

Designing at the Scale of a Child: An Interactive Learning Center in Muncie, Indiana

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This project began as a spin off of a great passion for child psychology. The issue of development of our youth is of great importance. The first years of our lives are by far the most critical in terms of maturing into well-rounded individual who will be an asset to society. In so many ways, our education determines our attitude toward life and our individuality in future. There are so many children who are being lost as a statistic in the ever-growing number of children per classroom. The student-teacher ratio is ~~much~~ too big and many students are not getting the attention required for them to learn. For these reasons, the possibility of a facility that would serve to accommodate all of those issues began to grow. Giving children a place to go and learn in a new interactive way that will assist them in their quest for knowledge is at the heart of this project.

While studying the process by which people learn, it is important to keep in mind that so much of the development and ending result is inherently very subjective. Although the process by which people learn has been the subject of much research and experimentation, the underlying truth is that each person is distinctively different in the way he or she learns, understands, and communicates. The process by which children learn is under even more inspection. Since the actions and understandings that we encounter during childhood are so crucial to our maturity into and through adulthood, it is a topic that cannot be taken lightly. It is not as much a matter of what is taught, but rather the manner in

which that subject is presented. There is an irrefutable truth that children are more eager to learn when there are hands-on activities involved. This is the one element on which nearly every child studied agrees. More so than adults, children are very visual learners that require special visual attention in order to retain information. Therefore, this project needs to be centrally interactive. In order for the learning to be interactive, the spaces within the building need to be easily accessible to children of all sizes. Accessible in a sense of height and width, but also in the sense of visual cues and wayfinding. If the child is unable to locate the exhibit, he or she will not gain anything from it.

Although many people underestimate the intelligence of our youth, children are very capable of realizing the attitudes of the adults in their environment. This realization has a direct correlation to the attitudes of the children toward learning. If a child has even a slight sense that the "teacher" is not enthusiastic, the child begins to emulate this poor attitude.

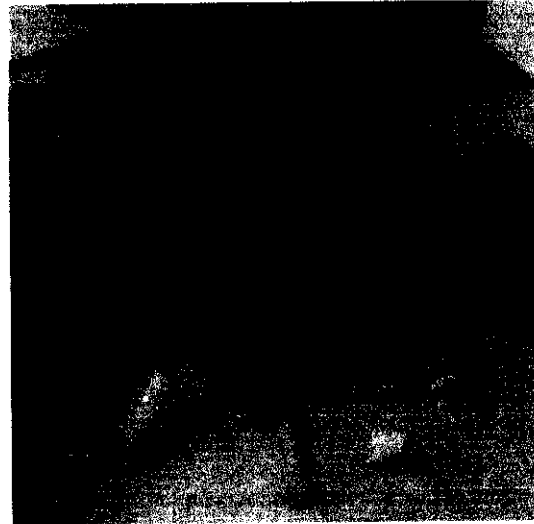
introduction

This learning center is designed for children between the ages of 5 and 12 to attend throughout the year. The children will be grouped according to proximity in age into 3 groups; kindergarten through 2nd grade, 3rd grade through 4th grade and finally 5th grade through 6th grade. This is not to say that some children can be advanced if he or she is on the borderline of grade levels and intelligence levels. It is merely a way to distinguish the children according to the majority of the children's academic level of learning. This separation of subspaces is to be gracefully meshed to create one continuous room, rather than abrupt changes from one to the other. The transition, similar to the transition involved in a child's learning continuum, should be smooth and continuous.

The facility serves as a supplement to their school education and serves to enhance their learning. It teaches them new ways of learning if they are struggling with the conventional ways. This facility also serves as a resource for parents and parents-to-be to attend seminars and discussions about various parenting problems and answers. There are a variety of groups such as 'children of divorced parents,' or 'parents of children with autism,' etc. This allows parents and children to come together to discuss ways of coping with similar issues. Although this facility is not meant to be a day care, it may also serve as a safe place for children to come after school until their mothers and fathers return home from work. However, it must be a place that the children are excited about and are looking forward to returning to with each day. The efficiency lies in the enthusiasm and attitudes of those that work there, more so than the actual activities that the child encounters each day.

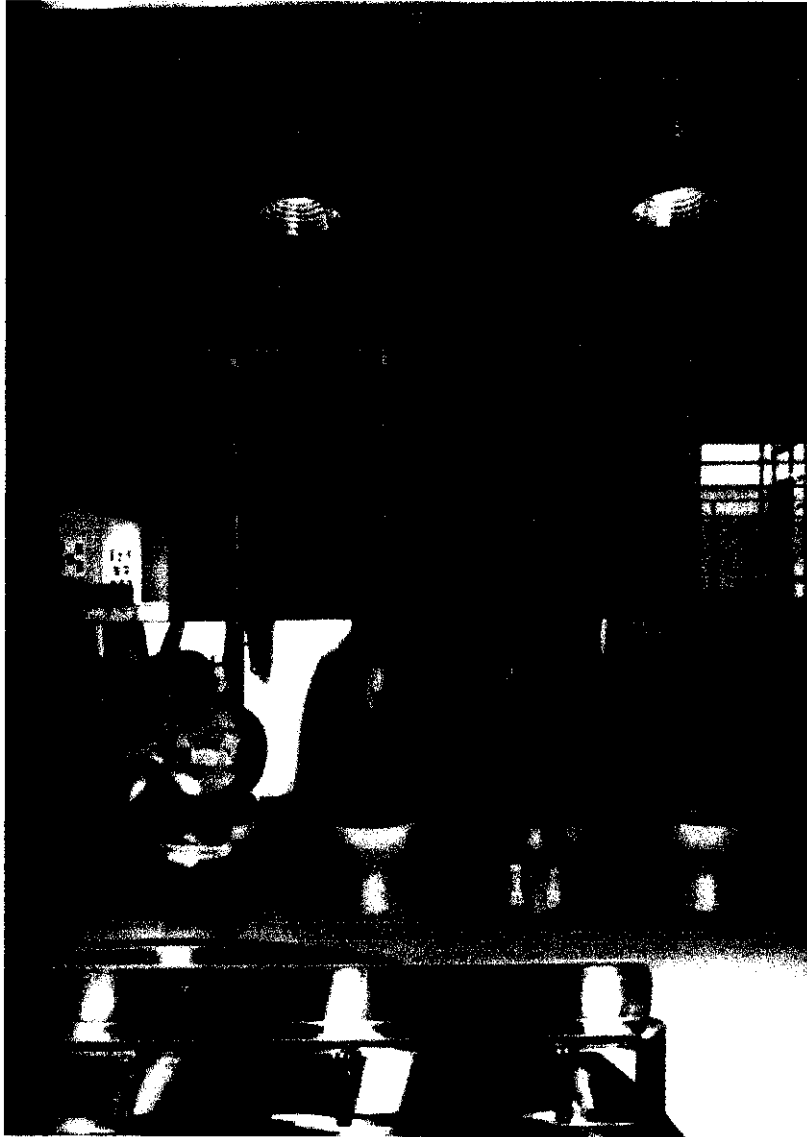


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from Kindergarten Architecture

As the ideas began to evolve, the research in turn facilitated the refinement of the topic. Child Psychology and Child Development are two very broad topics on which there are countless research studies and literature. A number of books began to expand upon the ideas that were already being formed about what the facility was going to be. Was this project about designing at the physical scale of children or was it more than that? After going through the literature, the term "scale" began to take on a new meaning. "Scale" soon meant the way in which children move and interact through the space. Was it possible to design a space that was totally oriented in the exact same manner by which children are oriented? The focus became less about making the chairs, window openings and doors closer to the floor. It now took on a much deeper concentration.

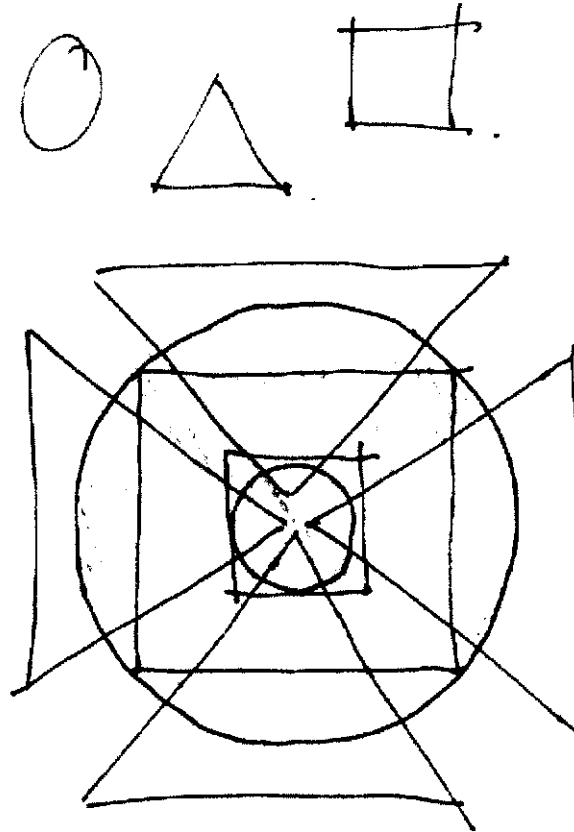
Several principles were recurrent findings in much of the literature. It was these findings that allowed the project to focus on those several principles. The development and implementation of these ideas were important to the success of the project. The project began to take shape by the exploration of the following four principles: the three basic shapes, cognitive mapping and wayfinding, journey, and hierarchy of interior spaces.

The central design concept behind this building is to create a series of spaces that are suitable for the growth of children both physically and emotionally through the designer's exploration of scale, boundaries, and connections. Although there is not a true typology for this type of facility, it is intended to be a combination of an interactive children's museum, an after school child care facility, and an elementary school. There will be spaces that are specific for individual learning, as well as spaces that will be appropriate for group discovery and exploration.

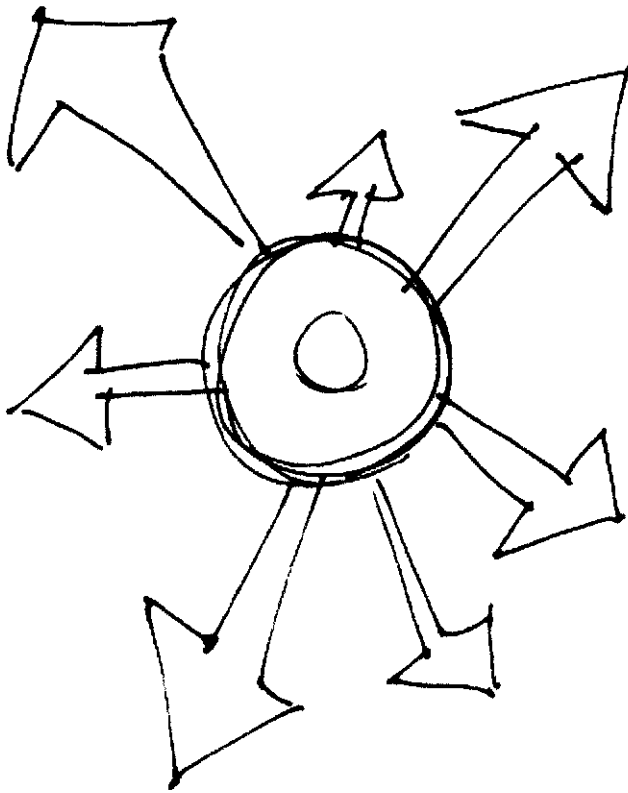
circle, triangle, square

The three most basic shapes, the circle, the triangle, and the square are the underlying shapes that created the major massing forms of this project. According to Frederick Froebel, an educational theorist, these three basic shapes, the circle, the triangle and the square, are the most easily understood in all dimensions across space, and therefore become the three basic forms (Dudek, 30). It makes sense. There are very few children, of any age, that are unable to recognize the familiarity of the basic units, even if they are given only a partial view of the particular shape.

Therefore, the floor plan evolved through overlapping, in two dimensions, these three shapes. Specific lines were then deleted to create interior spaces that were appropriate to the program. After extruding these lines into the third dimension, the project then began to start developing certain spaces and voids. The main circular form serve as secondary circulation around the entire building, with the diagonals of the dominant square being the primary circulation space. The triangle is expressed in the “wings” of the facility, on the north, east and west sides. The three shapes are then carried to the details of the exterior as seen on the ornamentation of the walls and the window mullions. These add both character and aesthetic quality, but also serve as exterior lighting opportunities.



cognitive mapping



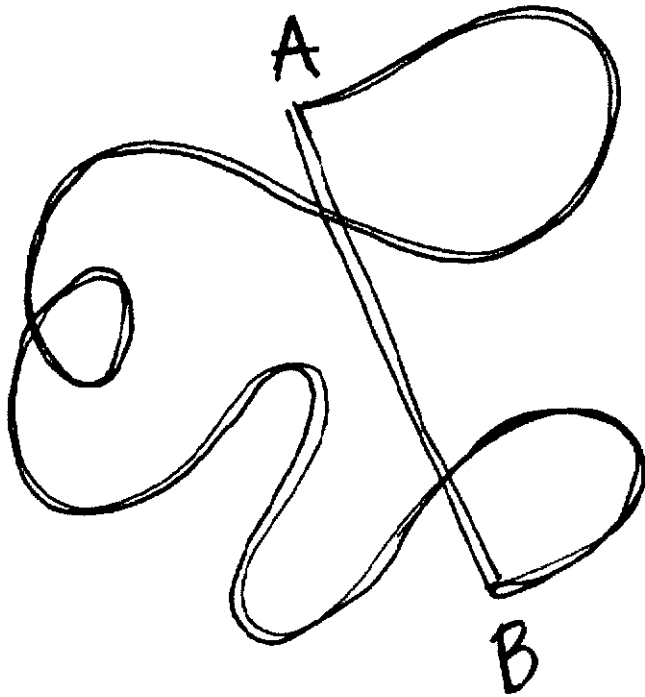
Nearly all of the research stated that children have a tendency to make egocentric cognitive maps. This means that they always place themselves at the center of the universe and then the world revolves around them. There is also a great deal of importance placed on landmarks in order to facilitate wayfinding. "Following the use of landmarks as individual references, the child next forms clusters of landmarks and 'minimaps' (Devlin, 11)." They create multiple "minimaps" that allow them to navigate through the building. Also, Devlin found these landmarks as a series of activities and experiences. "These theories have in common an emphasis on progression from a less integrated to a more coordinated spatial framework that develops with experience. There is also an undercurrent of the importance of particular kinds of spatial information. Specifically, landmarks emerge as significant sources of information (Devlin, 9)."

By creating a circular form, the project was able to have a central node with circulation space branching off of the main central space. This gives the children a place in which to center their egocentrism. Also, through the use of shape and color coding system, the children are better able to understand the stacking that occurs from the first floor to the second floor.

"(Children) can use the landmarks others suggest before they are able to identify these on their own. Early on, children may be captivated and misled by the perceptual attractiveness of landmarks. What children need, of course are (landmarks) that occur at a choice point, and only at one choice point. And that is what making an environment legible is all about (Devlin, 23)."

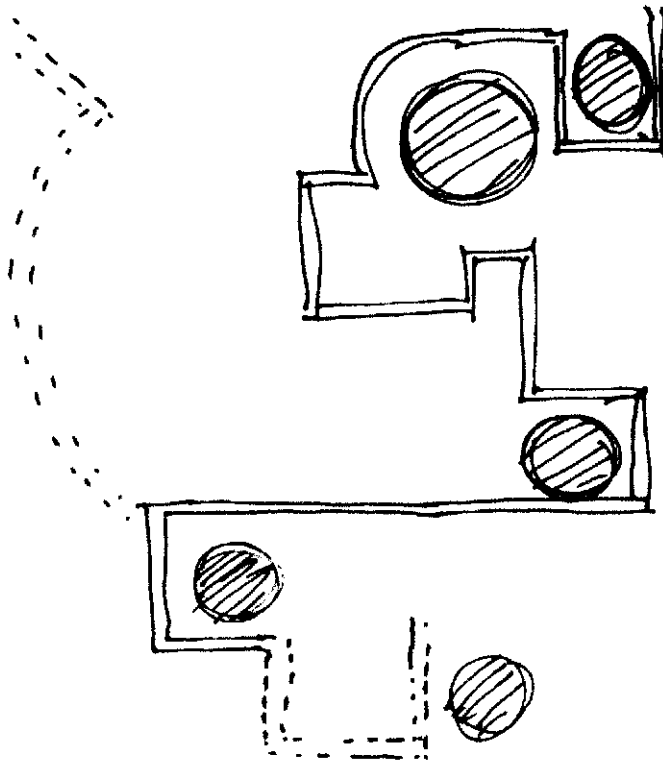
journey

The idea of journey for children is one that many adults dismiss as a trivial part of the experience of place. "Most of us (adults) usually think of routes in purely functional terms, as a means to ends rather than as the ends themselves (Hart, 74)." Children however, often times find the journey from one space to the next, no matter the distance, as an exploration. "Children seem to find as much enjoyment in getting to places as they do in being there. In fact, there often is no 'there;' they are just exploring (Hart, 40)." It is a sense of special pride to conquer the task of moving from one area to another: "considerable value is placed by the children on knowing how to get to places. Special pride is exhibited in the finding of 'short-cuts.' When new paths are discovered to link two previously explored routes, children pursue them with excitement, especially if the route enables some alternate route of return (Hart, 73)."



The main diagonal circulation spaces contain narrow shafts of space that create a fun way to move through the building. These spaces function as informal exhibit galleries and allow the children to create shortcuts from one space to the next. The continuous, circular circulation space was intentionally designed to be wider than usual so as to create secondary spaces adjacent to the primary spaces. The plan of the building, as well as the ability to move all furniture around, allows for the spaces to blend and interconnect, giving children the freedom to choose their own path to their destination.

hierarchy of spaces



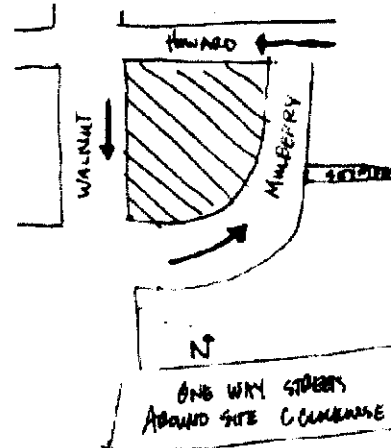
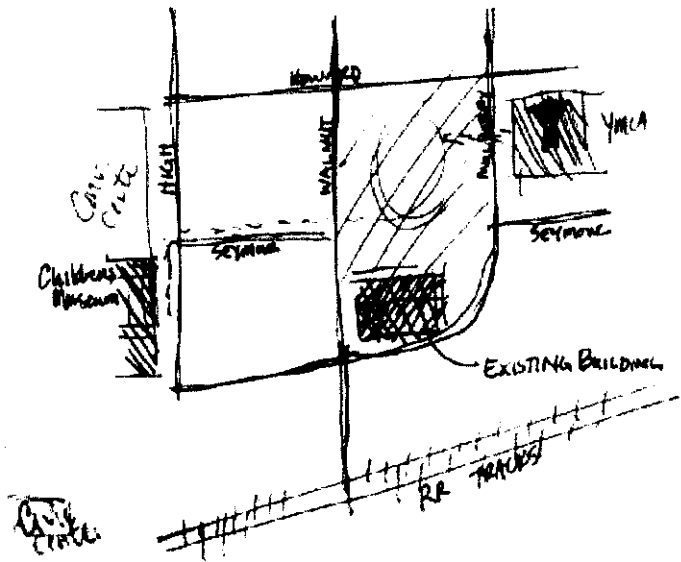
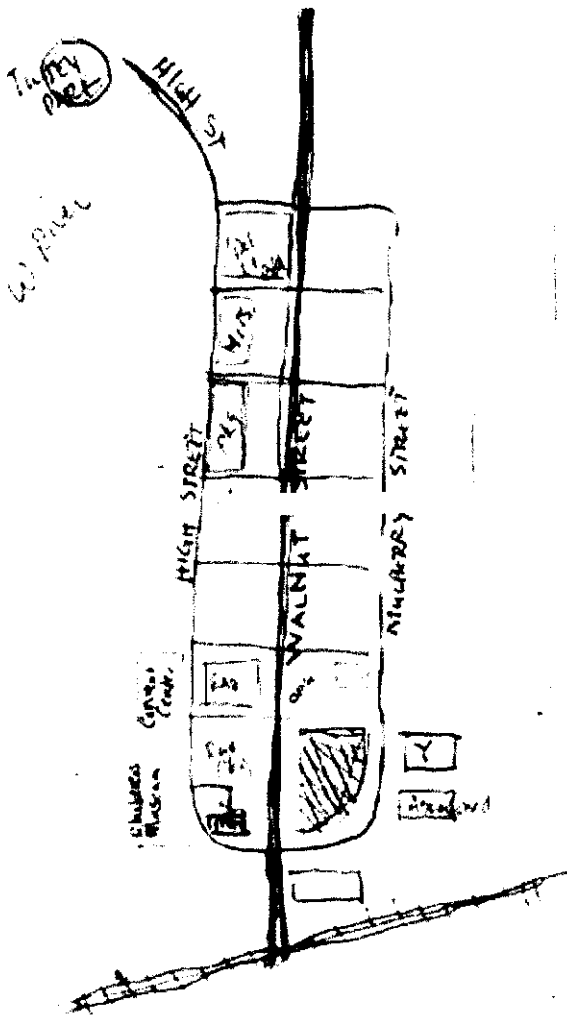
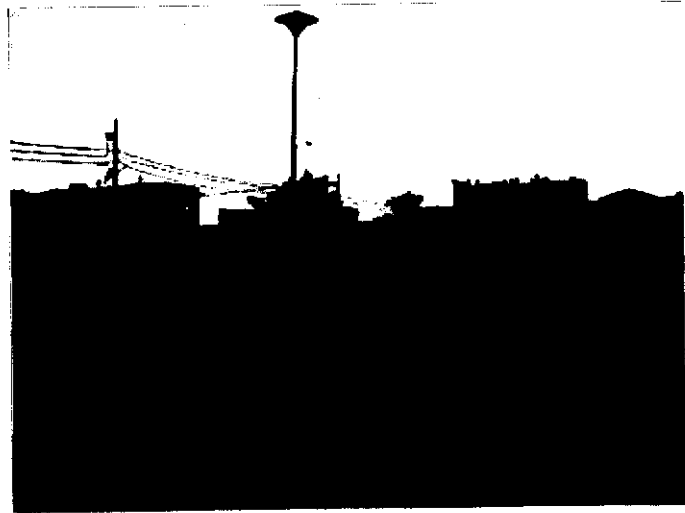
It has been found that the subdivision of space is important in creating a definition about the types of activities that take place within. "The qualities and use of instructional space can reflect the value placed on particular educational programs. Provision of a reading niche instead of books at students desks 'states' that reading is a valued activity and that it might be attractive or pleasurable (Stokols, 37)." This division of spaces is critical since most children focus on those things that are in close proximity to them: "Children [do] not seem to have much knowledge of, or interest in the world that is well beyond that which is experienced directly by them (Hart, 150)." However, it is important to note that division of spaces need not be floor to ceiling walls that inhibit the overlap of spaces and shared views.

The three exterior wings of the building contain small protrusions or niches that create a new sense of space. On the interior, they create small niches for the children to "get lost in whether the space be a reflection of the positive or negative image of the shape. On the exterior, these spaces create an opportunity to reflect the function of the building on the opposite side of the wall. All furniture in the building is movable where possible. This gives the children a sense of control while in a space that is considered to be theirs.

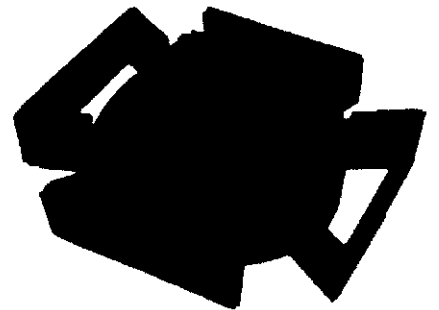
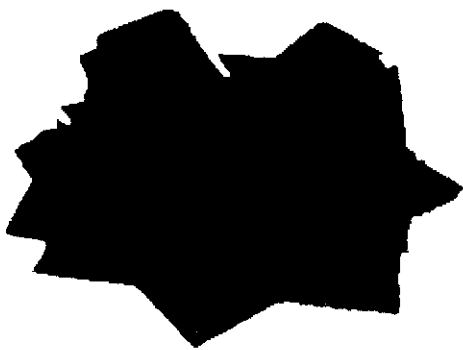
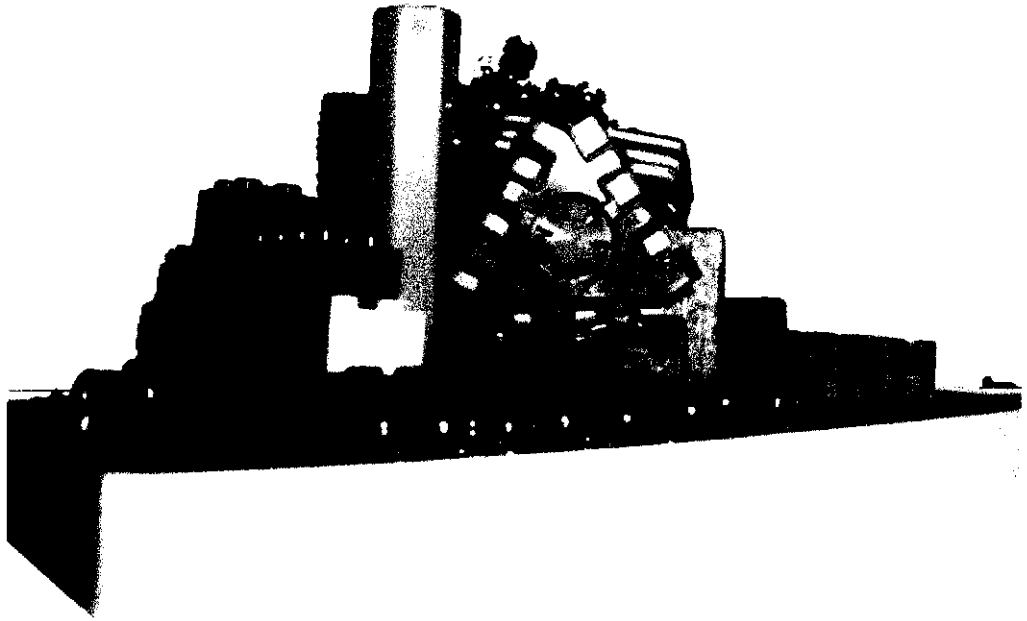
The circular circulation spaces allow for a separation of informal spaces and more formal defined spaces. This places more importance on the functions that occur within "defined spaces."

site

The site is on the southern edge of Walnut Street in downtown Muncie. Adjacent to the eastern boundary is the downtown YMCA, allowing for a connection to the facility as well as a possible collaboration with the children attending both the learning center and the YMCA during the summer. There are one way streets in a counter-clockwise direction that posed a challenge for parking and entry. Currently there is one abandoned building on the site that will be razed during construction of the facility.

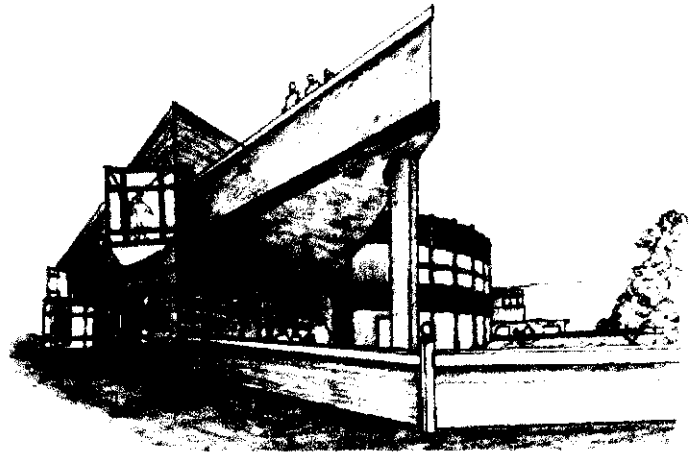


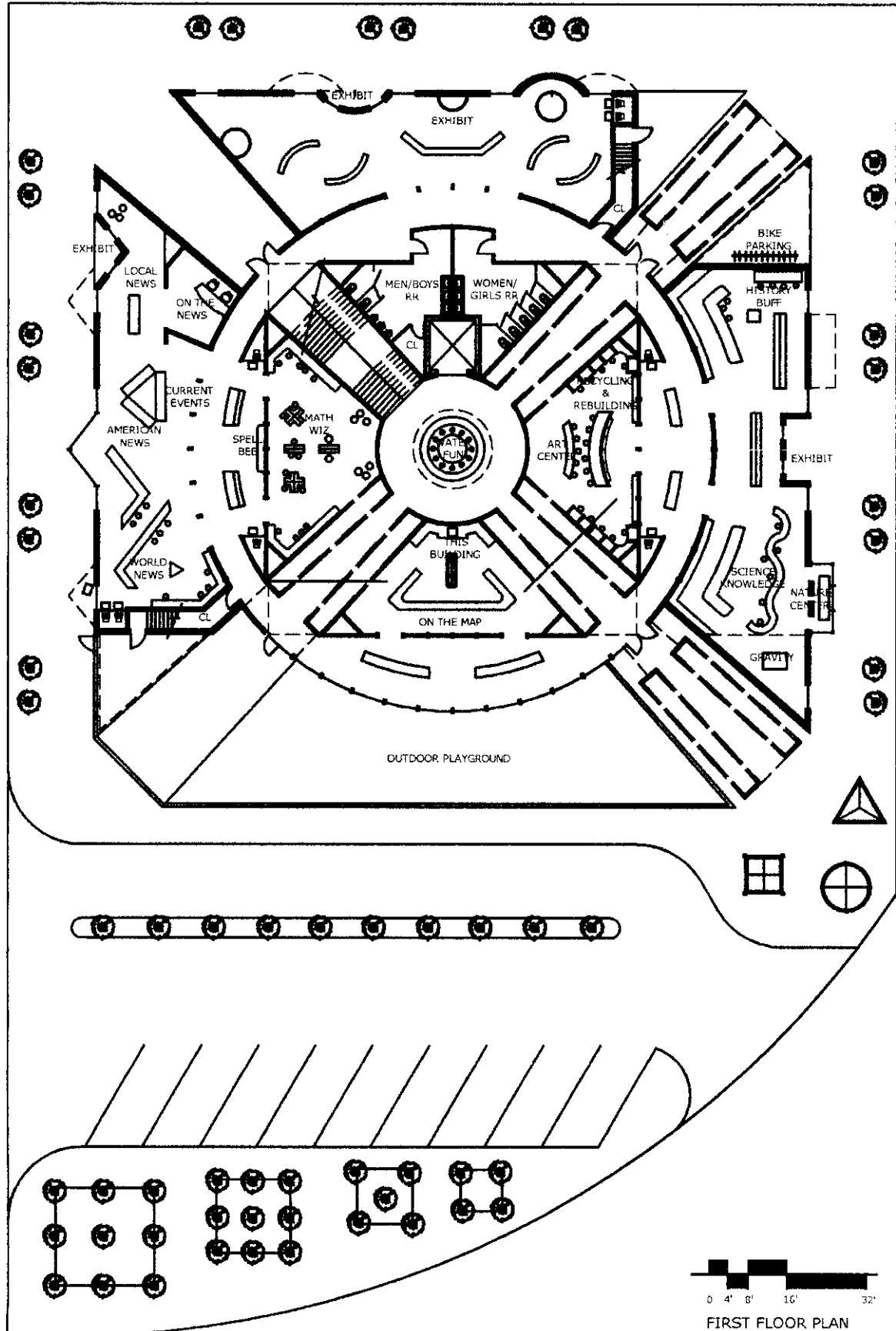
early conceptual ideas



first floor

The majority of the first floor is devoted to the "discovery zone." This consists of the central area and the east and west wings, and contains various learning centers that are specific to particular academic subjects. It is important to note that there will be a faculty member present that will guide a small group of children through the various spaces throughout the week. Also on the first floor is the formal exhibit space in the northern wing, and a number of informal exhibit spaces in the shaft galleries. Finally, there are several areas on the first floor that will contain computer stations. This allows the children the freedom to explore the infinite possibilities of the newest technology.

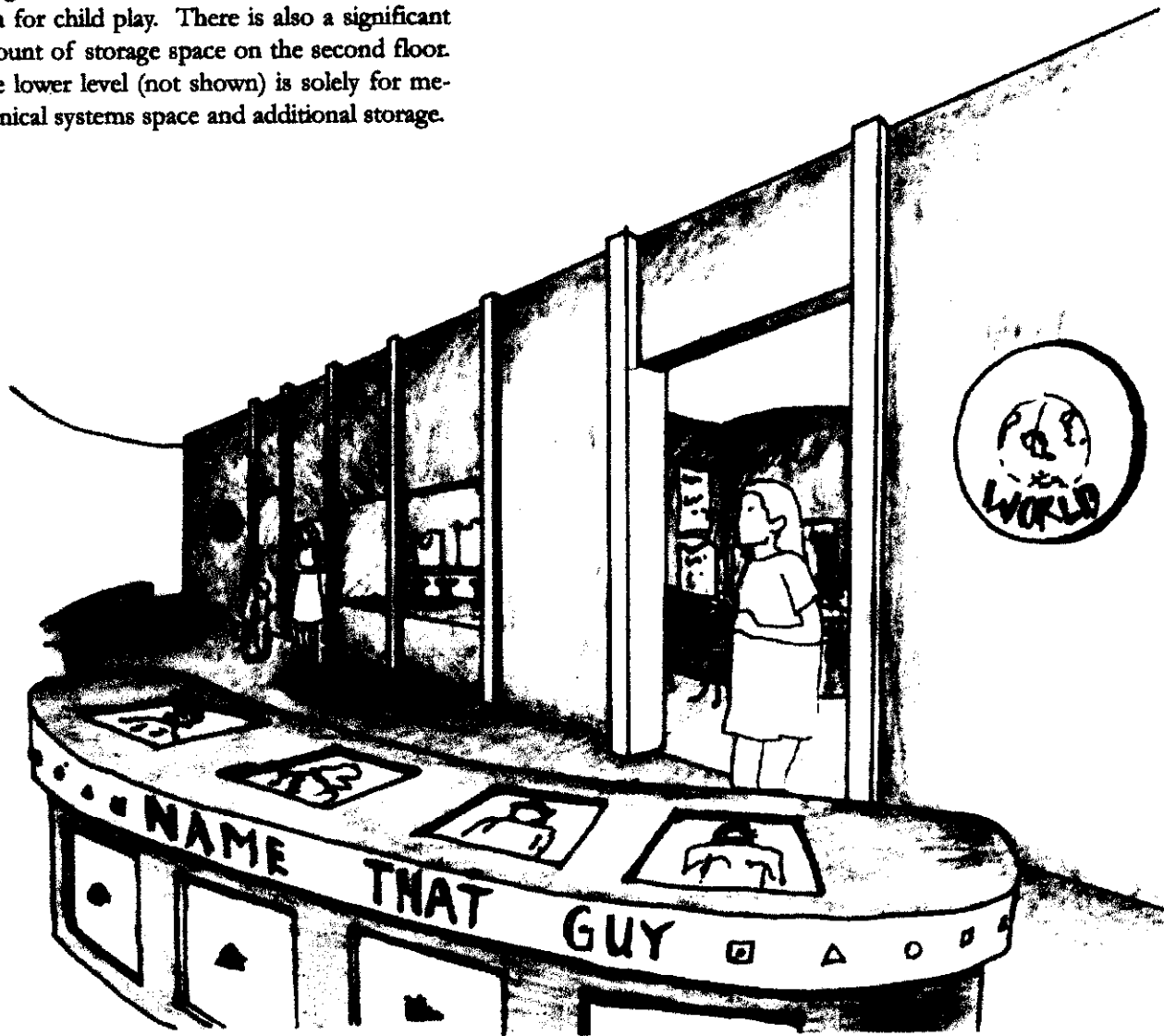


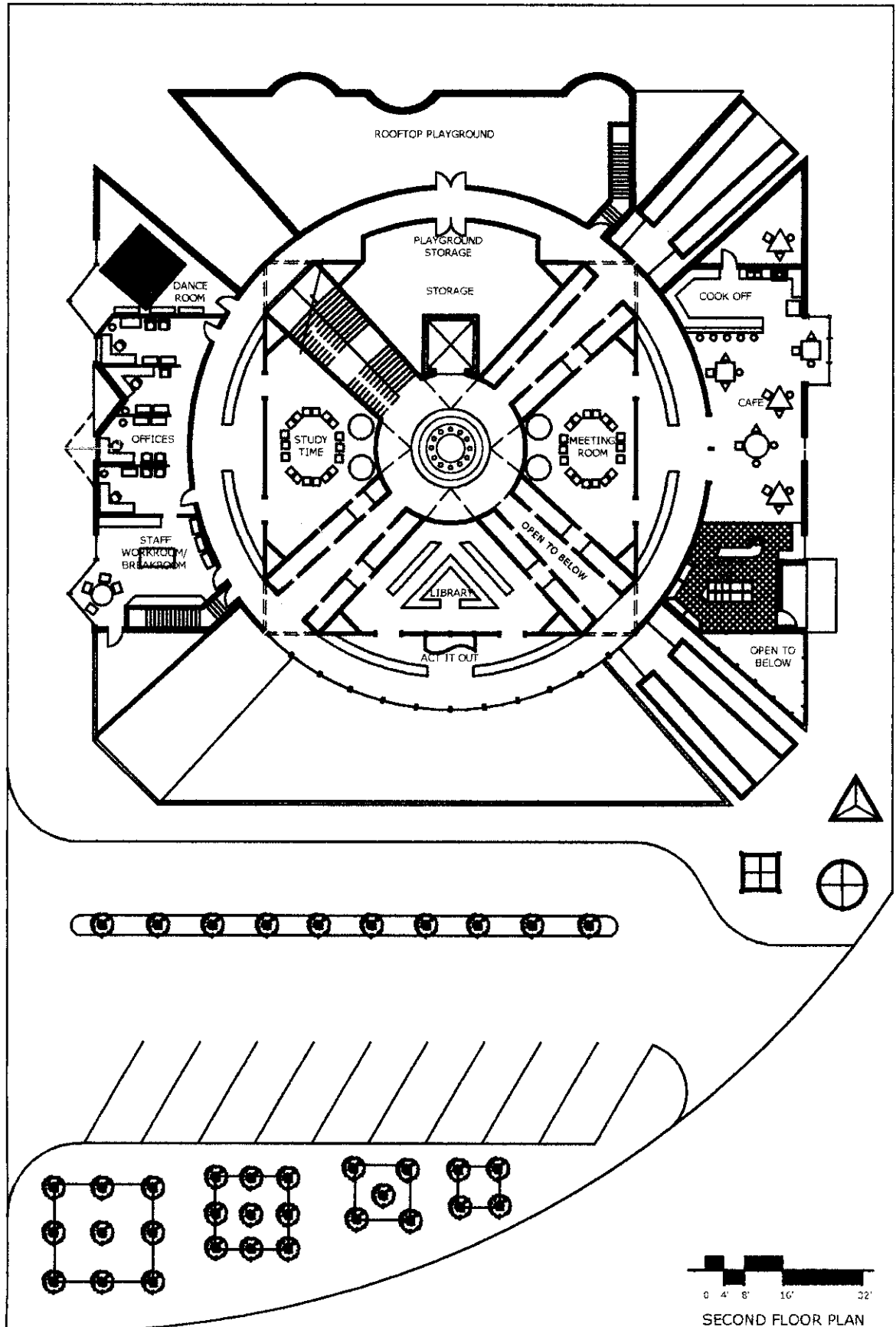


FIRST FLOOR PLAN

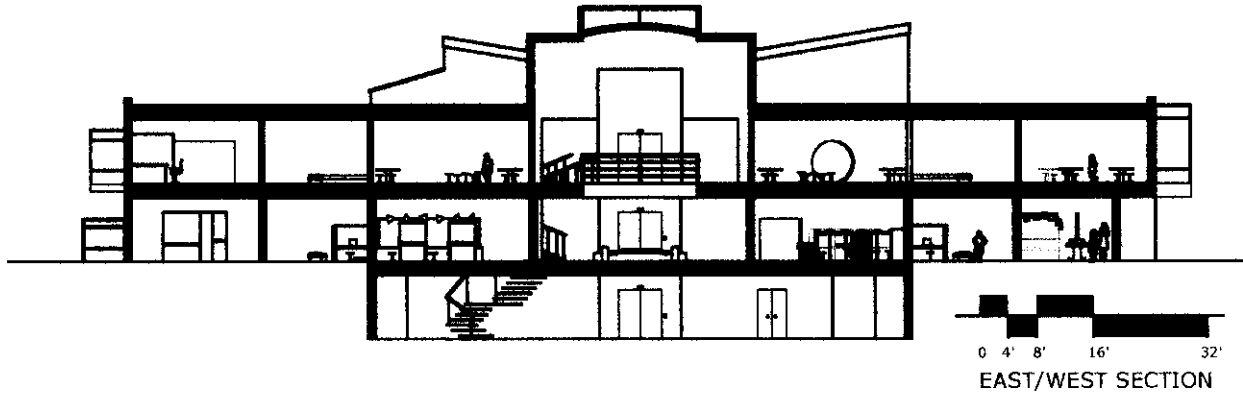
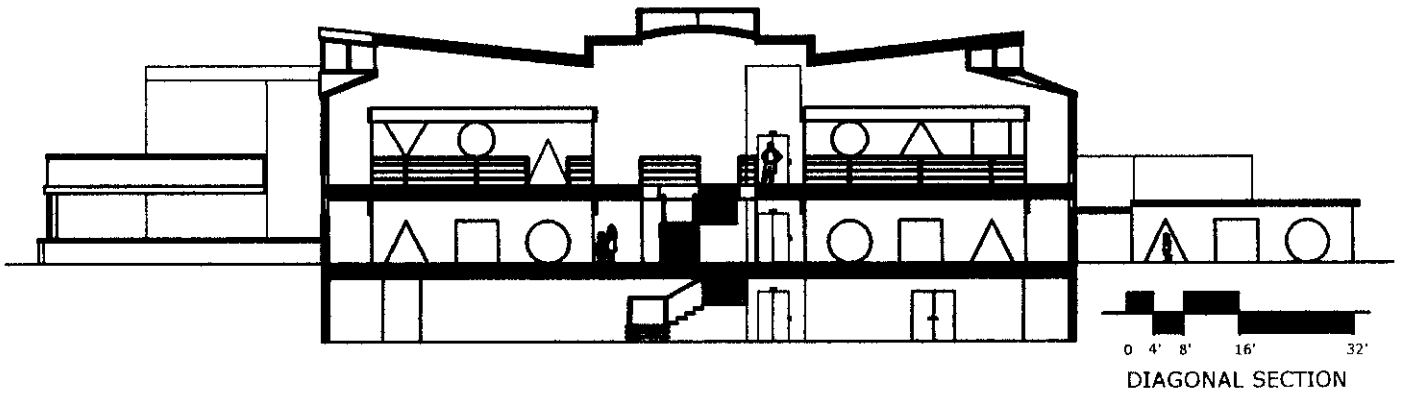
second floor

The second floor contains a few other learning/activity spaces as well as the administrative areas. There are two meeting rooms that could be used for more one-on-one tutoring or quiet study time. On the northern wing is a rooftop playground that will allow for a more secure area for child play. There is also a significant amount of storage space on the second floor. The lower level (not shown) is solely for mechanical systems space and additional storage.

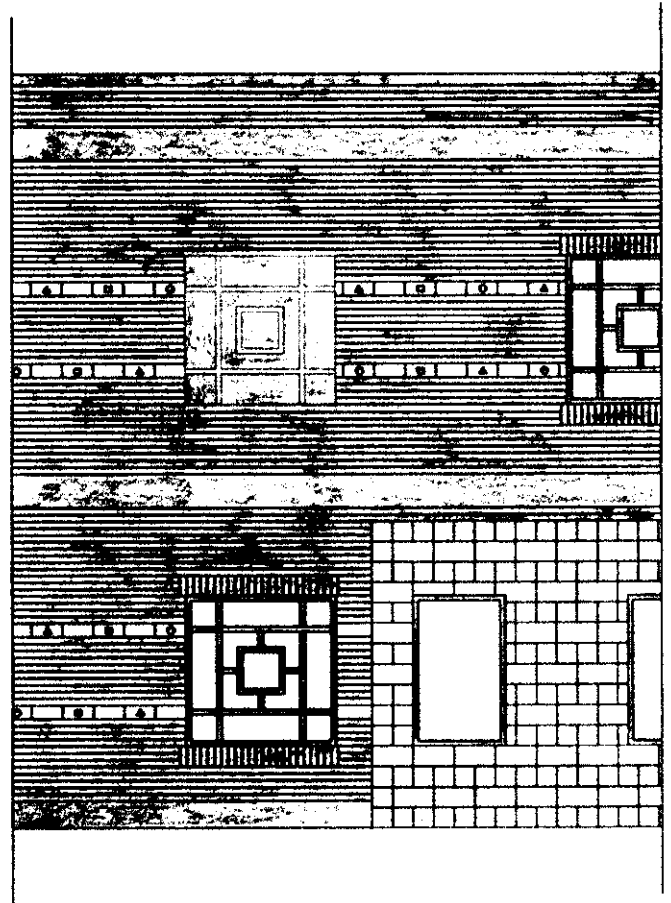
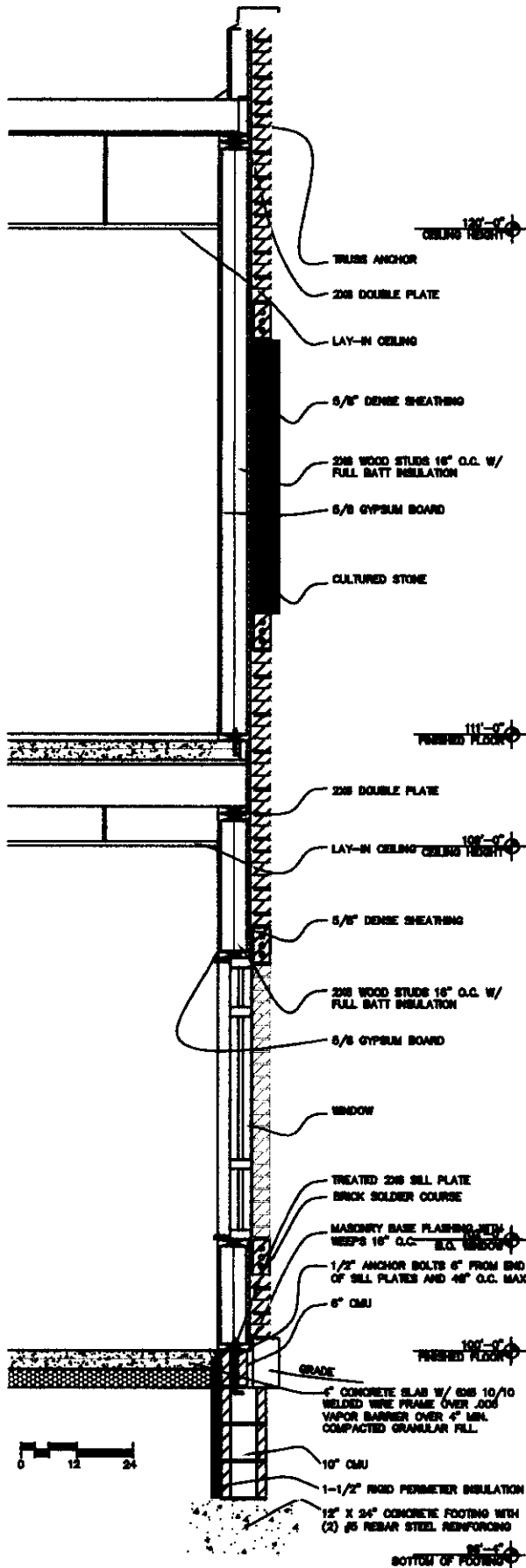




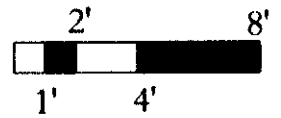
sections



detail

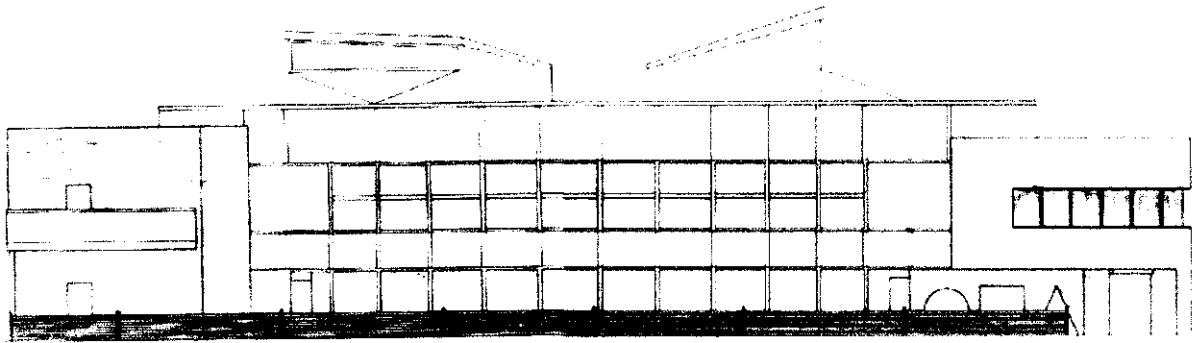


WALL SECTION
& PARTIAL
ELEVATION

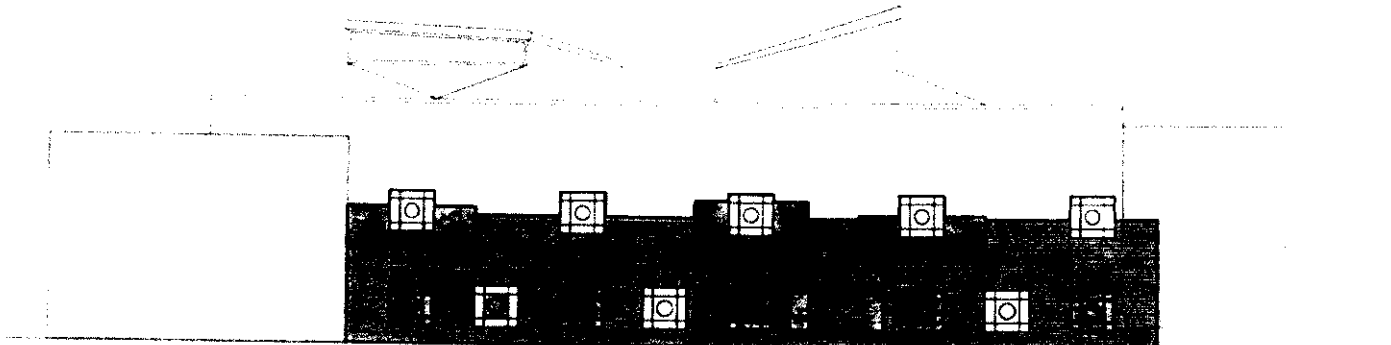


elevations

The materials chosen for the majority of construction is a brick veneer. These masonry units are appropriately scaled for the users, as well as being contextually appropriate as many of the surrounding buildings are brick also. The round form will take on a metallic look being formed out of aluminum. This will emphasize the differentiation of the particular forms and their function within the building.



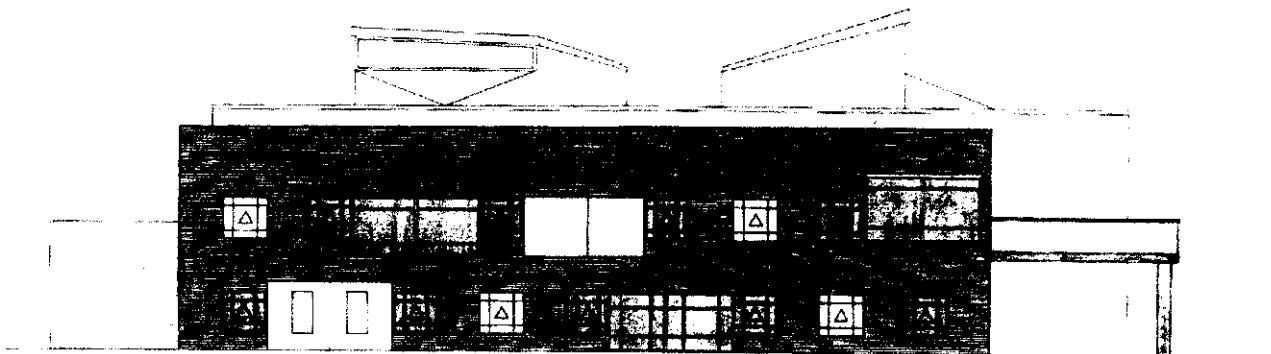
elevations



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NORTH ELEVATION

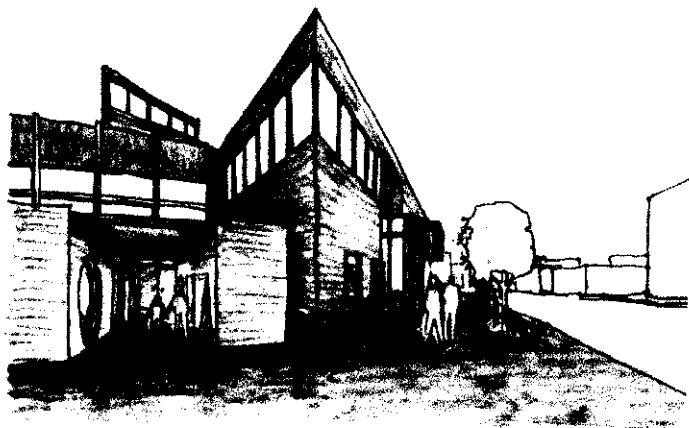


0 4' 8' 16' 32'
EAST ELEVATION



0 4' 8' 16' 32'
WEST ELEVATION

exterior

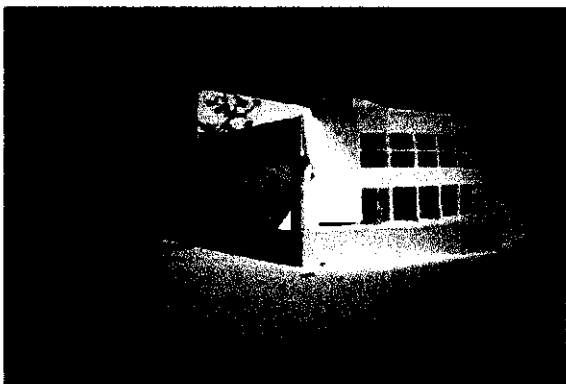
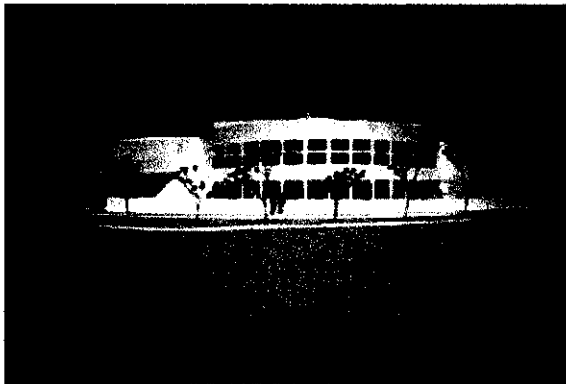


interior

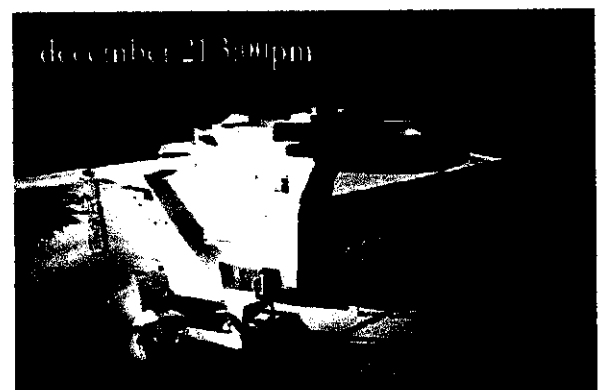
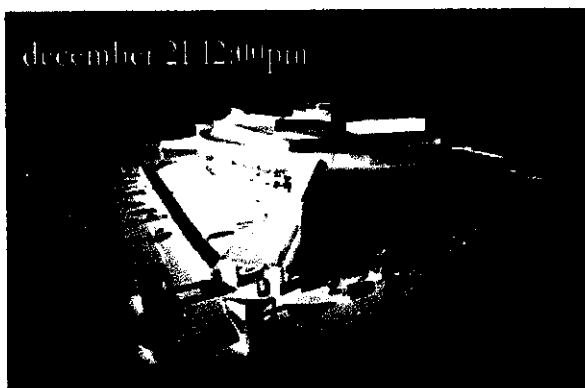
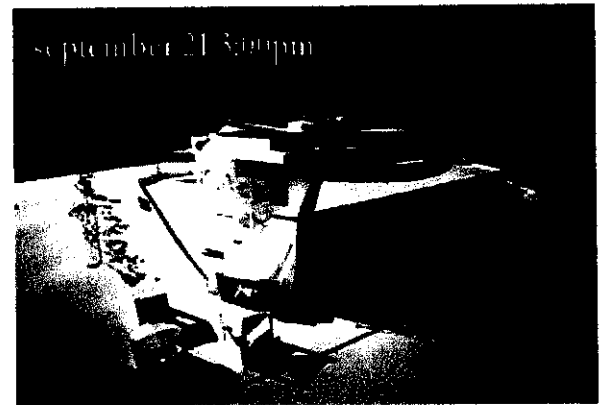
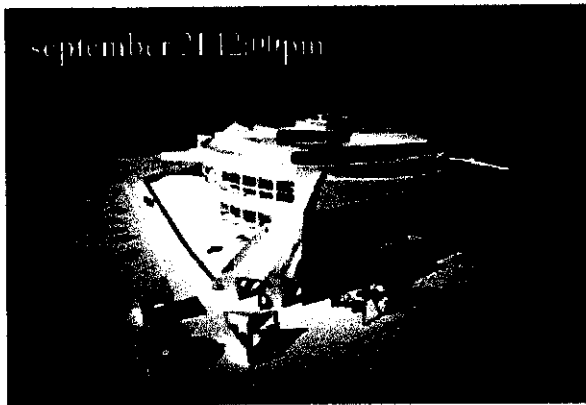
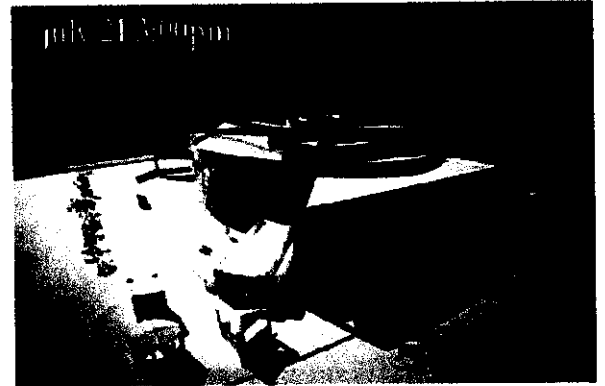
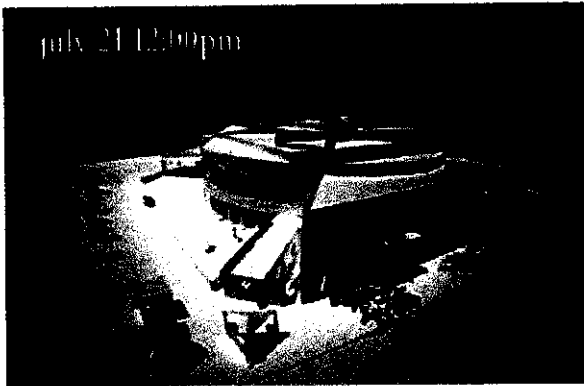
The interior spaces are at the essence of this project. The building forms an envelope for a multitude of learning experiences that are made through the play of light, space, and interconnectivity. The shaft spaces create informal galleries and the large circular hallway allows for informal spaces in which children can create their own spaces.



model



shadow



reflection

Looking back over the duration of the project, it is very interesting to see the many changes that have occurred through the design development. The project very quickly took on a typology of a museum and was then transformed into a more structured school-like facility. This posed as both a challenge and an opportunity. The school atmosphere held the dilemma of creating a space to where the children would want to come back on a daily basis. However, it allowed for a much more structured, group interactive environment that will also teach the children social skills along with academia.

As with any project, the final presentation was not the final product. There are still issues to be explored. For example, the issue of initial entry to the facility. It did not seem appropriate to have a receptionist's desk, however it does seem a bit ambiguous as to what happens when a child first enters the building. It was originally thought that the children would have appointments arranged through their primary educational facility to come to the learning center. Therefore, the faculty at this facility would be prepared for a certain number of individuals and could prepare their day accordingly. With no receptionist's desk, the problem of security also arises. With the increase of children's safety issues, this is a task that is critical to the success of this facility. It was intended that once the children were all present that all doors would be locked until release time. This may be problematic for children who are tardy or for parents who wish to visit their children and observe the activities.

Overall, this project has been a unique opportunity to explore both psychological and architectural interests. It would be advantageous for all designers to spend a significant amount of time studying the psychology of children, as well as all human beings to become better designers. I am confident that this project has enhanced my skills in both areas, and therefore was a huge success.



annotated references

The majority of research was through the reading of psychology-based books, as well as one book on the interaction of children and architecture. The latter books were particularly helpful in the quest for concrete architectural arguments, rather than the more subjective psychological arguments.

Baird, John C. and Lutkus, Anthony D. Mind Child Architecture

This book was a series of articles that were based on a conference held in October of 1979 at the New Jersey Institute of Technology and Rutgers University in Newark. These articles discussed the issues almost identical to those being investigated in my study. The idea that scale and “children’s spaces” are more than just the physical environment. The interaction of the mind and the body at the psychological level of a child is a central part of the design process.

Furth, Hans G. The World of Grown-Ups: Children’s Conceptions of Society.

This book was more specific to the manner in which children interact with society on a whole. This was a much broader outlook on the issues pertinent to my particular design process, but the subject on a whole parallels with my ideas. It speaks a lot of how involved children are in their environment, both physically and emotionally.

Hart, Roger. Children’s Experience of Place.

This book has been extremely helpful in learning about how children orient themselves in space. I have been able to find concrete issues to address in my piece of architecture through studying this book. This book has the results of numerous experiments about children and how they “see” the world around them.

Ligtelijn, Vincent. Aldo van Eyck: Works.

This book is a compilation of the work done by Aldo van Eyck, an architect known for his series of playground designs in Amsterdam and the surrounding areas. He is also famous for a large orphanage that he designed in 1955. This book, although I am not through reading it, has been interesting in learning how to apply the overload of information on the subject of children’s environments.

Robinson, Jeri and Quinn, Patricia. Playspace: Creating Family Spaces in Public Places.

Within the Boston Children’s Museum is a room called the Playspace. This room is both a space and an idea to those who curated the room. This book talks about how the room came about and what they have learned after it’s introduction. This is somewhat like a case study that I can use to aid in my design of certain spaces in the facility.

Ruth, Linda Cain, AIA. Design Standards for Children’s Environments.

This text has not yet been particularly helpful in that it is a reference book dealing with the architectural specifics generally used in children’s spaces. This book will be especially helpful once design development is underway.

Wood, David. How Children Think and Learn, 2nd ed.

This book talks about the psychological underpinning of children and their learning habits. It has been extremely helpful in understanding different cognitive approaches following Pavlov and Piaget’s models.

I would especially like to thank all both Bob Fisher and Brian Hollars for all of their time and effort over the past year. I would not have been able to do any of this without your guidance and advice.