

HEALING DANCE

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# Healing Dance

A design Thesis Submitted to the  
Department of Architecture and Landscape Architecture  
of the North Dakota State University

By

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for the Degree of  
Master of Architecture

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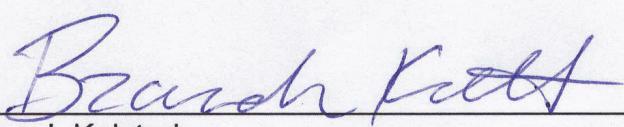
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How can cultivation through design become the next step forward in medicine and the arts by creating a homogenous mixture between dance and physical therapy? The typology for this exploration is therapy through a performing arts center. The Theoretical Premise / Unifying Idea that leads the research is, "the Art of Dance offers an alternative option to physical therapy other than pharmaceuticals with the guidance of physical therapy." The Project Justification is, "Physical therapy may borrow from insights developed by dancers to help those who are disabled to move again in their world."

In the narrative we explore the importance of medicine and the possible future of performing arts with relation to physical therapy. The user/client relationship will consist of one owner with an overview committee overlooking the program. The major project elements consist of very basic elements including: auditoriums, examination and class rooms, and public visitor spaces.

The site is located right in the heart of downtown Rochester, Minnesota along the banks of the Zambro River. The thesis will focus and emphasize the idea that physical therapy and dance can come together and help to promote health in those which may not be healthy through the expression of architecture.

I plan to proceed with this plan and collect data through the concurrent transformative research method. Once and during the collection of this information it will be stored digitally for future scholars.

**Key Words:** Dance, Physical Therapy, Homogenous Mixture, Performing Arts

**Square Footage:** 114,549

How can cultivation through design become the next step forward in alternative medicine and the arts by creating a homogenous mixture between dance and physical therapy?

## Typology:

A Therapeutic Performing Arts Centre

### The Theoretical Premise/Unifying Idea:

#### Claim:

The Art of Dance offers an alternative option to physical therapy rather than pharmaceuticals, with the guidance of a physical therapist.

#### Premises:

Dancers teamed with physical therapists can provide patients with full mental and physical concentration of the body. Working side by side, teaching each other, dancers and physical therapists can attentively heal patients. Physically handicapped people are given an alternative to conventional methods while also learning and enjoying the art of dance.

#### Theoretical Premise/Unifying Idea:

There is a correspondence between the art of dance and the science of physical therapy.

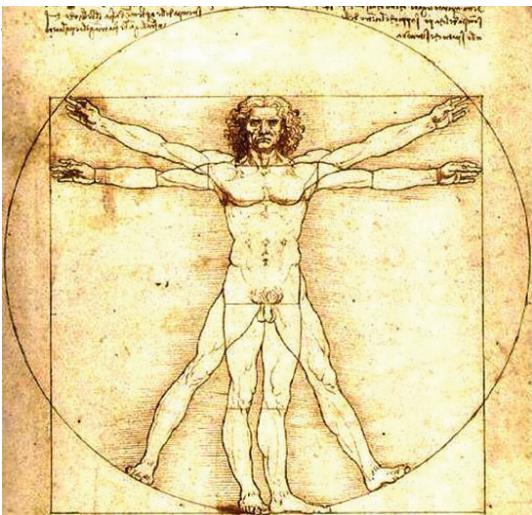
#### The Project Justification:

Physical therapy may borrow from insights developed by dancers to help those who are disabled to move again in their world.



STATEMENT OF INTENT





**Top:** Leonardo DaVinci's Vitruvian Man

**Middle:** Class of Cerebral Palsy patients dancing.

The study of "modern" medicine has only made real ground within the past half a century. Everyday there are findings that contribute to the healing of many different prevalent diseases such as Parkinson's, Cerebral palsy, and Huntington's disease. You may have noticed that I mentioned movement disorders, but this is not only for those afflicted with similar diseases but also for those that have just suffered a physical injury.

Physical therapy for this type of community is accomplished through many different

outlets. The question is, "can it be accomplished through unconventional methods? After asking myself this, I came to the conclusion that the performing art of dance is an amazing way to blend many attributes together. Dance blends mental, physical, and emotional elements into one cohesive action. Many of the patients of movement disabilities are not receiving all of these elements together clearly.

This thesis will investigate how these two professions can be homogeneously blended, With architecture as its catalyst, to offer a new form of alternative medicine, which provides a clearer form of therapy, and the enjoyment of dance.

I have always been interested in medicine, more specifically psychology. I believe that the blending of these two professions and activities, also becomes a way to blend psychology and architecture.

NARRATIVE

This facility will be designed for the benefit of the physically handicap. The project will be designed with the thought that therapists and dancers hold an equal importance to the overall function. The project will be owned by one person, but with an oversight committee who's main task is to provide and guide the owner to offer the best treatment possible.

#### Resident Physical Therapists:

The therapists are in charge of watching over not only their form of physical therapy but also the activities the dancers are having patients perform. This can only be done with clear communication between the two professions.

#### Resident Dance Instructors:

The dance instructors are responsible for teaching basic dance classes as well as providing classes for the patients.

#### Amount:

The project will have upwards of 150 people using the services from day to day. This of course would increase with recitals.

#### Parking:

Parking will be handled by the garage that currently sits on the site or by other public garages around the site area.

#### Physical Restrictions:

There are some restrictions, which will be addressed and fully considered. A drop off area will also be incorporated into the design.

#### Medical/Health Issues:

Must be considerate of all issues not only those with the patients but must consider overall user health.

#### Needs:

I believe that there will be some social issues as most people are afraid of dancing in front of others.

### Dinning Center / Cafeteria:

Will be open to all people, public and private patrons. I want the patrons to be able to sit down with their guests and enjoy their time together.

### Auditoriums:

These will be used for performances for the facility and the community as well.

### Classrooms / Dance Studios:

This will be where the day to day therapy and learning will take place. Through different stages of recovery as well as different ages of dance, students of dance and patients will learn together.

### Visitor Areas:

These spaces are for those who's family members would like to visit and places that those recovering will be able to show off their progress. Visitor areas will allow the public to view the dance classes while they are in progress.

### Dancer Areas:

This space will cater to both dancers and the physically disabled.

### Therapy Areas:

It is very vital and necessary that patients receive professional medical treatment one on one so that they understand what their body is able to endure and continue their

### Overnight Accomidations:

A space will be provided for some people to stay overnight to visit with loved ones.

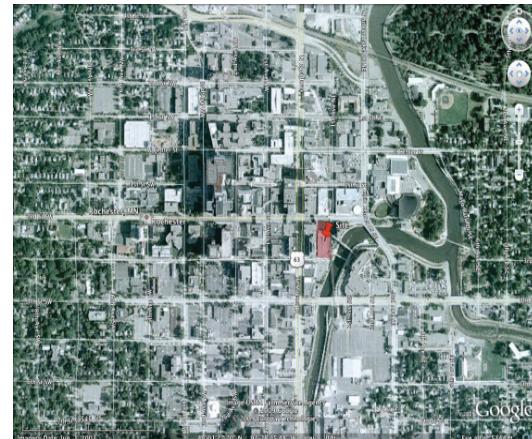
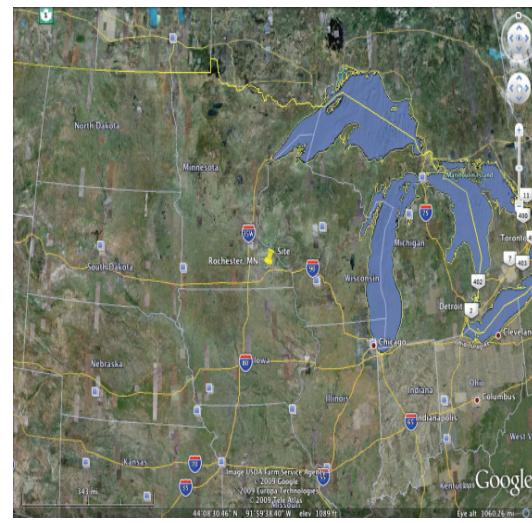
recovery.

Rochester, Minnesota is a city, which if you ask the residents, known as a business town. The Mayo clinic is a world renowned medical facility that employs around 40,000 people. Everyday the city swells with employees and patients. These patients come from around the state, region, country, and world.

A project typology, that is carefully located within a community will be accepted and flourish. With a world class medical center near by, physical therapists will be available. There are many dance companies within Rochester and the Twin Cities, who will provide dancers.

The city of Rochester, architecturally, fallsow hand-in-hand with the medical community. Rochester is a growing community that can support this typology.

With a city whose population fluctuates by 40,000 everyday, the cities parking ramps play a large roll in the daily mechanics of the community. From one point in the city, one can see at least 6 different parking garages. Mayo has helped alleviate this parking burden on the city by offering busses to pick up many employees but this is not enough for most. Most employees live outside the city of Rochester in neighboring small towns.





Approximately an hour and a half drive from the Twin Cities, the clinic is in close proximity of a major metropolis. Rochester it-self, although a company town, is very well planned for community connection. The city center possesses an extensive network of skyways which connect a majority of the buildings downtown. Just south of the downtown area is the well known Soldier's Memorial Field.



The site I will be investigating is located along the banks of the Zumbro river. Currently it provides public parking for the downtowns area. Located right next to a hotel, across the street from the library, and across the river from the Rochester Civic Centre. The parking garage itself is connected to the skyways which will help with the transferring of patients and the public.



The Zumbro River will be a perfect setting for the users of the facility. The city of Rochester has done much to help revitalize the downtown area with the creation of miles of running and bicycle trails along the riverside, which will be directly connected with the site.

Within the city there are many small green spaces. This if course helps the overall feel of the city. These green spaces also help to bring wildlife to the area.



## Site Location:

Between Second and Third Street Southeast and just west of Broadway along the river's edge, the parking garage provides a perfect outlook to the river while having good lighting conditions most of the day.



## Transportation Links:

The Site is connected to Second Street on the north side, otherwise only the skyway creates links to the other parts of town. The Rochester skyway provides the opportunity to move around to different businesses, even to the hospitals. The bus system and routes all drop off and pick up riders one block east of the sites location.

## Views:

The site has two main views, one being straight east to the river, the other being to the south looking upon the river and south Rochester.



## Major landmarks:

Other than the Mayo Clinic Facility and the previously mentioned Soldier Memorial Park there are no major landmarks within the vicinity of the site.



This thesis project will examine the relationship of two seemingly different kinds of activity, and find, as well as, focus on the similarities. The focus will be on the correlations between the art of dance and the practice of physical therapy, with the main goal being the healing of those who have limited mobility.

There is an awareness of the need for such an ideal in a city which is known for its world class medical treatments. The interaction this project would have with the rest of the medical community is important to the life of the Healing Dance Facility.

Another focus of the project are psychological elements that come with the process of healing and recovery from traumatic experiences. How do recovery, psychology, arts, and architecture blend together homogeneously, while keeping their own identities.

The project will explore many underlying ideas of sustainability, social interactions, community connectivity, medical communications, as well as expressions of art and body movement.



PROJECT EMPHASIS

Design methodologies for this thesis will depend on graphic and digital analysis, and mixed method quantitative / qualitative analysis. Interviews with single persons or groups maybe be used but only in the direction of character issues so that they may stay subjective.

Being guided by the theoretical premise/unifying idea, the thesis will follow a concurrent transformative research strategy. This will be implemented and data will be concurrently gathered using both quantitative and qualitative data. The theoretical premise/unifying idea will dictate priority. During several stages of the process the integration of research data will be in the nature of examination of the theoretical premise. Along with research integration; analyzing, interpreting and reporting will also occur.

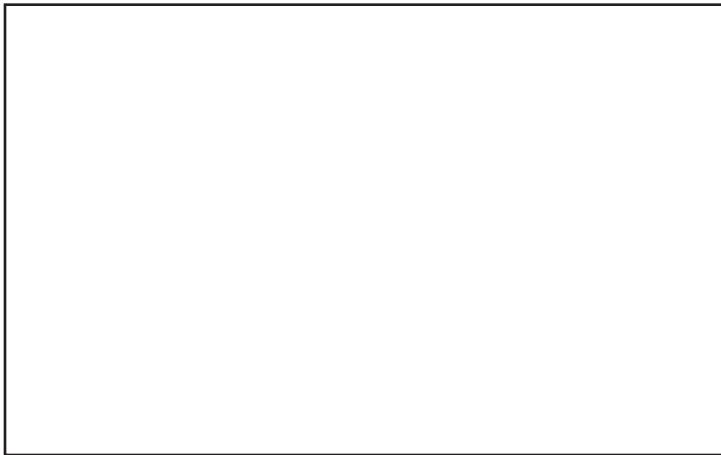
Quantitative data includes but not limited to statistical data which will be gathered and analyzed locally or obtained through an archival search. Scientific data measurements obtained through instrumentation and or experiments will be gathered directly or through archival search.

Qualitative data will be gathered from direct observations, local survey, archival search or from direct interviews.

This thesis will achieve thoroughness through all categories with a objective outlook so as to guarantee proper research for: the theoretical premise/unifying idea, project typology, historical context, site analysis, and programmatic requirements.

All documentation will be compiled and saved digitally. Any images, text, interviews or other data will be transformed into a digital format and again compiled so that it will be contained together in one place. Once all documentation has finished there will be a digital format available to future scholars as well as original hard copies of any information gathered or encountered.

The collection and analysis of new or over viewed information will be done in, at least, a two week basis so that the reviews will always be fresh.



PLAN FOR PROCEEDING

## Second Year:

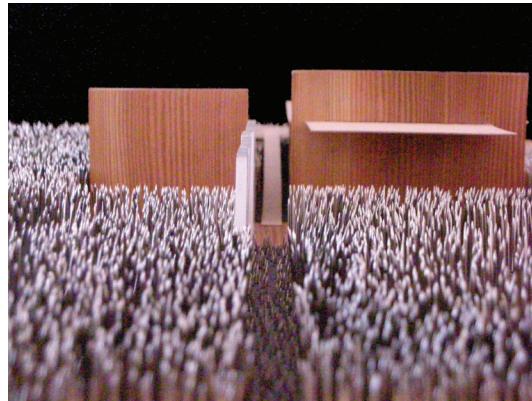
Fall 2006: Stephen Wischer  
Tea House: Fargo, ND.

Minneapolis River Rowing Club:  
Minneapolis, MN

Twin House: Fargo, ND

Pencil Holder: Architectural Theory

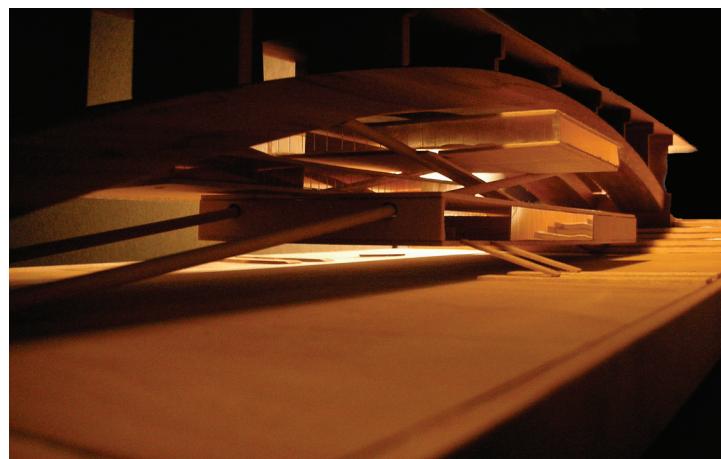
Spring 2007: Darryl Booker  
Montessori School: Moorhead, MN



NDSU Dance  
Academy: Fargo, ND

Summer 2007: Stephen  
Wischer

One to One Study



## Third Year:

Fall 2007: Ronald Ramsey

Boston Symphonic  
Orchestra Old Stone  
Barn: Pennsylvania

Agincourt Brewery and  
Expansion: Agincourt, IA

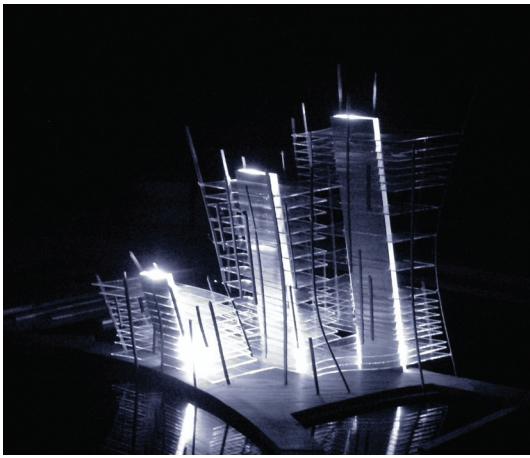
Spring 2008: David Crutchfield

International Market: Fargo, ND

Open Web Joist Study: Studio

Pop sickle Stick Structure:  
Structures One





#### Fourth Year:

Fall 2008: Darryl Booker

High Rise: San Francisco, CA

KKE Competition: Cigar Box

Spring 2009: Fank Kratky

Slum Revitalization: Santo Domingo, Dominican Republic

Fargo Flood Volunteer

Summer 2009: Ronald Ramsey

Slum Revitalization Revisited

#### Fifth Year:

Fall 2009: Regin Schwean

Hotel: Fargo, ND

Spring 2010: Mark Barnhouse

Healing Dance  
Thesis: Rochester, MN



PREVIOUS STUDIO EXPERIENCE





## RESEARCH RESULTS AND GOALS

"[T]he ability to release one's feelings in this way is a deeply therapeutic and healthful function" (Kraus, 1969). A way In one statement, the goal of this thesis can be summed, but cannot be fully discovered. The correspondence between physical therapy and dance may not seem similar, but I will show how they work well together to form a very cohesive symbiotic relationship.

It is the goal, ability, of both of these programs to express feelings, as the end result. This is more apparent for dance. In dance, we see performers, giving their all to emotionally move the audience. While observing a performance we forgo the thought of the immense skill that must first be learned and mastered. Dance is "...a form of physical, creative, and social experience, usually ... [studied]...within departments of physical education..." (Kraus, 1969). Kraus explains that these elements which must be conceptualized in order to perform, fall within the realm of physical education. This helps to build the bridge between dance and physical therapy by the simple fact that we must learn what our own bodies can do and master our bodies in order to perform. "Dance may serve as a means of expressing physical exuberance, strength, and agility." (Kraus, 1969) If we are to look at physical therapy, and its end results for the patients, we see that it helps recover the mastery of physical experience, while giving confidence to creative and social experience.

Physical therapy consists primarily of a qualitative analysis of the body. This qualitative analysis, which is comprised of understandings of biomechanics, motor development, motor learning, and pedagogy, help to cohesively bring physical therapy together so as to understand the characteristics and personality of the body.

Having control, or understanding of the body is vital to the absolute expression of dance. “ [C]ontrol and mastery of the body’s movement relate to emotional as well as physical and mental development.” (Kraus, 1969). This quote, from the *History of the Dance in Art and Education*, gives us insight into how dancer’s conceive their fundamental elements of dance as much as the control of breathing to both dancers and physical therapist patients.

Physical therapy, currently, is practiced by using the body’s own healing strength. Through message, weight training, and repetitive body movements, the body is encouraged, or forced, to work to repair or re-learn the execution of a certain movement.

The art of dance is not automatically understood, there are years and years of study, re-study, repetitive motions, and the ability to flex and bend. These actions and physical therapy share common ground in that the “...fundamental skills of movement may be learned in a creative way.” (Kraus, 1969). These fundamental skills



as with most professions take time to conceive yet evolve into an entity which never forgets its building foundation of knowledge. Skills of all professions especially dance, are always evolving into new forms, though they are built upon many common elements.

"[S]ymmetry should be used sparingly in choreography because of its calming effect, then asymmetry, which stimulates the senses is the area to court and understand for dancing." (Humphrey, 1959). Symmetry provides us with standards, which allow us to create a foundation build upon with elements of asymmetry. Asymmetry allows us the creative spark, which lights the fire within the patrons to affect their emotions and sense of place. "... [D]ance is an art in which design has two aspects: time and space." (Humphrey, 1959) Dance is very much like the art of architecture. Each performs its art with in the realms of time and space, in which both must choreograph movements, create space, affect emotion, and organize their surroundings.

If we are to view overall elements of dance and/or choreography and how this pertains to physical therapy then we must also look into the elements of rhythm. We can bridge the gap between the two using rhythm because, "[r]hythm so permeates every aspect of human beings, and indeed, of the known world..." (Humphrey, 1959). Rhythm creates

order, which allows for a more easily accepted practice. Physical therapists use rhythm with motor development as well as motor learning. Rhythm suggests repetitive action, for dancers there is a count to keep, for therapy, rhythm helps biomechanics by allowing the body to learn and remember how a body part used to move, and how it should move. You could say rhythm to therapists is equally important as it is to dancers, because "...of all the ingredients in the art of the dance, rhythm is the most persuasive and most powerful element..." (Humphery, 1959).

Having reviewed the basic features of each field we can see the necessity for a guide to pursue the two processes. Both activities require a leader in a firm position, to provide feedback and support. Feedback is mainly used for "... reinforcement either positive to help encourage correct techniques or negative to diminish the frequency of undesirable actions." (Knudson, 1997) All types of learning demand some kind of feedback.

The importance of feedback in both fields is imperative to being successful. The dancer must gain feedback to understand the emotions they are portraying, while the physical therapist must provide this same service so that their patients learn correct body movement, either to fix or prevent further incidences.

Although we see physical therapy as a one-on-one activity, dance is very much about



the group. Dance allows people to interact with each other. Physical therapy patients must be dealt with one-on-one, but is there not some kind of common ground that can be shared between the two. "In group design, simplicity is a must." (Humphrey, 1959) If creating too complicated a routine even at a professional level creates a difficulty in interpretation, then how can we expect others to understand or enjoy the dance itself. We want people to feel welcome and feel as if they are becoming more and more confident in their interpretation or movements.

Dance divides the body into different (categories-different word) which correspond with times of the day. Along with the times of day, they are also given a character trait which not only helps to define the body but also the emotion. "It works like this: the body can be divided into the physical (lower trunk and legs), the spiritual – emotional (torso and arms), and the mental (head and neck)." (Woodward, 1977) Like the body parts being split, the positions of the body, as previously mentioned, correspond with the times of day. The morning is for thinking, noon for work, evening for eating, and night for rest. Put yourself in these activities of the day, they you will be able to understand the positions of the dancers. The parts of the body are as important to dancers as they are to physical therapists. There must be a full and complete understanding of how these parts interact. They must be able to understand each other, cohesively, and

smoothly. Although the physical therapists look into the body, muscle, tendon, and bone, they must understand the movement of the body.

It is important to consider how each field is viewed by the public. Physical therapy is not performed for the public. Dancers and physical therapists could be viewed as instruments, like that of a symphony. Each has his or her own style and temperament, yet they both have limitations. The body is able to do only so much: The essence of dance is to transmit emotion that must be received by the audience. Learning about the body in the way we described here. Coming to such a place dancers may learn about dance, and the injured learn about recovery.

Recovery for the injured is not always quick or easy. Many of these injuries are serious, more serious than just a scrap on the knee. We are talking about torn ligaments, shattered bones to the point of requiring implants to correct such issues. Physical therapy can take years to succeed when recovery is possible.

We can see each profession contains similarities that can be executed in different ways.

As we bring both professions into a light, which shines on the similarities between them, we must also look into the darkness to find how this will equivocally become space and the relation to



the architecture. Comparing the required spaces for these professions provides us with a unique opportunity to look into the day-to-day directives and operations. To teach dance we can foresee many studio spaces and a performance theatre. Dance being more of a social, group effort if you will, lends itself to a simple room program. There could possibly be office area for dance choreographers or instructors. Therapy, involves many more spaces, which can become more involved as well as having spaces for specific functions. We must not only think of physical therapy being completed only through dance with this thesis, but must also understand the basics of physical therapy. These basics can include and are not limited to; message therapy, stretching, weight lifting and training, walking/ running tracks, and even aquatic spaces such as pools.

Having these many different spaces creates a very important issue that must be resolved fully so as to not hinder the ability of both professions. Each activity must be completed flawlessly on their own, which can be difficult with in itself, but now they must operate in a manner which will further push each profession above and beyond current standards. Architecturally these spaces will be

microscopically looked into to ensure day-to-day activities compliment the movement of the professionals as well as patients and students. As important as a simple layout may seem, the task of bringing them together involves many

other elements like accessibility, acoustics, and availability of simple necessities like sunlight, outside views, and basic human office environment comforts.

Looking at the layouts of spaces, along with acoustics for instance, we can fore see a few issues. We can not put a studio or performing space, which involves loud noises right next to an office which must be able to take and focus on phone calls per say. In order to prevent hindering any for of productivity this must be addressed. Yet if we do this, then neither field will be close to each other, and will not co-habitat. There is an opportunity to offer a cluster of spaces which will possibly have physical therapy rooms look in onto a dance studio. Imagine a patient being able to view what he or she wants to become and using the dancers as motivation and inspiration. Or being able to listen to the melodic sounds of a dance taking place while receiving a therapeutic message. Together these two fields can learn much from each other just by being in close proximity.

Architectural speaking, these spaces, must be kept simple. If we are to look back at what Humphrey said about group spaces, the simplicity must be kept in order to be easily understood. Understood by who? Mainly the general public must be able to understand the special organization easiest. This being because mostly because the daily employee or patients of this facility are given the opportunity



to understand the organization over a period of time, but why should they be expected to? Architecture in such an environment needs no plaque to explain its actions, we must understand who we are building.

We have found many similarities with in each field to understand the need for a connection on a non-physical basis, so what is the connection on a physical base? They both need meeting spaces. Both need spaces to perform group activities. Office spaces, or examination rooms, are similar in size but are different for each field. Then there are the spaces, which must be shared by both such as rest rooms, lobby space, waiting rooms, as well as changing rooms.

All in all, we know the connection between the fields of physical therapy and dance is unequivocally evident to the point of necessity. We know they share the common goals of teaching their respective goals and philosophies. The need to start off slow and simple by providing the basics creates a strong foundation. As in all teachings the building blocks must be "mastered" in order to move onto more complicated movements. Movements to each field is the way they express as well as the

way they prove their craft. Understanding of these teachings are portrayed eventually through the expression of the body. The body becomes the vessel to which the public will sense the emotions of the performers. It is through the art

of dance these expressions of triumph and self-gratification become evident.

For thousands of years, dance has been a means of communication to portray many different emotions, expressions, motives or otherwise. From love to war, dance is the basic and most important means of communication. Physical therapy will bring those who were previously unable to express themselves in a way they deemed fit, to a way they can proudly reclaim.

Reflecting back through the research process for this program, much of the hard sciences were not applicable to the program. Physical therapy falls under biology, but where does this leave dance. Socially we can firmly state dance contains hints of philosophy, psychology, and of course arts. We need to break down the movements of dance further and focus on the studies of kinesiology.

Kinesiology is the study of movement, particularly human body and human kinetics. As a study in science, kinesiology is in its infancy. Still young, this form of science is very important to the program because of its detail. For instance, if we begin with classical dance, then to ballroom, then to tango, then to the Argentine Tango, we would finally reach the amount of detail to which kinesiology focuses. Very much like architecture, kinesiology puts great focus on performance, detail, and prevention of accidents.



Having broken down each field to parts and their motion, we can see a direct parallel to architecture and focuses in tectonics and morphology. Dance holds a very close correlation to architecture. Within both professions time and space are two of the most important values. Both strive to convey or impact the viewer in some way whether it be emotional or otherwise. Dance choreographers, in perspective, are the architects of their field. We must both be able to see the bigger picture by assembling and perfecting all the details. The similarities can go on forever, yet following the basic question of this thesis, how can we combine two opposites?

We can look philosophically into the relationship of Dionysian and Apollonian or the ancient Chinese symbol of the ying yang. Opposites able to harmonize and compliment each other. The duality and struggle between creates the ground on which to build the connections between. Very much how one can not understand the commonalities until the differences are realized. Physical therapy, thusly is the yang to the architecture, dance, yang.

The importance of all three of these fields is important, it seems the relation between dance and physical therapy is the action while architecture can viewed as the vessel of expression. Dance uses body movement to express emotion, architecture uses the built environment to further impact its audience. The audience is not just

those who work or visit the building, everyone is apart of this performance. From the random pedestrian to the man or woman eating lunch across the street while having to look upon the design.

So many similarities have been found or drawn between each field that the importance of their connection is undeniable. From the very distinct parallels between dance and architecture, referring to the focusses on time and place, to the similarities of dance and physical therapy. The structure, and dedication to teaching allows a lot of what dance and physical therapy have, meld together. Not to forget the interesting relation found between kinesiology, dance, physical therapy, and architecture. All concern themselves with the parts, the motion, the detail, and most importantly the conveyance of emotion.

It seems the most common element to all of these fields and elements of each is the connection of emotion. A sense of expression is important to each of us all the way down to the deepest darkest parts of each of us. Kinesiology and physical therapy are the tool by which physical expression of emotion is studied. Dance and architecture are the means for each of us to share this with others. Both dance and architecture seem to force themselves upon everyone, you can walk out of the theater, but the performance still goes on, just like you can walk by and ignore a building, but it sill stands.



In the industrial district of West Philadelphia, lays the Philadelphia College of Pharmacy and Science. The Physical Therapy building designed by Mellet Architects, is 21,000 square feet with in a site which is 18' wide. The college, knowing the size of the site, kept the program basic, "Give us as many classrooms as we can get." (Russell, 1997) In the end the school received six classrooms, three labs, and around a dozen offices. The building also has a rooftop terrace, conference, and a reception area.

This case needed to overcome many obstacles, many from the college as well as the public and city. The college was not even sure if the expansion in the inner city was even a good idea. The public was worried about a middle school recess area right next to the site as well as concerns with possible graffiti. Environmentally, since the building is so thin, Mellet took advantage of the use of soft natural light from the north side only because of city concern not allowing windows on the southern exposure.

The college itself has been socially accepted with the surrounding neighborhoods and like most downtown scenes, has enjoyed the youth. The commitment for the project did not come easy. As I had mentioned before, many of the trustees were not accepting of the idea of expanding downtown mainly to rising crime rates, lower city involvement, and high tax burdens.

With this project cost of materials was one of the greatest concerns of the trustees. Mellet conquered this by using



All images from: (Russel, 1997)

**PHILADELPHIA COLLEGE OF PHARMACY**



easily manufactured materials and doing a little in-house manufacturing themselves, when it came to lighting. The structure of the building varies from side to side. The north is window glazing with steel structure, while the west side is glass block. One commonality is the base which is made of limestone.

All of the circulation space is retained to the north elevation with stair wells on the east and west sides. This layout creates a very strong linear geometry, with a positive negative symmetry.

This case study shows how a program such as this can respectfully utilize the space given. I think the importance of being aware of your neighbors and their concerns so that you can have a higher quality project. Having to "deal" with the space given is one of the top reasons architecture will always be pushed forward as a profession. The more and more we build, the less and less space we have to build. I believe many architects these days say they need plenty of space in order to become creative, but to me the most creative are those with the tightest constrictions.

This case study further solidifies the theoretical premise because of the ability to begin with something small and seemingly insignificant, and eventually working towards a presentation which is accepted and supported by all those who surround it. Otherwise the main ideas of the theoretical premise are affected by this case study, just further supported.



All images from: (Russel, 1997)

CASE STUDIES

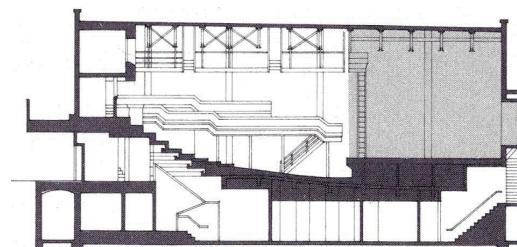
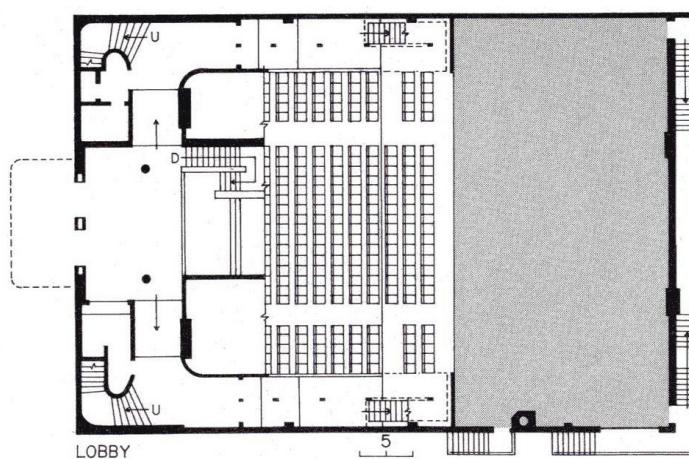
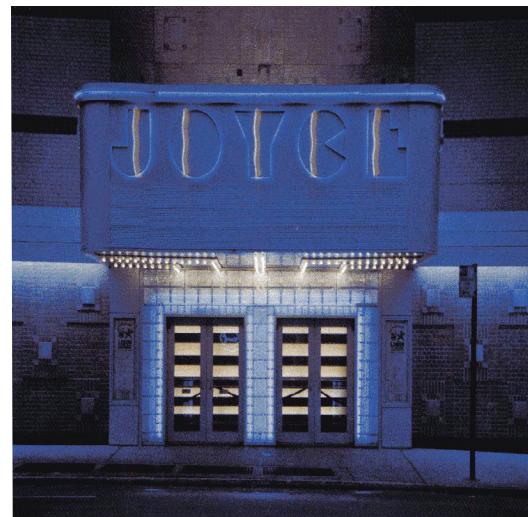
The Joyce Theater which is located in New York City, has been a staple of quality performances for many decades. This performing arts theater was previously known as the Elgin Theater back in the 1980s. We look at the Joyce theater for a few simple reasons. This is a rather classic example of completing a program which is focused on the performance.

The existing program contains a 472-seat venue, renovated by architect Hugh Hardy, which contains the needed technical specifications to serve small and large dance companies alike. Other than the main venue space there is a box office and back stage.

With this case study, we can see basic similarities with this as we can see with other theaters of its size. Most theaters do not come from a background of movie house turned pornography theater, turned into one of the most respected dance theaters in lower Manhattan.

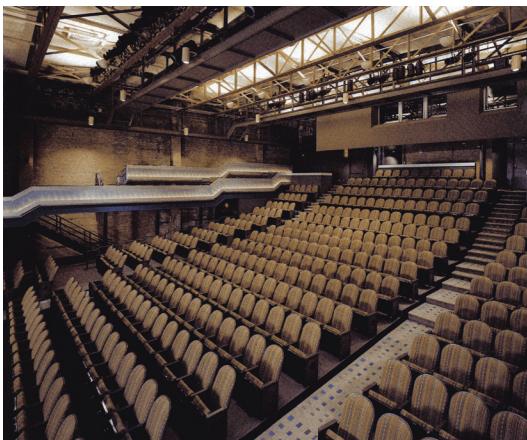
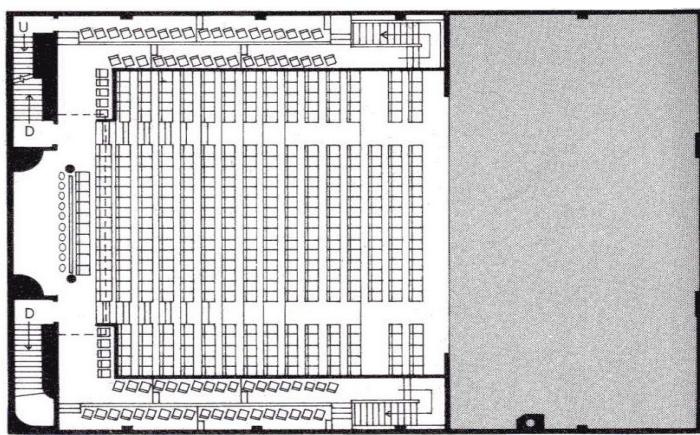
Socially I believe the Joyce is accepted if not for the basic fact the Joyce serves over 140,000 patrons 472 at a time. I believe the architecture of the building itself sticks out because of the classic artdeco exterior brick patterns. This theme is then concreted firmly with the use of the neon Joyce sign proudly parading itself.

It seems from the research of the performance venue there seem to be a few issues with the design and layout. One of the most prominent issues with the black box is that the lighting is to



All images from: (Hardy, 1984)

THE JOYCE THEATER



shallow in the room the right effects are not achievable for many performances. Another concern for many patrons has been the ability to view the whole production, especially on the sides of the venue. The geometry of each seat is very important not only to the success of how the public views the production, but also to the communication of the dancers to the public.

This theater design is another example of positive / negative symmetrical design. With the seats providing the positive and the stage being the negative. If there were to be a performance do these two switch places because of the activity.

I believe the stage then becomes the positive and the crowd become the negative.

The Joyce theater is very important to the thesis because of its history socially and the history to which it continues to create. Staying power such as this is important to any institution so that it is given time to evolve with the surrounding culture.

We can also learn from the Joyce's black box. I have mentioned a couple, what seem to be perceived, issues with this space, but this has not stopped, in any way, the patrons who come to view the quality and caliber of performances. These performances are invited, not only from around the city, but from around the world.

The Joyce has also expanded to be able to provide lessons as well as offer multi use spaces which can be used for performances as well as other ballroom type functions.

All images from: (Hardy, 1984)

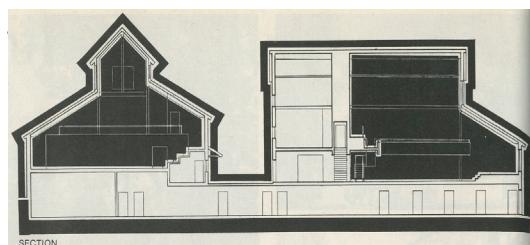
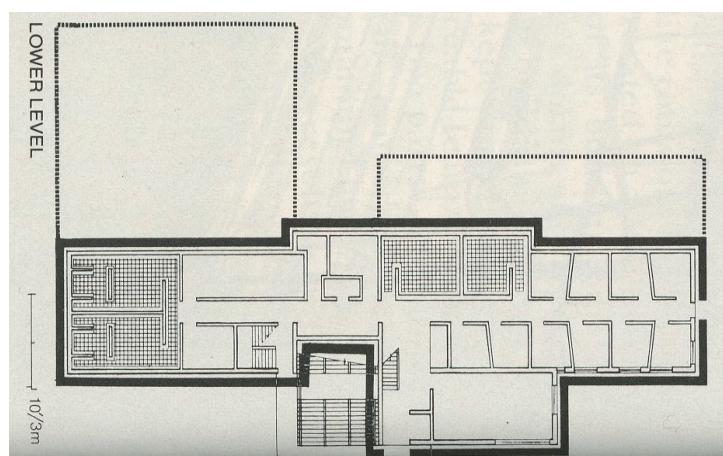
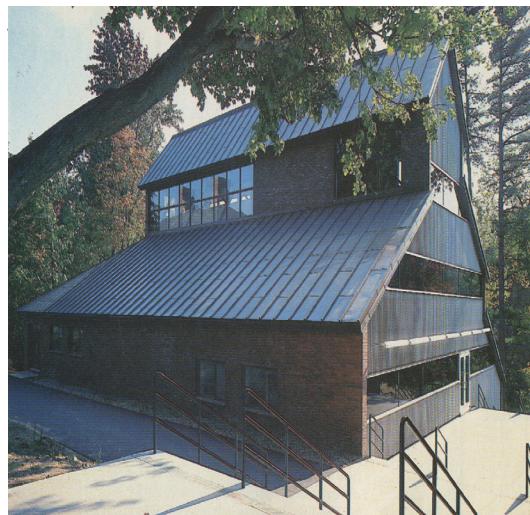
**CASE STUDIES**

This private school, located in Concord, New Hampshire, has become an excellent example of the next step in modernism, back in the day. The building is fairly large with main rooms having 40' ceiling heights. Overall the design covers around 34,000 square feet. Most of this being 17,000 square feet for 200 students and the dance curriculum. The program for this building was to provide spaces for the music and dance curriculums to me able to practice and perform.

This is similar to one of the other studies because this is also a focus in education. It is also very different, if not for the age of the project itself. The St. Paul's school has been around since the mid-1800's. Most of the architecture on the campus is gothic styled. The music and dance building is one of the first to other materials besides brick.

With a difference in material one might think the project does not fit the surrounding. This is true, but the style of building along with the size and orientation says otherwise. The surround environment is full of Gothic steeples, high clearstories, and general cathedral form. One could even relate this performance building to those built by Amish societies for use as barns. The layout of the campus is also kept with the rotation of 90 degrees between the two buildings to help break up the grid-like campus.

Looking at the section we notice that this student locker area is below grade. This corridor is the only thing connecting the two buildings. The locker area provide for both the dance and music students.



All images from: (Stephens, 1981)

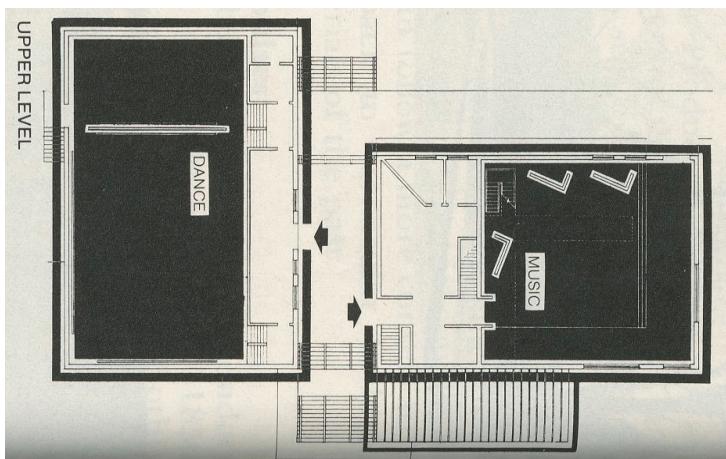
**ST. PAULS SCHOOL OF DANCE AND MUSIC**



Along with lockers, there is also a warm up space.

Natural light is able to fall through both of the 40' high rooms because of the very tall clearstory windows and the strips of windows along the elevations. Light is very important, especially to the dance program.

Between the two buildings, one does not seem to overwhelm the other in anyway. We can see the buildings are very similar in layout and design. Geometrically one of the buildings was rotated 90 degrees, again, to break the symmetry of the two buildings, yet they have a sense of their own symmetry alone.



This case study shows how two different programs can still coexist. With that said though, each has their own space, even their own building. From this we can presume with the two classes both playing different music they need to be separated. As I stated before, I am concerned with the audible level of the dance program compared to physical therapy.

Looking into the theoretical premise, we can conclude dance is very versatile when it comes to coupling programs together. It seems dance and physical therapy greatly concern themselves with education, which is an underlying idea of the theoretical premise. From this case study, I believe the two program's main spaces should be separated.



All images from: (Stephens, 1981)

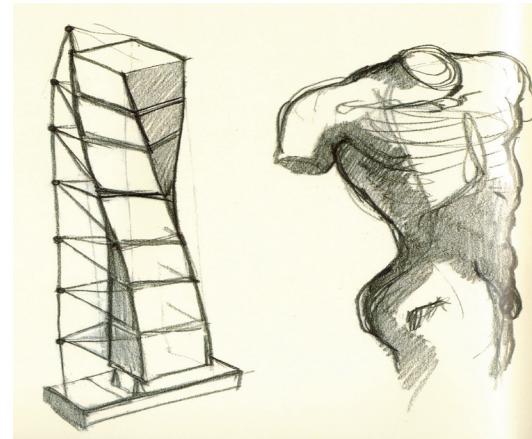
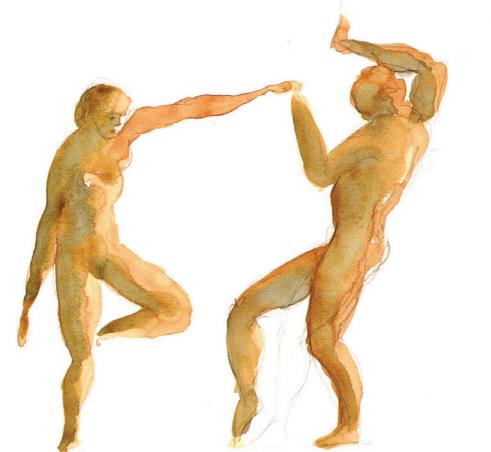
CASE STUDIES

These case studies have focused on the physical built environment, but like dance these are not the only forms of conveying movement. Through research we understand, dance, is a form of expression, but we also know that drawings are another form of expression.

Now if the built environment and motion happened to get together and have a kind, this child would then have some of the greatest understanding of how to express motion in the built environment. Santiago Calatrava would be this child. Looking at Calatrava's sketches we can see his understanding of how motion can be portrayed and eventually built.

For example, out of personal experience, having traveled to Milwaukee, Wisconsin to see the Milwaukee Art Museum on the shore of Lake Michigan. This project has a set of "wings" which open up every day a prescribed times. Using torsion these elements are able to rise with grace. These elements in their parts are not just for the simple use of rising and falling during the day. Its main use is as sun shade for the museum. Much of the building is covered in glass, so shading is helpful, exterior or otherwise.

Looking at the Calatrava sketches we see how two dimensional art can express movement. Now we look to the case studies. The St. Paul's Music and Dance Performance project because an important case study because of its dual program. It



Top: (Tzonis, 2005)  
Middle: (Tzonis, 2005)  
Bottom: (Lefavre, 2001)



is understood that dance should be by itself when it comes to main activity but with that we also know that there are spaces which can be shared by both forms of art. Another element I noticed was the fact that much of the dance space was flooded with filtered natural light.

In the Joyce theater, another element of performance setting happened to appear with the issues of geometry. This may not have a direct affect on the theoretical premise, but this does affect the design as a whole. The Joyce has been around as a dance theater for more than 20 years and has not shown any signs of slowing down. Staying power is very important to any program, this is why I choose a site where dance is embraced as much as the medical elements of the city of Rochester.

Physical therapy at the Philadelphia College of Pharmacy and Science, gives us a wonderful example, not only of program, but also of site identity. The site will be expanded to include the current Holiday Inn site so as to make room

for progress seeing as the Holiday Inn will be demolished for this purpose. There is also no room for site expansion seeing as the site is surrounded on the north and south sides but roads and a river to the east. The project needs to recognized this close relation because it will come as a great opportunity to show close relations and interaction, just like that of dance. The buildings wether or not it is intended will have a relationship and it will be important to focus on this.



Top: (Tzonis, 2005)  
Middle: (Tzonis, 2005)  
Bottom: (Tzonis, 2005)

## CASE STUDY SUMMARY

Being critical of this project and reflecting on project done in the past, there is not much similar at all. I have not found an example which combines two fields so far from each other yet still contain either one of the fields. Dance is almost always coupled with another form of art, while physical therapy seems to be with another field in the medical profession.

Dance, historically, did not even begin inside. Of course, I am speaking to the connection to architecture. Dance has become such a dominate tool of communication. Tribes in Africa use dance not only in celebration, but to suggest aggressiveness for war. Dance is used in Native American cultures to pay homage, not only to mother earth and father sky, but is used as communication to all gods of their cultures.

Coming to more recent history, dance through the twentieth century has gone through many fashions fades and with those has come under much criticism. Dance through the 1920's was fast and energetic. Getting into the 1950's and 1960's a much more conservative outlook on dance came about which ended up suppressing much of the energy within dance. Beginning in the mid to late 1960's a rebellion of sorts came about. This rebellion, not just focused in dance, seemed to be expressed through dance.

Through all of this excitement, many classic forms of dance endured the roller-coaster ride of social expression. Ballet along with many classical dance styles, like the waltz or foxtrot, were the styles who endured. Then again these styles

did not push any social taboo's or otherwise. The idea of being able to endure is a concrete attribute of art, but another attribute of art is to push social norm to the edge. Many times art goes beyond these norms to become taboo, but any such ideas are set within social understand.

Dance currently in society is huge. With television shows, millions of dance companies, and hundreds of dance academies and colleges, we see a healthy participation in dance. So many forms and styles of dance have found their way into mainstream social acceptability which was previously frowned upon. Many of the main categories of dance now include: Folk, Swing, Traditional, Latin, Ballroom, Hip-Hop, and Liturgical. Of course, each of these has many variations and not to mention with the freedoms of art, many styles are being mixed and combined.

For the purpose of this project we will focus on more traditional, or classical if you will, styles of dance. This is so there is more consistency and endurance throughout the project. I want this project to focus more on contemporary and classical dance.

The reason for this is that these dance styles are about motion, focus, timing, and strength. These dance styles will work well with physical therapy which is also about all of the qualities contemporary and classical dance hold.

Physical therapy is said to have been around since the time of Hippocrates, around 450 B.C. Being a field within the medical profession, Hippocrates, is where we get the Hippocratic Oath. This Oath basically swears to the ethical and best



treatment of patients as physician can offer. Most of what has been learned within the field of physical therapy has recently, like dance, flourished in the past 150 to 200 years.

The field itself has had to over come its many obstacles as well. Much of these obstacles were forced out of necessity more than anything. Physical therapy and the knowledge gained within the field has been done so through war. If not for war and the many people injured physical therapy would not be where it is at today. Many people losing some type of bodily function needed to be able to take care of themselves in some way. Sadly it took trial and error to help these people recovery in any way possible.

Physical Therapy these days, like dance, is broken into many sub-categories, which help to focus on more specified recovery. Orthopedic and pediatric recovery are what I am focusing on. Orthopedic therapy deals with muscles, tendons, ligaments, and bones. I also want to focus on pediatric therapy because dance is for all ages, and who likes to dance more than kids? Many of these kids are not even able to walk for ever but through dance they are given feeling of being apart of a group.

Orthopedic therapy involves a good amount of muscle building, massage, and repetitive movement. This repetitive movement is to teach muscle memory, where that memory has been lost. Most if not all of Orthopedic therapies patients are those just coming out of surgery.

Another field of study that needs a short introduction is that of kinesiology. Kinesiology is a much closer study of body movement. Literally meaning “the study of movement”, this science of the body is very new to the scientific community it is still not fully accepted. Many schools only offer a Bachelor’s degree, but many under the name of kinetics. The main goal of kinesiology is to study the movement and create preventative situations so that no one will be affected physically in the future. I believe the short history of kinesiology can be furthered with a facility such as my project. Just look at dance and physical therapy have gone through to be where they are now. Kinesiology is a much more focused form of study, just like sub-categories of dance. All dance is an art, which adds to the collective expression of dance. Kinesiology will offer that little bit of spice to the elements of science.

Rochester, Minnesota has become the home to a world class medical center called the Mayo Clinic. The Mayo Clinic is part of a three part medical facility which also has the Rochester Methodist Hospital and St. Mary’s Hospital. Together these three hospitals take up much of the downtown Rochester area. The Mayo Clinic is based on the practices of Dr. William Worrall Mayo and his two sons, Dr. “Will” Mayo and Dr. “Charlie” Mayo. The father joined up with a handful of other doctors to begin their own practice. From this the Mayo entity grew to what you see today. People travel from around the globe for many of the practices offered.

Let us get back to Rochester and its history. According to the city's web site, Rochester's first



citizen was a man by the name of George Head. This gentleman moved from Wisconsin with his wife, father, and brother. George staked his claim during the mid-1850's, when land was free. From there they created a settlement fitted with businesses and hotels for visiting or passing settlers.

Many of the towns in these days were started by immigrants coming west to claim their little piece of the american pie. A majority of the settlers moving west kept going to the west coast. Around 1870, it is said that Dr. William Mayo visited Rochester. The first hospital opened later that century because of a tornado hit the city. This first hospital was named St. Mary's.

Together, dance and physical therapy, have seen some rough times. Socially both are widely practiced and accepted. We currently can see a few examples of how physical therapy has branched out past what may be considered traditional medicine practices. Actually, these activities are now being called alternative medicines. I am speaking of yoga and pilates. Now, I know these aren't just alternative medicines, many people do these for general health and fitness. As well they should. Both have the participant focus a lot on body control, position, and create great strength training by just using the bodies own weight.

Yoga and pilates are just the beginning of activities that can help with therapy. Dance has many similarities but also differs greatly with these activities. With the other activities each person is working by themselves, and this may be the biggest

criticism for those in therapy. I want this project to be a social event mainly. I understand the importance of working one on one with a therapist, but for people to fully recover they must re-learn how to interact with others.

I have placed the project in Rochester for two simple reasons. The first reason is of course the Mayo Clinic and surrounding medical facilities. My project will have the ability to partner up with the Mayo facility which will provide many of the patients an opportunity for another way to recover. The second reason for choosing Rochester is the availability of dance companies. Not only does Rochester have a half dozen within the city, but the Twin Cities, have a very large dance culture and population.

With both of these professions in such demand and close proximity to each other we know this program and building will last far into the future and create its own history. The future of the program depends greatly on the architecture.

Creating the appropriate architecture will be one of the most important ingredients in making this work. The design must understand the most homogenous blend of spaces while giving each field its respective space, so as to not step on each others feet. The design must be able to lead the program into the future and sustain the same high quality of care.



I wanted to create a project that would be able to fully encompass many aspects of education from many different fields. To properly research this project, I had to look primarily into the arts and physical education. Using my other background studies of psychology and philosophy, coupled with personal experience, I understood much of what needed to be looked upon for research purposes.

Arts would give me the background of dance and the movements of the body concordantly. I have not been totally negligent of the art of dance my whole life having known many dancers and seen many performances. Performances are being taught in many educational systems not only in private dance academies but also within the public schools. Academically dance offers a sense of structure and break from hitting the books. Dance allows for personal expressions and freedom. Students of dance are given basic structure of counts, body movement, expression, and sense of place.

Through the act of public performance, all of these qualities can be appreciated, although sometimes they also become ridiculed. Dance builds many personal qualities within the performers. Confidence being one of the most important and most gained quality trait of all dancers. Confidence is very important not only in the dance field but also in the physical therapy field for those recovering.

The blending of these two fields, within an architectural context is something which is not commonly encountered. More often than not, architecture contains one main

purpose with a possibility of a few other smaller programs. This project is important to the profession because of the way these two professions will blend together to provide architecture the opportunity to see how two major programs will come together under one roof. I hope that this project will further the profession by offering an example of how to create space for the art and medical fields so that they may be able to better each other.

With this project I started this whole process with the idea of blending two things that are far from each other with seemingly no similarities. From this, I just happened to think of dance and the full physical capabilities and the expression of this idea. Then I came across physical therapy which focusses on those with physical handicaps. So now we have our polar opposites, full physical control with dance, and minimal mobility with physical therapy.

Using these two I want to show and express my passions of art, psychology, and architecture. With these I also want to venture into new territory, with the introduction of the medical profession. I love how with each new project in architecture we always learn something new. My goal is to successfully show how these two professions can relate through architectural expression and form.

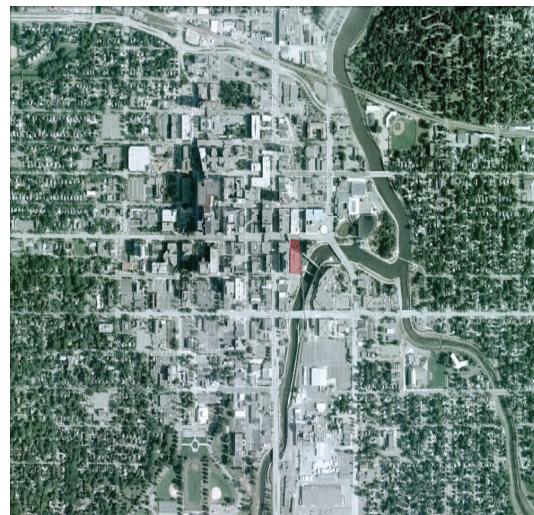


Rochester, Minnesota is located at 44 degrees, 1.3 minutes North and 92 degrees, 28.2 minutes West. In the southeastern part of Minnesota, Rochester is the largest city in the area other than the twin cities which is a little more than an hour north. Most of the city of Rochester is laid out according to the cardinal grid that dominates much of the mid-west territories.

Within the surrounding area of the site, much of the texture is that of a downtown, concrete jungle. The site chosen is closer to the river, so there are views of the river which offer some opportunity for views of green space. The downtown area is dominated with concrete and glass, like that of most major metropolitan landscapes. The geometry of the site follows that of the rest of the city except for the south eastern side which is dictated by the rivers edge.

The site gains most of its sunlight from the morning and then through the afternoon hours. In the evening the Holiday in on the, direct west, side will produce the most shadow. In the bottom photo from the site looking toward the east, we see the Zambro River along with the sunrise.

From the picture taken from the site we can see the river's edge is tightly controlled by a man made retaining wall to help relieve the waters during the flood season. Much of the space directly next to the water, within the walls, is covered



Aerial Photos by Google Earth

## SITE ANALYSIS



with tall grass and small sandy areas of silt.

Being that the site is along the river's edge, the topography changes rises slightly from east to west. The Zambro river does flood, but is controlled very well by a system of dams. As you can see from the photo the right, the city has constructed walls around the river along with a running / walking path. Also from the photo you can perceive the an elevation change of about 25' from the current water level to the top of the wall. Directly around the site there are no objects or buildings other than on the west side. The west side is dominated by a Holiday Inn Hotel.

With the hotel to the west, being so close to the site, there may some issues with available views. There also needs to be a concern for the guests of the the hotels itself. Will my project give them something to look at or nothing at all? In an urban context such as this, we must be mindful of our immediate surroundings and be able to respect those boundaries.

There are a few reasons this site specifically was chosen. The first being, the connection to mass transit, skyway, and proximity to the hospitals. The skyways of Rochester are some of the best examples of how to keep a city connected. Another reason is because of the views to the south and the east, towards the river. These views allow the building to be within the city without particularly



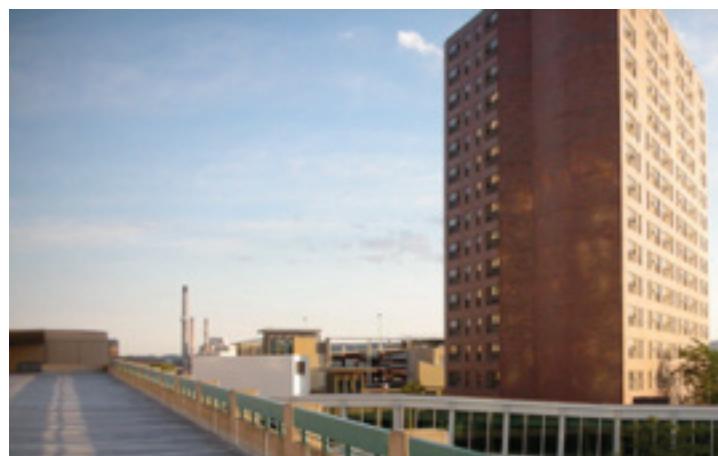
feeling in the city, as far as views go.

Much of the surrounding area is filled with businesses and hotels. There is not much permanent residential living in the downtown Rochester area. The city is almost totally consumed by the activities of the hospital and anything dealing with the hospitals. Like I have said, people visit Rochester from around the globe, therefore the hotel industry is a huge part of the city.

The available light to the site, is dominated by morning and early afternoon sun exposure. The warm morning sun will be a good welcoming element to everyone coming to the building. Light will also be important to practice spaces for the dance program.

Since the site is within the city there is not a whole lot of vegetation around, but since we are close to the river there is a visible source of water. The water is running. Not sure about whether it is polluted or not, but I would say that I am not going to be drinking from it. The majority of the winds come from the north and south of the site.

The site is in downtown Rochester, an urban area, so there is human use apparent. There seems to be no signs of distress on the site.



View looking north showing morning sun exposure.

## Engineering Classification of Soils

Lat: 44° 1'15.57"N  
Long: 92°27'43.06"W

The Kalmarville type of soil has high potential for frost action. There is a moderate risk for corrosion on uncoated steel, and a low corrosion risk for concrete.

The soil is frequently wet, but rarely flooded.

## Engineering Properties of Site Soil:

Surface: Kalmarville Silt Loam

0" - 10": Silt Loam

10" - 43": Sand, sandy Loam, silt loam

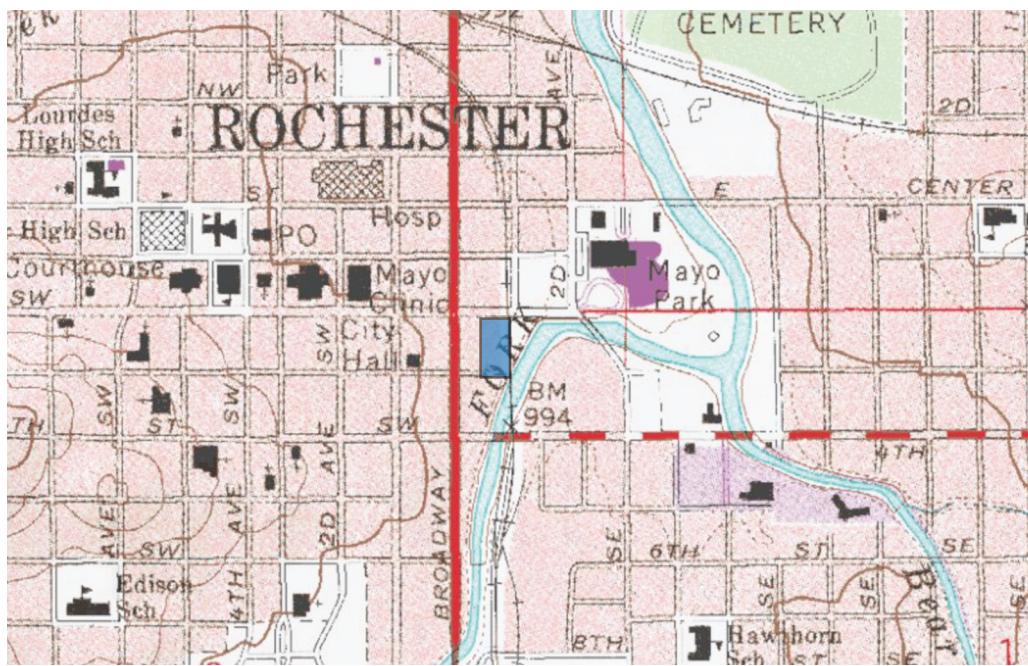
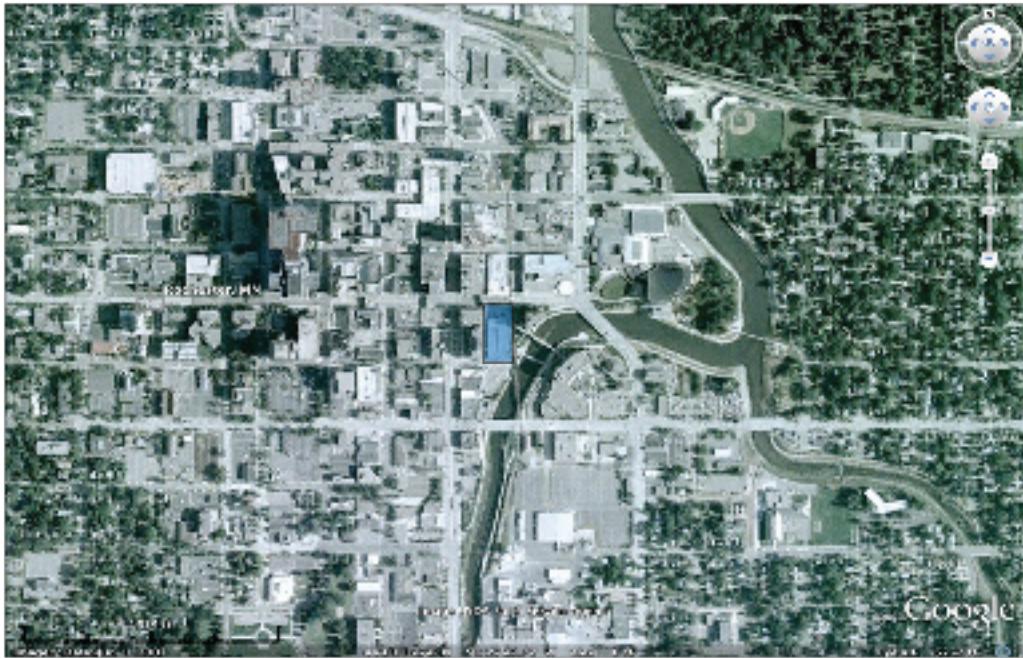
43" - 60": Sand, coarse sand, loamy fine sand

Karmarville Frequently Flooded.

Month	Moisture	Top Depth	Flooding Frequency
January	moist	0.0	rare
	wet	1.5	
February	moist	0.0	rare
	wet	3.0	
March	moist	0.0	frequent
	wet	1.0	
April	wet	0.0	frequent
May	wet	0.0	frequent
June	wet	0.0	frequent
July	moist	0.0	rare
	wet	1.0	
August	moist	0.0	rare
	wet	2.5	
September	moist	0.0	occasional
	wet	3.5	
October	moist	0.0	rare
	wet	2.0	
November	moist	0.0	rare
	wet	0.5	
December	moist	0.0	rare
	wet	1.0	

(<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>)

QUANTITATIVE ANALYSIS



Looking at the topography map the site is on a <4% grade, so there will be no problems building. We also know this because there is currently a structure at this site. There may be a concern about drainage, but currently the site is paved over.



This map shows the main circulation of Rochester. The purple and green is the skyway. You can also see the vehicular circulation as well. The site is pointed out for reference purposes and to show the connection to the skyways.

Site and property lines.

North View

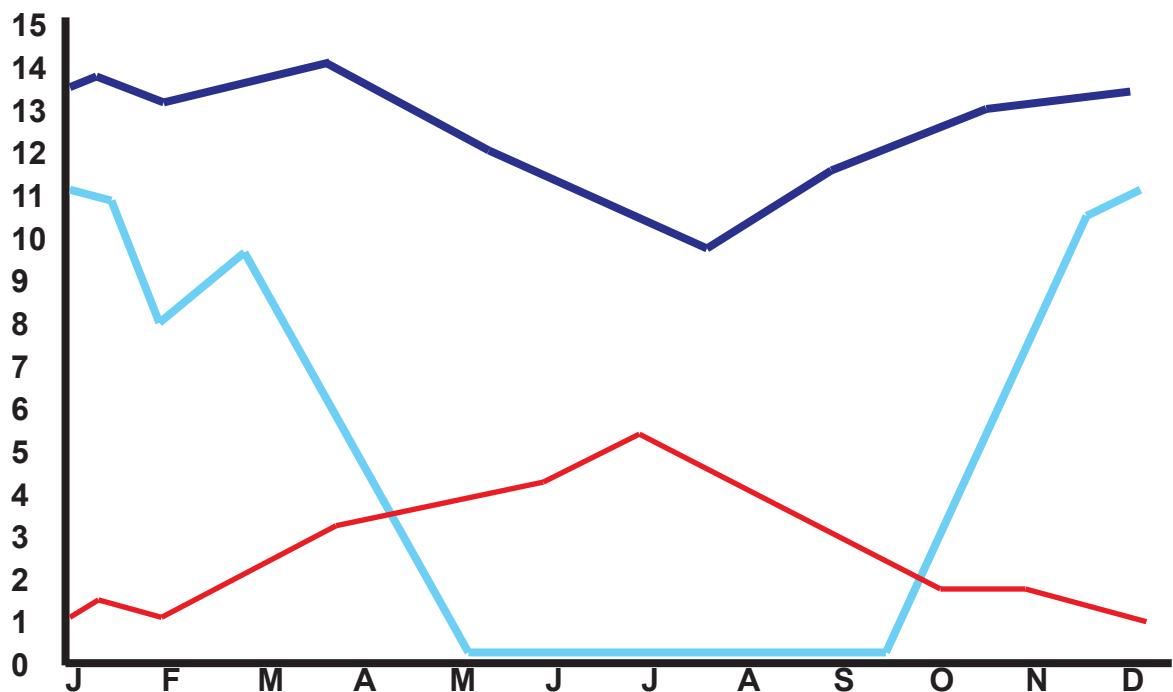


East View

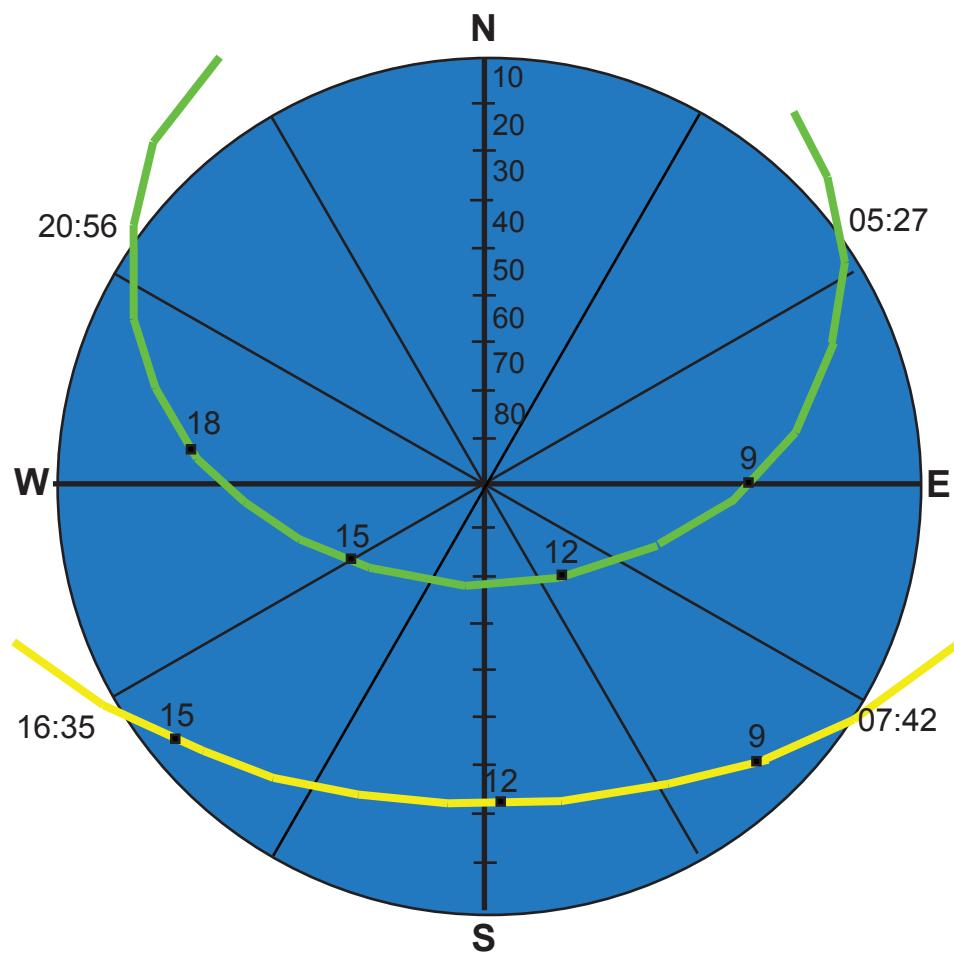




SITE RECONNAISSANCE



Wind Speed (MPH) ——————  
Snow Fall (IN) ——————  
Precipitation (IN) ——————



The chart shows the sun rise and sunset of Rochester. The Green line shows the summer solstice with the times of the day along the line. The yellow line shows the winter solstice and its times of day. We can also see at what angle the sun is at during those times of day as well.



## **Main Spaces:**

Performance Theater: (Seats 500)

35,000 sq. ft.

Practice Studios: (2 total)

4,000 sq. ft.

Therapy Gym:

2,500 sq. ft.

Cafeteria/Reception Hall:

10,000 sq. ft.

## **Secondary Spaces:**

Offices: (30 varying size)

3,000 sq. ft.

Rest Rooms:

1,500 sq. ft.

Receptions:

6,000 sq. ft.

Examination Rooms:

3,000 sq. ft.

Circulation space:

7,000 sq. ft.

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\*\*\* (Crisp, 1974)

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\*\*\* (Humphrey, 1959)

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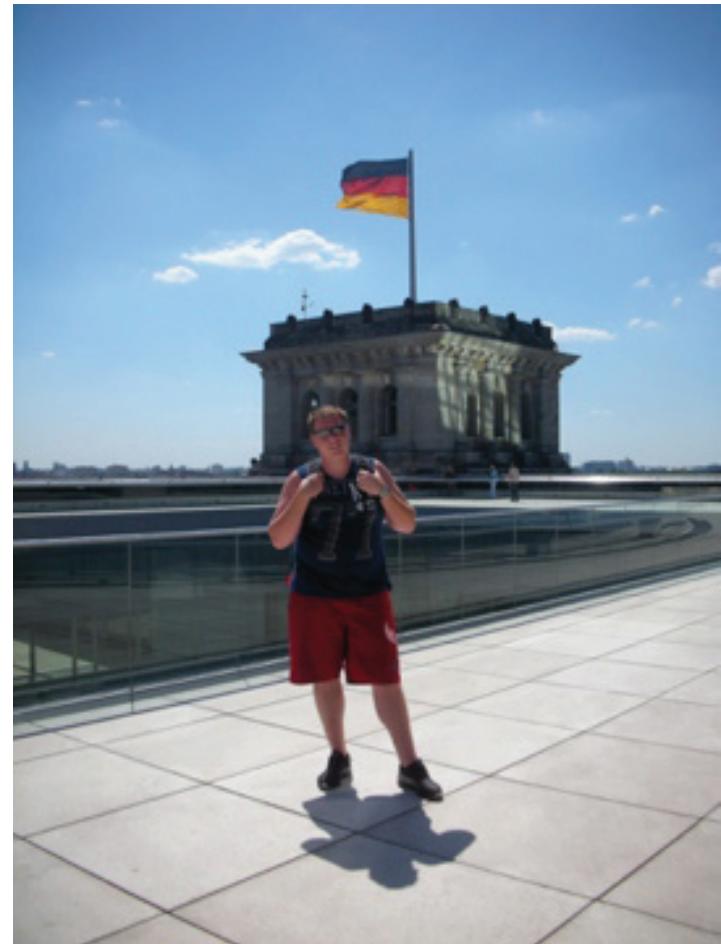
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"Never make a promise you can't break"



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