There are many studies in the development of different societies throughout the history of the world. In each case, there is extensive research as to the reasoning for divisions of people, separation of communities, and breakdown of family structures. At the time of the original settlements in America, there were rich traditions and heritages that were carried by people from their homelands. Over time these practices have developed and changed an blended together. The one thing that has been in common with all these people, up until the Industrial Revolution, was the dependence on the community for survival. The first buildings in this land were built with meager supplies. These pioneers brought with them only whatever could fit into one suitcase. Because the first settlers were desperate to establish a home and sustain their family through the winter, these buildings housed everything the family would need to survive. This included the animals needed for food, the crops harvested in the fall, and the family itself. These homes eventually grew and more structures were added to accommodate each function separately. Generally, they were constructed of hand-hewn heavy timber logs because that was what was most readily available and familiar to them. The first Americans were unfamiliar with the land, and they relied upon each other to discover how to survive. Despite the development of government and structured economy, these settlers continued to rely on these communities for support. They shared use and cost of expensive equipment, they helped each other through harsh seasons, and they gathered together to celebrate each success. As the Industrial revolution evolved in America, a new type of community developed that brought

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very valuable farmlands. These lands became the suburban subdivisions. The art of heavy timber construction fell to cheaper and more easily manufactured woods and metals. In fact, the knowledge of how some of these buildings were constructed was almost completely lost. Anyone stepping foot into a heavy timber constructed building should realize the true art and sophistication that these structures possess.

Urban sprawl is consuming these valuable farmlands. Since the land is already cleared of vegetation and the soil is fertile, it allows for the landowner to relandscape and build without spending a great deal of money on site. While this benefits the developer and landowner, it has cost the loss of valuable craftsmanship and architecture in the heavy timber barns. In many cases, barns are left to decay and farmers are replacing these buildings with ones that are more technologically advanced, and, usually, it is a metal structure.
Research
There is a developing trend to build homes and public places with heavy timber construction methods. One reason for this may be the emotions evoked in the timber spaces. The open spaces from wide spans and high ceilings, coupled with strong rich materials, manifest a warm, secure environment. Ted Benson is a craftsman dedicated to relearning and revitalizing the techniques of heavy timber construction methods. This construction method was originally taught through apprentices, and passed on from generation to generation. This resulted in few documented details. Benson's company has been able to re-use this construction by researching and studying existing structures and by some trial and error. Many times Benson includes the family in the construction process, and in the traditional barn raisings.
Research
These images show different ways heavy timber construction is used today as well as ways that it was used in renovations of barns. The images were inspirational to both the design of the addition and the renovation of the barn. The images show how these new developments in the research and revitalization of heavy timber construction can evoke the same emotions as in the old barns.
Programming

This project proposes the barn be redeveloped into a multipurpose space for group interaction like community meetings or for after school activities for elementary and middle school children.

The addition would house four classrooms for pre-school children. The spaces would be education based, but enhanced by exposure to the exterior. They would provide as much natural light and openness, structurally, as possible. Ultimately, this would create spaces that break the traditional classroom box and invoke spaces that blend the interior and exterior.

Administrative functions would be two-fold, one to meet the needs of the daycare and after school center, the other for the community-based activities. The daycare administrative office are situated in direct connection with the classrooms. Conversely, the community offices are situated to separate them from the noise and distraction of the children without separating them from the building. Included, as part of the business and community relationship, there are conference areas. The smaller conference rooms do not need to be directly related to the school, and can break away as an individual element, maintaining its connection to the building in function only.

The building includes a shared kitchen facility for catering purposes and for daily lunches in the daycare. This space has access to a service area (for waste) and includes plenty of storage. It is a flexible space that serves its daily functions as well as catering needs of the community's events in the multipurpose space. The space is conveniently accessible to both the daycare and the multipurpose space.

Christina Maddelein
Site / Context
The site for this project is a farm in Richmond, Michigan. Since their arrival in America over one hundred years ago, the same family has owned this farm. The land is currently being rezoned from agriculture to residential, resulting in an increase in property taxes that farming can no longer afford. Thus, the family has decided to sell the land to a local developer who plans on putting in subdivision. The one hundred acres are surrounded by a farmland to the east, a subdivision to the west, railroad tracks to the south, and privately owned properties to the north, including homes and a commercial greenhouse. The land is virtually void of topography. There is a wooded area in the southeast corner of the property and a residence to the northwest, which will remain intact as part of the new subdivision. There is a barn on the site that is constructed of hand-hewn timbers. This and other out buildings are scheduled to be demolished. This thesis is a proposal to renovate the barn and add a community and daycare center for the new families of the subdivision.

In addition to the need of housing in this town, there is a need for child care and after school activity centers. This development provides an opportunity to meet these needs. The barn can easily be renovated and reused as a community center for the families in this and neighboring subdivisions. An addition to this facility would allow for a daycare and an after school activity space for the children of the community. This building become a centerpiece to the community, much as the barn was the centerpiece of the farm. The central location is convenient for the families and ideal for community activities. This would manifest growth and development of the city and the community.
Process
Because this project deals a lot with the changing of the existing farm and its surrounding property, the first step was to establish the new building's connection with the subdivision. The second issue was to establish how the building would be organized. The three main elements needed to be connected in an organized fashion. There were three initial concepts.

The first had the multipurpose space connected to some of the classrooms. The administration spaces were divided between the two classroom spaces. This concept also had vehicular traffic moving between the two buildings.

The second concept separated the building from the subdivision. The multipurpose space was still at the center. The classroom and administration spaces were still divided, but the building was one whole unit instead of two separate entities.

In the third concept, the building has all its components combined, and it is connected to the subdivision by having the vehicular traffic moving around it. The multi-purpose space and the administration space have been placed on either side of the classrooms. The classrooms, in this scheme are inside the barn structure.

In all cases, the barn is the central element to the building and the surrounding subdivision.
Sketches
These are initial sketches of how the second floor interacts with the barn. They look at how the spaces on the second floor affect the spaces on the second floor. Because timber construction cannot be cantilevered, there needed to be special consideration to the structure of the second floor and how that structure would possibly interfere with the structure of the barn, which is essential to the overall design of the building.

There are also sketches of the initial layout and elevations of the proposed building. In these sketches, the classroom space and the barn are still separate elements. When they come together, there is an interesting question of how they will interact and work together or separately.
Sketches
These sketches were design sketches that helped to develop how the structure would work in the addition. The way the wedge pieces connect is essential to how the space operates. These images are a charrette of different options to both the roof structure and the connection, structurally, between each piece or classroom.

Christina Maddelein
Sketches
These sketches are illustrations of final details as well as beginning sketches of how the building would be viewed from the entrance of the subdivision. The roof over the classrooms is not only of an unusual structure, but it has the potential of leaking. Because this is a major concern for any building and particularly this one, it was addressed as a decorative element. The roof drains to one point. At this point, there is a steel pipe that carries the water from the roof to a collection barrel on the ground. The barrel is a familiar element to a barn and is a detailed element in this renovation.

There was a lot of consideration to the entrance of the building and how the second floor would interact with the barn. There was also consideration for elements, such as the traditional "barn door", to be utilized in the final design as a reminder of what once was on the site.
Study Models
The above model was the initial attempt to bring my conceptual sketches into three dimensions. The classroom space was separate from the main building, which contained the multipurpose space. These two buildings were connected with a hallway. The classrooms were separate elements with one connecting vertical piece.

The second model brought the classroom spaces closer together, but they were still separated by a hallway leading to the exterior. The barn is still the main focus, but the second floor spaces have begun to take form in relation to the rest of the building. The classrooms and the main building are connected by a central, still undefined, space.
Study Models
This final study model begins to define detail elements that were before unknowns. The central piece that connects the classrooms with the multipurpose space has begun to take shape, but it is still a long way from being fully defined. The barn has remained unchanged.

The classrooms are more defined. Each piece is connected to the other so that the building is one cohesive whole. The classrooms within each piece are connected with the exterior through glazing and doors from each room. In addition, the structure for the classrooms and the barn overlap. The roof over the classroom space seems to be a strong element of this part of the building and is expressed in the cantilever on the south side of the building.
Site Plan
This building is located at the center of the new subdivision development. The barn's facade would be the first element viewed upon entering the neighborhood. This makes the community and its children the focal point of the neighborhood. It is also a direct and constant reminder of the people who once owned and worked this land. It makes the barn a reflection of the past and all that it contains.

The homestead that will remain intact as part of the agreement with the developer is visible from the building, but it is separated from the new development by vegetation. This was done out of courtesy to the family who is still dealing with the loss of property that is so dear to them. The new facility is surrounded by vegetation as a means of "fencing" in the playground area.

Christina Maddelein
Floor Plans
The original barn is the focus of the new building. It is the starting point for the plans and everything then expands out from it. There is a silo near the barn which was the one vertical element on the site. This silo, of stone, became the vertical circulation element, as well as, the focal point for the radial part of the plan.

The first floor contains the classrooms, kitchen, and the administration for the daycare. The multipurpose space is the largest space. This space is in the barn, which contains the original structure. The space is open from the threshold floor to the ceiling. This space also has the second floor offices and conference spaces extending into it.

The classrooms are also on the first floor. They are in the addition and are located so that they face the playground. They are single story spaces, but they also have heavy timber construction and are open from floor to ceiling. The administration for the daycare is in the addition, and it is located at the front of the building near the entrance. There is also a storage building, which is separated from the main building, but based on the same module as the second floor conference rooms.

The second floor contains the offices, the conference rooms, and the mechanical room. There is a balcony that runs along the side facing the multipurpose room. For performances in this space, the audience could view from this area. The balcony off the elevators and stairway allows parents to observe the activities of the children.
Elevations

The main focus of this project is to reemphasize the value of the barn's heavy timber construction. The visual focus of the building is then the barn. The traditional appearance of the barn is evident, but, this barn has new elements that take over the view as one moves around to the back.

The silo has, over time, deteriorated, and the only stone left on it is at the base. From there up, a new glazed, steel structure emerges from this stone base. Inside the cylinder is the elevator shaft with an exposed staircase wrapping around it.

The design of the addition contains a great deal of glazing, especially on the north side, to maximize views to the exterior and natural light. The barn contrasts this, which is in keeping with the tradition functions of the barn. Typically used for a storage house for either crops or livestock, the barn has no need for exterior lighting or views, especially considering the cost of glazing at the time. However, barns are known for the large sliding doors. In this revitalization, the door are kept in tact, but there have been windows added to the interior so that the doors can be opened to allow light or to allow people to travel through. The storage building is also intended to resemble a low storage building, like in the tradition farm set up.
Sections and Details

The building's main emphasis is on the timber construction, and, therefore, on the structure. The existing structure in the barn has remained. As part of studying the structure of the building, there is the study of the connections needed to make the building and the structure function.

These details are common ones, but essential to the stability of the building. They are also used in the structure of the addition. The versatility and the common nature of these details means that the construction of the building is easier to understand and to repeat.
Building Section
This drawing is showing the structure of the existing barn and how it is still a dominating element in the multipurpose space even though there is a second floor protruding into it. This space is also a very vertical one, which again emphasizes the structure.

The model had a two-fold focus. To illustrate the overall scales and proportions of the building and to illustrate the structure. The structure in the addition is similar in appearance, but functions slightly differently. They are both intended to be dominating elements in the spaces. To a child, these would seem like very powerful elements. This brings the emphasis of the building back to the structure. It also allows the interior to feel vast and open as in the barn.

Christina Maddelein
Model

While the main focus of building this model was to illustrate the timber structure, it also shows how each element of the existing building as well as the addition work together. The addition is continually pulling out of the barn. It is turning and twisting the original into something new and exciting.

There are three main concepts within the building. The barn is the main element and is used as the starting point as well as the basis for the design of the addition. The addition pinwheels out from the barn around the silo. Its design is based on the barn yet is different enough that it could stand alone. The addition also has its pivot point at the center of the silo, which is part of the existing structure. Its structure is grounded in the silo in that the sheer walls compress into the steel structure of the silo. The third element is the second floor. This space needed to be both part of the first floor and separate from it. It also needed to interact with both the addition and the existing without seeming to intrude upon it.

The images to the left show how the building as perceived from its main entrance points. The barn is the main visual point when entering the subdivision and the silo is the main visual point when entering from the parking lot. This again puts the emphasis of the project back on the existing buildings and the traditional aspects of a farm. The silo and the barn are the main functioning elements and all other buildings are simply their support.
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Christina Maddelein