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The era of technology, media and consumerism that exists in contemporary cities has diminished the opportunities to offer society direct encounters and personal dialogues with the urban realm. This has caused the visual sense to predominate over the rest of our senses, turning society into pure spectators in the city. Taste, sight, smell, sounds, touch and balance are all senses that need to be ordered, translated and processed by perception at the time we confront a place. The architectural space should be perceived with all senses in the emotional experience of it. Architectural Categories, such as shadows, lights, colors, textures, and materials, that complement architectural form, should be combined in the space for the purpose of impacting the perceptual process in humans and transcending their memory. Supporting the idea of a tactile rather than a visual city, this thesis attempts to analyze form and architectural categories to materialize a temporal “Art-chitectural” urban object adaptable to a variety of public situations. The exploration seeks to offer citizens different ways to perceive and experience urban spaces, while encouraging social participation and interaction through sensations, contemplation and physical engagement. The “Art-chitectural” object has been developed and tested through digital imaging and physical models; these evaluations confirmed the endless applications and basis for actual materialization.

INTERACTIVE PUBLIC “ART-CHITECTURE”: ENGAGING THE CITY AND ITS  
INHABITANTS

by

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Approved by

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APPROVAL PAGE

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## CHAPTER I

### INTRODUCTION

This design thesis focuses on the exploration of the phenomenon of perception, specifically architectural perception. The concept of perception has been associated with the city, which is the main scenario for exploring and experiencing this phenomenon. It is in the city where humans' architectural manifestations dwell, while at the same time it is adapted and transformed by people who look everyday for better living solutions, making humans participants in a constantly changeable scenario. Perception entails aesthetic experience, where the dialogue between the spectator, objects, and their surroundings is immediate. On the other hand, a sense of feeling while we perceive a space is indispensable, as this is the mediator between us and the existing world that can only be possible through our senses.

The objective of this thesis is then to explore different ways to perceive and experience ordinary urban spaces in order to enhance the potential for social interaction through sensations, contemplation, and physical engagement in the urban realm. How can architecture enhance human perception and experiences within the public realm? Which are the fundamentals in a space for making architecture more than just a physical expression but a piece of art? How can architecture be eternally memorable regardless of its temporal or permanent condition?

Human situations, events, meanings, materiality, and experiences are analyzed in order to create an “Art-chitectural” urban piece that can be adapted to a variety of situations. The piece has been conceived to give temporary solutions for enhancing ordinary urban spaces, catching the attention of its citizens and encouraging interaction among them. The work seeks to provide solutions for creating an intimate connection between human beings, art, and architecture, hence triggering the human senses in a way that viewers cannot remain as pure spectators but must become actors and participants within the urban field. The creation of an “Art-chitectural” object could be perceived as “temporary”; however, its “permanence” can metaphysically exist in the experiences and memories within each participant’s mind.

In this work, the designer refers to the concept of “Art-chitecture” to describe the precise combination of colors, forms, materials, scale and textures that make architecture a complete piece of art. The combination of these categories will be essential to this work so that it can provide spectators with a memorable and valuable experience.

Based on theory and design precedents, the designer has created different prototypes and visualizations to show how the “Art-chitectural” piece can be adapted to different existing scenarios within the urban realm. In addition, the designer has conducted further studies to show how the “art-chitectural” piece may not only *modify* a space but also can *create* a space addressed to multiple users.



## CHAPTER II

### REVIEW OF LITERATURE

The following research material has been structured in a certain way that allows for a better understanding of the very different aspects explored during the research stage: from large to small, from broad to narrow, from perceiving the city to actually feeling a particular space within the urban realm. Additionally, the designer has also studied the variables and elements that work together in order to make these transitions happen smoothly. The designer has divided this Review of Literature in two different parts: Theoretical Precedents, which are the theoretical bases from architects and philosophers that have been analyzed to build up this research; and Project Precedents, which are design precedents and architectural projects that support the proposed argument and that serve as reference in the final design outcome.

#### **A. Theoretical precedents.**

##### **Perceiving and experiencing the city.**

The city is the context in which thousands of people interact with each other everyday, and it is for this reason that it has been considered in this research as the most appropriate place to provide perspectives for understanding the confrontation of social existential conditions. The city is known as the place where citizens are able to perform their lives, express their feelings, and develop their identity. The connections between the

self and the urban realm can be achieved by choosing different ways to experience the city; we can choose to navigate the city by walking, driving, running or flying. At the same time, we can choose the speed - slower or faster - and then we can choose a sensory focus such as smelling the city, observing it, listening to its sounds, touching its textures. We can also determine how we navigate through the city: we may explore it randomly given its physical limitations, following the shortest paths to reach places, looking for landmarks or monuments, or simply following sensory intuition. When we visit cities we silently observe and learn about the particular identity of that society, its traditions, ethnicities, manifestations, architectures, lifestyles. These experiences will be later transferred into the personal memories of our bodies; therefore we become part of that identity as the structures of the environment had played a central role in our minds. Hence, the images that exist in our minds of visited cities do not result by purely visualization, but rather after a multisensory experience of that place. (Pallasmaa, 2005)

The city is understood in this research as a gathering space, mobile, dispersed, empty, unstable, full of information and changes. Cities rely on public spaces, as these are one of the main elements during the cities' design and configuration and also constantly changed by individuals' everyday feelings for expressing their lives. For these reasons, individuals live in and change the spaces of a city every second, though often in an unconscious manner.

We should always expect a great impression of a public space at the level where it really matters, in our interaction with the places where we live, work, and play. They should be enjoyable; we should be cheered by what we see, perhaps perplexed, curious; a

daily encounter should not become a dull routine. This creates a complex rationale for why we respond to such objects and images the way we do, because we have found connections while navigating and experiencing these aspects of the urban environment. According to Pallasmaa (2005) we should encounter in architecture, as well in art, our “being in the world” in an intensified manner. This means that architecture should have the capability to create images and emotions in our minds equally true as the actual encounters in life. If we have found real connections while experiencing any particular space, the process of experiencing, remembering, and imagining this place in our minds should move us as by anything actually encountered. (p.130)

The city seems to be the main scenario where participative and interactive architectural spaces can dwell. It is within this context that a variety of cultures and manifestations converge. How can culture influence the development and changes in a city? Culture and society have been the driving forces in determining cities; social diversity entailing races, cultures, and genres have been constantly performing on the city stage in order to express frequently changing ideas, thoughts, and feelings. In the book “Art Space and the City”, Shields explains, “ The city itself can be treated as a representation of the society which constructed and used it.” (Miles, 1997, p.14)

We all have a culture and an identity that defines who we are. Differences in behaviors including the way we perceive spaces might be different among all humans; a combination of these behaviors is what makes a city constantly evolve. The city is a physical representation of culture: the materials, the smells, color, and surfaces are all cultural manifestations that can be developed and modified over time. Culture is both the

interface through which we interpret everything and the machine through which the city is created and transformed; cities expand in many directions and shaped by the local culture that inhabits it.

Pallasmaa (2005) writes that technology, compulsive shopping, and media culture in the contemporary city are constant attempts to manipulate the human mind, by offering thematic environments, commercial conditioning, and inactive entertainment.

Architecture and art have the mission to defend the autonomy of individual experience, provide an existential ground for the human condition, and safeguard the authenticity of the human experience in the cities. (p.250-262)

### **“Art-chitecture” and individuals relationship.**

The materialized “Art-chitectural” object should establish a connection that transcends the spectator’s perceptual process through not just tangible elements based on pure image of this object, but also intangible elements based on the lived experiences that will be powerfully filed in the spectator’s minds. Kevin Lynch states that “ Moving elements in a city, and in particular the people and their activities, are as important as the stationary physical parts. We are not simply observers of this spectacle, but ourselves a part of it, on the stage with the other participants.” (Lynch p. 2)

The city has been the main place for experiencing art as a form of cultural entertainment and knowledge, making it the ideal place for encountering “Art-chitecture”. Besides museums and galleries, artists have translated abstract concepts into

tangible events in order to offer audiences contemplation and experimentation within the public realm. Current tangible artworks present in buildings, parks and streets have enhanced participation among citizens by gaining their interest. Art events should emphasize architecture of social relations that invite the visitor to spontaneously perform and thus construct alternative physical, architectural, urban and social meanings.

According to Pallasmaa (2008) “Today’s city is described as the city of the eye, where rapid programmed movements and actions have detached us from a bodily, experienced, and intimate contact with the city” (p. 142). However, this concept should not be generalized as cities around the world enclose different schemes, landscapes, population, and cultures that make each city different at the moment humans perceive and experience them. For example, European cities are closer together, densely populated, allowing people to walk distances as a substitute for automobile use as these become unnecessary. Hence, a more direct interaction between the pedestrian and the city is offered. On the contrary, American cities are sprawling and designed around the automobile for the most part, isolating and separating people from interaction and experiencing the environment.

When perceiving art in a gallery or museum, visitors feel they are in a controlled environment: they are a cordoned-off from a venerated object where only a visual connection seems to be present at that moment. Artists, museums, and galleries have been successful in bringing the art from museums to an outside environment; creating a wider public experience and encouragement of sociability within the city. This is where the interactive experience is at its most powerful level, where it has the ability to transcend

the everyday, causing people and spectators to pause a minute at a street corner or a gallery foyer to participate, be playful and have fun.

### **Feeling and experiencing space.**

The perceptual process can be considered as an individual capacity for processing, ordering, and translating certain experiences through our senses: taste, sight, smell, sounds, touch and balance. The perceptual process entails a sequence of steps that begins with the environment that leads to our capturing of a stimulus and an action in response to that stimulus. Within the process of perceptions is the sensation that can be described as the immediate basic experiences that are generated by simple stimulus. The process of visual perception reacts to a stimulus from our bodies, generating an internal representation of what is occurring outside. This information is analyzed afterwards and goes to our memory. Sensorial memory will allow us to retain impressions of sensorial information that will help to create an interpretation and final representation of a unique object.

Zumthor (2006) explains that, the phenomenon of perception entails experiential sensations. Design work starts from a physical feeling, and the fact that someone has to feel the essence of architecture deep inside one's body for experiencing it. Experiencing architecture in a concrete way means to touch, see, hear and smell it. By experiencing architecture we have the opportunity to act and later interact with any space, and it is

through interaction between the human body-mind and the physical elements of a building that we are able to feel architecture. (p. 25)

Perception in architecture is based on experiencing materiality and its sensory properties. It is examining architecture from within consciousness and experimentation.

In the book *Questions of Perception*, the authors make references to Maurice Merleau-Ponty and how he describes the human body “as an expressive space, which contributes to the significance of personal actions. The body is also the origin of expressive movement, and is a medium for perception of the world”. Bodily experience gives perception a meaning beyond that established simply by thought (Holl, Pallasmaa, Pérez-Gómez, 1994) For these reasons, perception is not related to a specific sense or sensory organ. It is a multi-sensory and complex process in which the human brain is capable of absorbing and reacting towards many aspects present in the outside world. Perception not only creates and filters our experience within a particular space, it also allows us to act within this environment. These actions will occur after the perception process is finished. A variety of responses can take place during this stage, like listening to specific sounds or touching a particular object. These actions will create the experimented sensations within a space, triggering the interaction between the place and human beings. Experiencing architecture means being able to feel light, shadows, colors, textures, and materials; which are all part of the complete process of perceiving architecture, and for this reason: “Architecture, more fully than other forms, engages all our sensory perceptions. The passage of time; light, shadow and transparency; color phenomena, texture, materials and detail all participate in the complete experience of

architecture.” (Holl, Pallasmaa, Pérez-Gómez, 1994, p. 41)

The perception of architectural spaces is strongly related to their surroundings, offering visitors and participants a perfect place where they can remain and exist. Visitors should be able to analyze and read the place, observe colors, materials, textures and architectural forms. They should also observe its particular beauty. For example, in Zumthor’s Vals spa, the architect has conceived every material to be appealing to the human senses and to lead us to feel architecture. Flamed and polished stone, chrome, brass, leather and velvet were deployed with care to enhance the inhabitant’s sense of embodiment when clothed and naked. Zumthor also took advantage of the incorporation of water, which produces the phenomena of refraction, a particular magic in architecture. He has created an entire atmosphere in order to perceive a variety of situations as coherent and unified.

Perception of a space or a building such as this might not be the same for each spectator. Each individual is distinctively attracted by each different element and invest a defined amount of time exploring our interests and curiosities. This whole perceptive process is not a linear path and is not accomplished in a particular frame of time; each spectator has different interests and ways to explore a space. It is true that whenever we enter a space, our first impression of it can be unfolded in just seconds. Our first impressions of a space are directly related to its surroundings; atmosphere acts with a perfect coherence and unity, where forms, colors, materials and textures create harmony and rhythm, adding to the perception of the space as a whole. Our feelings and experiences evolve through silent meditation, and we feel able to communicate with the



space, we talk to ourselves, remember past experiences, daydream, and then the space acts in response to us through the silence of perceptual phenomena. Pallasmaa (2008) assures that “ The sense of silence connected with an architectural experience is perhaps due to the fact that we are listening so intently to ourselves” (p.76). We experience all the attributes of a particular space as a whole, the entire atmosphere that includes colors, lights, sounds, particular smells and shadows. These elements allow complete perception and experience of environment and are the only ones that take us to another level, to feeling architecture. In order for architecture to offer experience and emotions to visitors it should be conceived as a whole, meaning that “Form” might catch our first impression of a space from a distance, but the categories that compliment architecture are essential for creating a real quality in the architectural space that will drag us in to feel the space (Pallasmaa, 2005). For these reasons, architectural categories such as materials, texture, color, light, scale, and shadow will be carefully explored during this research for achieving the final outcome: an “art-architectural” object.

## **B. Project precedents.**

### **1. Copenhagen Harbour Bath.**

Location: Copenhagen- Denmark.

Architects: BIG.

Characteristics: Ground modification + Urban landscape intervention + Codification (Pavement materiality) + Social gathering.



Figure 1: Copenhagen harbour bath ([www.archdaily.com](http://www.archdaily.com))

The proposal is about recapturing an industrial space in the east side of the city by changing the use of this area and promoting cultural and social activities. This allows the space to be recognized as a cultural center within the city. Public spaces are developed and some of them are conceived as terraces that hold either controlled or free activities.

### **2. Seattle Art Museum Olympic Sculpture Park.**

Location: Seattle-USA.

Architects: Weiss + Manfredi + Anderson.

Characteristics: Urban landscape modification, codification (artificial elements on pavement), experience, social gathering, ephemeral



Figure 2: Seattle Art Museum Olympic Sculpture Park ([www.weissmanfredi.com](http://www.weissmanfredi.com))

An area of 388 square feet area that has been conceived as an open museum, represents one of the main public spaces of the city center. Previous uses of the space are changed (before this was an Oil and Gas corporation). The task of the project was to design a continuous and constructed landscape for art in a space that was previously used to operate an oil and gas corporation. The architects' vision was to make art outside the museum walls and bring the park into the landscape of the city. This new topography offers environmentally diverse settings for viewing sculptural elements such as an artificial illumination on grass that encourages visitors to cross specific path and experience permanence spaces.

### **3. Body Movies: Relational Architecture.**

Location: Temporary installation in different cities.

Architect: Lozano-Hemmer.

Characteristics: Architecture modification, individual interaction, codification (projections on architecture), experience, ephemeral.



Figure 3: Body movies: Relational Architecture ([www.lozano-hemmer.com](http://www.lozano-hemmer.com))

In this project, Mexican-Canadian artist Rafael Lozano-Hemmer is recognized for creating theatrical interactive installations in public spaces. Viewers not just become participants but also actors. Using interactive projections, his main objective is to engage viewers with art and architecture, providing platforms for human participation.

His work has a strong tradition of humanism in which man and the human body are the center and measure of all things. He concentrates his work on exploring themes, such as: perception by creating virtual openings in architecture, the city, the body and technology.

#### **4. Cloud Gate - Millennium Park.**

Location: Chicago - USA

Artist: Anish Kapoor

Characteristics: Urban intervention, social gathering, materials (Reflective), interaction, Experience (Deformed Space and Reflection), tactility.



Figure 4: Cloud Gate at Millennium Park ([www.millenniumpark.org](http://www.millenniumpark.org))

A public sculpture made out of polished stainless steel surface reflects the Chicago skyline. Its elliptical shape distorts and twists the reflected image. Kapoor explores how the object can become a space in all of his sculptures, installations and public art. His objective is to test the phenomenology of space and his work is recognized for encouraging tactility and the use of reflective materials, engaging the viewer by distorting their sense of perception.

##### **5. Maximilian's Schell.**

Location: Los Angeles – USA.

Architects: Ball & Noguees.

Characteristics: Urban intervention, materials (Color translucent), contemplation (Form and Color reflections) social gathering, interaction, experience (Lights and Shadow), ephemeral.



Figure 5: Maximilian's Schell ([www.ball-nogues.com](http://www.ball-nogues.com))

This is a temporary outdoor installation in the Los Angeles exhibition space of Materials & Applications; it is called Maximilian's Schell where stained yellow mylar is the main material for designing the canopy structure. The interior space is an immersive experimental installation that creates an outdoor room for social gathering, interaction and contemplation. During sunny days the structure's casts colored fractal light patterns on the ground while ambient music surrounds the space.

## 6. Public Farm.

Location: New York - USA.

Architect: Work AC.

Characteristics: Repetition + Social gathering + Programmatic + Interaction + Ephemeral

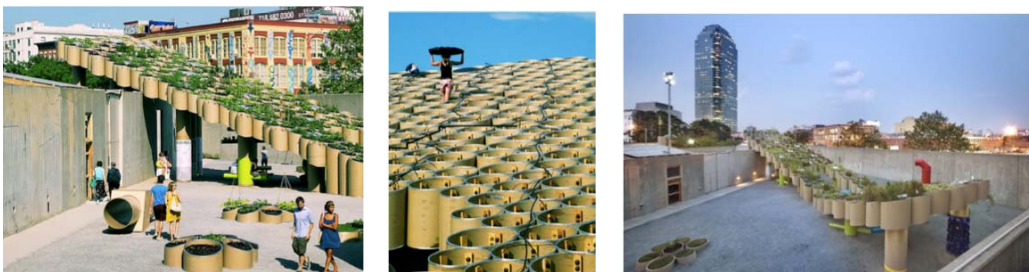


Figure 6: Public Farm ([www.work.ac.com](http://www.work.ac.com))

The ephemeral green structure has been conceived as a piece for offering citizens a place to relax and socialize in a public space. The tessellated construction is capable of generating new experiences and interaction among visitors, as planting strategies are one of the main attractions in the space. The structure also creates a covered area for social gathering while holding new uses and spatial conditions such as pools, shaded spaces and interactive objects. Recyclable cardboard tubes and diverse plants seek to generate a microclimate; also solar panels are used in lieu of generating energy for audio installations within the space.

## **7. Sequences.**

Location: New York-USA.

Artist: Richard Serra

Reference type: Immersion, materiality, scale, experience, and tactility.

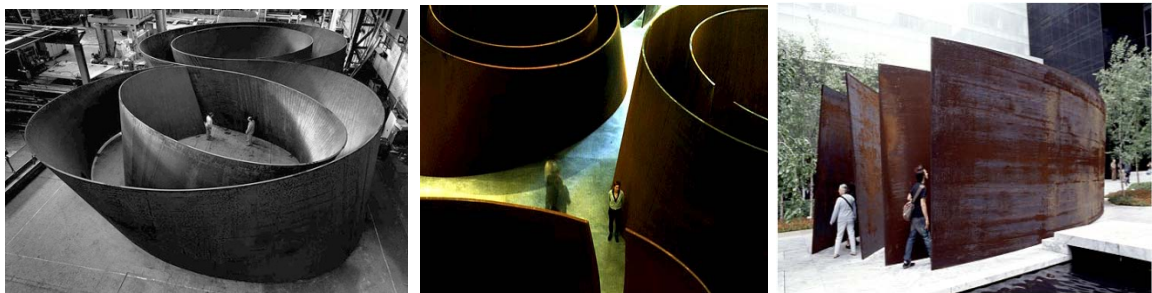


Figure 7: Sequences ([www.portlandart.net](http://www.portlandart.net))

In this installation, a direct interaction between visitors and the object is presented. Serra's objective in this work is to impact visitor's personal experience by making them walk through giant undulated corten steel sheets. The work makes people

feel embedded in the object, making visitors confused or disoriented.

### **8. Penetrable Amarillo.**

Location: Caracas-Venezuela.

Artist: Jesus Rafael Soto

Characteristics: Urban Intervention, immersion, repetition, interaction, materiality, sound, experience.



Figure 8: Penetrable Amarillo ([www.venezuelatuya.com](http://www.venezuelatuya.com))

Penetrable Amarillo, is translated in English as “Penetrables”, an installation where visitors can immerse themselves in the space. The interactive sculpture is placed in the urban landscape, consisting of square arrays of thin, hanging plastic bars through which participants can walk through producing sounds. These pieces are supposed to be sensorial in the sense that they invite a tactile, as well as a visual response from participants. The sensorial quality of this particular installation could be an example of experiencing all the attributes of a space as a whole. Feeling the sculpture, is not just



touching attractive plastic bars but also going beyond the tangible, which is also about feeling and hearing the space.

## CHAPTER III

### METHODOLOGY

Based on the theory and design ideas previously presented, a method of action will allow the designer to thoroughly explore from the simplest ideas in this research to the most complex as Descartes (1637) assures “To conduct my thoughts in order, by beginning with the simple objects, and those most easy to know, so as to mount little by little, as if by steps, to the most complex knowledge”(p. 1).

The methodology section on this thesis will represent a summary of the design process pursued by the designer, followed by the analysis section where design stages are discussed in detail describing processes involved to achieve the final design outcome. Design Processes explained in this section include: Concept Exploration, Design development and Construction.

#### Concept exploration:

The intent of this thesis is to create a flexible urban object that could provide temporary solutions while modifying the urban scenario. The urban object offers citizens moments for experiencing and participating in the city while encouraging them to

perceive ordinary urban spaces from a different perspective. The examination of forms, materials, colors, textures, lights and shadows were considered from the beginning as crucial categories in the space when making a piece of architecture, a piece or art that can later result in an “Art-chitectural” urban piece.

The concept exploration phase began with a reflective practice followed by an experimental process. Main tools utilized during the creative, experimental and developmental process were written thoughts, hand made sketches, conceptual models where form and materiality were explored and analyzed. Two conceptual models exploring pure Materiality created a huge impact during this process as these dictated results that were later taken into further developments. The third model explored Form and Composition using basic materials such as cardboard and triangle shapes. This model was later taken to the next level and further discussed with Committee members during Studio Presentations.

#### Design development:

The examination of forms, materials, colors, textures, lights, scale and shadows were considered from the beginning of this study in this master’s degree as crucial categories in the space for making a piece of architecture, a piece or art that can later result in an “Art-chitectural” urban piece.

As a brief overview the first project during this program was to create a space located in the UNCG campus, specifically the lawn area in front of the EUC building. Part Landscape, part infrastructure, the proposal was based on generating an architecture that was more than an object for aesthetic contemplation. The installation would encourage and define the formation of interactive activities that occurred spontaneously within such space.

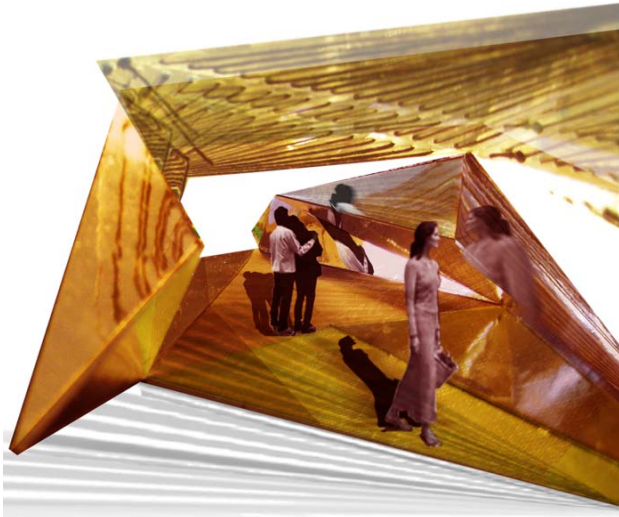


Figure 9: Sensation space.



Figure 10: Social events.

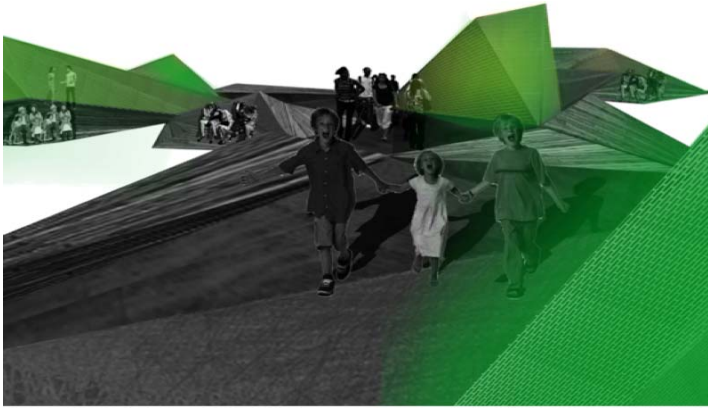


Figure 11: Illumination.

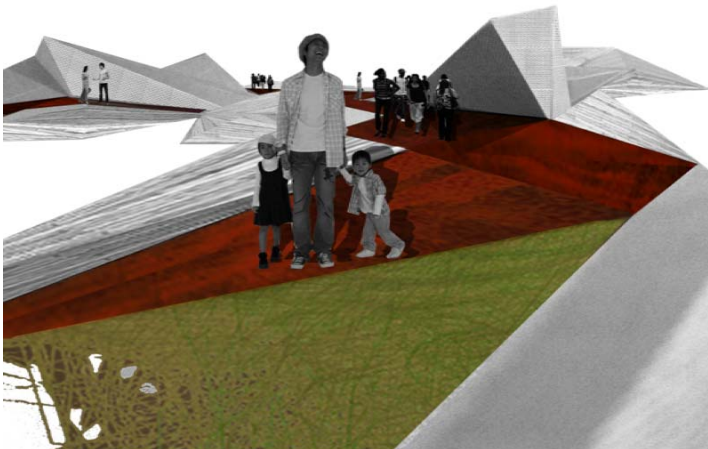


Figure 12: Walkpaths.

Through concept models, form and materiality were explored during this phase in order to discover the right path for materializing the project. These experiments unfolded a variety of ideas. For example: the aesthetic of “form” was developed as triangulated

pieces. This concept was inspired on the plate tectonics theory, where layers start to emerge from into the soil proposing a natural dynamic topography in contrast to current horizontality present in the EUC lawn.

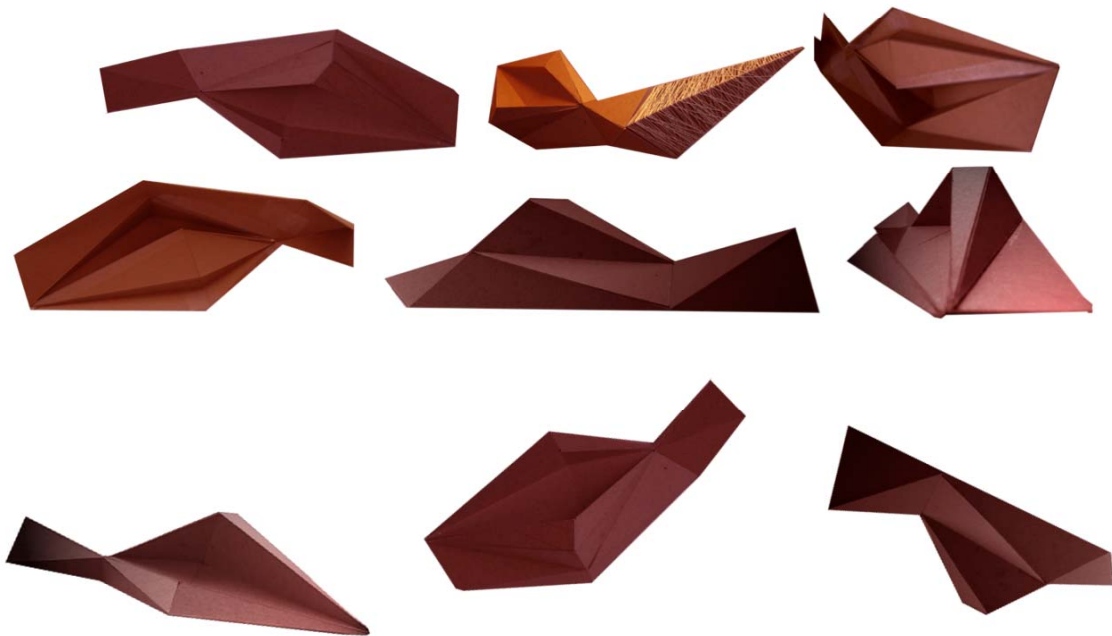


Figure 13: Conceptual models exploring Form.

Although materiality was used as a way for creating sensations, it also defined a variety of activities that took place in this proposal such as: Walk paths, Furniture, Lighting and a Sensation space.



Figure 14: Final model in the first year studio semester.

These design ideas, theories, investigations, prototypes and results obtained in the past studio semester have been the basis for the creation of the following thesis.

Derived from folded planes of the earth, triangulated forms from the previous studio semester were taken to another level. This time, triangles have been set as equal units and repeated for creating a modular surface that could offer interactive and flexible activities within the urban realm. The model was manipulated and resulted flexible enough for creating endless compositions in the space.

During this stage, three main scenarios were evaluated: human scale, possible human interactions and possible uses within the city. The piece was photographed and modified using digital software where the different scenarios were evaluated.

Sketches depicting possible moving and assembly systems for this object were created. A prototype model applying sketches ideas helped the designer to test constructive systems and manipulation.

Construction:

During the Design development phase the prototype model dictated the beginning of further explorations and later improvements, final prototype models where constructed applying different materials and constructive systems for testing feasibility.



## CHAPTER IV

### ANALYSIS

Based on the previous design process, this section describes in depth the theoretical and practical processes for achieving the final creation. Design stages are classified as follows: project strategies, the activities related to the type of exploration required in each of the stages, and a method of actions from the designer, narrating how each of these stages were approached. This project research is conceived as a scientific scenario, where the knowledge gained, directly matches the development of architectonic objects. The first two steps explain the configuration and ideation stages for the entire design project. Whereas within the application stage, creation stage and fabrication stage two different explorations are developed simultaneously: the object is developed to “create” a space whereas the second one seeks to “modify” the urban space.

#### **Configuration Stage:**

##### **Pre- configuration – Intuitive Consciousness:**

During this stage, the designer details every thought that shaped the possible characteristics present in the design. Simultaneously, the designer also pre-configures

architectonic objects based on the previous knowledge base gathered during the related topic research and explorations in previous semesters.

Exploration type: Reflective and Practical.

Tools: General bibliography, papers, graphite pencils, colors, key words.

**Configuration** – Conscious level 1:

Exploration type: Theoretical and Practical.

Tools: WEB, General bibliography, Specific bibliography.

Actions: During this stage, the designer targets the required theory documentation for expanding the knowledge base necessary for the conceptualization of the topic research. Space characteristics in precedents' projects are narrowed down, while forms, materials, compositions, illumination, colors and programs are analyzed as references for the final outcome of the project.

**1. Project: Public Farm.**

Location: New York - USA.

Architect: Work AC.



Figure 6: Public Farm ([www.work.ac.com](http://www.work.ac.com))

Space characteristics:

- Urban intervention
- Social gathering
- Interaction
- Experience (Participative)
- Materials (Recyclable cardboard)

**2. Project: Maximilian's Schell.**

Location: Los Angeles – USA.

Architects: Ball & Noguees.



Figure 5: Maximilian's Schell ([www.ball-nogues.com](http://www.ball-nogues.com))

Space characteristics:

- Urban intervention
- Social gathering
- Interaction
- Contemplation (forms and color reflections)
- Experience (visual: lights and shadow)
- Materials (color translucent)
- Ephemeral

### 3. Project: Penetrable Amarillo.

Location: Caracas -Venezuela.

Artist: Jesus Rafael Soto



Figure 8: Penetrable Amarillo ([www.venezuelatuya.com](http://www.venezuelatuya.com))

Space characteristics:

- Urban intervention
- Immersion
- Interaction
- Repetition
- Experience (tactile, visual, auditory)
- Materials (soft textured, colored plastic)

- Sound (possible with participants' interaction)

These three projects were selected as the most related to the characteristics in the space that the designer wanted to achieve for the final project. All precedents proposed urban interventions for achieving social gathering. The characteristics in the spaces were narrowed down as follows:

- How does Interactivity occur in these spaces?
- What is it that people contemplate in these spaces?
- Which constructive system allows the structure to be temporary?
- How are these materials applied, what are their characteristics?

### **Ideation Stage:**

#### **Materiality – Reflective Consciousness 1:**

- Exploration Type: Theoretical and Practical
- Tools: WEB, specific bibliography, sketches, Photoshop, conceptual model explorations.
- Form techniques: folding, tessellation, repetition, sectioning, origami.
- Actions: During this stage, an exploratory and practical approach is sought. The aim of this exploration was to evaluate how materials and their properties could modify a regular space.

**First exploration:** This exploration was created as an inspiration from Kapoor's work. For this conceptual model, characteristics in the space such as deformation, reflection, immersion and illumination were explored inside a 6"x 6" cardboard cube. Deformation and reflection were explored using a reflective material adhered to the base of the cube and to uneven forms placed on the sides.



Figure 15: Deformation and reflection.

Light was explored from the outside by constructing linear gaps that let natural light filter through, generating a composition of illuminated stripes reflected in the interior of the space.



Figure 16: Linear gaps in cube.

Immersion was explored through the utilization of a wide-angle door viewer placed in the center of the cube. By looking through this element the observer is engaged with the cube while “feeling” inside of it.



Figure 17: Wide-angle door viewer.

**Second exploration:** Inspired by the concept used in Maximilian’s Schell, characteristics in the space such as translucency, color, reflection, immersion, form, shadows, repetition and scale were explored inside a 12 ½” x 7 ½” x 6” acrylic box. The study of lights and shadow dictated the final material of the box to be acrylic for letting in the largest amount of light detected in the exploration. Form was explored throughout origami shapes fabricated with translucent red sheets; these were repeated and used to reflect red shadows on a white base as light went through. Reflection was also incorporated, as in the first exploration, on the walls of the box in order to provide a sense of infinity or endless repetition of the space. Immersion was also explored through a wide-angle door viewer that let the observer feel inside the inner infinite space. Human

scale was as well tested in order to get an approximation of the size of origami shapes.



Figure 18: Study of lights and shadows.

Results obtained in this reflective and practical study assure the importance of materiality and its properties in the creation of the final object. Moreover, achieved results such as shadows, light, textures, reflection and color became essential “categories” and constantly seek for creating the real quality of the final “art-chitectural” object that will remain in visitors’ mind forever.

**Conceptualization – Conscious level 2:**

- Exploration type: Practical
- Tools: WEB, specific bibliography, software: Microsoft Word, AutoCAD, 3d Max, Photoshop, sketches, photomontages, conceptual model



- Task: To generate a transformable and adaptable “art-chitectonic” object capable of “modifying” ordinary urban spaces as well as “creating” new spaces while encouraging participation, interaction and contemplation among citizens within the public scenario.
- Actions: Similar to the previous design stage, the conceptualization phase also entails an exploratory and practical approach, as well as experimental. During this phase the category of Form is explored.

Initial sketches helped to define basic triangulated shapes and different techniques such as tessellation, fenestration, repetition and sectioning were envisioned for the final composition of the object.

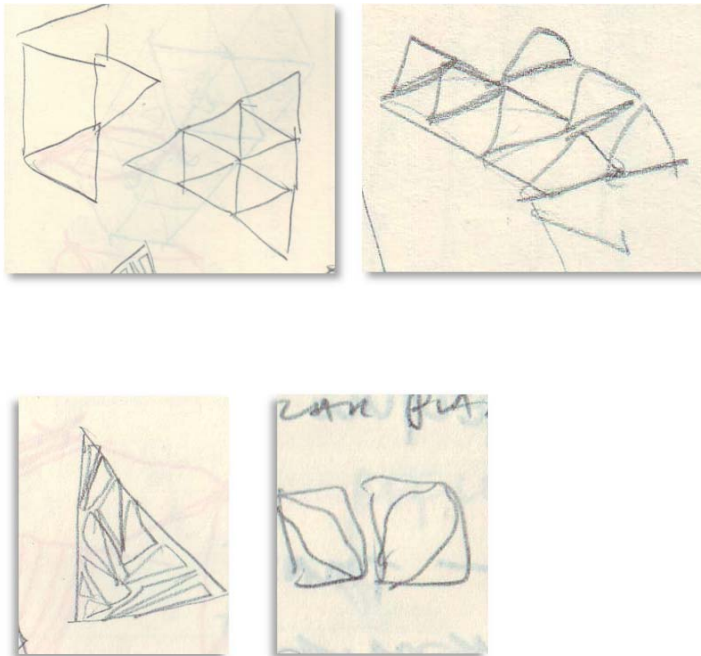


Figure 19: Repetition, Tessellation and Fenestration

At the same time, sketches for evaluating the scale between humans-form (object) were developed. How big should this object be? Should the space offer visitors a distant or an immersive experience? Committee members and peers provided feedback supporting the idea that the piece could be adaptable to offer visitors both kinds of experiencing for providing either distant or an immersive experiences. In the first instance, the object was envisioned as an organic-undefined shape where different pieces together could create a whole structure.

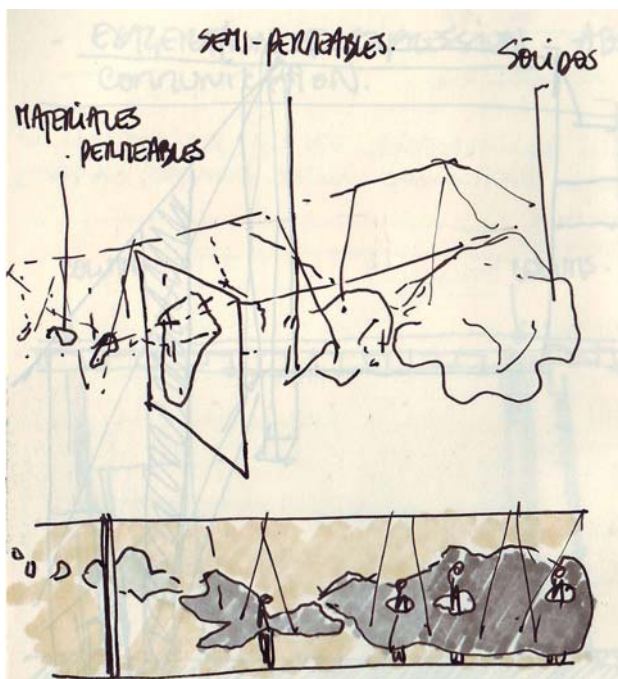




Figure 20: First imagined object

Flexibility and adaptability were a rule for the exploration of the final “art-architectural” object. Creating a modular basis was also essential for conceiving the object’s design as it has the capacity to organize and simplify any complex system.

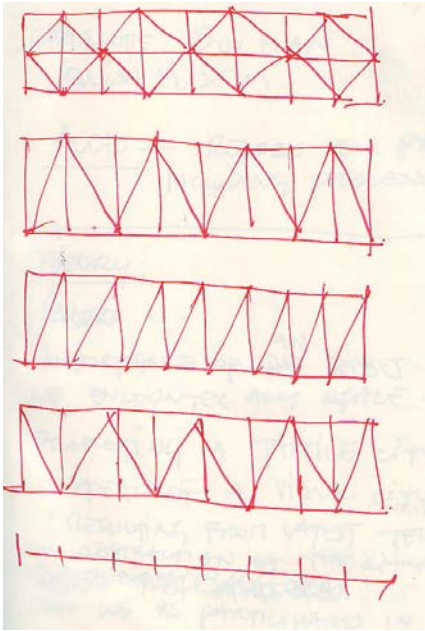


Figure 21: Triangulated modules.

As previously stated, folded planes from earth explored in previous semesters were taken into further development to create a modular model. Through this sketch model triangulated pieces were fastened together in order to make possible this structure to fold, move and turn, allowing it to provide a variety of compositions in the space and to be managed easily.

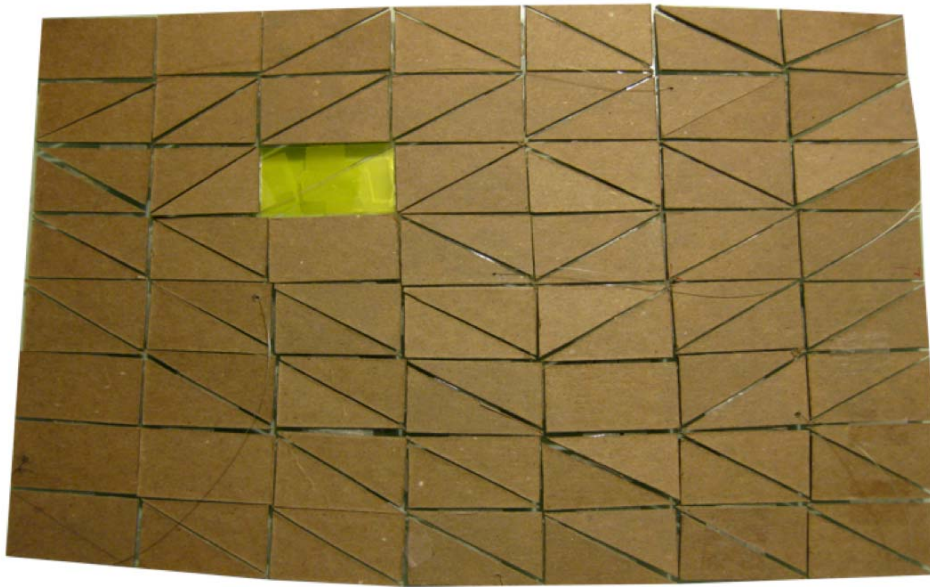


Figure 22: Sketch model

Ideas have been based on the production of a triangulated modular piece that can be repeated in infinite of ways, creating an object that will be flexible for a variety of spaces and morphologies to finally generate ephemeral urban solutions. A series of pictures after manipulating the fabricated model demonstrated that the triangulated piece could offer infinite flexible configurations and a great variety of uses within the city. Results obtained from this model confirmed that this was the right path for further development.

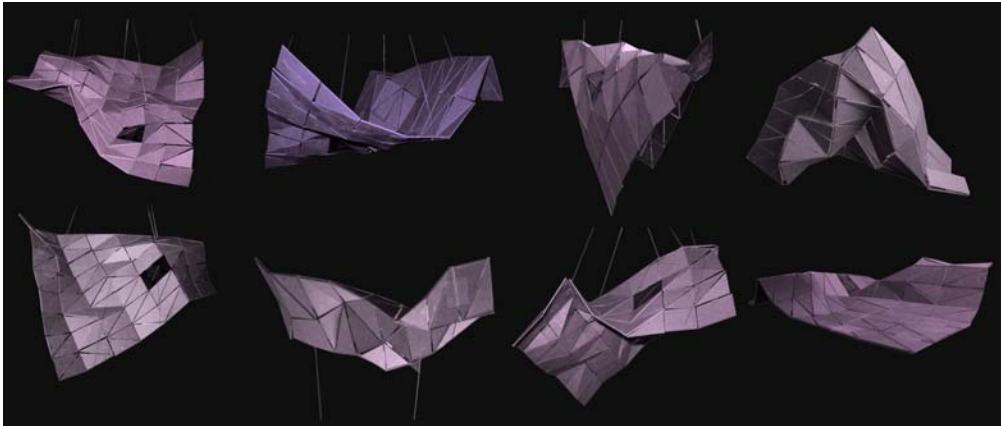


Figure 23: Different compositions of the object.

### **Creating a Space:**

#### **Application Stage 1:**

Exploration type: Theoretical and Practical

Tools: photo sequences, software: AutoCAD, Photoshop, sketches.

Actions: Photo sequences generated after informally manipulating the object helped to keep the record of a variety of compositions. This helped committee members and the designer envision the object from different perspectives and to start working on its applications and adaptability.

Using photomontages, the sequence of pictures helped the designer to explore scales and a variety of possible scenarios to which this piece could be used. First attempts envisioned the object in a public place, triggering actions and interactions among participants as they could manipulate the object. Different configurations that were depicted helped the designer and committee members to discuss the most workable

options that could be developed. The flexibility of the object did not just remain in merely form and malleability but also, on the capacity to be adapted to different architectural functions. Space characteristics previously explored from design precedents worked as references for setting benchmarks in this research: Immersion, interaction, participation, contemplation, experience and social gathering were the experiences and actions that the designer wanted to translate into the new space during this first exploration.

These ideas visualized the “art-architectural” object not only as an immersive experience but also as a tactile experience to its visitors. Inspired by the concept of how marionettes are controlled, the project’s aim is to produce a direct connectivity between inhabitants and the object as they can constantly manipulate it, in order to be transformed and “create” a space. A mutable structure that can only function with the active participation of visitors which not only creates architecture for performance, but also a living theater where body, program and space interact to choreograph the pattern of dwelling.



Figure 24: Hanging structure

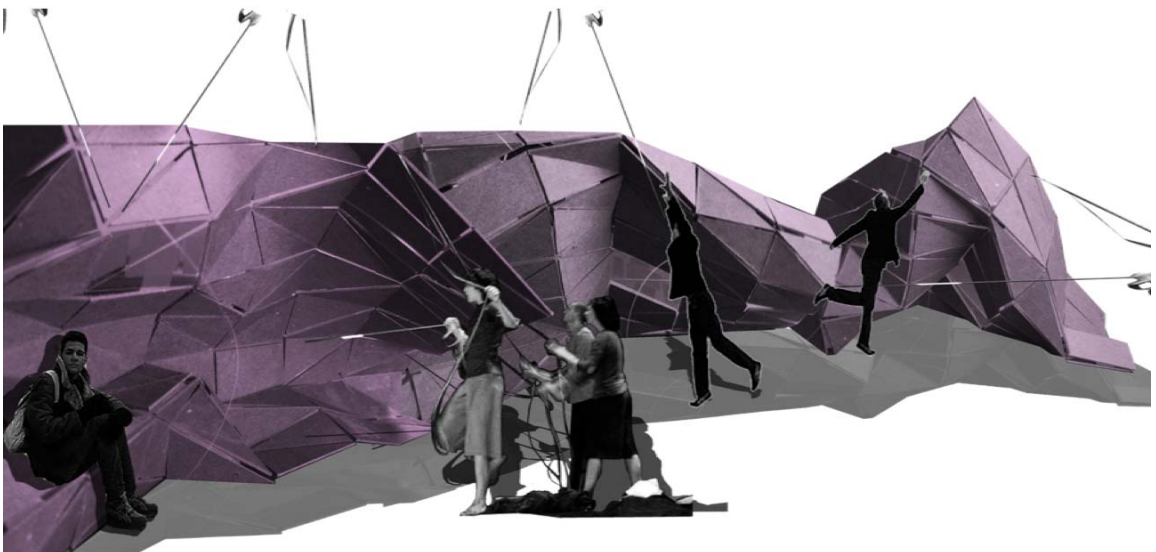


Figure 25: Wall structure





Figure 26: Top + Bottom structure

After thoughtful consideration, the possible configurations were narrowed down to only one out of the three options, to start exploring its technical design solutions. After discussions and evaluations, the “hanging structure” seemed to be the most accurate for further development as: it could generate a larger variety of compositions and provide visitors an immersive experience.

Tools for exploring these technical solutions were driven by a personal reflective dialogue and a sequence of hand made sketches that were discussed with committee chair and members on a weekly basis. How is the object hanging from the ceiling? Which mechanisms should be created for providing easy manipulation of the object while being interactive at the same time? What size should the object be? How many participants could interact at the same time?

### **Creation Stage 1.**

**Evaluation: Fabrication** – Development level: Exploration type: Theoretical and Practical

Tools: WEB, software: AutoCAD, 3ds Max, Photoshop, sketches, photomontages, study models

Actions:

Based on the first and second explorations during the ideation stage, the designer focuses in coming up with technical solutions for each one of the options.

Making the hanging structure work did not depend only on answering previous formulated questions. During the creation stage, the designer attempted to generate a possible final solution for “hanging” the object while analyzing mechanisms, constructive systems, manipulation methods and materials. Designing the right mechanism for the structure’s manipulation was one of the greatest challenges during this phase. The first

option envisioned suspending the structure using eyebolts and ropes.

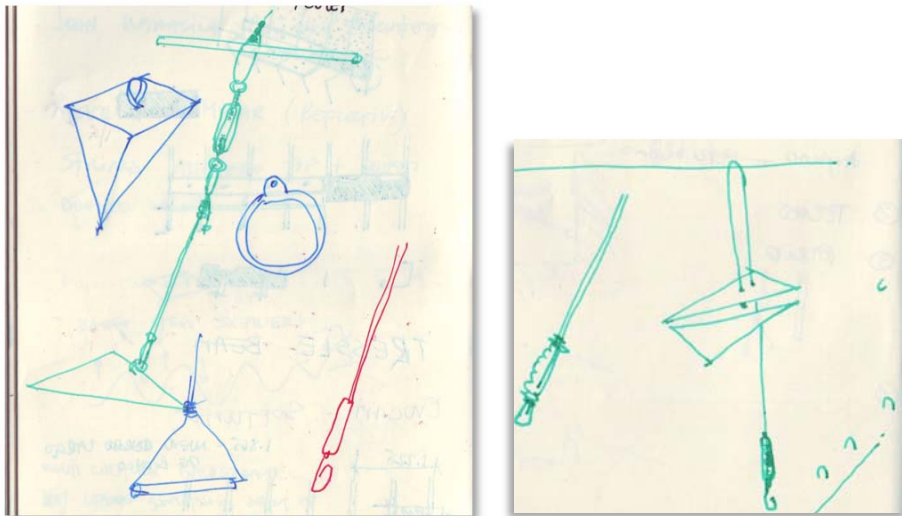


Figure 27: Eyebolts and ropes

Even though this could work as a solution for hanging the object it did not work for its manipulation. The second option considered was a pulley system, an interactive structure that could be operated by people. This was perhaps the most feasible option as it provided mobility of the object and its manipulation. Sketches were generated to understand the basics of the system and how it could be applied to this design. Although sketching represented an extensive part of this process, it was definitely not the best way to test these mechanisms.

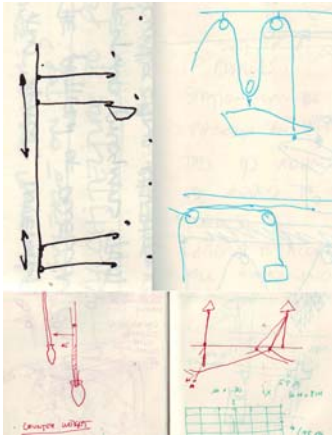


Figure 28: Initial sketches

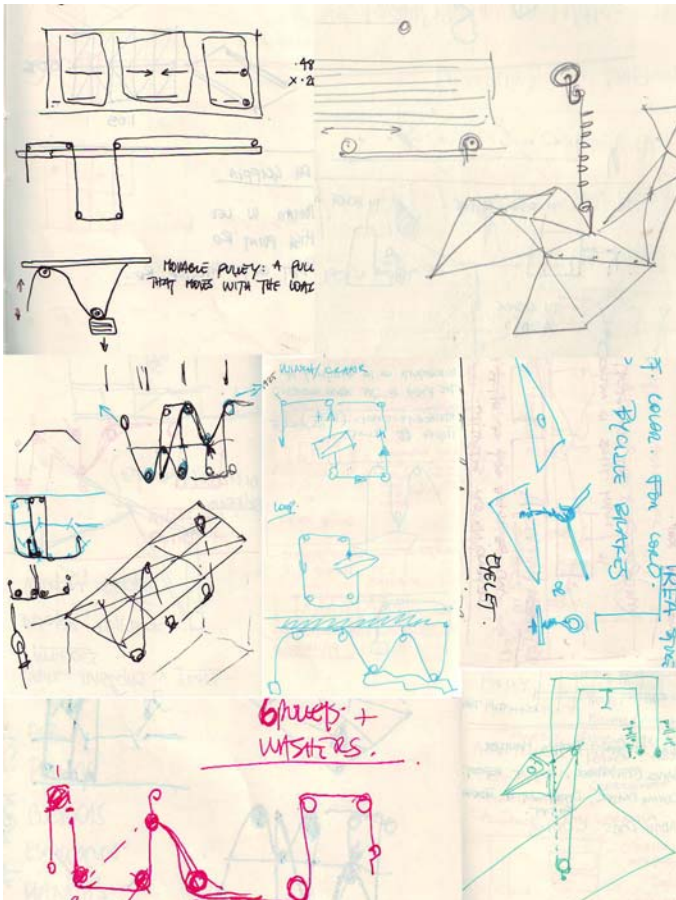


Figure 29: Pulley sketches

## Fabrication Stage 1.

**Prototype 1:** In this phase, drawings were translated and used for discussion among committee members, which resulted in a model where real mechanisms were explored.

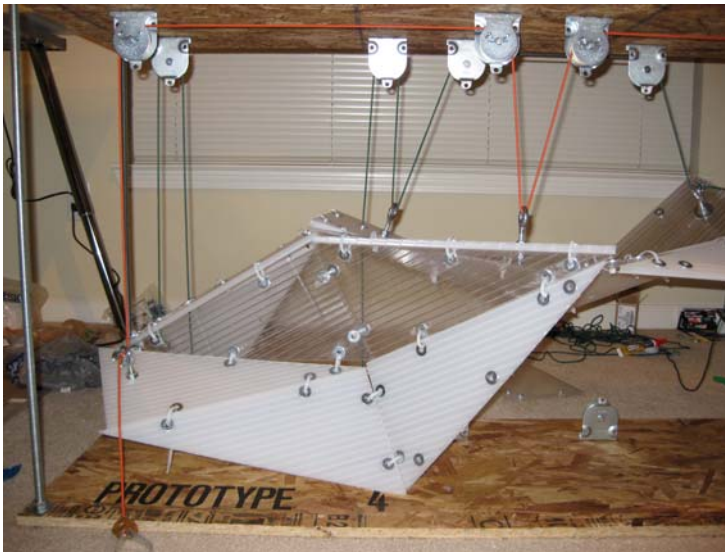


Figure 30: Prototype: Pulley system

Results obtained in the previous concept model using the red translucent acetate dictated the material selection for this first attempt. The application of translucent polycarbonate in triangles fabrication was considered for offering participants a diffused environment with certain transmission of light. This prevents the perception of distinct images and results a space for intrigue and surprises. A triangulated surface was created using white and clear  $\frac{1}{4}$ " thick polycarbonate sheets that were linked together using plastic cable ties through holes.

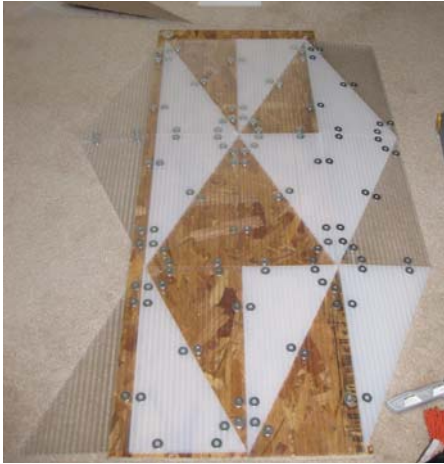


Figure 31: Prototype: Triangulated surface

On two horizontal planes, simulating the top and the bottom part of the space, the pulleys and a rope ran over the wheel and inside the groove were fixed for creating the vertical motion. The realization of this first prototype was beneficial as the designer was able to confirm that the pulley system worked well and that it could be actually operated. On the other hand, non-beneficial results were achieved with the material and plastic cable ties, as the motion of the structure was rigid and unnatural.



Figure 32: Prototype: with two horizontal planes

**Final idea:** The constructive system using vinyl is then applied to the final outcome of this first exploration. Ideas applied in the Prototype 1 were translated to full-scale 3D visualizations and photomontages, in order to show the composition of the space as an immersive experience. To support the structure, scaffolds and trestle beams were proposed for creating the whole structure, as they are characterized to possess portability, movement, and the ability to be installed or uninstalled in any desired place. Moreover, wood and aluminum were considered for the materialization of this piece. At the same time, elements such as an OSB board base for fixing the under part of the pulley system, counter weight for balancing the structure. Eyebolts are strategically attached to triangles, with a parachute rope that goes through to manipulate the structure in a vertical direction. Finally, illumination and handles provide cues to the audience that this piece can be grabbed and controlled.

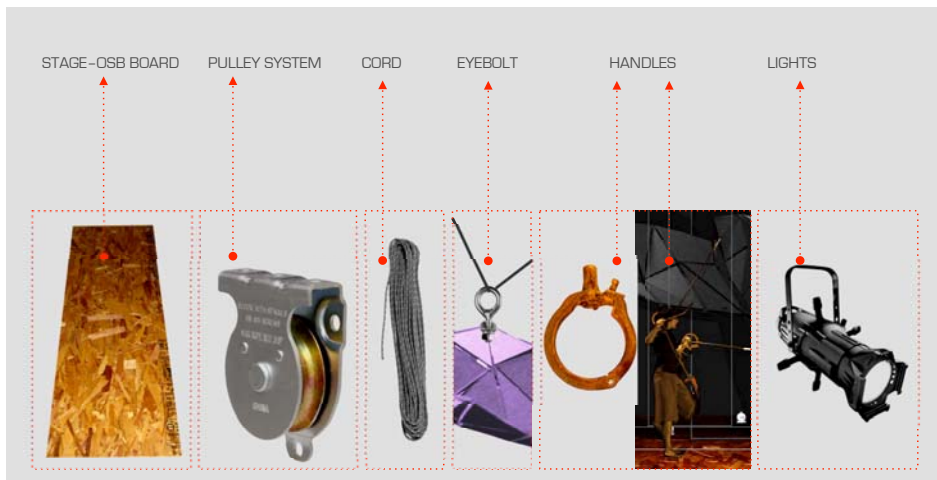


Figure 33: Components for the creation of the final space

The final work provides a real feeling of movement for the beholder, who is mobile in front of the art-architectural piece. The spectator becomes an actor by penetrating into the space, accessing and manipulating the structure's components, which creates empathy and rouses all five senses of the human body. This mutable structure can only exist with the active participation of the inhabitant, creating a living theater and a fusion between “ body and space.”



Figure 34: Final space

The pulley system was not only employed in this exploration. The compatibility between the flexibility of the piece and the system allowed the designer to envision more urban solutions as the design process advanced and interesting architectural ideas emerged.



## **Modifying a Space:**

**Concept Applications** – Conscious level 3:

Exploration type: Theoretical and Practical

Tools: photo sequences, software: AutoCAD, Photoshop, sketches.

Actions: Photo sequences generated after informally manipulating the object also helped to keep the record of a variety of compositions and create different visualizations to demonstrate how the object could modify the urban space.

This helped committee members and the designer to envision the object from different perspectives and to start working on its applications and adaptability in the urban realm.

Further ideas picture this “art-chitectural” object as something more than just for encouraging actions and interactions among its citizens. Next investigations consider this object as a flexible urban piece that can solve different urban necessities on a temporary or semi-permanent basis. The object can serve as an instrument to modify ordinary urban spaces and encourage society to perceive the city from a different perspective.

The exploration of this object as a piece to “solve” urban necessities demanded a more detailed research on materials, their characteristics, and feasibility to valid applications. On the other hand, the size of the triangles as components of this object can be scaled proportionally depending on the final space.

Space characteristics gathered from design precedents were also used for setting benchmarks, as occurred during the precious exploration of this stage: Urban

intervention, immersion, interaction, participation, contemplation, experience, social gathering and materiality represent the experiences and actions that the designer wanted to translate into the new space during this second exploration. 3D models and photomontages created with digital software helped depict three different scenarios where the “art-chitectural” object could “modify” the urban space for further evaluations. Different scenarios have been explored using 3D models and photomontages in order to assess how could the piece “modify” the urban space and its adaptability.

#### A. Weather Solutions:

In proposing the concept of a tactile city, inhabitants can be participants in its daily life instead of just spectators. The pulley system and the polycarbonate material applied in the first attempt unfolded other scenarios. The mechanism encouraged people to interact and manually control the malleable object for protecting themselves from weather conditions such as rain, sun and wind. On the other hand, translucent polycarbonate can perfectly operate indoors or outdoor areas due to its unique characteristics: light weight, translucency, heat/acoustic insulation, durability, fire resistant, water resistant and easy to clean.

The triangulated modules are proportionally reduced in size for creating a surface that can be personally manipulated. Pulleys are strategically fixed at the top, with high ropes running over their wheels and inside grooves creating the mechanism for a pliable structure. The spectator now becomes an actor by participating into the space, which rouses all his five senses. This object has been envisioned indoors to work as a white

polycarbonate triangulated curtain hanging from fixed pulleys above while filtering the sun coming through high glass windows and resulting in scattered lights in the space. The following structure will also be manipulated and transformed in a similar way to how “marionettes” are controlled to graduate the amount of illumination entering through the space.



Figure 35: White polycarbonate triangulated curtain

Another idea considered a fixed hanging structure where suction cups strategically placed all over the object could be adhered to the glass window, freezing different compositions and creating a “wall” that could be constantly transformed for blocking the sun’s glow.

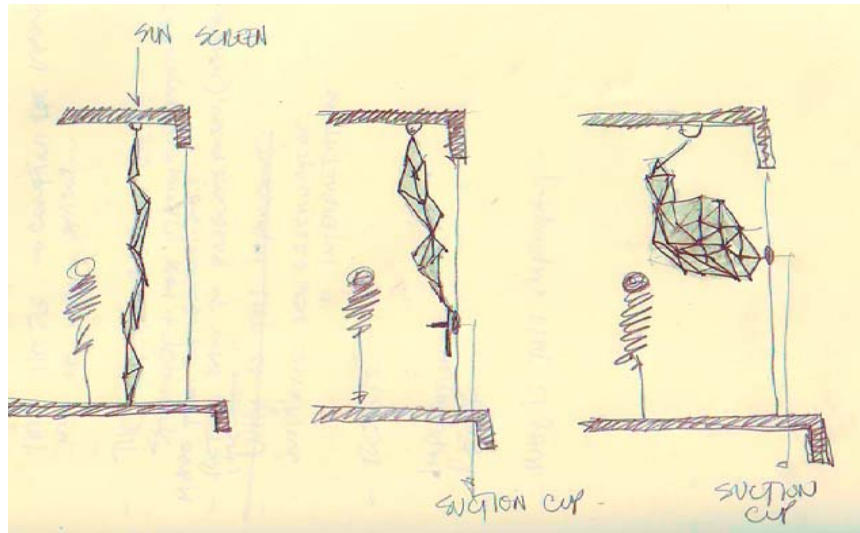


Figure 36: Fixed hanging structure.

During this process of creation, other ideas came up to the designer's mind, like for example: what if the same fixed triangulated curtain can be transformed into a canopy in the same place? Pulling up the bottom part and fixing it to a hook on a top rail that when slid to the sides can spread the triangulated canopy. This was another thought that brought to mind the object as a room divider when necessary. Even though this idea is probably detached from solving weather necessities in the city, it is still related to the concept of perception as the transformation-manipulation of this object can totally change

the way humans' might perceive the space while demonstrating the potential of the piece to be adaptable to a variety of situations.

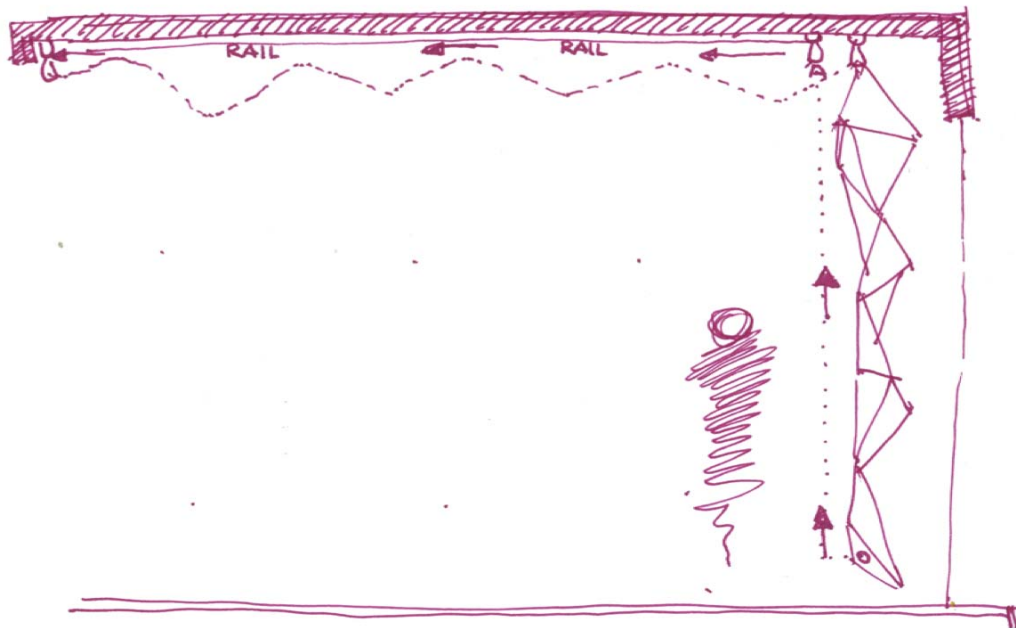


Figure 37: Room divider.

By using the same polycarbonate material, the “Art-chitectural” object was visualized as adaptable for a year-round curtain surface in outdoor environments, functioning as a sun-rain-wind stopper placed in bus stops and train stations.

The pliable structure can be transformed using the pulley system operated by people from the inside of the space, protecting them from weather conditions while enhancing participation among citizens in a routinely place.

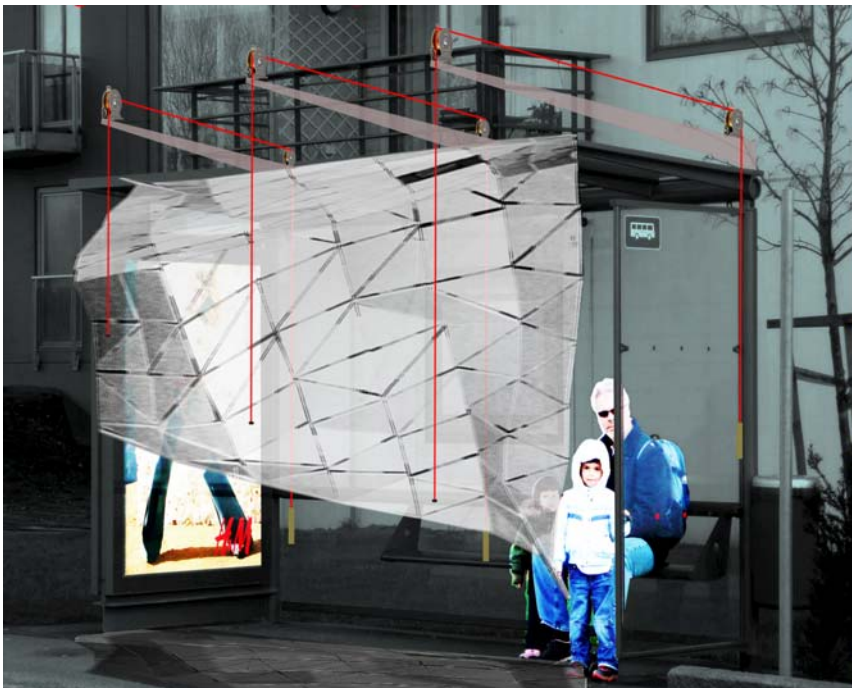


Figure 38: Sun, rain and wind stopper placed in bus stops.

For train stations, the object is fixed from top and bottom to protect people from cold and windy weather while at the same time, these spaces immerse the viewer in kaleidoscopic patterns of color created by sunlight filtering.



Figure 39: Cold and wind stopper placed in train stations.

## B. Entertainment Solutions:

The project that inspired this idea was Les Bains des Docks from Jean Nouvel, an aquatic center in France. The main color in the space is white where flowing water curtains, color walls, various textures and surface treatments create each section's distinct atmosphere. One of the pools is meant for the children where brightly colored foam blocks create a dynamic play area.



Figure 40: Les Bains des Docks, Jean Nouvel.

The “Art-chitectural” object created an outdoor installation for kids during the summer season. Made out of colorful rubber panels, the modularity of the triangulated pieces are adapted in scale to create a “topography” submerged into the water as an extension of the natural landscape. Rubber panels are textured providing some traction for preventing slipping while at the same time creating appealing sensations to the human haptics. Once the piece is out of the water, it has the potential to be adapted and create furniture pieces where people can relax and lay down outside the water.





Figure 41: Summer Installation

As the object has been conceived to create a dynamic “topography”, the structural system consists of adjustable plastic poles screwed to the bottom part of the pool and placed underneath the “Art-chitectural” object for generating different heights.

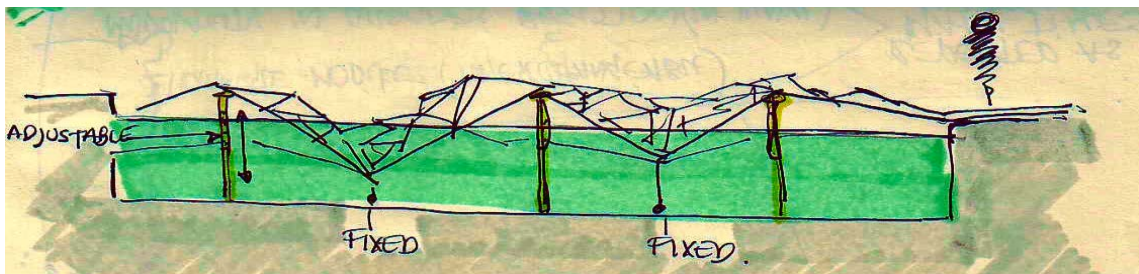


Figure 42: Adjustable plastic poles for structure.

Using the same structural system, the “Art-chitectural” object has also been envisioned to work as a beach installation providing a playground where natural water fountains splash out from the triangulated pieces creating an interactive environment.



Figure 43: Beach installation

A Playscape can also be created as triangulated pieces can work as ludic shapes used by kids for building their own structure to interact and play. Triangulated modules can be repeated as many times as desired for accommodating different uses and infants' necessities.



Figure 44: Playscape at the beach.

### C. Acoustic Solutions:

A bigger scale object has been envisioned to cover outdoor events and concerts as a temporary structure. Pieces are built out of acoustic or cork triangles that better absorb external sounds. Triangular modules can be proportionally adapted to larger or smaller pieces that respond to final urban necessities and event sizes. An outdoor concert in a park would've been envisioned with the "art-chitectural" object as an acoustic membrane offering open spaces.

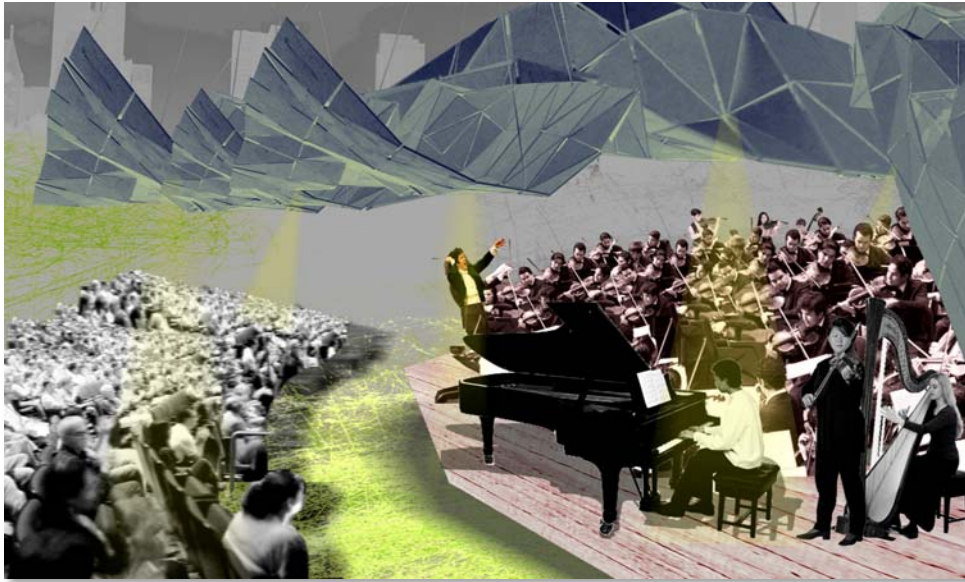


Figure 45: Outdoor events and concerts

Perhaps, in another scenario, the object is seen as a tensioned canopy that holds different events and actions such as leisure spaces. Furthermore, mixing materiality can produce a different perception of the place when elected cork triangles are interchanged by clear polycarbonate material that let the natural light go through into the space. Due to the size of the space, towers of poles are inserted into the soil to allow graduating the height of the canopy.



Figure 46: Tensioned canopy.

The precedent for this idea was originated from a project called Liquid Sky from Ball and Nogue, where a temporary immersive structure was supported by utility poles offering public leisure activities to New York citizens.



Figure 47: Liquid Sky, Ball and Nogues Architects.

Hanging the “art-chitectural object from the trees using hooks and ropes could also accommodate open-air markets that can gather people while purchasing food and merchandise. The structural system based on hooks and ropes will allow the object to be simply installed and uninstalled for its temporary uses.



Figure 48: Open-air markets.

By proportionally scaling the triangles down, the structure could also solve necessities for smaller spaces such as private concerts in amphitheaters, gardens or temporary acoustic ceilings when private speeches/concerts might take place. By the implementation of a suction cups system the piece could also be attached to the glass windows for creating privacy and sound isolation.



Figure 49: Structure for smaller spaces.

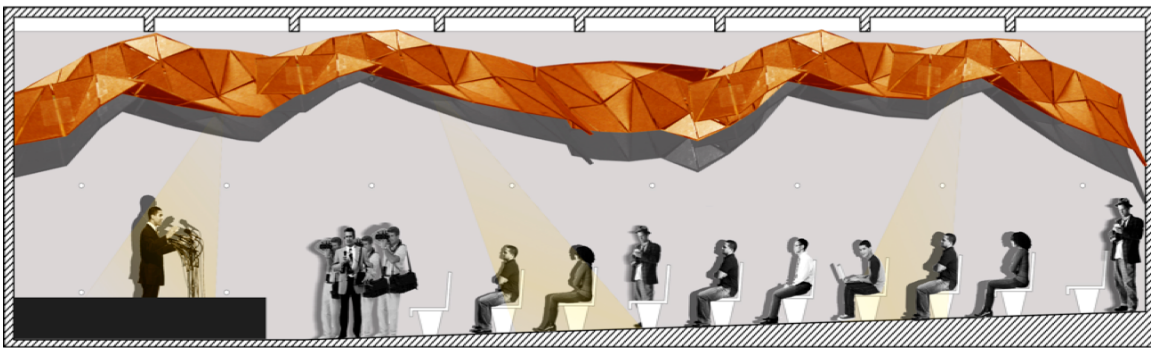


Figure 50: Temporary acoustic ceiling.

## **Fabrication Stage 2.**

After confirming diverse situations and urban necessities that the “art-chitectural” object could solve throughout this investigation the designer was encouraged to explore a more flexible structure for the manipulation of the object. Plastic cable ties in the first prototype demonstrated rigid movements when folding the piece, but this was not the desired final outcome. It was evident that the characteristics of the “art-chitectural” object



involved more flexibility; its moves and folds had to be more natural, just like a membrane for creating a pliable structure, but how to achieve this?

The next steps involved personal reflective dialogues to ideate this mechanism. In an era of mass production and a time where “average” is expanding at an alarming rate it has been more important to tackle new dimensions in design. Based on this, the designer felt encouraged to include various contemporary product designs as part of this research and analysis. The mechanism embedded in a product from German designers Olze & Wilkens called *Showhide* created a huge impact for the final design of the “architectural” object. Despite the lack of information about the real qualities that made this flexible sheet be able to fold, pictures of the product were illustrative enough to notice that a “sandwich structure” existed and that “something” very thin and flexible in between these layers made the folding possible up to 90 degrees.

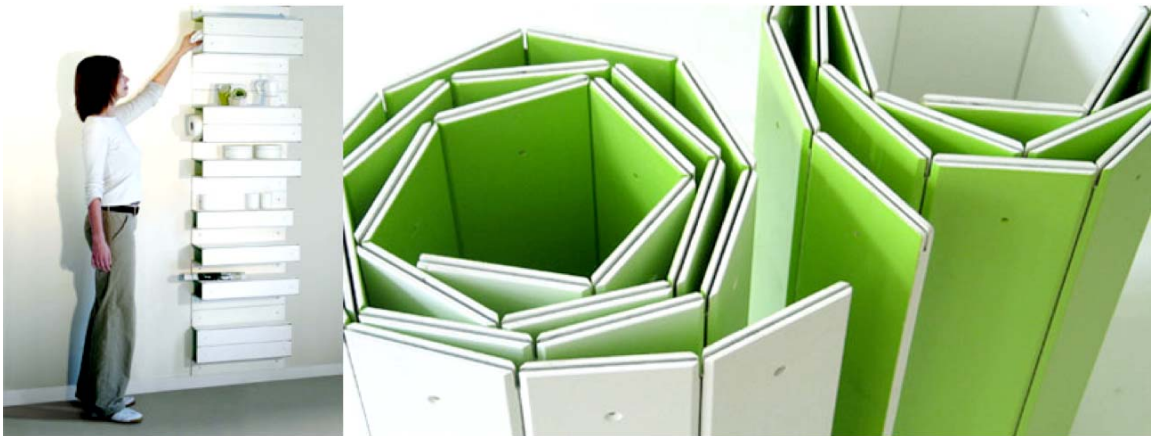


Figure 51: Showhide, Olze & Wilkens.

This is how the designer comes up with the idea of a vinyl in between two layers. Vinyl offered characteristics such as flexibility, lightweight, thinness, durability, transparency and low cost that could work for this design.

The next steps involved the fabrication of a model with this new idea for testing its feasibility and mechanism. The fabrication of this model was crucial for the design of the “art-architectural” object as it defined a totally new and promising step forward to achieve the final design. Results were compared with initial intents and confirmed that this was the right path and expected qualities for the final designed object.



Figure 52: Comparison between the sketch model and model using vinyl.

Consequently, further experiments involved applying the desired materials to achieve the look and feel of the previous explained scenarios. It was confirmed that the mechanism could work and that almost any type of material could be applied depending on final uses and necessities. Flexibility did not remain just in the object’s mechanisms. Creating a modular basis was as important as creating the correct system to make this

object work. Modularity not only had the capacity to organize and simplify any complex structures but also to be repeated endless times to make the object larger or smaller and adaptable to any space dimensions.



Figure 53: Cork.



Figure 54: Foam.



Figure 55: Reflective material.

Through a programmatic approach, further developments involved the creation, design and description of the final components of the object for making this idea possible on a full-scale model. First, vinyl modules that can be proportionally scaled to be adapted to space dimensions where the object will be finally used; Secondly, grommets have been considered for reinforcing vinyl holes, and finally triangle modules, where final materials can be interchangeable responding to final uses or necessities while their size can be proportionally scaled depending on final space dimensions.

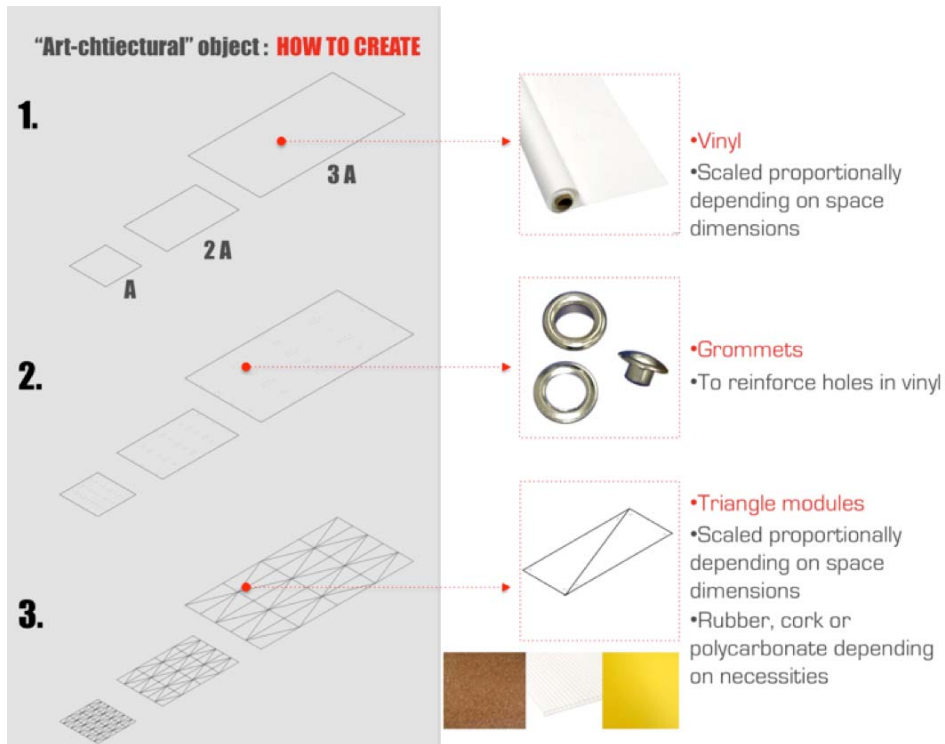


Figure 56: How to create the “Art-chitectural” object.

A sandwich structure will be created using the vinyl in between the triangulated shapes. These three layers will be fastened together using screws, washers and nuts that will slide into each of the grommets.

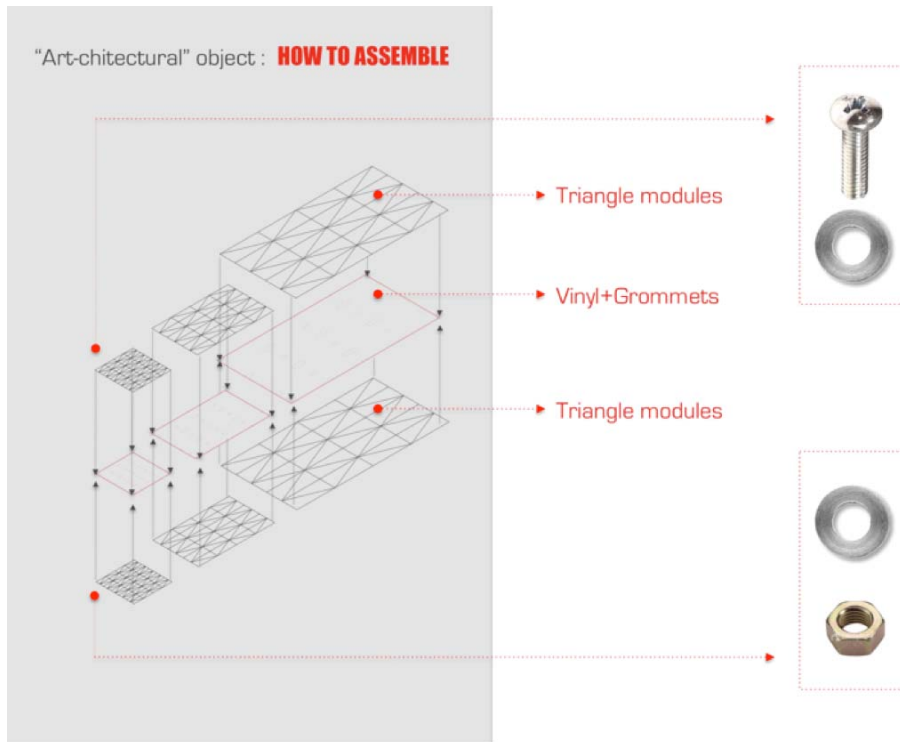


Figure 57: How to assemble the “Art-chitectural” object.

As previously mentioned, the triangular modules can be proportionally augmented or reduced in scale depending on the final space and necessities. For example, for minor spaces cork modules can be scaled down in size in a way that can be personally managed to set up a mobile acoustic ceiling for music and sounds checks. On the other hand, for medium spaces the scale of modularity might increase for providing acoustic solutions for larger spaces such as conference or meeting rooms. The scale in modularity is modified responding to necessities in large spaces, covering extensive areas such as parks, plazas or any public places within the city.

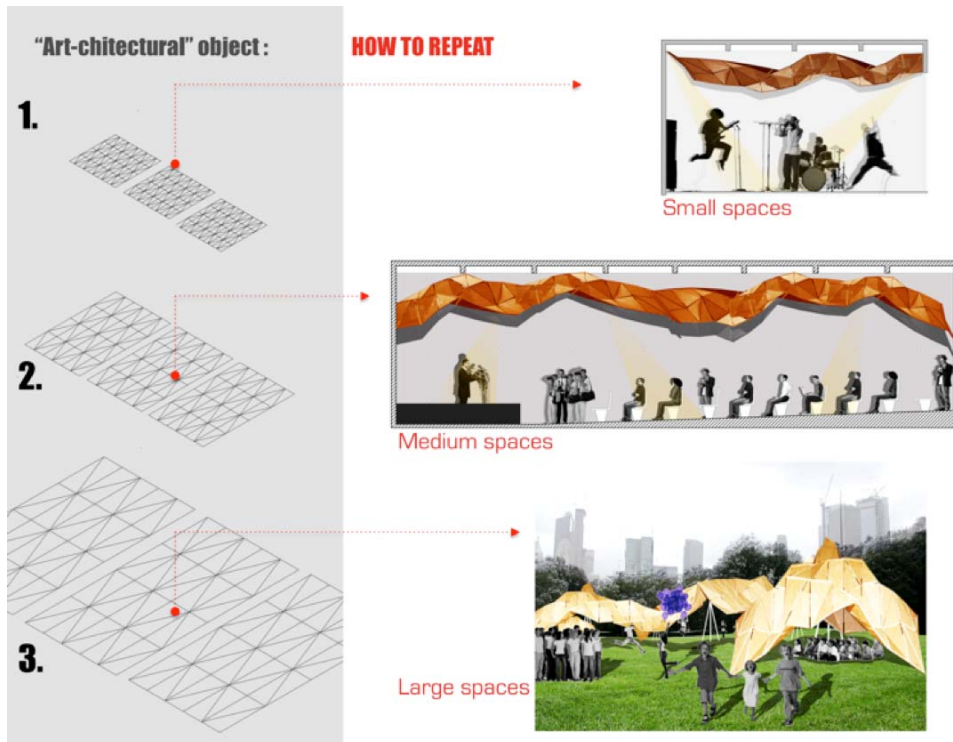


Figure 58: How to repeat the “Art-chitectural” object.

Placing them next to each other links different modules while repetition can be endless for generating the desired size. Grommets on their four borders will allow these to be connected using bolts and nuts for assuring a safe and lasting structure.

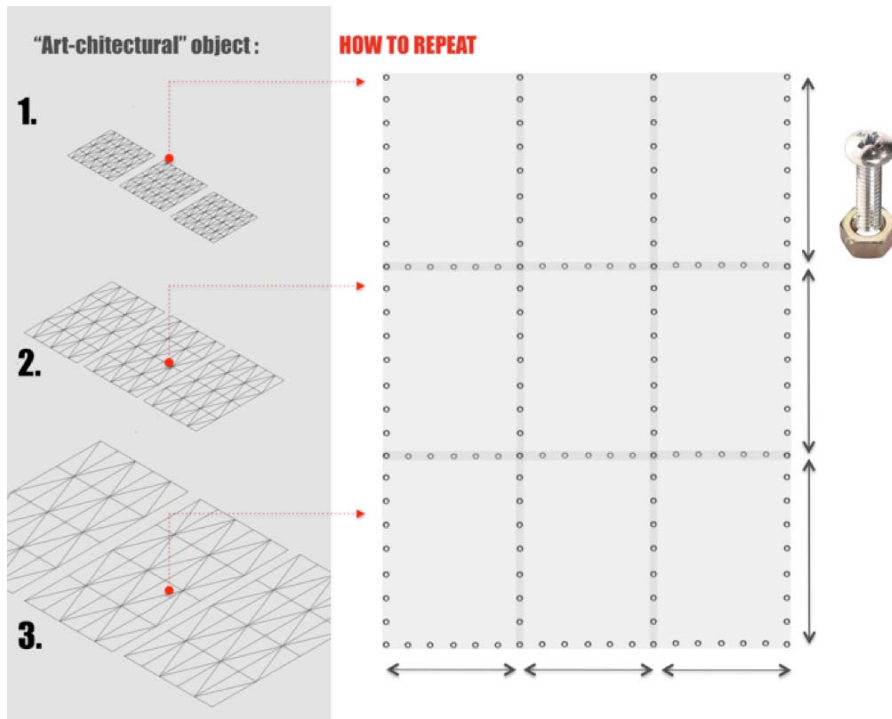


Figure 59: How to repeat the modules in the “Art-chitectural” object.

Different hardware and structural systems have been considered throughout this study for achieving the different positions of the object and its uses. The pulley system allows a transformable and interactive structure. This mechanism might imply a semi-temporary use, as the pulley system installations might have to be customized for the desired space and dimensions. Eyebolts connected on top of triangle panels allow the structure to be hanging from hooks or elements above. These can be strategically distributed all over the “art-chitectural” object for creating different configurations, heights and necessities. Adjustable poles are able to structure the object in higher or lower positions. These are resting on the soil and ensure the creation of dynamic configurations. The top base secures selected triangles while the lower bottom base is



screwed to the bottom of the pool. Floating triangles are also fastened from underneath using eyebolts and cables that are connected to the bottom part of the pool in order to keep them secured. Structural poles can be fabricated in different heights and diameters. These towers are inserted into the soil and allow the suspension and rigidity of the triangular canopy from above while leaving open spaces beneath for any type of public event.

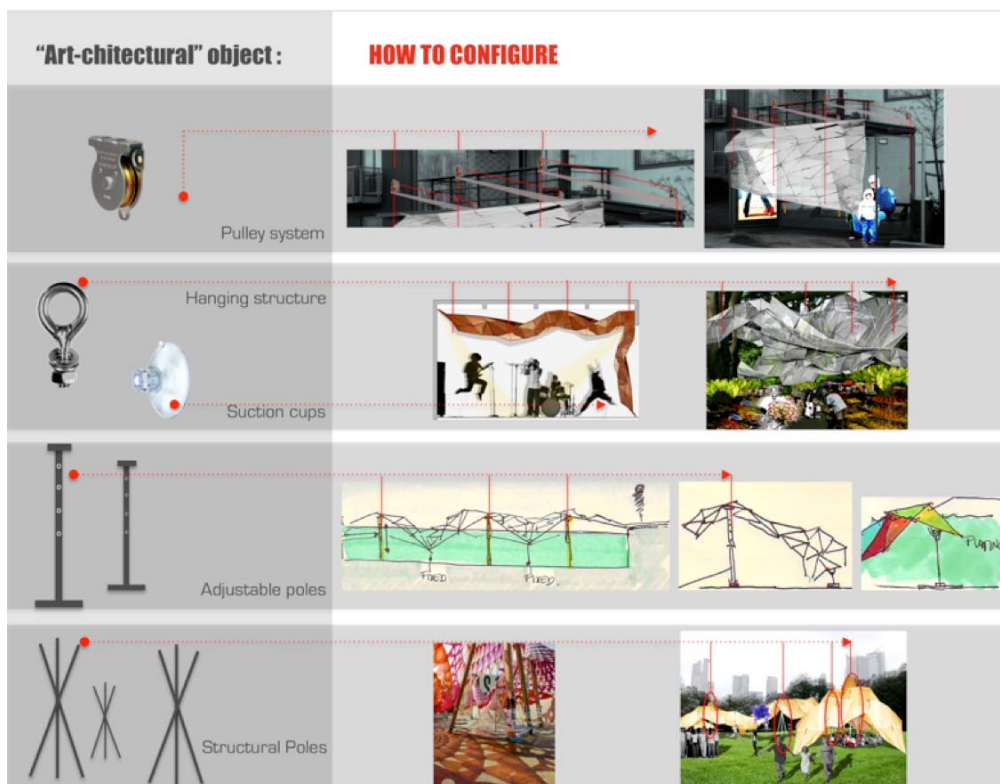


Figure 60: How to configure the "Art-chitectural" object.

## CHAPTER V

### CONCLUSION

Theory and design precedent provided the designer with the basis to analyze concepts and characteristics that were consequently translated throughout an experimental process for materializing the final design. The design conception and process was based on two fundamentals: First, the characteristics of a space: these were narrowed down from precedents and classified by the designer in order to build the personality of the desired space. Interactive, contemplative, experiential, ephemeral, and adaptable were the characteristics that the designer conceived for this attempt. Second, architecture categories: shadows, light, materiality, color, form and scale were conceptually explored and afterwards translated for the materialization of the final design. These two fundamentals were explored simultaneously during an experimental - design process where “learning while making” was perhaps the best way to describe the heuristic methodology involved for achieving the final outcome.

#### **Material exploration.**

The fabrication of conceptual models during the ideation process guided this exploration for understanding the particular qualities of the materials applied and their capability to modify a simple space. Using reflective materials on fractioned shapes in a box while providing natural illumination created a space fully interactive and filled with

experiences for the viewer. On the other model, a repetition of folded translucent plastic sheets in a red color plus the application of natural illumination generated a contemplative space where red shadows were projected on a clean white base. The results from these studies deeply influenced this work and answered one of the questions that the designer raised at the beginning of this thesis: Which are the fundamentals in a space for making architecture more than just a physical expression but a piece of art? Shadows, light, materiality, color, form and scale were indeed the ones that molded the characteristics of that space, in this case of the “art-chitectural” object making it contemplative and experiential, capable of transcending in peoples’ minds; just as a piece of art.

### **The “Art-chitectural” object and impact in the city.**

The conceptual process of this thesis was driven by experiments with sketches that were later tested through models. The triangulated piece translated the characteristics that the designer wanted to achieve: Interactivity, adaptability and flexibility. By generating a simple modular pattern the designer explored proportional relationships within the functional context. The introduction of vinyl while ideating the object was crucial to the development of this piece. Results transcended the expectations of the designer, as it was possible to reduce the amount of hardware on triangles in the first model and generated a more natural movement that resulted on a more flexible and malleable piece in contrast to rigidity obtained in the first attempt. This created a huge

impact on the design of the piece since almost any material could be applied to the vinyl. Triangles sizes were conceived on a modular basis while the vinyl modules responded to these same criteria.

This process was crucial as it let the designer visualize different functions and adaptabilities of the piece. As the triangulated piece evolved in its design, different scenarios were represented. The ideas that initially depicted the piece as an interactive stage, later unfolded into a variety of mechanisms that resulted on a flexible urban piece adaptable to endless necessities within the city. While ideating the concept, the designer faced some challenges such as making the piece to bend, fold and move in a flexible and natural manner. The first attempt was based using plastic cable ties, although this was a good way to start by “making” and testing the design of the triangles and their movement, pulleys and the mechanism results were not totally positive as very rigid movements were obtained when manipulating the triangulated by participants.

A second strategy was vital to the development of this piece with the use of vinyl material placed in between the triangulated pieces. This idea transcended the expectations of the designer, reduced amount of hardware on the pieces, and generated a more natural movement resulting a more flexible and bendable piece that when folded was extremely malleable. This created a huge impact on the design of the piece since almost any material could be applied to the vinyl. As triangles sizes were based on a modular system, the same was considered for the vinyl material. This could increase or decrease proportionally depending on the final space. As triangles were screwed through the vinyl,

the utilization of grommets for securing this material became essential. Results were based on the creation of three main elements: modular triangles, modular vinyl and grommets that were related to vinyl's modularity were connected together using screws, washers and nuts. Materiality was dictated by the final applications of the piece and the final environment: Colorful and textured rubber panels appealing to humans' sight and haptics responded to a wet environment; Cork was applied to acoustic spaces by enclosing and isolating them from sound regardless exterior or interior uses. And finally, polycarbonate sheets that responded to the weather; used as curtain walls while allowing the light and visibility go through, people could protect themselves from the rain, sun and wind in tentative scenarios such as bus stops and train stations. The process evolved from a sketch triangular model to different visualizations and prototypes that demonstrated that this object could solve endless urban necessities while providing a variety of scenarios offering people times for participation, interaction and contemplation. Although "triangle forms" in this design thesis were further studied as a derivation from earlier explorations on folded planes of the earth, studies confirm that the mechanism of the design object can be perfectly adapted to other shapes such as hexagons, circles, squares and perhaps organic shapes.

How can architecture enhance human perception and experiences within the public realm? How can architecture be eternally memorable regardless of its temporal or permanent condition? This study provides evidence that the answer for the last two

questions formulated at the beginning of this work will rely on the same conclusion: Only architectural categories such as: shadows, materials, colors, textures, forms and scale can enhance the human perception and create an intimate connectivity between us and the space that will later transcend in our minds.

Enhancing human perception in the urban realm can stimulate our thinking, and change our perceptions of places where we live and work by making environments that provoke interaction. Interactive public art can make strangers talk and participate, make infants curious, and provide citizens with an opportunity to calm down from stressed life. Over time, this can have the power to transform a city's image and help to define an entire community's identity by revealing the unique character of a specific area.

## BIBLIOGRAPHY

- Bishop,C. (2006).** *Participation. Documents of Contemporary Art.* London: Whitechapel.
- Bullivant,L. (2006).** *Responsive Environments. Architecture, Art and Design.* London: V & A Publications.
- Bullivant,L. (2007).** *4dsocial.Interactive Design Environments.* London: Wiley Academy.
- Debord,G.E.(1955).** Introducción a una crítica de la geografía urbana. (Introduction to a Critique of Urban Geography). Retrieved from:  
<http://www.bopsecrets.org/SI/urbgeog.html>
- Descartes,R.(1637).** Lectures on modern European intellectual history. Retrieved from:  
<http://www.historyguide.org/intellect/descartes.html#biblio>
- Gadamer,H.G. (1997).** *Rethinking Architecture. The ontological foundation of the occasional and the decorative.*(pp.126-136). New York: Routledge.
- Gregory,R.L.(1997).** *Knowledge in perception and illusion.* 352, 1121–1128.  
Department of Psychology, University of Bristol, 8 Woodland Road, Bristol BS8 1TA UK.

- Holl, S., Pallasmaa, J., Pérez-Gómez, A. (1994).** *Questions of Perception. Phenomenology of Architecture.* San Francisco: William Stout Publishers.
- Howes, D. (2005).** *Empire of the Senses: the sensual culture reader.* Berg: Oxford-New York.
- Kaye, N. (2000).** *Site-specific art. Performance, Place and Documentation.* London and New York: Routledge.
- Kronenburg, R.(2005).**Transportable Environments 3. In Pérez-Gómez, A. *Polyphilo's Thresholds: Alternatives for Nomadic Dwelling* (pp. 2 – 9). Kindle Edition.
- Leach, Neil. (1997).** *Rethinking Architecture. How an exposition exposes itself* (pp.202-204). New York: Routledge.
- Lippard, L. (1997).** The Lure of the local. Senses of place in a multicentered society. New York: The New Press.
- Lozano-Hemmer (2007).** *Rafael Lozano-Hemmer: Relational Architecture.* In Ponzini,M. , *Digicult.* Retrieved March 15, 2009, from <http://www.digicult.it/digimag/article.asp?id=990>
- Matzner, F. (2004).** *Public Art. A Reader.* Germany: Hatje Cantz Verlag
- Merlau-Ponty, M. (2002).** *Phenomenology of Perception.* New York: Routledge



**Miles, M. (1997).** *Art, Space and the City. Public Art and Urban Futures.* London and New York : Routledge.

**Pallasmaa, J. (2000, May).** Hapticity and time. *Architectural Review*.  
Retrieved from <http://www.findarticles.com/>

**Pallasmaa, J. (2005).** *Encounters.* In MacKeith, P (Ed), Helsinki: Rakennustieto Oy.

**Pallasmaa, J. (2007).** *The eyes of the skin, Architecture and the senses.* Wiley – Academy. England

**Rist, P. (2001).** *Pipilotti Rist.* London: Phaidon

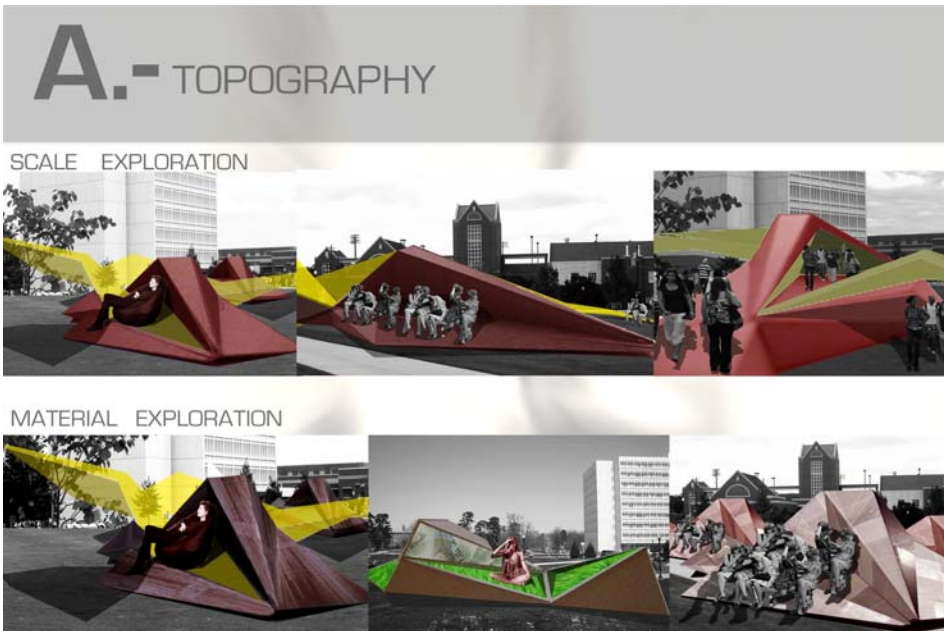
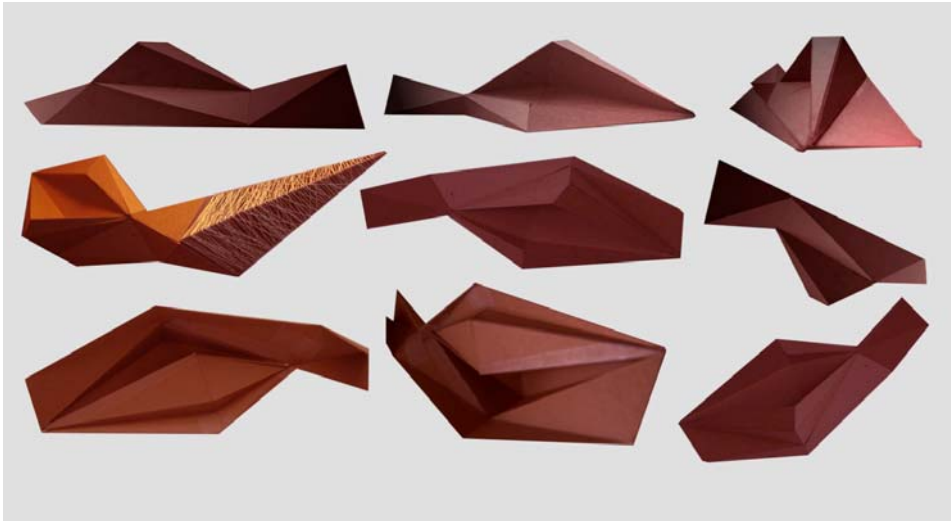
**Seamon, D.** Phenomenology, Place, Environment, and Architecture: a review of the literature. <http://www.phenomenologyonline.com/articles/seamon1.html>

**Von Hornbostel, Erich M. (1927).** *The Unity of the senses.* *Psyche*, 7, No 28, 1927, pp. 83-89

**Wodiczko, K. (1999).** *Critical Vehicles. Writings, Projects, Interviews.* Cambridge, Massachusetts: The MIT Press.

**Zumthor, P. (2006).** *Atmospheres.* Basel-Boston-Berlin: Birkhäuser – Publishers for Architecture.

APPENDIX A.  
BODY OF WORK.



## A.- LARGER SCALE EXPLORATION



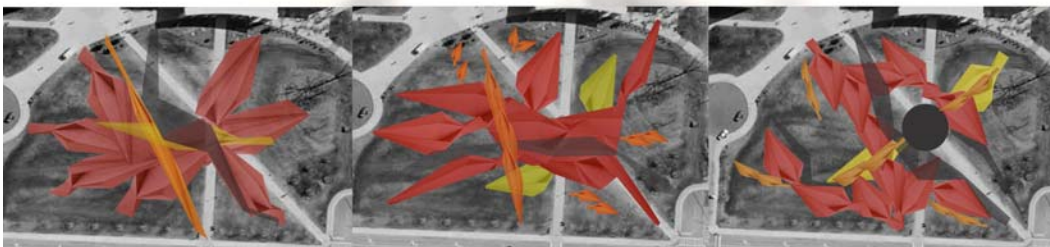
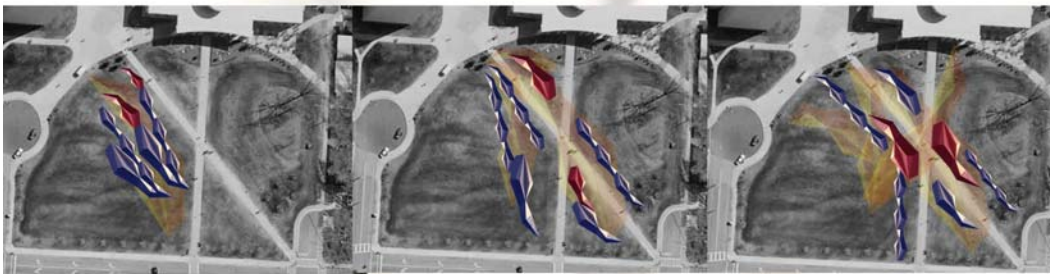
## B.- SKIN + WEAVE



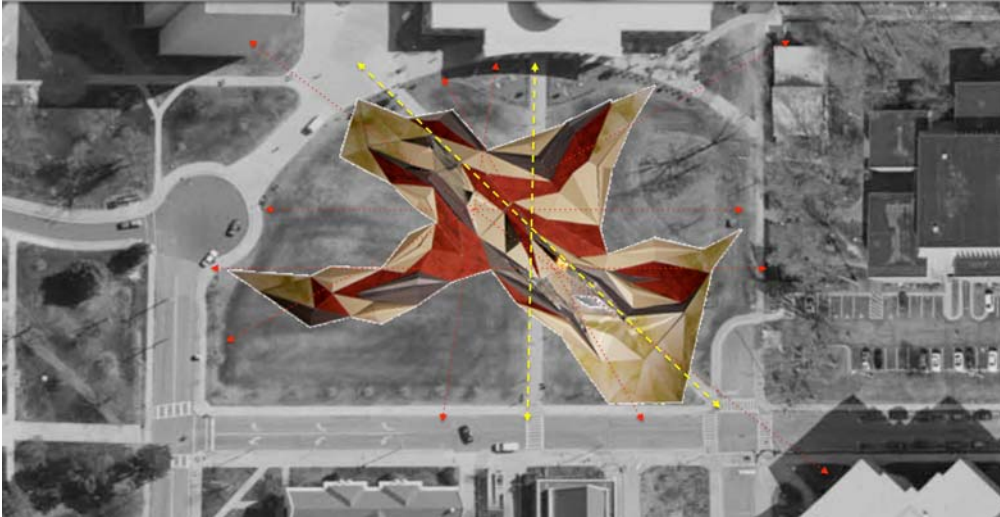
# C.- SENSATION BOX



# 03.- EARLIER SITE PLAN EXPLORATION



## 04.- SITE PLAN



## 05.- NATURAL TOPOGRAPHY



# 06.- WALKPATHS



# 06.-

## WALKPATHS- CORE-TEN STEEL

Core-Ten Steel  
Walk paths



The Niaux Caves in Ariège-France  
MASSIMILIANO FUKSAS

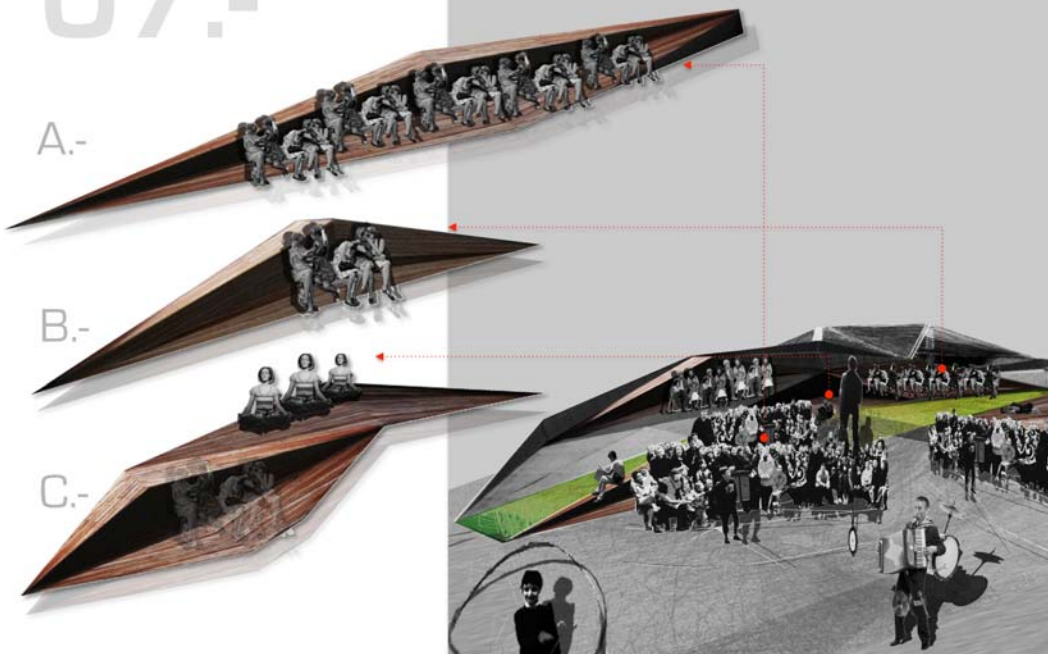


# 07.- FURNITURE-WOOD



## 07.-

## FURNITURE - WOOD



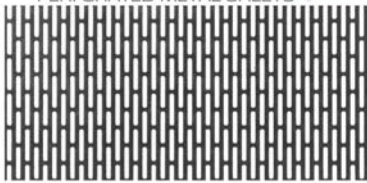
# 08.- PERFORATED METAL+LIGHTING



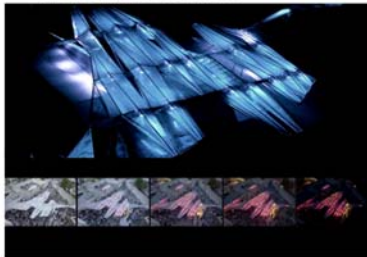
# 08.-

## PERFORATED METAL+LIGHTING

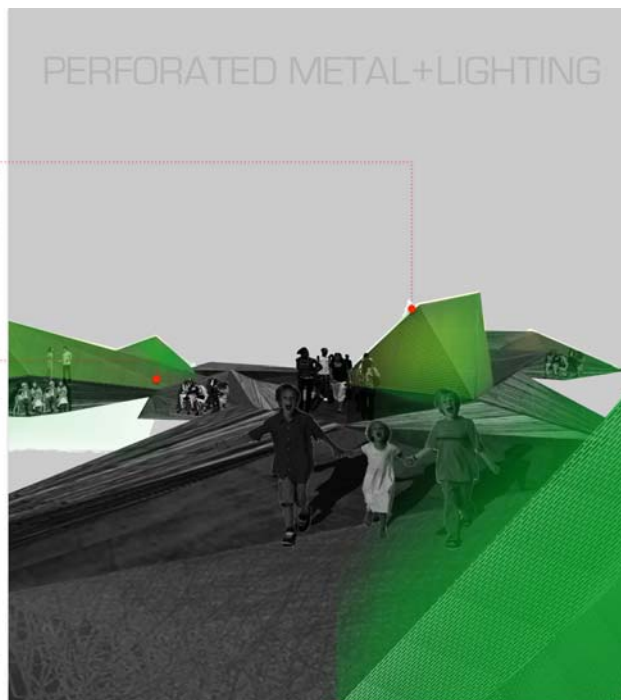
PERFORATED METAL SHEETS



LIGHTING:  
METAL HALIDE LAMPS



Summer Installation-PS1 MUSEUM-NY





# 08.- SENSATION SPACE



# 08.-

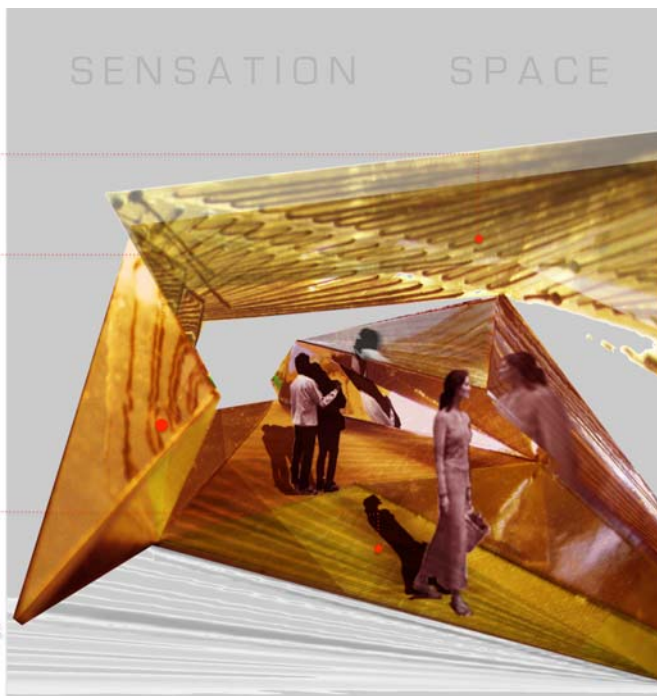
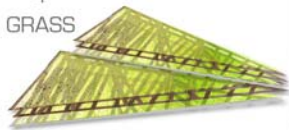
## SENSATION SPACE

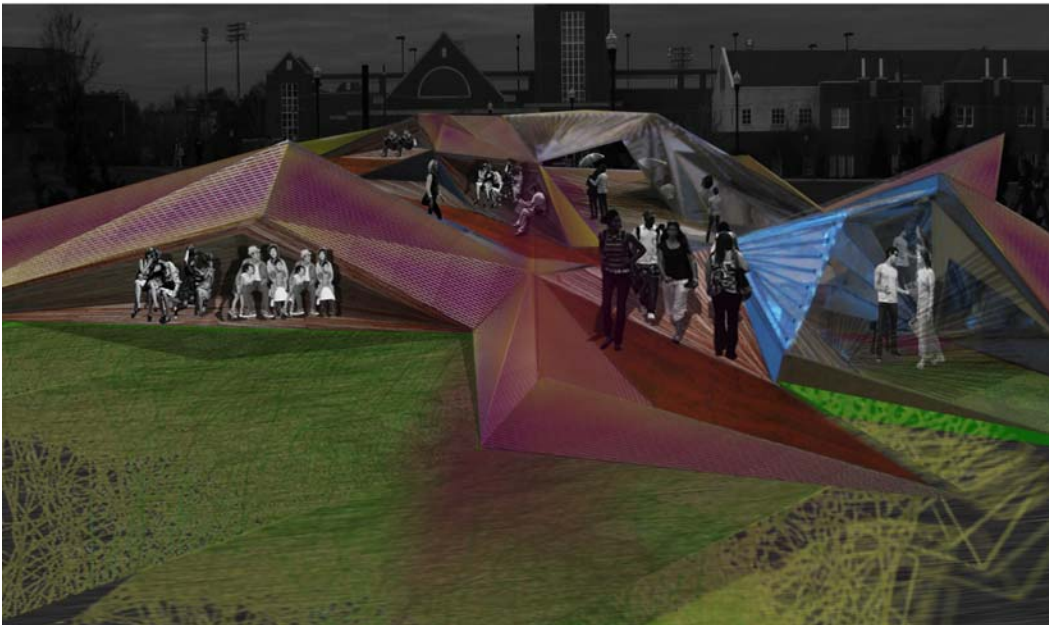
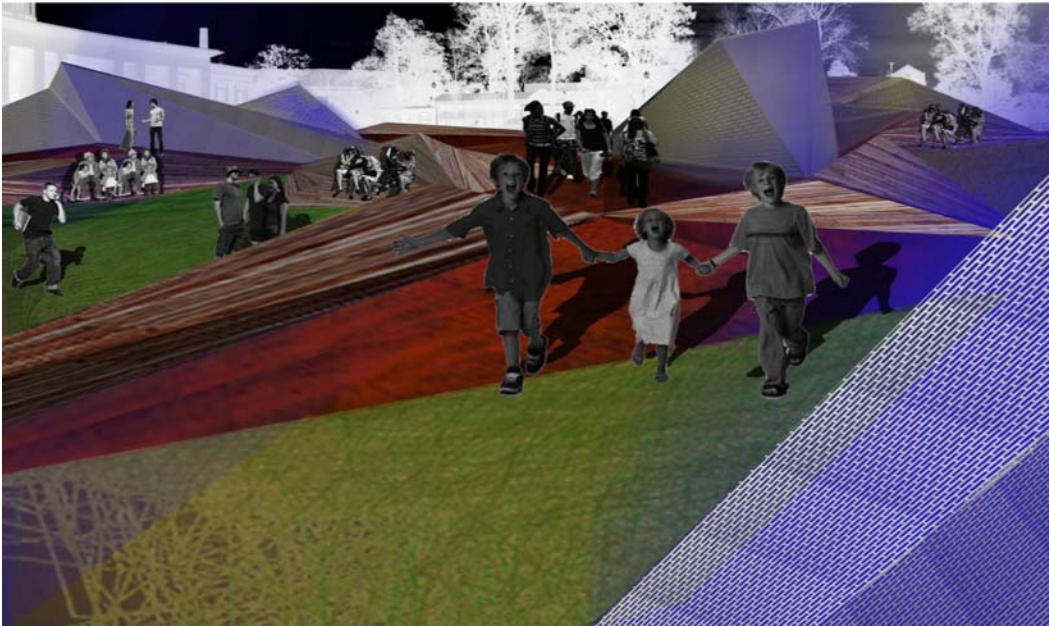
STRUCTURAL  
CABLES

POLISHED  
STAINLESS STEEL

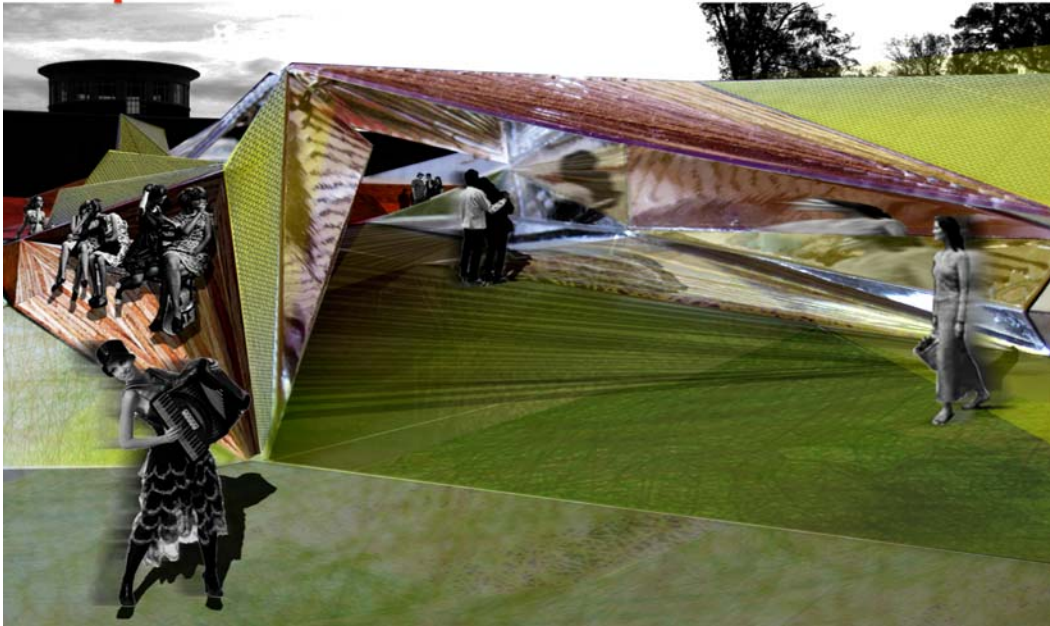


WOOD  
+  
GRASS

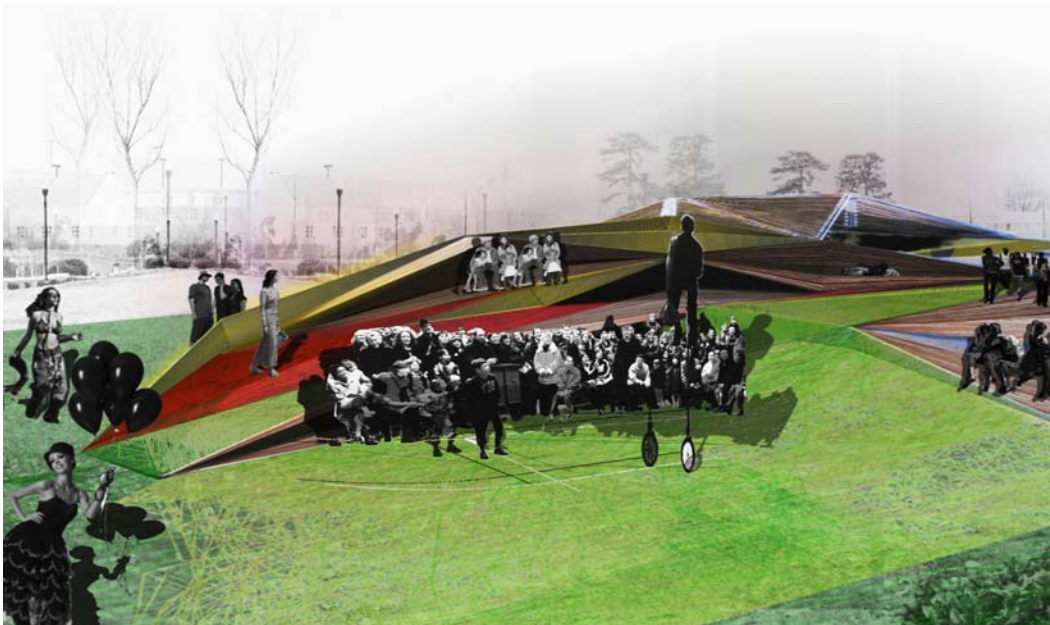




3

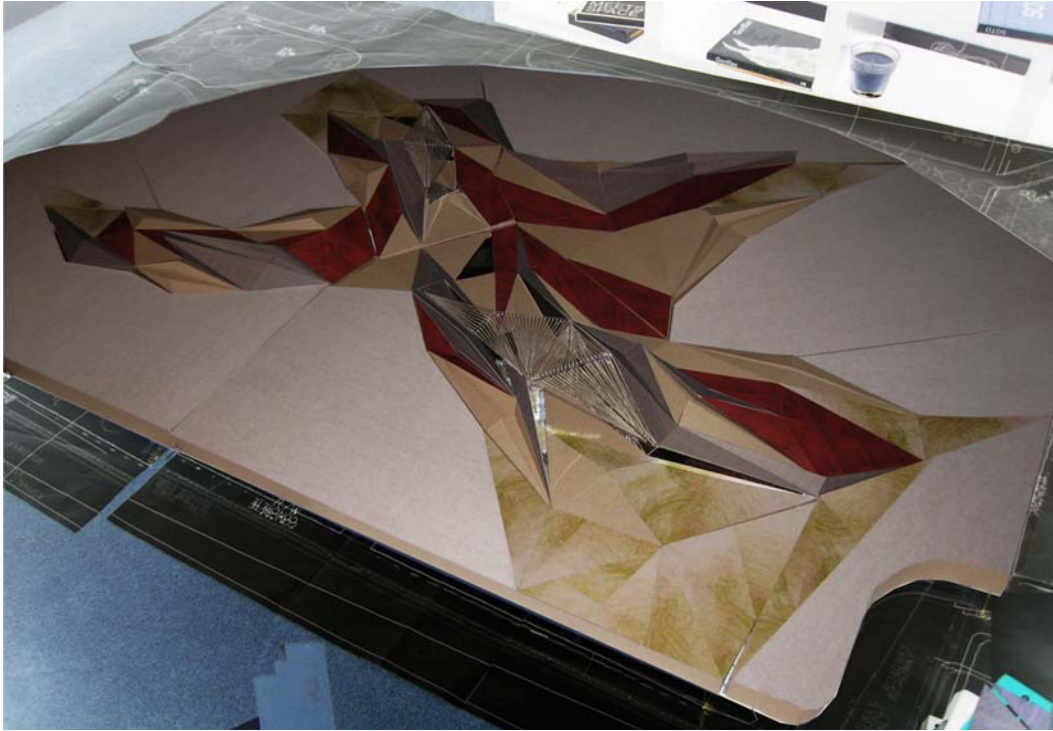


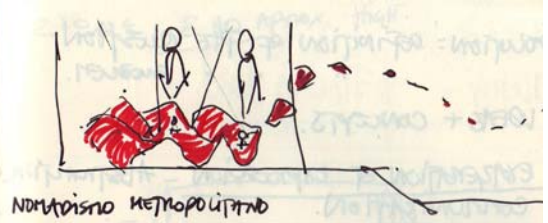
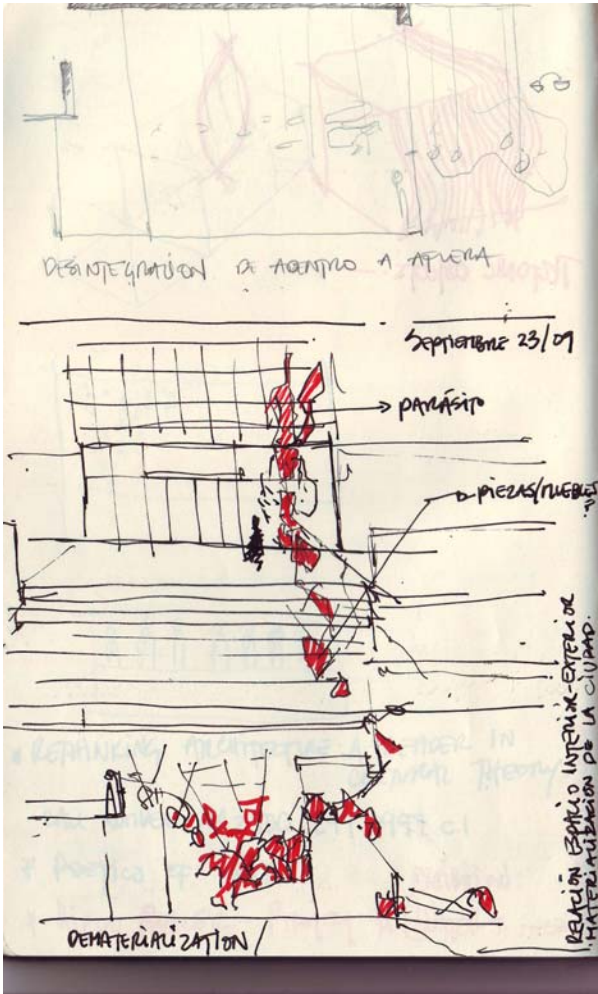
4



# 10.- MODEL DEVELOPMENT







NORMALISMO METROPOLITANO  
 - MÁS DE UN SOLO MATERIAL EN LA DESINTEGRACION DEL OBJETO. INDICANDO: NUEVOS EVENTOS, CAMBIOS, MODIFICACIONES

Billy Lee:

QUIN  
 SU ZHOU  
 SHAN WITAI  
 POEILIN

DIFFERENCE: SIZE ≠ SCALE  
 CHANGE → NATURAL PATH.  
 POETRY - SIGNIFICANCE (OUT OF REALITY).  
 POETRY WORKS / NOT LITERAL TRANSLATION  
 SYNTHESIS. FORMS.  
 SIZE - PERCEPTION / TACTILITY.  
 SIZE - BIGGER VS. SMALLER WORK IN DIFFERENT WAYS.  
 PICASSO - AFRICAN ART:  
 CONCEPTUAL SPACE / PERCEPTUAL SPACE  
 TRANSLUCENCY / REFRACTION / TRANSPARENCY

Body, program and space; interact  
to choreograph the pattern of dwelling.

Diverse architectural programs that  
reflect the cycles and rhythms  
of domestic life

The repetitive bodily interaction with  
a transformative architecture is an  
habitual act, that is, an act of inhabita-  
tion. This performance, therefore, has  
direct ontological significance: these  
actions are choreographed by the  
architecture, such that the inhabitants  
construct and reconstruct their  
domestic world on a cyclic basis.

Mutable domestic space can only exist  
with the active participation of the  
inhabitant, thereby creating a fusion  
between the phenomenal "body and space"  
and between the ontological "being and  
dwelling"

Notion of the city as a nexus of social and  
creative collaboration.

- Awnings structure for parking  
surfaces on top?

ARCHITECTURE TO PERFORM

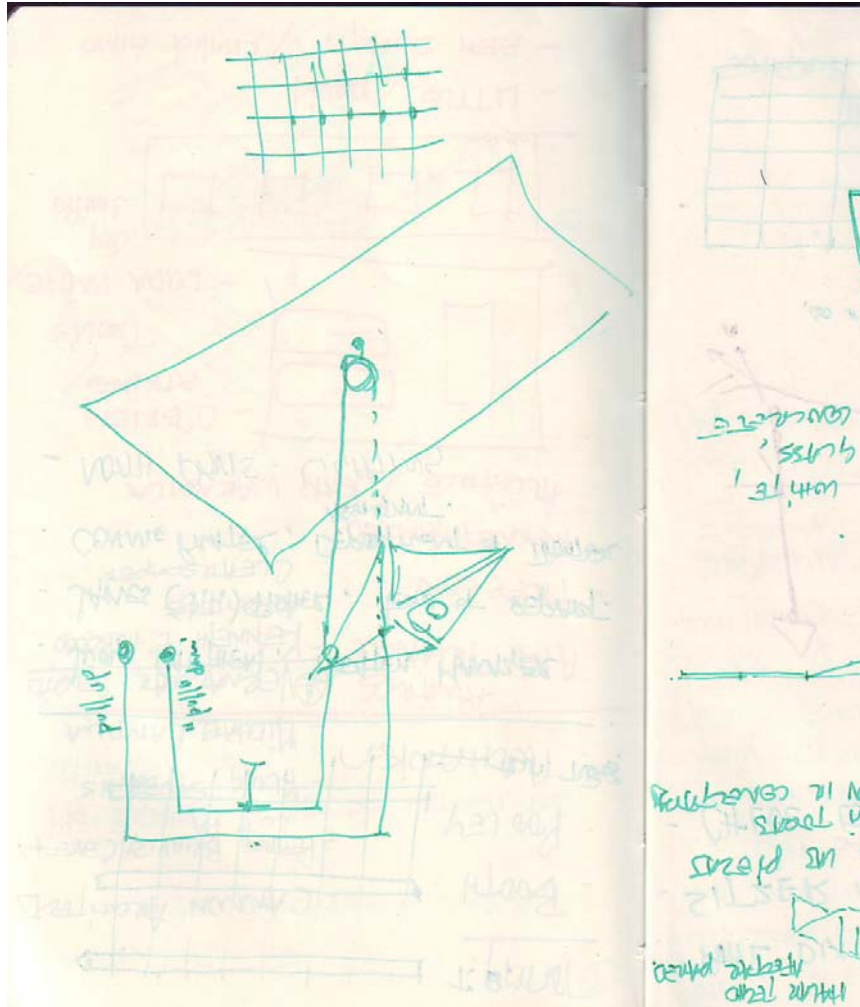
ARCHITECTURE AS AN INSTRUMENT  
TO EXPLORE OPEN RELATIONSHIPS  
BETWEEN PERFORMERS AND AUDIENCE

WANT THE SET TO GIVE CUES TO THE  
AUDIENCE THAT PROVIDED MULTIPLE  
WAYS TO ENGAGE THE WORK. RETHINK A  
SET AS AN INSTRUMENT THAT COULD  
FOLD INTRUSIONS FROM INFORMAL  
AUDIENCES INTO THE PERFORMANCE.

THEATRICAL ENVIRONMENT = INTERFACE  
SET = INSTRUMENT

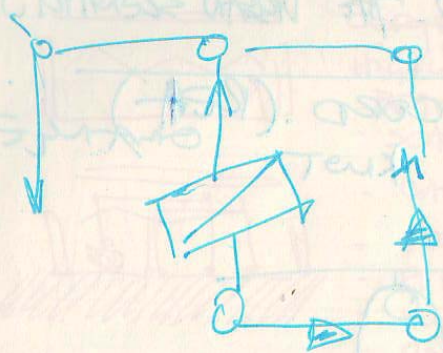
EXTENSION OF THEATRICAL SPACE OUT INTO  
THE STREET = "LIVING THEATER"

TRAGILITY: ELEMENTS CAN BE ACCESSED  
AND MANIPULATED. EMPATHY ARISES,  
BUT ALSO PARTICIPATION BECAUSE NOT ONLY  
IS THIS ARCHITECTURE A BODY, BUT IT IS A  
BODY WE CAN MANIPULATE.

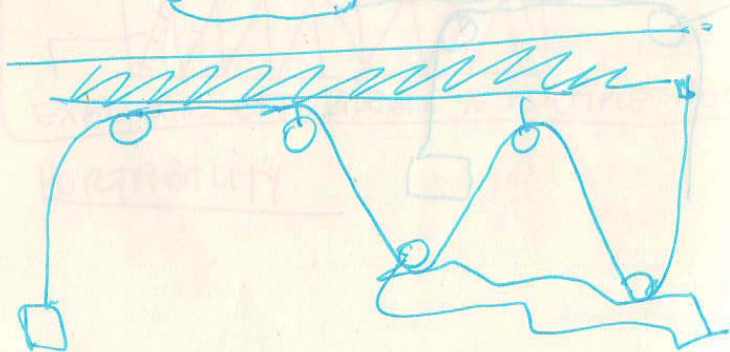
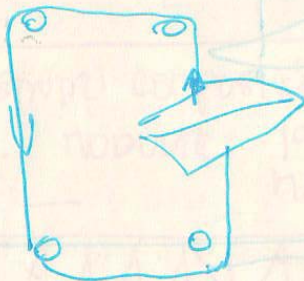


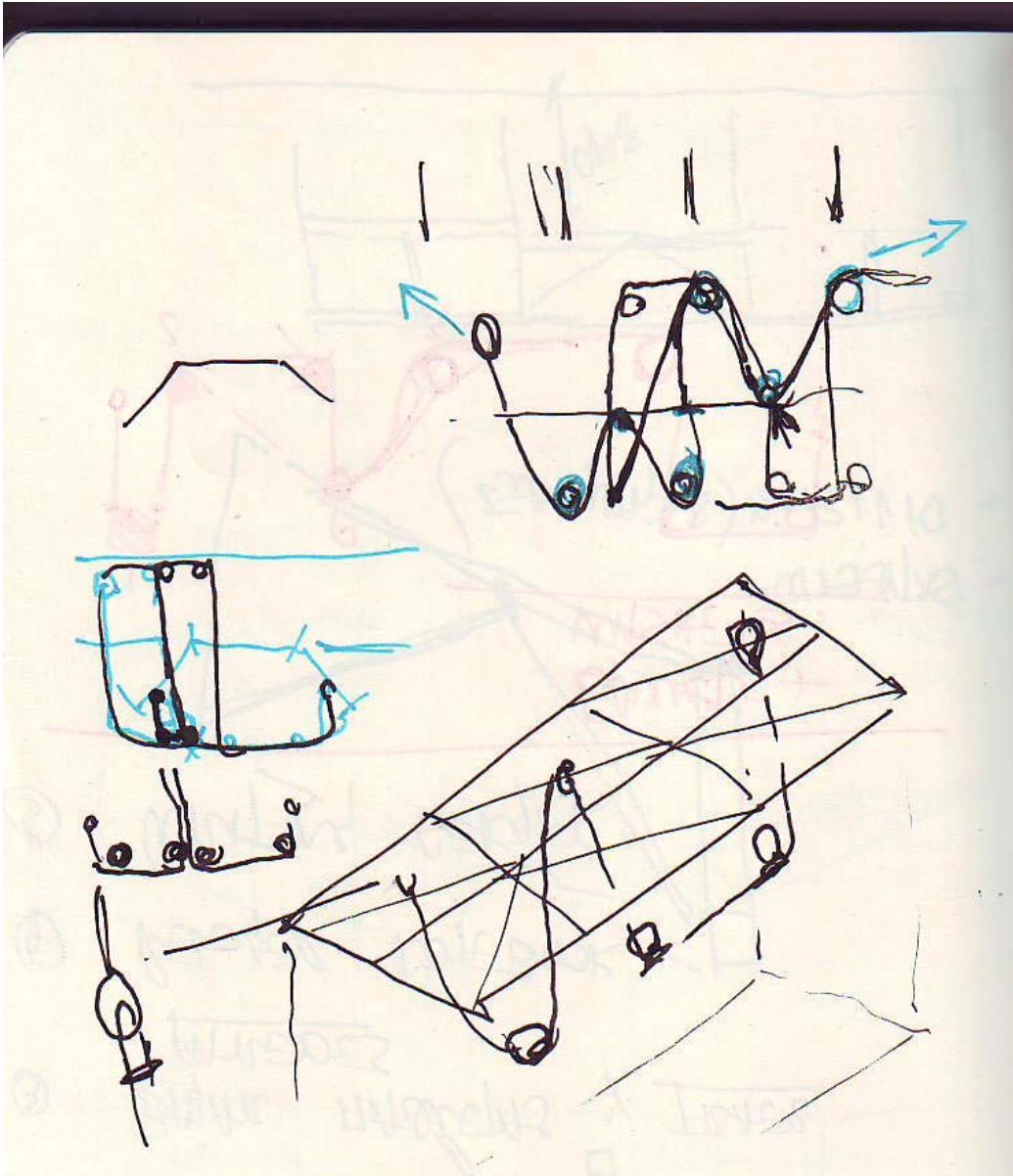


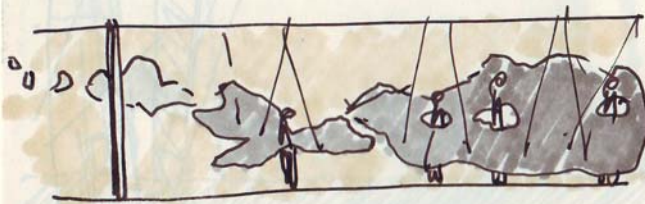
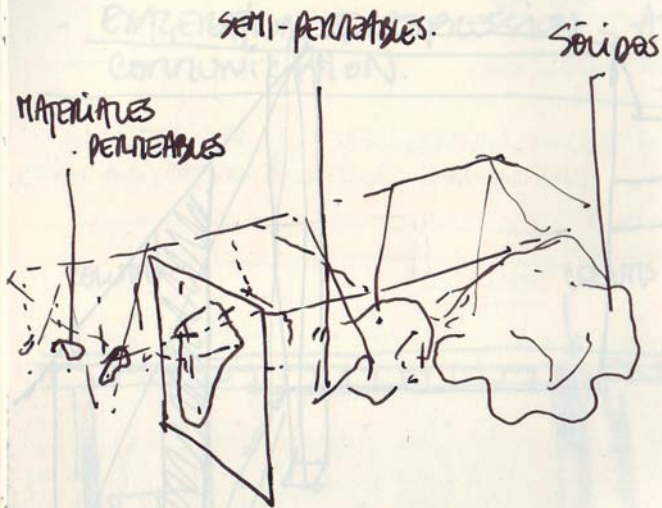
7425 WINDUP/CRAWR



loop.







RELACION ENTRE EL ADEPTO Y EL APENA.

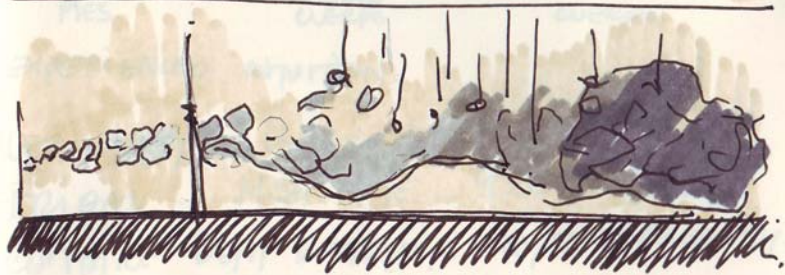
CITY.

INTERIOR.

(SOUND?) → CITY + PERFORMANCE.

VIDEO: NUESTRA PARTICIPACION DIARIA DENTRO DE LA SOCIEDAD. VIDEO EN CÁMARA LENTA. → VISUALIZAR CADA DETALLE DE MANERA CONHELADA 8

LENTA → OBSERVACIÓN DETALLADA DEL  
ESPECTADOR PARTICIPANTE SENTADO  
DE LA CIUDAD.  
SLOW MOTION VISUALIZATION.



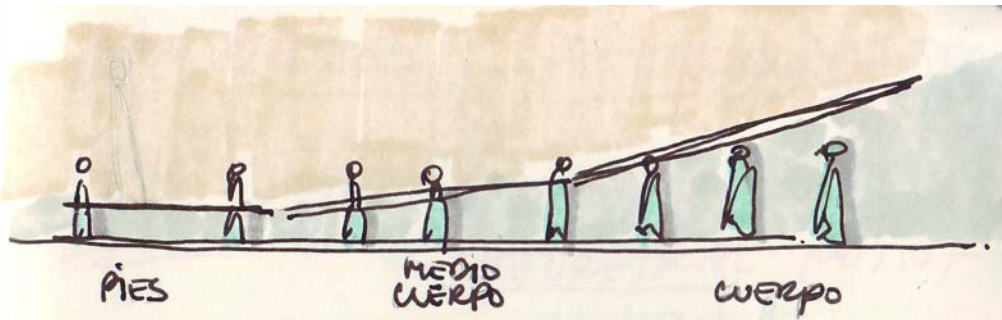
09/25/2009



DEMATERIALIZATION  
09/25/2009.

MOVEMENTS/ACTIONS/DISORDER/SURPRISES/PHENOMENA.  
MATERIALIZACIÓN DE LA CIUDAD EXTERNA PARA CREAR  
LA CIUDAD INTERNA. (CONCEPTUAL SPACE/PERCEPTUAL SPACE)  
DEMATERIALIZACIÓN → COLOR, FORMA, MATERIALES





- EXPERIENCED INTUITION.

WEDNESDAY - WORK DAY.

FRIDAY - MSH SITE 9:00 AM - 1 PM

COMBINE BOTH MEETINGS 10/7 WEDNESDAY.

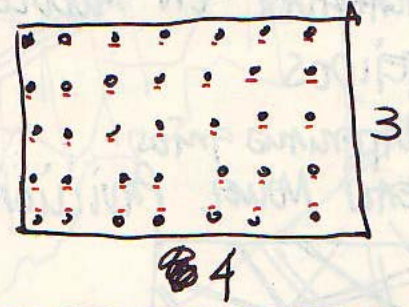
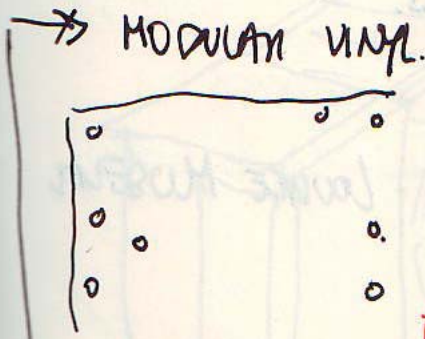
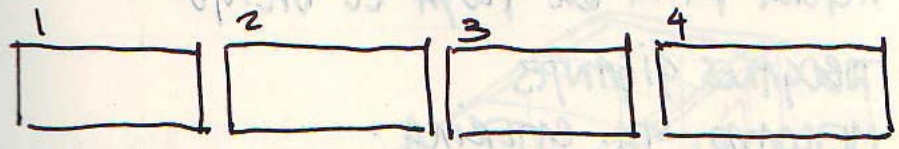
- VIDEOTAPE + SOUND. 1/8 3/16.

Wed TH After.

- FIND FOUR SCENARIOS:

- OUTDOOR CONCERT
- POOL.
- BEACH SCULPTURE
- URBAN SCULPTURE

SHOW IT Big - AT URBAN SCALE WITH ILLUMINATION.



Apply ANY MATERIAL ON TOP OF VINYL

A diagram showing a triangular structure with dots on its top surface. The text "Apply ANY MATERIAL ON TOP OF VINYL" is written above it, and the number "4" is written below it.



