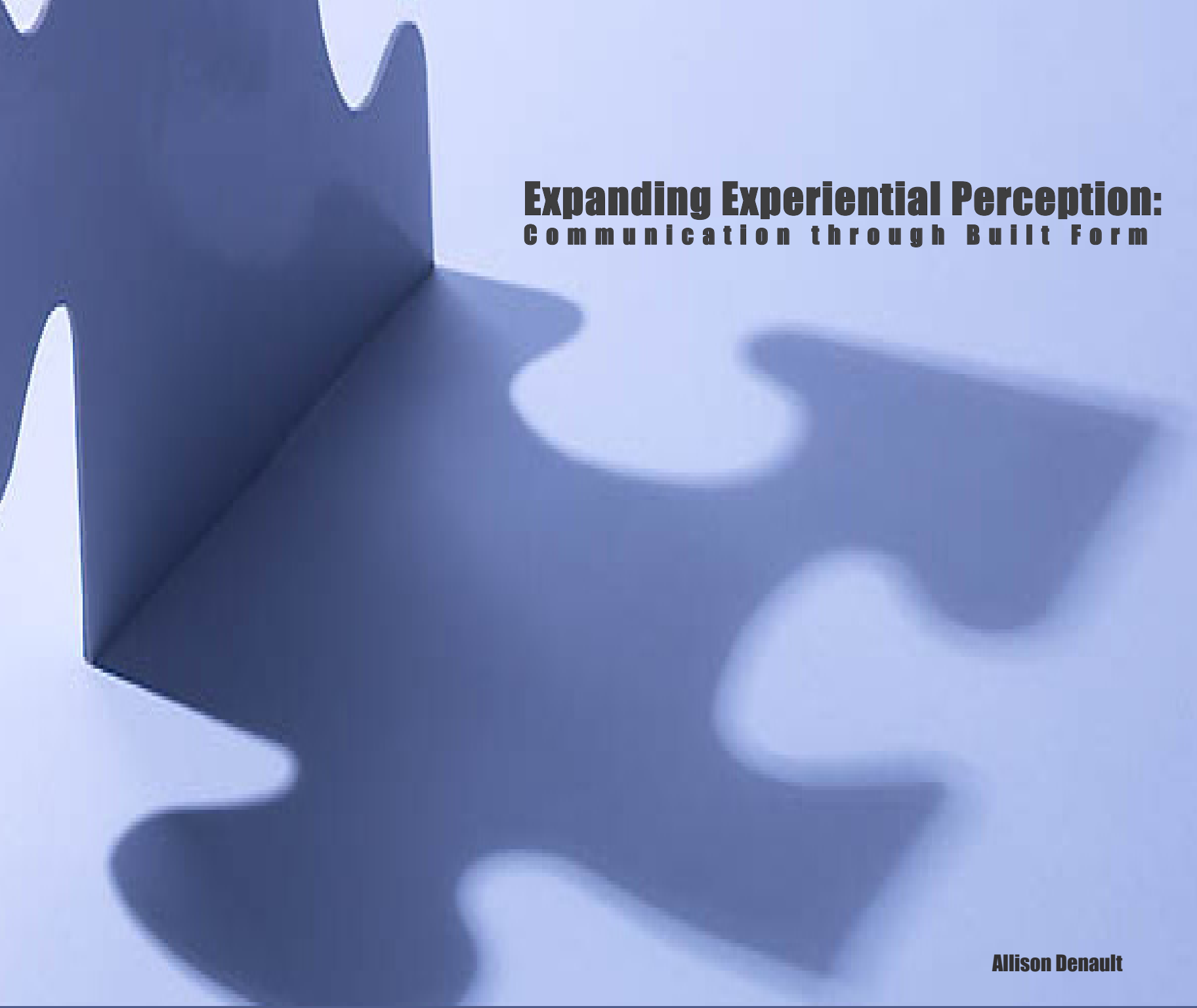

Expanding Experiential Perception:

Communication through Built Form

Allison Denault

Expanding Experiential Perception:
Communication through Built Form

A Design Thesis Submitted to the

Department of Architecture and Landscape Architecture

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By

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In Partial Fulfillment of the Requirements

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Masters of Architecture

Primary Thesis Advisor

Thesis Committee Chair 05/11/11

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Name: Allison Dewart Date: 05/12/11

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Thesis Abstract

By understanding the affects of built space on those who have limited physical or mental abilities, we are able to create space that could facilitate their very specific needs. Currently, there are many ways to facilitate those with limited abilities, such as the American Disabilities Act of 1990 regulations and codes. This, however, does not begin to describe the effects of built architecture to the perceived observer with disabilities. Designing for a specific group of people, specifically children with autism, allows for the design to enhance their lives. This could be beneficial for some, and even help "treat" others. This specialized mixed-use housing development would be designed through a series of built artifacts that would bridge the gap between designer and client. It would also allow objects used for therapeutic reasons to be incorporated into the design in an essential way. Located next to the Rochester Autism Center, in Rochester, Minnesota, the program calls for temporary living residences, classrooms, and sensory rooms.

Key Words: Artifacts, Mixed-Use, Sensory, Autism, Treatment

Problem Statement

How does Architecture facilitate the perception of those with mental disabilities or varying bodily limitations?

Statement of Intent

Statement of Intent

Project Typology

Specialized mixed-use housing development designed for children with disabilities

The Claim

The built environment should not only be beneficial to those with physical limitations, but also be mindful of the perceptival experience of these children.

Premises

Architecture must have the ability to adapt to those who are incapable of adapting to their own environment.

By considering the ritual of treatment for children with disabilities, the architecture could be created as part of that treatment.

Designing space for a particular group of people calls for an empathetic understanding of materials, textures, and experience.

Theoretical Premise/ Unifying Idea

Architecture can be created to help with the "treatment" of those who are limited in their abilities, both physically and mentally.

Project Justification

Responding to the natural environment naturally is not always possible for some. This is when architecture could be used to help build confidence for these children to face the world.

Proposal

Narrative

He was the boy that they always wanted. When he turned five and still did not talk, they began to worry. He started having temper tantrums and would not look them in the eye. When they made him look at them, he closed his eyes and the world around him disappeared.

One can hardly perceive the difficulty of designing a building for someone whose experiences exceed anything imaginable, someone who feels pain when staring into the eyes of a loved one, someone who rocks back and forth to try to keep the built-up energy within from exploding; even as the inability to communicate prevents caretakers from helping.

Architects need to be able to enter into the world of the clients they are designing for. When designing for a child with autism, one must retreat into the mind of that client. I propose this will be established with a series of artifacts that will capture the essence of the sensory objects the child has grown to understand, and use that essence in the design.

Attention must be called to the increase in disabilities among the children in our society. Creating spaces that can focus the energy specifically for the needs of these children could increase their ability to adapt more effectively to their environment.

Proposal

This project will attempt to connect the architect and clients through experiences of the body. The intense study of bodily interactions with space must be studied through how a child with autism interacts with objects.

Creating artifacts that will correspond to the sensory objects allows the architect to relate to necessary elements in designing a space that will, in essence, “treat” children with autism. This study will also use ritual to help children with autism adapt to their environment without being sent to a specialized school, giving them the ability to attend elementary schools with fewer special services.

Objects are created to help children with autism relate on a scale they are comfortable with interacting. Their boundaries are then pushed by transforming those objects into artifacts on a one-to-one scale. These artifacts will be the size of the children involved in this program as to not overwhelm them.

From artifacts, architecture is created. The architecture will rely on the memory and subconscious of the children and the ability to relate first to object, then to artifact, then to architecture. Using this process, I believe these children with autism are able to be pushed further and use the relationship established to continue good behaviors in similar environments.

User/Client

A new program will be developed for this therapy center to assist families with children who have autism to apply therapy techniques and create ritual for their children in a temporary residence. By building a specialized housing complex for individual families' needs, the spaces will be therapeutic in nature, while enabling the children to still have a sense of "home."

This complex will allow families to focus completely on their child or children with autism.
Creating an environment that responds to the physical limitations of each child, as well as the behavioral limitations, will allow the guardians to enforce rituals of good behavior. The repetition of the rituals created in this facility will allow for a transformation of behavior for each child.

Gardens and a pool area will be built for public use. This helps create an environment where the children with autism are allowed to interact with "typical peers." This will also help connect the isolated Autism Center with the residential area surrounding it.

Rochester Center for Autism, Rochester, MN

Users

Single Family-
Families that are approved by the Rochester Autism Center will have the opportunity to rent an apartment for an extended period of time that will be created to be suitable for the needs of each child. By using the appropriate technologies, the design will be informed by therapeutic objects that will be incorporated into the design to help create a ritual for each family.

Peak Usage

Peak usage would depend on the reservations of the apartments on the second level. The classrooms and sensory rooms would be able to be accessed at any time by the Rochester Center for Autism, as well as for the families visiting the facility. The pool would be open to the community as well.

Physical Restrictions

Physical restrictions of any family in the program would be assessed on an individual level. These restrictions would also take into account Universal Design suggestions.

Medical and Mental Health Issues

Because autism has a wide spectrum of symptoms, each family would have the ability to request items needed, and will also be assessed on an individual level.

Future Users

The complex will be designed to be used for many functions in the future. The design will also fit into the surrounding buildings, from apartment buildings to industrial sales.

Major Project Elements

As previously stated, the complex will be tailored to the needs of each child, children, and their families. Each space will contain all that is needed to live, as well as therapy rooms and a hierarchy of space adaptable to each child's ritual or patterns. The main level for classrooms will be developed to be accessible to the families as well as children attending the Autism Center.

Family Use Rooms

These rooms will be designed for all members of the family. They include the following:

Bedrooms, Bathrooms, Kitchen, Dining Room, Living Space, Garage/ Work Space, Den

Specialized Rooms

Although the dwelling would be completely designed for the child with autism, there would be several types of rooms offered into the design for each specific need. Examples of these would be:

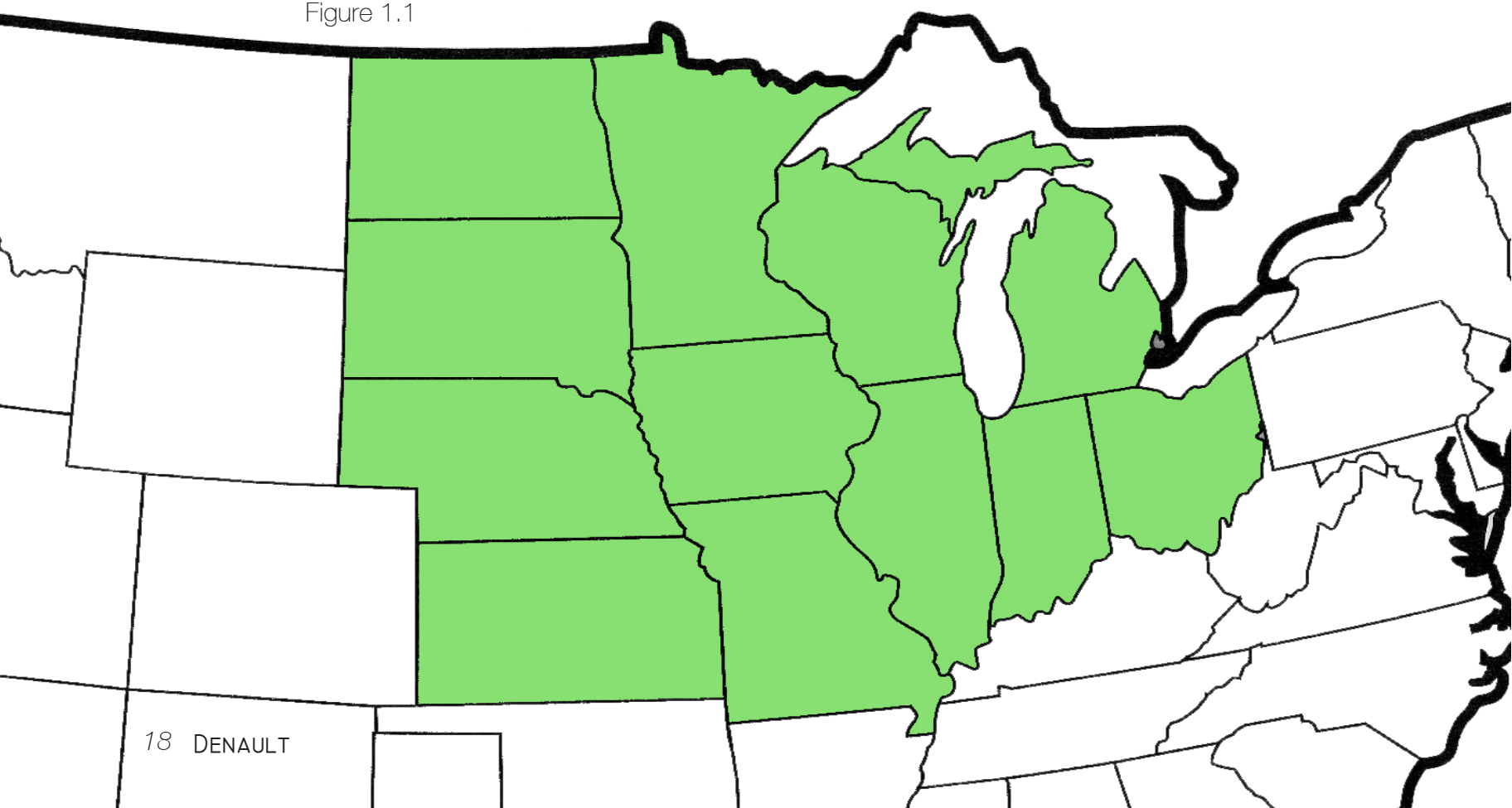
Therapy Rooms, Pool Area,
Interior/Exterior Gardens,
Exercise Rooms, Sensory Room,
Music Room, Menagerie Room,
Classrooms, Corridors

Site Information

Macro- Regional

The Midwest Region of the United States has many promising opportunities for housing development by expanding rapidly in the last 10 years. By being able to offer jobs, the poor economy of the country has yet to extensively affect this area.

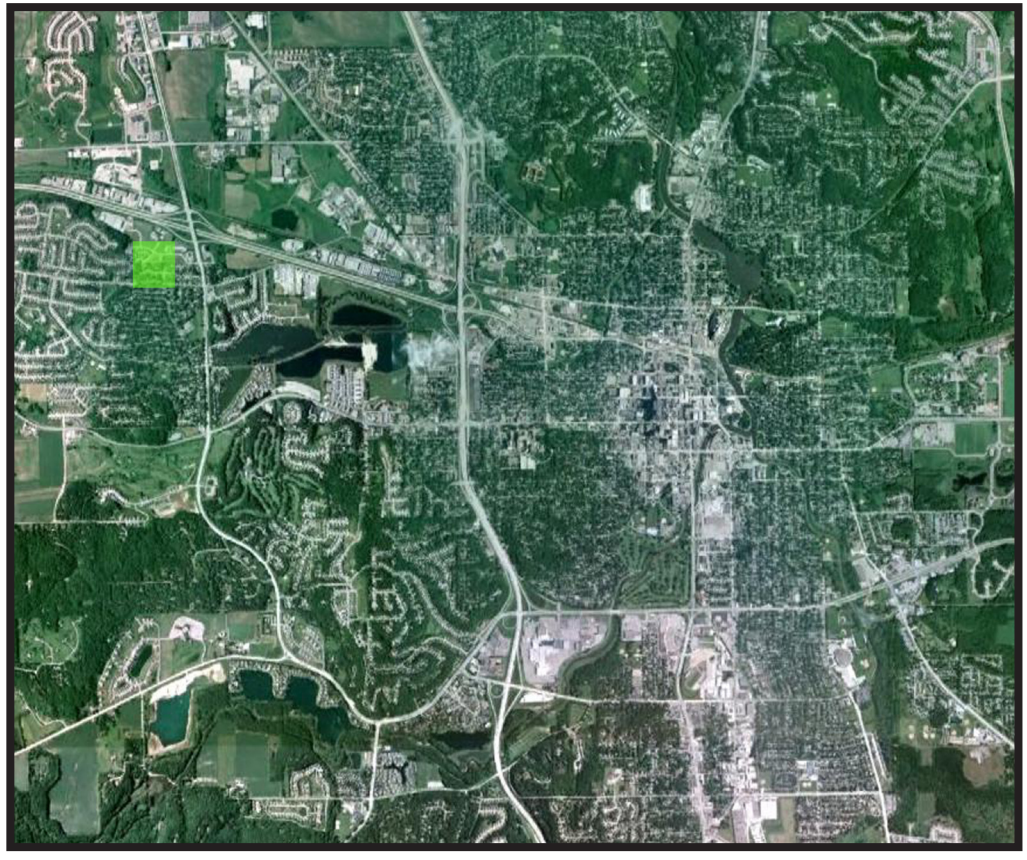
Figure 1.1



Macro- City

Rochester, Minnesota is home to not only the Mayo Clinic, but also an Autism Center. This medically oriented area would be beneficial for those who need that type of assistance. Also, Minnesota is the second highest ranking state in autism cases (Thoughtful House Center For Children, 2009).

Figure 1.2



Micro- Site

The site for the program is located next to the Rochester Center for Autism. This enables families to use the facilities if needed. It also allows for the Center to make house visits very easily. This area is located on the outskirts of Rochester, but is located close to the on-ramp of a major highway that runs into the downtown area. It is also a developing area, which could easily be acquired by the Center.

Figure 1.4

Figure 1.3

Project Emphasis

This project will attempt to connect architect and clients who have specialized needs. This project will address the needs of those clients who have yet to be taken care of in the built environment. People with autism experience a variety of extremes.

To be able to design for their very specific, even ritualistic way of adapting to an environment requires intense study. By creating objects for children with autism, I will be able to connect through the object to the child. Then, by creating artifacts from those objects, the children will be able to relate from object to artifact through a subconscious memory. Each child would be able to physically interact with the spaces designed with the memory each object and artifact.

This allows for a relation to what will be needed to design a space that will, in essence, “treat” that child. This study will also use that ritual to help the child adapt to his/her environment. A study into “simulated living” will also be explored. As a transitional housing complex, what does it mean for a person to enter into a space that is designed to help train a child with autism?

Research Direction

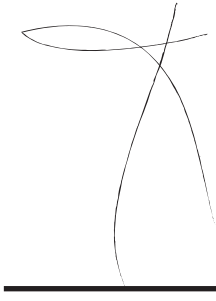
In order to arrive at a completely informed design, this project will focus on research in the areas of the theoretical premise/ unifying idea, project typologies, historical context, as well as future context, site analysis, and programming requirements. Built artifacts will also inform the design as a hands-on experiential design problem.

Design Methodology

The method to be used on this project is the mixed-method approach. It involves a quantitative outlook on the project as well as a qualitative. The combination of detailed analyses and data collected will enhance my ability as a designer to make empathetic choices in my design work. This Concurrent Transformative Strategy will be guided by the aforementioned premises. Most data collected will be experiential in nature.

Documentation of Design

To create an all-encompassing design, one must employ the use of many design tools. Because of this, various forms of documentation must take place. First, hand drawings, sketches, models, and artifacts will be recorded and saved both physically and electronically. Computerized renderings, drawings, illustrations, and photographs will be saved electronically. Using a weekly deadline as a guide, all of the information gathered throughout each week will be analyzed and saved. Models and artifacts, as created, will be preserved for the final critique and photographed for this manual.



EnvD 172- Spring 2007
Instructor: Stephen Wischer
Space Planning
Designing with Metaphor
Dwelling for the Connected

Arch 271- Fall 2007
Instructor: Stephen Wischer
Tea House, Fargo, ND
Rowing Club, Minneapolis, MN
Twin House, Fargo, ND

Arch 272- Spring 2008
Instructor: Mike Christenson
Community Design Block, Fargo, ND

Arch 371- Fall 2008
Instructor: Steve Martens
Crane Observatory, Grand Rapids, ND
Masonic Lodge, Jasper, MN

Arch 372- Spring 2009
Instructor: Ronald Ramsay
Shaker Barn, New Lebanon, NY
Citizen M Hotel, Chicago, IL

Arch 471- Fall 2009
Instructor: Don Faulkner
Mixed-Use Highrise, San Francisco, CA

Arch 472- Spring 2010
Instructor: Darryl Booker
Community ReDesign, Santo Domingo, Dominican Republic

Arch 771- Fall 2010
Instructor: Steve Martens
Adaptive Re-Use of Christian Science Church, Fargo, ND

Program

What is Autism?

A pretty little girl sits with her hands clasped in front of her, waiting for the bus to arrive. At seven years old, she still requires someone to help her zip her coat and put on her boots. Her form of communication is just expanding to making correct gestures and grunts. The doll-like expressions she makes convey something that is almost "other-worldly, another state of mind or an absence of self." "Living in a world apart." (Barrow, 1968) (Frith, 2003)

A new epidemic is upon us. Autism has become exponentially more apparent in society in the last 10 years. Autism, as described by the National Society for Children and Adults with Autism, is a slowed development of physical, social and learning capabilities. Communication skills are usually minimal to none, with very limited abilities to comprehend ideas. The senses are extremely affected, either being hypersensitive or restricted.

Autism is a disorder that seems to separate the person from the world. It affects the person's ability to effectively communicate and establish relationships. Even though the concentration of people with autism are children, it does not mean autism is only a childhood disorder. Autism is a developmental disorder. It affects the development of these individuals, which in turn, affects the progression of the disorder. (Frith, 2003)

Autism is a "sign of central nervous damage in which withdrawal and affectlessness are secondary systems" (Seifert, p. 5 1990). This is what causes the limited speech skills and also provides insight into some of the effects autism has on some children, such as rocking.

Unknown Causes

The causes for this disorder are widely debated, from environmental to biological. Autism affects more boys than girls, which tends to lean toward more of a biological cause. Possibly some girls carry something on the X chromosome that protects them from this disorder. Genetics could also play a role in this disorder, but that has yet to be proven.

Environmental factors are suspected of causing this disorder, from nutrients women take when they are pregnant, to insecticides and pesticides used by farmers. Many people also believe that vaccines are inhibiting healthy development of children, causing autism (Frith, 2003).

In 1970, only 1 in 10,000 children were diagnosed with autism. In 2003, 4-6 in 1,000 children were diagnosed with this disorder (Myler, 2003). This statistic grows every year, which is causing concern among parents and teachers. This is especially a concern since there is no known cause for the disorder.

History of Autism

Although some wish to believe this is a recent development, autism was recognized, though not named as autism, as early as 1799. A boy was isolated when he was young, or feral, and was thought of by society as having been raised by animals (Frith, 2003). This isolation when younger damages the ability to communicate or further social interactions. Merleau-Ponty (1964) describes in his book *Primacy of Perception*, that in this beginning stage of being, interaction must occur between father/mother and child. This allows for growth of the child's psyche, and the ability to recognize others' psyches as well.

Leo Kanner and Hans Asperger separately coined the word autism in 1943. Working on opposite sides of the world, they both discovered something peculiar about a group of children. They coincidentally used the same term, autism, which was derived from the Greek word "autos" meaning self. Asperger described one child, saying:

> His gaze was strikingly odd...When somebody was talking to him he did not enter into the sort of eye contact which would normally be fundamental to conversation. He darted short "peripheral" looks and glanced at both people and objects only fleetingly. It was as if he wasn't there. (Frith, 2003, p. 7)

Leo Kanner wrote a paper titled "Autistic disturbances of affective contact" after his findings in Baltimore. He described the children he studied as having three traits: "autistic aloneness, desire for sameness, and islets of ability" (Frith, 2003, p. 6). These describe the three criteria needed to be diagnosed with autism.

Understanding the Symptoms

The autistic aloneness describes a child's ability to shut out the real world. The desire for sameness illustrates the repetitive nature needed by children with autism. The sameness enables the individual to rely on something or to count on something to keep him or her safe. Many children are not able to communicate, but every child with autism is capable of excelling in some aspect of life. To understand each individual need allows the opportunity for greatness among each of these individuals.

From six months old and on, a child uses its own body to interpret and understand others. Merleau-Ponty (1964)describes the four distinguishing divisions of understanding:

1. Myself (psyche)
2. Image of own body
3. Others image of own body
4. Others psyche

These are helpful in relating to others and creating a perceptival universe. Some individuals with autism have the inability to consciously develop the self psyche. The world is experienced through observation instead of "doing." Many children with autism are unaware of any image they have of themselves. This becomes a juxtaposition between being completely absorbed into one's self, and not quite knowing the extent of one's self-existence.

When interacting with an individual with autism, there is almost always a disconnected exchange. This demonstrates the individual's inability to not only understand another's psyche or being, but also the idea that someone else could have an understanding of them. It is extremely hard to read the expressions of someone with autism.

Autistic Savants

This disorder is spreading worldwide. Children and adults are affected by autism in every country and every culture, despite any level of resource available (Mullick, 2009). Symptoms for each individual vary from mild autism to extreme autism and everything in between. About 80% of the individuals affected are categorized in the mental retardation range of IQ (Hinerman, 1983).

This, however, does not mean these individuals are incapable of doing anything. When dealing with this disorder, standardized testing is not the most accommodating. These individuals have another way of learning that could potentially exceed the abilities of a typical peer (Frith, 2003).

Some individuals with autism are extremely detail-oriented. These children are able to pick up on the smallest thing out of place. They are able to remove themselves from their immediate surroundings to logically, simply solve problems. Others sense too much of their surroundings, which leads to confusion and frustration and they cannot complete a simple task.

Some may be able to focus in and shut out the entire world, whereas others cannot determine which noise is the most important to listen to. When put in the right environment, each individual may excel in a specific area. Art, music and technology have been proven to be three very important areas that a large amount of development can be shown (Myler, 2003).

Stephen Wiltshire is a thirty-six-year-old man with autism. At the age of three, he was diagnosed with autism. When he was five, he was enrolled in Queensmill School in London. This is when he was introduced to art.

He became almost obsessed with drawing every detail of anything he could see. He then started drawing panoramic pictures of cityscapes. He has completed drawings of Rome, Hong Kong, Madrid, Dubai, New York, and London, along with many others. His attention to detail creates almost an exact replica of what is perceived. All of these drawings are completed from memory (Wilson, 2010). This exemplifies an individual ability to use this disorder to his advantage.

Communication

Even then, only about 50% of people with autism have verbal skills, and the individuals with verbal skills have a "wooden, parrot-like" voice (Hinerman, 1983). Communication becomes a great frustration for everyone involved in the process of each individual with autism. Some individuals are incapable of forcing out what they intend to communicate, which could leave them frustrated, desperate or even fearful (Seifert, 1990). This can also cause other behaviors, such as hitting, yelling, screaming and tantrums.

Other ways children with autism try to communicate are through gestures.These children are unable to comprehend good or bad, so some act in an inappropriate manner (Parnas, 2002). Some call these behaviors peculiar, but they have not yet been trained how to act in society. These also vary per child.

Bodily contact and proximity could be interpreted in different ways to each child. Some children withdraw completely to be alone, while others stand curiously close to strangers (Hinerman, 1983).
Other learned behaviors could sometimes be interpreted as learned behaviors that will get the outcome these children have learned to expect. For example, some children will learn facial expressions or gestures to receive a treat, no matter if it is what they are feeling or not.

Most children learn to look into the eyes of someone communicating with them, but eye contact may physically hurt others. Head nods are also trained into some children's mind to show the other person they are actually interacting with them, while retreating into their own mind (Hinerman, 1983).

Sensitive Nature

Rhythm, repetition, and calm can help children with autism create a sense of ritual for themselves. Many children with autism have very specific rituals that must be kept in place. If these schedules are disrupted, the sense of unbalance has the ability to overtake the child and create an emotional breakdown. It is not logical for these children to do anything other than what has been prescribed for them as their ritual for any length of time (Frith, 2003).

As children, individuals with autism are extremely vulnerable. They are not necessarily aware of the dangers of the world that surrounds them. They also may not retain memories of harmful things, such as touching their hands on a hot stove, cutting themselves on sharp edges, or tasting toxic materials. They must be reminded of those things, until it is processed in their mind.
Many children with autism are self-destructive; they understand the effects of harmful objects and use them to receive attention when they feel they are being ignored.

Since autism affects the central nervous system, some children are very sensitive to textures, light, colors and/or food (Frith, 2003). These also vary for each child. Bright lights can over stimulate most children with autism, as well as flickering halogen lights. Darker spaces or naturally lit spaces are the most calming for these children (Myler, 2003).

Some children are drawn toward certain textures, whether those textures are rough, bumpy, sandy, course, gritty, smooth, soft, or squishy. Other children will avoid certain textures at all costs. Bright colors have a similar effect on these children as artificial light. A more soothing color palette uses muted colors.

Despite the difficulty it takes for a child with autism to create a relationship with another person, the ability to relate to objects is outstanding. They become fixated with "things." The static nature of these objects allows the child to focus on their entirety without being overwhelmed. The constant changing emotions of others are disruptive, while objects remain the same (Hinerman, 1983). This gives the illusion of an "aloofness" of an individual with autism (Frith, 2003).

Three Children

It has been said there are three ways that autism will affect the behavior of an individual. First is the aloof. These individuals need to separate themselves from others. It is like they have created a bubble around them that no one may cross. They often cannot stand being touched or handle any type of social interaction at all. One must be very cautious around these types of children and approach with care.

The second effect is called "the passive." These children will allow an adult figure to do anything for them, and often act as if they have no bones. They easily drop to the floor when forced to do something they do not believe they need to do. They take no interest in anything that is going on around them.

The third and final type is “the odd.” These children have no boundaries and are very exploratory, in a way that may not be socially acceptable. They stand peculiarly close to people and inspect every detail of them. Some may like being cuddled by others, even if they do not know them. Everyone is familiar to these children (Frith, 2003, P. 63).

The Aloof

The Passive

The Odd

Three Learning Styles

Other ways to classify individuals affected by autism Temple Grandin shares in her book, 'The Way I See It.' As an individual affected herself, she describes three categories for learning with autism. The first is visual learning. This includes objects, such as playing with Lego's, building blocks, and Kinects.

When attempting to communicate their needs to others, they will often need to use pictures. This also pertains to being asked to complete a task; the adult figure may need to use pictures along with words for the child to comprehend what he or she is being asked to do.

The second way of learning is through music and math. These subjects use patterns and relationships between the numbers and notes. This allows the child to take advantage of the ideas that keep them calm to create something and let them communicate in another way to the rest of the world. This is why music and art are so very important in autistic treatment.

The final way of learning is based on verbal logic. Some children with autism have a knowledge of numbers that exceeds most typical peers. Their brain has been wired almost as a computer and this allows their mind to solve problems very advanced for their age. Some children have a preference of which numbers they like best, such as the Fibonacci sequence or prime numbers (Grandin, 2010).
There is no cure for autism, only treatments. The most effective treatment starts at an early age as an intervention step. Each treatment is specialized for each individual case. No two children with autism have the same symptoms (Barrow, 1968). This creates a high demand for one-to-one contact.

Teaching Solutions

The teachers involved in the early intervention are asked to create strategies for the targeted behaviors and push the students to reach these goals (Hinerman, 1983).
Targeted behaviors include everything from being able to use the toilet, zip up their coat, put on their own clothes to learning how to behave in a classroom, hallway, or playground.

Every person involved with this child's life must be focused together to create a solid group of influence for this child who so desperately needs a foundation to build on (Hinerman, 1983). Specialized teachers are available for most public school systems, but there are also specialized schools for children with autism who are unable to be in the school system. These children are either unable to be in school because of violence or they cannot handle the extra stimulation a school creates (Seifert, 1990).

These problems are created when the levels of frustration come exploding out in violent forms, such as hitting, kicking, screaming, yelling, and/or tantrums. When students with autism become violent, they are almost always removed from the school setting to ensure the safety of other students and teachers. Once removed, these students attend specialized schools with other students like themselves.

This should be considered a temporary solution. Kris Helfer, a staff member from the Rochester Autism Center, described the goals they have for the students as being able for the student to return to the school system. If the center accepted a student from the school system, they work together to return the student to his or her normal environment as quickly as possible.
The Rochester Autism Center is one of many specialized centers in the United States. They strive to create an environment that pushes each student to accept things they are usually not willing to accept. They maintain a solid foundation for the student to be comfortable, but ensure each and every child is capable of expanding their boundaries for a "typical" life.

"Segregation of children with special needs is morally unjustifiable; it promotes isolation, alienation and social exclusion" (Mullick, p. 49 2009). Specialized centers for children with autism should be considered a transition space. These children will hopefully move on stronger than they were when they entered. They need to have the space to grow in an environment that is empathetic to their needs, but also pushes them to become the most they can be. There is hope of growth for each and every individual, if they are treated as such.

Summary

Architecturally, there are few buildings that have been designed specifically for this disorder. International Building Codes has yet to employ any codes that would be advantageous for people with autism. This growing epidemic is being addressed by school systems and learning centers, but is just beginning to be addressed by the built community (Myler, 2003).

The built society needs to be aware of the effect they are not only having on children with special needs physically, but also mentally.
There has been much discussion as to how buildings should be developed, which would help in the future of this specialized design typology.

These items have been studied through observing how children with autism react to certain colors, spaces, and textures. By acknowledging that these children understand the environment around them, we are then allowed to shape that environment to protect and push them forward in their learning.

According to Patricia Myler's (2003) article, "Eliminating Distractions," the environment created should have a feeling of softness. This enveloping cushion could be seen almost womb-like for these children. This also describes the color palette said to be acceptable for these spaces. Muted tones are calming and simplistic. The overwhelming reds, yellows, and blues are known to cause emotional turmoil for some.

Calm, order, and simplicity are described as the feelings that need to be created in a building for individuals with autism. Complex design is overwhelmingly intricate to these individuals and could even disorient an individual. Carefully articulating the spaces to revolve around a constant area is a way to keep a constant source of reference or "home-base" (Humphreys, 2008).

Having a clear layout of spaces also addresses the issues of noise. Acoustically separating sounds will help each individual discern which noises are important enough to pay attention to. Long, echo chamber hallways cause confusion for some individuals. Circulation patterns should be generous though.

This gives the individual a sense of openness and freedom and also allows them the space they need. Lighting of the building will need to be addressed, as individuals with autism seem to prefer natural day light over artificial.

Flickering halogen lights cause distractions while an individual tries to complete tasks. Le Corbusier states, "The key is light and light illuminates and shapes have emotional power" (Humphreys, 2008). By creating spaces using naturally diffused light, we are able to accomplish spaces that incite feelings of calm.

Particularly, there are many areas that may be addressed to create a positive learning space for students with autism. Suggestions from Simon Humphreys' article includes limited material changes, limited detailing, or simplified detailing, intimate volumes for spaces, but also open areas to discourage the institutionalized feeling of the building.

Consistencies in the details that are designed are also necessary. These include ceiling heights, door heights, locations of light switches, and door handles. Sustainable design requires the building to be adaptable for reuse. By designing for the subtly specific, I believe you are able to design universally.

These individuals with autism can pick up on the tiniest detail and are being bombarded by overstimulation in our society every day. Simplifying design while focusing our efforts on details that may be overlooked could not only help this specific group but our entire society as well.

Figure 3.1

Willemspark School, Amsterdam, Netherlands

Figure 3.2

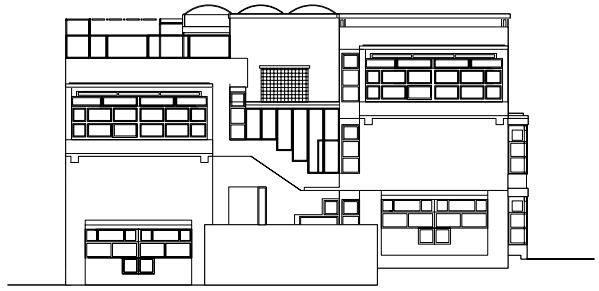
Hope and Healing Center, Memphis, Tennessee

Figure 3.3

Broelberg Housing Complex, Kilchberg, Switzerland

Willemspark School, Amsterdam, Netherlands

Figure 3.4

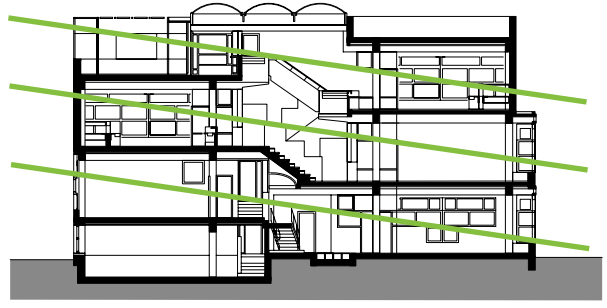


West Elevation

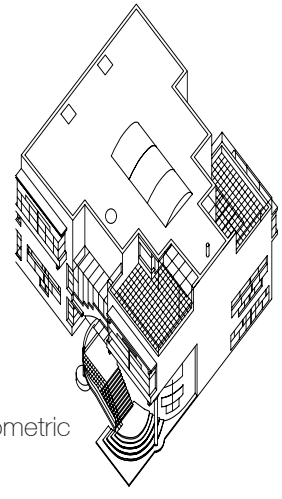
In 1907, Dr. Maria Montessori opened a new type of school. She designed a new method of teaching which called for the use of manipulative learning materials. This concept of teaching through experiences was aimed directly for children ages two to seven.

Being able to spend enough time with these children she was able to discern how these children learned. The techniques used in this method of teaching allowed for what was called "the discovery of the child." Montessori schools have taken childhood learning to a new level (The Montessori Foundation, 2010).

Interaction between teacher and student may be described as a type of hierarchy. Teachers have their tall desks at the front of the class with the small student desks below (Kronenburg, 2007). This idea of the classroom has been in the process of changing due to the progressing knowledge of how children learn. Interactive learning is starting to replace the lecture-type of learning.

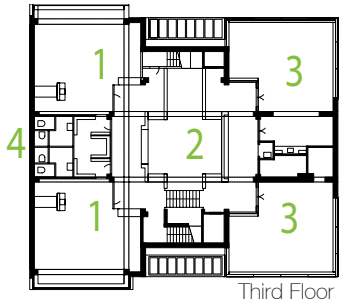


Section

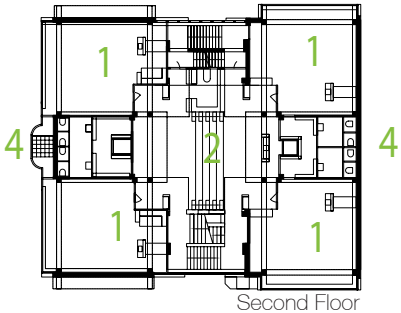


Axonometric

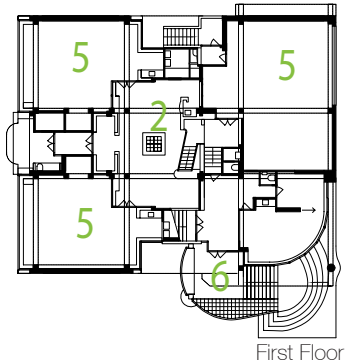
Images from:
Key Buildings of the Twentieth Century



Third Floor

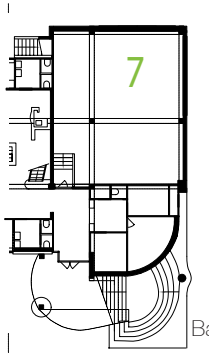


Second Floor



First Floor

1. Classroom
2. Central Atrium
3. Outdoor Patio
4. Bathrooms
5. Mixed-Use Space
6. Entry
7. Basement Storage Condition



Basement

The architect of this building, Herman Hertzberger, not only attended a Montessori school when he was young, but also taught at one as well. He believes in this style of teaching and has applied his knowledge of how students can learn in an environment. He has been able to design another Montessori school as well: the Montessori school in Delft, Netherlands (ArchINFORM, 2010). The design of this building was inspired by the idea of interactive learning and eliminating the hierarchy described between teacher and student. This school is constructed completely of concrete blocks juxtaposed to warm wood on a three-by-three structural grid. Initially, the building's façade does not elicit feelings of inspiration, but the attention to detail demonstrations the architect's ability to connect the building to its user.

Three stories tall, the three-by-three gridded structure is carefully articulated to allow for not only a slight variance for each level, but also for the opportunity to use spaces for display or for group work. A total of six classrooms are spread between the upper two floors. This leaves the main level open for a central meeting space that is overlooked by the rest of the classrooms (Rapport Creative, 2010).

The central meeting space is created by the main staircase of the building. The steps were designed to have many functions. They may be used as seating for a class, meeting space between classes, and of course part of the circulation system of the school. Window sills are also used to create desk spaces for students in certain activities (Rapport Creative, 2010).

Summary

Understanding the program of the building being designed allows for a more cohesive design. The structural patterns are simplified to avoid distractions for the students and small details such as windows and stairs are used to create a more diversified learning environment.

The layering of spaces by a simple grid structure allows for an optional spatial expansion of the classrooms to create a more dynamic atmosphere to match the teaching styles of the Montessori school.

Using a central core for the structure provides a space for reference to the children who attend this school. They are constantly reminded of the public spaces created by this core. This memory of a central space provides comfort for the students by providing a sense of place for the individual.

Hope and Healing Center, Memphis, Tennessee

Figure 3.5

The Hope and Healing Center is a branch of the Church Health Center, designed by Looney Ricks Kiss. The building houses meditation rooms, meetings rooms, exercise rooms, a therapy pool, locker rooms, and training rooms in its 75,000 square feet. Different types of therapy help the wellness of individuals and offer classes to train themselves to live a pure life (Looney Ricks Kiss Architects, 2010).

Trust, compassion, commitment, and quality are the four core goals of this organization. By creating a sense of community with the building, the architect was able to portray these goals within the architecture. When entering the building, the patient is immediately faced with a meditation room and chapel. This reminds the patient of the all-encompassing health care they are to receive. The exercise rooms were designed to be completely private and do not include mirrors, as to maintain modesty and dignity of those learning to take care of themselves (Church Health Center, 2010).

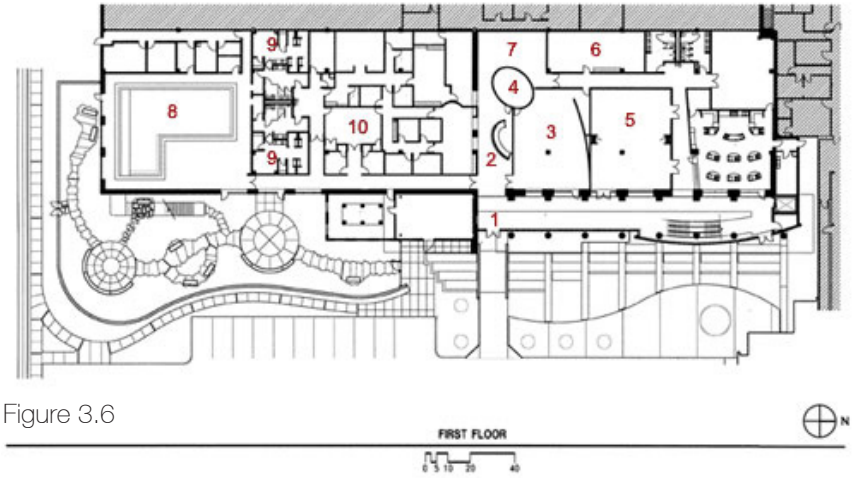


Figure 3.6

Recently certified as a Medical Fitness Facility, the Church Health Center strives for the wellness of its patients. The facility was started by Dr. Scott Morris, a minister who wished to provide quality medical services to those who were unable to attain them without help. Dr. Morris and the center maintain that health should be acquired not only physically, but mentally and spiritually as well (Church Health Center, 2010).

The metaphor for this building deals with the internal struggle to maintain a balance of wellness. The architect plays with many types of juxtapositions. Metal panels are set into smooth composite panels. Curved and linear elements are structured throughout the building.

Art and landscaping are also incorporated into the building's architecture. Art was selected from local artists in Memphis to be showcased in this center and express the sensitive balance between science and religion. Dry grasses in the gardens are sculpted to express the memories of the person and habits that need to be worked on. The main atrium of the building allows for each area of the building to be connected through circulation or memory. This also speaks to a point of reference to orient people in the architecture (The McGraw-Hill Companies, Inc, 2009).

Figure 3.7

Figure 3.8

Summary

Minimal use of opposing materials begins to describe the juxtaposition of a space for programs that address physical therapy as well as mental. Offering quality health care to all walks of life puts this center apart from others. The health care does not stop at the
one-time visit, because the center also offers classes to help people use this knowledge to better their lives at home.

Whole body treatment is included as one of the experiences one has while visiting the facility. A sense of calm and order is displayed in the architectural systems, such as structural and spatial. Daylighting is also used to create a presence of warmth.

The facility uses the idea of metaphor as a way to establish what each patient will be leaving behind. This may help each individual patient realize that there must be a transformation in his or her life.

Figure 3.9

Broelberg Housing Complex, Kilchberg, Switzerland

Developed in a suburb of Kilchburg, Switzerland, by Eckert and Eckert Architects, this colony of apartments was built to house the high-end needs of those who are unable to find housing to meet their expectations. The multi-family residence was created to be self-contained rather than independent housing and is located in a private park.

Each unit is constructed to provide equality to all its residents and to give each residence a grand view of the park. The isolation that this park provides puts this housing development above the typical suburban architecture and sets this housing development apart from most.

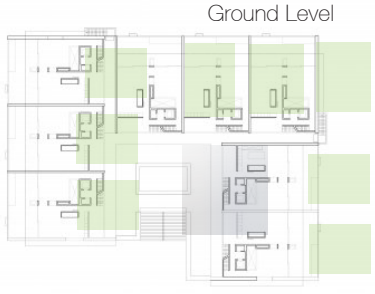
The buildings are constructed completely of concrete. The slightly contrasting colors are created by using a dull red dye for the concrete on the second level. The white concrete slices across the ground level of the building create a rhythm for the building and begin to define the equality of the spaces on the interior (Phaidon Press Limited, 2006).

Details are added to the exterior to give the building depth. The windows were not attached as an after-thought but were cut from the precast concrete. The mullions in the windows were created to rhyme with the concrete structural systems to create a vertical layering system.

Figure 3.10

Figure 3.11

Figure 3.12



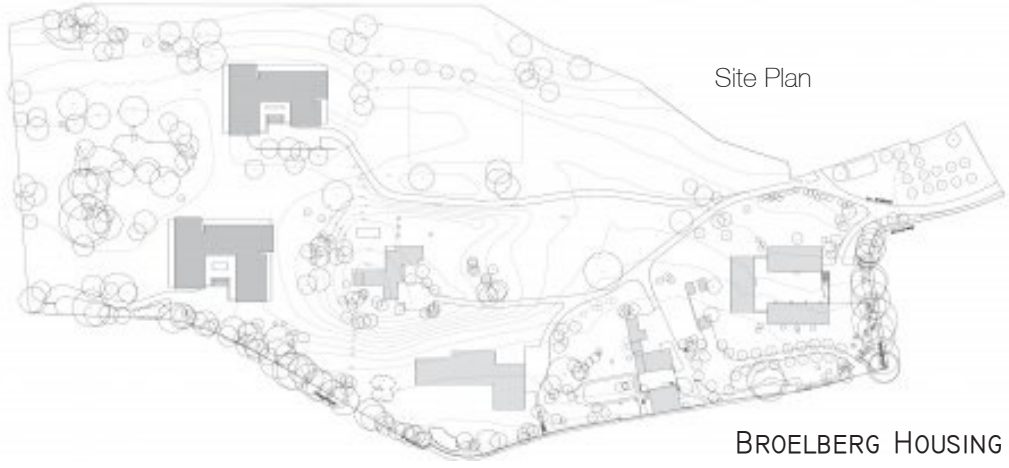
Circulation Core
Apartments
Parking

The complex contains 15 apartments and 45 spaces for vehicles. The infrastructure of the building is sunken into the ground to maximize parking. Each apartment was designed with an open floor plan to suit each resident (Migue, 2009).

Summary

The manipulation of the singular material proves to be essential in the vertical layering of the building. The hierarchy of spaces is then developed by sinking the structure into the ground. The feeling of pressure is displayed at the cross sections of the layers of concrete.

By locating this complex in the middle of a private park, the architects were able to create a community within the city of Kilchburg itself. This creates an environment of isolation that is pleasant for the demanding residents. They are able to connect with the park on an equal level with the other residents. This provides a sense of community within isolation.



Site Plan

Images from:
Architizer.com

Case Studies Conclusion

The three typologies begin to describe the mixed-use functions of this project. The absence of information on architecturally sensitive designs for children with autism confirms the immediate attention needed for these children. Our society is overly stimulated with infinite opportunities of growth based on our substantial advances in technology. Bringing the built environment back to a focused, simplified process may help focus these young children with autism as well as their typical peers.

The Willemspark School in Amsterdam defines spaces with a simple grid structure and limits the use of details. The form of the building does not detract from the use of the program. Flexible classroom spaces permit the teachers and students to expand or limit the use of space to create a favorable environment for learning. Limited material changes create an emotional feel, but do not over stimulate the environment.

A central core gives students a point of reference throughout the day. This central stairwell atrium, as well as meeting space, is seen by all classrooms. The openness of this atrium also provides the students with a feeling of freedom, which also is needed for children with autism. The points of reference help advance the memory of these children and help them feel safe. By understanding where they are at all times throughout the building they are able to focus on other tasks.

Physical and occupational therapy is a large part of the lives of those with autism. Having an understanding of how the spaces are able to create a calming environment for individuals with autism, but still push their capabilities, is incredibly valuable to their treatment.

All-encompassing treatments must be used in this thesis to create a sense of wellness for those with autism. Balance, calm, and order are three feelings that the Hope and Healing Center has established within its architecture. This allows the visitors of this Center to be relaxed enough in the environment to be able to focus on their internal needs.

Individuals with autism must be "treated" by their environment most of the time. In many cases, the home environment is forgotten for these individuals. This is the only place they may be able to create a ritual for themselves.

The Broelberg Housing Complex not only creates an environment conducive for ritual, but also one for sameness. Since the complex is located in an isolated area of a private park, it may be a great area for those who need space to be alone.
Dying a single material, concrete, to create a layering effect would be beneficial as to not over stimulate the users.

The sensitivity to the details within the material is enough to call attention to this project. Cuts in precast concrete define the views to the park, which begins to describe the attention to detail that individuals with autism see every day. If designing a building to its extreme detailed finishes could help create a soothing environment for one with autism, then must we rethink how the design process works?

Figure 4.1

Historical Context

Rochester, Minnesota is a thriving city in the Midwest. With a population of 103,486 people as of July 2009, the city known as "Med City" derives most of its economic success from the Mayo Clinic (City Data, 2010). The clinic has become the destination for health care nationally, as well as internationally. This has allowed the city to create a culture rich in the arts. Various music venues and art galleries are scattered throughout the city (Mayo Clinic, 2007).

The Beginnings

In 1854, land in the area of Rochester was free for the taking. George Head and his family were considered the first family to be located in the central part of what is now Rochester. He named the city after Rochester, New York, because he felt that both cities had many things in common. A few years later, the first street was established as Broadway, on which the Mayo Clinic is now located (RochesterMN.com, 2010).

This city grew as a part of the railroad system was built through the town. Farmers in the area were able to take advantage of the railroad systems to transport goods such as potatoes and apples.

A depression came upon the area in 1857, which left many, including George Head, with nothing. After declaring bankruptcy, the Head family moved out of town (RochesterMN.com, 2010). As the city began to rebuild itself, a doctor who had emigrated from England moved his family up the Mississippi River to find an area to settle. He arrived on the railroad and immediately enjoyed the city of Rochester (Mayo Clinic, 2007). Soon after they made their home and he started working as a Civil War recruit examiner, another disaster struck this blossoming town.

Figure 4.2

Starting Anew

In 1883, a tornado destroyed most of the northern town of Rochester, killing and injuring many residents. This was the turning point of the town. Many residents pushed the development of the town to rebound from the devastating loss. Among these people was a baker, jeweler, lawyer, and Dr. William Mayo, the man who started working in the town as a Civil War recruit examiner (RochesterMN.com, 2010).

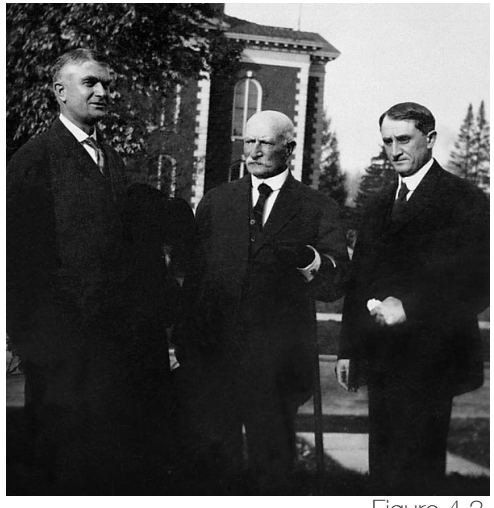


Figure 4.3

Dr. Mayo was put in charge of the relief efforts from this natural disaster and immediately recognized what was missing from this town: a hospital. With the help of the Sisters of St. Francis and a promising lawyer, Burt Eaton, Dr. Mayo was able to create the foundation for the hospital that stands today (Mayo Clinic, 2007).

The doctor, however, had some reservations about the longevity of this clinic because of his old age. He was 70 years-old when the hospital was created. He did not need to worry, though, because both of his sons, Drs. William J. Mayo and Charles H. Mayo, trained to become doctors as well (RochesterMN.com, 2010).

Figure 4.4

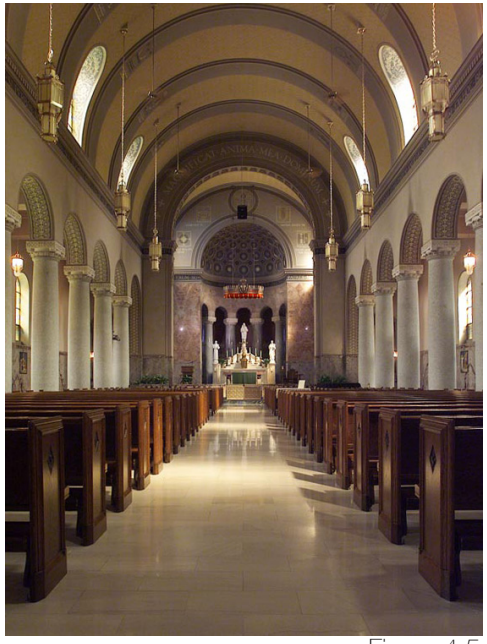


Figure 4.5

Figure 4.6

The brothers had been trained very thoroughly in the larger cities in the area and brought the training back to the hospital. They were able to do a lot of traveling to further their knowledge of their profession (Mayo Clinic, 2007).

Mayo Clinic

The brothers used part of the Doctor's Creed, "knows neither color nor race when humanity is suffering." This became the foundation for the hospital, offering health care to anyone in need. They were able to start treating international patients in 1924. By 1939, both brothers had passed away, leaving a legacy of one of the greatest hospitals in the United States (Mayo Clinic, 2007). Currently, the Mayo Clinic is comprised of three main branches: the central Mayo Clinic is located in the heart of the city, St. Mary's Hospital is on the west side of the city, and Rochester Methodist is just north of the Mayo Clinic (Mayo Clinic, 2007).

This expansion allowed for further studies to be completed, which brought about discoveries that could be used to give the highest quality health care one could receive. This also allowed for an expansion to two other states: Florida and Arizona. There are 51,144 people work or study in the Rochester location; 3,305 are staff practitioners and research scientists, while the other 3,129 are students, graduates, or fellowship residences.

This provides many job opportunities for those in the medical field. The opportunities to help others are vast, from residencies to becoming doctors, to research staff with the highest quality equipment (Mayo Clinic, 2007).

The impact of the Mayo Clinic is enormous. This not only affects the residents of the city, but also the weary travelers looking for specific health care. It is astounding how accommodating the city is to those who travel far and wide for treatment. From cancer treatment to kidney and lung transplants, patients know they will be in good hands at this hospital.

Over the years, this organization has strived to offer health care solutions to those who need it most. The initial mission of this hospital has remained the same throughout the years: "To inspire hope and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research" (Mayo Clinic, 2007). Compassion, integrity, healing, respect, teamwork and stewardship displayed throughout the Rochester community are the values they wish to instill to everyone who enters the clinic.

This reputation brings many people to this area. Presidents, royalty, and even the Dalai Lama have visited this complex. The high level of research in the many branches of the Mayo Clinic keep each doctor, nurse, and student informed of the newest types of treatments (Mayo Clinic, 2007).

Each branch of the clinic works together diligently to maintain the highest standards of service. This also includes providing the city with opportunities to other treatments for specialized needs, such as physical therapy clinics and centers for autism.

Figure 4.7

Rochester Autism Center

The Rochester Autism Center, Inc. was established in 2004 to provide alternative opportunities for children with autism. Jon Sailer, the program director, along with his wife, Molly Hill, had worked with students in public schools, home services, and center services. Through this process, Jon and Molly had decided to create a family owned center whose program was focused on the students as individuals. RCA began with only two students and now has grown to more than 60 students (Rochester Autism Center, 2010).

The success of this center has been based on the programs provided. Jon and Molly have been able to recognize the intense nature of therapy that is needed for each child. The programs themselves transfer into the homes of these students, creating an all-encompassing environment for them. Becoming the stabilizing objects of these students' lives allows the staff to push their development further than before. Individualized programs for each child allow for a focused effort into their lives. This allows the staff to encourage each child to a accept difficult situation without having it devastate them.

By understanding each child's limits, the staff is able to maintain balance in the child's life. Some students that attend this center have been removed from the school systems because of certain behaviors. The best achievement for these students is to work extensively on those behaviors and return them as soon as possible to the school environment. Other students may not have the capabilities to be in a classroom. These behaviors are also addressed in hopes that they too will be able to be in the school system with the least amount of help.

Simulated classrooms, located within the playroom of this center, create the essence of a busy classroom. The students are asked to complete tasks, such as homework, in this environment to develop positive behaviors within their surroundings.

Programs offered to students attending the center have been expanding since its opening: a music therapy program, a circle time program, a social skills group, and art therapy. Other programs are also offered to the families, such as sign language training (Rochester Autism Center, 2010).

The center resides in an adaptively reused law office. The garage/ storage space was converted into the students' playroom. This open space takes advantage of the daylight from the east. This limits the use of artificial lights that are a problem for some children. The cyclical circulation pattern allows for repetition and rhythm for the students. It also gives the students a reference point in the building (Rochester Autism Center, 2010).

Spaces are then created within the building according to Minnesota laws for children with autism. These laws state that the child must be observed at all times. This prevents the child from harming themselves and/or others. Time-out rooms must be 10 feet by 10 feet and the walls must not reach the ceiling. Individual "cubbies" are also created to allow the students to have an individualized space that they may retreat to. The cubbies are also used to complete tasks when more focus is needed (Helfer, 2010).

The exterior of the building establishes a sense of rhythm and pattern. Material choices will be taken into account when designing my own project. The center and the new complex should be consistent through the designs. Having the design influenced by the current center will allow for explorations into the material choices present.

Upon entering the Rochester Autism Center, a receptionist greets the child. He or she is then escorted down a corridor to an open playroom. Each child has his or her own private space on the south side of the building, as shown in the picture on the bottom right of the opposing page. Being exposed to the east side, these rooms are lit with daylight, which creates a more natural environment for the children. Flourescent lights are also used, but are covered if they flicker.

In order to ensure the success of this thesis, goals must be set and completed in a timely manner. An interest in a subject that incites passion was the first goal met in this project. Curiosity in the subject matter continues to grow with each design proposal. The main goal of this project is to help society by using the built environment to communicate with those who are unable to do so in a typical way.

Academic Goals

To teach others about the epidemic of autism.

To further my understanding of how the perception of others should influence my design works.

Use case studies of similar programs to develop a new type of typology for children with autism.

To research Universal Design codes and understand their affect on the designed world.

To research and explore a specific topic, such as autism, and its effect on architecture.

To research and understand architecture's affects on those with a specific disorder.

To use artifacts as a tool to bridge the gap between the client and designer.

To challenge design rules.

To explore the effects of textures, light, colors and volumes in designed space.

To conduct material studies.

To understand the constructability of my design work.

To investigate structural systems that simplifies the design.

To find balance, simplicity, and order.

To maintain my passion for the subject.

To complete these goals in a timely manner with a high level of professionalism.

Professional Goals

To continue nurturing my curiosity of the designed world.

Allow the project to influence my career path.

Create a professional presentation.

To showcase my understandings of the built environment.

To speak clearly of the design I have created.

To use this project as a catalyst to create sensitive architecture for those who are unable to adapt to the built environment.

Personal Goals

To maintain steady progress throughout the design process.

To illustrate the necessity to create one-to-one objects to successfully transition my thoughts into architecture.

To put forth a project that I am truly satisfied with.

To instill hope to those who work with children with autism that there have been advances in architecture with them in mind.

To pass the information and design work I have completed to an Autistic Foundation as a suggestion of action toward building.

Passion and empathy are the main components driving this project. Sensitivity, toward materials, lighting and acoustics, help focus the project. Gathering information about children with autism and their reaction to the built world will help distinguish the parameters of the objects to be created. These objects will then be related to each child's normal environment. In doing so, the memory of the child is accessed and may enforce their rituals. Each child will then be able to relate to each object as well as the architecture formed from these objects.

Rochester, Minnesota

Excitement builds when visiting a site for the first time. The winding road that leads to the Rochester Autism Center pulls the visitor away from the bustling downtown toward an isolated housing area. On the north side of the street is a small strip of commercial buildings. The south side of the street has yet to be developed.

The Rochester Autism Center is located in the center of this undeveloped land. The east side of the center is largely overgrown grass. This openness allows for daylight to be funneled into the play room of the Center. A small parking lot located on the west side of the center is directly adjacent to the site.

There is minimal change in elevation on the site, except on the south side of the site. Pacing the site from the corner of 9th St. and south on 37th Ave., I noticed a gradual incline. A line of trees seems to create a border on a sloped incline to the housing development behind it.

This incline is slight closest to the street and as you move toward the south edge of the site, a hill creates a split level between the site and buildings to the south. It gives extra height to the apartments located behind the screen of the trees. A fence is also installed along this line in the landscape.

A small playground for the Center is set near this hill and is fenced in for protection of the children who use it. This is located directly next to the parking lot and backyard play area which may be used for the new development.

The idea of a screen seems to resonate in this area. The commercial buildings located across 9th St. have winding driveways to push back their entrances. Some of these buildings even hide their entrances to keep visitors away. The Rochester Autism Center allows for parking on the west side of the building and also has the entrance pushed back from street. The columns in the front façade of the building create almost a tunnel into the building. Trees screen the neighboring houses to the south.

The only exception to this idea of the screen are the apartments located across the west side of the street from the site. Each apartment complex is three stories tall and the entry condition is built up to the sidewalk. These buildings are out in the open for everyone to see.

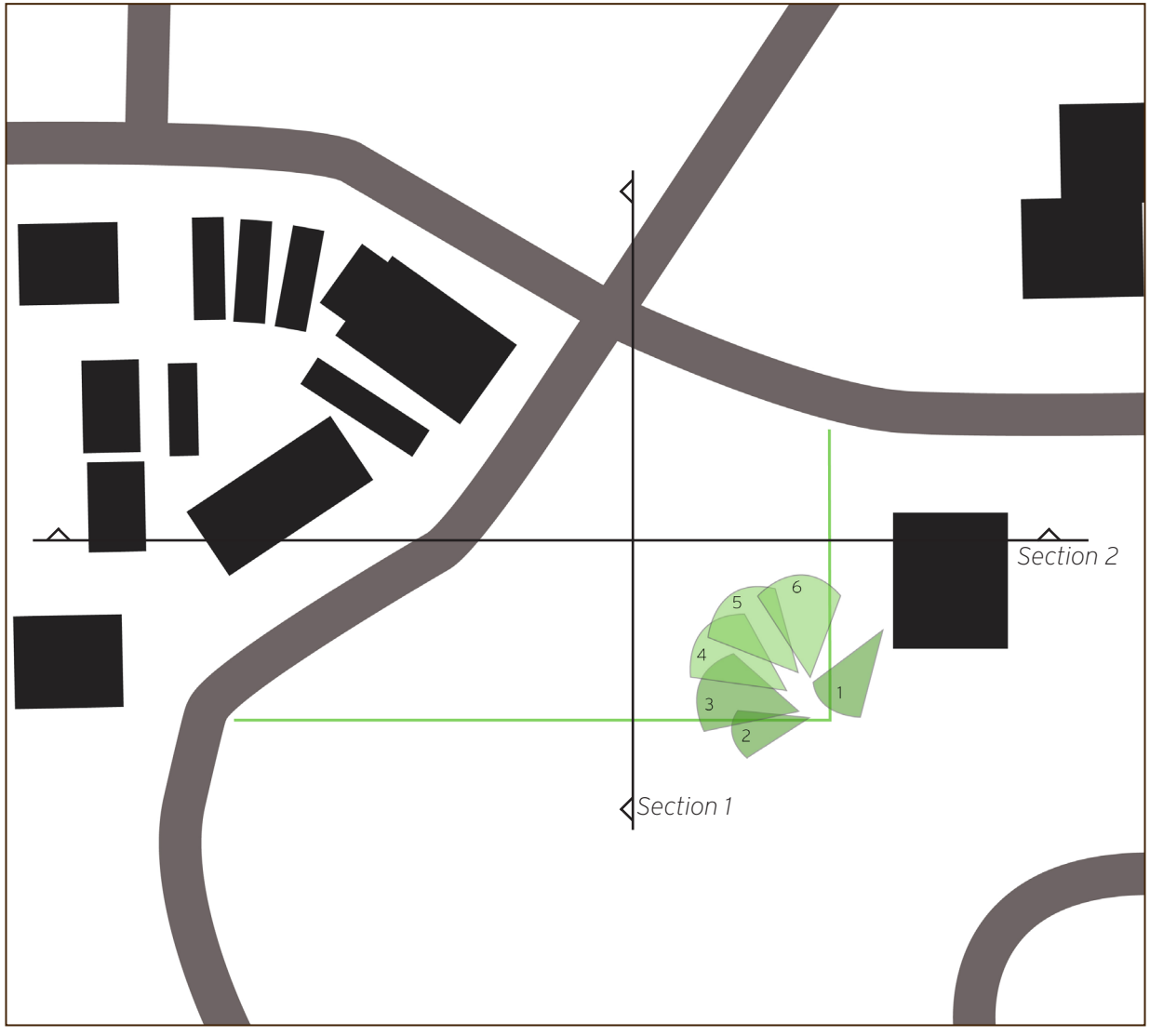
The proposed complex will have to address each of these ideas. Being a public community center, as well as a private training center, screens will be added to create a sense of privacy. The main entrance to the building must be open to the public and could use the lack of development to create a sidewalk to the entrance.

Even though this site is in an area that is on the edge of a suburban housing development, the area surrounding the site is largely undeveloped. The expansiveness of the views in a largely residential area was interesting to see. These areas are soon to be sold for development, so designing the complex based on these views may not be advantageous in the long run.

Overall, I have seen that there will be a few challenges in developing this site, but there also just as many opportunities. On the edge of the housing development in the area and soon to be development areas, this site has the ability to connect these two. The community complex may start to suggest what other typologies may use this area.

Views of Site

When experiencing the site, one immediately notices the hill on the south side of the site. This area becomes the nexus, or pinnacle of the site. The barriers created by the environment around the site, such as commerical buildings and apartment complexes, this hill beomes the natural center for the design process. It allows the site to be developed inward, as if to protect the views toward a more natural setting. The next series of pictures describes the hill, and the panoramic new from the hill of the site.


Section 2
Section 1
1
2
3
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6

Site Sections

The seemingly expansive nature of the site suggests there is a lot of land to be developed. Upon further study of the north section below, the site itself becomes disturbingly small for the proposed program.

This poses the question of what could belong in that space between. The other realization made after the west section was: If the building were to dwarf the apartment complexes across the street, would it also destroy the day lighting the building procures now?

There seems to be a very sensitive balance as to what could belong in the space between. The building needs to be able to bridge the gap between the one-story Autism Center and three-story apartment complex.

West Section - Section 1

North Section- Section 2

Light Quality

The southern side of the site is covered by trees on a hill. This limits the amount of day lighting available for the site. The further away from the tree line that the building can be developed, the more day lighting will be used.

Vegetation

Grass is the only type of vegetation on the site. Trees will be planted and an exploration into landscaping will be pursued to develop the site.

Water

No water was visible at the site. There will, however, be runoff from the hill on the southern side of the site and also from the west.

Wind

Because of the protection of the hills and tree line, the site is protected from the southern wind. The open area to the northwest, however, allows wind to be gathered and used for ventilation.

Human Characteristics

The Rochester Autism Center and its parking lot are the only human additions to this stretch of land.

Distress

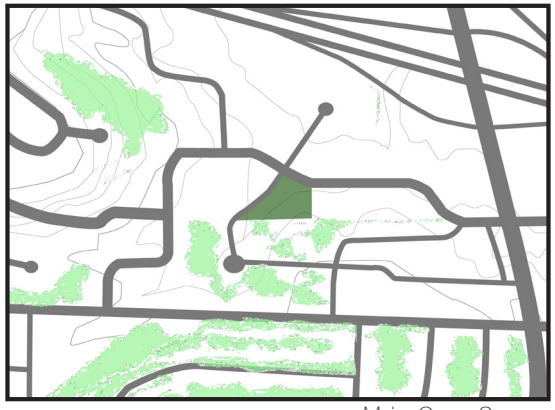
There was not much distress to the site to the naked eye. The tree line acts as a retaining wall which benefits the land below.

Data taken from Google Earth

Figure Ground Studies

These studies describe the relationship of the built environment to the site. The Rochester Autism Center is completely isolated from the surrounding residential area. This speaks of the way children with autism are thought of in our society today. Many are just sent to facilities away from “typical peers” to get better. Some even believe that they should continue to stay in these facilities for the safety of their “typical peers.”

Buildings/Roads



Major Green Spaces

Green Spaces vs. Built Space

The site's location serves as a mediator between the center and residential area. Public uses of this facility will allow the residents of the apartment complexes and residential homes in the area to access the building during certain hours of the day.

The site will incorporate gardens, or green spaces, which will intertwine with existing green areas in the suburb.
A connection must be made between the Rochester Autism Center and its surroundings.

The commerical buildings to the north of the site will also have to be addressed. Barriers of views will be established to keep an atmosphere of "home" and nature.

The Green Space vs. Built Space figure/ground describes the balance of nature and man-made structure in the area. This is taken into account when designing the ratio of built structure and green space on the site itself. Green spaces will also be used to direct views away from unwanted noise and visual pollution.

Figure 5.1

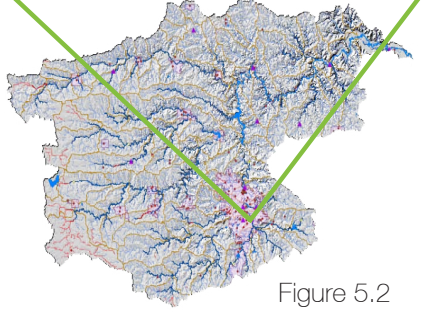


Figure 5.2

Utilities

Utilities found on site were as follows: Fire hydrant, sewage line, and electrical boxes. Further investigation of the utilities will become apparent during the design process.

Soils

According to the USDA Web Soil Study web site, the largest concentration of soil in the area of my site is eroded silt loam. This average soil is made up of sand, clay, silt, and organic matter.

Hydrology

Most of Minnesota is groundwater runoff. Figure 5.2 describes the watershed analysis of the Zumbro River, which runs through the middle of Rochester (Minnesota Dept. of Natural Resources, 2010). This and the topography suggest that if there would be runoff on the site, it would be collected in the groundwater system and be drained toward the east.

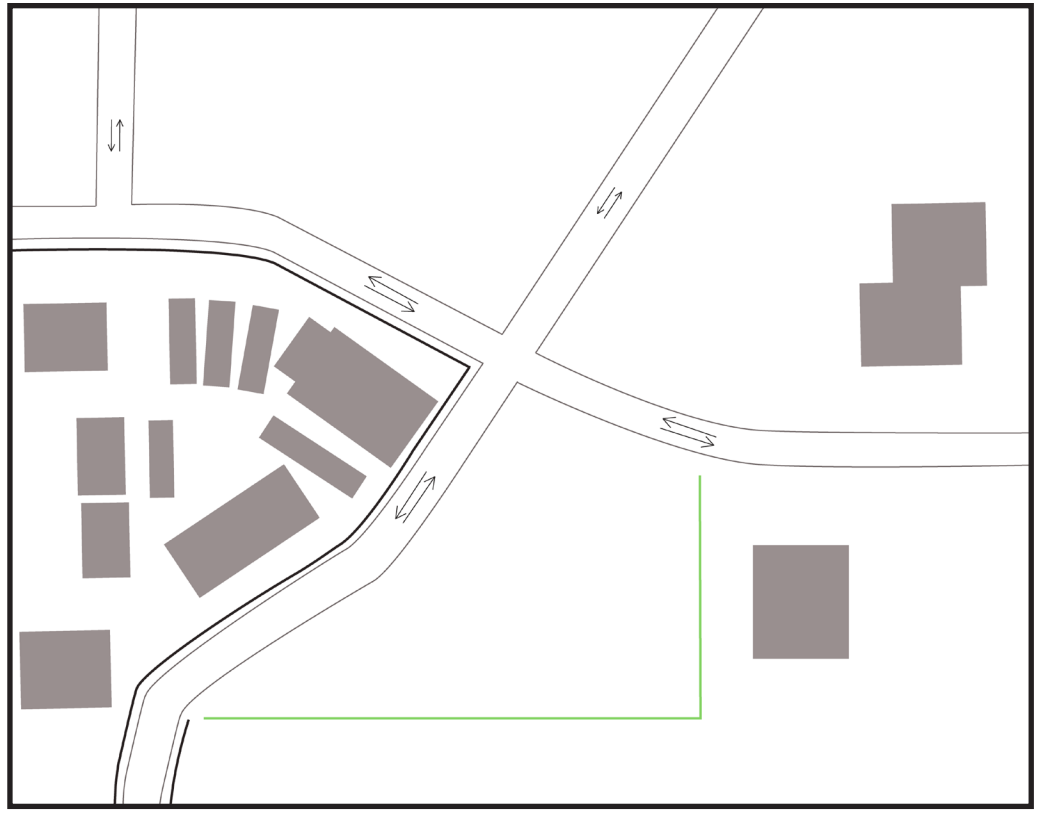
Vehicular Traffic

Highway 14 is located north of the site. The noise is blocked by the commerical buildings located directly south of the highway. The winding roads that lead to the site also bring you away from the bustle of that major highway. The only traffic that is seen in the area is residents that live in the suburban area. The three sites with businesses do not seem to bring a lot of traffic into the area. This seems to give the site an isolated feeling, while still being in a community of many.

Pedestrian Traffic

Ninth Street, which runs in front of the Rochester Center for Autism, does not have a lot of foot traffic. The sidewalks for the area start on the block across the street to the west with the apartment complexes and continues around to the residential areas. Some people were seen walking down the side of the street.

This issue will be addressed with an attempt to establish a path through the site to create an even stronger connection between children with autism and the community. This has the ability of making the community stronger.



Data taken from Google Earth

Topographic Survey

There are two elevation markers throughout the site. While located near a large hill to the west, the smaller hill located on the southern part of the site is not steep enough to cause damage to the site. This does, however, raise issues with the water drainage systems. If the water from all of the upper residents' housing to the south drain into this site, there will have to be a design solution created to solve that problem. Water collection is one way to solve this problem. The plants that will be used in the gardens would be able to use this water to grow.

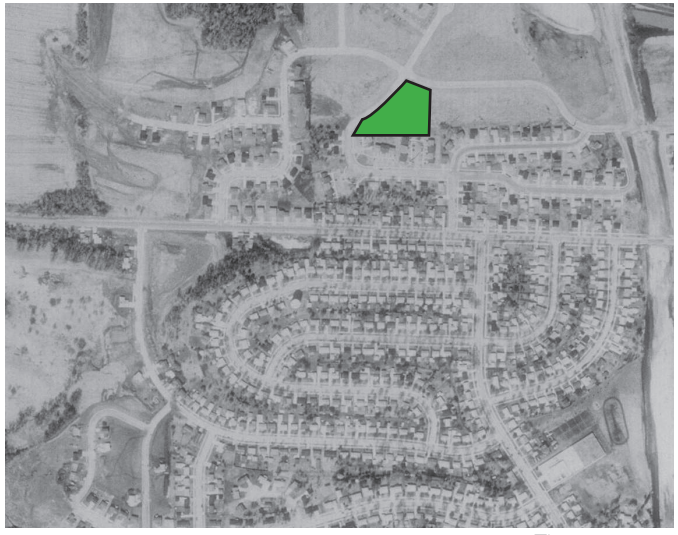


Figure 5.6

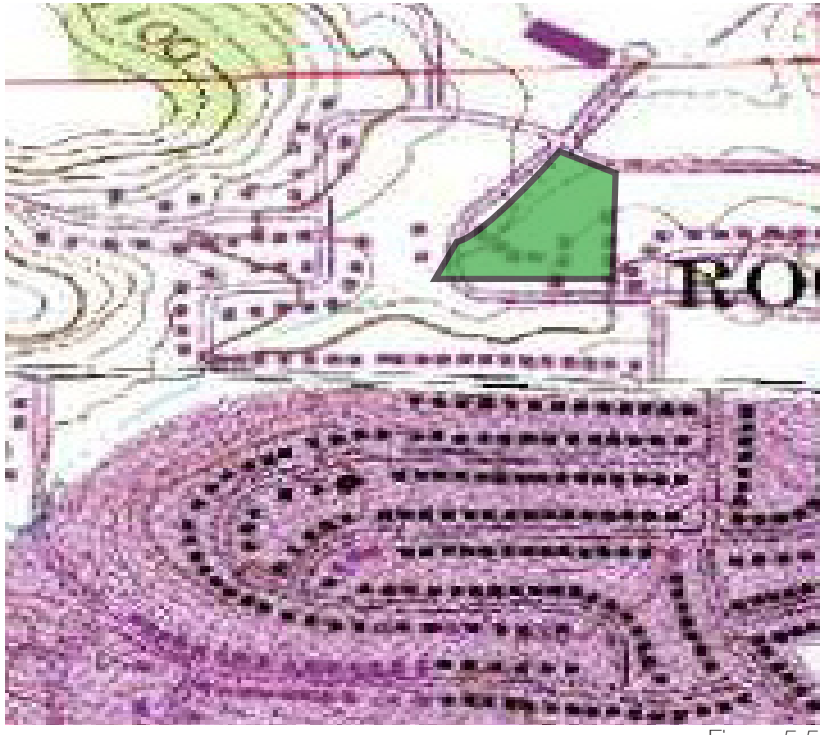


Figure 5.5

Visual Form

The wide open spaces of the undeveloped land in the area provide isolation as of now. This, however, may change as the undeveloped land is being sold. The other forms from the site are mostly apartment buildings. The screen of the apartment complexes hides the residential housing on the opposite side.

Figure 5.7

Plant Cover

Minimal plant cover on the site. The exterior gardens that are proposed for this design would incorporate plants and flowers that are indigenous to Rochester, MN. These plants will be reflective of the design and design process. The image is taken from the web site of a landscape artist local to Rochester.

Site Character

The site looks as if the law office that previously occupied the Center for Autism was the first to develop anything on that land. Nothing from the site was dying, and there was no sign of erosion.

North

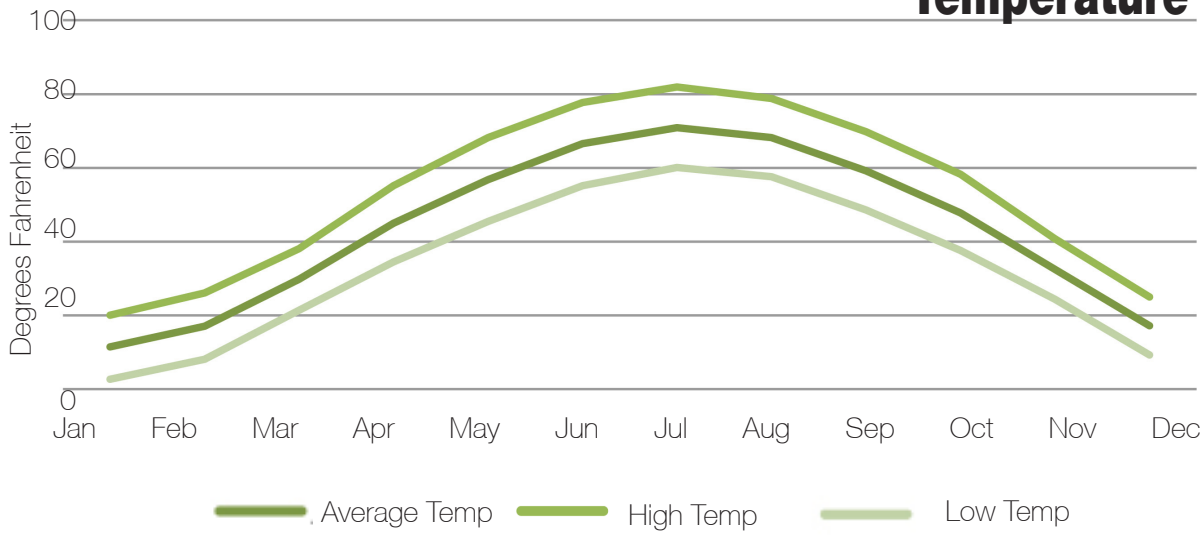
East

South

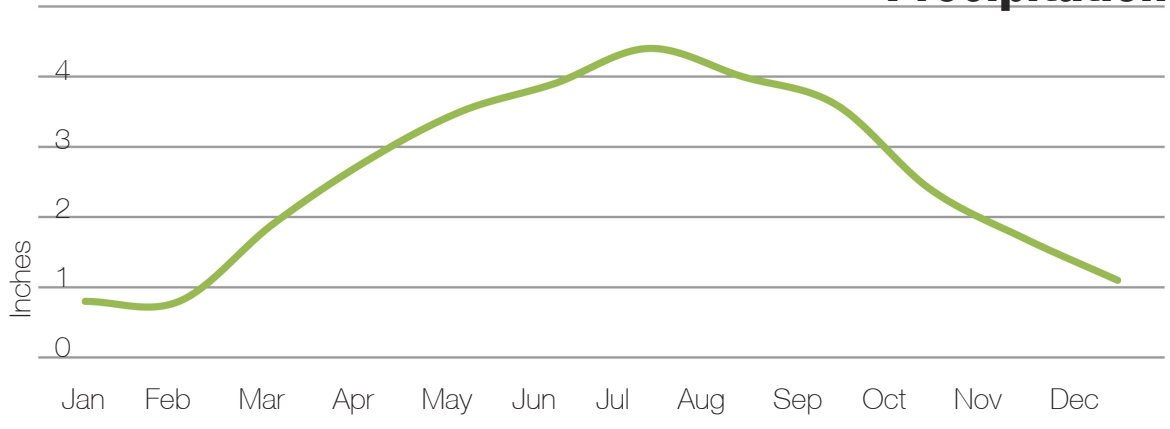
West

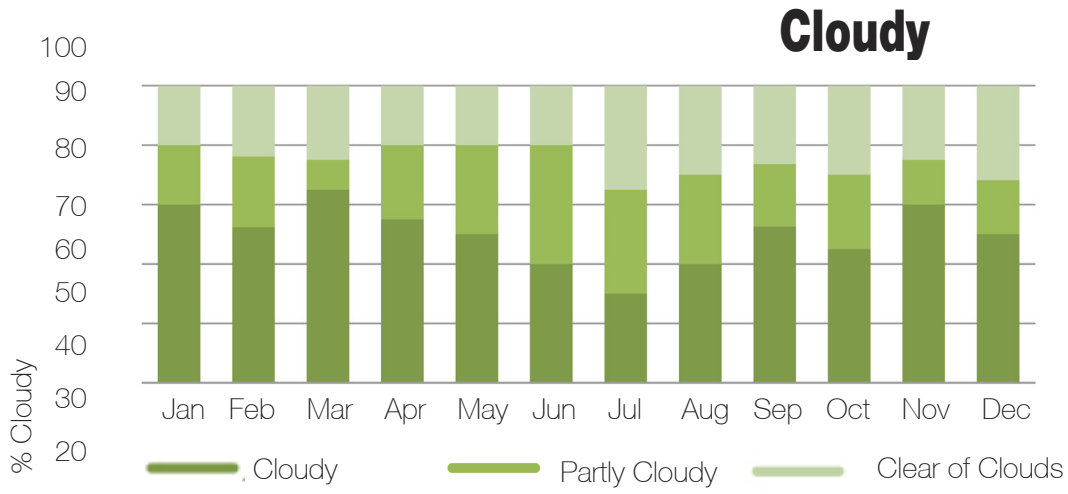
Climate

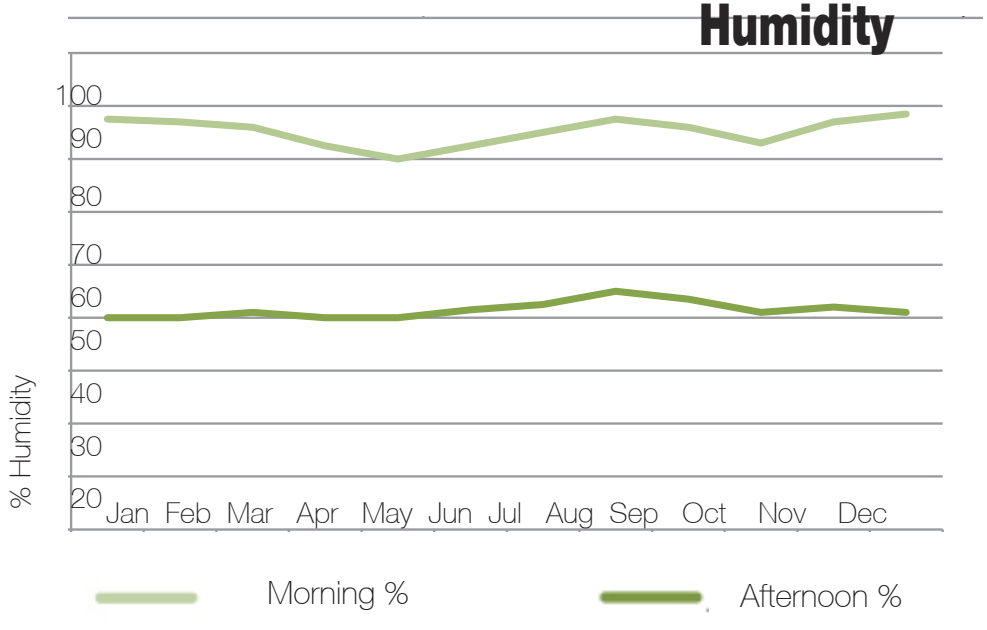
Temperature



Precipitation







All Data gathered by:
City Data.Com

Wind Analysis

The prevailing winds for this area come from the northwest. The site is fully exposed to these winds, which presents the issue of deflecting the wind or using it for passively cooling the building.

During the summer months though, the prevailing winds mostly come from the northeast and southeast (Minnesota Climatology Working Group). Creating shapes that take advantage of the wind in the area would be advantageous for these children.

Sun Analysis

Day lighting is extremely important to children with autism. Artificial lighting can be detrimental to some children with autism. The sense of openness allows the children to connect more with nature.

The southern half of the site is blocked from the sun by trees through parts of the day. This leads the design to be pushed toward the northwest corner of the street. This allows for the building to take advantage of the prevailing winds and the most sun exposure.

Summary

Throughout this research, details came to my attention that would otherwise take months of design work to realize. The climate is colder than I thought it was, but it was also a lot more humid. These principles of design allow us to understand the climates of the areas to make people more comfortable. Design decisions will be made not only in a qualitative way but a quantitative way as well.

It will not only be more sustainable to use natural passive systems for the heating, cooling, and lighting of the building, but also be most beneficial to the children who will occupy the space. Some children with autism are unable to cope with the loud buzzing of an HVAC system or the flickering of fluorescent lighting systems.

These will not be completely eliminated, but the more natural environment created for these children, the better.

Private Space

Understanding the space allocation allowed for each portion of the program will become imperative to the design. The following programmatic requirements specify the approximate amount of space assigned to each specific space. These numbers will be subject to change throughout this design process.

Apartment One-

Bedroom one	370 sq. ft.
Bedroom two	252 sq. ft.
Bathroom	120 sq. ft.
Living Area	400 sq. ft.
Kitchen	200 sq. ft.
	1342 sq. ft.

Apartment Two-

Bedroom one	260 sq. ft.
Bedroom two	252 sq. ft.
Bathroom	120 sq. ft.
Living area	300 sq. ft.
Kitchen	200 sq. ft.
	1,132 sq. ft.

Apartment Three-

Bedroom one	290 sq. ft.
Bedroom two	252 sq. ft.
Bathroom	120 sq. ft.
Living Area	650 sq. ft.
Kitchen	100 sq. ft.
	1,412 sq. ft.

Apartment Four-

Bedroom one	320 sq. ft.
Bedroom two	252 sq. ft.
Bathroom	120 sq. ft.
Living area	600 sq. ft.
Kitchen	120 sq. ft.
	1,412 sq. ft.

Semi-Private Space

Classrooms-	
Grocery Store Classroom	940 sq. ft.
Library Classroom	1500 sq. ft.
Laundromat Classroom	1000 sq. ft.
Sensory/Tech Classroom	1600 sq. ft.
Utilities-	300 sq. ft.
Mechanical-	200 sq. ft.
	5,540 sq. ft.

Public Space

Exterior Garden	2000 sq. ft.
Community Room	4000 sq. ft.
Playground	3500 sq. ft.
Exercise Room	2000 sq. ft.
Pool	5000 sq. ft.
	16,500 sq. ft.

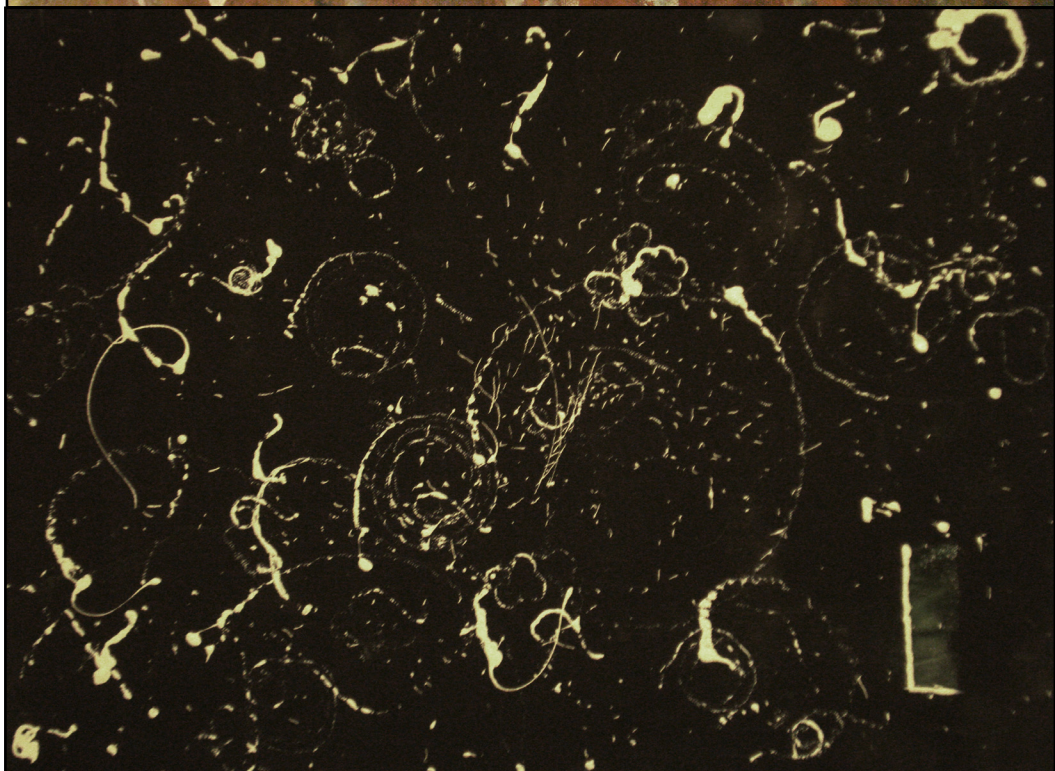
Public community space would create a central hub for this residential area. The lack of community space in this area would be advantageous to acclimate these children within this transitional environment. These children would also have the chance to interact with typical peers, which would further their development. Transitioning these children from private space to public space through the circulation spaces will also help with the transition from this “training complex” to their home environments.

Process

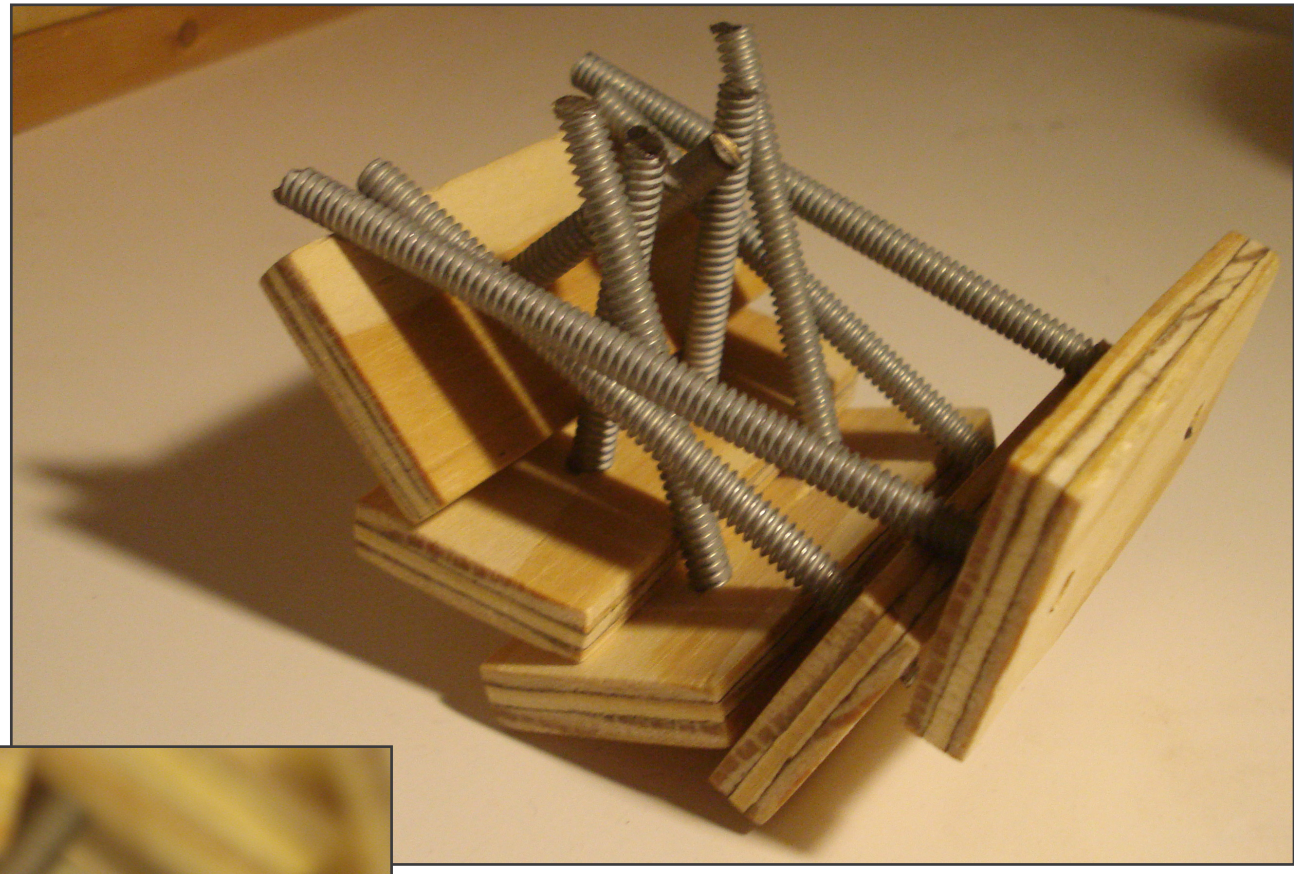
The process began with a description of how children with autism release the tension that is built up within themselves. The two motions that revealed themselves were rubbing and twirling.

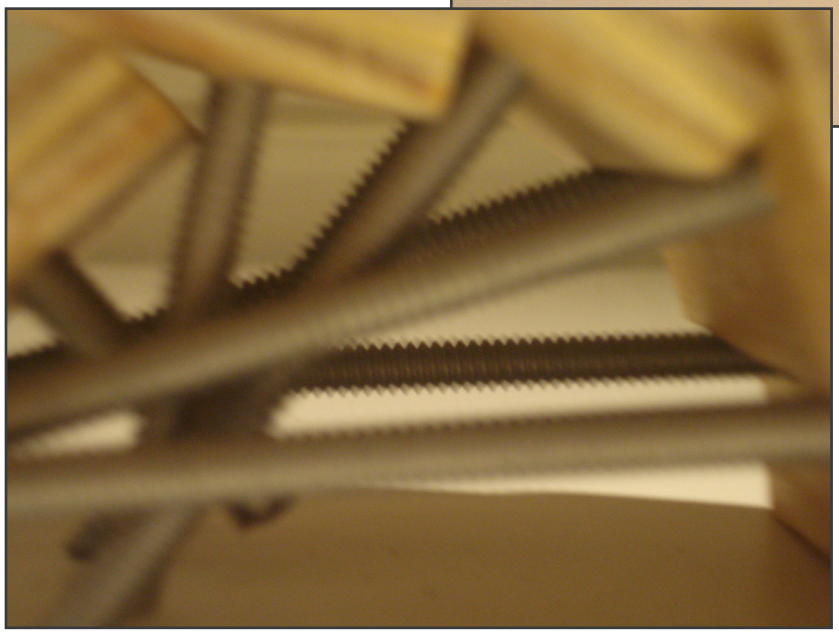
These motions were then translated into the paintings on the right. The top painting was an exploration into the physical act of rubbing paint onto the canvas. This allowed me to explore the color range and tones that would be useful in the final project.

The second painting was an exploration into the act of twirling. Using a top dipped in white paint and twirling it on a black canvas allowed me to understand the unpredictability of the disorder I was working with. The green corner of the painting represents the focus of the painting. This also shows how a child with autism has to pull themselves towards focusing with the amounts energy they have swirling inside them.



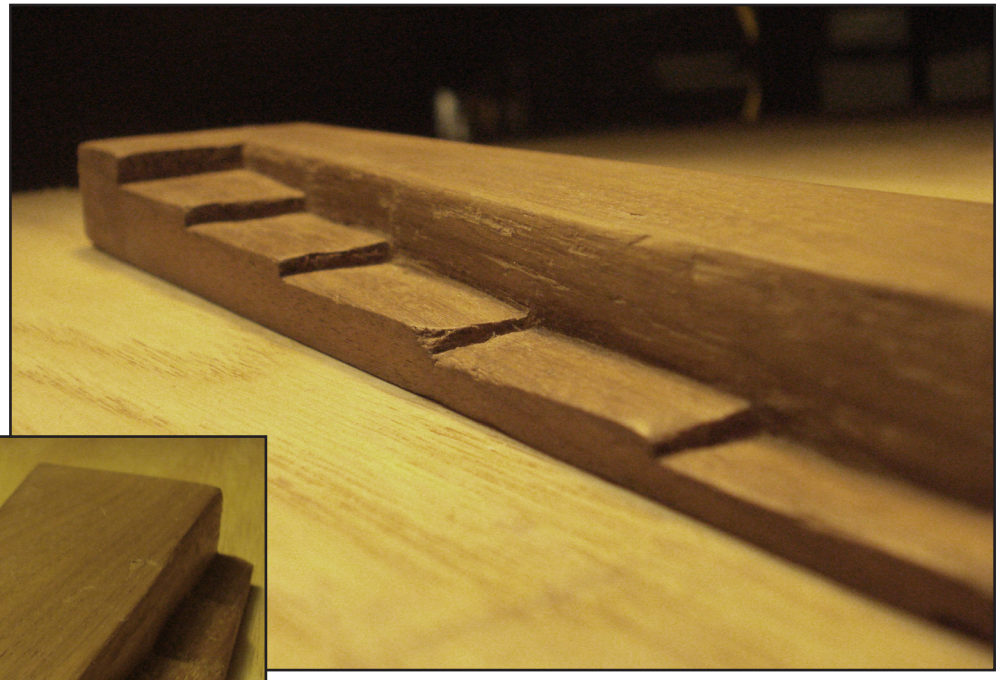
Next was a study of objects and materials. The idea of creating stair-like objects came from a discussion of how children learn. By using architectural elements, I was able to explore different ways to describe what a stair was, and how it was used in a smaller scale.





The first material I used was steel and wood. These were the first initial materials to be used in the final design of the building. Wood introduces a warm feeling into the building, while steel has a rigidity that offers structure and support.

The second material used was walnut. I was able to carve stairs into a piece of walnut that was eventually sanded down to allow the user of this object to continuously slide his/her finger along the steps repeatedly.



The repetition introduced by this object opened a new idea to the project. The need for this "rubbing" to keep happening needed to appear spatially in the final design.

The smoothness of the material and how the object was designed to control user's need to continuously use the object advanced the design of the building.

Concrete was the third and final material used in this series of explorations. The stair-like qualities in this exploration become quite literal. It was difficult to create a mold of something that would not turn out to be a literal stair.

This allowed me to understand the weight of concrete as well as the different textures that could be created with different molds and concrete types.

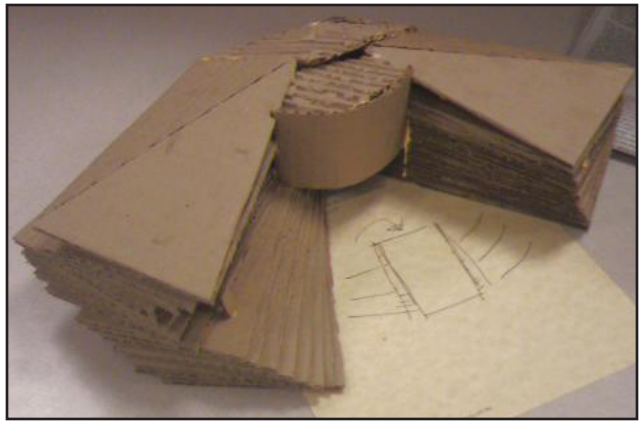
From the object studies, I was able to revisit the site and start making decisions with how this complex would sit on the site. By pushing the building towards the exterior of the site, I was able to create a private courtyard for those who were using the facility.

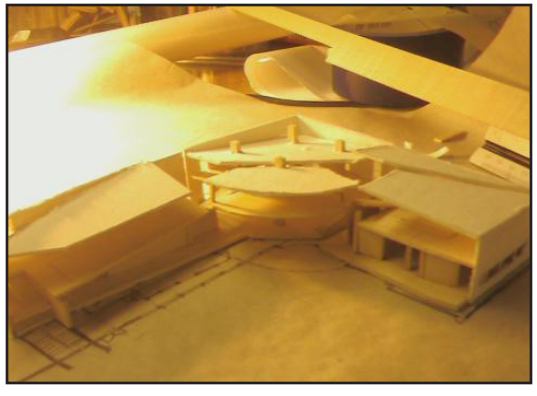
The first sketch describes the how the building becomes a protective screen towards the interior of the site. This helped show the relationship of Rochester Autism Center towards the new building and helped create a connection to the center with pathways and gardens.

The massing model showed how the shape of the building would be extruded from the plan sketch. Created was an interesting layering of space. It also started describing the roofing system that would be need to layered into the design according the second level's needs.

The spaces were not described on the interior which made this model great for defining exterior space, but not for detailing the interior.

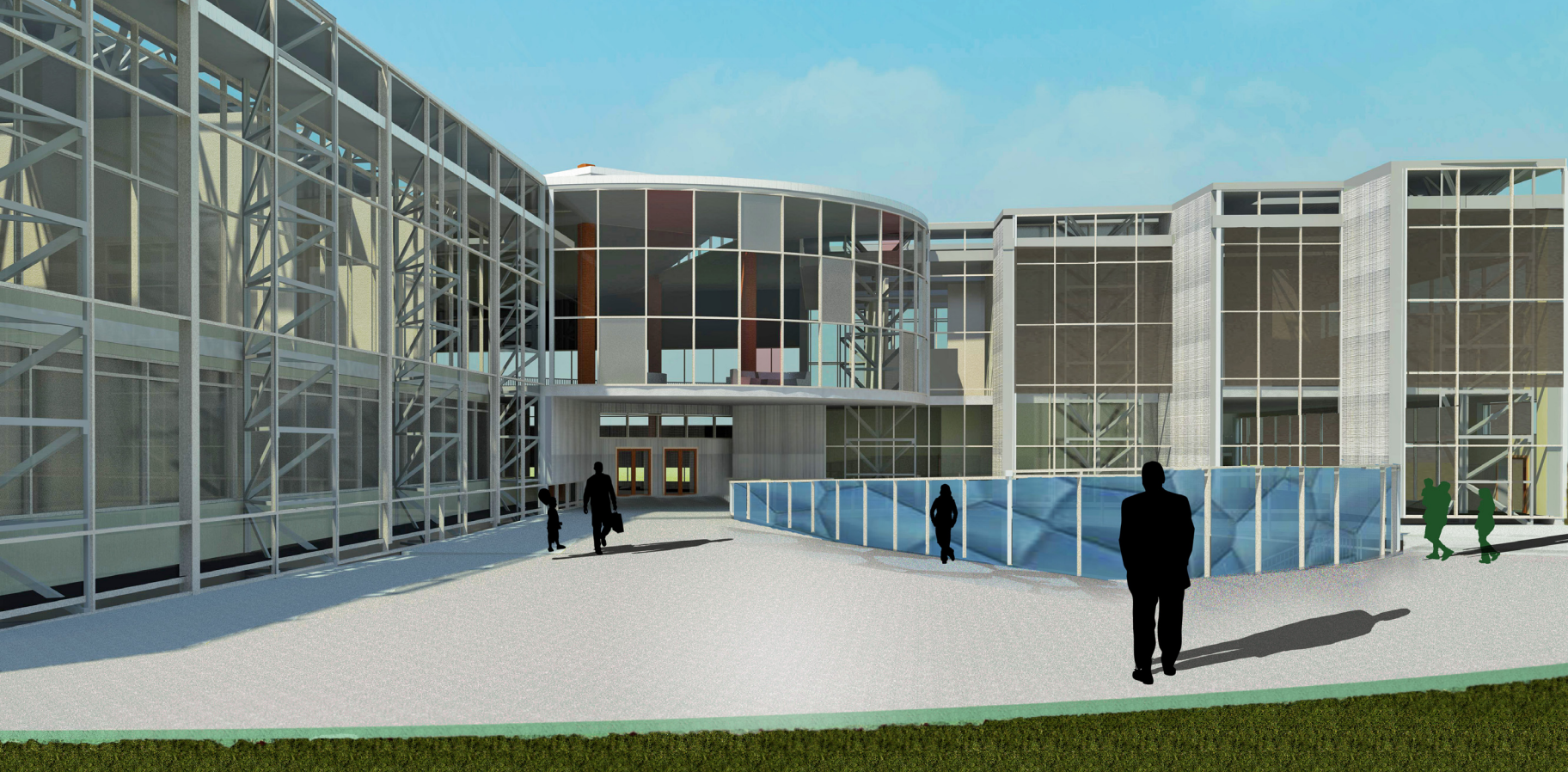
The final model made was able to show how each room would feel spatially. This model progressed the design of the roofing structure, but still left refined details of materiality. Also, the exterior walls on the interior of the site were left undeveloped.



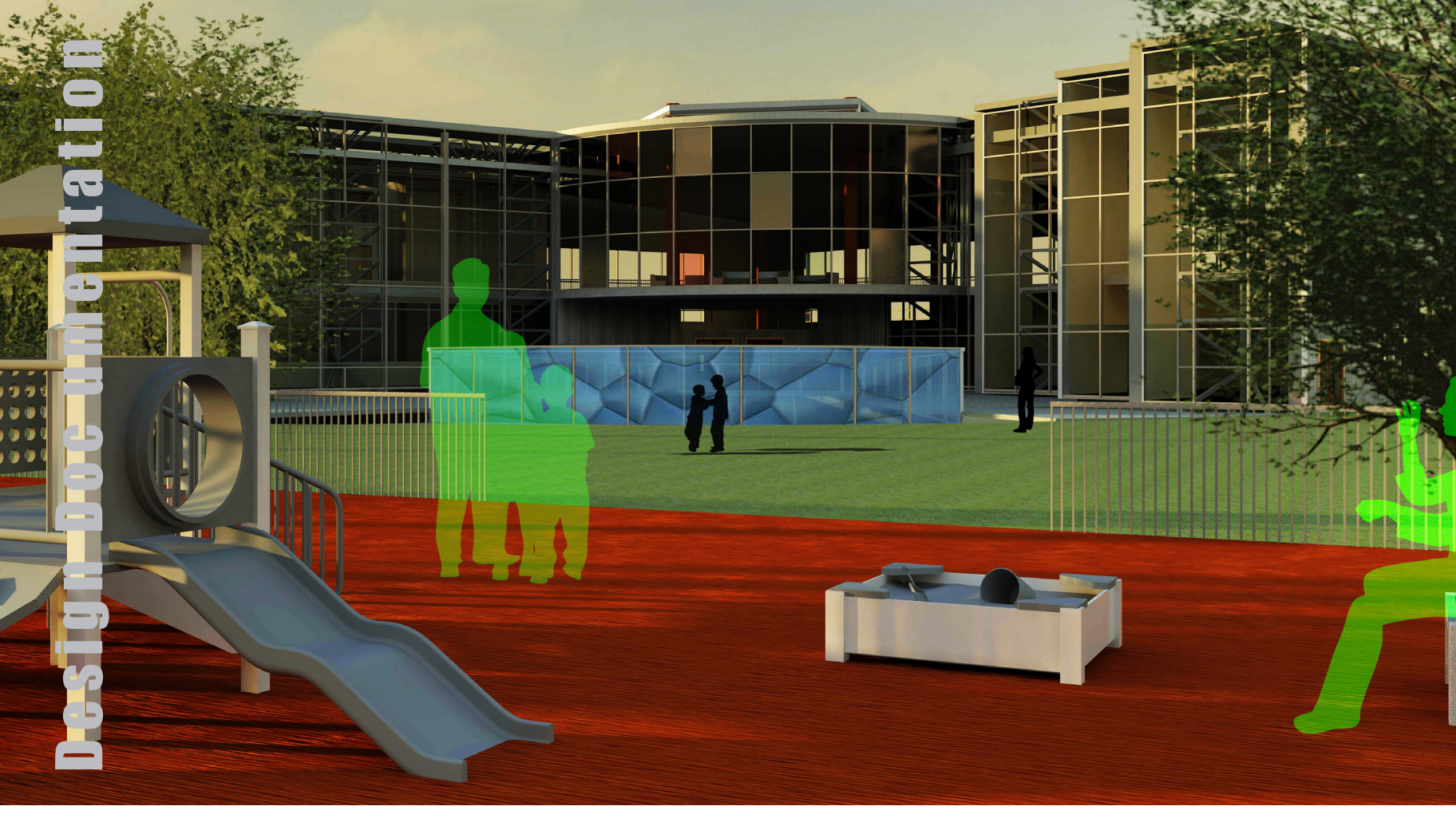


A narrative was created to understand the spatial progression of the building. These next four renderings show the four points of reference for the building. The first of this series is the entrance. The rendering above shows how a family will be greeted by the building when arriving. The oversized door was designed to imitate that of a family's door from home. This gives the child a sense of familiarity as they approach the building.

The next rendering is of the atrium of the building. This is a gathering space as well as a showcase space for the crafts or objects the children can make in the sensory rooms. The upper level is a connection space for the children staying in the apartments to be part of the bustle of the main level, but still keep their distance for their own spatial needs.

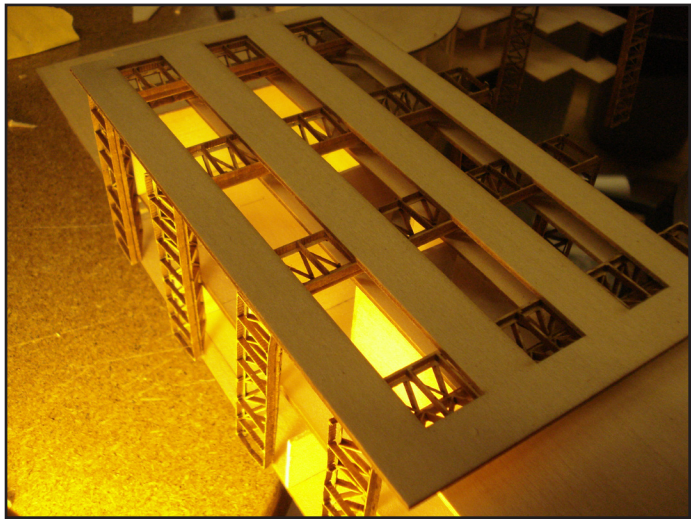


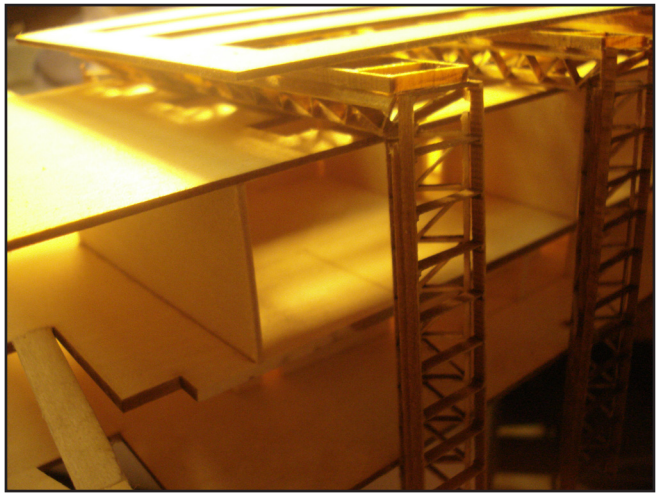
The third reference point created was the courtyard. This area allows the structure of the building to be seen so the children with autism can sense the repetitious pattern of the building. The bubble wall material used to create the roofing structure of the pool area gives the children something to run into or feel as they are walking through the courtyard. It also becomes the centerpiece of the area. Entrances to the lower level pool area are located on the southeast side of the bubble wall as well as on both ends of the building.

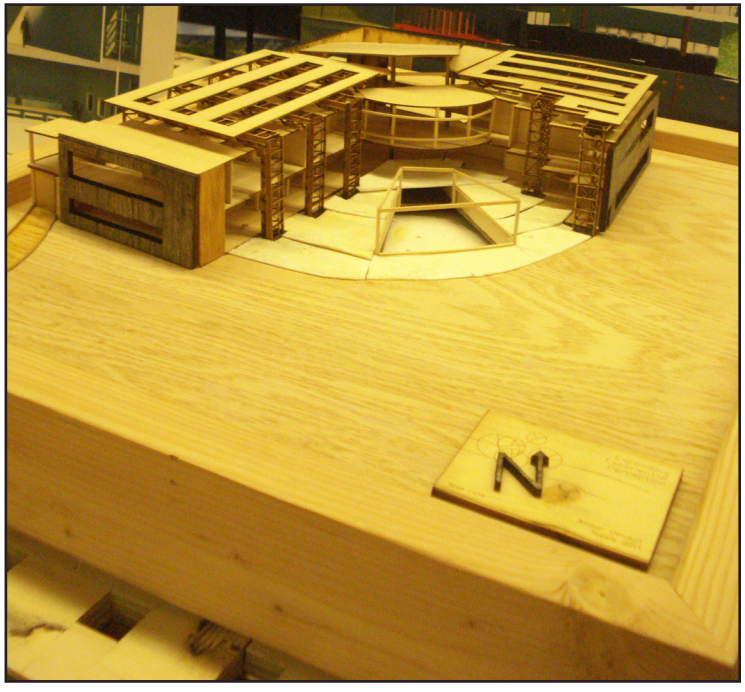


The fourth and final rendering describes the playground area. Being able to look back across the site and see two of the other reference points will allow the child or children with autism feel at ease. The disorientation of building may be overwhelming for a child with autism, or any child for that matter. Subtly structured spaces allow the child to understand the space or feel comfortable in that space create an environment where that child's behaviors could be pushed.

Model







The artifact created during this process became a catalyst for the architecture's design. The repetition of the holes created by routering strips of plywood seemed to represent the suburban area that surrounds the site. The meticulous natural of creating these strips also put myself into this repetitive natural needed for children with autism to advance their behaviors.

Creating this table for the final display allowed me to work with spaces within a space that would be beneficial for these children with autism, on a one-to-one scale.

Being able to be within the table opened new design opportunities. The ability to build at a one-to-one scale also helps understand how the building would actually feel. This part of the process allowed me to make connections from the objective to subjective.

Final Display

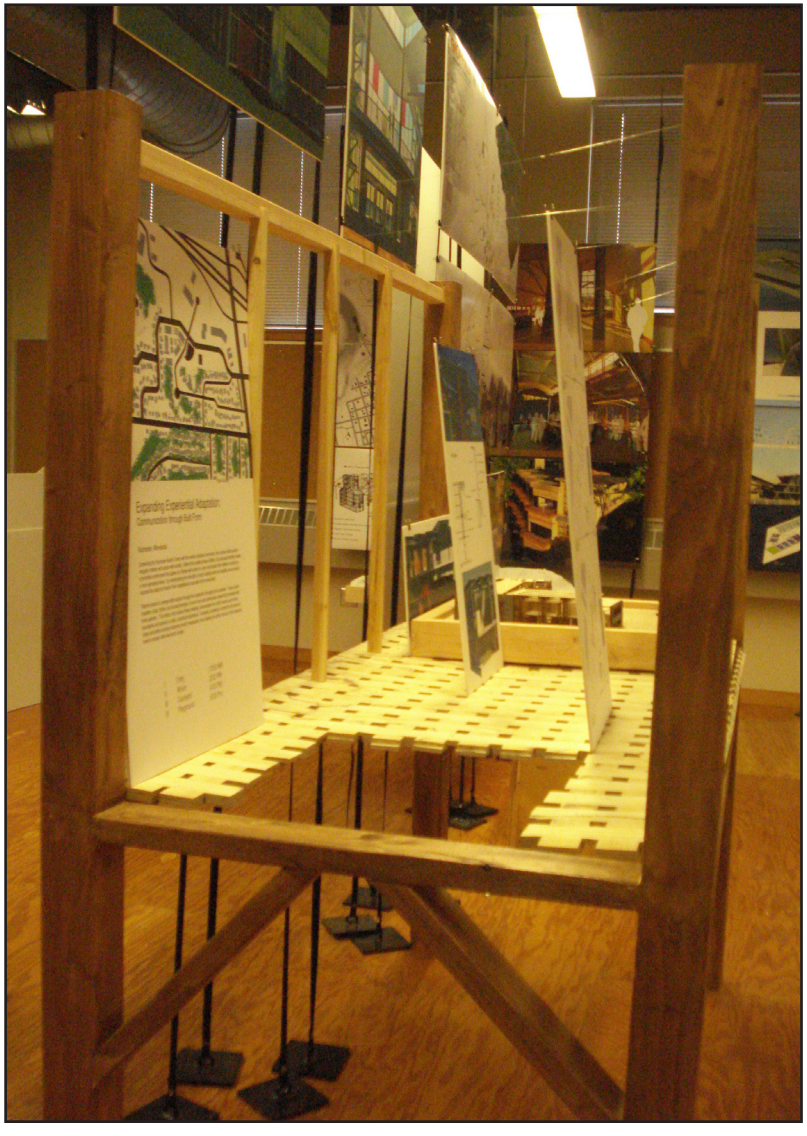


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Image List

Cover Image- Black, M. H. (2010, September). Austim Awareness. Retrieved September 8th, 2010, from Kids for Moms & Dads

Site Images

Figure 1.1- Stock.Xchng
Figure 1.2- Google Earth
Figure 1.3- Google Earth
Figure 1.4- Bing.com

Case Study

Figure 3.1- Addison Godel. 1999. Amsterdam, Netherlands. Retrieved December 9th, 2010.
Figure 3.2- Kiss, L. R. (2010). Healthcare. Retrieved December 9, 2010, from Architectural Record
Figure 3.3- Rubin, A. (2005). 10x10_2 E2A Broelberg Housing Complex. Kilchberg, Switzerland.
Figure 3.4- Addison Godel. 1999. Amsterdam, Netherlands. Retrieved December 9th, 2010.
Figure 3.5- Church Health Center. (2010). Home-Medical.Wellness.Outreach. Retrieved December 9, 2010, from Church Health Center
Figure 3.6-3.8 Kiss, L. R. (2010). Healthcare. Retrieved December 9, 2010, from Architectural Record
Figure 3.9-3.12 Architizer. (2009). Project-Broelberg Housing. Retrieved December 9, 2010, from Architizer.com

Historical Context

Figure 4.1-4.6 Mayo Clinic. (2010). Mayo Clinic Artifacts. Retrieved December 9, 2010, from Mayo Clinic

Figure 4.7 James Neely. (2007). Flickr. Retrieved December 9, 2010, from Flickr.com

Site Analysis

Figure 5.1 USDA: Natural Resources Conservation Services, 2009

Figure 5.2 Minnesota Dept. of Natural Resources, 2010

Figure 5.5-5.6 Topo Depot. (1993) Retrieved December 9, 2010 from Topo Depot.com

Figure 5.7 Sargent's Gardens. (2010). Landscape Photo Gallery. Retrieved December 10, 2010, from Sargent's Gardens

Personal Identification

Personal Identification

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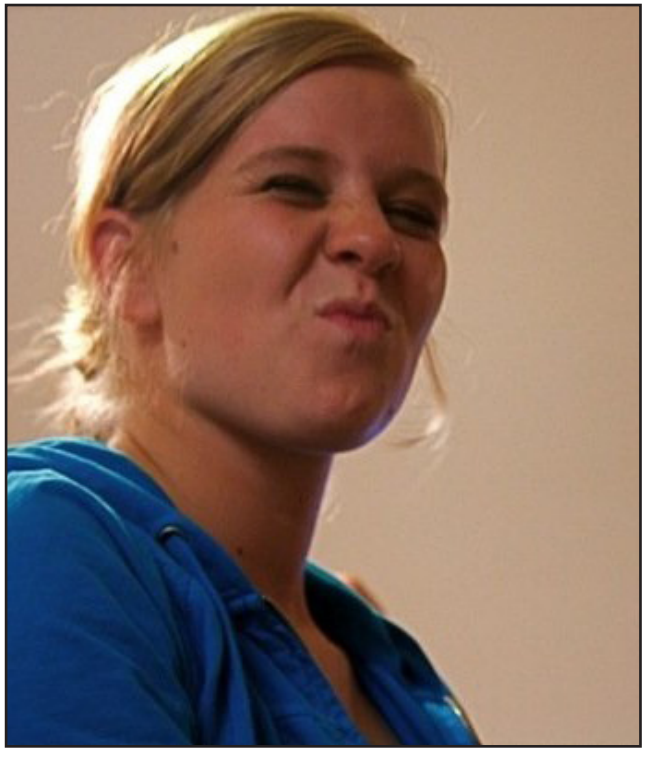

"Words are abstract."