

The background is a grayscale aerial photograph of a city grid, likely New York City, showing streets and buildings. Overlaid on this is a network of white lines that branch out from a central point, resembling a tree or a neural network. Several thick, horizontal grey bars are placed across the image, some of which intersect the white lines. The text is centered in the upper-middle portion of the image.

CREATING AN UNDERSTANDING OF
THE BUILT ENVIRONMENT

adam.cook

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Abstract

Detroit has always had a strong design heritage that goes beyond its architecture and into the fabric of everything it produces. This strong design sense has fallen off with the city, as it has fallen on hard times. Detroit however, is in the process of rebuilding, and with this growth comes many opportunities to reinvigorate its design past. Many cities that currently place a strong emphasis on design, Chicago, LA, New York, Copenhagen, all have prominent culture centers for architecture and design. By proposing a culture center for architecture and the built environment in Detroit, provides the city with the opportunity to place a stronger emphasis on design. The culture center will give the Detroit a knowledge and understanding of design in order to create positive growth within the city itself.

This thesis follows the simple objective of promoting an understanding of the built environment for an urban culture. This objective was focused on throughout all processes of the design in order to create a building whose appearance and program reflects the objective. This was done through multiple studies of visual theories as well as urban form analyses.



“We shape our buildings; thereafter they shape us.”
- Winston Churchill

img. 1

1

BEGINNING

Architectural concepts are often ignored or misunderstood by non-designers. Therefore it seems critical to bridge this gap and allow for architecture, as the primary piece, as well as the urban context of the built environment, to be understood by non-designers. Through the process of forming a better understanding of the built environment, connections can be made that demonstrate how “new ideas can traverse traditional boundaries and show how architecture creates cultural and economic assets for people, industry and society.” By bridging this gap, a higher design standard can be set, thus improving the standard of life and an understanding of the built environment. When looking at a transitioning city this standard seems necessary as to avoid some of the short falls that surfaced during previous attempts of redevelopment, thus making a more contextually aware society. Within these attempts at redevelopment, many issues arise. One of these is the potential lack of understanding by the population, or the planners’ misunderstanding of the willingness of the population to change. These types of issues all fall under the need by both the planner and population to adapt relative to each other’s outlook.

We become accustomed to viewing objects in a predetermined manner, a manner that assigned before we become aware of it. To break this trend we look for outside influences, new objects and new ideas, something that can foster the growth needed to adapt. If an idea has been maintained for an extended period of time, change and adaptation would become increasingly difficult to enact.

If these difficult adaptations exist in architecture, it becomes the role of the designer to look for ways change can take place: ways that the public can be educated in order to accept the change or even adapt to it, without realizing it. It is important

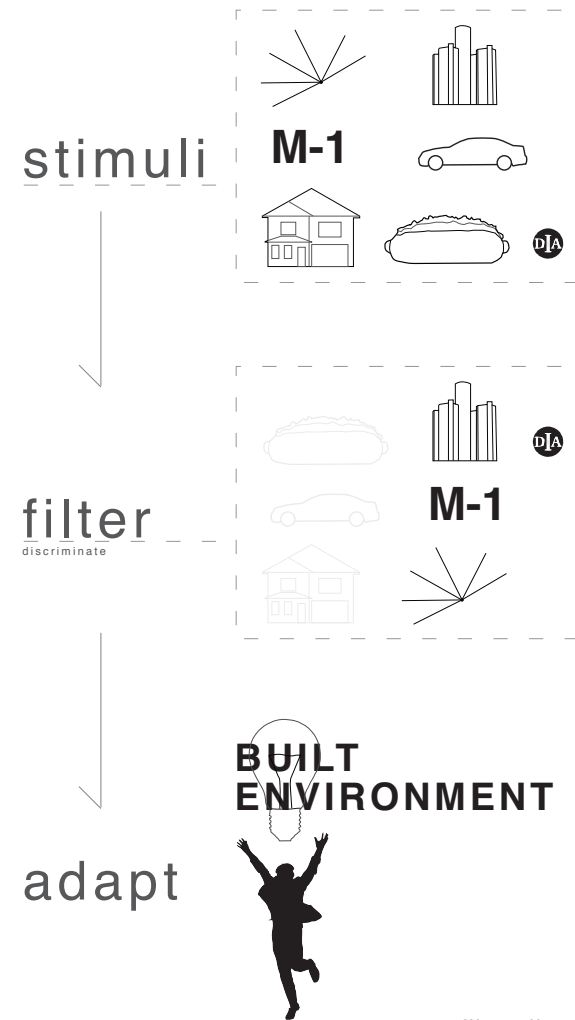
to implement a slow consistent change that effects long term memory as radical short change is often misunderstood and pushed away. Here the designer must look for ways to create this adaptation, which exists in the notion of perceptual learning. Perceptual learning can be understood as “an improvement in the ability to discriminate simple attributes during sensory processing.”

Perceptual learning becomes the foundation for how influence can be established, taking what we find in our current society and forming it into a way to critically look at the environment. If architecture is understood as a state of constant change, it can adapt to the needs of the people and progress in a manner that reflects the direction of the city. These changes can be progressive and a response to the current conditions, therefore reflect the future vision of the city rather than being stuck to a bygone era.

In order for the concepts of perceptual learning and a better understanding of the built environment to work together, a central localized point must be established. This point can be materialized in the form of a cultural center for architecture and the built environment by gathering related functions, to form the dialogue between past, current, and future. By being the physical manifestation of adapting ideas, the cultural center can be the reference point for how and what type of change is measured. It not only holds the conversation for what the built environment is today, but also becomes the architecture for where it can go in the future.

Adaptation Theory

In order to create an understanding for how adaptation can take place, the concept of Priming and Perceptual Learning must be defined. It is through the following sections of 'Brain Landscapes: The Coexistence of Neuroscience and Architecture' that Priming and Perceptual Learning will be explained. The author provides one of the key links to how people can begin to adapt to their surroundings. This then forms a process that explains how different elements can be connected in order to stimulate change in a manner that is unseen but successful.



stimuli: showing the stimuli we encounter in our daily life
 filter: the stimuli to focus on
 adapt: form the understanding

“Conscious perception is associated with recognition and identification and with the function of the ventral stream of visual processing. Aspects associated with unconscious processing of visual information are not part of our visual awareness. These principles also apply to the faculty of memory. Memory is not a single entity but consists of different systems. Declarative memory is the only system of which we are consciously aware. However, a number of non-conscious memory functions are present in humans, including priming, perceptual learning and emotional learning.”¹

Priming

“is based on our ability to improve detection of objects or identification of words after a recent experience with them. Priming is a distinct memory phenomenon. Its key feature is that it is an unconscious process. Even though priming improves the perception of recently encountered stimuli, usually we are not aware of the improvement in speed or efficiency of perception. This improvement can persist for a long time, even after a single priming experience. A simple way to think about priming is that for a period of time after a word or other perceptual object has been presented, less neural activity is required to process that same word or object again... Once primed, a small ensemble of well-tuned neurons might handle the perceptual task with the net result being a reduction in neural activity... This perceptual efficiency is available not only for familiar material but also for a wide range of stimuli: strings of nonsense letters, unfamiliar visual objects (such as views of buildings), novel line patterns, and material presented by voice.”¹

Priming can be used to train the brain to recognize and associate a building with a type of program or event. As an example post-industrial urban revitalization is often associated with the Bilbao Guggenheim museum or in Detroit, art is associated with the DIA. If the

user is able to do this, they can form references and associations to new buildings when similar patterns or trigger words are experienced. Essentially the building becomes branded without a logo.

Perceptual Learning

While it is clear that perceptually we need to see a tree as being a tree or know that the face of a friend is their face, perceptual learning refers to an improvement in the ability to discriminate simple attributes during sensory processing... In the case of perceptual learning, we become more expert at discriminating some feature of a stimulus. For example, with practice people can improve their ability to discriminate texture, direction of motion, line orientation, and many other simple visual attributes. Remarkably, this learning is often highly specific to the task and the specific way in which the training is carried out... This process, in which the ultimate long-term effect of experience is to change the structure of the brain, seems to underlie the famous quote of Winston Churchill, “We shape our buildings; thereafter they shape us.”... Most of these changes are nondeclarative, in the sense that they occur outside awareness and do not evoke conscious remembrances of the past. Priming and perceptual learning provide ways for early stages of perceptual processing to become faster, more efficient, and generally more discriminating as the result of prior experience.”¹

Perceptual learning can be experienced when one no longer has to think about a task or object, they simply know it or expect it. This becomes effective when talking about design; if a user of the built environment comes to know design they simply expect the improved quality of life. For example, if a building creates a usable public space, the public no longer thinks about its benefits, they become ingrained in their thoughts and demanded when taken away.

These theories are not fixed to a small scale, they have the ability to be applied to the built environment. The triggers and stimuli become buildings and transportation, it is in this way that perceptual learning can be applied to design. If positive design associations are made to buildings, then they can be built upon by an urban culture.



Woodward ave

Effect of M-1 Rail

By using stimuli through the priming process as selective elements, they can begin to be controlled or new stimuli can be introduced. The most important of these new stimuli is the introduction of the M-1 Rail system that will travel along Woodward Avenue, from Congress to Grand Blvd. Using the M-1 Rail as a priming element, it becomes a vessel: a mobile stimuli that has the ability to reach a larger audience. It is a stimulus because it represents a change in Detroit's current transportation. It will not only change the perception of how Detroit views transportation but it will also, quite literally, be the connecting element for Detroit's cultural centers such as the Detroit Institute of Arts, the Detroit Public Library, and the Detroit Historical Museum, both physically and metaphysically.

The M-1 Rail with its 11 stops stretching 3.3 miles along Woodward Avenue, will act as "economic catalysts, spurring investment and growth along their routes."² It is scheduled to begin construction in late 2013 and be in operation for the first quarter of 2016.



img. 4

Program

In order to begin promoting a broad understanding of design within society a specific program must be developed. For this program to be effective it must engage both the general public of an urban culture as well as the professional design community. By providing functions that respond to the needs of both the public and professional, different levels of interaction can take place between the two groups, which would allow for a greater understanding of design.

It is important for the program to engage and educate the public on design, this can be done through a number of activities and interactions, but it can also be done without the realization that learning is taking place. Thus creating a public that is more responsible to the built environment.

Program inspiration has been taken from existing architecture centers such as the DAC [dansk arkitektur center] and the NAI [Netherlands architecture institute]. Both of these centers lay out clear plans and objects of how and why architecture is important to be taught and understood by an urban culture.

"Our goal is to create broad interest in architecture, to clear the way for new ideas traversing traditional boundaries and to show how architecture creates cultural and economic assets for people, the industry and society."

"to make it clear to the public at large that architecture and construction create both cultural and material value in society. The purpose is to promote a culture in which producers and users participate in and influence the creation and preservation of architecture and construction at a highly qualified level."

"WHY TEACH ARCHITECTURE?"

- Architecture is a part of our identity and constitutes the framework for our lives.
- Architectural insight provides an understanding and respect for our surroundings and the tools to take part in democratic processes.
- Architecture is an interdisciplinary subject that deals with our relationship to nature, the environment, climate change, culture, religion, politics, economics and social conditions.
- Architecture can be experienced with all our senses and talks straight to our emotions.
- Architecture is innovation - learning about architecture also includes learning about a creative industry and process based work methods."

- DAC_[dansk arkitektur center]



our goal is to create broad interest in architecture, to clear the way for new ideas traversing traditional boundaries and to show how architecture creates cultural and economic assets for people, the industry and society.

Dansk Arkitektur Center
Copenhagen, Denmark
1985



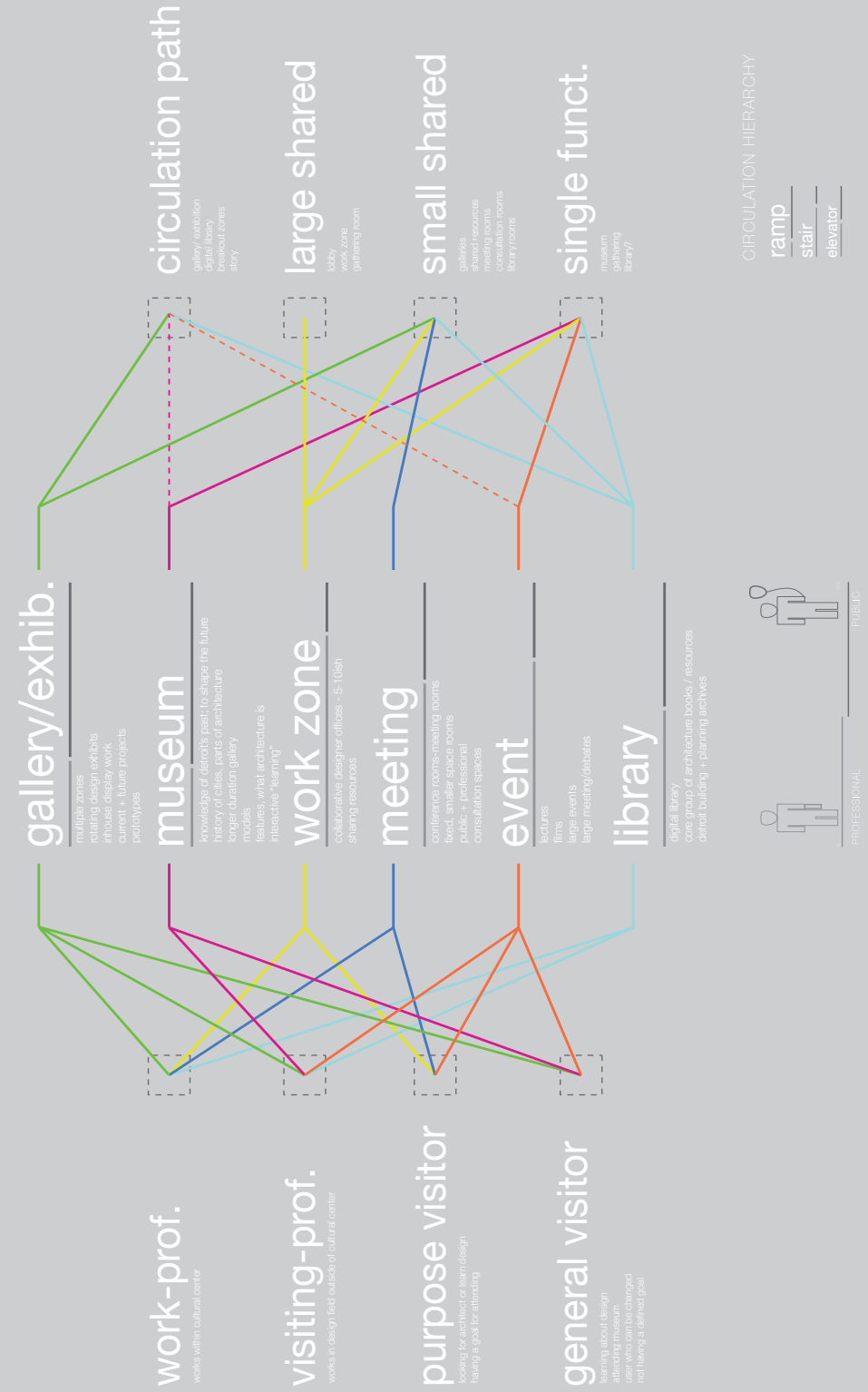
Netherlands Architecture Institute
Rotterdam, Netherlands
Jo Coenen
1993

The culture center for architecture and the built environment would house the following programs: gallery/exhibition space, architecture museum, collaborative work zone, meeting rooms, auditorium/event space, and an architectural library.

These programs have varying levels of public vs. professional involvement based on who the target audience is. As an example, the work zone is targeted towards multiple small start-up firms working in a collaborative environment sharing resources. By targeting the work zone towards professionals it has a small involvement of the public. On the opposite, the museum is target towards the public, as the professional will already have a majority of the knowledge that is trying to be shared.

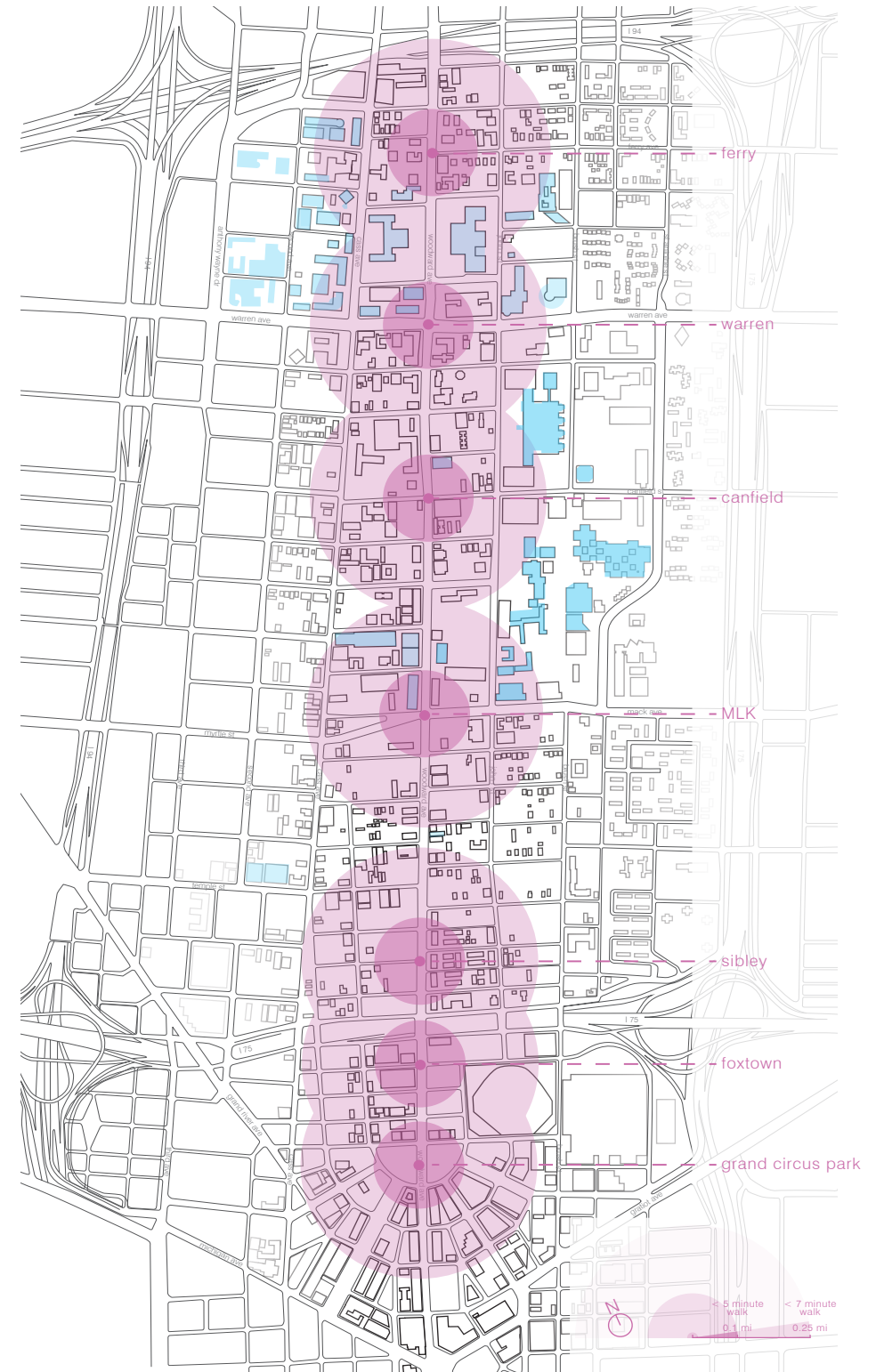
The programs are connected by one central circulation system, which also wrap and look inward on a private courtyard. This situation creates intersections where different levels of users can cross paths to share and gain knowledge. This helps limit the insular focus of most design community members and puts their focus beyond their own work.

By having a variety of programs existing in one place, growth and expansion of the different elements can occur. This variation of programs also starts to shape how the building operates. For instance, the work zone becomes a source of income to offset the need for donations and allow for it to be self-sustaining.

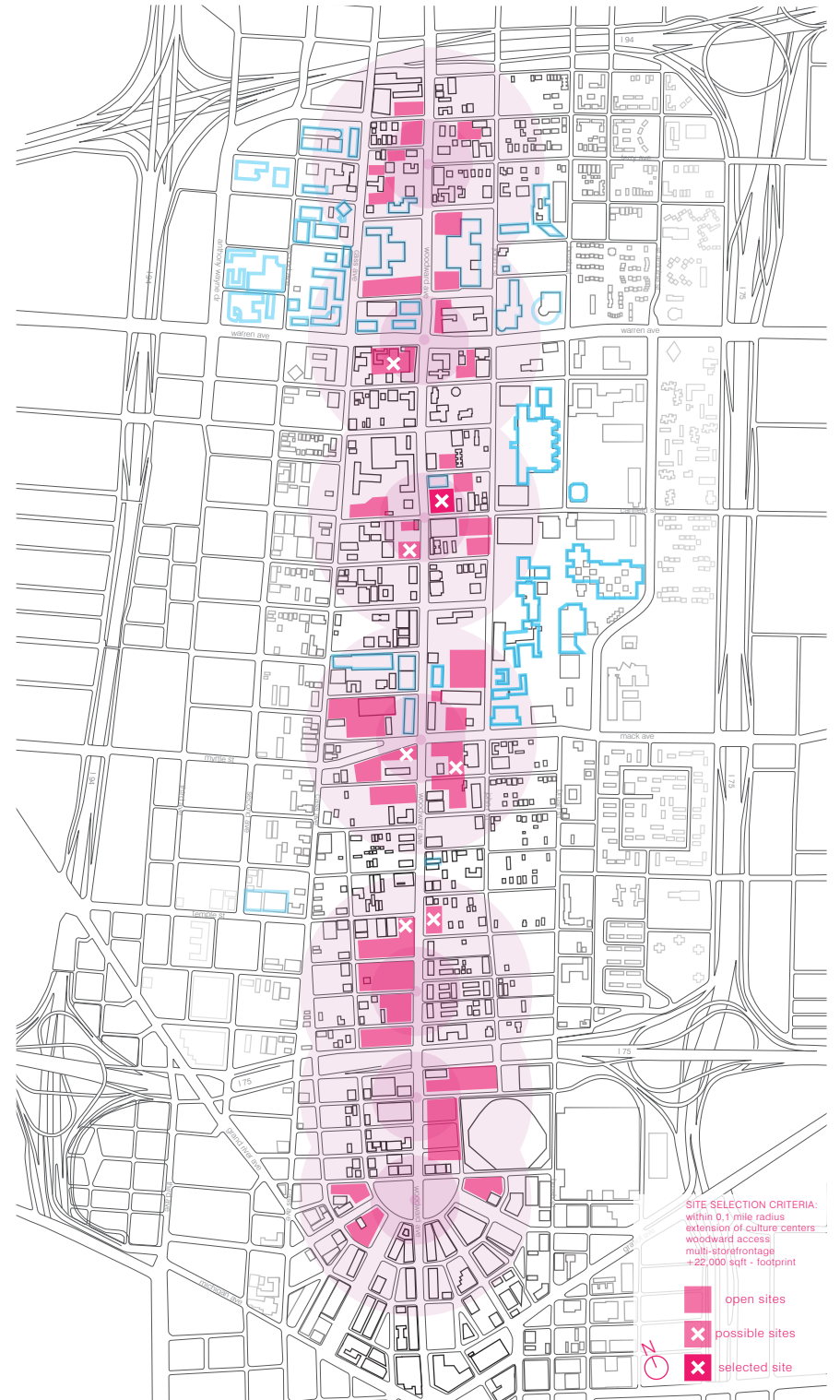


Catalyst Range

At each proposed stop there is currently some development and in many areas through midtown, growth is occurring without the rail. However, proposed stops will have a larger and more immediate effect on this growth once implemented. It is important to recognize where these stops are and how they can benefit a cultural center for architecture and the built environment. While Detroit is re-building, the initial catalyst effect from the proposed stops would be kept to a relatively tight circle, most likely within visual range or a block or two off of Woodward. By understanding where initial growth will take place, it helped determine where and how a cultural center along Woodward should be located. In order for the cultural center to have the greatest impact it should be within a tenth of a mile visual radius of a proposed rail stop. By narrowing this selection further, having it at a corner where there is a proposed rail stop would allow for the re-envisioned transportation to be understood and then transfer to an adaptation of how we view the built environment. They can work hand-in-hand, feeding off one another.



Within the immediate area of the proposed M-1 Rail stops, there are very few culture centers. MOCAD and the Wayne State University Welcome Center are the only two major cultural centers in these radii.



The relationship between programs and scale along Woodward seems to be minimal at best. Throughout the analyzed section of Woodward, programs range from small single-floor takeout restaurants to 20+ story office buildings. This provides an interesting look at what can be placed on Woodward and how it responds to its given site, and thereafter how those buildings respond to Woodward.



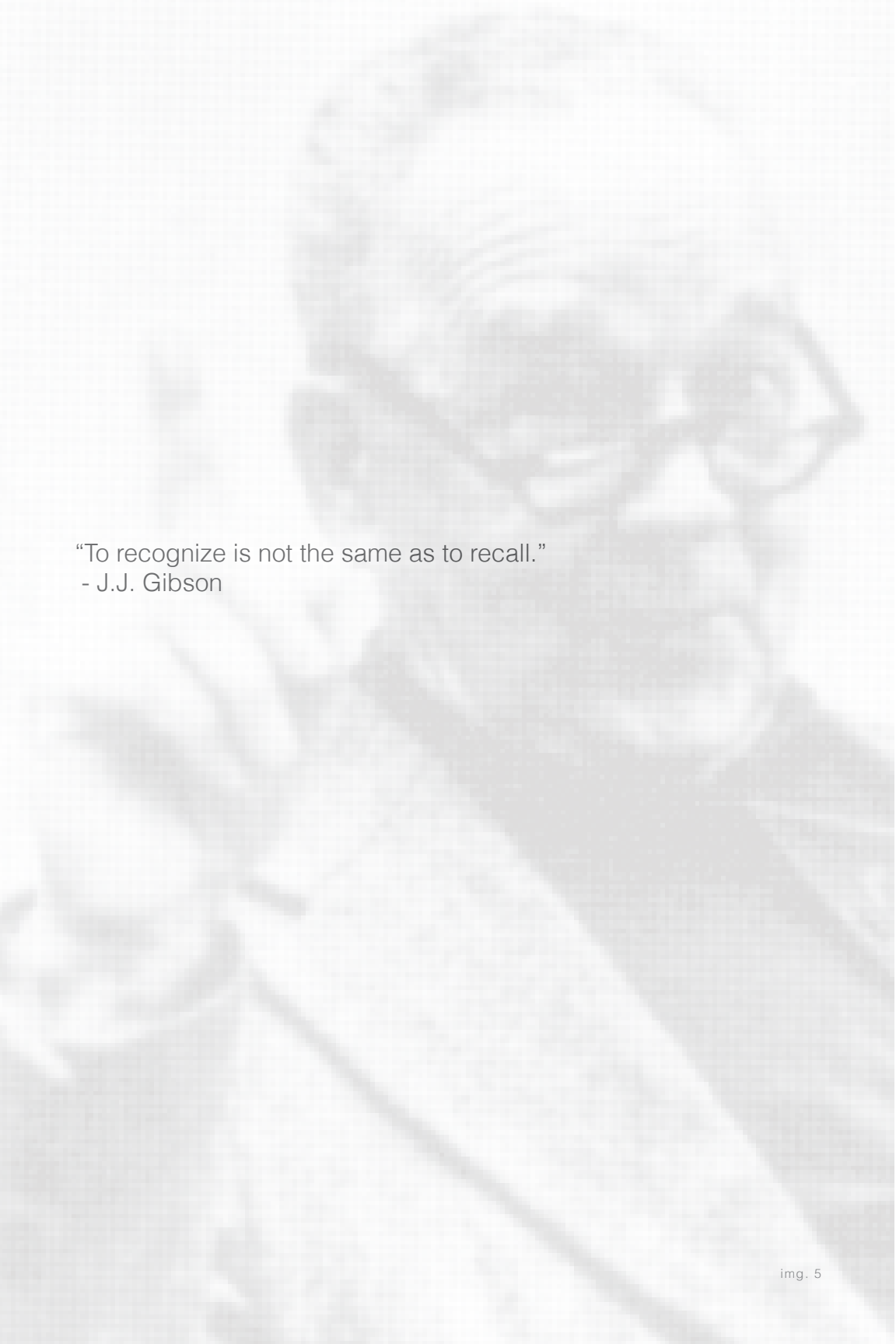
Site Selection

The site on the northeast corner of the Woodward + Canfield intersection was chosen as it met the criteria set forth in the site selection process and provided for an opportunity to respond differently to Woodward than its current neighboring buildings do. The opposing three corners are built or inaccessible to the public. This is seemingly opposite to what would be useful for a new public transit system. Therefore, an open corner is provided allowing for a public zone to exist at a transit stop, this provides the potential for new understanding for urban development.





site panorama



“To recognize is not the same as to recall.”
- J.J. Gibson

img. 5

3

VISUAL THEORY

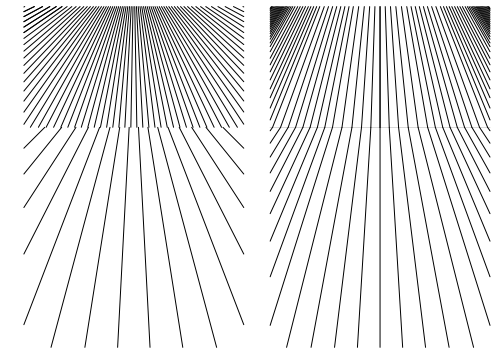
In order to expand and adapt the mind to think about the built environment differently, principles and theories can be applied to the formation of the structure in order for it to be perceived in a pre-determined way. We can start by looking at association in the sense of how perceptual learning can be applied, but in addition to that, how visual theories can begin to influence design. It is important to look at visual theories, because not only are humans visually dominant creatures, but naturally the exterior of a structure will be (almost always) the first thing we interact with, with our senses. Therefore, by designing in a manner to capitalize on the way we naturally look at objects, seems critical. It can allow for an understanding to take place, that can be subconscious, but referenced to the adaption that is trying to be accomplished through the M-1 Rail, and the program of the cultural center for architecture and the built environment.

The concepts for this study are brought forth through the works of J.J. Gibson and Rudolf Arnheim who were both prominent perceptual psychologists of the twentieth century. J.J. Gibson and Rudolf Arnheim, while representing different viewpoints on perception were chosen because of how they both respectively look at and analyzed the built world. J.J. Gibson's beginnings and initial ideas can be seen below.

“In Perception and the Visual World [2], Gibson states that his approach to perception grew out of aviation experiments that he did during World War II. In doing these experiments, Gibson concluded that the usual laboratory approach to the study of depth perception is not well suited to improving a pilot's ability to land an airplane, and that, instead, it is necessary to take the study of perception outdoors into the natural environment. Thus began Gibson's 'ground theory' of space perception, a theory he contrasts with the older 'air theories' of perception. Visual space, according

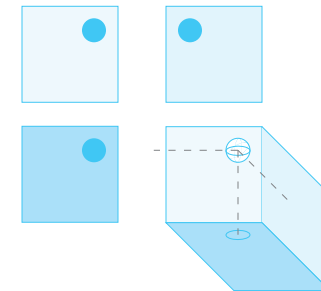
to the 'ground theory', is defined not by an object or an array of objects in the air {as occurs for depth cues such as interposition, relative size, etc.} but rather is defined by the ground, a continuous surface or array of adjoining surfaces. Thus, the spatial character of the visual world is defined not by objects but by information contained in the ground upon which these objects rest.”³

how can changes in surfaces be conveyed on a 2D surface, working with visual illusions



edge vs corner
img. 6

how can one object appear to be in the same position relative to its background while not dependent of viewing position



position's influence

Within the works of Gibson, a common theme exists, which is “invariant” or the “non-change that persists during change”[3, p. 201]. While there exist many examples of invariants, there are three that are more important to this project, they are described as follows:

1. Increasing density of optical texture

“[1, pp. 67, 149, 250, 272].

Texture gradients like the one in Fig. 1 remain constant as an observer moves in relation to the gradient (being the running bond pattern). This constancy of texture helps define the scale of space, since equal amounts of texture represent equal amounts of terrain [1, p. 83], and also helps determine the perception of sizes of objects, since the bases of equally sized objects cover equal numbers of texture units.”³

2. Flow patterns of gradients

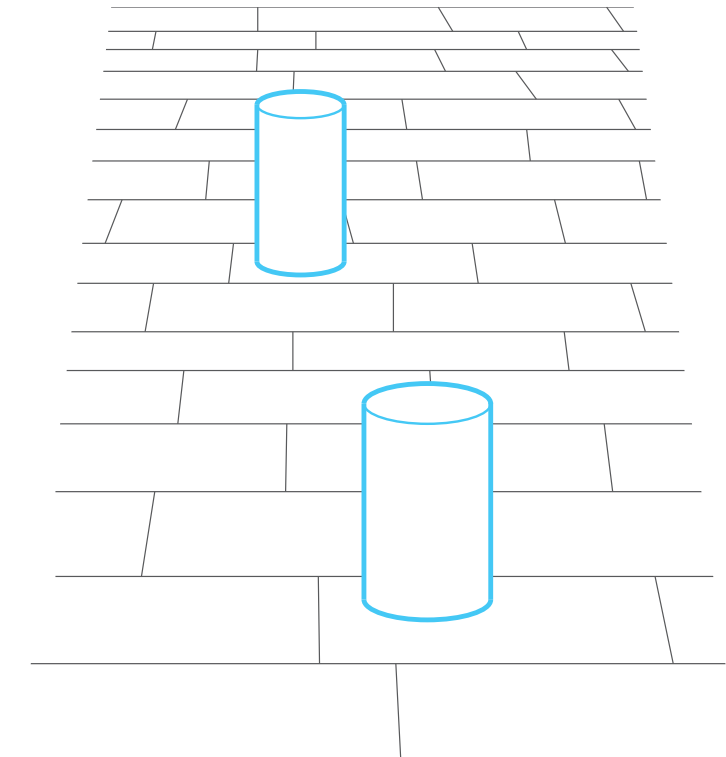
“[3, p. 162; 1, p. 182].

Movement of an observer causes textures in the environment to flow. If a person is moving straight ahead, the gradient flows everywhere with the exception of the point toward which the person is moving, which, being at the center of the optical flow pattern, stays constant. Thus, a person’s ability to stay on course as he or she moves towards an object is attributed to the ability to keep the unchanging (invariant) center of the optical flow pattern centered on the desired destination.”³

3. Structure common to two successive views.

“[3, p. 261].

As a person moves through the environment or scans it by making eye movements, the views seen at successive points in time overlap. This overlap helps the person to perceive a coherent, continuous scene even as the scene is changing.”³



texture gradient

img. 7

Interpreting Information

If the cultural center for architecture and the built environment is able to be recognized beyond its immediate site context, then it has the potential to carry its influence further; an object for adaptation.

These three invariant ideas become the basis for developing a façade and exterior conditions that responds to the importance of having a recognizable image. In addition, they help reinforce how the building form was generated. These visual theories start to suggest humans have the ability to process information in pieces and place it together to understand the form as a whole. By starting to think about what this means and how it affects individual perception of a space and of an object, certain choices can be made. These choices can allow for the visual connection to transfer from an idea to an object. They can be interconnected between symbols that can carry connotations, what is implied and what is meant to be gained, through the perceptual learning process.

In order to create a recognizable façade that responds to the visual theories an understandable pattern is needed. A pattern that can easily change scale, avoid connotations, and work with change; that pattern is the grid.



img. 8

4

THE GRID

An infinite grid can be used based on the three studied visual theory principles; it will act as a dialogue to explain how the theories can be applied. The grid has the ability to carry multiple meanings as well as be abstracted to fit to different theories.

Grid Points

“Functioning like a monochrome, as a flat surface that rejects composition and hierarchies.”

“Infinity that invades the viewer’s space.”

“All over space”

“the structure of this space is non-hierarchical, every space is equal,”

“Super studio uses the grid to mediate and give quality to space”

“Free Movement”

“The grid is designed to meet all the needs of its inhabitants and create a social structure of complete freedom and equality”

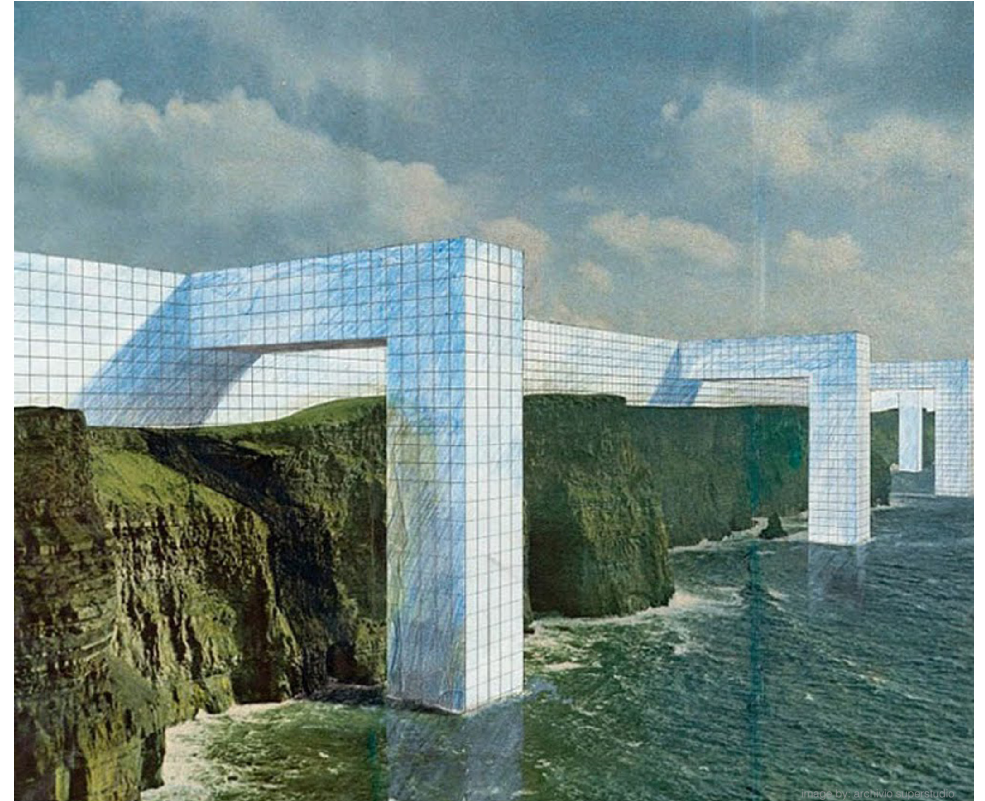
“Commentary of being “on grid” vs “off grid””

“The grid itself is a prototype for understanding the arbitrariness of the normal when juxtaposed upon a surface of total possibilities.”

“Pure and unchangeable, creating objects which will last, hard and immobile, shining and simple, and at the same time complex and ambiguous, because they are built of the materials of memory.”

These points about the grid help explain why it was chosen to represent the façade. The grid can be one of the links between what current society is and ways it can change. By removing hierarchy, the present is no longer weighed down by the past’s memory. It places them at equal levels and gives the current and the future the possibility to use the equally buildable space as a canvas for what development can be.

In the 1960's and 70's Super Studio pioneered the use of the grid as a commentary on society and the built environment. By using this as a precedent one can begin to look at what commentary can be said about the current nature of our built environment and how it can be adapted to better the future growth. By starting at the commentary point, the grid can be used as a tool to understand societal perception of the built environment.



The Continuous Monument

Super Studio
1970
img. 9



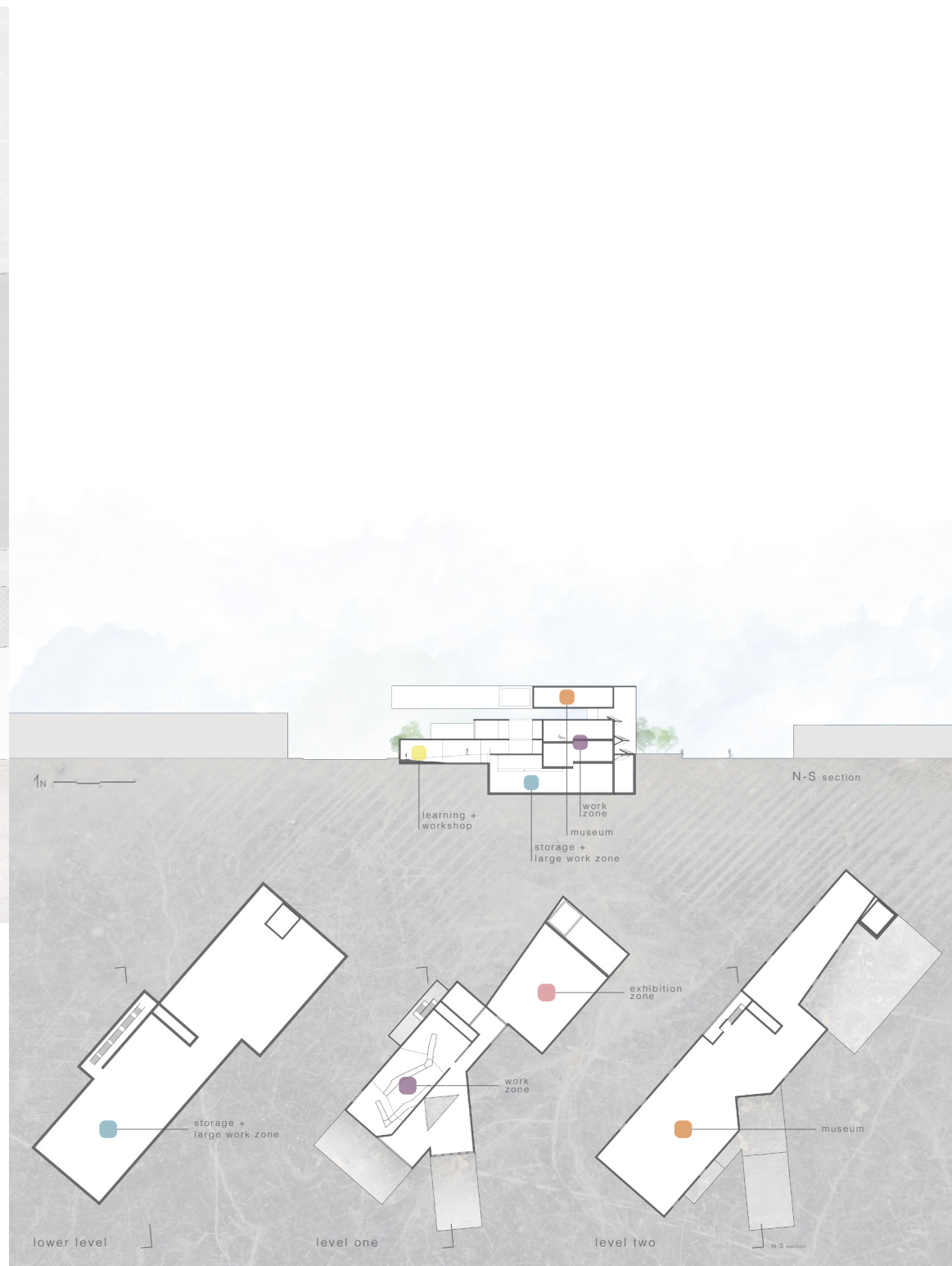
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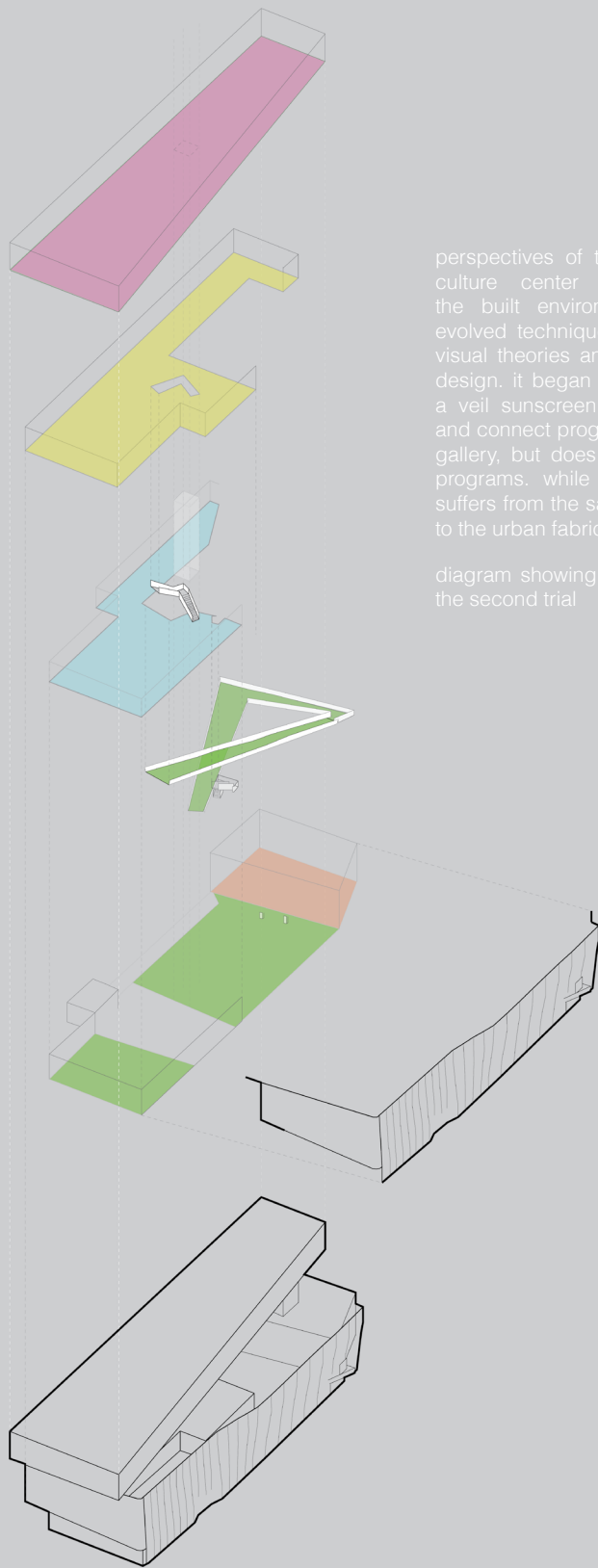
TRIALS

perspectives of the first trial of the culture center for architecture and the built environment. this was the first attempt at implementing the different visual theories that had been studied. utilizing a bar form that was expanded to form different public spaces. while effective at meeting the formal requirements it lacked proper circulation and connection of programs. in addition, it did not engage the urban fabric to its fullest potential.

[the same trial on the following pages]



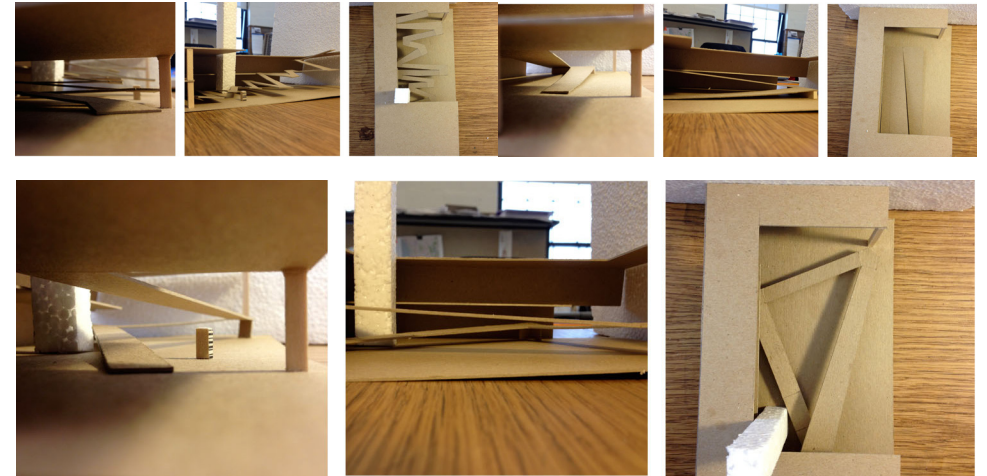




perspectives of the second trial of the culture center for architecture and the built environment. this trial uses evolved techniques of incorporating the visual theories and is closer to the final design. it began looking at the effect of a veil sunscreen as well how to stack and connect programs. it utilized a ramp/ gallery, but does not connect all public programs. while refined, this trial also suffers from the same lack of relationship to the urban fabric.

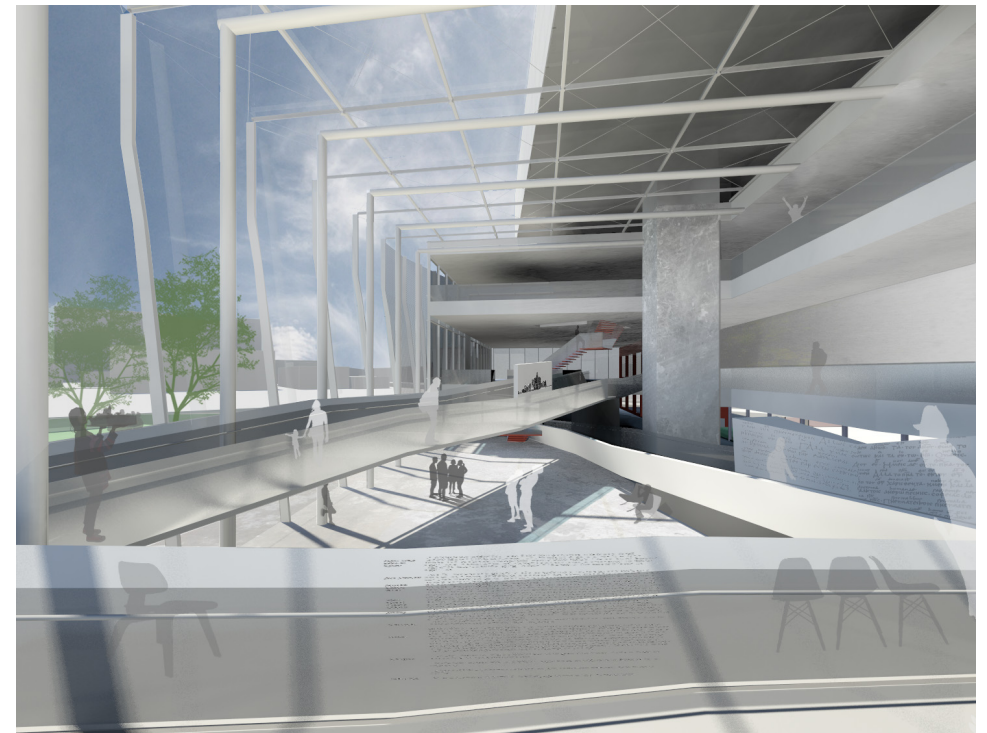
diagram showing spatial relationships of the second trial





studies of different ramp conditions, this was done to determine the most effective and elegant way to move between floors while still meeting ADA requirements. it was important to determine what type of ramp would be best suited to move people as well as act as a gallery to convey information.

perspective of the atrium from the second trial. showcasing how information is conveyed as well as how multiple levels are connected by the atrium.



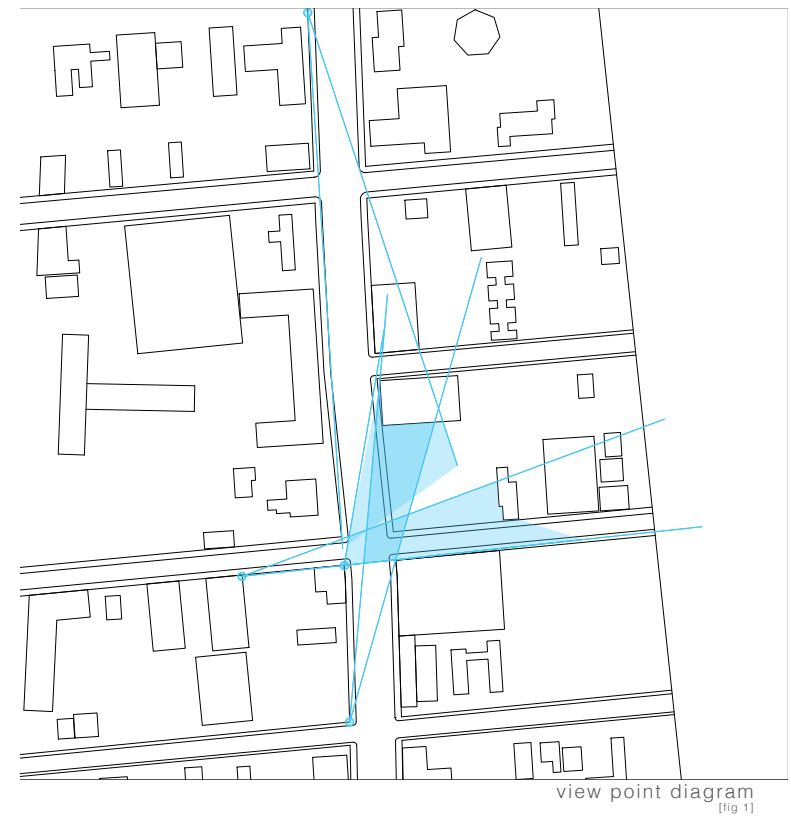
“museum for architecture, is the place for everyone with an interest in their surroundings” - the NAI

img. 10

6
FORM

Locating the culture center for architecture and the built environment at the corner of Canfield and Woodward Ave. was critical as that location provided important site characteristics to help it engage the surrounding community and influence the building form. At Canfield, Woodward turns slightly, allowing for unique views to exist when looking south down Woodward. Since the site offered these views, it was important to maximize how the building appears as it is approached from multiple directions. This study will also play into its association properties as to how it can appear as the same recognizable object from multiple directions.

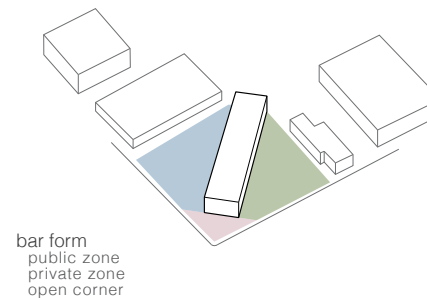
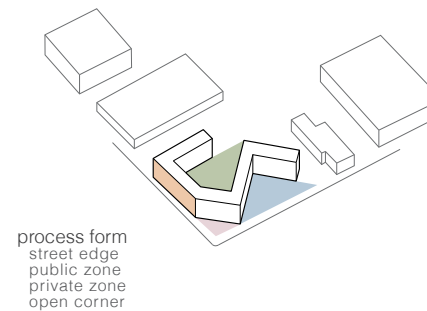
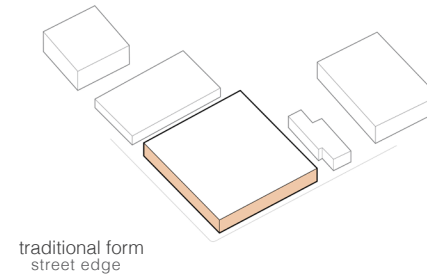
As development of the building form progressed, the site was looked at in two ways. The first being from a viewpoint diagram¹; this diagram looks at the site from multiple vantage points and through this helps determine what the optimal area to construct could be. It looks at overlapping zones as a place that can be visible from the most directions.



The second way the site was analyzed and building form was developed was more traditional. The defined program square-footage is approximately 45,000sqft, which is the same footprint as the site. Since the size of the building matches the size of the site, it would be easy to design a building that fills the entire site but would only be one level. This single level building would also have draw backs in its ability to distinguish itself from the building form that surround it, as well as the ability to overlap multiple programs. As the program began to be stacked, minimizing the footprint, a variety of forms were developed to visually fill the sight, create crossing paths of interaction, form public and private courtyards, as well as maintain a street edge.

As studies progressed multiple criteria we able to be met, but problems arose when connecting the different programs across the building plan. These studies also lead to understanding how a building could and should engage the urban fabric. Through these studies a simple bar form was chosen for the culture center.

The bar was chosen as it easily divided the site and allowed for an equal public and private courtyard. Given its shape it could also be pulled back from the corner, allowing for open corner to exist and accept the pedestrians that arrive and depart at the rail stop. This form also allowed for a central atrium to be constructed that not only rose through the building but it connected all the programs. This atrium was able to house the gallery ramp.



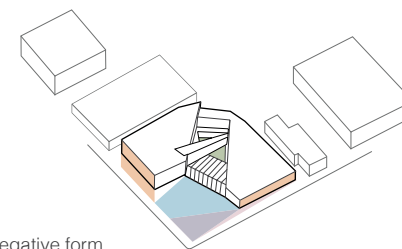
While this was an effective form from the perspective of meeting a large portion of criteria, it lacked some basic urban fabric relationships. This criticism came by of justification for utilizing only a third of the site while limiting opportunity for expansion and maintaining urban conditions. It also became increasingly difficult to justify an atypical building that is about architecture when completely ignoring the architecture to which it is responding.

Re-thinking the building form lead to a simple solution that utilized more of the site, maintain the connecting ramp, and provide a more distinct form, which does not reveal itself immediately. The re-thought form was generated by taking the bar form, leaving the ramp and surrounding the previous form, creating a negative void in the middle. This void was able to become an exterior private courtyard and an interior lobby/atrium. In addition to the private courtyard situated behind the atrium, the negative form produces a public plaza that doubles as an open corner.

The negative form is possesses a progressively slopping roofline and ascension of building height. At the two street edge conditions, the building starts at the human scale on Canfield with a total height of 13' and wraps to Woodward where the height increase to a 20' covered outdoor space. This outdoor space utilizes four structure columns to act as an arcade to maintain the street edge.

As the building wraps north around the negative form it is constantly rising till it terminates at Woodward. Here it creates a supported overhang that is slightly taller than the neighboring buildings. By doing this, the negative form is able to create a recognizable and consistent condition that is visible from multiple approaches of the building.

In addition to the private courtyard situated behind the atrium, the negative form produces a public plaza that doubles as an open corner. a



negative form
public zone
private zone
open corner
street edge

“of course it’s going to have light and sound, it’s a project in the universe” - Noah Resnick

7 DESIGN

Site Design

The negative form was developed with an understanding of the different roles it would need to play but the formal development would come later. It became critical to not only engage the public by creating a usable public space but equally critical to engage the surrounding context: neighboring buildings, streets, tram-stops and proposed development.

Engagement with the surrounding context begins by creating situations where defined and undefined programs can take place. The site breaks down into multiple zones while still being encompassed as an open corner. A green zone exist on the southern portion of the site, it is designed to be a reflection of the Whitney, situated across the street. This green zone, over time will grow into a simulated entrance for passing into Midtown, maximizing the effects of having to green corners on Canfield.

The north portion of the building offers a covered area where breakout performances can happen, as it can double as an outdoor exhibition zone. It is depressed into the ground, allowing it to act as a stage for people passing by or stopping to watch. When there is not an event, in this area, it acts as outdoor seating for the café.

Just north of the building exists a corridor that is shared with the Museum of Contemporary Art Detroit – MOCAD. This corridor responds to a proposal of MOCAD's expansion, providing a link to their rear entrance as well as the proposed green space and event space located behind their building. While this new corridor ends in the proposal for MOCAD, it also acts as a vital connection to a proposed residential and mixed-use building. This connection allows for quick access to transportation as well as access to a series of public and private courtyards. This is possible

by proposing two courtyard buildings (proposed residential and culture center for architecture and the built environment), each building provides a private courtyard, the space created between them being a semi-private courtyard and then a public plaza on the corner of Canfield and Woodward. This series of open spaces allow for the user to experience and interact with the site beyond simply walking into the building. Making connections such as these are important as they incorporate the surroundings, as this culture center is not an insular object.

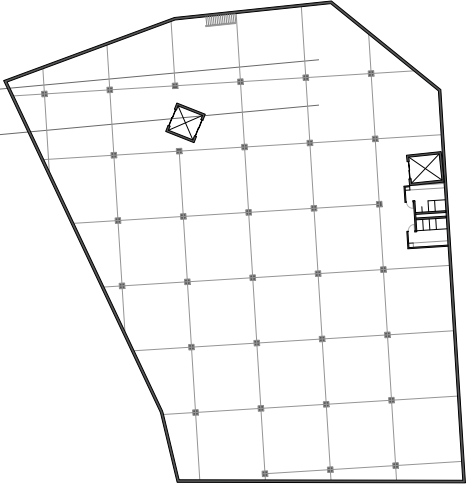
In order to entice the public to approach the building a distinct paving pattern was designed and incorporated into the site. This pattern is derived from lines that exist within the building, become abstracted and are extended into and across the site. This site design is meant to focus and draw visitors into and through the building, leading them into the gallery ramp. This is done by creating incrementally smaller paving patches, as they get closer to the building, giving the illusion of motion. Each of these patches can be handled in a number of ways. They can be different in material make-up, color, actual brick pattern, or texture. By doing this each interaction with the space becomes unique and different depending on the approach and specific path chosen.

By extending the site lines across the site and into the street, the pattern is able to form a recognizable relationship with a changing new transportation network, the M-1 Rail, and the new culture center for architecture and the built environment. By pushing this relationship a user can begin to infer connections about a changing and adapting city system to a positive and important view on design. In addition to this relationship, the paving pattern reaches out into the street to accept users of the rail system, as the remainder of the site context is not immediately

accessible. In choosing to look at site design with the active user in mind, the site's edges are pushed beyond a traditional end of the sidewalk and become blurred as to where the physical end of the site is. This more holistic approach was carried into the choice to eliminate any new surface parking and propose an underground structure that can service the entire site.

Through the incorporation of multiple outward reaching site design features the culture center for architecture and the built environment is able to engage and invigorate the new user into interacting with and understanding the built environment. In order for this understanding of the built environment to be successful inside the building it must begin with a positive approach to the building.

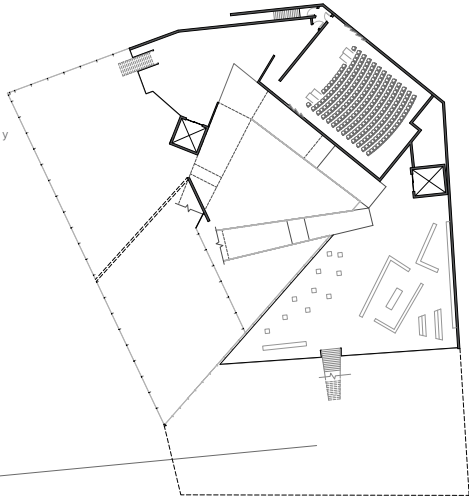
BASEMENT PLAN
scale 1/32" = 1'



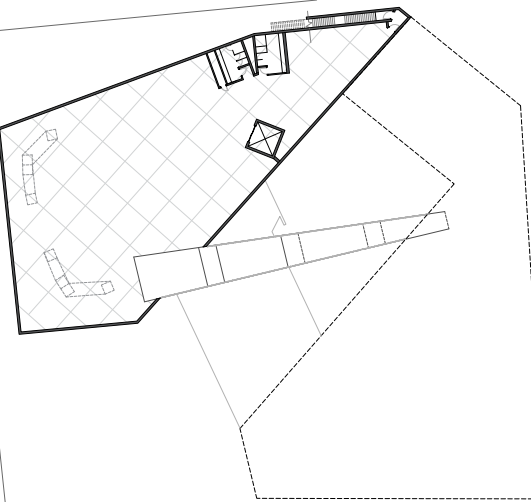
proposed mixed-use
w/ underground parking

MOCAD

LEVEL TWO
scale 1/32" = 1'
auditorium + library



LEVEL THREE
scale 1/32" = 1'
museum



GROUND PLAN
scale 1/32" = 1'

collaborative work zone
lobby + cafe + administration

M-1 rail stop

M-1 rail stop



MOCAD

SECTION_N-S
scale 1/16" = 1'
museum + work + library
lobby + cafe + auditorium

underground parking

SECTION_E-W
scale 1/16" = 1'
museum
lobby + cafe + auditorium

Formal Characteristics

A site that effortlessly engages the user is critical to a positive experience of a project; equally as important is a well-designed formal plan of a building. As previously discussed in the section regarding the form, the culture center is in an abstracted 'L' shape that is progressively rising in height. To reiterate the program, the culture center for architecture and the built environment would house the following programs: gallery/exhibition space, architecture museum, collaborative work zone, meeting rooms, auditorium/event space, and an architectural library, these programs breakdown into three levels plus one level of basement.

When programming the different levels it was important to consider what and where interaction between the public and the professionals could take place. With this being the case, the ground floor contains both the most professional and a largely public space. Those programs being the collaborative work zone, lobby, the café/event zone and the administration zone.

The sloping south portion of the cultural center contains the collaborative work zone and the architectural library. By positioning these programs in the same area they can be placed on top of one another, the library being on top. With the library being on top, it is able to be the second landing of the gallery ramp, allowing the public to reference material: gaining knowledge of their built environment. When the public reaches the library, they have the ability to look into and onto the work zone, as the sloped roof creates a double height space. This gives the public the opportunity to view architects work and further their understanding of how they create and design the built environment.

The library contains resources and archives of the city of Detroit as well as an architectural library. The

architectural library would have a worldly collection of books, depicting the history of architecture as well as progressive architecture text.

The work zone would contain a variety of work environments to fit the different groups. It is meant for small, new architecture groups to work in a collaborative environment and share resources.

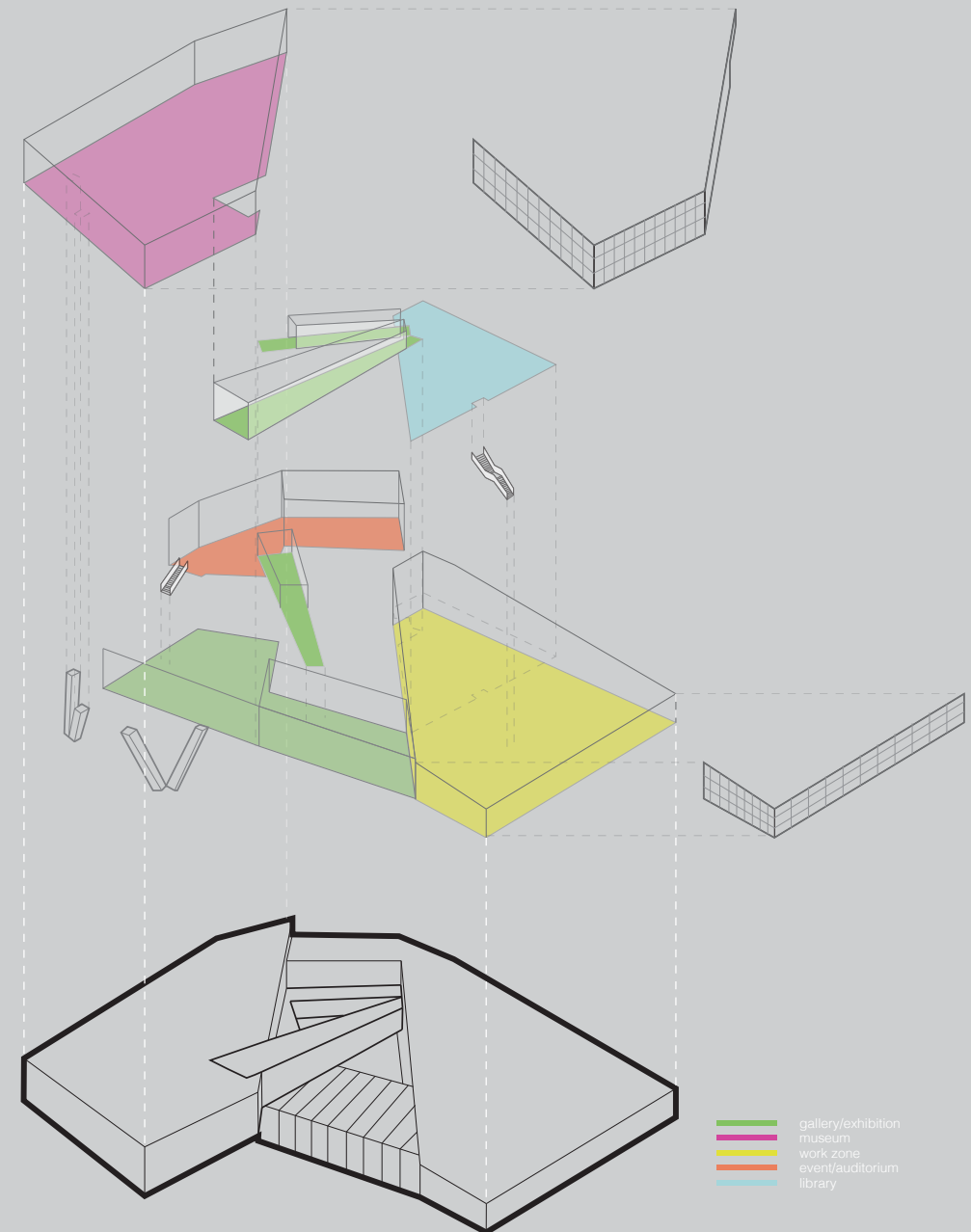
Entering into the culture center takes place at the center of the form, where a number of the paving patches converge. This area acts as the lobby, and gives the user the option of choosing their path depending on purpose. It is here where they can chose to enter the work zone, traverse the gallery ramp or visit the café/event space. The lobby is the only section of the negative form that would have been enclosed after the original bar shape was removed. By enclosing this section a decision was made to make the lobby as transparent as possible, while still retaining a defined structure that allowed it to read differently than the rest of the building. To achieve this effect a strong, thin and rigid metal structure system was devised to allow the user to easily look through this space. By looking past the lobby the building entrance experience appears deeper and longer, essentially creating the illusion of a larger space, however this space is accessible too. The structure used in the lobby, being on its own unique grid pattern creates a moving shadow grid that provides subtle reminders to the grids used throughout the building.

Level three is exclusively for the museum. It responds to the shape of the lower levels and extends to the street edge. By extending it to the street edge it provides a covered outdoor space below and visually holds the street edge of the urban fabric. The museum is on an open plan that allows for a flexibility of partitions and exhibits. It is designed to have long term exhibits that

focus on architecture and the built environment; it completes the relationship between the ramp gallery and itself. Being the end of the gallery, the intention upon leaving the museum is having an understanding of the built environment and how design can influence and improve one's life.

The process of refining the negative form resulted in simple design moves, which provided a more responsive form. Beginning on the south façade, the west corner was pulled slightly into the site to create a gently angled wall. By doing this, pedestrians traveling west are drawn into the space, as they can see into the open plaza at an earlier point, this avoids an impression of a long wall and stark corner. A similar move was done to the north façade. The west corner of the museum is also pulled into the site, this was done to create a funnel effect for the corridor as people can easily move to the development at the rear of the site. By having this larger entrance, it appears less enclosed and more accepting. The remaining edges of the building follow the parallels of the street edges, making the building a box if it were to be abstracted into a complete shape.

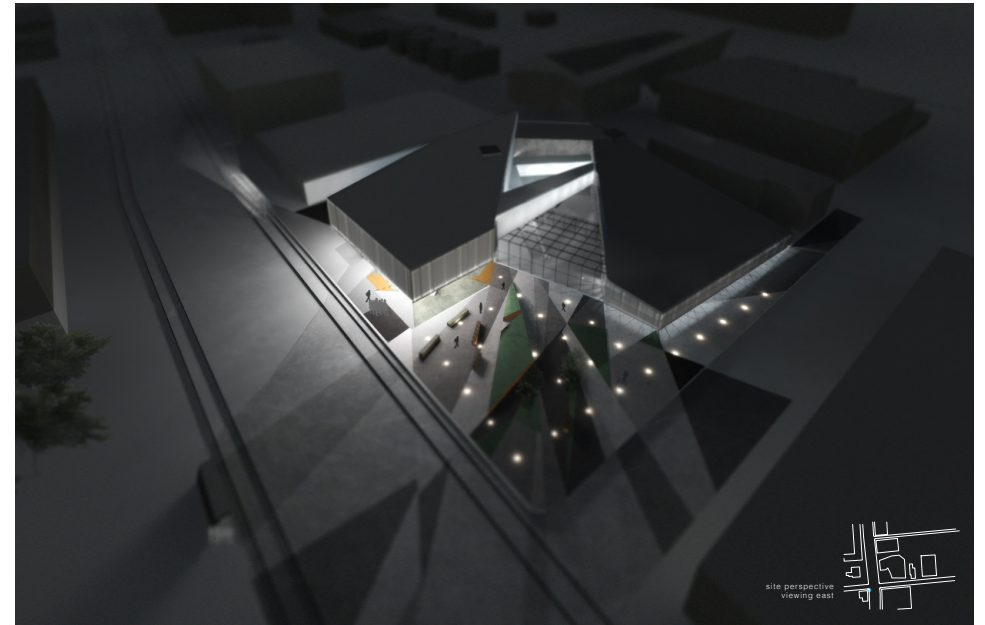
Arguably the strongest element of the culture center is the continuous gallery ramp that connects the different elements and programs. The ramp is designed to be constantly relaying information whether it is on displays, walls, floor or interactive installations. This zone is to be the filler and a progression of knowledge in between the different floors. The idea being a user starts at the bottom of the ramp with limited to no knowledge of the built environment and as they progress through the ramp they are consistently exposed to more information till their experience is complete at the top of the ramp where the museum is a compilation of more information. The ramp transitions in and out of the main building creating a unique



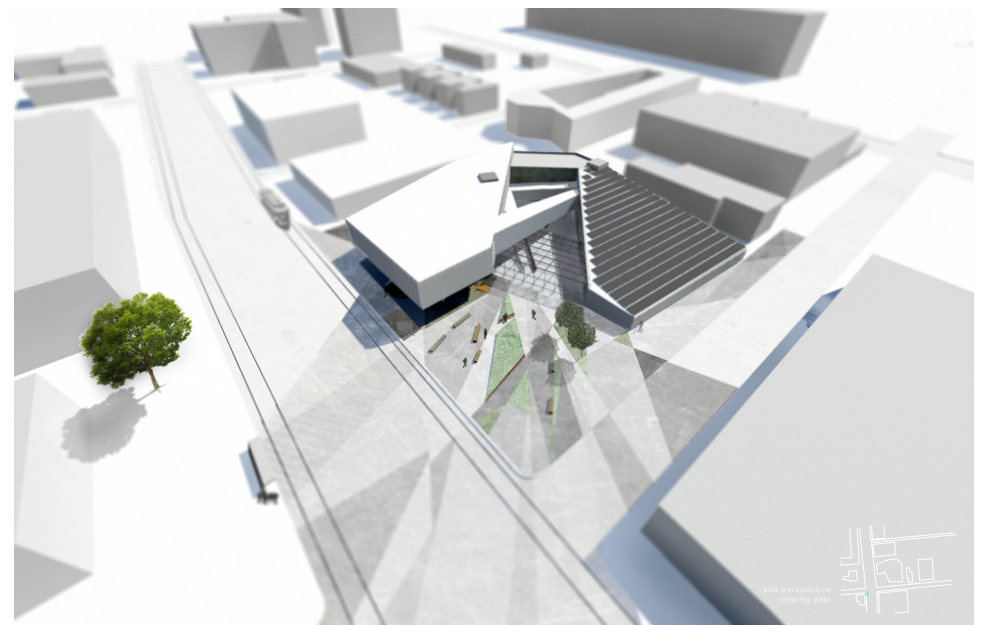
experience with the ability to constantly see the built environment from different vantage points.

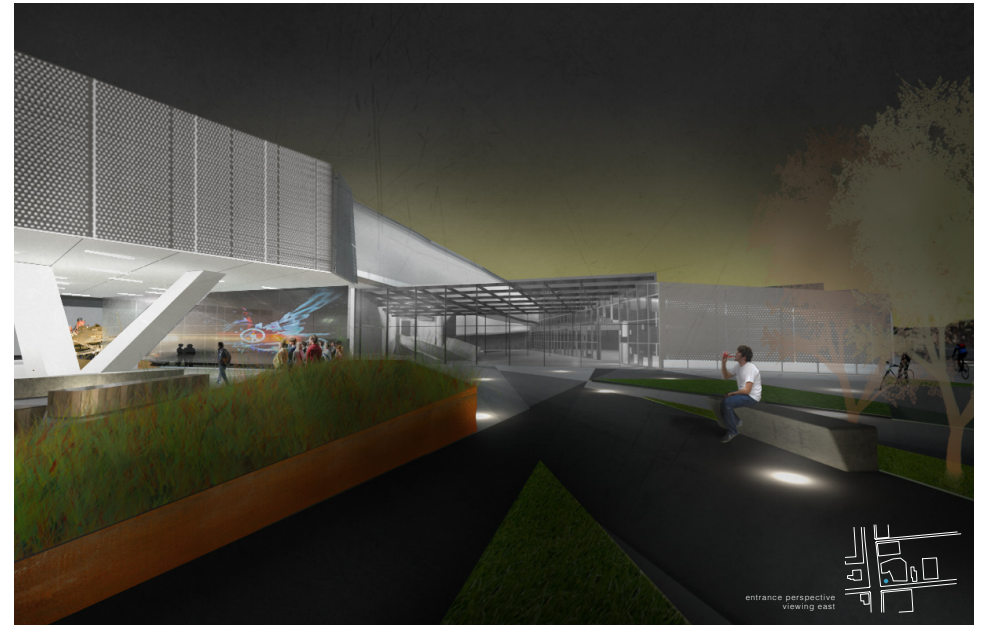
Since the culture center is meant to engage the public and professional, the hierarchy of circulation was an element that could not be overlooked. The ramp is at the top of the hierarchy as it is designed to be the clear priority for a visitor, as they would be drawn to it first. Secondary circulation is in the form of stairs. The stairs connect the different immediately related portions of the building (i.e. library-work zone). These connections are not as prominent within the space and are designed primarily for the professional use. The lowest level of circulation are the two elevators, they are designed for quick circulation between the extremes of the building. The elevators also double as service elevators to get content to and from the basement storage.

The formal characteristics of the culture center were designed with the constant reminder of how does it allow for a user to have a better understanding of the built environment. As this was the case the building reveals itself differently depending on position and approach. It allows for quick recognition as well as a deeper understanding as subtle hints reveal themselves as the day and time progress. Some elements appear to float while others disappear as the complexity becomes refined into understanding.



aerial perspectives of the culture center, showing day and night experience



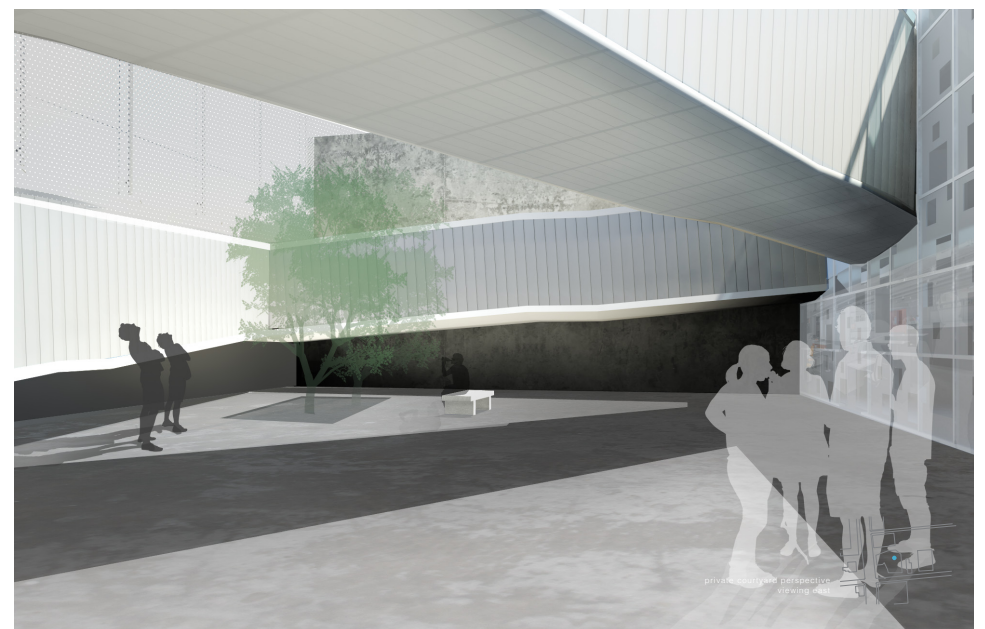


entrance perspectives of the culture center, showing day and night experience





ramp/gallery perspective - showing the different types of display interaction
private courtyard - showing the space created by the negative form and ramps





perspective looking north and south - showing how the development could look



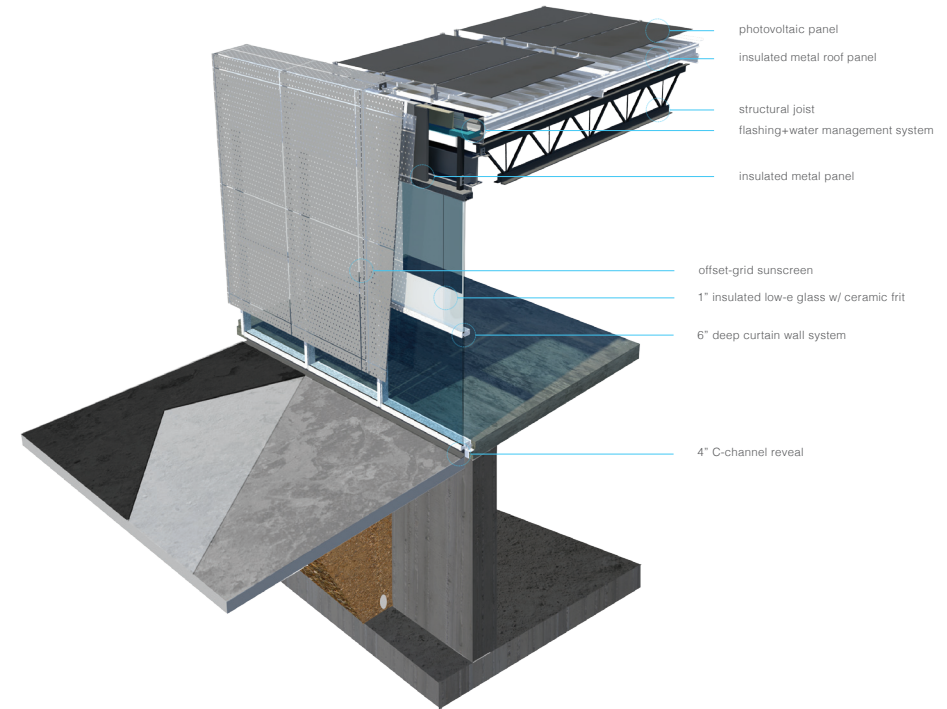
Façade

During the examination of different visual theories by J.J. Gibson, it became clear the power defined patterns and techniques can have in their ability to influence association and memory. The façade, therefore, is the key to sparking interest, as the most dominant part of the human senses is the sense of sight. While other senses are important and are incorporated into the experience of the culture center, a strong visual impact was something that was sought after. This interest does not need to be stark or flashy, but simply something that is recognizable, relatable and has the ability to be understood, while standing out from its context.

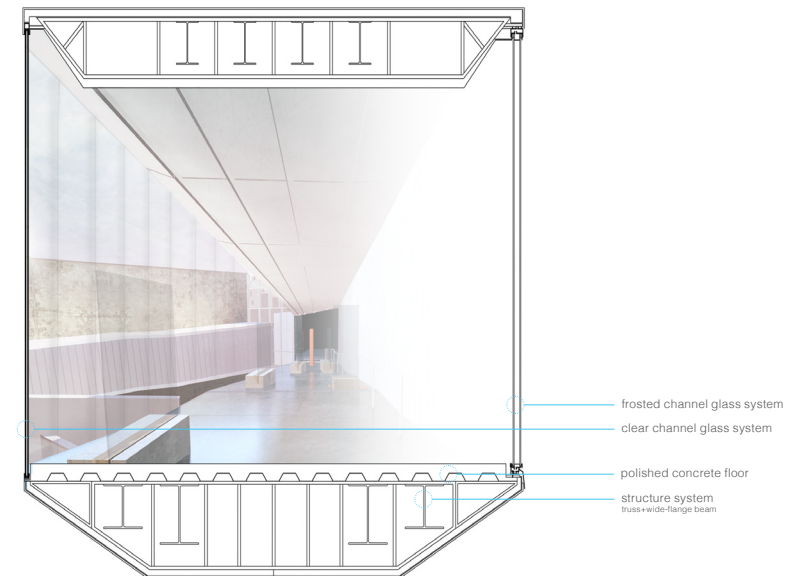
Forming the associations is necessary as it becomes the way the urban culture views and remembers the culture center, it becomes the way people see and think about design. If people can think and relate positively to the building then design will be thought of positively as well. To expand the associations made with the culture center, it deals with ideas of branding. By branding the building in a way that gives it an identity is important to growing its visitor base, it gives the building something that can be discussed and shared. This idea of branding is different than simply slapping a logo and name on the side of a wall. It deals with making recognizable patterns that can be transferred to other objects, were one glance at it allows one to relate it back to the culture center. This idea can even be expanded into distinct shapes and larger building characteristics.

In developing the physical façade the grid was turned to again both for its theoretical concepts as well as its ordering constructs. By using it with the idea of variants and invariants (change and non-change) the façade is able to be developed with a recognizable pattern. Even when objects are placed in front of it or

sunscreen wall section detail



bridge section detail



portions of it are removed the overall pattern is still able to be recognized; the grid is very efficient at this. The efficiency of the grid becomes useful when the pattern is placed across the building as it is easily expanded or reduced, resulting in a changing scale, which is dependent on its engagement with the public and the program in which it covers.

By using the grid as the façade structure it made it possible to, in a sense, explode or expand the building envelope beyond a single system. The envelope for the culture center began to become layered, and it has the ability to be understood on multiple levels. This layering effect creates a depth and gives the façade multi-dimensional properties.

The layering begins with the mullion pattern, which creates a 5'x5' grid that is carried throughout the layered portions of the building. Occupying the space between the grid points is insulated glass. The glass features four distinct frit patterns that also utilize a grid. These patterns are rotated for the appearance of randomness and scattered on the façade. The glass system is covered by a metal screen, the screen features an offset square grid pattern, which corresponds to the frit pattern behind it. The metal screen acts as the grid lines and points for the frit pattern, this relates the systems and gives them depth.

While the screen provides visual interest to the façade system, it also is highly functional when dealing with solar control. Through sun studies of both summer and winter, the building is exposed to large amounts of sun all year from both its south and west façades. The screen and frit allow light to enter in a diffused manner to minimize unwanted solar heat gain but maximize natural light.

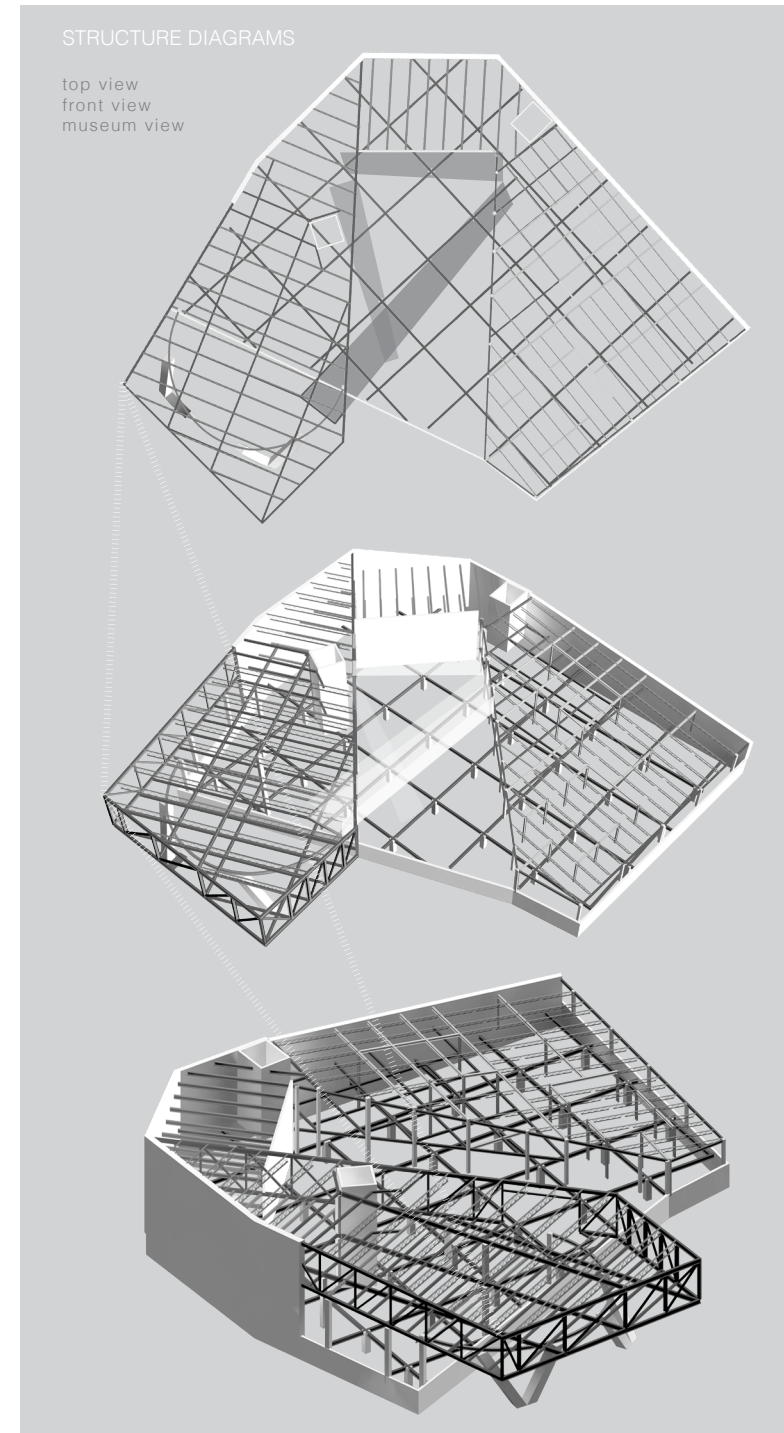
The same properties that help the building envelope with sun control also help reveal itself throughout the day. The screen acts as a veil, masking the building when it is in direct sunlight. As the day progresses and sections move in and out of sunlight the building begins to reveal its transparent nature. As the sun sets the building becomes illuminated from the inside and the same screen that diffused light now radiates light, allowing the building to glow as beacon along Woodward.

The façade of the culture center for architecture and the built environment is able to maintain a pattern that allows the user to recognize it regardless of time of day. It remains uniform as one moves around the building, allowing for the form and building properties to generate the necessary relationships between it and the user. This allows the user to build the association of the building with the built environment.

Structure

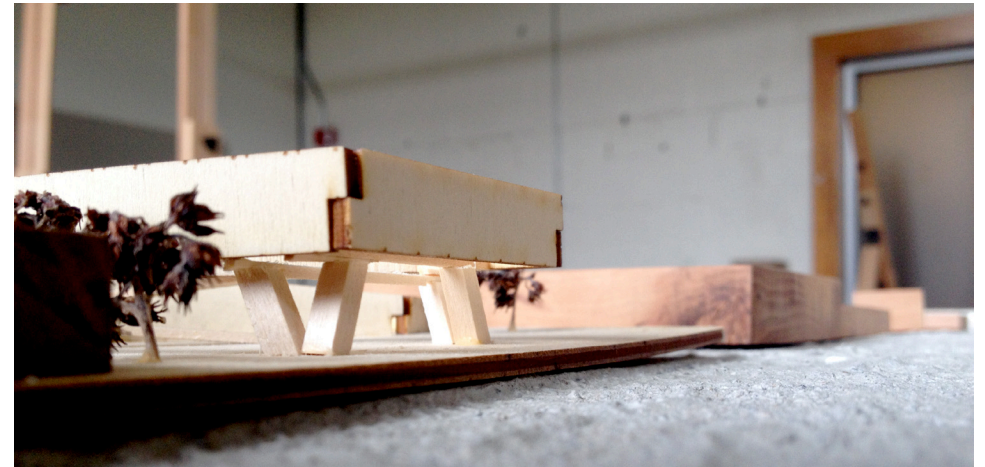
The structure for the culture center for architecture and the built environment utilizes a combination of wide-flange beams, floor to ceiling trusses, concrete shear walls and open-web-joists. The result of having a variety of structural systems was maximized flexibility with minimum inferences for program requirements and changes. This flexibility is best represented in the museum portion of the building (bottom left – top view). The museums structure is almost entirely along the perimeter, giving it an open plan. This is achieved by layering structural patterns. There are three main girders that run parallel to the length of the plan, they rest on spaced columns and one bent girder that carries the over hanging condition. Beams run perpendicular to the girders, while the entire section is framed by floor to ceiling trusses. These large trusses allow for minimal supports and provide the necessary support to handle the long cantilevered conditions.

The work zone also features a large span, however, in here a decision was made to strategically place columns to minimize distances of the joists. This creates a grid pattern of columns in the work zone. This pattern begins to define the space and allow for smaller zones to be created for the firms within this area.



Concluding Thoughts

The program for the culture center for architecture and the built environment would be beneficial to the city of Detroit. It offers a place for the public to gain a better understanding of the world around them as well as learn the value of design. The techniques used to generate its form respond ideally to the theories that were used throughout the design process. The culture center provides a unique change in the traditional urban fabric to which it is surrounded. This change allows for the culture center to be an invariant in the city, to which an urban culture can make positive association with it and its purpose.







B

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Img. 2 – Periodic Table of Elements.
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Img. 6 – Edge vs. Corner. J.J. Gibson, Adam Cook

Img. 7 – Texture Gradient. J.J. Gibson, Adam Cook

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