To the Graduate Council:

I am submitting herewith a thesis written by Carmen Rachel Scoggins entitled "A Teaching Tool: Exploring a Cooperative Spirit, Education, and Cultural Influence through the Arts." I have examined the final paper copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in Architecture.

Scott Wall, Major Professor

We have read this thesis
and recommend its acceptance:

Timothy W. Hiles

Barbara Kirkhanne

Accepted for the Council:

Vice Chancellor and Dean of
Graduate Studies

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A TEACHING TOOL:
EXPLORING A COOPERATIVE SPIRIT, EDUCATION, AND CULTURAL INFLUENCE THROUGH THE ARTS

A Thesis
Presented for the
Master of Architecture Degree
The University of Tennessee, Knoxville

Carmen Rachel Scoggins
May 2006

DEDICATION

I would like to dedicate my thesis to my parents. They have always been behind me in whatever path I choose, and have always sought to provide me with the ability to have a choice. I would never have been able to come as far as I have, if it were not for their selfless, generous love and acceptance.

ACKNOWLEDGMENTS

Primarily, I would like to thank Scott Wall for being a genuine force in the development of my thesis. Some people love to teach, and most importantly, are good at it. I have come to learn that this is certainly not always the case, so for that I am forever grateful.

In addition, I would like to thank Dr. Timothy Hiles of the Art Department, who was generous enough to take time out and be a part of my thesis. It was such a breath of fresh air to have a new face and a new outlook, outside of the realm of architecture.

ABSTRACT

"Always design a thing by considering it in its next larger context -- a chair in a room, a room in a house, a house in an environment, an environment in a city plan."
-Eliel Saarinen

The creation of the built environment today is highly complex. Hundreds of different professions come together to create what is, I would hope, creating a better environment for people to inhabit. Sometimes, and actually quite often, the players in this process do not work together effectively, if at all. Once the construction is over, the grand opening has come and gone, and the users of the building start their everyday lives in this setting. It becomes increasingly obvious that all the parts do not always work together. Unfortunately, it is an all too common occurrence, yet each of the professions carries on in the same manner that they always have, not realizing that the opportunity for collaboration was lost.

I would like to propose that the origin of this is education. Specialization and being educated in this way is an inevitable product of the way we work today, but somewhere in that education, we cannot forget that eventually there will be a confrontation with hundreds of professions relating to our own. In the case of the built environment, there is an intricate connection of professions. It should not be a linear and finite connection, but a network where items and ideas pass back and forth, and continuously build upon each other. Rather than simply passing it on to the next person to do as they wish, without really knowing the intentions of the former, the components can work together in order to unify the conception of the design.

This problem could be addressed through the design and curriculum of schools. These schools, as in some cases do not even have to be facilities solely for the arts. This thesis will study the school of Cranbrook in Bloomfield Hills, Michigan, along with pieces from the Bauhaus in Dessau, Germany and the University of Helsinki's new campus for the College of Art and Design in order to investigate the role that architecture and interdisciplinary teaching has with our professional lives.
This is done in order to understand the ways in which one can learn by example, through the school's built environment, and how an initial education in the appreciation of different arts can lead to a more congruent understanding.

What will emerge as important is the encouragement of students to look at other fields of study experimentally and collaboratively not only through curriculum, but also through designs, which teach by example. This, in turn, will encourage an understanding

of other fields and improve the way that those same people interact with other professions in the realized built environment and the ways that other unrelated fields relate to the appreciation of the applied arts. If, as at Cranbrook, from the beginning these people are aware of the implications and benefits of working closely together, and encouraged to do so, it can create a more interconnected, and therefore, more enhanced background for life.

STATEMENT OF THESIS

With the increasing number of specialized fields of professionalism and study, I believe it is increasingly important to learn early-on the interconnectivity of all professions that form our environment in order to appreciate and collaborate with each to create a more unified design.

This thesis will explore the interdisciplinary teaching and educational building and campus design as it was conceived at the Cranbrook Academy of Art, the Bauhaus, and the University of Helsinki's College of Art and Design. I propose that the design of buildings, which are designed to teach by example and also offer interdisciplinary learning, can help to reunite the professions and the people later. The methods of teaching and design principles can be seen through the way that the buildings and campuses were designed and how this was a teaching example in conjunction with a curriculum, which was meant to teach appreciation early and collaboration and experimentation soon after.

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1. CENTRAL PROPOSITION

How I got Here

Throughout the time that I have been in college and graduate school, I have been fascinated with designers, who were included in the course of my study, who designed many objects included in the spaces that they created. I found it intriguing that all the parts designed, including such pieces as furniture, hardware, and textiles, were all related to each other in their design, functions, and relationships. These designs seemed to me, to be the most interesting, because nothing was forgotten. The designers had made an effort to think of everything. Not "everything" in a final, complete sense, but in a careful and considerate sense.

This fascination led me to read more continuously about the ideas and theories that each of these people held, and the impacts it had on the design world. It is increasingly interesting how these people employed their design philosophies not only by designing for like-minded clients, but also in another way that they took it a step further. They, along with others like themselves, created schools. These schools were meant to be an architectural representation of these philosophies, in addition to creating a way to teach which they supported. This thesis will primarily examine Eliel Saarinen and his involvement with the Cranbrook School in Bloomfield Hills, Michigan, in which his philosophies along with others led to a still influential school of the arts. Cranbrook is the primary focus for several reasons. Even though it has long-standing roots, it is still building contemporary architecture by well-known architects, in keeping with the original spirit of craft, integrated with modern technology. At Cranbrook, modern philosophies and technologies were taught and always were important, but it was always conceived in context of architecture and the idea of craft. Today Cranbrook is still building with the same spirit that its creators had, in addition to taking on the demands of modern design and technologies. (Figure 1)

Many other schools had similar goals and were influenced by similar or contemporary movements, such as the Bauhaus. These schools, if not able to teach one person to design all things, as a minimum, they could facilitate an appreciation and an interrelated relationship with other fields and technologies to encourage experimentation in order to understand other forms of art. This, in turn, would lead to a better-designed environment.

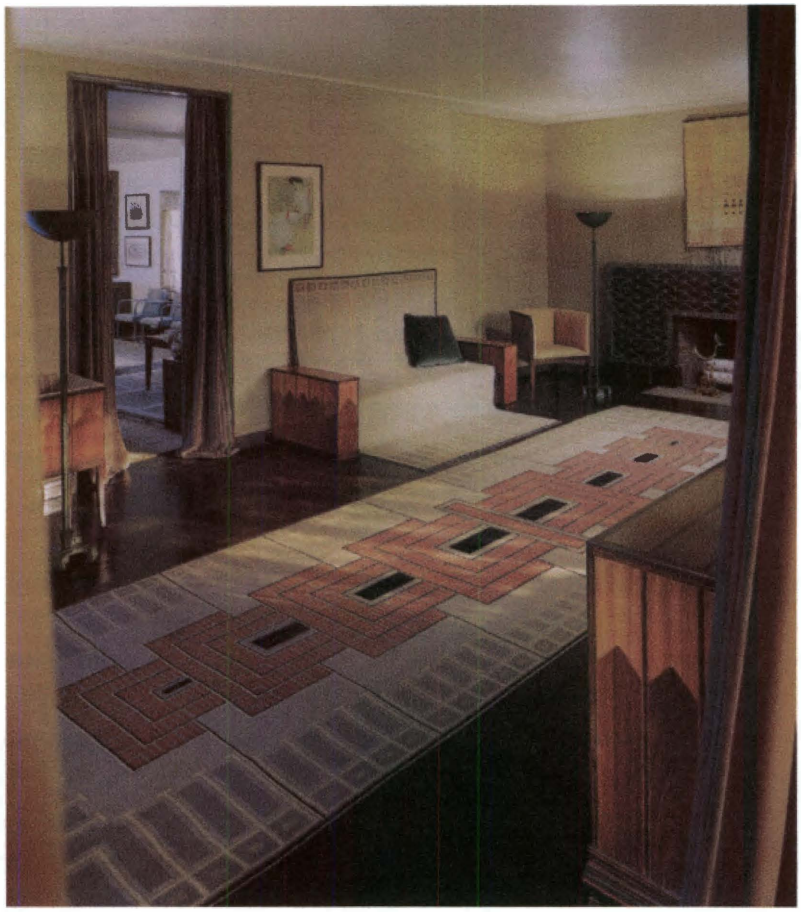

Figure 1: Saarinen House
Source: Cranbrook Archives

Why is Cranbrook So Important?

Cranbrook, I believe is of particular interest, not only because it has been so influential to American art and craft, but also because it is one of the only of these historic schools that still exists in its original location and, in combination with a spirited administrative group, still retains its original roots. It has survived by continuing to educate progressive artist and designers in addition to creating a home for the work of progressive architecture and art.

I feel it is also relatively understudied, which could be a result of the lack of substantial time that has passed since its initial creation or the lack of substantial opposition to it, such as at the Bauhaus. It has in fact been named, "America's democratic counterpart to the great German school, the Bauhaus." I propose that the initial ideas and history that created Cranbrook and the history that has followed it are extremely important today and are strong today. It is significant the way that applied arts and architecture were conceived through the curriculum, buildings, and campus being designed as a tool, because "these were qualities that may be learned more readily by example than by formal academic study."[1]

George Booth and Eliel Saarinen, along with their families, were the creators of the early formal development of Cranbrook. Their backgrounds in addition to the contemporary movements of the time greatly influenced the way that they later designed and ran Cranbrook. Both Booth and Saarinen shared Arts and Crafts Ideals, pioneered by people such as John Ruskin and William Morris. The Arts and Crafts Movement was a group of loosely affiliated artists, craftsmen, artisans, designers and architects, who aimed to raise the status of the applied arts to that of the fine arts, in which medieval guild systems provided a model. Although the movement originated in England during the 1860,'s it quickly spread throughout the world, and eventually, "it addressed the problem of the designer's role in the industrial context."[2] Both Booth and Saarinen followed more the spirit of the American Arts and Crafts, in which the craftsman and applied arts were stressed, but integration of industrialized components of production was also encouraged to promote affordability. (Figures 2 & 3)

The Establishment of a New Mix

Ultimately, though, "like so much else in the Cranbrook story, threads lead back to England."[3] Parallels in stylistic likenesses and organizations of buildings at Cranbrook point back to its European art academy precedents. In 1851, the first international

Figure 2: George G. Booth
(1864-1949) c.1916
Source: Cranbrook Archives

Figure 3: Elen Warren Scripts
Booth (1863-1948) c.1918
Source: Cranbrook Archives

exhibition was held in London. By 1852, the event had spurred the founding of the South Kensington Museum, now known as the Victoria and Albert Museum. In 1857, it was integrated with the School of Design, later to become the Royal College of Art, in a new location. This new combination became an influential precedent, with intentions of having a school of design in connection with a museum of ornamental art, became known as the "South Kensington Principle."

The German opera composer Richard Wagner, believed that the future of the arts, specifically Music and Music Theater, lay in the fusion of the arts, which had not been achieved, he believed, since the time of the Greeks. He termed this idea Gesamtkunstwerk, which translates as "total artwork." He began to illustrate this through different forms. He wrote an essay entitled, "The Artwork of the Future," in which he describes the different areas and forms that create art, and then how and by whom the artwork of the future will be carried. Through operas, he aimed to create the full range of human experience through equal representation of music, song, dance, poetry, visual arts, and stagecraft. This then led him to design, with the help of architect Gottfried Semper, the Festspielhaus (Festival House) Theater. The theater was constructed to immerse the audience in a total experience, a gesamtkunstwerk, which was to recreate the drama of the actual events that the operas were about.

Gottfried Semper, who had been involved in the 1851 exhibition, published an article the following year entitled Wissenschaft, Industrie und Kunst, "in which he argued for the judicious use of machinery, workshops with a spirit of community between master and apprentice, and the improvement of public taste through museums of the decorative arts."[4]

In 1864, the Österreichisches Museum für Kunst und Industrie opened in Vienna. By its fiftieth anniversary in 1918, "Alfred Roller, its director, could boast of three major departments (architecture, painting, and sculpture) as well as studio courses in metal sculpture, ceramics, enamelwork, and textile and fashion design. Many of the faculty members were, or had been, associated with the Wiener Werkstätte (founded in 1903), which Roller rightly regarded as the perfect model of combining art and small industry."[5]

This, in turn, led to similar developments in other cities from the 1860's onward. A common union began to occur such as when the Academy of Fine Arts in Berlin was combined with the School of Applied Arts. However, the most famous of these was the chain of events that led to the founding of the Bauhaus in Weimar in 1919.

Henry van de Velde, a neoimpressionist-turned-architect was asked by the Grand Duke of Saxony in 1901 to come to Weimar in order to be an advisor to arts and commerce. Later, he designed an art academy and a building for the school of

applied arts, which he later led. Here, he did not establish a fixed curriculum, but encouraged an intimate relationship between teachers and students, who were to work as apprentices. (Figure 4)

The largest chunk of historical influence of the Bauhaus occurs after these events. Van de Velde was forced out of Germany and replaced by Walter Gropius, who was much younger. Gropius attempted to unify the academy and the school in order to dissolve the division of the fine and applied arts. (Figures 5 & 6) To train architects was the ultimate goal, but it was through the artisan's workshop. The Manifesto of the Bauhaus, published in 1919, urged architects, sculptors, and painters to return to the crafts through schools "returning to the workshop."

> "Today they exist in complacent isolation, and can only be rescued by the conscious co-operation and collaboration of all craftsmen. Architects must come to know and comprehend the composite character of a building...The old art schools were unable to produce this unity; and how, indeed, should they have done so, since art cannot be taught? Schools must return to the workshop.... There is no essential difference between the artist and the craftsman. The artist in an exalted craftsman....a base in handicrafts is essential to every artist. Together let us desire, conceive, and create the new structure of the future, which will embrace architecture and sculpture and painting in one unity'"[6]

Cranbrook and the Bauhaus were relatively similar institutions and have often been compared. Saarinen, like Walter Gropius, was concerned with spreading knowledge and the application of good design principles to all.

> "Both institutions were residential communities as well as schools, and both grew because of a strongly felt need to reassert the fine arts and craft traditions in the modern industrial world. Beyond this, there was a desire to emphasize the interrelationships existing between the fine and applied arts, and to clarify and reestablish their place in an increasingly complex technological society."[7]

Ultimately, the American Academy in Rome was the most influential precedent to George Booth. After visiting the academy with his family in 1922, the guiding principles of not implementing a strict curriculum and the artisan/apprentice relationship made an important impression. He vowed to create a comparable Academy of Arts at Cranbrook. (Figure 7)

The Beginnings

George Booth owned and ran The Detroit News, one of the city's major newspapers at the time, as well as a number of smaller papers. Booth, however, always saw himself as an artist who had come into his fortunate financial situation. Therefore, he was one of the early American philanthropists who were dedicated to the betterment of society through education and art. He conceived Cranbrook to be his greatest contribution

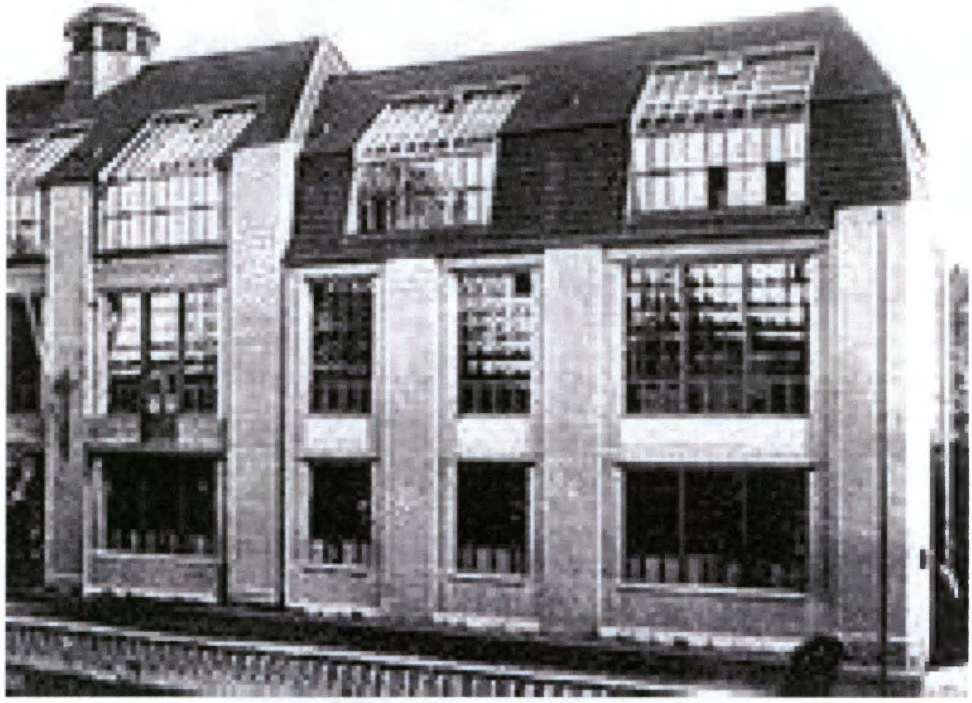

Figure 4: Weimar Bauhaus under Henri Van de Velde
Source: Bauhaus Archive

Figure 5: Bauhaus Exterior

Figure 6: Workshop Facade

Figure 7: American Academy in Rome
Source: American Academy Archives

to society.

It is by no coincidence that Booth and Saarinen came together to create the school at Cranbrook. Each shared corresponding ideas about the arts and the education that was essential. They hoped to create an institution with traditions of craftsmanship and with a small close-knit community of master and student. The intention was for all the people of Cranbrook to live and work there, which they hoped would increase the opportunities for cooperation and the interchange of ideas.

During the time between 1925 and 1938, Saarinen designed a school for boys (1926-30), a school for girls (1930-31), graduate art academy with a museum and library (1925-38), as well as a science institute (1936-37). The site plan proposed in 1925 showed a campus in which each building was planned with consideration to the whole and a consistent sense of unity throughout its courtyards, pathways, and garden. The creation of the Cranbrook community stretched over two decades, and Saarinen supervised the construction of all the buildings he designed. He believed that, "no matter how well your drawings look on the drafting board, it is the construction men who give the finesse to the design, eventually."[8] He also believed in the idea of the Gesamtkunstwerk, or total artwork, and designed most of the furnishings for the buildings at Cranbrook in addition to others, such as his own home. (Figures 8, 9, & 10)

Once he became President of the Academy, Saarinen added design studios under the instruction of his son Eero and Charles Eames, a painting studio, a metal department, city planning department, and the post-graduate architecture program. "The future success of those associated with Cranbrook are testament to Saarinen's influence on twentieth century architecture and design;"[9] most notably Eero, but also Charles Eames, Harry Bertoia, Ralph Rapson, Florence Knoll (who later worked with Breuer and Gropius and studied under Mies van der Rohe), Carl Milles, Maija Grotell, and countless others.

Into the Future

Kenneth Frampton wrote in an article in Architecture Magazine, "Cranbrook would blossom over the next 25 years as a mecca for humanist education in the arts at every conceivable level, from prekindergarten to a postgraduate academy."[10] In addition to producing great artists and designers, Cranbrook has successfully brought itself seamlessly in to the 21st Century. Frampton writes, "Unlike many of our prestigious universities, prone as they are to inexplicable lapses in taste, Cranbrook has yet to put a foot seriously wrong as an architectural patron."[11]

Figure 8: Early Site Plan for Cranbrook, Eliel Saarinen, 1924
Source: Cranbrook Academy of Art/Museum

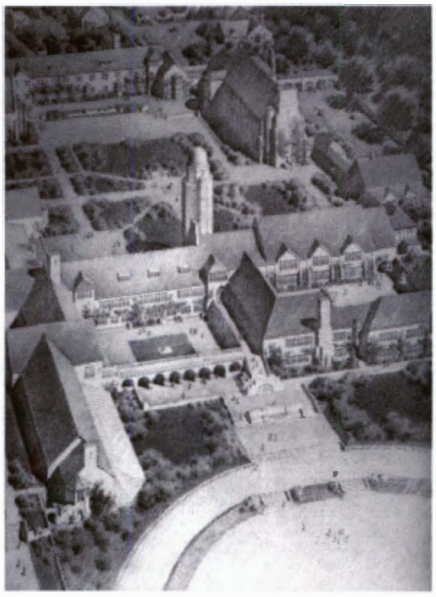

Figure 9: Aerial Perspective Rendering, Eliel Saarinen, 1925
Source: Cranbrook Academy of Art / Museum

Figure 10: Cranbrook Mueum and Library Rendering, Eliel Saarinen, 1940
Source: Cranbroon Academy of Art / Museum

Cranbrook has been able, especially recently, to keep up with adaptations necessary to modern technologies and demands. This is extremely important to the significance of Cranbrook today, because it is still carrying on the original tradition of experimental and collaborative teaching and appreciation with emphasis on craft, but not abandoning the increasing technological advancements. This, I believe, is why Cranbrook has been able to stand the test of time.

The structure designed by Steven Holl for the Cranbrook Institute of Science helps to reinforce the teaching philosophies that Booth and Saarinen had, but as a modern building as a teaching tool. The core of the complex, called the science garden, is a place that is all about tangible learning. The focus of this garden is an exhibit that illustrates the three phases of water through three features: The Flow Pool, The House of Vapor, and The House of Ice. Along with others vegetation in the garden it will also illustrate the intense climatic and seasonal changes that exist in that region. Other plantings in the garden are used to show color and fragrance changes that occur with the changing seasons in addition to various medicinal uses of these plants. The entry hall with a tall south facing glass wall is conceived as the "Light Laboratory." Many types of glass are used that have different light casting phenomena on a white plaster wall and ceiling. The room is also designed to indicate the changing light conditions that mark the equinoxes and solstices of the year. In addition to these centrally located areas for hands on learning, there is also existing planetarium, herbarium, anthropology displays, and long-term exhibition spaces. The overall organization also illustrates the central concept of collaboration and experiential learning that is essential to Cranbrook's original teaching philosophies. (Figure 11)

The natatorium designed by Tod Williams and Billie Tsien is making connections to activities and program that was almost placed off site. The original thought was that the new facilities would be moved away from the central core of the school. Williams and Tsien believed that it should be kept close and create an essential connection that existed in both Booth and Saarinen's minds in the early designs. They believed that despite the differences, they should once again be integrated. They did this by creating a multifunctional place that not only brought the sports participants to the place, but also others who may not go there otherwise. The gymnasium can be used for competitive and recreational use, but also for convocational activities that can hold the entire population of the school. These activities will include film showings, all school meetings and graduations. "In order to further solidify the connections between academic and athletic, a bookstore has been added. This way all students will be able to appreciate the rich mixture of possibilities, a place for reflection, for socializing, for academic exploration as well as for physical expression."[12] With all this, Williams and Tsien were able to integrate and bring together buildings and activities that might not otherwise be connected. This, in turn, honors the original intentions of Booth and

Figure 11: Light Laboratory, Steven Holl

Saarinen. (Figure 12)

All the mentioned aspects, both historic and contemporary, of Cranbrook have led it to be an important asset to American education and arts. I propose that these aspects are the things that are the most important from which we can learn. The ability to appreciate, experiment, collaborate, create, and be surrounded by these things is essential to creating great spaces and environments. Sometimes we can be taught to see something, but most times, we have to experience it before we can really see it. Not all great architecture can be experienced, even through photos, and it is not always possible for all people to experience it in real life. This is why creating teaching environments that are not just your run of the mill institutional establishment, along with teaching philosophies that will teach appreciation and collaboration are essential. (Figure 13) "As the United States moves away from the integration of the arts into education, Cranbrook, as an active part of public dialogue, becomes even more essential. The Community's ongoing commitment to great architecture, art, and design is ample proof that poetry of things of the mind and the hand is critical to life – and the sublime does endure."[13]

> "Other principles endure here: Idealism is grounded in pragmatism; the arts and sciences intertwine; individuality flourishes with the support of the community. These founding values have engendered a context that promotes both stability and change, welcomes challenges, and supports the belief that striving for the highest levels of intellectual and aesthetic discourse is critical. Every building, every sign and tree planted at Cranbrook was and continues to be carefully considered. How else could it be in a place where the sublime is a standard?"
> -Marsha Miro

Figure 12: Natatorium, Willams & Tsien

Figure 13: Saarinen House Courtyard
Source: Cranbrook Archives

2. CASE STUDIES: CURICULUM

Bauhaus, Dessau
Walter Gropius
(Figures 14, 15, & 16)

I believe that the Manifesto is incredibly important to understanding the way that Walter Gropius believed the Bauhaus should be designed and taught. The Bauhaus archives give us the translation:

> "The ultimate aim of all creative activity is a building! The decoration of buildings was once the noblest function of fine arts, and fine arts were indispensable to great architecture. Today they exist in complacent isolation, and can only be rescued by the conscious co-operation and collaboration of all craftsmen. Architects, painters, and sculptors must once again come to know and comprehend the composite character of a building, both as an entity and in terms of its various parts. Then their work will be filled with that true architectonic spirit which, as "salon art", it has lost.
>
> The old art schools were unable to produce this unity; and how, indeed, should they have done so, since art cannot be taught? Schools must return to the workshop. The world of the pattern-designer and applied artist, consisting only of drawing and painting must become once again a world in which things are built. If the young person who rejoices in creative activity now begins his career as in the older days by learning a craft, then the unproductive "artist" will no longer be condemned to inadequate artistry, for his skills will be preserved for the crafts in which he can achieve great things.
>
> Architects, painters, sculptors, we must all return to crafts! For there is no such thing as "professional art". There is no essential difference between the artist and the craftsman. The artist is an exalted craftsman. By the grace of Heaven and in rare moments of inspiration, which transcend the will, art may unconsciously blossom from the labour of his hand, but a base in handicrafts is essential to every artist. It is there that the original source of creativity lies.
>
> Let us therefore create a new guild of craftsmen without the class-distinctions that raise an arrogant barrier between craftsmen and artists! Let us desire, conceive, and create the new building of the future together. It will combine architecture, sculpture, and painting in a single form, and will one day rise towards the heavens from the hands of a million workers as the crystalline symbol of a new and coming faith."[14]

I also believe that one important aspect of the Bauhaus to look at is the organization of its curriculum. This is best seen through an outline at the Bauhaus Archive and the diagram drawn by Walter Gropius.

Figure 14: Traditional Facade View

Figure 15: View from Street

Figure 16: Dormetory Catileverd Balconies

The diagram shows the connection between each aspect and how each one works in a concentric way to influence the focus. The focus in this case, is the building. Each part is equal in importance within its own circle, and each one equally influences the next inner ring. The process of philosophy to physical manifestation of design to the public realm can also be seen in this diagram. (Figure 17 & 18)

Outline

I. Classes

> "Thanks to the anti-academic character of the Bauhaus, students from extremely diverse standards of prior education were enrolled: A pupil from elementary school could work next to an academician."

A. Itten
B. Albers
C. Moholy-Nagy
D. Kandinsky
E. Klee
F. Schlemmer

II. Workshops

"Here the mediation of the basics of the craft, together with design parameters, were directly combined with practical experience."

A. Metal
B. Weaving
C. Pottery
D. Furniture
E. Typography
F. Wall Painting

III. Architecture

A. Gropius
B. Meyer
C. Mies van der Rohe

IV. Art

A. Painting
B. Graphic Art
C. Sculpture

V. Stage

VI. Photography

Classes

The following is a brief description of each part of the teaching at the Bauhaus. The intent is not to create a separation, but to illustrate the various aspects that went in to the concentric rings.

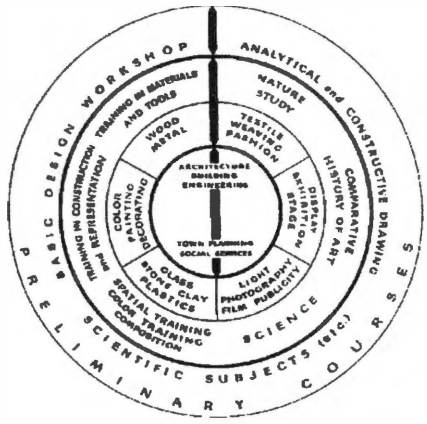

Figure 17: Curricular Diagram,
Walter Gropius
Source: Bauhaus Archives

Figure 18: Curricular
Progression Diagram

The preliminary classes given at the Bauhaus were intended to teach the basics to anyone coming into the school. This was done so in order to create a more even knowledge base for students. Each person had different ideas, so it created an interesting mix.

Johannes Itten designed a preliminary class that was part of a basic education strategy in order to teach students materials composition and color. Itten was an interesting character, in that he approached his work and his students in a spiritual way.

Following the departure of Itten, Josef Albers took over the preliminary teaching; He put more focus on the study of different materials using only primitive methods. He used materials in which the nature of that material had to be discovered. Albers never used the same method of teaching a material. "The student was supposed to 'discover' and 'invent' by himself. These preconditions led to classes with strong self-educational components....The accuracy of the aim was meant to lead the student to recognize and develop his personal inclinations and aptitudes with regard to the other classes in the workshops." When Albers later left, he carried his methods to Black Mountain College in North Carolina where he was asked to make the visual arts the center of the curriculum at the newly established college.

When Itten left the Bauhaus, László Moholy-Nagy gave a theoretical division Albers's material focus. His part had three focuses. First, the students were to combine tactile elements to form a "visualization of personal experience." The second focused on combination and construction. Last, and most famous, were three-dimensional studies that were meant to teach aesthetics in volume and elaborative construction solutions.
Moholy-Nagy was also the founding director of the New Bauhaus in Chicago in 1937, after the school in Dessau was forced to shut down. This new school was immediate successor to the Bauhaus in Dessau, and the ideas and teaching methods there were further implemented and developed in Chicago. After his death, the staff was slowly supplemented with American artists, and eventually merged with the Illinois Institute of Technology.

Parallel to the preliminary courses, Wassily Kandinsky taught two classes that were entitled "Analytical Drawing" and "Primary Artistic Design." The first being a course on the process of abstraction and the latter being a course surrounding the concepts of centers, edges, lines, planes, and bodies. His color classes also became famous for experimenting with the psychological effects of color. Kandinsky did not teach in a strict manner. "He often revitalized his own ideas concerning design theory, and remained open to other solutions."

Before teaching at the Bauhaus, Kandinsky wrote a book, Concerning the Spiritual in Art, in which he examines the psychological effects of color with analogies between music and art.

Paul Klee's classes were supplementary to the preliminary course. He dealt with shapes and colors, encouraging experimentation to form patterns or organizations.

Ockar Schlemmer led life Drawing and analysis of the proportions of the human body.

Workshops

The idea of Bauhaus teaching to create a unity of the artistic and the practical was tied to the workshops. After completion of the preliminary course, the student entered a workshop, which headed by both an artist and a master craftsman.

The metal workshop focused on the production of vessels, and lighting. "These were indeed conceived for industrial serial production, but realized only as single pieces in handcrafted series." By 1926, the workshops had successfully designed and produced all the lighting for the new building, and "finally, when several industrial lighting manufacturers took the models into serial production, it achieved the status of the most effective and successful workshops at the Bauhaus."

The weaving workshop also did "experimental work" for industrial production. "The products ranged from cushions, blankets, and clothes fabrics, to knotted carpets, Gobelins, and wall hangings." Anni Albers led the weaving and textiles workshops and experimented with printmaking through the Bauhaus Newsletter.

Unfortunately, the pottery workshops could not get many industrial producers of the time to become interested in the experimental pottery of the Bauhaus. The only were the Staatliche Porzellanmanufaktur Berlin and the Stoneware factories Velten-Vordamm.

No workshop has been more influential to the public image of the Bauhaus than the Furniture and Cabinet Making Workshop. "Gropius, in furnishing his director's office without obeying the dictate of traditional forms of representation, created a modern 'Gesamtkunstwerk'. For the first time, the exhibition presented furniture visibly built along the lines of Gropius's Bauhaus concept, according to which each object should fulfill its practical function, be long lasting, cheap, good looking, and also well suited as a prototype for industrial production."

The workshops for Typography and Commercial art became focused on the "articulation and accentuation of pages through distinct symbols or typographic elements highlighted in color, and finally direct information in a combinations of text and photography, for which the name 'typo photo' was created." During this time and with the people who taught in these workshops later became some of the most influential graphic designers of the twentieth century.

The wall painting workshops began by teaching experimentation with color to define areas of a room, in which the walls, floors and ceilings were all dealt with in color. Later there was also emphasis on the craftsmanship of the application of the colors. "The Bauhaus wallpaper was developed in 1929 as an industrial product....the patterns were held small and subdued in tone. The wallpaper was so well adapted to its specific function that it became the most successful Bauhaus product."

Architecture

Many of the buildings that Walter Gropius designed were "Bauhaus Buildings." For financial reasons, there was not an initial architecture department. Gropius let his students work on the commissions of his office and often tried to sell Bauhaus products to his clients.

Art

The Bauhaus was never intended to be solely and art school. "Goal of the course was to form a universal designer able to work with equal creativity in the fields of architecture, handcrafts, or industry."

The painting classes at the Bauhaus taught by Johannes Itten and Wassily Kandinsky encouraged students not to paint in any certain way. "The artists were free to try out new paths in the tuition of artistic basics."

The Graphic art of was part the work of the students and part the work of the teachers. The printmaking workshop produced many things for the Bauhaus maters, but their work was also open to commissions outside the school such as lithographs for Piet Mondrian and Alexander Rodchenko.

These areas of workshops also concentrated on the educational aspects of sculpture in addition to exercises in stage design, maquettes and exhibition architecture.

Stage

The stage department not only studied the aspects of stage design, but also performances. The students experimented with masks and costumes, and studied the mechanical, optical, and acoustical aspects of stage work. The main venue for this was the stage at the Bauhaus auditorium, but there were also traveling productions that gave the school wide publicity.

Photography

Moholy-Nagy was the primary facilitator for photography at the Bauhaus. He encouraged using photography as a means to see architecture in a new light in which the perception or interpretation could be changed through photography.

Building Analysis

The best way to relate the design of the buildings at the Bauhaus to this thesis is through the realization of the organization, and the furnishings that were either designed by Gropius or through the workshops of the students. The furnishings, colors, and displays were all intended to reinforce the idea of craft in conjunction with preparation for industrialized production. This can be seen also, through the innovative buildings techniques that Gropius employed in the building at the time.

The Community of Cranbrook, Bloomfield Hills, Michigan

The curriculum and mission of Cranbrook are unfortunately not as brief as at the Bauhaus. This section will outline the major areas and organizations of study. The intention is to determine the programmatic elements needed for the curriculum.

The Upper School

Mission Statement[15]

"Cranbrook schools are independent day and boarding schools that provide students with a challenging and comprehensive college preparatory education. We motivate students from diverse backgrounds to strive for intellectual, creative, and physical excellence, to develop a deep appreciation for the arts and different cultures, and to employ the technological tools of our modern age. Our schools seek to instill in students a strong sense of personal and social responsibility, the ability to think critically, and the

competence to communicate and contribute in an increasingly global community."

Guiding Principles

"Cranbrook Schools comprise a college preparatory day and boarding educational institution, early childhood through 12th grade, consisting of three divisions: a lower, middle and an upper school. We are structured to recognize and respond to the developmental, cognitive and creative needs of boys and girls and are dedicated to excellence in all aspects of education."

The Program of the Upper School gives art and computer sciences a major role in addition to required high school curriculum. Students are required to focus on arts (fine and performing) and computer workshops every semester. This focus on the arts and technology is of great importance to Cranbrook.

Fine arts classes consist of

- Basic Design
- Beginning Ceramics
- Ceramics Studio Honors Continuing Ceramics
- Drawing
- Drawing Studio Honors
- Metal smith/Jewelry Studio Honors
- Metalsmithing/Creative Jewelry
- Painting
- Photography
- Sculpture
- Sculpture Studio Honors
- Weaving/Fibers
- Weaving/Fibers Studio

Performing Arts Classes Consist of:

- Advanced Acting Techniques
- Concert Band
- Concert Choir
- Dance I – IV
- Introduction to Acting
- Madrigals
- Orchestra
- Speech
- Symphony Band
- The MasterSingers
- Theatre Design and Stagecraft

Computer Science Classes:

- Computer Science
- Computer Science (AP)
- Computer Science Directed Studies
- Computer Science I

Community Programs

For over 64 years, Cranbrook has offered the community the opportunity to share in the Booth family's vision to develop and nurture the creative and performing arts. Founded upon the principle that all young people can benefit and enrich their lives from exposure to music, art and theater, the summer music and arts camps at Cranbrook have long been a treasured part of the Schools' programming and community outreach.

The Summer Theatre School, our oldest summer program, presents classic theater skills like character acting, lighting, dance, voice, costuming, set design and other stage crafts. The Theatre School operates from Cranbrook's beautiful Greek Theater grove, an outstanding full sized stone replica of a classic outdoor Greek theater setting nestled in a mature pine forest. Evening outdoor theater productions attract ample crowds from neighboring communities.

The unparalleled legacy of Arts and Crafts exploration on Cranbrook campus is celebrated and expanded in the Summer Art Studio Day Camp. Students learn classic art forms like drawing, composition, painting and sculpture, and expand their horizons into leading edge media such as collage, computer design, and photographic techniques.

True to Cranbrook's earliest traditions celebrating the joys of scholarship, the Young Authors Day Camp was established to encourage exploration of language crafts in a truly fun environment.

Community and Continuing Education

- Adult Foreign Language Classes: French, Chinese
- Introduction to Orff Schulwerk
- Orff Schulwerk Teacher Training
- CPR
- Cranbrook Retreat for Writers
- Various classes and camps located in the Natatorium and Ice Facility
- Summer Jazz Ensemble
- HUB = Horizon-Upward Bound: "The mission of Horizons-Upward Bound is to prepare students from the Detroit Metropolitan area with limited opportunities

to enter and succeed in post-secondary education."

The Cranbrook Academy of Art

"The Cranbrook Academy of Art offers studio based graduate art, design, and architecture. The Academy offers graduate degrees in architecture, ceramics, two-dimensional design, three-dimensional design, fiber, metalsmithing, painting, photography, printmaking and sculpture."
"An estimated 145 students are enrolled annually. The Academy promotes an intense studio-based learning environment in which individual student projects are pursued under the mentorship of 10 artists-in-residence. The small size of the Academy ensures that students, faculty and visiting artists will benefit from close individual and creative relationships. True to its mission, the Cranbrook Academy of Art aims to inspire artists, designers, and architects to creatively influence contemporary culture."

Vision

Cranbrook Academy of Art and Art Museum together form a pre-eminent international educational community dedicated to creativity as a way of life.

Mission Statement

Cranbrook Academy of Art is an independent graduate degree-granting institution offering an intense studio-based experience where artists-in-residence mentor students in art, architecture and design to creatively influence contemporary culture.

Cranbrook Art Museum is a dynamic forum for contemporary art, craft, architecture and design, and an integral component of Cranbrook Academy of Art. Through its broad-based educational programs, permanent and changing exhibitions, collections and research, the Museum engages diverse public audiences in emerging artistic forms and ideas of visual culture. The Museum's collections document the history and innovations of Cranbrook, its artists, and the pivotal role they play within the broad context of the 20th and 21st centuries.

Cranbrook Academy of Art and Art Museum are collaborative partners with the institutions that comprise Cranbrook Educational Community.

"Cranbrook Academy of Art has always inspired excellence by example. The catalyst and challenge for artistic growth in this community of artists is the intensity of the work surrounding you. Founder George Booth and architect Eliel Saarinen developed a contemplative and integrated environment of art, architecture and natural beauty where tradition would inform but always be questioned. Without using a formulaic

curriculum, our students are asked to consider how meaning is constructed today. They establish an aesthetic voice and leave with the discipline for a lifetime studio practice, ready to enter the world as professional artists, architects, or designers."
-Gerry Craig, Assistant Director for Academic Programs[16]

The Departments at the Academy include:

- 2D Design
- 3D Design
- Architecture
- Ceramics
- Fiber
- Metalsmithing
- Painting
- Photography
- Print/Media
- Sculpture

3. SITE SELECTION AND APPROPRIATENESS

The site for this thesis exploration is located in the northern part of downtown Metro Nashville with the Cumberland River bordering to the north called Metro Center. The site consists of naturally and artificially created lakes and canals. The existing school of Watkins College or Art and Design provides not only an appropriate program to expand upon, but also is located in a favorable location, utilizing existing buildings in an area that is undergoing a revitalization which is intended to be a continuation of downtown and create an urban area. The existing natural conditions also mimic an urban version of that existing at Cranbrook and the College located here with the intentions of creating a campus community with academic village and live-work communities. The site consists of large expanses of surface parking, which will be displaced and developed in a manor that is more conducive to the fabric and the environment that the school is trying to create. The site also benefits from valuable access to public transportation, which makes a direct connection to the Downtown Transit Mall, located on 4th St. and Deadrick. (Figures 19, 20, 21, & 22)

Many valuable community oriented programmatic elements and amenities bound the site such as:

- Z. Alexander Lobby Branch Library: Housed in a multi-use facility that includes a theater, and recreation center.
- Municipal Center: a large soccer and football complex
- Hull Jackson Montessori School (K-4)
- John Early Paideia Magnet School (5-8)
- Continuation of the Nashville Greenway System including a parking point to access the greenway.
- The Charles Davis Foundation Learning Center
- Ted Rhodes Golf Course

This site, I believe is an advantageous location with complex potential. The surrounding components lend themselves to the community that exists and has aspirations that parallel those of Cranbrook. In combination with an enlightened community, and a desire to educate and bring this community together through the arts, the College will further grow to become the link that brings the community together.
The curriculum at Watkins is also similar to that of Cranbrook. Students are encouraged to cross disciplines, and are required to have a fine arts base, before entering into more specific instruction in their chosen discipline. A difference is that students at Watkins must complete liberal arts components, yet all the topics are art related.

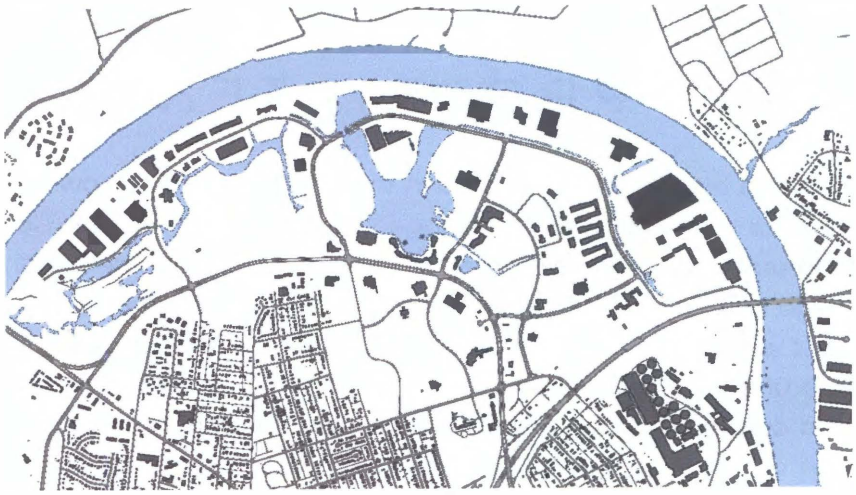

Figure 19: Site Map

Figure 20: Photo from across the Lake

Figure 21: Photo from the Street

Figure 22: Existing Student Housing

4. PROGRAM SELECTION AND BUILDING TYPE

Program selection is not based on a pre-designed master plan, but through diagnosis of the internal goals of the school's current and future curricular focus. At the Bauhaus, it can be seen in Gropius's diagram that the center focus, which can be seen as the way that they connected to the public realm, was on architecture and building. At Cranbrook, through their mission statement, the central focus is to "creatively influence contemporary culture"; also a way to connect to the public realm. At Watkins, their focus is to do both of these things, but with a strong focus on reinforcing this by activating the community around them. The building and campus design will be a physical manifestation of the school's internal goals, in addition to a teaching tool for students and the public who use it.

If you take the method, that Gropius used to diagram the intentions, structure, and focus, a similar diagram can be made for Watkins. This, in combination with interviews with current employees and students, a program of buildings can be developed and suggestions of curricular additions can be made. (Figures 23 & 24)

An interesting aspect of the schools that have been studied is the way that they reach out to the public, and bring their philosophies and physical results to the public domain. This, at Watkins, is reflected in their original focus, which reaches back to 1885, of community education. Facilities for this, in addition to facilities in which the students can live, produce, and sell their own work are necessary. Also vital are facilities for artist-in-residence and staff live/work facilities. An interdisciplinary approach to program is the core of bringing the community to the arts, and the arts to the community; each of which are rooted strongly in the arts and are bonded together. (Figures 25 & 26)

The school hopes that these suggestions will further the rapid growth that has already begun and to help to remind the community what the original historical beginnings were. (Figure 27)

Existing and Proposed Program

School campus consists of the original building (60,000 sq. ft.) that currently houses the Bachelor's programs including:

- Film
- Photography
- Graphic Design

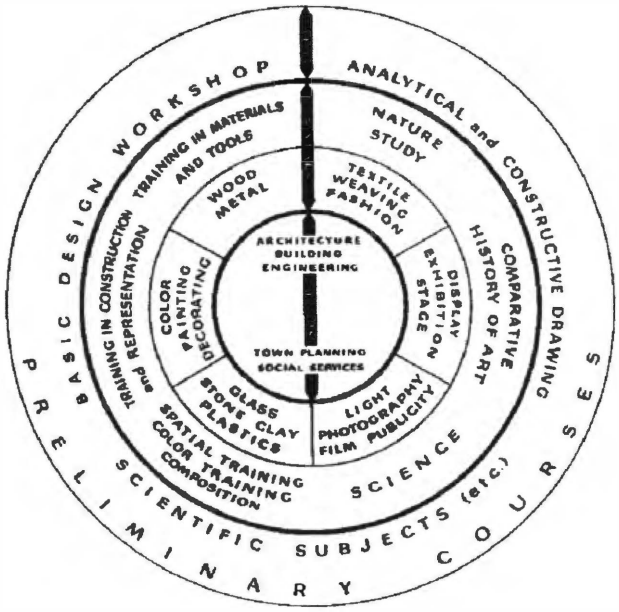

Figure 23: Walter Gropius Diagram
Source: Bauhaus Archives

Figure 24: Progression Diagram

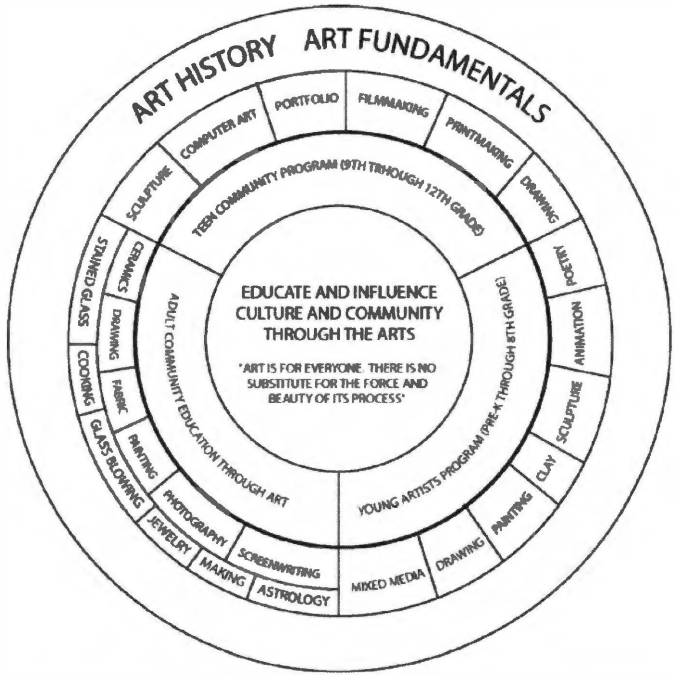

Figure 25: Watkins: Community Outreach Diagram

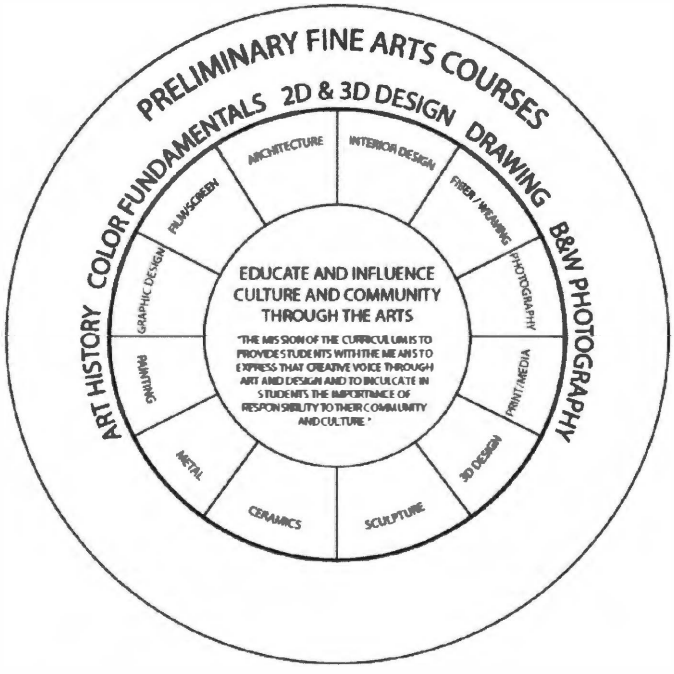

Figure 26: Watkins: Curricular Diagram

Schools	Programs											
	Architecture	Interior Design	Painting	Ceramics	Metalsmithing/ Metalurghy	Graphic Design / 2d Design	3D Design / Produot & Industrial Design	Sculpture	Fiber / Weaving	Photography	Print / Media	Film / Screen
Bauhaus	•		•	•	•	• (Typography & Graphic Art)	•(Furniture)	•	•	•		• (Stage)
Cranbrook Academy of Art	•		•	•	•	•	•	•	•	•	•	
Watkins College of Art and Design	proposing	•	•	•	•	•	proposing	•	proposing	•	•	•

Figure 26: Comparison of Schools anf Programs
Personal Diagram

- Interior Design
- Ceramics
- Painting
- Printmaking
- Sculpture
- Metallurgy

The school also offers community education classes including:

- Young Artist Courses: (Ages 3 – 8th Grade; Classes increase by age)
    1. Mommies and Monets
    2. Young at Art
    3. Artworks
    4. Drawing & Painting
    5. Art-Mania
    6. Cartooning
    7. Creative Clay
    8. Drawing Explorations
    9. Cartooning, Comic Arts, & Animation
    10. Intro to Sculpture
    11. Mixed Media Drawing & Painting
    12. Poetry Adventure
- Teen Courses (Entering 9th -12th grades)
    13. Anime
    14. Art on the Computer
    15. Filmmaking
    16. Mixed Media Drawing & Painting
    17. Portfolios
    18. Printmaking
    19. Sculpture
- Adult Courses & Workshops
    1. Ceramics
    2. Drawing
    3. Exploring the Art of Felting Fabric
    4. Getting' Knitty with It
    5. Intro to Art
    6. Open Studio with Model
    7. Painting
    8. Photography I&II
    9. Screenwriting
    10. Stained Glass
    11. Secrets of a Mad Tail-Gater
    12. The Fundamentals of Glass Blowing

Based on comparison with the Case Study Schools, my suggestion would be to add programs in:

- Architecture
- Fiber / Weaving
- 3D Design – Which included specialization in:
  1. Product Design
  2. Furniture Design
  3. 3D Physical or Digital Media
  4. Industrial Design

Building Programs:

Interdisciplinary Student Building

Cafeteria: 2700 Sq. Ft.

Interior Gallery/Exhibition Space: 2400 Sq. Ft.

Exterior Gallery/Exhibition Space: 4800 Sq. Ft.

Studio Spaces:
Design-Based: 4400 Sq. Ft.
Studio-Based: 1200 Sq. Ft.

Woodshop: 2400 Sq. Ft.

Metalshop: 1800 Sq. Ft.

Faculty Offices: 13 X 100 Sq. Ft. = 1300 Sq. Ft.

Classrooms:
Lecture-type: 4 X 1000 Sq. Ft. = 4000 Sq. Ft.
Workshop-type: 4 X 1000 Sq. Ft. = 4000 Sq. Ft.

Auditorium/Theater: 3600 Sq. Ft.

Atrium: 3600 Sq. Ft.

Total Approximate Sq. Ft.: 39,600 Sq. Ft.

Applicable Codes

The following codes are taken from The Code of the Metropolitan Government of Nashville and Davidson County, Tennessee.

16.24.380 Light.

A. Habitable Spaces. In residential occupancies, every habitable space shall have at

least one window of approved size facing directly to the outdoors or to a court. The minimum total glazed area for every habitable space shall be eight percent of the floor area of such room. Wherever a wall or other obstructions face a window of a habitable space and such obstruction is located less than three feet from the window and extends to a level above that of the ceiling of the habitable space, such window shall not be deemed to face directly to the outdoors nor to a court and shall not be included as contributing to the required minimum total window area for the habitable space.

Exception: Where natural light for rooms or spaces without exterior glazing areas is provided through an adjoining room, the unobstructed opening to the adjoining room shall be at least eight percent of the floor area of the interior room or space, but not less than twenty-five square feet. The exterior glazing area shall be based on the total floor area being served.

B. Common Halls and Stairways. Every common hall and stairway in residential occupancies, other than in one- and two-family dwellings, shall be lighted at all times with at least a sixty watt standard incandescent light bulb for each two hundred square feet of floor area of said common hall or stairway, or equivalent illumination, provided that the spacing between lights shall not be greater than thirty feet. In other than residential occupancies, means of egress, including exterior means of egress stairways, shall be illuminated at all times with a minimum of one-foot candle at floors, landings, and treads.

C. Other Spaces. All other spaces in residential and nonresidential buildings and structures shall be provided with natural or artificial light sufficient to permit the maintenance of sanitary conditions, the safe occupancy thereof, and the safe utilization of the appliances, equipment, and fixtures. (Ord. BL2001-585 § 1 (part), 2001)

16.24.390 Ventilation.

A. Habitable Spaces. In dwelling units, every habitable space shall have at least one openable window. The total openable area of the window in every room shall be equal to at least forty-five percent of the minimum glazed area required in Section 16.24.380, above.

Exception: Where rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the unobstructed opening to the adjoining room shall be at least eight percent of the floor area of the interior room or space, but not less than twenty-five square feet. The ventilation openings to the outdoors shall be based on a total floor area being ventilated.

B. Bathrooms and Toilet Rooms. Every bathroom and toilet room shall comply with the ventilation requirements for habitable spaces as required above, except that a window shall not be required in such spaces equipped with a mechanical ventilation system of sufficient capacity to provide at least one complete air change each six minutes. Air exhausted by a mechanical ventilation system from a bathroom or toilet room shall discharge to the outdoors and shall not be recirculated.

C. Cooking Facilities. Unless approved through the certificate of occupancy, cooking shall not be permitted in any rooming unit or dormitory unit, and a cooking facility or appliance shall not be permitted to be present in a rooming unit or dormitory unit. Exception: Where specifically approved in writing by the director.

D. Process Ventilation. Where injurious, toxic, irritating or noxious fumes, gases, dusts, or mists are generated, a local exhaust ventilation system shall be provided to remove the contaminating agent at the source. Air shall be exhausted to the exterior and not be recirculated to any interior space.

E. Clothes Dryer Exhaust. Systems to manage exhaust from clothes dryers shall be independent of all other systems and shall be installed in accordance with the manufacturer's instructions. (Ord. BL2001-585 § 1 (part), 2001)

16.24.400 Occupancy limitations.

A. Privacy. Dwelling units, hotel units, rooming units, and dormitory units shall be arranged to provide privacy and be separate from other adjoining spaces.

B. Minimum Room Widths. A habitable space, other than a kitchen, shall not be less than seven feet in any plan dimension. Kitchens shall have a clear passageway of not less than three feet between counter fronts and appliances or counter fronts and walls.

C. Minimum Ceiling Heights. Habitable spaces, hallways, corridors, laundry areas, bathrooms, toilet rooms and habitable basement areas shall have a clear ceiling height of not less than seven feet.

Exceptions:

1. In one- and two-family dwellings, beams or girders spaced not less than four feet on center and projecting not more than six inches below the required ceiling height.

2. Basement rooms in one-and two-family dwellings occupied exclusively for laundry, study, or recreation purposes, having a ceiling height of not less than six feet eight inches and not less than six feet four inches of clear height under beams, girders,

ducts and similar obstructions.

3. Rooms occupied exclusively for sleeping, study or similar purposes and having a sloped ceiling over all or part of the room, with a clear ceiling height of at least seven feet over not less than one-half of the required minimum floor area. In calculating the floor area of such rooms, only those portions of the floor area with a clear ceiling height of five feet or more shall be included.

D. Bedroom Requirements. Every bedroom shall comply with the requirements of Sections 16.24.400(E) through 16.24.400(I).

E. Area for Sleeping Purposes. Every bedroom occupied by one person shall contain at least seventy square feet of floor area, and every bedroom occupied by more than one person shall contain at least fifty square feet of floor area for each occupant thereof.

> Access from Bedrooms. Bedrooms shall not constitute the only means of access to other bedrooms or habitable spaces and shall not serve as the only means of egress from other habitable spaces.
> Exception: Units that contain fewer than two bedrooms.

G. Water Closet Accessibility. Every bedroom shall have access to at least one water closet and one lavatory without passing through another bedroom. Every bedroom in a dwelling unit shall have access to at least one water closet and lavatory located in the same story as the bedroom or an adjacent story.

H. Prohibited Occupancy. Kitchens and nonhabitable spaces shall not be used for sleeping purposes.

I. Other Requirements. Bedrooms shall comply with the applicable provisions of this chapter including, but not limited to, the light, ventilation, room area, ceiling height and room width requirements; the plumbing facilities and water-heating facilities requirements; the heating facilities, electrical receptacle requirements; and the smoke detector and emergency escape requirements.

J. Overcrowding. Dwelling units shall not be occupied by more occupants than are permitted by the minimum area requirements of Table 16.24.400.

a. See Section 16.24.400(L) for combined living room/dining room spaces.
b. See Section 16.24.400(K) for limitations on determining the minimum occupancy area for sleeping purposes.

K. Sleeping Area. The minimum occupancy area required by Table 16.24.400 shall not be included as a sleeping area in determining the minimum occupancy area for sleeping purposes. All sleeping areas shall comply with Section 16.24.400(D).

L. Combined Spaces. Combined living room and dining room spaces shall comply with the requirements of Table 16.24.400 if the total area is equal to that required for separate rooms and if the space is located so as to function as a combination living room and dining room.

M. Efficiency Unit. Nothing in this section shall prohibit an efficiency living unit from meeting the following requirements:

1. An efficiency living unit occupied by not more than two occupants shall have a clear floor area of not less than two hundred and twenty square feet. A unit occupied by three occupants shall have a clear floor area of not less than three hundred and twenty square feet. These required areas shall be exclusive of the areas required by subsections (M) (2) and (M) (3) of this section.

2. An efficiency living unit shall be provided with a kitchen sink, cooking appliance, and refrigeration facilities, each having a clear working space of not less than thirty inches in front. Light and ventilation shall be provided in conformance with this chapter.

3. An efficiency living unit shall be provided with a separate bathroom containing a water closet, lavatory, and bathtub or shower.

4. An efficiency living unit shall have a maximum number of occupants of three.

N. Food Preparation. All spaces to be occupied for food preparation purposes shall contain suitable space and equipment to store, prepare and serve foods in a sanitary manner. There shall be adequate facilities and services for the sanitary disposal of food wastes and refuse, including facilities for temporary storage. (Ord. BL2001-585 § 1 (part), 2001)

16.24.410 Plumbing fixtures and fixture requirements.

A. Dwelling Units. Every dwelling unit shall contain a bathtub or shower, lavatory, water closet, and kitchen sink which shall be maintained in a sanitary, safe working condition. The lavatory shall be placed in the same room as the water closet or be located in close proximity to the door leading directly into the room in which such water closet is located. A kitchen sink shall not be used as a substitute for the required lavatory.

be supplied for each four rooming units in a rooming house.
C. Hotel. Where private water closets, lavatories, and baths or showers are not provided, one water closet, one lavatory, and one bathtub or shower having access from a public hallway shall be provided for each ten occupants of any hotel.

D. Employee Facilities. A minimum of one water closet, one lavatory, and one drinking facility shall be available to employees. Drinking facilities shall be a drinking fountain, water cooler, bottled water cooler, or disposable cups next to a sink or water dispenser. Drinking facilities shall not be located in toilet rooms or bathrooms. (Ord. BL2001-585 § 1 (part), 2001)

16.24.420 Toilet rooms.

A. Privacy. Toilet rooms and bathrooms shall provide privacy and shall not constitute the only passageway to a hall, other space, or to the exterior. A door and interior locking device shall be provided for all common or shared bathrooms and toilet rooms in a multiple dwelling.

B. Location. Toilet rooms and bathrooms serving hotel units, rooming units, or dormitory units, shall have access by traversing not more than one flight of stairs and shall have access from a common hall or passageway.

C. Location of Employee Toilet Facilities. Toilet facilities for employee use shall have access from within the employees' regular working area. Required toilet facilities shall be located not more than one story above or below the employees' regular working area and the path of travel to such facilities shall not exceed a distance of five hundred feet. Employee facilities shall either be separate facilities or public customer facilities.

Exception: Facilities that are required for employees in storage structures or kiosks, which are located in adjacent structures under the same ownership, lease or control, shall not exceed a travel distance of five hundred feet from the employees' regular working area to the facilities. (Ord. BL2001-585 § 1 (part), 2001)

16.24.530 Fire safety requirements--Means of egress.

A. General. A safe, continuous, and unobstructed means of egress shall be provided from any point in a building or structure to the public way, in accordance with the requirements of the building code and fire code as adopted by the metropolitan government.

B. Emergency Escape and Rescue Openings. Basements with habitable rooms

B. Emergency Escape and Rescue Openings. Basements with habitable rooms and every sleeping room shall have at least one openable emergency escape and rescue window or exterior door opening. Where openings are provided as a means of escape and rescue, they shall have a sill height of not more than forty-four inches. The net clear opening dimension required by this chapter shall be obtained by the normal operation of the window or door opening from the inside. Escape and rescue window openings with a sill height below the adjacent ground level shall be provided with an approved window well.

C. Minimum Net Clear Opening. All emergency escape and rescue openings shall have a minimum net clear opening of four square feet.

D. Minimum Net Clear Opening Height. All emergency escape and rescue openings shall have minimum net clear opening height twenty-four inches.

E. Minimum Net Clear Opening Width. All emergency escape and rescue openings shall have a minimum net clear opening width of twenty inches.

F. Operation. Required emergency escape and rescue openings shall be operational from the inside of the room or space without the use of keys or special tools, knowledge, or effort. Bars, grilles, grates, or similar devices are permitted to be placed over emergency escape and rescue openings provided the minimum net clear opening size complies with the building code and such devices shall be releasable or removable from the inside without the use of a key, tool, or force greater than that which is required for normal operation of the escape and rescue opening. Where such bars, grilles, grates, or similar devices are installed in existing buildings, smoke detectors shall be installed in accordance with Section 16.24.550.

G. Aisles. The required width of aisles in accordance with the fire code shall be unobstructed.

H. Locked Doors. All means of egress doors shall be readily openable from the side from which egress is to be made without the need for keys, tools, or special knowledge or effort, except where the door hardware conforms to that permitted by the building code. (Ord. BL2001-585 § 1 (part), 2001)

Zoning Codes

The site is owned by Watkins Institute.
Sited on 13.64 Acres.

Zoned MUG: Mixed Use – General (As of 1/18/2002, previously zoned Industrial/ Warehouse/Distributution)
Land Use # 93: School or College
USD / GSD: Urban Services District

17.08.020 Zoning districts described.

D. Mixed-Use Districts. The purpose of all mixed-use districts is to provide for and encourage a mix of compatible land uses that provide opportunities to live, work and shop within compact areas. Included among the common goals for these districts is the efficient use of land capitalizing on a high level of services, reduced reliance on the automobile with enhanced usage of mass transit, strong pedestrian relationships, and creative opportunities for the economical preservation and adaptive reuse of existing structures, most notably those which contribute to the historic resources of the community. A mixture of residential, office, personal service and retail shopping opportunities is encouraged within all mixed-use districts with individual components complimenting and reinforcing other uses within the district. Owners are encouraged to plan and develop mixed-use projects capitalizing on the more flexible design opportunities offered by Article V of Chapter 17.40.
To effectively implement the mixed use policies of the general plan, a variety of mixed-use districts are provided that offer a range of permitted uses and intensities of development. The lowest intensity districts encourage development at intensities commensurate with nearby residential areas and local shopping services. The higher intensity mixed-use districts, being more permissive in the allowable intensity of development and the range of nonresidential uses, are intended to be located in areas characterized by excellent mass transit opportunities and high levels of support services....

3. MUG, Mixed-Use General District. The MUG district is intended to implement the moderately high intensity mixed use policies of the general plan, being appropriate near major concentrations of employment, commercial or institutional uses. This district also may be used near the central business district, within regional activity centers, or in areas otherwise policied for concentrations of mixed commercial development with high levels of accessibility, including public transit service. The bulk regulations are designed to encourage consolidation of land and large scale development on or near arterial streets.

17.12.030 Street setbacks.

A. Measurement. For single and two-family lots in the RS, R, MHP, AR2a and AG districts, the minimum building setback from a street shall be measured from a street

right-of-way line. In all other districts, setbacks from streets shall be measured from the centerline of the travelway pavement.

B. Street Classifications. All street classifications are as established in the "Subdivision Regulations of the Metropolitan Government of Nashville and Davidson County" and the "Major Street Plan" as adopted by the metropolitan planning commission.

C. Street Setbacks.

1. The minimum setback of a structure from an adjacent street shall be established by the following tables according to the zoning of the property and the classification of the street.

2. When the rear setback of a corner lot is oriented towards the rear setback of a neighboring lot, the required street setback along the street common to those two lots may be reduced by fifty percent. A corner residential lot created by plat prior to the effective date of the ordinance codified in this chapter may reduce the required setback of Table 17.12.030A by fifty percent along that street running parallel with the side of the residential structure.

3. In residential areas with an established development pattern, the minimum required street setbacks for the R, RS and MHP districts shall be the average of the street setback of the lots immediately adjacent on either side of the lot, or the value provided in Table 3-D, whichever is greater. If the average setback is greater than the standard of Table 17.12.030A, the required setback shall not be more than twice that required by that table. When the adjacent lot is vacant, or the subject lot abuts a side street, the value provided in Table 17.12.030A shall be used for that side. In areas undergoing new subdivision development, the zoning administrator may apply the standards of Table 17.12.030A below. In the MUN and MUL districts, the average street setback of existing structures along the same block may be applied to new construction on that block if determined appropriate to maintain or reinforce an established form of character of development.

4. When a subdivision plat establishes a reservation of land for future right-of-way acquisition, the street setback shall be measured from the ultimate right-of-way line.
5. Double frontage lots are subject to the provisions of Section 17.24.060(B). Property abutting a street designated as a scenic arterial by the major street plan shall comply with the provisions of Section 17.24.070.

6. The front façade of a principal structure on a corner lot that has lot lines of unequal length abutting the streets shall be oriented to the shorter lot line, except where the Zoning Administrator determines that the longer lot line is more appropriate based on

one or more of the following criteria:

a. The longer lot line of a lot zoned for office, mixed-use, commercial, or industrial use is located along an arterial street as shown on the adopted major street plan;

b. The proposed structure will contain multiple businesses with outside entrances;
c. The predominant character or pattern of adjoining development is or will be oriented to the street on which the longer lot line is located.

(1) Two-family dwellings with any parking proposed between the street line and the front edge of the residential structure shall provide a minimum street setback of thirty feet.
(2) Lots having vehicular access to these streets shall develop in a manner which avoids back-up movements into the public street.

Note 1: Properties abutting a street designated as a scenic arterial by the major street plan shall comply with the provisions of Section 17.24.070.
Note 2: In no event shall any street setback provisions permit a principal building to be constructed within an area designated for street improvements on a major street plan adopted subsequent to the effective date of this note.
Note 3: No street setbacks shall be required in the CC, CF and MUI districts.
Note 4: U=Urban Arterial, S=Scenic Arterial, OW=One Way Arterial (e.g., U2=two-lane urban arterial and S4=four-lane scenic arterial).

(Ord. 2002-1013 § 1, 2002; Amdt. 1 with Ord. 2002-1012 § 1, 2002; Ord. 2001-858 § 1, 2001; Ord. BL99-117 § 1 (part), 2000; Ord. 98-1268 § 1 (part), 1998)

17.16.040 Educational uses.

(Refer to zoning district land use table)

A. Community Education.

1. Campus Size. Minimum campus size shall be based on the total enrollment capacity of the following school types:

* Public park space which abuts the school site may be calculated to meet the minimum campus size, provided the metropolitan board of parks and recreation approves the site for shared use.

2. Setback. Where elementary and middle school structures and outdoor activity

grounds abut a residential zone district or district permitting residential use, there shall be a minimum setback of fifty feet. Where high school structures and outdoor activity grounds abut a residential zone district or district permitting residential use, there shall be a minimum setback of one hundred feet. Notwithstanding any other provision of the Metropolitan Code of Laws, no new community education facility, as defined in Metropolitan Code of Law Section 17.04.060(B), shall henceforth be constructed within two thousand feet of the property line of any landfill or other waste disposal facility.

3. Landscape Buffer Yard. Screening in the form of landscape buffer yard Standard B shall be applied along common property lines.

4. Street Standard. At a minimum, educational facilities shall have driveway access on streets that function at the minimum street standards below:
a. Elementary: any street; on minor local streets, driveway access shall be permitted only if the minor local street intersects an arterial or collector street within the same block;

b. Middle: collector street;

c. High: arterial street; or the intersection of two collector streets.

5. Reduced Lot Size. The board of zoning appeals may permit school facilities on smaller lot sizes than set forth above provided extracurricular activities are not offered by the school. Indoor/outdoor interscholastic and intramural competitive sports and outdoor physical education facilities are prohibited. Playgrounds and nature study grounds shall be permitted. The reduced lot size shall not be less than the following enrollment capacities.

a. Landscape Buffer Yard. Screening in the form of landscape buffer yard Standard A shall be applied along common property lines.

b. Street Standard. Reduced lot size educational facilities may have driveway access on any street, except on a minor local street driveway access shall be permitted only if the institution is located on a corner lot.

6. Community education facilities having a valid use and occupancy permit on the effective date of the ordinance codified in this code, and which cannot satisfy the locational or design standards of this section, may petition the board of zoning appeals as a special exception use under the provisions of Article III of this chapter.
B. Vocational School.

1. Landscape Buffer Yard. Screening in the form of landscape buffer yard B shall be

applied along common property lines.

2. Setback. Whenever a vocational school structure intended for vehicle repair, truck driving, manufacturing, production, or industrial equipment abuts a residential zone district or district permitting residential use, there shall be a minimum setback of fifty feet.

3. Street Standard. At a minimum, a vocational school shall have driveway access on a collector street. (Amdt. 1 with Ord. BL2002-1273 § 6, 2003; Amdt. 1, 2 with Ord. BL2002-1171 § 6, 2002; Ord. 98-1268 § 1 (part), 1998; Ord. 96-555 § 4.2(B), 1997)

17.16.050 Office uses.

(Refer to zoning district land use table)

B. General Office. A general office shall be limited to two thousand five hundred square feet of gross floor area per establishment.

C. Leasing/Sales Office. A leasing/sales office shall be limited to two thousand five hundred square feet of gross floor area per establishment. (Ord. 96-555 § 4.2(C), 1997)

17.16.120 Recreation and entertainment uses.

(Refer to zoning district land use table)

C. Park.

1. Location. Notwithstanding any other provision of the Metropolitan Code of Laws, no new park, as herein defined, shall henceforth be constructed within two thousand feet of the property line of any landfill or other waste disposal facility. (Amdt. 1 with Ord. BL2002-1273 § 7, 2003; Amdt. 1 (part) with Ord. 99-1644 § 1 (part), 1999; Ord. 98-1268 § 1 (part), 1998; Ord. 96-555 § 4.2(J), 1997)

17.16.170 Institutional special exceptions.

B. Cultural Center.

1. Lot Size. The minimum lot area shall be three times the minimum lot area requirement of the zone district or two acres, whichever is less.

2. Setback. Where active outdoor areas abut a residential zone district or district permitting residential use, there shall be a minimum setback of one hundred feet.

permitting residential use, there shall be a minimum setback of one hundred feet.

3. Landscape Buffer Yard. Along all residential zone districts and districts permitting residential use, screening in the form of landscape buffer yard Standard B shall be applied along common property lines.

4. Street Standard. At a minimum, primary access shall be from a collector street which has primary access to a street designated on the major street plan.

17.20.030 Parking requirements established.

F. Parking Study. Several uses listed in Tables 17.20.030 and 17.20.070 have a large variability in parking and/or loading demand, making it impossible to specify a single parking or loading requirement. The parking or loading requirement for such uses shall be established by the metropolitan traffic engineer based upon a parking and/or loading study. The board of zoning appeals may grant a parking reduction to the minimum parking requirement for existing churches within residential districts which have a valid use and occupancy permit on the effective date of the ordinance codified in this chapter. This reduction will be based on a parking study demonstrating that the parking requirement is excessive due to carpooling, van-pooling, mass transit, and/or pedestrian movement between the church and the surrounding residential neighborhood.

A traffic engineer establishes parking for all Colleges and Universities.

17.20.060 Parking area design standards.

A. Standard and Compact Spaces. Parking spaces shall be classified as standard or compact spaces with required dimensions in accordance with Table 17.20.060. No development shall be allowed to have more than thirty percent of the total required parking as compact spaces.

B. Parking Space and Aisle Dimensions. The minimum required dimensions of parking spaces and aisles are established in Table 17.20.060. For parking angles not shown in the table, dimensions shall be interpolated by the metropolitan traffic engineer. Minor deviations from these standards may be approved by the traffic engineer for parking structures. The dimensions for a sixty-five degree parking layout are graphically shown in Figure 17.20.060.

C. Parallel Parking. Parallel parking spaces shall have a minimum length of twenty-three feet and a minimum width of eight feet.

street shall be a minimum of twenty feet from the property line. Within the urban zoning overlay district, no off-street parking area or loading area shall be located within any required street setback area, unless it is located on a driveway in accordance with Section 17.20.060G.

E. Use of Parking Areas. Required parking spaces and associated aisles and maneuvering areas shall be reserved for vehicle use at all times.
F. Off-street Parking Standards. The following standards shall apply to all off-street parking areas.

1. No parking space shall open directly onto a public street (single-family and two-family dwellings and townhomes are exempt).

2. Except for single-family and two-family dwellings, aisles, driveways and joint access easements shall not be used for parking vehicles.

3. Required parking spaces for all uses except single-family and two-family dwellings shall be designed to permit entry and exit without moving any other vehicle.

4. No parking space shall be located so as to block designated emergency access.

5. No portion of any required parking space shall be located within the right-of-way of a street or alley.

6. For parking areas with ten or more spaces, a minimum queuing distance of twenty feet shall be provided along all access drives between the street right-of-way line and the nearest parking space.

7. The zoning administrator or planning commission, as applicable, may request the traffic engineer to review site plans for on and off-site traffic circulation.

G. Paving and Marking. Permanent parking areas containing five or more spaces shall be surfaced with asphalt or concrete, or other hard-surfaced dustless materials, and shall be constructed to provide for adequate drainage. Each space shall be marked by a single or double stripe, with stall width measured centerline to centerline. Single-family and two-family dwellings shall be exempt from this requirement.

H. Curbs. Curbs or other equivalent means shall be provided to prevent any vehicle using a parking area from encroaching on any public right-of-way, required landscaping area or adjacent property. (Ord. BL2000-364 § 1 (part), 2000; Ord. 98-1268 § 1 (part), 1998; Ord. 96-555 § 5.3(D), 1997)

area or adjacent property. (Ord. BL2000-364 § 1 (part), 2000; Ord. 98-1268 § 1 (part), 1998; Ord. 96-555 § 5.3(D), 1997)

Article V. Floodplain Overlay District

17.36.170 General provisions.

In addition to the floodplain and floodway protection provisions of Chapter 17.28, the alteration or development of land subject to flooding shall be regulated by Chapter 15.64 of the Metropolitan Code of Laws ("An Ordinance for Storm Water Management"), the purposes being to prevent the obstruction of watercourses and the protection of lives and property from the hazards of flooding. Regulation of flood-prone properties further allows for the reasonable protection of this community's natural ecosystems and wetlands areas, and qualifies metropolitan Nashville and Davidson County for flood insurance under Public Law 1016, 84th Congress (as amended or superseded). (Ord. 96-555 § 9.5(A), 1997)

17.36.180 Official floodplain map.

The Federal Emergency Management Agency Flood Insurance Rate Maps, along with specific basin studies that have been approved by the director of the department of public works shall constitute the official floodplain map for the metropolitan government of Nashville and Davidson County. In addition, the floodplain regulations of this title and Chapter 15.64 of the Metropolitan Code of Laws shall apply to lands which can be demonstrated to lie within a floodplain. Conversely, any lands which can be demonstrated by competent engineering to lie beyond the floodplain shall not be subject to these regulations. In cases of discrepancy, the official floodplain map maintained by the department of public works shall take precedence over generalized floodplain boundaries referenced on the official zoning map. (Ord. 96-555 § 9.5(B), 1997)

17.36.190 Permitted land uses.

Land uses permitted within the floodplain overlay district shall be established by the underlying base zone district according to the district land use table (Section 17.08.030) or an adopted PUD master development plan (if applicable). (Ord. 96-555 § 9.5(C), 1997)

17.36.200 Development standards.

All development within the floodplain overlay district shall be in conformance with Chapter 17.28, Article I of this title, Chapter 15.64 of the Metropolitan Code of Laws, and the subdivision regulations of Nashville and Davidson County. (Ord. 96-555 § 9.5(D), 1997)

Alterations of floodplain land and drainage channels shall be in accordance with the applicable provisions of Chapter 15.64, "An Ordinance for Storm Water Management." (Ord. 96-555 § 9.5(E), 1997)

17.36.220 Report to stormwater management appeals board.

A request for a variance to the requirements of "An Ordinance for Storm Water Management" shall be considered by the stormwater management appeals board according to the provisions of Chapter 15.64 of the Metropolitan Code of Laws. Prior to consideration of a variance, the stormwater management appeals board shall solicit a report from the zoning administrator and the planning department regarding the applicability of Chapter 17.28, Article I, or any other provision of this title. (Ord. 96-555 § 9.5(F), 1997)

5. PRECEDENT STUDIES

The Community of Cranbrook, Eliel Saarinen

The amount and influence of the buildings at Cranbrook is too numerous to describe in detail. This will look at the older buildings designed by Saarinen and the new buildings designed by various contemporary architects. (Figure 28 & 29)

Saarinen

The buildings that best illustrate the ideas that Saarinen was trying to convey through his designs can be seen at the buildings he designed at Cranbrook, specifically his home there and the Kingswood School for Girls.

The Kingswood School for Girls accomplished this, yet on a more public scale. All the elements of the school were designed by Saarinen to illustrate the unity of the spaces. This was to be used as a teaching tool for the appreciation of applied arts.

New Buildings

The more contemporary buildings at Cranbrook were conceived to continue the founding ideas, but interpreted in modern times. Thus, all these buildings strive for unity and hands on teaching with modern technologies emphasized.

Cranbrook Institute of Science, Steven Holl

The building at the new Institute of Science draws on many of the hands-on learning aspects that Cranbrook strives to achieve. The before mentioned centrally located learning gardens are of importance. These areas are designed to show the phases of different states of water in addition to the changes of water and plants through different seasons. This learning is coupled with a side planetarium and herbarium and lengthened with many temporary and permanent exhibition halls. This building of visual and tactile learning reinforces the overall teaching strategies at Cranbrook. (Figures 30 & 31)

The Permanent exhibitions offer innumerable opportunities for learning not only about the world, but also about the region and different cultures including:

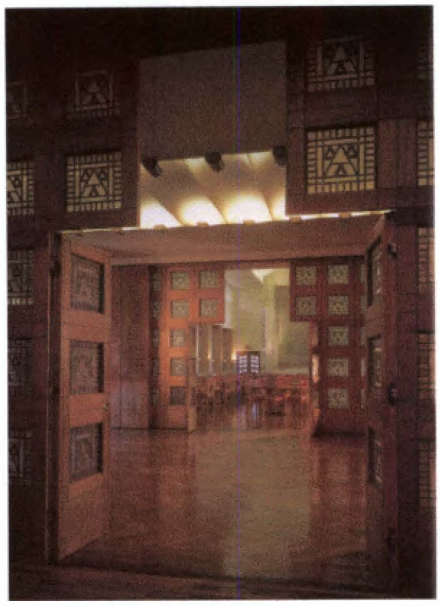

Figure 28: Kingswood Campus Lobby and Dining Hall from Auditorium
Source: Balthazar Korab, 1998

Figure 29: Kingswood Carpet
Source: Balthazar Korab, 1998

Figure 30: Science Garden
Source: Steven Holl Architects

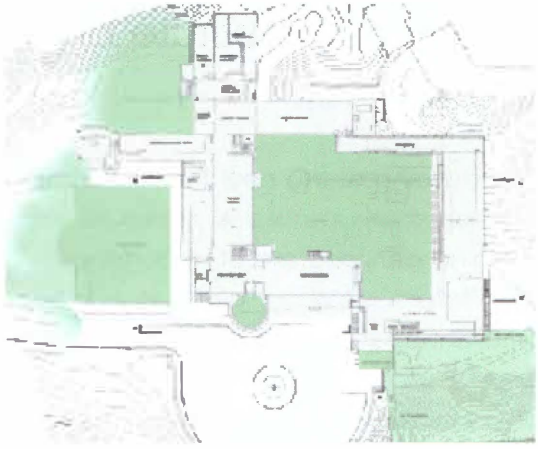

Figure 31: Places for Student and Community Learning

Life Changes Over Time

Come face to face with a full-sized Tyrannosaurus rex skeleton cast and examines natural selection and evolution by exploring the question "Are birds the descendants of dinosaurs?"

Ice Ages Come And Go

This exhibit presents climatic variations that have buried Michigan under ice over and over again. Hands-on interactives and visual diagrams help visitors explore issues like seasons, heat distribution and how heat travels across the globe.

Mastodons Did Not Survive

This exhibit examines extinction through the example of the mastodon, which used to be plentiful in Michigan during the last ice age.

Peoples of the Woodlands: Objects of Great Lakes Native America

The rich culture of Great Lakes native peoples reflects a complex connection between objects, practices and the environment.

Reading Objects

Every object – a pair of shoes, a necklace, a flag – holds different meanings for different people, and how we decode objects varies depending on culture, previous experience and prior knowledge.

When Worlds Collide: The Great Lakes Fur Trade

The exhibit is designed to give visitors a snapshot, a basic overview, of the fur trade that existed in the Detroit area. Detroit was one of the largest fur trade centers in the Midwest and the exhibit presents the basics of the interaction between Europeans and Native Americans.

Blues Life Lab

It's all about life! Blues Life Lab features interactive learning stations with hands-on lab experiments that produce exciting and unpredictable results.

Woodlands Den

Retained as originally created, these dioramas of Michigan plant associations capture both a reminder of the Institute's past and a glimpse of habitats increasingly threatened throughout the state.

The Motion Gallery

Lose your fear of physics with hands-on experiments that demonstrate the basic yet profound concepts of matter in motion.

Every Rock Has a Story

Was Michigan once located in the tropics? Will California crumble into the Pacific Ocean? The earth is constantly changing right under your feet and the exciting results range from earthquakes and volcanoes to granite and diamonds.

Mineral Study Gallery

Cranbrook founder George Booth started this mineral collection in 1926 with only a few hundred specimens.

Acheson Light Lab

Light Lab, an ingeniously subtle science lesson, is a space designed to encourage curiosity.

Water is Like Nothing Else

See the power of water on the bed of an ancient sea, make a storm, and find out how much of your body is water.[17]

Natatorium,

Tod Williams and Billie Tsien

The program that originally was conceived to fill the natatorium was originally thought to be placed off the central campus of Cranbrook. Williams and Tsien believed, though, that the original intention of George Booth was that the athletics were bound to the academic and should not be separated. This led to the design becoming more multi functional and compact in order to keep it integrated with the central Cranbrook fabric. The additional functions were to further, this concept by bringing people to the natatorium that might not go there otherwise. This is done by creating social spaces and spaces that can be used for all the school meetings (it is large enough to fit the entire school's population), graduation, and film showings. The integration of otherwise uninterested people furthers the Cranbrook philosophy of, teaching by example, and the appreciation of other interests.

Lume Media center, Heikkinen-Komonen

The importance of the media center is that this school successfully encompasses the applied arts with modern methods. Located in an industrial district in the historic part of Helsinki in a complex that was originally owned by a ceramics production company, it adds to former warehouses to house the growing functions of the University of Art and Design.

The media center is a part of a master plan in this industrial area to create a plan of buildings conceived to create a small town, with its own streets, alleys, service areas. The area is being designed to serve its new modern and functional requirements along with creating a community.

The program in addition to the media center includes film and television studios, a black box theater, an experimental theater, a separate auditorium, many galleries, and a residential area. This program is important to look at, because it not only teaches applied and fine arts, but performing and digital arts.

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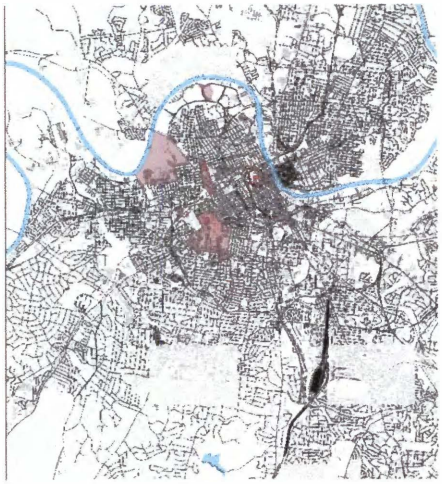
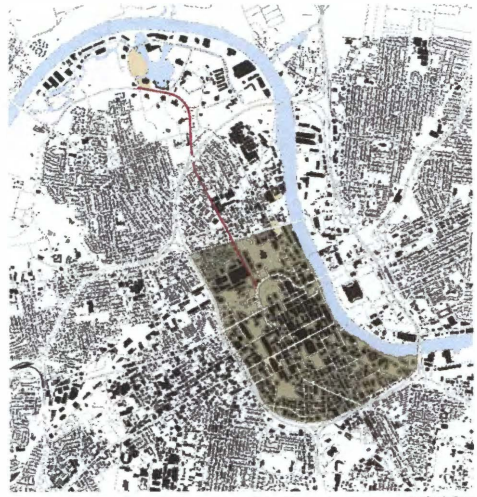
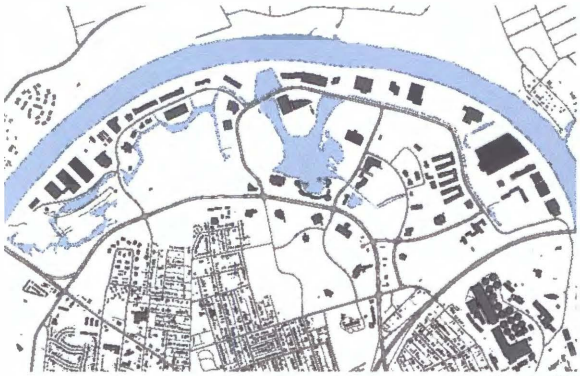
APPENDIX: DESIGN



public art in metro nashville, tn and davidson county
relationship of colleges and universities

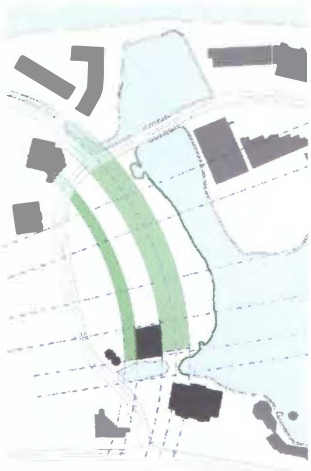


city of nashville, tn
site in red showing proximity to downtown,
main transit route, and other thesis sites



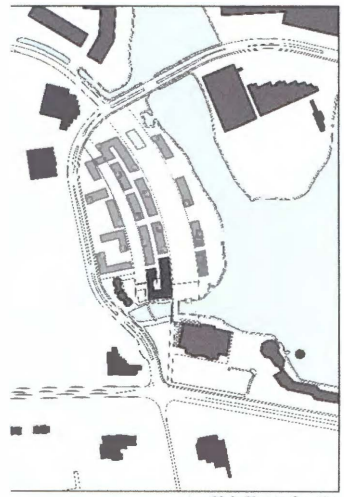
interconnections

site aerial



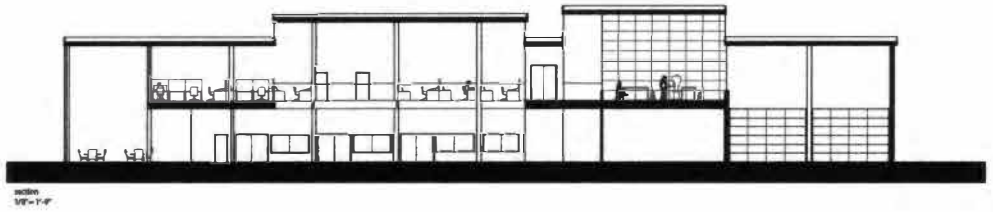
green zones

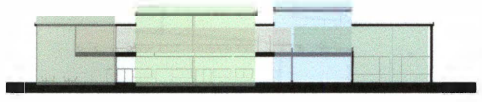
built zones

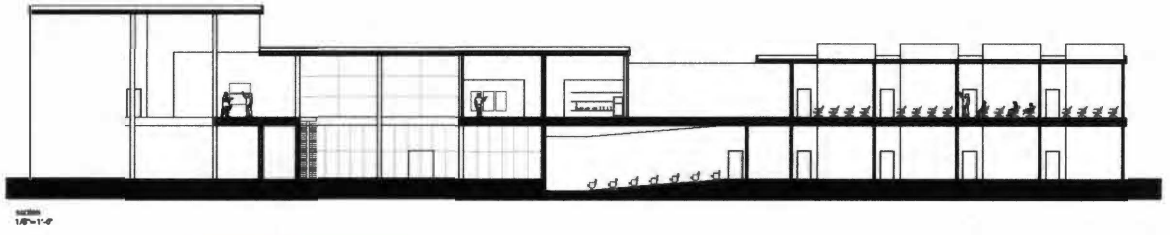


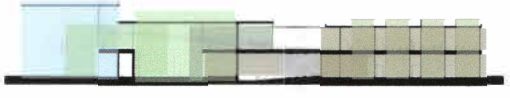
possible building configuration

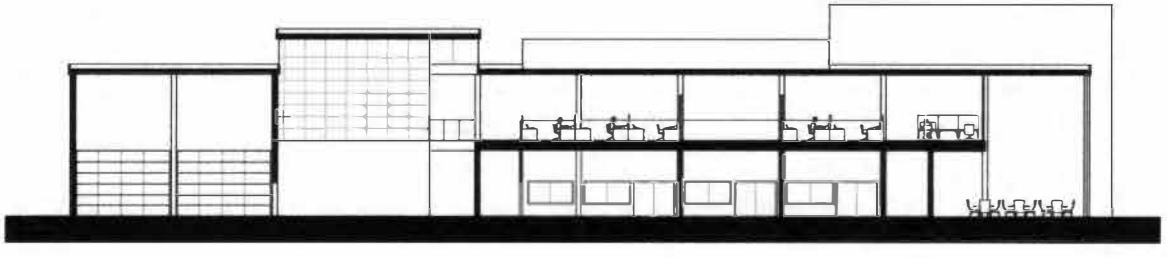
A-1: Existing Conditions

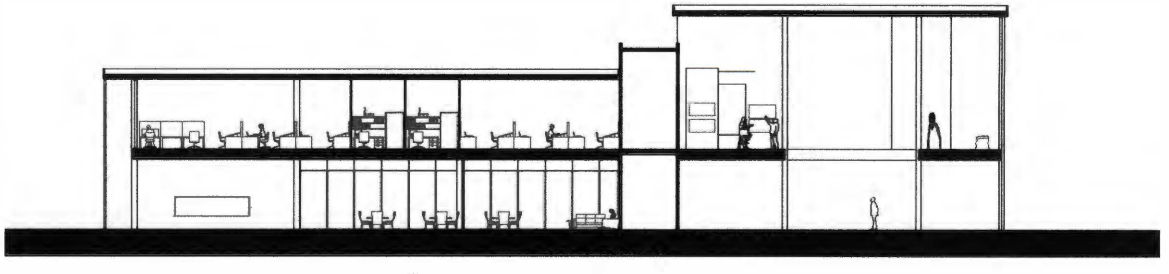




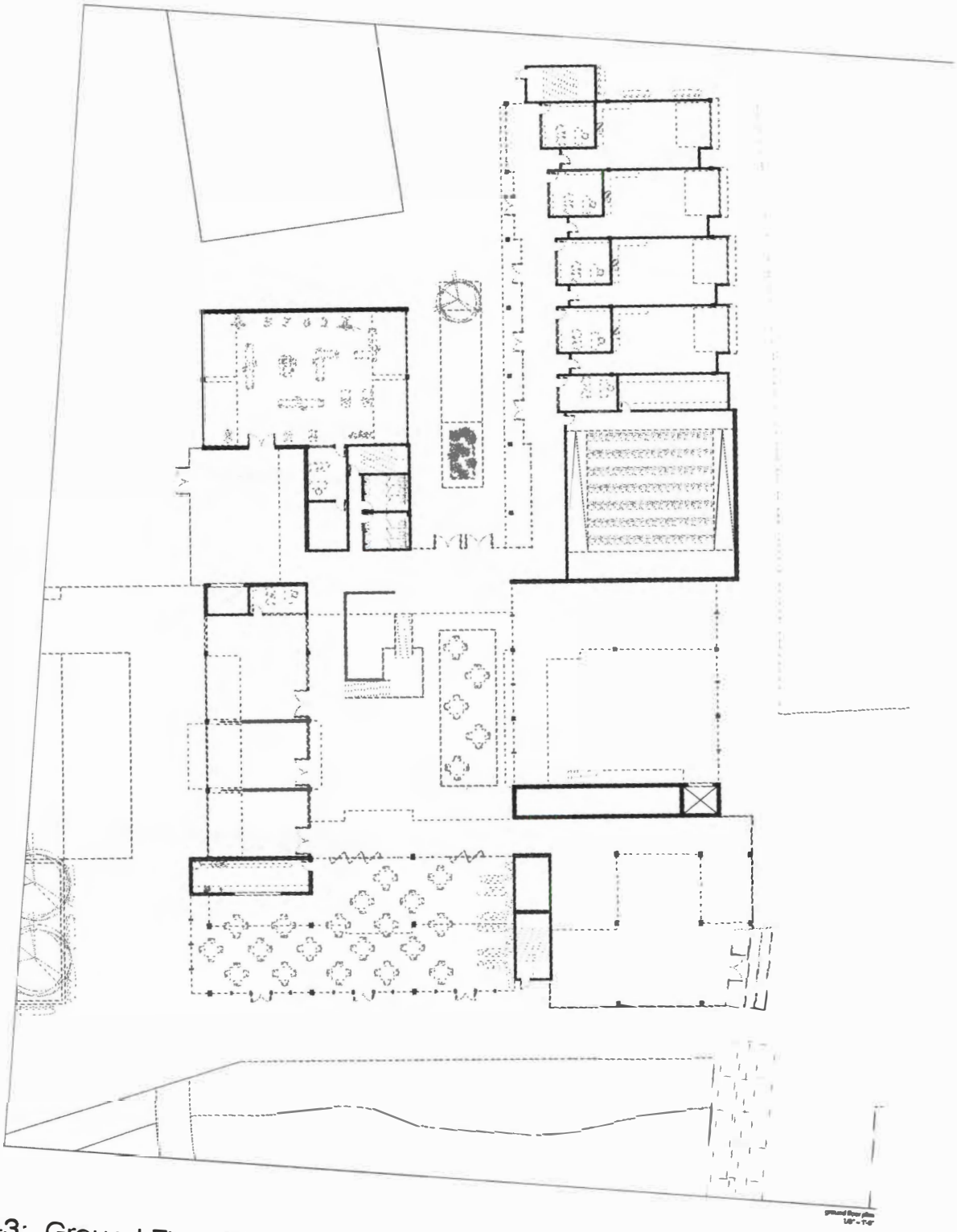




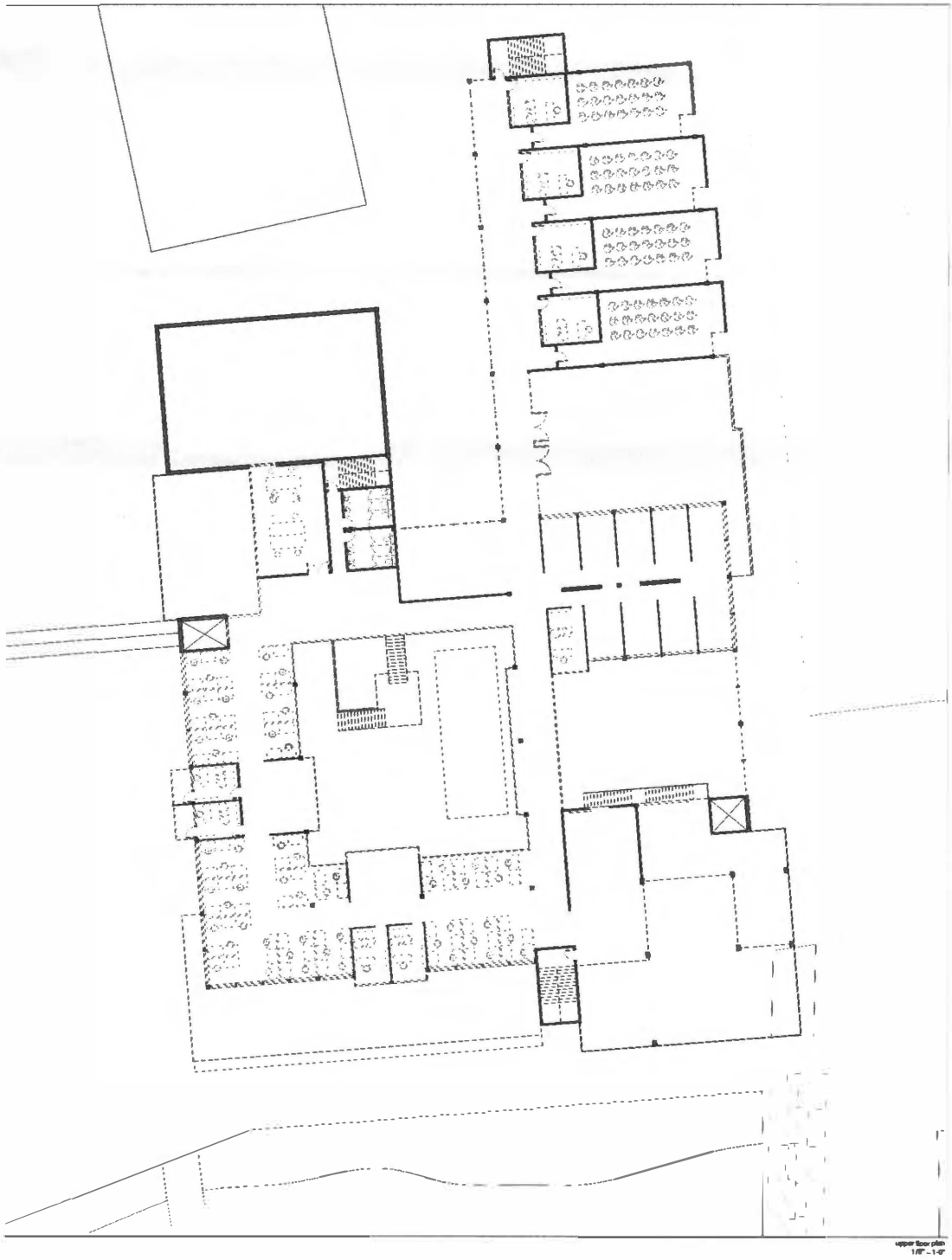




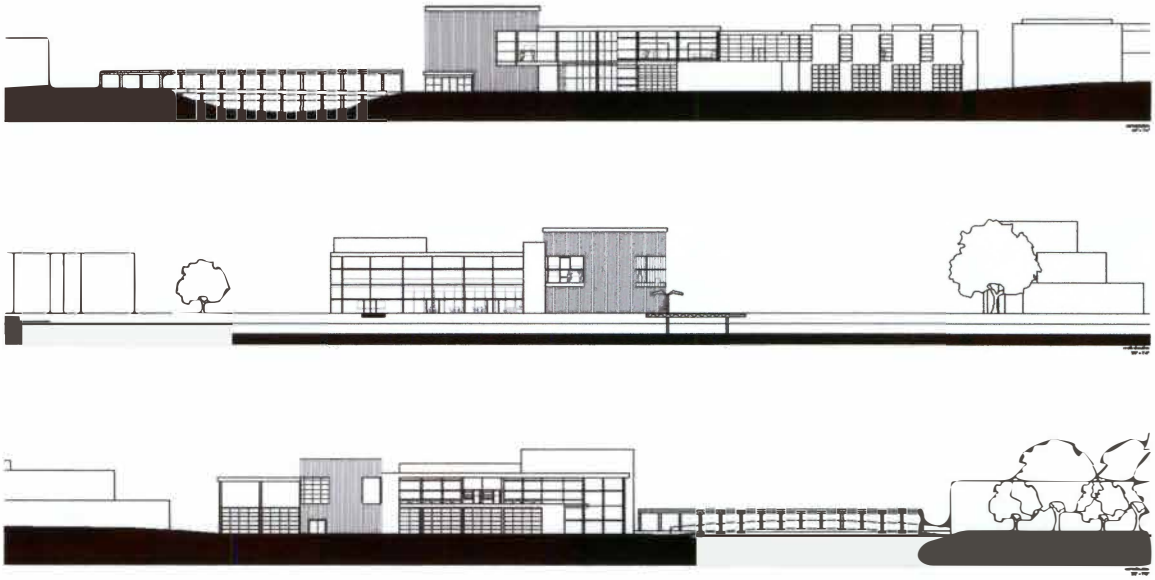
A-2: Sections



A-3: Ground Floor Plan



A-4: Upper Floor Plan



A-5: Elevations

VITA

Carmen Rachel Scoggins was born in Livingston, TN on November 14, 1980. She was raised in Cleveland, TN and attended high school at Cleveland High School, where she graduated in 1999. She attended the Univeristy of Tennessee, Knoxville and graduated with a B.S. in Interior Design in 2003. Immediately following, she began the Master of Architecture Program, also at the University of Tennessee.

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