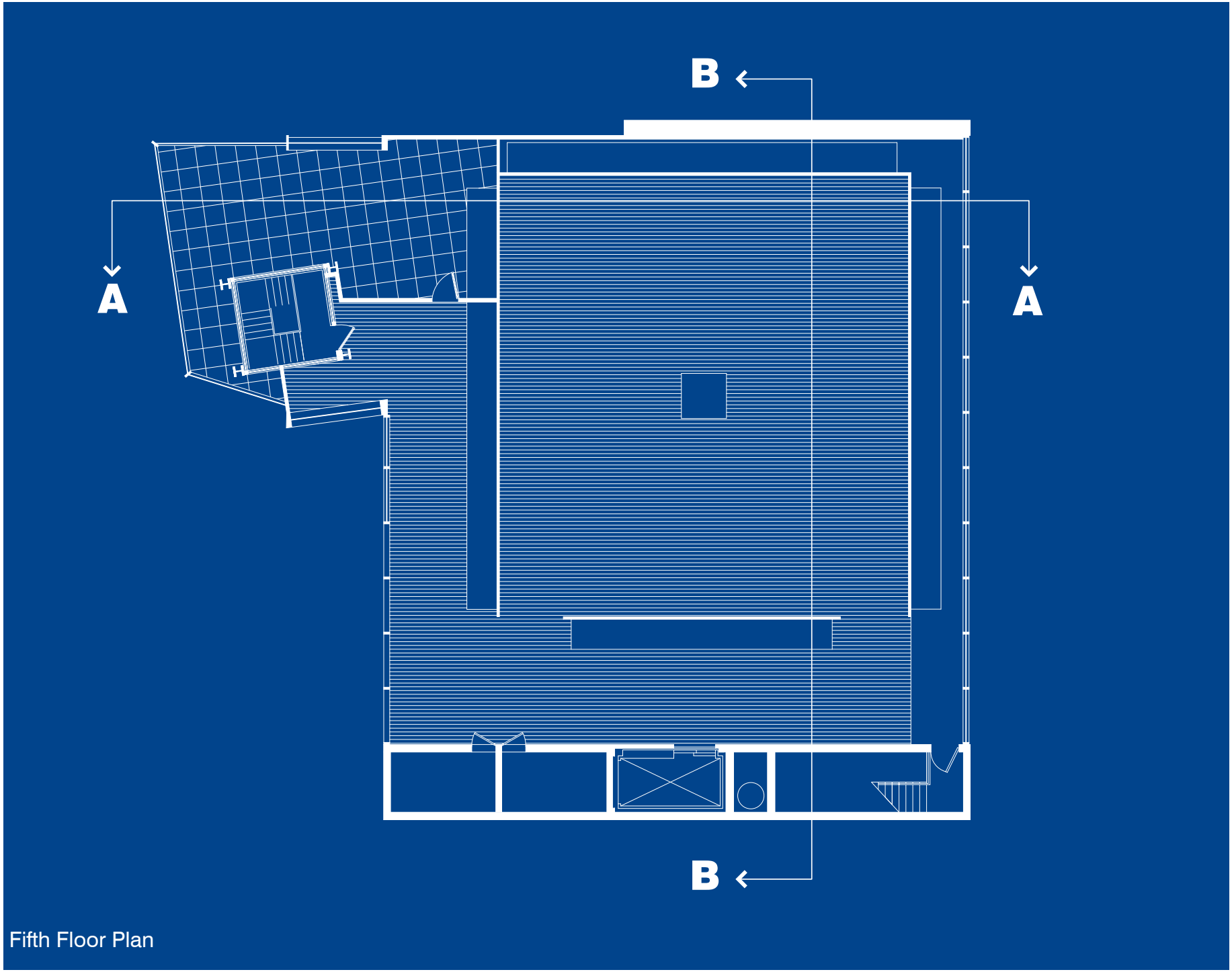
Second Floor Plan



Third Floor Plan

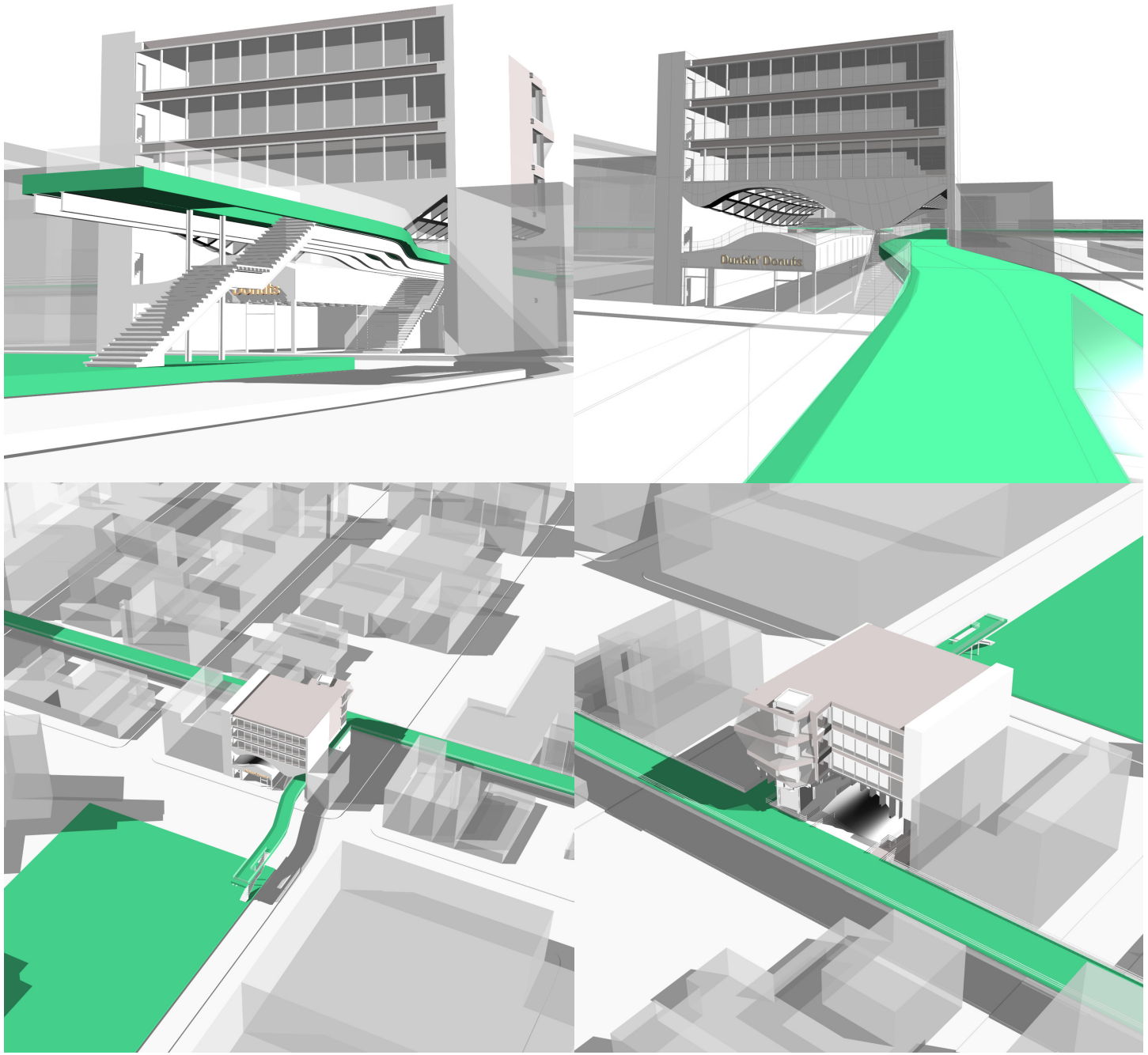


Fourth Floor Plan

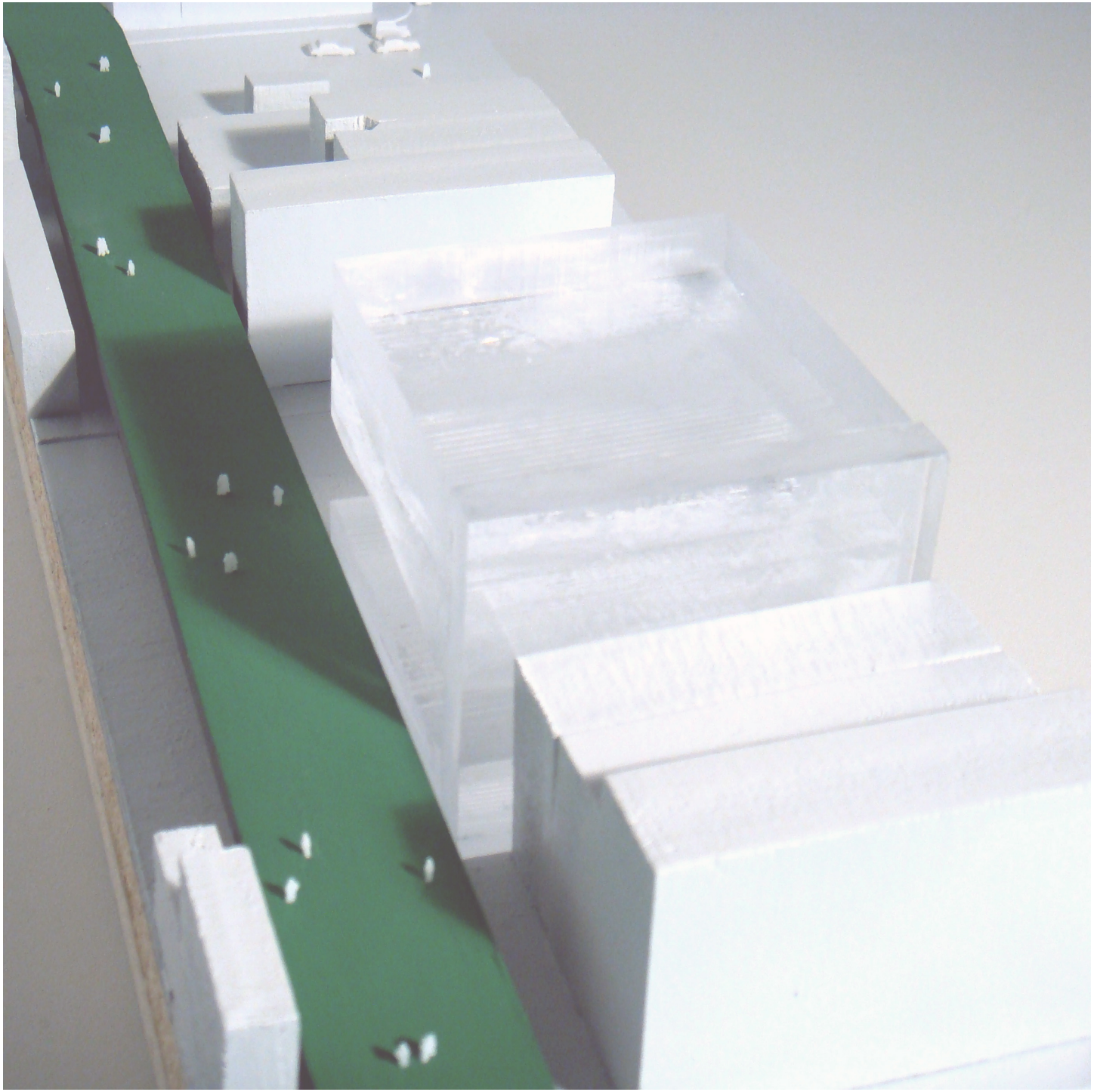


Fifth Floor Plan

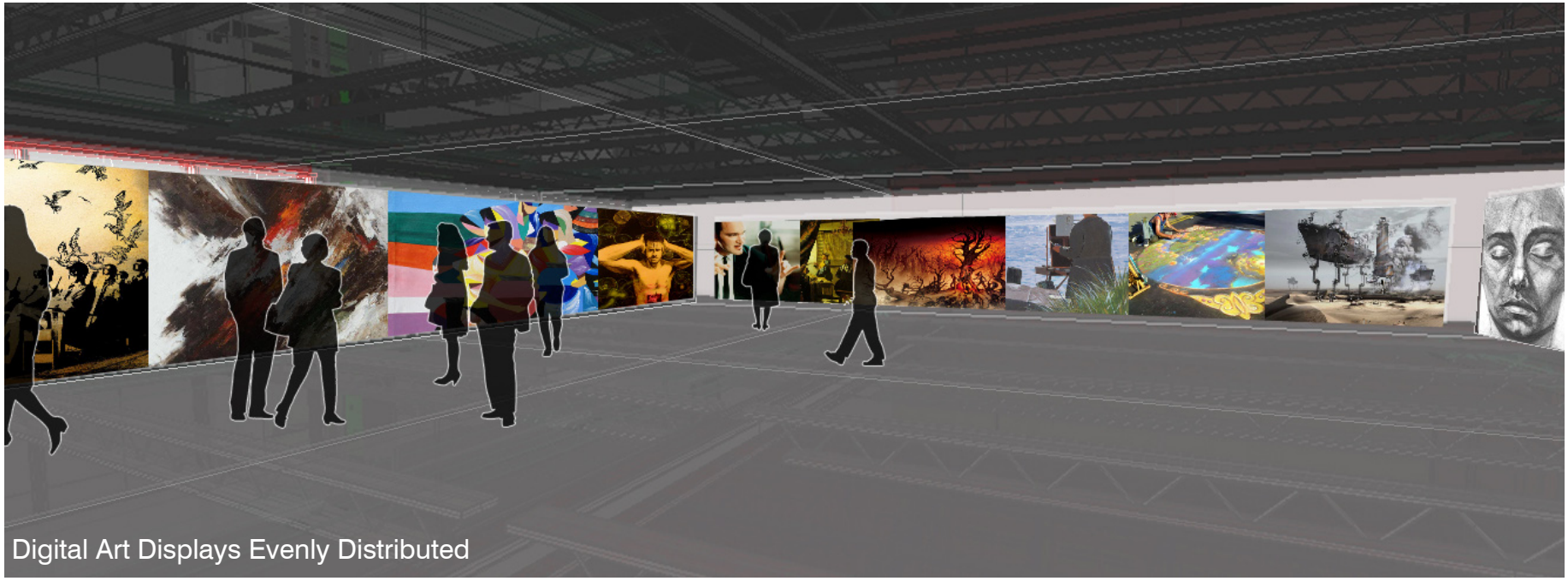
Quick renderings describe the urban nature of this intervention.



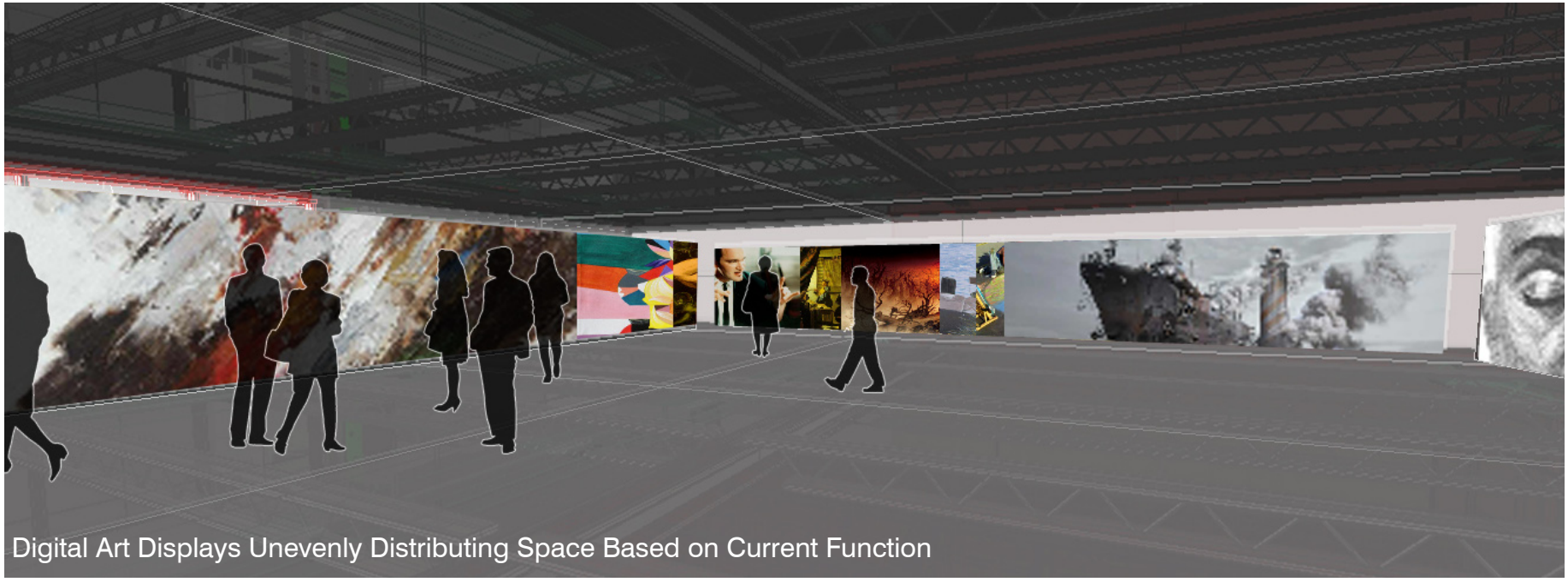
This physical model is made of layers of 1/2” plexiglass and represents the conceptual basis for the form of the Chelsea Art Gallery



Exterior View From Pedestrian Bridge Over Chelsea Park

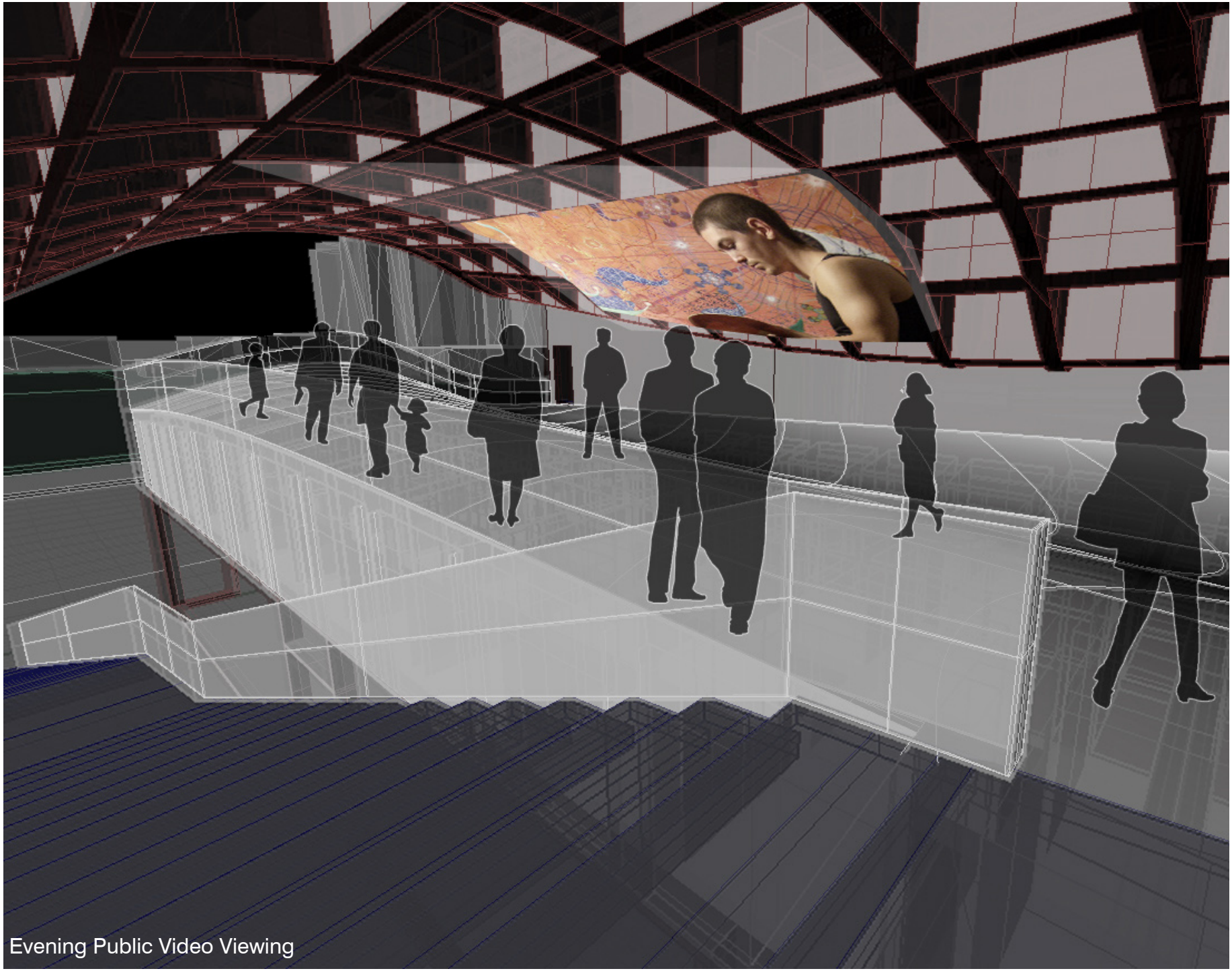


Digital Art Displays Evenly Distributed



Digital Art Displays Unevenly Distributing Space Based on Current Function

Interior View of Mezzanine Level From The Highline



Evening Public Video Viewing

Contrarian Urges

Animation Techniques in Architecture: Suggestions for meaningful applications of animation in architecture based on a critical analysis of existing techniques.

Thesis Statement:

Animation techniques are currently one-dimensional and underproductive as design tools. Their ability is limited to shaping conceptual form. Emergent techniques in animation must apply to a broader range of topics. These topics may be conceptual, contextual, or programmatic. This thesis proposes the development and implementation of these new animation techniques across a broader scope of the architectural design process.

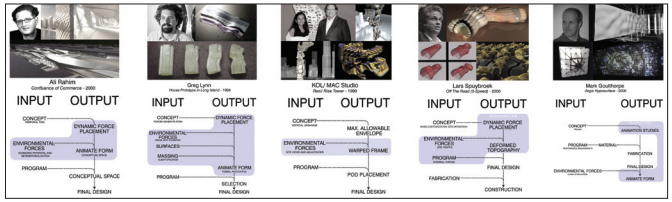
Animation:

The rapid display of a sequence of images of 2-D artwork or model positions in order to create an illusion of movement. It is an optical illusion of motion due to the phenomenon of persistence of vision, and can be created and demonstrated in a number of ways. The most common method of presenting animation is as a motion picture or, although several other forms of presenting animation also exist.

View of Chelsea From The Empire State Building

Analysis Process

The major research component of this thesis consists of a critical analysis of five users of animation in architecture. The practitioners who were chosen are leading advocates of animation techniques in architecture. The objectives of this research were two-fold: one, to reveal an underlying process which guided the use of animation software in the project; and two, to reveal the manner in which the architect was able to control the design process. The diagrams below reveal a similar thread running through all of the projects. Animation software was used to map forces which were external to the project as a means of justifying the final form. Also exposed was the role of the architect as one who merely organized and placed information in the computer which then became the designer.



Case Study Diagrams

Site Photographs

Site visits in November, January, and March have yielded a well rounded understanding of the site. Situated on the west side of Tenth Avenue, the site is neighbored by a deli to the north and an Indian restaurant to the south. To the east is Chelsea Park: a large, fenced-in green space with accommodations for soccer and baseball. The "green" is actually an Astroturf material but suits year round activities.

The Chelsea art gallery district is home to over 200 art galleries. For many art enthusiast this may be the mecca of modern art. But traversing Manhattan's western edge can be exhausting even for the physically fit. The bulk of Chelsea's galleries are located between Ninth Avenue and the river, and between 19th Street and 30th. There are no subway lines at hand, and public restrooms and restaurants are few and far between.

Site Elevation Looking West

Site Description

Chelsea is a neighborhood on the west side of Manhattan north of Greenwich Village and south of the Clinton neighborhood. Currently this post-industrial neighborhood is home to a mix of cultures including a large art community, a substantial gay community, and many bars and clubs. Currently, it is undergoing gentrification due to the rehabilitation of the Highline elevated railway into a new public park.

The nature of this new park will be a pedestrian oriented elevated landscape running through the middle of New York City. Extensive landscaping will highlight various local flora and fauna. Water features will be incorporated as well. The Highline structure will also be highlighted as visitors ascend through the structure on stairs and elevators.

Satellite Image

Eidetic Image

This image speaks to the nature of traffic flow in New York. In this dense urban environment, clear traffic-ways are in constant use. The Highline Park will inevitably become a transportation corridor for those who live by it. The elevated park will provide a quick shortcut to many locations on or near its route. The Chelsea Hypermedia Gallery will tap into this traffic flow to draw visitors to its exhibits, in hopes of generating interest and awareness about the art scene in Chelsea.

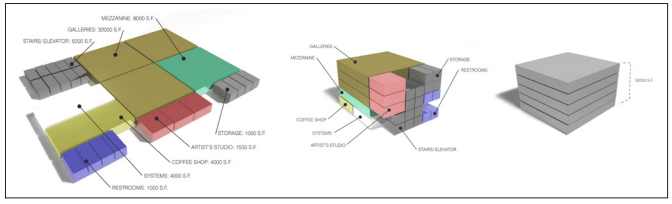
Eidetic Image

Vehicle / Program

This thesis proposes the construction of a physical gallery that contains references for each of the 206 galleries in Chelsea. The program consists of gallery space, public plazas, a coffee shop, an artists studio, and public amenities such as restrooms and circulation corridors. Within the building, each gallery will be allotted 100 square feet of digital display space within the proposed building. Galleries will then present their work through videos on the screens allotted to them. In this way users can navigate through the displays and familiarize themselves with each of the galleries and their artists.

Over time, the allotted digital display space will shrink or grow depending on number of visitors the gallery receives. This will provide an animate environment that users can experience as it changes over time.

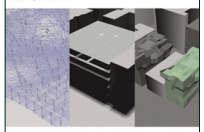
The current New York zoning laws limit development on this site to a floor area ratio of 5. This allows for up to 50,000 square feet of development. The maximum height allowed is 75 feet.



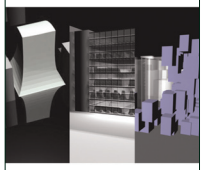
Program And Spatial Layout

THE DESIGN PROCESS

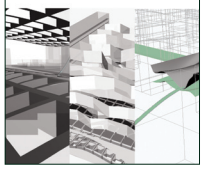
Techniques 1 - 3

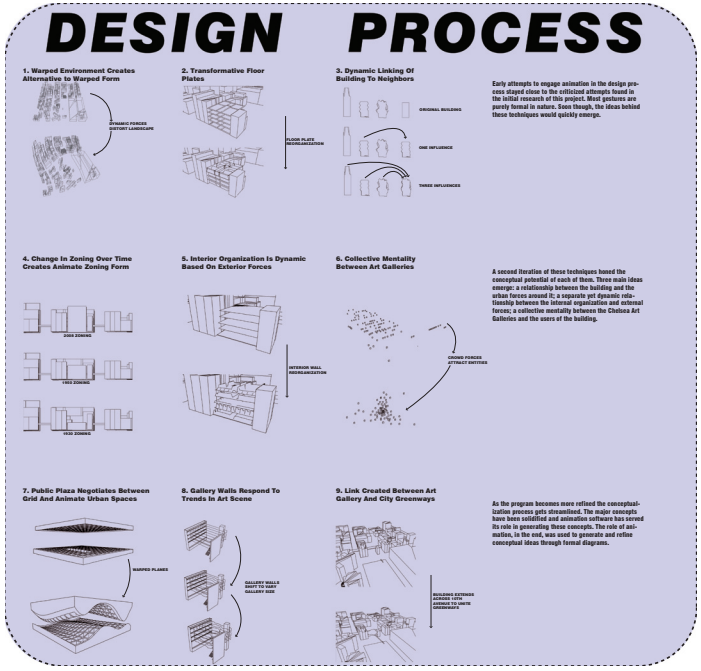


Techniques 4 - 6

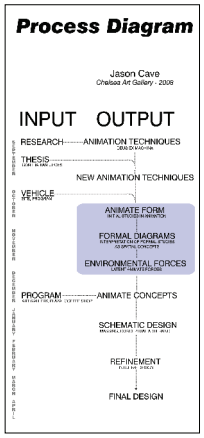


Techniques 7 - 9

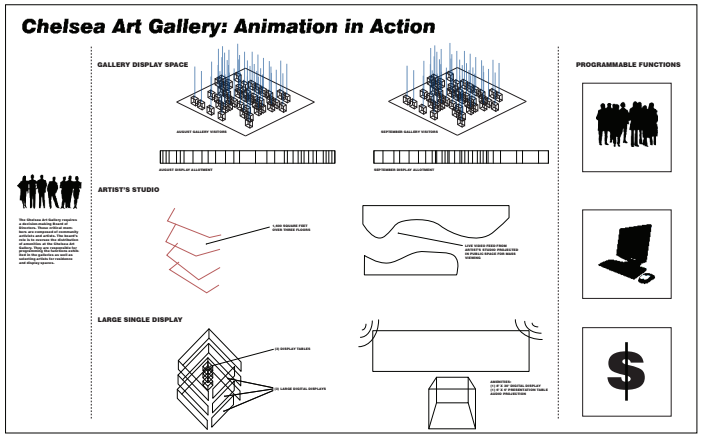




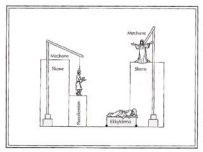
Process Diagram



Chelsea Art Gallery: Animation in Action



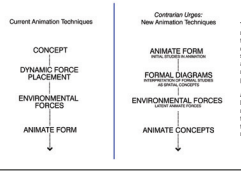
Conclusion



"Deus ex machina" is a Latin phrase that literally means "God from a machine". It is a phrase that is used in playwright criticism and refers to an improbable device, that the writer introduces, that resolves the plot. The Greek playwright, Euripides, is known for using this plot device for resolving a seemingly hopeless situation.

Aristotle first uses the term in his criticism of Euripides, and his play Alcestis. In the play, the heroine Alcestis agrees to give herself to Death in exchange for her husband's life. In doing so, she imposes a series of unreasonable promises upon her husband. He then is forced to choose between letting Alcestis die, and obeying these promises. To resolve this, Euripides inserts Hercules, who comes down from the heavens to rescue Alcestis from Death and free her husband from the unreasonable promises.

Contemporary animation techniques act as a Deus Ex Machina to the architectural design process. Animation is used to generate outside forces, which then act on the architecture to resolve the form. The user is left bedazzled and disillusioned. In the end, the outer form of the building has little to no effect on the interior spaces. The building also has no internal dialog, but represents a preformed notion of what digital architecture should be. Instead, attempts should be made to resolve architecture from an internal logic in the design process.

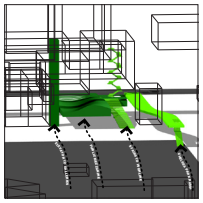


The design process generated by this thesis moves in an opposite direction of the process found in existing animation processes. In contrast to the Deus ex machina, this process could be described as "Tar-zalina-zaque". This new design process starts by effecting a formal solution. The following steps trace the formal generation back to its animate roots in hopes of finding a conceptual basis. This use of animation techniques seeks to highlight the latent potentials that are present in animation software.

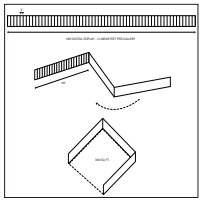
As a result of this new diagram, the architectural design process is allowed to unfold under its own power and operate within its own set of rules. Form is not predetermined as the end result in conceptual space. In the end, this thesis puts forth a diagram that can be emulated in further explorations. The notion of animate concept generation is one that may apply to a multitude of projects.

Board 1 of Final Presentation

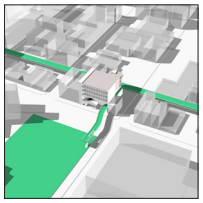
Continuity And Expansion Of Green Space



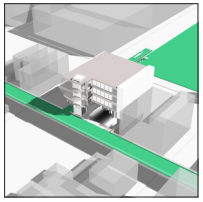
Modes Of Circulation And Access



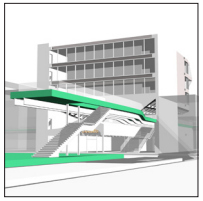
Gallery Layout



Aerial View Looking Southwest

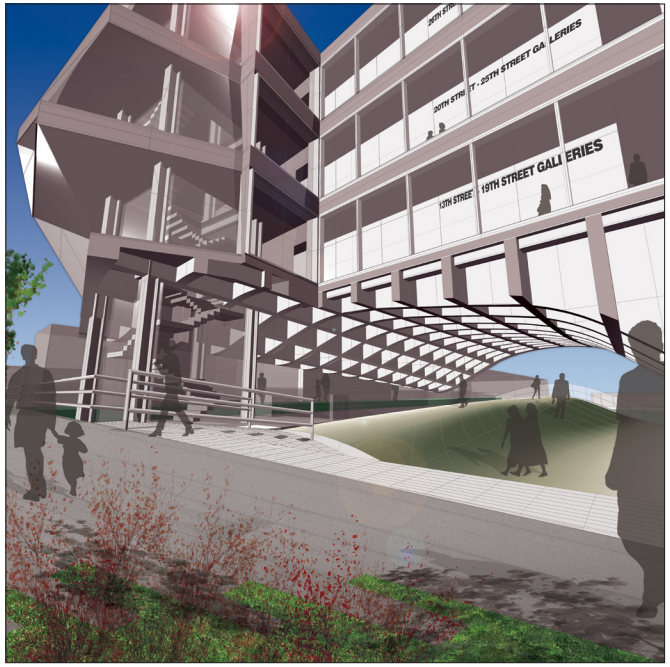


Aerial View Looking East

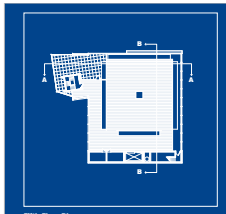


View Looking West

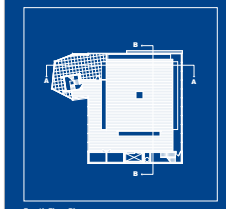
Exterior View From Pedestrian Bridge Over Chelsea Park



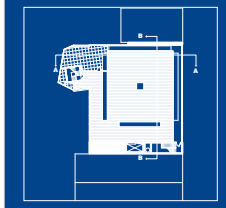
Interior View of Mezzanine Level From The Highline



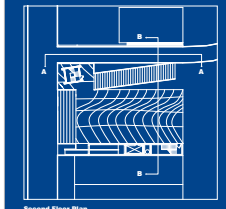
Fifth Floor Plan
Scale: 1/16" = 1'0"



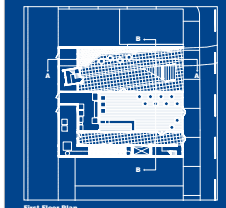
Fourth Floor Plan
Scale: 1/16" = 1'0"



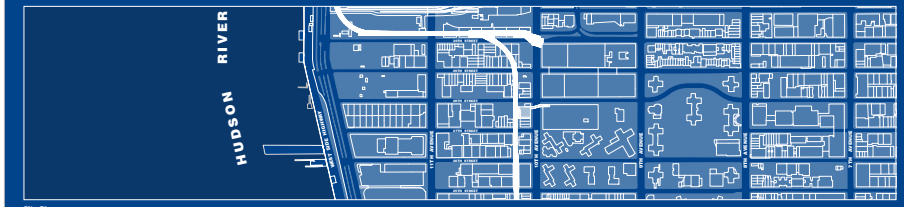
Third Floor Plan
Scale: 1/16" = 1'0"



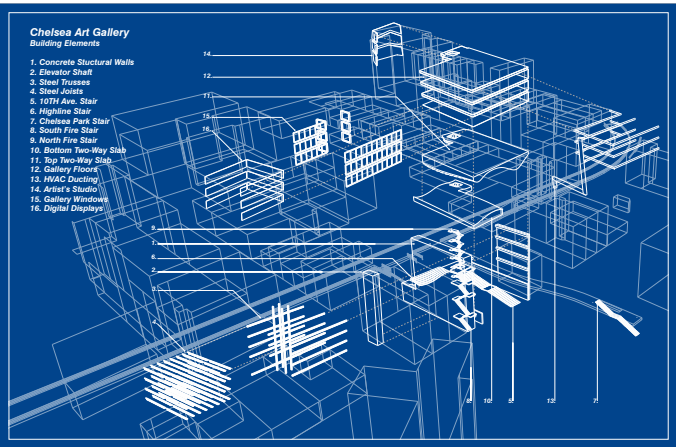
Second Floor Plan
Scale: 1/16" = 1'0"



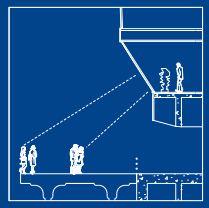
First Floor Plan
Scale: 1/16" = 1'0"



Site Plan
Scale = 1:2000

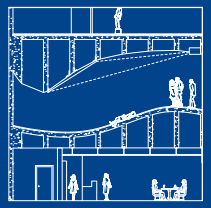


Program Diagram



Detail
Scale: 1/4" = 1'0"

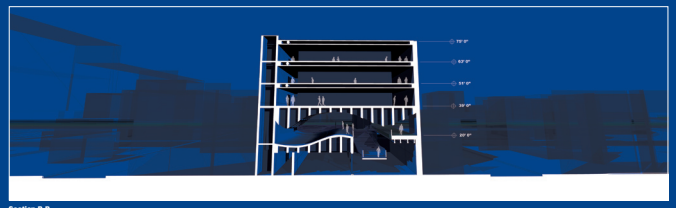
The artist's studio is a space that can be leased to an artist at the discretion of the gallery board members. The benefits of using this space is the high amount of visibility that ones art will receive while working in this studio. Pedestrians along the have a full view of the studio through floor to ceiling glazing.



Detail
Scale: 1/4" = 1'0"

An additional benefit of the artist's studio is the increased exposure provided by the gallery through public live video feeds. All activity in the artist's studio is recorded and aired in the public plaza space in the ceiling. The sloped ground plane provides a comfortable place to lay back and stare at the projection on the ceiling.

Section A-A

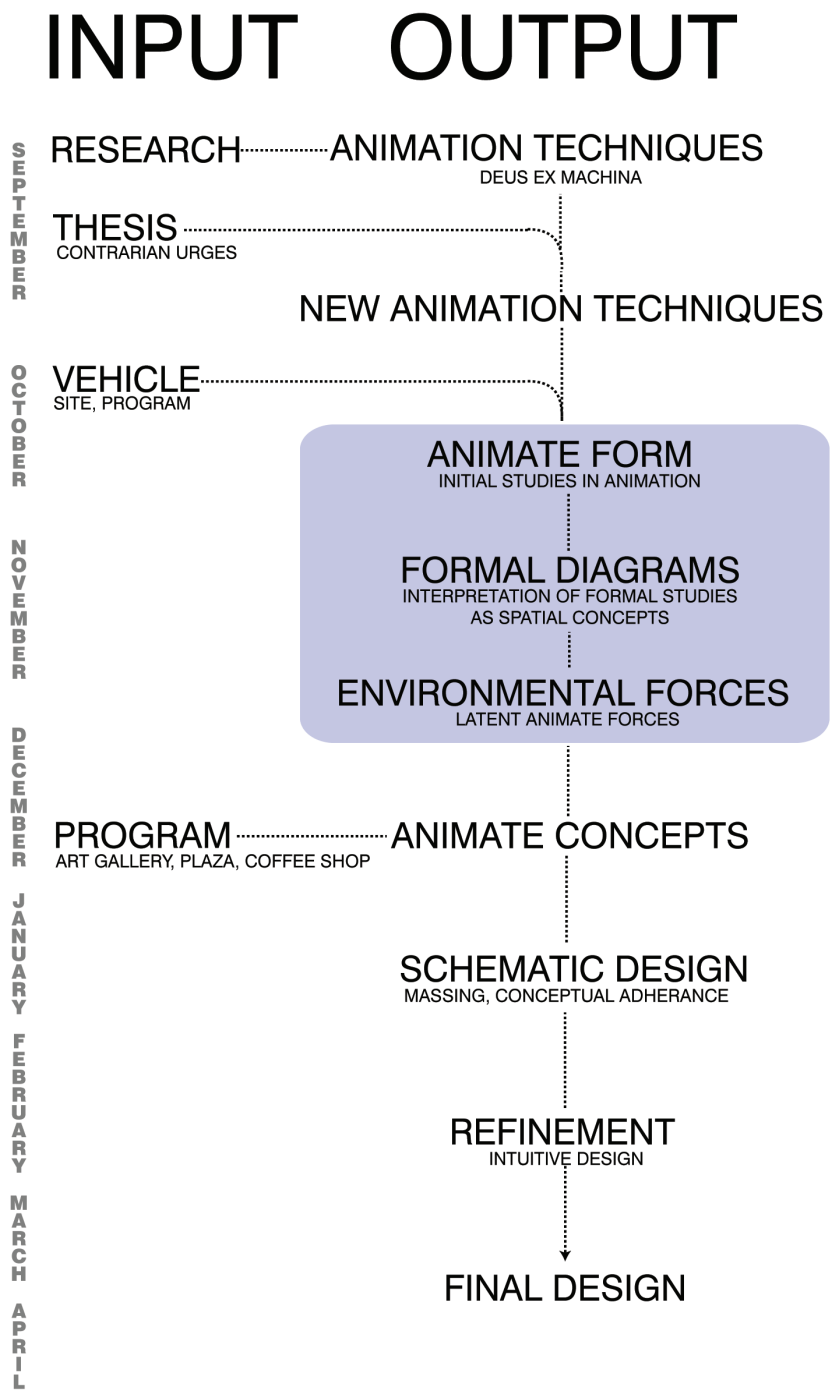


Section B-B

Board 2 of Final Presentation

Conclusion

Final Design Process



Current Animation Techniques

CONCEPT

DYNAMIC FORCE PLACEMENT

ENVIRONMENTAL FORCES

ANIMATE FORM

Contrarian Urges: New Animation Technique

ANIMATE FORM
INITIAL STUDIES IN ANIMATION

FORMAL DIAGRAMS
INTERPRETATION OF FORMAL STUDIES AS SPATIAL CONCEPTS

ENVIRONMENTAL FORCES
LATENT ANIMATE FORCES

ANIMATE CONCEPTS

The diagram on the previous page tracks the eight month time period over which this thesis occurred. This new diagram describes the process taken throughout the duration of this thesis. In it, one should see the attempt to remove animation from the form-making process.

The design process generated by this thesis moves in an opposite direction of the process found in existing animation processes. In contrast to existing techniques, this process does not make form-making its end goal. This new design process starts by offering a formal solution. The following steps trace the formal generation back to its animate roots in hopes of finding a conceptual basis. This use of animation techniques seeks to highlight the latent potentials that are present in animation software.

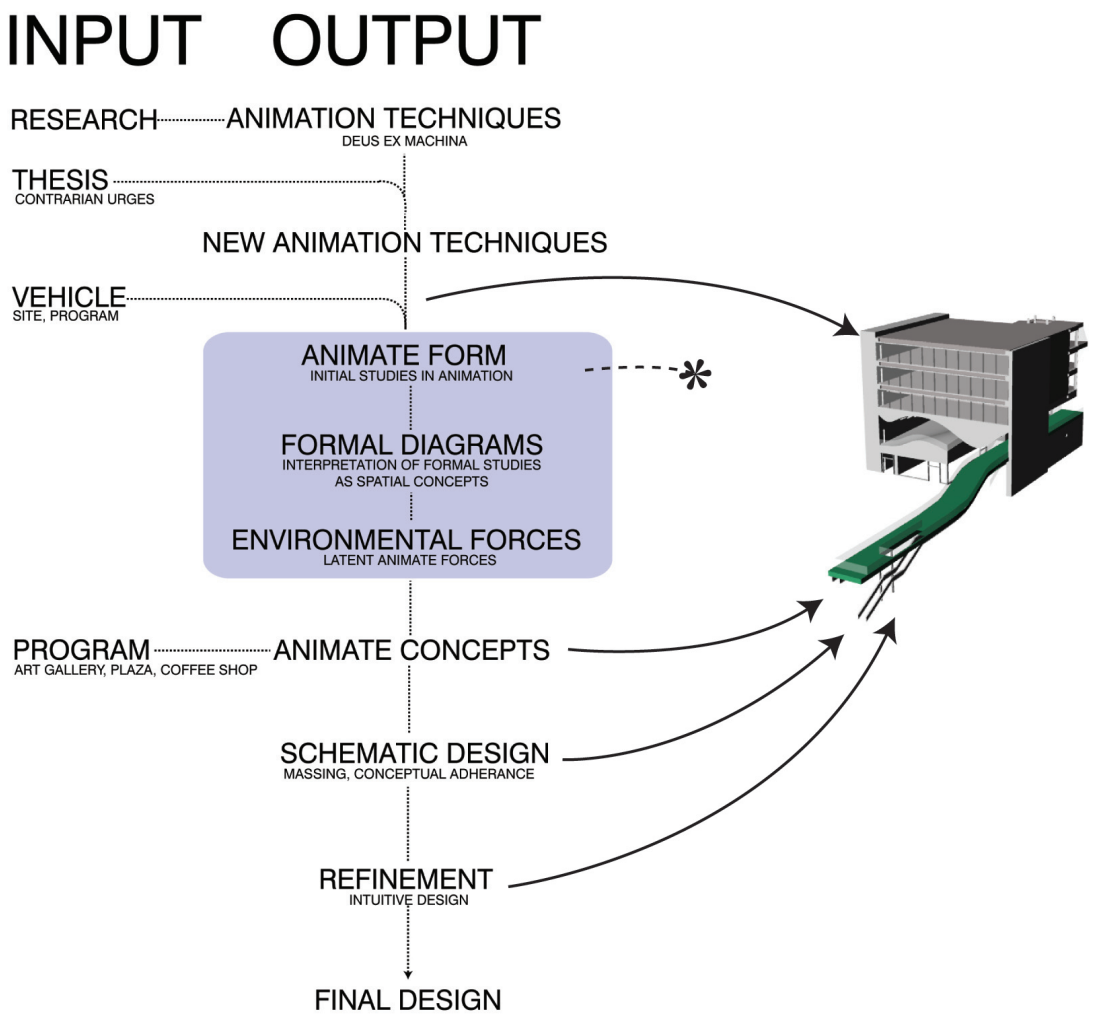
As a result of this new diagram, the architectural design process is allowed to unfold under its own power and operate within its own set of rules. Form is not predestined as the end result is conceptual space. In the end, this thesis puts forth a diagram that can be emulated in further explorations. The notion of animate concept generation is one that may apply to a multitude of projects.

Critical Analysis of Final Faculty Review

Comments from the faculty were less than enthusiastic. Of most importance was the apparent lack of connection between the new design process put forth and the finished architectural creation. The diagram to the right describes the true relationship between the final process and the finished architectural piece.

As an idea, this thesis proposed the generation of a new process; one that integrated the notion of animation into the design process as more than a form generator. *Quite by accident and in an honest effort to remove animation from the form-making process; animation was not integrated into the final scheme at all. This produced, what critics deemed, too few points of contact between the presumed aim of this thesis and its final trajectory.

Perhaps too hard a stance was taken against the form-making process of current animation techniques. The authors of these techniques surely have the same misgivings that have motivated this thesis. However, the lack of new ideas that truly incorporate the notion of animation in a novel technique left critics wanting more. In the end, this thesis certainly stands to gain from its critical analysis of existing techniques and its attempt to push the conversation about animation and architecture forward.



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Acknowledgements

The last seven years have been a great ride. This thesis has been a testament to my passion for architecture and my peers in the field.

I would like to thank all of the faculty members who engaged with me on this project over the last year. Thanks to my mentor: Jeff Day and Critics: Chris Ford, Doug Jackson, Hyun Tae Jung and Chip Stanley.

Thanks to all my friends who helped me at one point or another, brought me food, provided caffeine, helped me stay awake or simply listened to my rants.

Finally, I would like to thank my wonderful fiance` Chantel. Thank you for all the support, meals, phone calls, back rubs, encouraging words, and for dreaming with me on this.