

SYNERGY

INTEGRATING PERFORMANCE AND THE FINE ARTS



SYNERGY: INTEGRATING PERFORMANCE AND THE FINE ARTS

A Design Thesis Submitted to the
Department of Architecture
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By
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of
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North Dakota State University Libraries Addendum

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ABSTRACT

Music has proven to be beneficial to students, both academically and socially, as has arts education in general. Over the years, the arts have proven to take giant strides when the artists are a part of an environment that encourages collaboration within and between artistic disciplines and social backgrounds.

This design strives to create a contemporary and sustainable environment that encourages an enjoyable, collaborative, and educational experience for performance and fine arts students of various backgrounds and nationalities. This includes designing a performance and fine arts educational facility as well as revamping current lodging for campers and staff.

NARRATIVE

I have been involved in the arts ever since I can remember. I was rarely seen without a pencil in my younger years and was encouraged to take art classes in the summer. I doodled always --when I wasn't reading. This eventually developed into a skill with a paintbrush and the massacre of 400+ page books during my middle and high school years. I also got involved in band, starting off as the lowest instrument (as an alto saxophone) in a 10-piece 5th-grade band and ending up a section leader in a 170-piece college marching band, of which I am in my 5th year of membership. I have played with all but one ensemble available to saxophonists, from quartet, to saxophone choir, to University Band. I even tried choir for the first time in college, thanks to my non-architect friends I made in band, and I learned a lot from it, and not just musically.

My experiences in the arts have taught me more than just color theory, chords, and grammar; I learned about personal responsibility, the importance of collaboration, and how one detail can change an entire perspective, for better or for worse. I have also have been able to connect with students of other disciplines, such as art education, music, vocalists, and the occasional creative writer (this doesn't include the plethora of engineers) who have helped me think differently about my designs, instead of seeing them from a strictly architectural perspective. For example, playing saxophone in NDSU's Beckwith Recital Hall creates a certain understanding of the space and architecturally analyzing the hall creates another. Singing in the same space adds an even different perspective to those. Being aware of one perspective can work on its own, but the knowledge of all of them can be applied to



more than the current activity.

These experience from these perspectives made me realize that all forms of art are connected, most notably in two categories: historically and use of vocabulary. For example, anything Baroque can be defined as classical in structure, yet obnoxiously ornate, and expressionist pieces as exploratory, putting feeling over reason. Architects, painters, musicians, dancers, and poets are no stranger to terms like rhythm, structure, color, and balance. These are universal terms in the realm of the arts; although the means of the art's creation may vary. Despite the similarities, this variance of means became significant enough that artists of different disciplines became separated from each other during their education, and for the most part, professional lives.

Segregation, in any sense, does not lead to much progress, and when it comes to the arts, the greatest advancements and movements came with interdisciplinary collaboration. For example, Twentieth-Century Paris, France saw collaborations between Pablo Picasso -- a painter -- and Guillaume Apollinaire, a poet. They, along with others, created the Cubist movement. Another collaboration is between that of the French and Russian artists in the fields of music and dance. The result was striking to the viewers then, however they are now known as the most notable and recognizable ballets of all time. These accomplishments would likely not exist if not for Paris being the place for artists to come and be surrounded by others with the same interests, to discuss and develop their new ideas that they would not have been able to anywhere else in the era.

The connections between the artists themselves, not by what they make, seems to be the key to artistic revolution. These connections need an environment to thrive,

having need of being made in the right place at the right time. The relationships – of various types – between artists glue them together, whether the professions are the same or different, to create a stronger and, again, revolutionary product. This can be seen in the folk-inspired ballets of Stravinsky or the fragmented creations of Picasso. It seems artistic revolution prefers the company of friendly chatter and the relationships are the catalyst.

This design will provide that environment, one that will cultivate future connections through both nations and interests in the arts to further the growth of artist and artistic creation, all the while enjoying the experiences created.

**“THE DIVERSITY OF THE ARTS DOES NOT HINDER
BUT RATHER EMPHASIZES THEIR UNITY”**

-OCTAVIO PAZ
POET



PROJECT TYPOLOGY

A Performance and Fine Arts Educational Center brings together students of the arts, encouraging collaboration between subjects typically taught separately from each other. Performance arts include, but are not limited to, bands, choirs, orchestra, various forms of dance, as well as theater. Fine arts include sculpture, painting, and photography, as well as creative writing. This facility provides space for large performances, individual and group practice or work, private and group lessons, and space to socialize and share ideas.

In addition, the project includes both student and faculty lodging, which also provides private space and space wherein the occupants can create a sense of community, regardless of artistic discipline, nationality, or background.

CASE STUDIES

The following case studies were selected based on their typological emphases, their variation of cultural location, specific attention to education, and community involvement that comprises of all age groups.

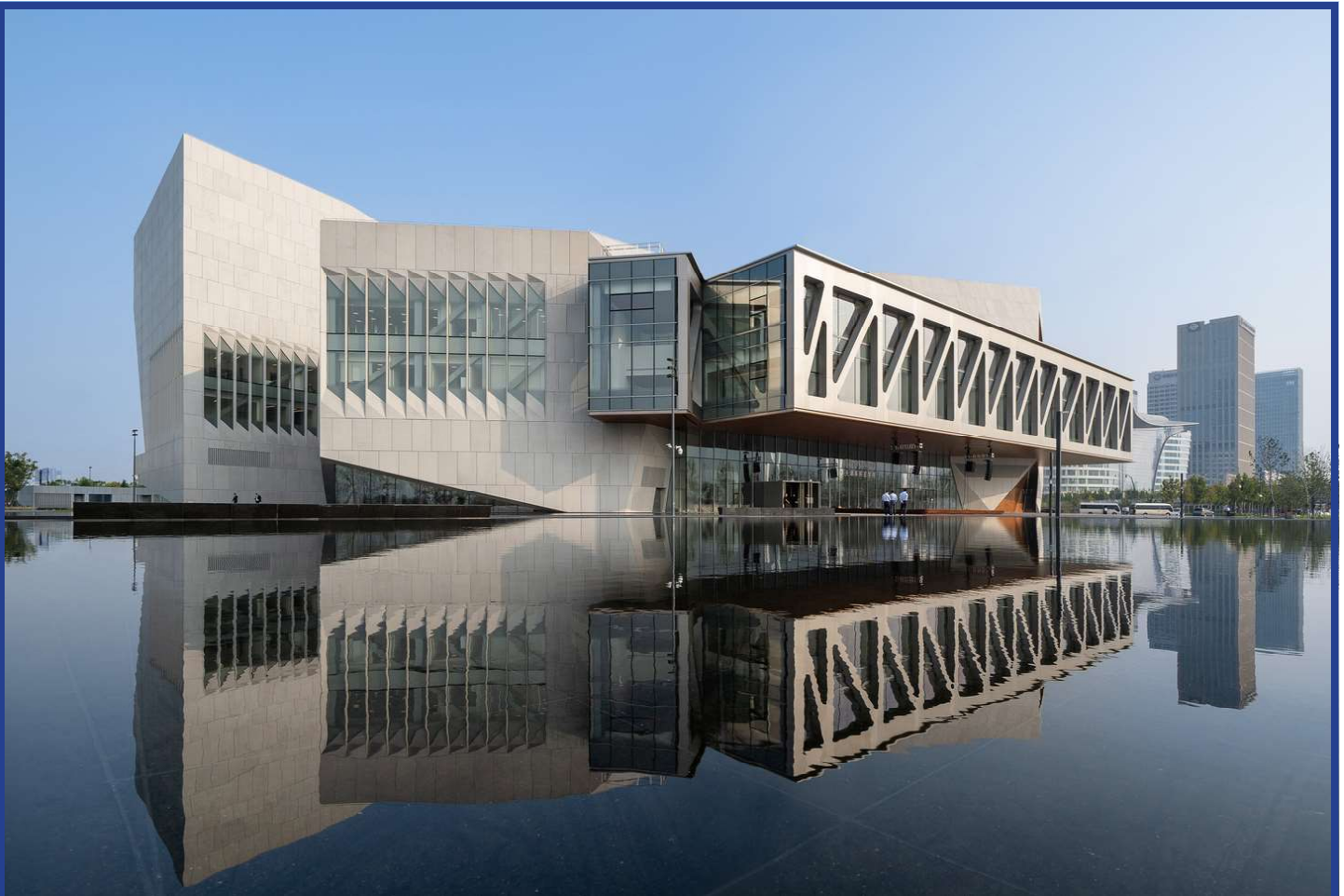
TIANJIN JULLIARD SCHOOL

ESTUDIO MASSANA

BALLET MEMPHIS

TATEV MONASTERY

***ARLINGTON ISD CENTER FOR
VISUAL AND PERFORMING ARTS***



TIANJIN JULLIARD SCHOOL

BASIC FACTS

Architect: Diller Scofidio + Renfro

Year Built: 2020

Square Footage: 32500 m² (350,000 ft²)

Typology: Performing Arts Center

Location: Binhai, China

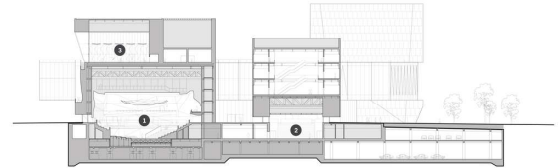
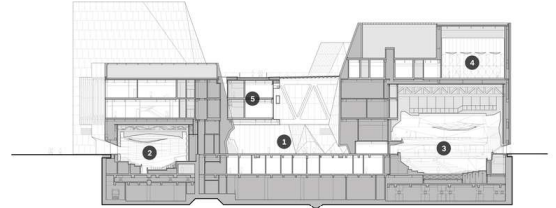
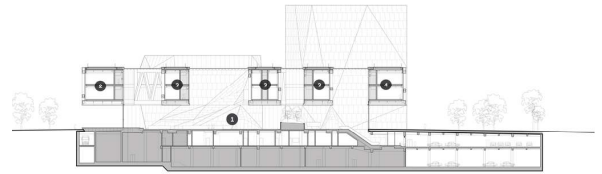
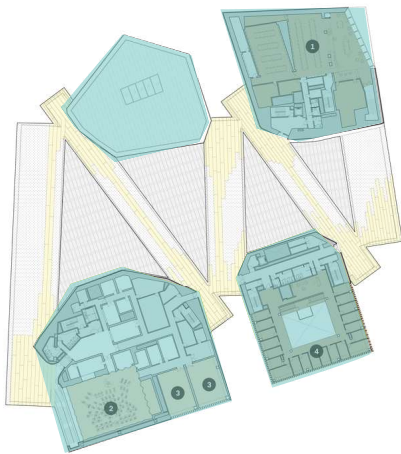
SUMMARY

Program:

- Lobby
- Recital Hall
- Book Store
- Coat Check
- Box Office
- Black Box Theater
- Concert Hall
- Cafe
- Faculty Lounge
- Teaching Studios
- Practice Rooms
- Classrooms
- Student Lounges
- Administration
- Library
- Orchestra Rehearsal
- Keyboard Rooms
- Faculty offices

This facility is used for performance, practice, and research. It is designed to welcome the public into the creative process as well as the performance of music by using communal spaces and interactive exhibits. The facility was designed by the same architects employed by the New York campus; the design connects both campuses while also capturing the spirit of the area. In addition, the campuses are connected via the latest telecommunication technologies and features a "Julliard Imagination Space" used for digital exhibitions and streaming the other campus' live performances. It has 690 concert hall seats, 299 recital hall seats, and 225 in the black box theater. The school provides educational opportunities for Pre-College students ranging from ages 8-18 as well as graduate student opportunities, which includes being the first performing arts institution in China to confer a U.S.-accredited Master of Music (MM) degree.





SPACIAL ORGANIZATION

The design is comprised of four pavilions that house the larger elements, such as the concert hall, recital hall, offices and retail space. The educational spaces are connected by glass bridges containing classrooms, teaching studios, and practice rooms. The public spaces, on the other hand, are open to the



CONNECTIVITY

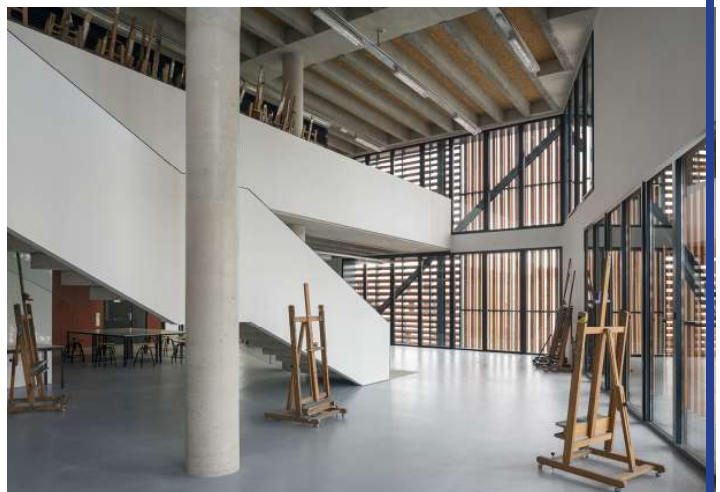
There are five glass bridges that go over a large public space that extends into the surrounding park. This creates a place for students, visitors, and audience members to mingle and take a break. This space also provides a place for students to practice and perform informally. The glass bridges create visual connections between the private and public spaces, providing an environment where all occupants feel involved, despite their current occupation.

The aforementioned Juilliard Imagination space provides even more connection

TAKEAWAYS

This project is a good example of making connections, both spatially as well as socially, as demonstrated in the private yet public nature of the glass bridges and the rooms attached. On a similar note, the Juilliard Imagination room and international collaboration between the campuses is a unique idea, likely working well in the current and past COVID-19 era. The concept is something to consider moving on with the thesis project.

There is a lot of compartmentalization within this facility, especially considering it is focused on music. Knowing this amount of compartmentalization occurs within one subject of fine arts will be taken into consideration when including more than music under one roof.



ESTUDIO MASSANA

BASIC FACTS

Architect: Estudio Carme Pinós

Year Built: 2017

Square Footage: 118,510 ft²

Typology: Art and Design Center

Location: Barcelona, Spain

SUMMARY

Program:

- Classrooms
- Studios
- Lobby
- Kiln Room
- Galleries
- Terraces
- Student lounges
- Faculty Lounge
- Faculty offices
- Administration
- Auditorium



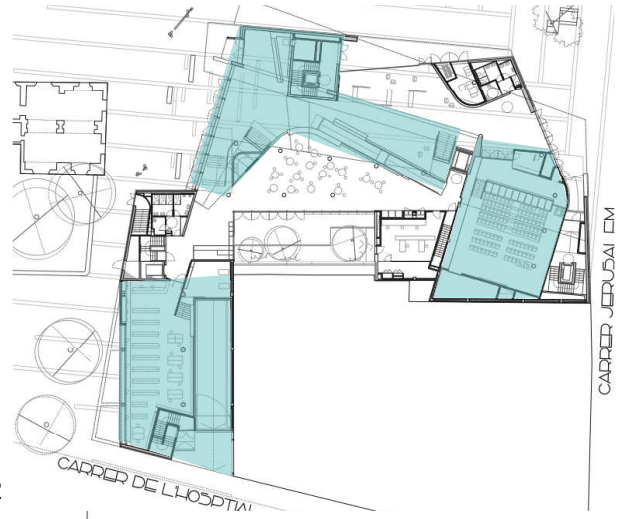
This facility is an art and design public education center that focuses on visual arts, applied arts, and design. It is located in the heart of Barcelona's historical district and is situated to play off nearby buildings and streetscapes in order to not seem bulky. It was designed to have a more sculptural appearance than the surrounding buildings.

CONNECTIVITY

There are multiple open staircases spanning the main lobby. These provide a connection between the students, as they are able to observe the public, and the public to the students. The facility encourages open communication between students of different fields of study, which is reflected in their studio areas. The school also encourages collaborations between students of different cultures, in order to further enhance their art.



1



2



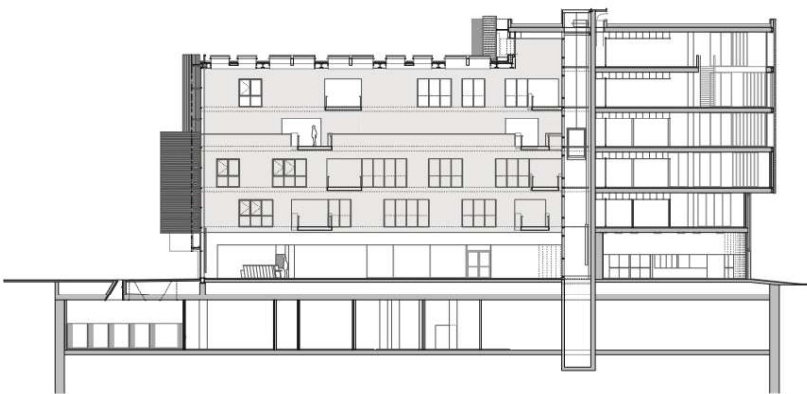
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SPACIAL ORGANIZATION

The design is comprised of two block forms rotated and stacked on top of each other. There are three consistent large spaces on the East, North, and South sections of the building, with smaller classrooms or studio spaces filling in the rest of the school..

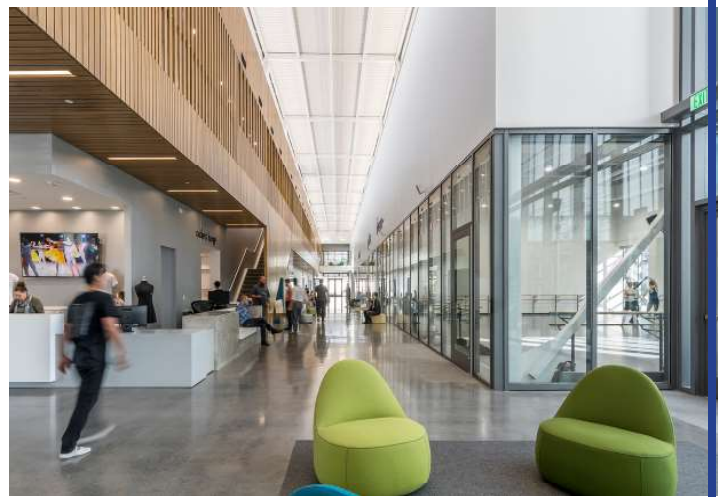




TAKEAWAYS

The design is very condensed, yet contains everything needed for the facility to function and students are able to mingle and share ideas. Being consistently exposed to different ideas, as well as visually exposed is something to take into account when designing the thesis project.

The building's aim to be a work of art while also being a haven for it is another aspect to consider when designing the project. That, along with how it reacts with other buildings nearby, which will be a concern when it will be placed alongside already existing buildings on site.



BALLET MEMPHIS

BASIC FACTS

Architect: archimania

Year Built: 2017

Square Footage: 44,270 ft²

Typology: Dance Hall

Location: Memphis, Tennessee

SUMMARY

Program:

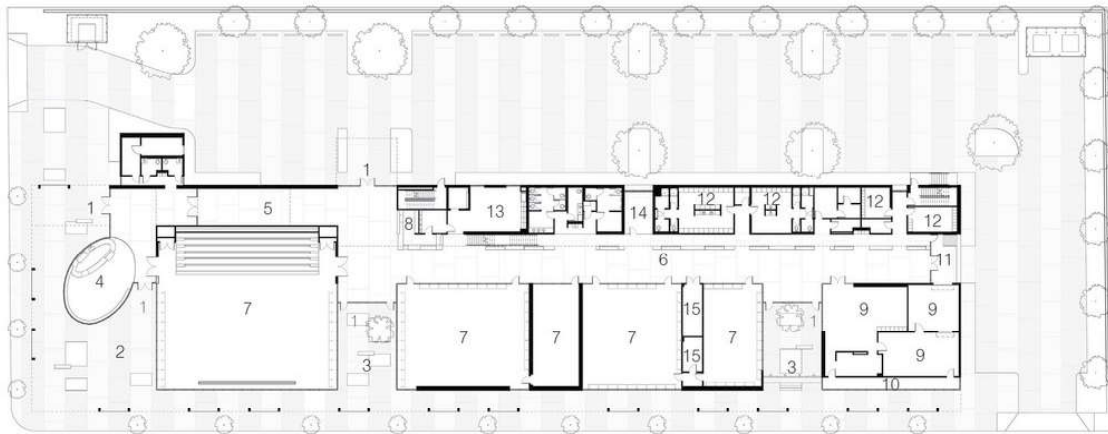
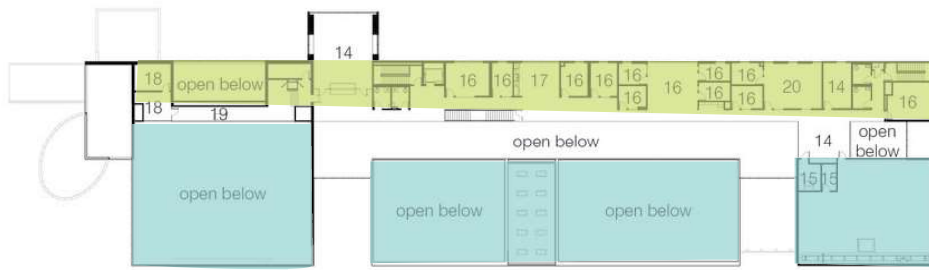
- Lobby
- Cafe
- Offices
- Studios
- Flying Hall
- Soaring Hall
- Reception
- Costume Shop
- Costume Display
- Dressing Rooms
- Lounge
- Conference Room
- Storage Room
- Break Room
- Control Room
- Balcony
- Production Room

This facility is used by the Memphis Ballet Company, however, is also a community center that contains a children's dance school, and community dance and Pilates. The Company puts an emphasis on education and connections in the Memphis community. It comprises of multiple studios connected by exterior courtyards.

FORM

The form of the building was designed with layers of glass and metal with the intention of looking similar to a music box. Screens and courtyards are used to create a sense of movement, while also showing glimpses of the movement of the dancers within, using materials to represent its moving occupants. It is designed so that the occupants move throughout different environments, from the courtyards, to the studios, to the lounges.





floor plan

0' 64'

Legend

- | | | |
|----------------|--------------------|-----------------|
| 1 entry | 8 reception | 15 storage |
| 2 urban plaza | 9 costume shop | 16 office |
| 3 courtyard | 10 costume display | 17 break room |
| 4 cafe | 11 loading dock | 18 control room |
| 5 flying hall | 12 dressing room | 19 balcony |
| 6 soaring hall | 13 lounge | 20 production |
| 7 studio | 14 conference | |



SPACIAL ORGANIZATION

This dance hall is designed with multiple pods, which are connected by lounge space or courtyards. The pods are separated by function, with larger rehearsal spaces in one group, offices and other smaller rooms in another. Some of the spaces are multiple use, such as the large rehearsal hall that also doubles as a performance hall.

Discover

CONNECTIVITY

The design is comprised of pods and these pods are connected by communal space. The second level is visible to this public space. This space to relax and an opportunity for the different users to connect between different skill levels. The pods also provide a variety of environments for the same purpose within close proximity, instead of having being secluded away from those spaces similar to it.

TAKEAWAYS

This project groups together similar functions and connects them to other groups with similar uses. The connection between these groups encourages interaction between the various users of the different spaces. The integration of courtyards as connections may not be feasible in colder climates, but brings into question the usage of nature in the design, after all, the project is in the Peace Gardens.

The architect's inspiration is also one to note, as movement can be embodied in a design as well as dance itself. This will be a point to consider when coming up with a design concept.



TATEV MONASTERY

BASIC FACTS

Architect: Tatev (unclear)
Year Built: 9-13th Centuries
Square Footage: N/A
Typology: Monastery
Location: Tatev, Armenia

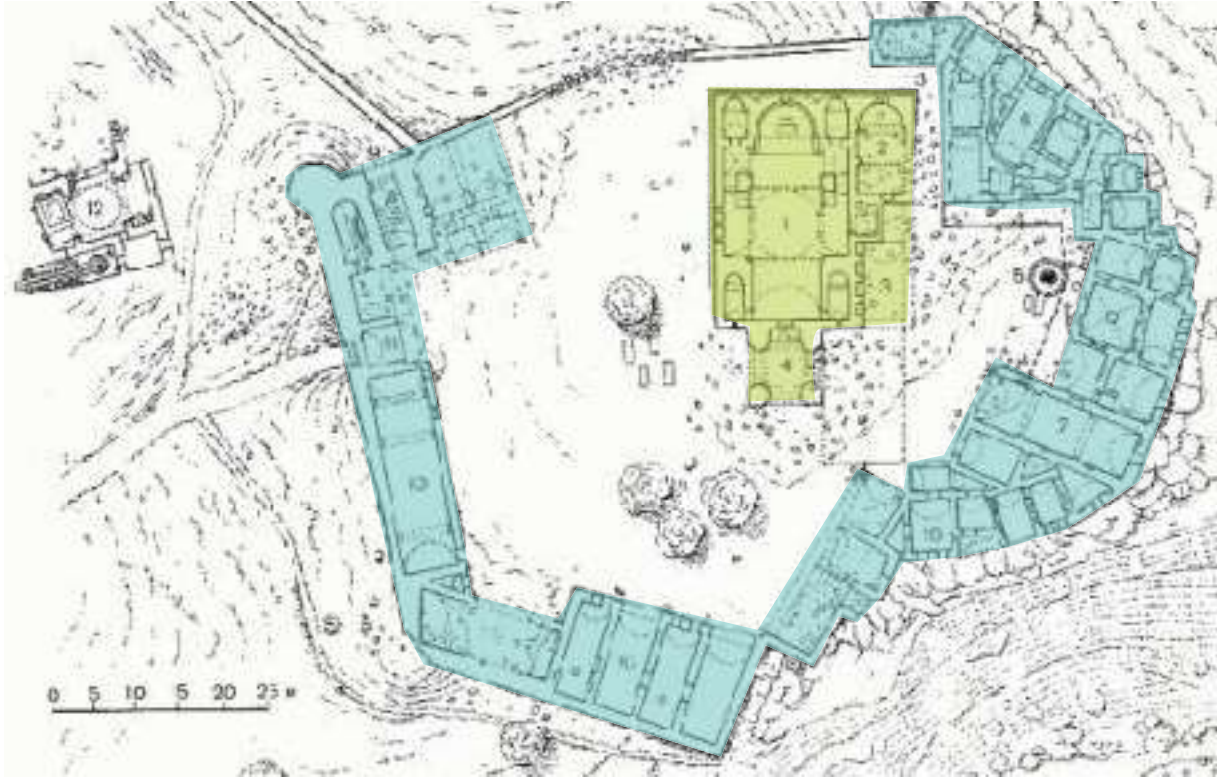
SUMMARY

Program:

- 3 Churches
- Library
- Refectory
- Bell Tower
- Mausoleum
- Administration
- Cells
- Bishop's Residence
- Storage
- Classrooms
- Gazavan (pillar)
- Other Auxillary buildings
- Dining Hall
- Bakery
- Kitchen
- Winery

The Tatev Monastery is one of Armenia's top tourist attractions, however, it is quite remote, accessed by foot or by way of the longest cable car on the planet. The monastery is steeped in historical significance, as it served as the intellectual center for both monks and artisans of Armenia. It developed into Tatev University in the 14th century, becoming a hub for the advancement of Armenian culture. It taught humanities and social sciences, philosophy, oration, grammar, literature, History, calligraphy, artistic design, painting, ancient music, and musicology. The site has survived through earthquakes, various enemy attacks, and intense cultural turmoil over its 12 centuries of existence.

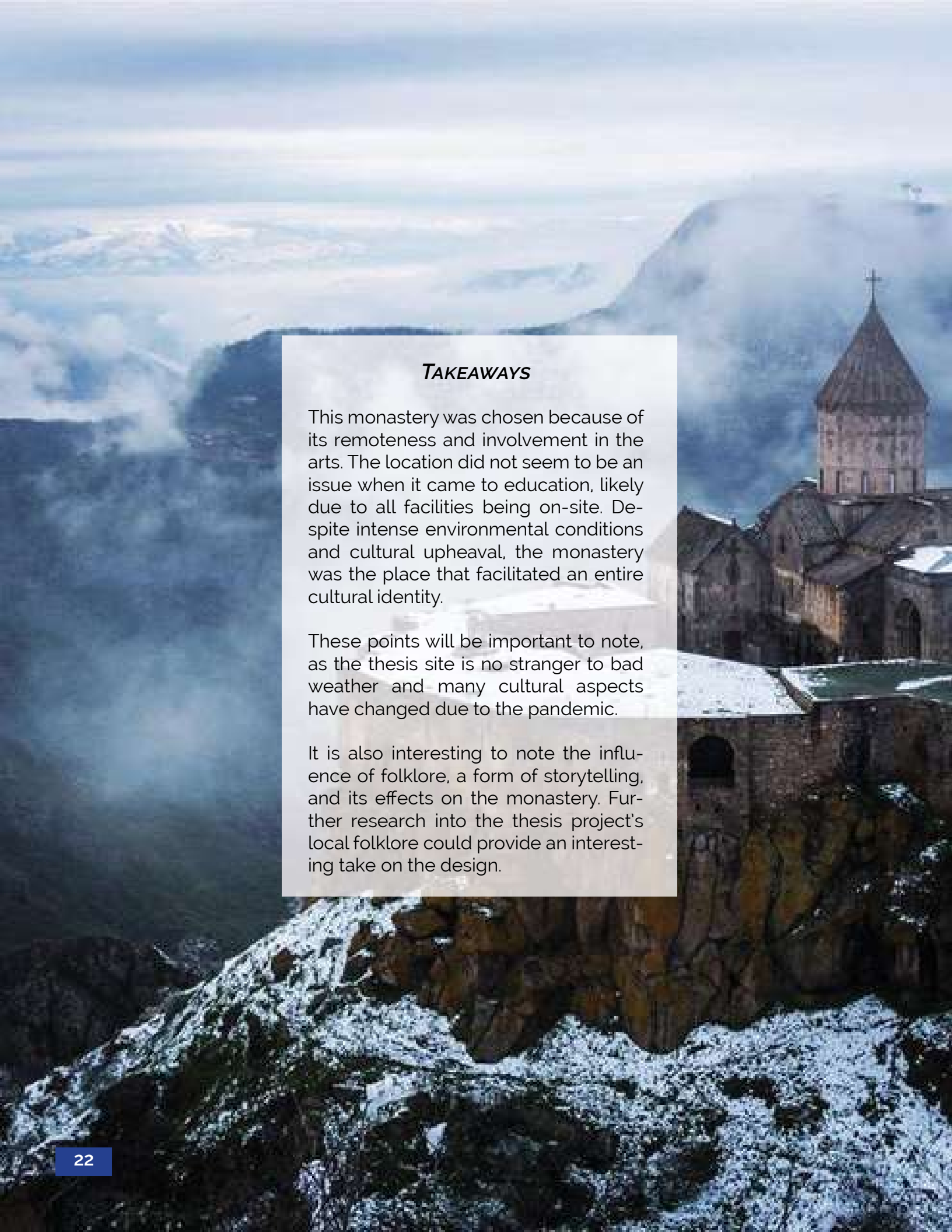
Some folk legends claim the monastery was named after its builder-architect. One variation states that the architect, after the monastery was finished, prayed "Holy Spirit, help me to get wings!" and he flew up and admired his handiwork from a birds-eye view. "Ta tev" means to "get wings" in Armenian and one can see why.



FORM AND ORGANIZATION



The monastery consists of multiple buildings surrounding the main church. These buildings are single-use and are connected by passageways. The churches take on traditional christian forms and are categorized architecturally as monastic educational architecture of the late medieval period. There is a significant amount of space between the rest of the monastery and the church. This is basically a lobby and would connect the users to the environment and the rest of the facility across the way..



TAKEAWAYS

This monastery was chosen because of its remoteness and involvement in the arts. The location did not seem to be an issue when it came to education, likely due to all facilities being on-site. Despite intense environmental conditions and cultural upheaval, the monastery was the place that facilitated an entire cultural identity.

These points will be important to note, as the thesis site is no stranger to bad weather and many cultural aspects have changed due to the pandemic.

It is also interesting to note the influence of folklore, a form of storytelling, and its effects on the monastery. Further research into the thesis project's local folklore could provide an interesting take on the design.



UNIVERSITY ARTS BUILDING

BASIC FACTS

Architect: DLR Group

Year Built: 2019

Square Footage: 42,525 ft²

Typology: Performance and Fine Arts Center

Location: Reno, Nevada

SUMMARY

Program:

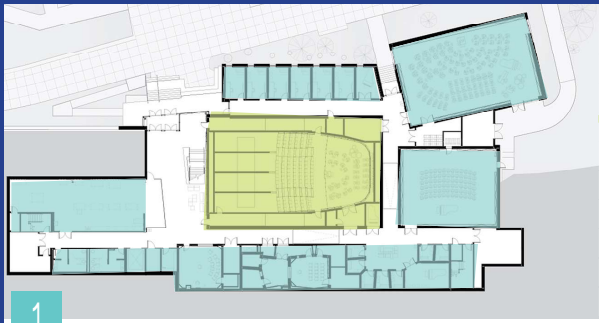
- Recital Hall
- Lobby
- Museum of Art
- Rehearsal Spaces
- Practice Rooms
- Offices
- Recording Studio
- Electro-Acoustic composition lab

This facility is an addition to the University of Nevada's Church Fine Arts Complex which was designed by famous architect Richard Neutra. The building itself focuses primarily on performance, but also provides galleries for visual art displays. The Church complex features space for theater in addition to galleries and halls. The addition plays off of the original building and features a top-notch acoustical expe-

CONNECTIVITY

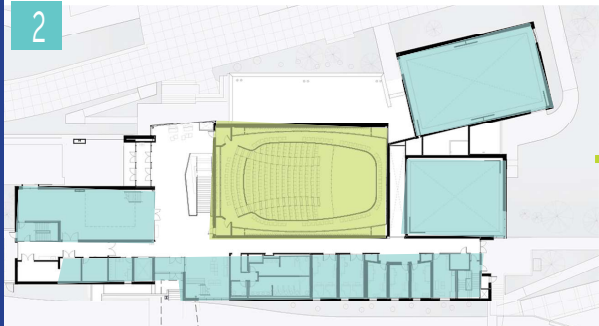
The two buildings are connected by a glass skybridge over a courtyard. There is also a multilevel lobby that provides a space for students and visitors to interact, as well as display artwork or provide an informal performance.



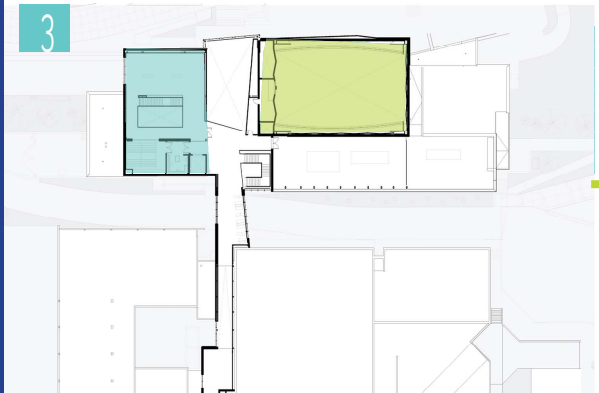


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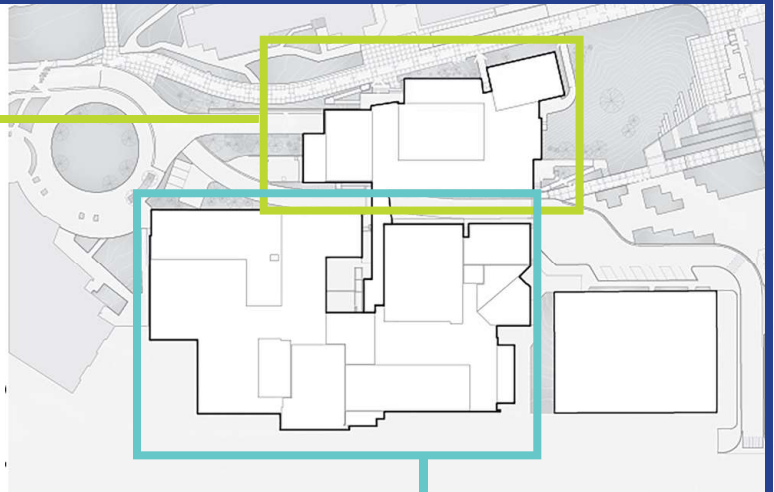
UNIVERSITY ARTS BUILDING



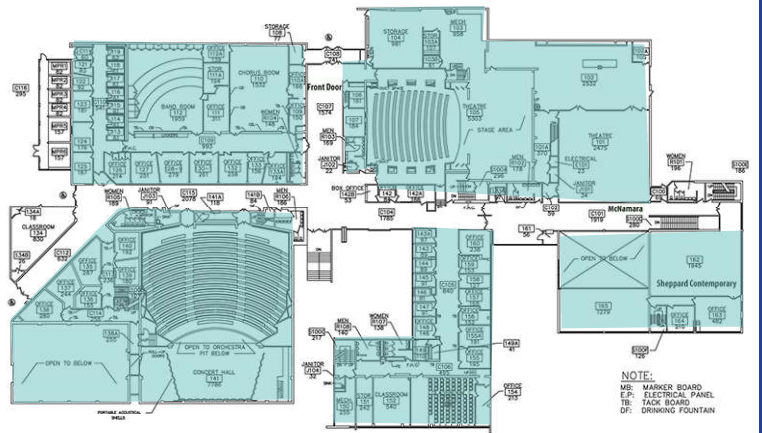
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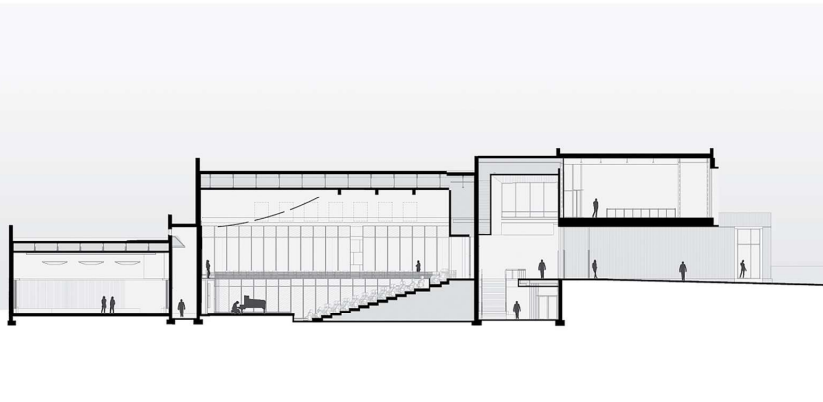
CHURCH FINE ARTS COMPLEX

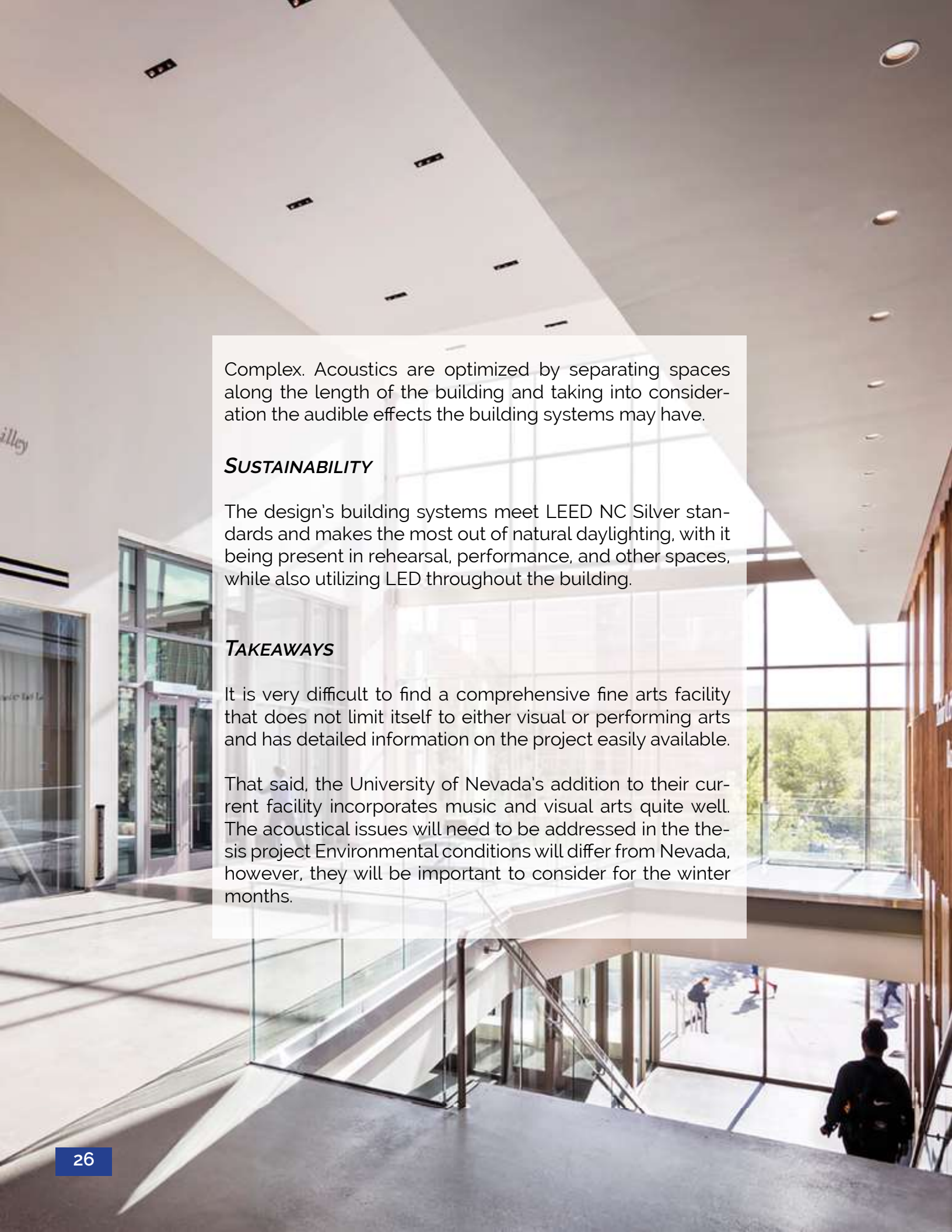


NOTE:
 MB: MARKER BOARD
 EP: ELECTRICAL PANEL
 TB: TACK BOARD
 DF: DRINKING FOUNTAIN

SPACIAL ORGANIZATION

The design is comprised of multiple blocks of various sizes. The Church complex groups the spaces by primary art form and then by use -- primarily rehearsal and performance. The addition has the spaces organized around the main recital hall, unlike the Church





Complex. Acoustics are optimized by separating spaces along the length of the building and taking into consideration the audible effects the building systems may have.

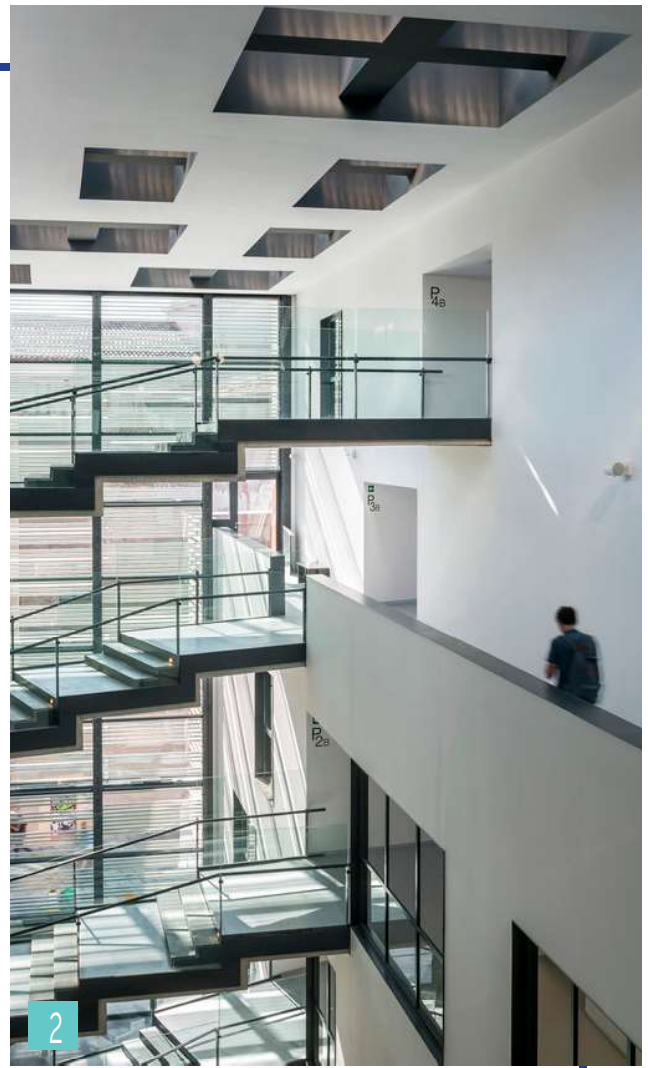
SUSTAINABILITY

The design's building systems meet LEED NC Silver standards and makes the most out of natural daylighting, with it being present in rehearsal, performance, and other spaces, while also utilizing LED throughout the building.

TAKEAWAYS

It is very difficult to find a comprehensive fine arts facility that does not limit itself to either visual or performing arts and has detailed information on the project easily available.

That said, the University of Nevada's addition to their current facility incorporates music and visual arts quite well. The acoustical issues will need to be addressed in the thesis project. Environmental conditions will differ from Nevada, however, they will be important to consider for the winter months.



CONCLUSION

The variation of the arts tend to have different architectural representations. Finding a way to have them balance within the design will be a key point to figure out during the design process.

Many modern art education centers group together similar spaces and use educational and interactive spaces to connect them. These in-between spaces seem to be the key to both interaction and an ideal education.

Finding a way to include as many art forms as possible in these shared connective spaces will be a key element needed for this design.

Considering new technological aspects that have been brought into education due to the current era, should be a consideration for the long-term success of the project.

Combining all of these elements into one design will ideally bring about a unique facility that will, despite its location, be beneficial to the surrounding community, the education of the users, and culture.

MAJOR PROJECT ELEMENTS

PERFORMANCE & EDUCATION

Large Performance Hall: This performance hall will accommodate larger performances than the other halls on-site and will be designed with the optimal acoustical experience in mind.

Rehearsal Spaces: These rehearsal spaces will accommodate large ensembles, such as choirs, bands, and orchestras, as well as provide smaller spaces for smaller ensembles, such as quintets. There will also be rehearsal space for dance.

Studios: Creative writing, visual art, and music composition students will share an integrated studio environment. These studios will be in close proximity to practice rooms to encourage interdisciplinary socialization.

Individual Practice Rooms: These spaces will provide more ADA-accessible rehearsal options than what is currently on site and will provide practice space during the colder months when the practice huts are not feasible..

LODGING

Staff Quarters: Staff quarters will be updated to accommodate more people as well as provide an environment for socialization between employees.

Dorms: The barrack-style dorms will be updated to provide more privacy for their occupants, while also providing an environment that encourages campers to network with others.

USER DESCRIPTIONS

CAMPERS/STUDENTS

Middle - High School, Adult

- Students hail from all corners of the planet, but primarily from midwestern communities of the US and Canada.
- Skills range from beginner to professional, depending on age, subject, and experience
- Currently grouped in sessions by Middle School (Grades 5-8), high school (Grades 8-12), and Adult (some mingling may occur between age ranges based on subject)

STAFF

Teachers

- IMC typically recruits artist/teachers with specialties in the fields of theater, dance, music, creative arts, and visual arts
- Need separate spaces for lodging, class prep, and storage

Volunteer and Facility Staff

- Maintain the well-being of the camp facilities and of campers and other staff
- Need separate lodging from campers, however, do not need as much resources as teaching staff

COMMUNITY

Parents

- Additional parking will need to be added, ideally temporary, yet accommodating for large numbers during pick-up, drop-off, and performance/display times

Private Groups

- Private groups will have varied access to facility depending on specific needs
- Parking will need to be considered for large events



THE SITE

LOCATION

International Music Camp Summer School of Fine Arts,
International Peace Garden, U.S.-Canada Border

Nearest Town: Dunseith, ND

Population: 692

Region: Turtle Mountains of North Dakota and Manitoba

DESCRIPTION

The International Music Camp (IMC) was chosen as a site due to the programs already in place. It incorporates all ages, all nationalities, and many forms of art, making it an ideal environment for interdisciplinary artistic collaboration. The Peace Garden promotes similar thoughts, encouraging the intermingling of people and ideas. Having the site embodying all these ideas was the main basis for the selection.

Positives:

- Site has a positive local and international reputation for arts education programs
- Facilities already in place
- Loyal investors, staff, and students
- Beautiful environment

Negatives:

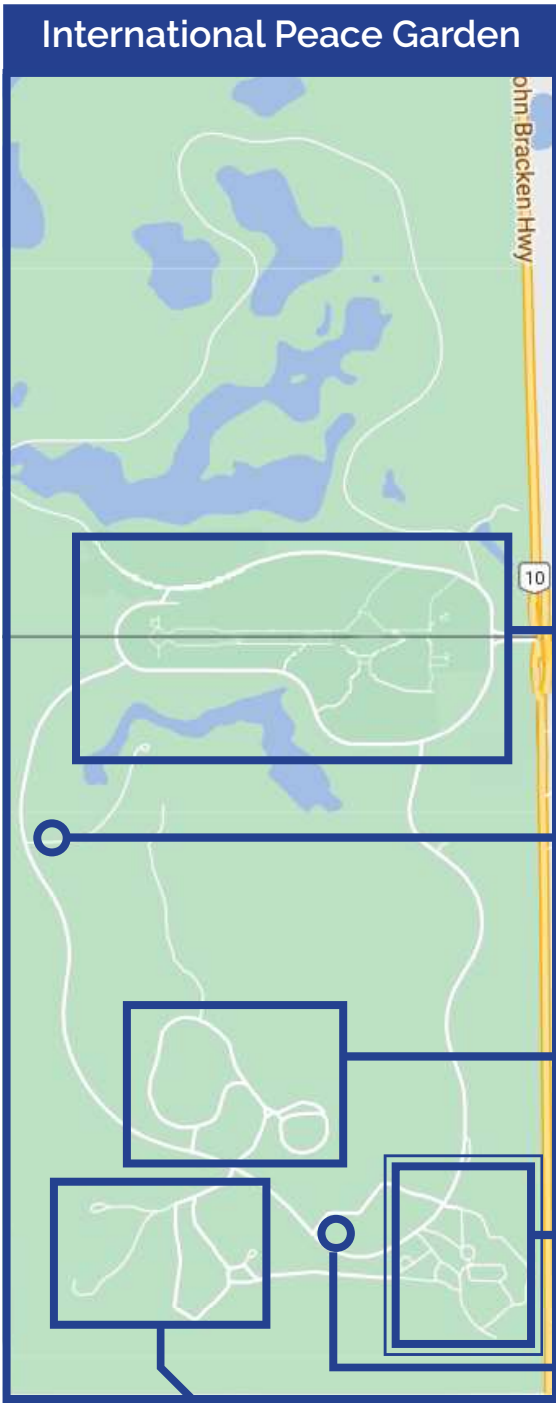
- Site is remote and therefore certain demographics may not have easy access
- Border crossings upon entry and exit

Peace Garden Campground

SITE LOCATION

Manitoba

North Dakota



International Peace Garden

Formal Garden

North American Game Warden
Museum

Peace Garden Campground

International Music Camp

Masonic Memorial Auditorium

Canadian Legion Athletic Camp

PROJECT EMPHASIS

*YEAR-ROUND USE AND EXPANSION OF
WHAT IS A TRADITIONALLY A SUMMER
CAMP (USED THREE MONTHS OUT OF
THE YEAR)*

*EDUCATION OF ALL AGES IN BOTH
PERFORMING AND FINE ARTS*

*FORGE FUTURE CONNECTIONS
THROUGH NATIONS AND INTERESTS IN
THE ARTS*

GOALS

SOCIAL

- Establish proposed conservatory as a North American landmark and world-class facility
- Design a space that is internationally attractive as both a retreat and educational experience
- Successfully educate a wide range of ages and cultures using both retreat/camp and traditional year-round formats

PHYSICAL

- Create a design that is safe, resilient, and self-sustaining in relatively severe climate (both weather and health-related climates post-COVID-19)
- Develop a space that promotes collaboration between students of different disciplines to further enhance their own
- Create a design that is both familiar and unique (or camp-like) for all nationalities and cultures
- Enhance the current facilities to further emphasize collaboration and sustainability for year-round operation

THEORETICAL

- Learn about the appeal of both secluded retreats and specialized educational facilities (arts)
- Learn the differences and effectiveness of modern performance/fine arts teaching methods for students of differing ages, especially short-term educational experiences, and how to design for them



PLAN FOR PROCEEDING

METHODOLOGY

DESIGN DEVELOPMENT

SCHEDULE

METHODOLOGY

In order to create connections between the different artistic fields, research will be done on a variety of levels. Firstly, it will be important to research the ideal teaching methods for fine and performance arts, specifically music, painting, creative writing, and dance. Ideal environments for these will be researched as well, as the demands of performance and fine arts vary, even within themselves. Ideally this research will point to similar spaces to be used interchangeably by the different fields.

Further research will be done on the historical connections between past artists during the most influential times in the histories of music and art, with emphasis on the environments in which the connections were made. Along these lines, research will also be done on the techniques used to connect people from both similar and different demographics, as the facility will be housing rural to international students. Camp mentality will also be a point of interest, as it is a much more condensed experience than traditional educational settings.

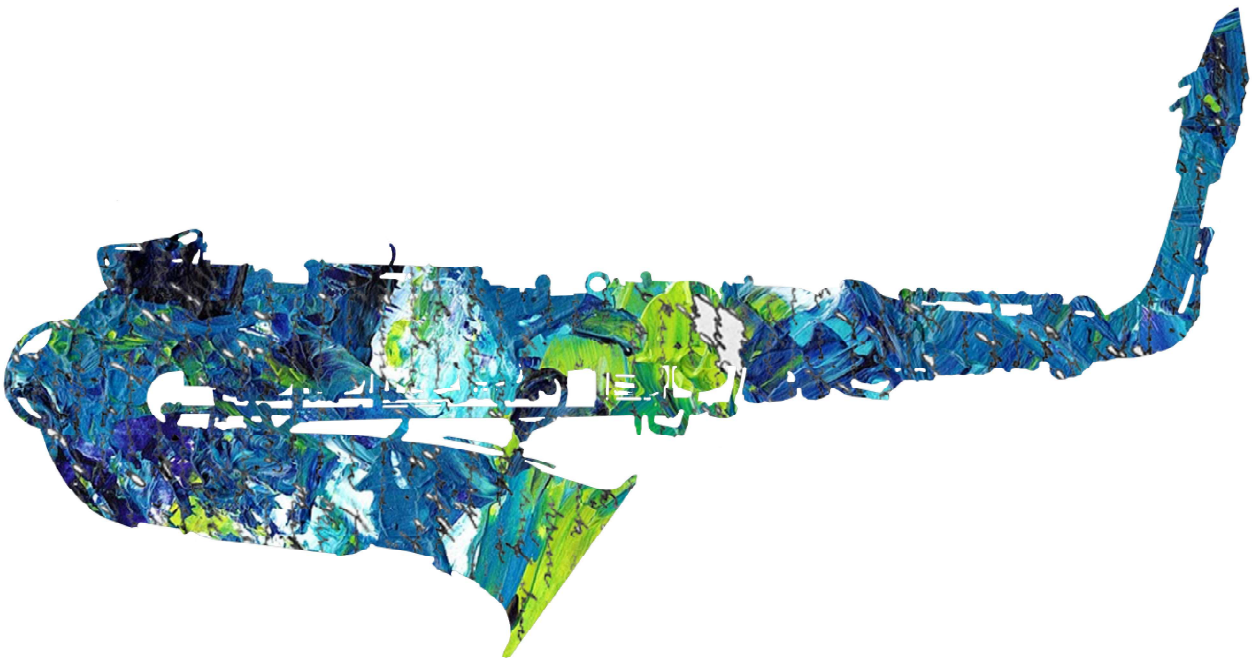
Research will also be done on the basic backgrounds of music, visual art, theater, dance, and writing. Knowing ways to represent these subjects as an architectural design will help to further emphasize the connections between all the subjects mentioned.

PLAN FOR PROCEEDING

DESIGN DEVELOPMENT

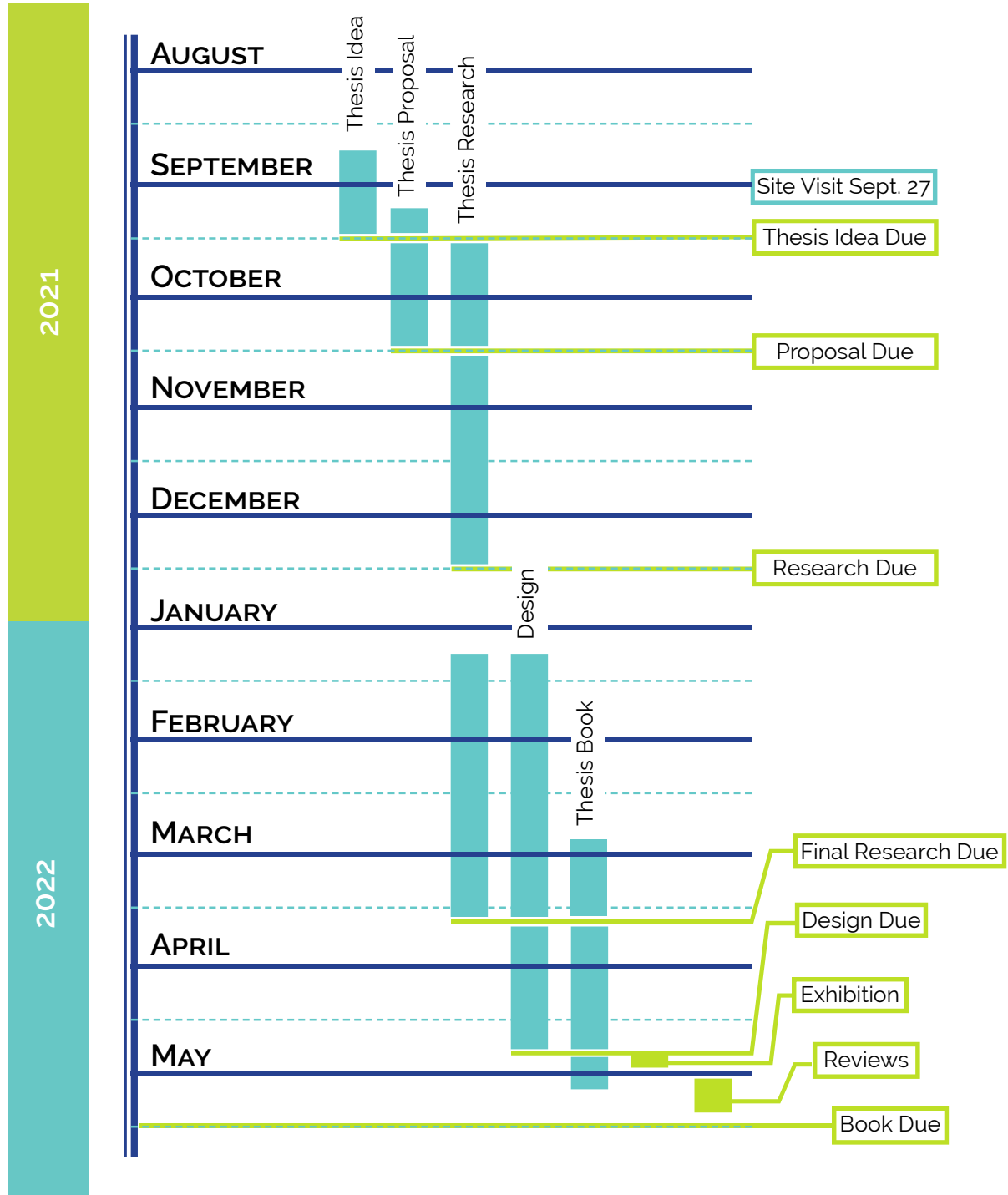
The progression of the design will be shown through sketches, conceptual drawings, digital models, graphics, and photos. Any other means that will benefit the final result may also be depicted.

The development of the design will begin officially in early 2022, starting with concepts and sketches, and continuing down the list, eventually evolving into the final product.



PLAN FOR PROCEEDING

SCHEDULE



RESEARCH

SITE INFORMATION

Dunseith, ND (nearest city)

Population 742
Avg household income \$48,479
Poverty rate 33.59%
1 sq mile

DEMOGRAPHICS

Native American: 73.70%
White: 25.43%
Two or more races: 0.87%

Female 57.51%
Male 42.49%

Median age 33

SOIL

5.2% Kelvin Loam
3.1% Eramosh mucky peat
91.6% Rolla silty clay

TREES

aspen, black poplar, ash, birch, box elder, elm, and bur oak.



CLIMATE

Precipitation
16.1 inches annual rainfall
2.65 inches annual snowfall

Daylight

8.5 December Average
16 June Average

Temperature

January -9/12 degrees
April 27/50
July 53/79
October 29/53

PEACE GARDEN HISTORY

This information is taken directly from the Peace Gardens website

Dr. Henry J. Moore of Islington, Ontario conceived the idea of a garden on an international border where people could share interests and celebrate friendship in 1928. A year later, he proposed the idea and the National Association of Gardeners who approved the plan for the International Peace Garden. The group decided that the site for the garden should be near the geographical center of North America, and approved the current site with a dedication on July 14, 1932. 50,000 individuals traveled from all over the United States and Canada to witness the groundbreaking and dedication ceremony.

Manitoba donated 1451 acres and North Dakota purchased and donated 888 acres to the garden along the international boundary line. The International Peace Garden established its organizational structure and hired a landscape architect from Minneapolis who began turning ideas into reality. By 1934 operations were well underway and the Civilian Conservation Corp descended upon the area to perform the physical labor of turning the prairie and forestland into a garden to celebrate peace.

The IPG was born in the midst of the great world depression and followed by World War II. Despite long bouts of economic depression and world wars, the garden continued to flourish and shine as a beacon reminding citizens that friendship between countries was not only possible – but could continue to grow.

The first buildings constructed on the site were the barracks that housed the CCC workers as they worked to create the garden. After the barracks, the Historic Lodge was constructed and still stands today as a monument to early times. The Historic Lodge is listed on the National Register of Historic Places and is still used for a variety of IPG events.

One of the most iconic features at the IPG is the floral clock. Donated by Bulova in 1964, the clock is a duplicate of the original Bulova Floral Clock in Berne, Switzerland. The 18 diameter clock face includes more than 2000 annual flowers.

While there are more than 200 structures within the boundaries of the Peace Garden, the only building on the Canadian side of the garden is the Willis Pavilion, built in 1967 as part of the Canadian Centennial Project. The most notable structure at the IPG is the Peace Chapel. Built in 1968, it is a beautiful stone structure that includes imported French colored glass panels. The Chapel is constructed from Manitoba limestone and inscribed with quotes of peace from international leaders.

INTERNATIONAL MUSIC CAMP

The following information was taken directly from the International Music Camp's website.

Founded in 1956, The International Music Camp Summer School of Fine Arts offers a wide array of cultural study for students and adults. In weekly sessions, students of all ages gain concentrated knowledge in their particular area of interest. While the camp name speaks of its foundation in Music, IMC also offers one week summer camp programs in Dance, Creative Writing, Painting, Drawing, Theatre, and several other Fine Arts disciplines. A staff of 150+ artist-teachers, internationally noted guest conductors, and outstanding clinicians from the United States and Canada provide instruction to students from around the world.

All ages and nationalities study at IMC. Adults and students from 84 countries practice and learn together each season. Instruction ranges from beginning to advanced study, and classes are divided in order to challenge each person to the fullest of their ability.

MISSION

The International Music Camp enriches lives through artistic expression and personal growth through our summer school of fine arts.


VISION

The International Music Camp provides an elevated and welcoming fine arts camp experience with financial and capital sustainability and stability.

VALUES

The leadership, staff, and volunteers of the International Music Camp value:

CAMPER CONNECTIVITY & INCLUSION – Every camper, regardless of background, feels welcomed, valued, supported, and connected to staff and volunteers.



OPPORTUNITY – The International Music Camp provides equal-opportunity for education and employment and does not discriminate on the basis of race, color, gender, sexual orientation, religion, national origin, age, disability, or veteran status.

PERSONAL DISCOVERY & CREATIVITY – Campers are provided the freedom and opportunity to develop themselves personally and creatively, with gentle guidance and support from staff.

EDUCATIONAL EXPERIENCES – High-quality fine arts education is at the core of a camper's experience, starting first with recruiting tremendous local and international teachers.

The International Music Camp is proud to have a strong history of welcoming people from all cultures and bringing them from around the world together for high quality fine arts education. We stand with calls for justice and peace around the world and are working to end systemic racism and oppression. Strengthening our inclusive, safe, and transformative traditions with respect, kindness, awareness, and compassion will remain a priority now and in the future.

THOUGHTFUL GROWTH – Growth of the campership is focused on rural and underserved areas by utilizing available resources, like teachers and past campers.

SUSTAINABILITY – Whether it be organizational or environmental, sustainable practices are implemented daily to reinforce kindness for the Earth and save much-needed organizational resources.

The International Music Camp is proud to have a strong history of welcoming people from all cultures and bringing them from around the world together for high quality fine arts education. We stand with calls for justice and peace around the world and are working to end systemic racism and oppression. Strengthening our inclusive, safe, and transformative traditions with respect, kindness, awareness, and compassion will remain a priority now and in the future.

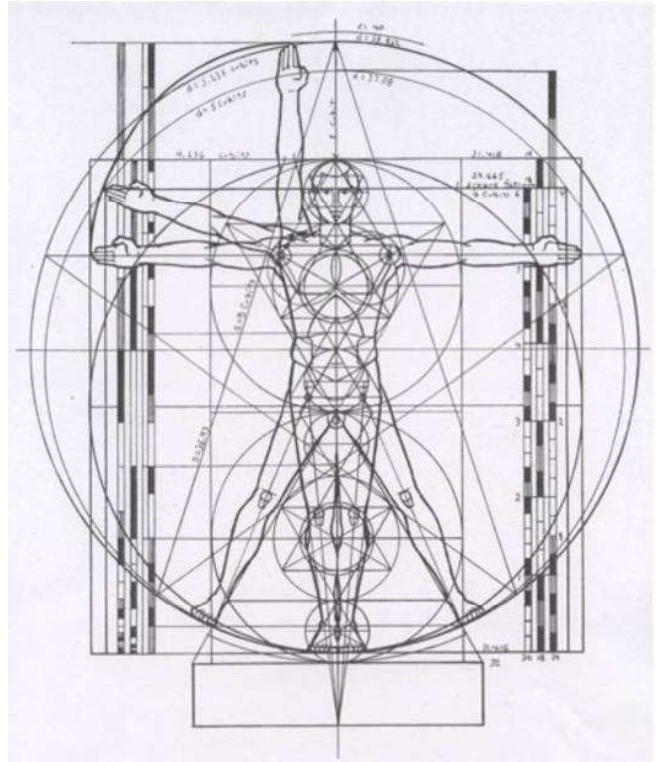
HISTORICAL, SOCIAL, & CULTURAL CONTEXT

The arts have arguably been the defining difference between mankind and the rest of nature. Over our years on this planet, both as a species and as individuals, we as humans separate what is intrinsically knitted together, especially in the western world. Much of this is due to language and the development of writing systems, including musical notation.

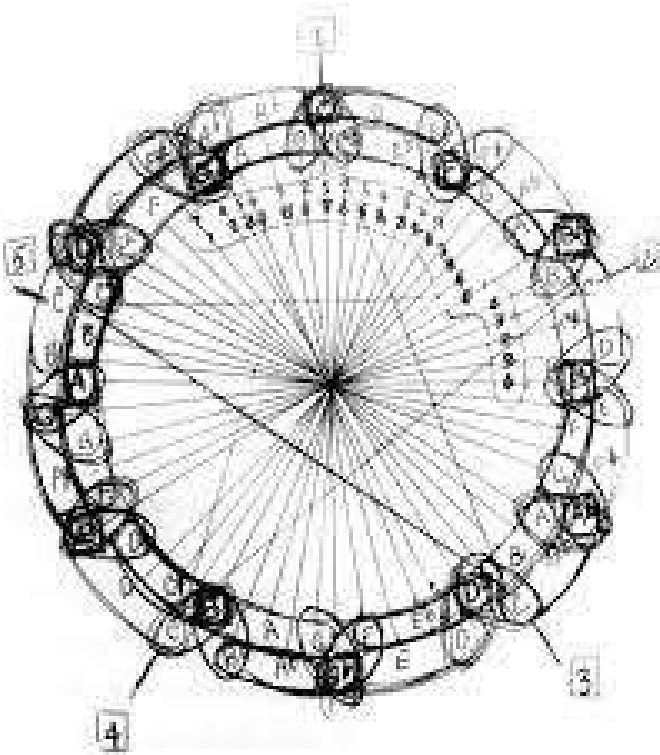
The variations between cultures, while different, tend to follow the same patterns. For example, dancing in circles is extremely commonplace, as are groups of twelve, five, seven, and three; light and dark are associated with up and down, high and low across the planet. Examples of similarities between the arts themselves are displayed on the following page, with humankind following similar ratios as music as well as our perception of color. Despite cultures having different variations of the arts, there is almost always something overlapping.

The effects of the arts socially can be brought back to language, as well as communal experience. In general, the act of participating in the arts benefits the individual and enhances communication abilities, therefore benefiting others in proximity. Humans are able to experience things like music simultaneously, for example, musicians performing a piece will generally have their hearts beating together in time with the beat. Participation creates a space for commonalities to be found, despite the major or minor differences between participants.

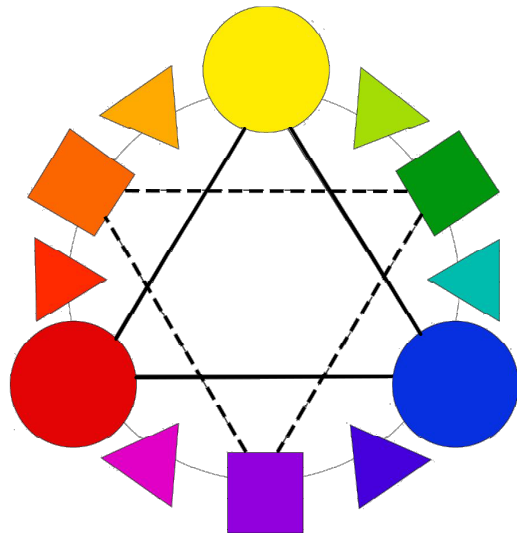
The relationships between the arts tend to have very specific ratios. These ratios are found everywhere and are known as harmonics. These harmonics are universal -- even planets are involved -- with the arts as no exception. Examples of these relationships are on the following page.



Vitruvian man



John Coltrane's Circle of Fifths



Standard Color Wheel

RESEARCH

LITERARY REVIEW

ARTS WITH THE BRAIN IN MIND | ERIC JENSEN

Arts with the Brain in mind is an educational resource aimed at teachers and those involved in the educational field. It encompasses the benefits of not just music, but visual and kinesthetic (dance, mechanical arts, drama, etc.) arts and serves as a guide to help educators incorporate the arts for further success of their students. Much emphasis is placed on younger and more developmental years. He uses many different studies, but favors statistics from the US College Board.

MUSIC

Jenson's main argument involving music is that it needs to start early, which is corroborated by multiple other resources listed in this review. A very interesting point he demonstrates is that the United States is well behind other developed countries, specifically Asian countries. Taiwan, Singapore, and Japan are all, at the point of time of this book's writing, the top countries in the world for math and science scores. The most significant difference between education in these countries and the United States is that music is required and considered a major discipline, not just an auxiliary elective. These countries train their students in strong musical traditions from grades 1-9.

College Board statistics (as of year 2000) demonstrate that music coursework was strongly correlated to SAT scores. A half a year of music averaged a 7-10 point gain, whereas 4 years of experience resulted in 49 points above non-musical peers on average. Jenson's conclusion is that, along with starting early, music can help for future excellence in math and science, however, it is not a last-minute crash course or cure-all in regards to its benefits.

VISUAL ARTS

Jensen argues that participation in the visual arts enhances aesthetic capabilities, such as more reflective thinking, better continuity between subjects and higher expectations for quality of work. Studies using different forms of visual art and exposure to those of other cultures demonstrate these thoughts. He lists studies that show students are more focused on tasks at hand and even ones that show that participation in visual arts increases vocabulary and writing skills. Part of this is due to the effects of color on memory, as studies have shown that colors, specifically realistic colors, are beneficial for recall, which in turn could assist in remembering grammatical structures, new words, etc. In this section, he also argues that artistic ability has nothing to do with

standard intelligence, as demonstrated by autistic children having considerable skill, comparing one autistic child's drawing to one of Leonardo Da Vinci's, which was quite similar. Through these studies, Jensen argues that the visual arts are superior to music when it comes to immediate results and requiring little investment.

KINESTHETIC

Jensen uses results from the College Board data to demonstrate that students involved in the movement arts have higher entrance scores, for example results showed that students with four or more years of dance experience scored 27 points higher than their non-dance peers. Those involved in drama scored 44 points higher and those involved in acting or production scored 53 points higher respectively on the averaged math and verbal scores. These are obviously very significant increases. He also lists a couple studies involving elementary schoolers where the school added these arts, instead of focusing on math and reading, and to improve the percentages of students performing at grade level. It resulted in the doubling of the amount of students able to perform at grade level. He argues also that, especially with acting and drama, which requires the manipulation of one's emotions, can improve students' mental health as they learn to modulate expression.

It was very interesting to get the educational point of view. There were many different marginal anecdotes for classroom ideas, but as neat as they are, not all together applicable to this project. The book is the commonly seen "Don't take the arts from schools!" plea that is heard by many, but only listened to by a few. Jensen's point of view is interesting in the sense that he is not, "in any traditional way, an artist" and focuses more on the data than the actual arts themselves. This research is included mainly to reinstate this plea and back up the fact that the arts have an effect on our brains and that the arts are not just suited for leisure.

SYNESTHESIA | RICHARD E. CYTOWIC, MD, MFA

Synesthesia by Richard Cytowic is a book published as a part of the MIT press' Essential Knowledge Series. The book serves as an introduction and overview of synesthesia, as it is a rather new field of neurological study, primarily due to the fact that people thought it was a ridiculous notion and anyone who wanted to study it was afraid to because the condition was so unknown and different. Synesthesia is a genetic trait which is passed down in a similar manner to perfect pitch (being able to name a pitch by simply hearing it). Those with this condition can experience sound as color, shapes as taste, or any other combination of the senses. There are many different types, however, most center around color.

COLOR

The fact that color is so significant in synesthetes is an important one to note. Those with color-related synesthesia experience more nuanced and complicated colors than the standard ones. The most interesting thing about color brought up in the book is that it is most commonly associated with words and linguistics. The association is found in both synesthetes and those without the condition, although those without chose colors voluntarily whereas those with synesthesia had no choice in the matter, as the condition causes an immediate reaction and there was no choice to be made. Another interesting thing about color is the fact that it is a construct -- light itself has no color. Our brains assign color by a certain ratio and use the results by comparing objects to other objects.

Another note on color is the order in which we learn the names of colors. We first learn black and white, or more so dark and light first. This is interesting considering that the previous book on this list mentions that black and white is the least efficient for remembering -- color makes it easier to recall things. (Ironically, the diagrams in the book are grayscale in context, with a collection of them in color set off on their own in the middle of the book. Whether or not this is done purposely to emphasize how synesthetes are "set apart" from the rest of us could be an interesting argument. Anyways...) Synesthetes are able to remember elements much easier, due to the color association. Generally, words and letters are "assigned" a color and these assignments are based on their linguistic frequency and the times in which they were learned.

LANGUAGE

Multilinguals, interestingly, are less likely to develop synesthesia than those who learned later on in childhood and synesthetes are less prominent in less grammar-ridden languages; Cytowic mentions Czech and English here, as well as how the Japanese have the most significant rates of synesthesia, potentially due to the fact that they have four different scripts that vary how they are orientated. This is an interesting connection to make with Jensen's findings in the previous review concerning the Asian country; more of these connections will be made in the following reviews. There is more correlation between actual shapes of the letters than the letters themselves, as Cytowic demonstrates with I and 1 or N and the cyrillic , which one bilingual subject associated similar colors to, This is likely to be corroborated with the various Japanese scripts.

Numbers are interesting in the realm of synesthesia. According to Cytowic, numbers are experienced in a panoramic sense, as in the observer can zoom in and move about the numbers, similar to the scenes in marvel movies with Tony Stark's JARVIS holograms. Numbers usually appear linear and are correlated with spatial positions most closely linked with how the subject reads and writes. For example, higher numbers are associated with the right side and smaller numbers on the left for English speakers, Iranians are the opposite because they read the opposite, and because the Japanese read up-down, left-right, they associate accordingly.

Time is interesting here as well, as it is usually perceived linearly, like numbers, but can be perceived as an ellipse. This applies to months and hours of the day, each of which we usually number at twelve. This number will become important in the design.

TASTE AND VISION

Taste is a significant element in the following reviews, but as for synesthesia, Cytowic argues that this is the most multisensory experience we have, since it involves smell and sight as well as touch. He mentions a test where an electrode mesh was placed on subjects' tongues and fed a digital video. The subjects were able to interpret size, shape, distance, and directions of movement. Basically, you don't need eyes to see, despite 85 percent of the brain's sensory input coming from our sense of vision. This is also demonstrated by spelunkers; some claim to "see" in complete darkness, when in fact they are "seeing" their body through their movement. This would be an interesting concept to explore when applied to dance.

MUSIC

Throughout the book, there are many experiences recorded involving music. All of the subjects mentioned consider higher notes lighter in shade, with lower notes being darker, a concept that also appears in the realm of smell. Changes in pitch result in changes in brightness, size, and contrast. There are cases of Audiomotor synesthesia, where a note corresponds to an action. Interestingly, the synesthete that Cytowic uses to exemplify this correlates the ascension of the scale with doing something higher up in space. For example, the Tonic (I), or base, of the scale is firmly on the ground, the V, or dominant chord and heart of the deceptive cadence (the ending of a musical phrase where without a satisfying end; it feels like it should continue) is "on a landing" (higher than I-chord) "knees bent, ready to jump" which correlates with the feeling that the song should continue -- when the V chord appears in a deceptive cadence. Basically, the physical perceptions match what usually happens in the music.

Besides notes, the timbre of music can influence a synesthete's experience similarly to what a note can. For example, a flute playing a C can have a different color than someone singing the same pitch or playing it on a trumpet. Color is only one of the realms of synesthesia; some synesthetes experience music with shapes. The most common forms music assumes are cones, central radiations, spirals, and honeycombs.

It is important to note that all of the experiences of synesthetes are unique -- not everyone sees the same note or letter as the same color or shapes with the same tastes, therefore there cannot be any standard color for any of these variables and will remain subjective to the design. There was much more discussed in this book, but the most important aspect is that everything is connected, in fact synesthesia is hypothesized to exist because of a genetic predisposition to excess connections in the brain. These connections create a more memorable, and Cytowic would argue, meaningful life experience for those with the condition. Creating a memorable and meaningful space

is the goal of this project, as well as integrating all of these different senses involved in experiencing both life and the arts to their fullest. Knowledge of the synesthetic condition will definitely assist in the development of this project, especially considering that our senses start out tied, much like the arts.

"Synesthesia is actually a normal brain function in every one of us, but its workings reach consciousness in only a handful." - The Man who Tasted Shapes

THE MUSICAL HUMAN: A HISTORY OF LIFE ON EARTH | MICHAEL SPITZER

The Musical Human is a very recent book written by Michael Spitzer, a professor of music at the University of Liverpool (so recent it mentions COVID). It is a comprehensive overview of human musical development beginning from the womb and also from an evolutionary perspective. He provides a wealth of information from different cultures as well as consideration of musical development in the animal kingdom. He provides a timeline and projects the possible music of the future, as in what he calls the musical post-human.

EVOLUTION

Spitzer argues that our sense of rhythm grew out of our experience walking on two feet. Steps created a better sense of timekeeping, hands were free to make tools and instruments and the independence of the torso would have also enabled dancing, an integral part of music. In fact, there are neural links between auditory and motor systems that are almost completely unique to humans -- the link is present in some songbirds and marine mammals like whales and dolphins. Whether or not these links are the same ones discussed in earlier reviews is unknown. Spitzer argues throughout the book that somewhere along the line, we rejected "animal music", which will be described in a bit.

As for our fellow bipeds, the neanderthals, there is a plausible theory that they had heightened musical abilities as a compensation for not having language. This is backed up by the lack of artifacts and their existence in small communities with little need for communication.

CHILD DEVELOPMENT

Spitzer insists throughout his book that the current musical human is passive when it comes to musicality. He argues that we are born musical and creative, but we (especially in the West) have taken to the idea that only some people are talented and it affects us at a young age. Babies can perceive regular beats from day one and will

naturally move to rhythms, though not in sync with the time for a few years after birth. Rhythms can be differentiated at five months and can be recognized at seven-nine months even when tempo or key is changed.

Young children are extremely sensitive to tiny changes in pitch, but are more likely to remember the broad contour of the melody. These are important because they are the base of how mothers and children communicate -- in musical protolanguage, probably not unlike that of the neanderthals. This language is based on imitation of each other's facial expressions and vocal fluctuations, which generally follow a melodic contour. Interestingly, this is similar to how jazz musicians improvise with each other, with no line between composing, performing, and listening; all are one.

PARTICIPATORY MUSIC

Jazz is historically polyrhythmic, courtesy of the hunter-gatherer cultures of Africa. The "all is one" concept mentioned before is inherent in many cultures, who are also polyrhythmic. These cultures sometimes have no word to separate dance from song, emphasizing even more that they are one and the same. These cultures encourage music as a tool for social harmony and well-being, and it belongs to everyone. A potential benefit of this is that, by enabling the tribe to share the same emotional state by clapping, singing, or dancing together, is enhanced group cohesion.

ACHEULEAN BIFACES

So now for the stone that started it all, supposedly. These hand axes are frequently brought up in the art (as in visual art) world as the origin of making something for no purpose other than to display. The development of these axes required that there be leisure and the skill required to make one. This has been discussed as beneficial for the sexual selection process, as well as the stones just being nice to look at. Spitzer expands on this theory and adds that the knapping, the physical act of hammering away the edges, would have created a rhythmic experience via movement and the sound of rock hitting rock. Therefore music, art, and rhythmic movement could have all started here, as a result of, and resulting in, leisure and skill.

SOUNDTRACKS

Spitzer argues that music has always been a part of our daily life, however, in a different way than now. Music was frequently used as a tool in the past, to help with the day's workload. For example, sea shanties were essential tools aboard ships. Listening was considered a luxury in these times. The industrial revolution eliminated this kind of music, due to factories being loud. However, once the power of music was recalled around WWII, it became implemented.

Nowadays, we can create our own musical landscapes, courtesy of portable music devices, which can create a bubble and affect how we see the world around us. Soundtracks manage moods, memories, and what we want other people to think, according to Spitzer.

CULTURAL ASSOCIATIONS

The experience of time is perceived differently depending on culture. Spitzer discusses how the West perceives time as an arrow, a cycle in Greece and India, and a fragmented continuum (multiverse almost) in China. These are all concepts able to be explored in design.

Music terms themselves vary among cultures. Rather than high and low melodic contour terms, the Greeks associate various pitches as sharp and heavy, in Bali and Java as small and large, the Kisedje of Brazil associate pitch as young and old, and the Kaluli of Papua New Guinea associate contours with waterfalls. The latter has no concept of rising melodies. The correlations between these and some forms of synesthesia is notable.

Spitzer identifies different characteristics of certain cultures and where they diverged from one another. For one, Islamic cultures had ornamentation. India had taste, China had timbre, and the West had notation. Access and the portability of music after written notation is the biggest factor in how the West diverged from the rest of the world, where traditions were passed down via apprenticeship.

ARCHITECTURE

"It is a cliché that music is like architecture. But in some cases architecture can be like music." This is what Spitzer thinks on architectural matters. To a point, it makes sense, but if all is one like jazz... Anyways, Spitzer describes that Islamic ornamentation is the best iteration of this. He mentions the Taj Mahal, considering it an "architectural marriage of ornament and taste", the Alhambra Palace as example of Islamic music, St. Mary of the Angels Friary as an example of what he considers "Western square music". Also, Schumann's Rhenish Symphony he considers the musical manifestation of the Cologne Cathedral, from which it was inspired. These will be taken into consideration in the design process

POLYPHONY VS MONOPHONY

In the book, the author discusses how polyphony mainly occurs where there is a lack of hierarchy, whether it be amongst nature (this primarily happens in cultures residing in forests, where there sounds become one of many and need to compete) or among themselves. This many-angled approach is also applied to dance. In these cultures, sound is more important than words. Monophony, which westerners are more familiar with, developed because of close quarters, which in turn were a result of being in cold, open climates. This type of music focused primarily on the words, as the music was used to decrease tension in tight quarters.

MUSICAL STRUCTURE

Spitzer argues that asymmetry is a universal notion, since the distance between notes is always irregular and music with even spacing is not the most pleasant for us to hear. The number seven is significant, as there are seven notes in a scale. For example a

step fits four times into a major third. The Chinese developed a 5-note (pentatonic) scale, and were able to create what we know as the chromatic scale, due to their use of semitones, which contains 15 notes. He argues that music follows a double helix shape.

MUSIC AND MOVEMENT

The author states in his book the importance of both music and movement, as they are closely tied. Interestingly, how we categorize sounds (high-low, large-small) is related to the movement of the vocal cords; higher pitches are produced in the upper tract in a smaller space, the opposite with lower notes. Besides that, listening to music involves the same neurons in our brains associated with motor activity. Egyptian hieroglyphs depict "sing" as a picture of an arm. This is due to the Egyptians' use of Chironomy, which is basically reading the positions of a person's arms and hands as musical notation. King David is also mentioned doing this.

NATURE

Spitzer argues that nature plays a large role in the type of music. Aboriginals, for example, sing melodic contours that match the landscape, using the music as a type of map. African Pygmies yodel in the forest, where they need to be heard above the noise, whereas Pygmies in desert tribes do not.

The incorporation of animals in the book is interesting. Spitzer begins with crickets, stating how they have a sense of rhythm, yet they cannot change it. Birds have different calls that mean different things, however, they lack the ability to put them together to make something new. Whales seem to have the most similar music to humans. When it comes to apes, however, song is not their thing. This is interesting, considering that we are related on the evolutionary spectrum. Spitzer argues that we gained our musical sense from the visual aspects of apehood, learning rhythm before anything else, much like babies do.

The Musical Human discusses much, much more than this, especially when it comes to the future. The most significant note found in that portion was that of Niel Harbisson, a colorblind synesthete with an implanted attachment that converts color to sound so that he can experience it. It was interesting to hear the evolutionary perspective and there are a plethora of things to take away from this book, namely the ratios, connections to architecture, consideration of nature, and further assurance that the connections between the arts are innate. The World is Sound: Nada Brahma | Joachim-Ernst Berendt

THE WORLD IS SOUND: NADA BRAHMA | JOACHIM-ERNST BERENDT

This book is by Joachim-Ernst Berendt, who was a German music journalist and producer who specialized in jazz. He has written many books related to music. In this book specifically, he focuses on the Indian notion of Nada Brahma, which can translate to "the world is sound". From mantras to physics, he describes the role of sound in it all. Berendt starts out his book with a plea to change our perspective on the world, being that we are the world and we have to change ourselves to change it. He takes a very firm stance, stating "Science without wisdom can be dangerous". The contrast between this book and the previous is stark when it comes to the scientific vs religious perspective, however, there are aspects where the two authors align, which is generally where the arts do too.

VISION

Berendt is very adamant about how vision is overplayed in today's society and how it correlates with excess rationality, basically the "see it to believe it" notion. This he argues against, considering that with all of the screens and pictures, "we don't see the world, we see its images" suggesting we are basing our rationale off of what we might be seeing, not reality. This is an interesting point, considering that things like color are made up by our brains to make sense of our surroundings. This is further expanded on by the fact that we can assign math to sound, but not to color.

VOCABULARY

The connections between the basic building blocks of language between cultures is intense in this book. Berendt dissects many words, but to start with, Nada is the Sanskrit word meaning sound (also sounding, droning, screaming, howling, roaring, roaring bull, bull). Brahma is one of the three main deities of Hinduism and is one of the Trimurti, which is similar in concept to the Christian Trinity, where the three are one. Therefore, Nada Brahma also translates to god is sound; sound is god.

Berent traces phonemes across the planet that all mean similar things, the main examples being nadi- (river, stream) and various roots of brahma. The biggest of these, however is leg, which is the root for the following: light, loud, logos, lux, lyche (greek lamp), lex (latin, law), language, legein (greek to gather, collect, talk, read, count), re-legio, and the Germanic lie. He points out that lie is connected to light, which is generally considered the opposite. He states, "Language has known from the beginning that the word is light is loud (sound) is the beginning". There is also a possibility that

large linguistic context shares tonos, tone, sound, song, sangit (which originally meant dance and music), and sun.

MANTRA

Berendt goes into lengthy discussions about mantras, considering them significant sounds, which are generally pre-linguistic. Om, Ah, Hum, and Hrih are the four seed syllables, which in turn, correlate to four movements: circular, horizontal, down, and up. Another fun mantra is Mu, which means "no thing, emptiness, to be filled with being". This "no thing" is an interesting concept when everything is everything.

MUSIC OF THE SPHERES

Berendt brings up the works of Johannes Kepler, Plato, and Pythagoras in relation to harmonics. The discovery that the elliptical orbits of the planets oscillate and sound in similar proportions to our music is a significant one. Interestingly, the planets in our solar system were assigned vowels, A to Jupiter, I to Mars, O to Venus, U to Saturn, and E to Mercury, and these vowels relate to the vibrations of their planets according to Kepler. The planets also have sounds that match their corresponding god's personalities: Mercury has a restless sound, Mars slides violently up and down several notes, Jupiter is majestic like a church organ, Saturn drones mysteriously. The sound spectrum of our visible planets cover eight octaves, which is almost exactly the size of the human hearing range. The planets out of our range act more so as a rhythm section, beating together polyrhythmically.

MICRO LEVEL

Berendt also states that harmonic correlations exist in the sub-atomic level. For example, the nucleus of an oxygen atom with protons will have 12 steps between its microscopic arrangement and harmonics. Seven of these arrangements are filled and five are empty. These numbers correlate with the seven and five note scales. Carbon, also essential to life, creates an arrangement similar to the hexachord of a Gregorian chant when the electron shell is full. Magnesium and nitrogen, necessary for chlorophyll, are anatomic numbers 12 and 7 respectively. DNA follows the divisions of octave, fifth, fourth, and major second.

PROPORTIONS

Berendt discusses the golden section, as well as the primordial leaf, which can be separated into three or five equal parts. This is the only organic matter separable by five

ARCHITECTURE

There are mathematical correlations found between math and music. For example, a Baroque church in Bavaria is reminiscent in Bach's Well-tempered Clavier. The 72 double columns in the cloister of San Cugat Monastery are related to the Gregorian hymn Cucuphatus. Romanesque cloisters can be read as rhythms. The most notable

feats, like the Acropolis or the Pyramid at Giza, are built with exact harmonic proportions. Berendt suggests that length, width, and height must be related in whole-number proportions, as in the overtone scale, to be comfortable.

This book was a very interesting read. Berendt emphasizes the need for more focus on the listening side of things, instead of the visual. He frequently compares listening and vision to yin and yang. Considering the visual is out of proportion to hearing (85 percent as mentioned earlier), it would not be a bad idea to return to the balance.

CONCLUSION

From the completed research, it can be concluded that the arts are a significant part of our lives, from early childhood development, to the beginning of our species, to how we live our current adult lives. The arts are inherent and cohesive, highly dependable on the other. It can also be concluded that their separation is due to language and the idea that the arts are more of an individual experience than that of a group, also that it is dependent on skill and not participation. Simply existing in the "now" is essential for the arts, even though their benefits expand over time. Colors, shapes, and time are all important aspects in these readings and therefore should be in the final design. Harmonics and proportions also appear to be universal, similar to how the connections between the arts are. Research will continue on these subjects.

APPENDIX

PERFORMANCE MEASURE

The main focus of this project is facilitating collaboration between different art forms and representing their harmonics in the architecture. Correlational methods will be utilized to assess this representation, along with further analysis of the connectivity of the spaces. The main elements of the arts will be pointed out and corroborated. Much of the data will remain subjective, however, there are defined ratios that will be used to assess the architectural representations, which will begin as hand sketches and be developed based on the aforementioned elements. These sketches will progress into the three-dimensional realm of Revit. Because of the emphasis on the creation and performance of music as an art, acoustics will come to play an important role in the design and will be assessed via acoustical simulation programs, such as Odeon, for the main auditorium. Acoustic considerations will also be present in other areas of the project, such as practice rooms and studio spaces. The project will be deemed successful if elements in the design fit well into the realm of harmonics and provide adequate space for social connections and learning.

The project will aim to be utilized by students and teachers, as well as staff and occasionally the community. Having a representation of what the students are intending to learn surrounding them in the form of architecture will help further their learning and make connections between themselves, their art, and the art of others.

The project will aim to utilize as little energy as possible with minimal to no effect on the environment and will comply with the international building codes of the US and Canada.

The primary allocation of space will be for educational purposes. These include a large performance hall, individual practice rooms, small group rehearsal, and studio spaces. There will also be a lodging component for both students and staff, albeit separate from one another.

PROJECT JUSTIFICATION

I decided to do this project because I have grown up around the arts and while studying both music and architecture at a collegiate level, I came to realize the similarities between the two, as well as other forms of art. I wanted to study these differences and how architecture can both house and incorporate all of the arts in its design. This project will help me delve deeper into things I already know, or would like to know more about, creating a better understanding of how the arts tie together. It will also help me hone my basic understanding of acoustical spaces, as well as expand my current method for solving problems, specifically many at once.

Doing this project at this stage academically will help me bridge out into what I am interested in architecturally and take a more proactive stance in my projects, while still being provided with an academic support system. Doing this will provide me with more independence and expertise that will be useful in my professional career. This project is important in the current climate because we are stuck between our "traditional" ways of experiencing, and learning, art forms and the new ways technology has reshaped people's perspectives on how to do so as a result of the pandemic. Creating a space that recognizes the significance of these perspectives in addition to the various needs, histories, and similarities of various art forms is something that, as a whole, should exist, or at least be brought into the conversation.

The project itself has the possibility to create monetary returns in the form of tourism, however, the main goal is to create an environment for better understanding and socialization of art and artists, which in turn, would result in positive social and cultural outcomes. It would be provided for financially most likely by donors, who are able to see the needs of the site and have and/or would like to experience the outcomes of the past, present, and future of what goes on on the site. The project is not completely necessary, however, it would provide for eventual needs as well as an idyllic space that could benefit the site in a social, cultural, financial, and sustainable sense.

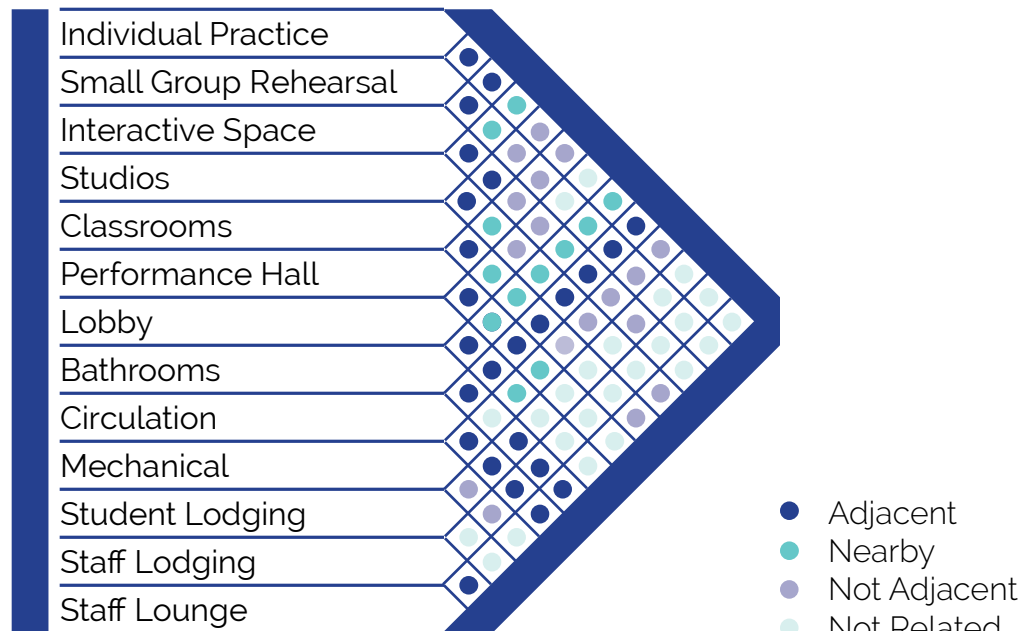
This project could be done by someone else in the profession, as there are many ways to solve the issues I am attempting to, yet, not all professionals will find it as interesting, have my experience, or be able to make the same connections that could change the outcome of the project.

SPATIAL ORGANIZATION

SPACE ALLOCATION TABLE

Space	Square Feet	%
Individual Practice	1,200	2.6 %
Small Group Rehearsal	3,600	7.9%
Interactive Space	3,000	6.6%
Studios	2,800	6.2%
Classrooms	2,400	5.4%
Performance Hall	4,800	10.6%
Lobby	2,200	4.8%
Bathrooms	1,800	4.0%
Circulation	8,000	17.6%
Mechanical	6,000	13.2%
Student Lodging	4,200	9.2%
Staff Lodging	3,200	7.0%
Staff Lounge	2,200	4.8%
Total	45,400	100%

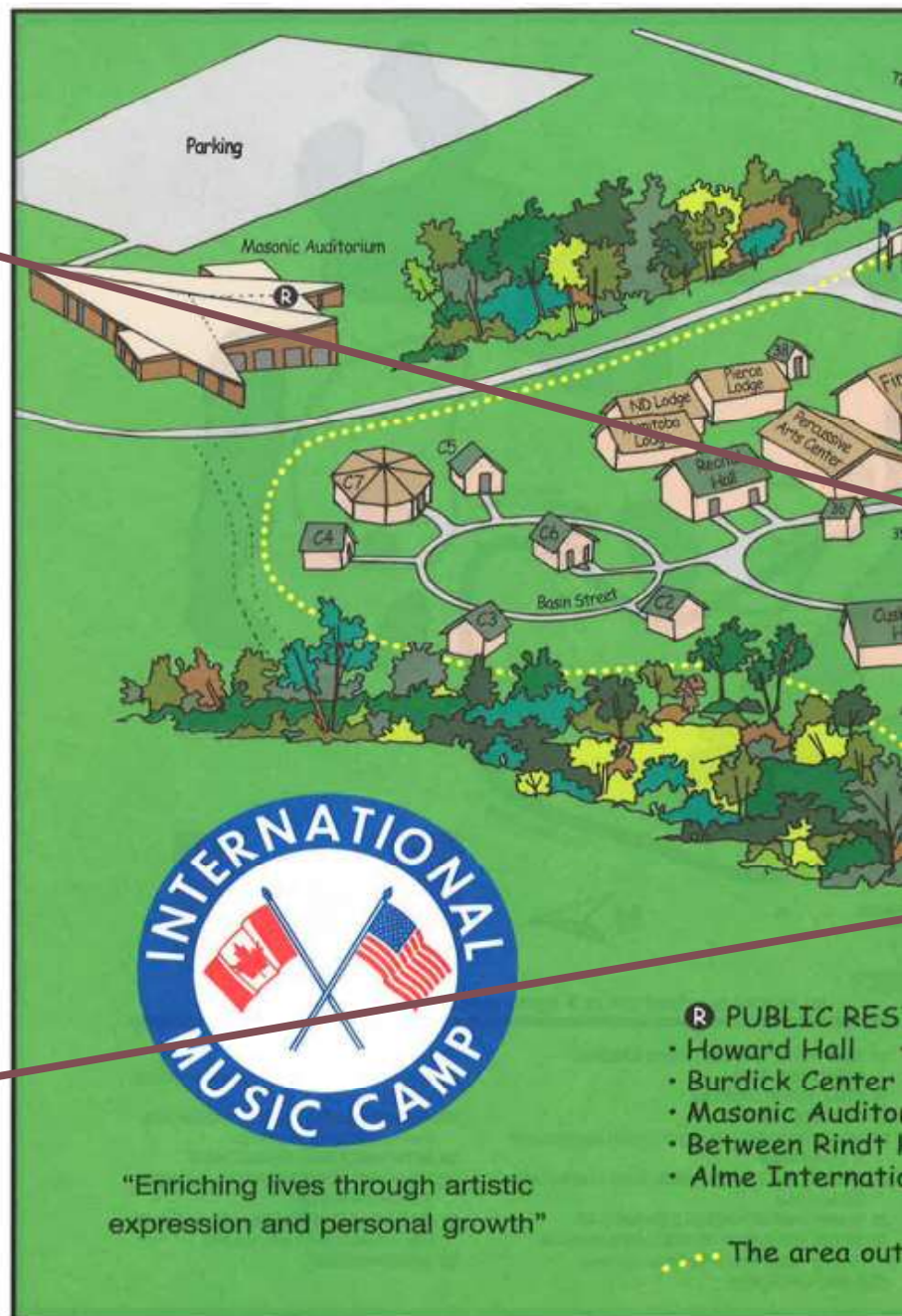
SPACE INTERACTION MATRIX





DESIGN SOLUTION

LOCATION ON SITE



The location of the building is to the South of the Mall on IMC grounds. It replaces Dow, Hougland, Solberg, and Pollock Halls. These halls are barracks-style (rows of bunks on a concrete slab floor) which are severely outdated (see picture on page 65). Practice huts 2,3, and 6-10 will also be replaced. The official IMC map below shows all structures on site, as many are hidden by trees in satellite images.



CURRENT STRUCTURES



New Hall



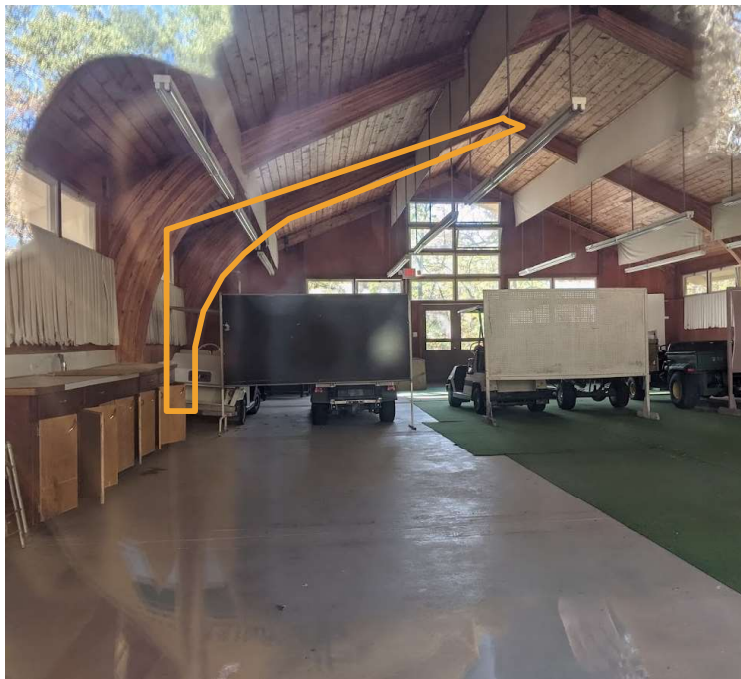
Fine Arts Center



Rehearsal Hall



Burdick Center



Interior of rehearsal space, note glulam structure

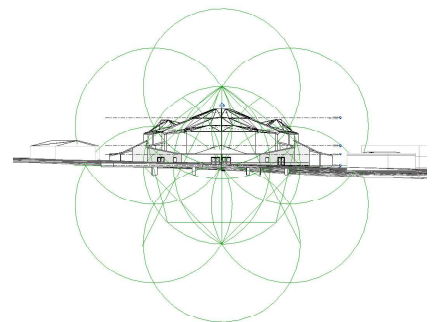
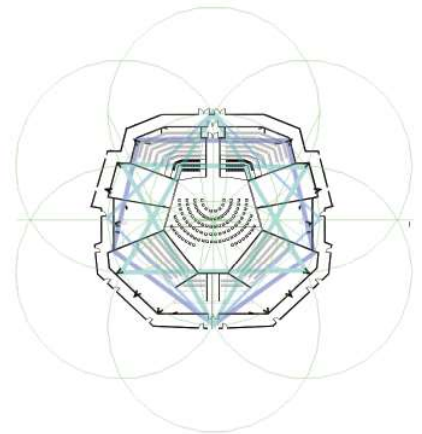
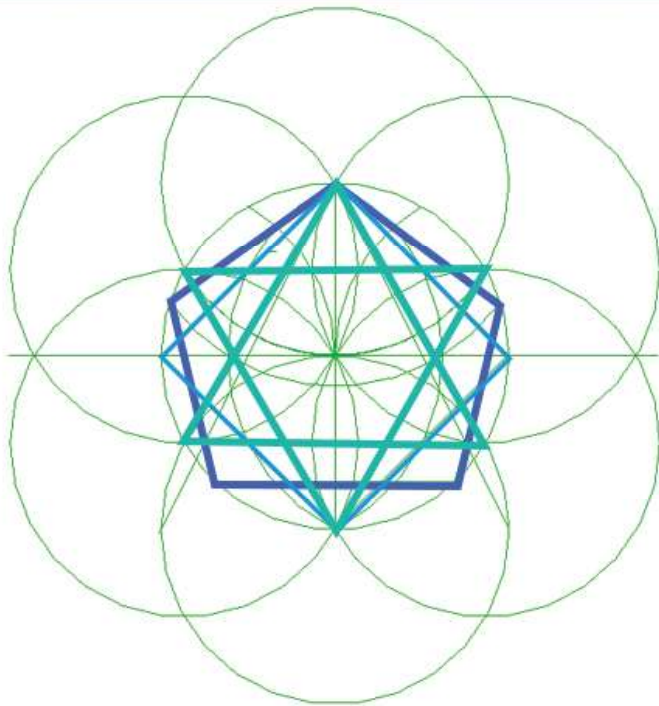
PARKING

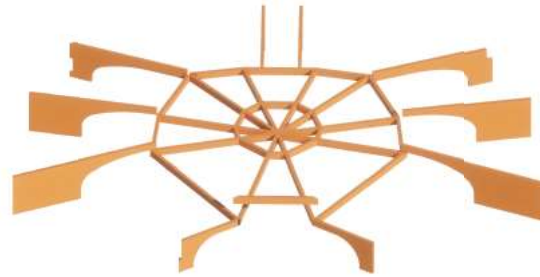
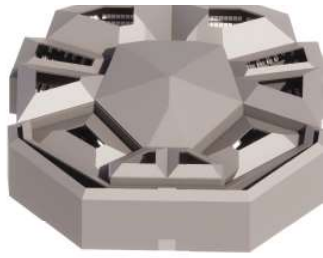
Parking (see left map) will consist of shuttles from the Peace Garden lots, as well as limited parking on site. A lot was added to the South of the complex and the East road was widened to accommodate for street side parking. Purple is designated lots and tan is expanded roadside parking. The Masonic Auditorium to the Northwest is a park-and-ride lot for visitors.



PROCESS

The project began with a grid comprising of shapes found frequently in the connections within different art fundamentals, such as the color wheel and circle of fifths. Circles, being the most common in art, dance, and music, comprise most of the grid and help to create the remaining shapes, most notably a pentagram and Star of David, which are frequently found in the mentioned fields and the realm of harmonics, present everywhere. The intersections of this grid created the form of the auditorium, which is in the vineyard style with seats in the round. This type of auditorium is not found anywhere in the region and would provide a unique experience for performers as well as visitors. The grid was also applied vertically, with intersections determining different roof heights.



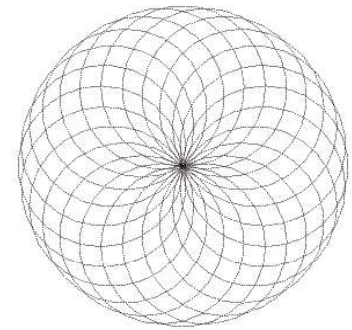


KEYSTONE/COMPRESSION RING

Due to the unique shape of the auditorium, it required a structural system that could span the auditorium without hindering the view. The turtle shape was adopted, however the keystone arrangement did not accomodate well for the shell-like "bumps".

KARBANDI

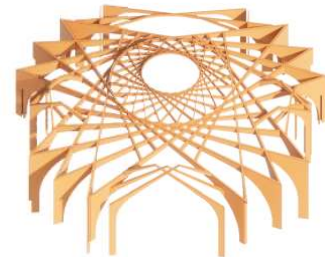
Karbandi is a structural system used in Persian architecture. It involves placing arches on a grid (left) and rotating them so that they intersect. This structural system created multiple possible solutions and allowed for the "shell" to be more prominent. Arches were also chosen due to the glulam structures seen in most buildings throughout the site.



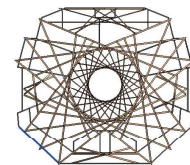
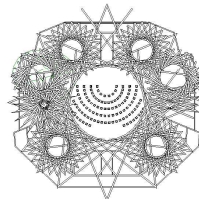
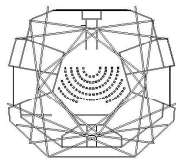
No "bumps"



Too complex



Final, 4 "bumps"



STRUCTURE

FLOOR PLAN

While designing this project using the harmonic grid, a turtle "emerged" from the lines. (If you look closely, the auditorium is the shell, bathrooms feet, and the practice rooms resemble eyes) As insignificant as a turtle may seem to be, this is not the case when it comes to the premise of this project. Firstly, the location of the site is in the Turtle Mountain Region. This area was named by the local Native American tribes whose creation story involves a turtle that "emerged" from the depths of the sea during the great flood. This created a mound of land, hence "Turtle Mountain". In Ojibwe legend, the turtle's name was Mikinaak, which is also the Ojibwe word for "snapping turtle". This seemed a fitting name for the hall, as the Peace Gardens are on what was significant land for the native tribes.

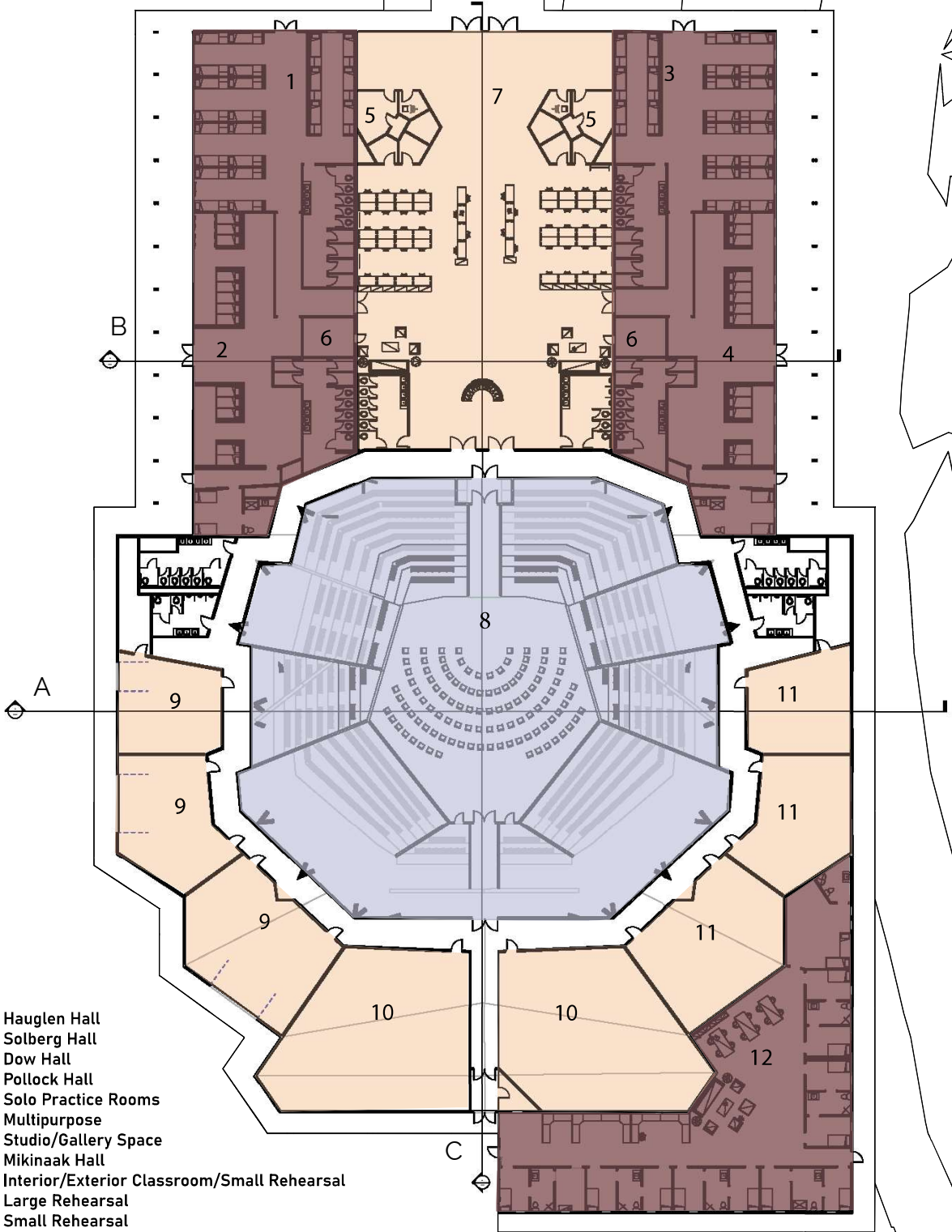
Turtles also make frequent appearances around the world in many different creation stories, such as in Hinduism, further accentuating the connections between cultures and the arts internationally -- fitting for an international camp in an international peace garden.



Hindu Creation Story



Ojibwe Creation Story



- 1 Hauglen Hall
- 2 Solberg Hall
- 3 Dow Hall
- 4 Pollock Hall
- 5 Solo Practice Rooms
- 6 Multipurpose
- 7 Studio/Gallery Space
- 8 Mikinaak Hall
- 9 Interior/Exterior Classroom/Small Rehearsal
- 10 Large Rehearsal
- 11 Small Rehearsal
- 12 Staff Lodge and Offices

ELEVATIONS



West



North

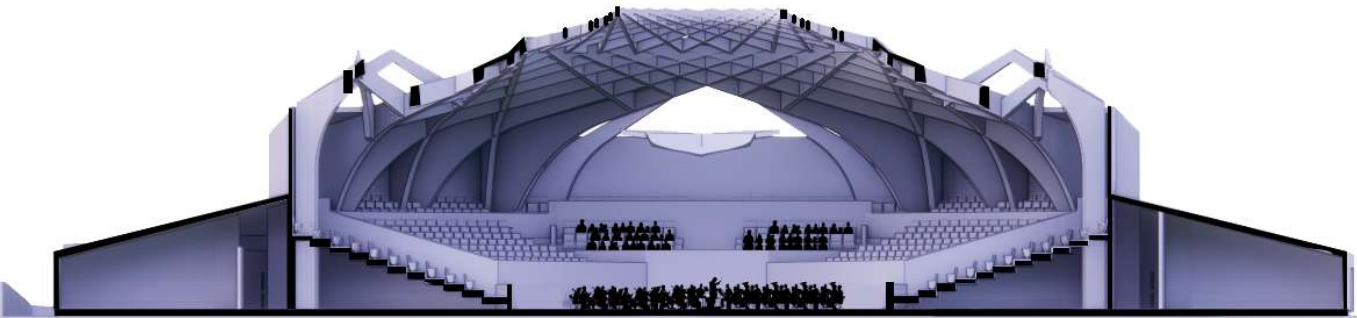


South



East

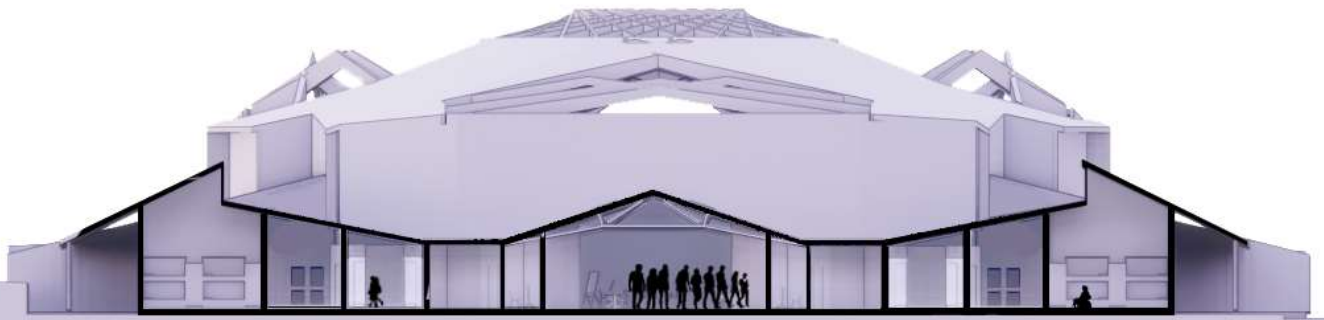
SECTIONS



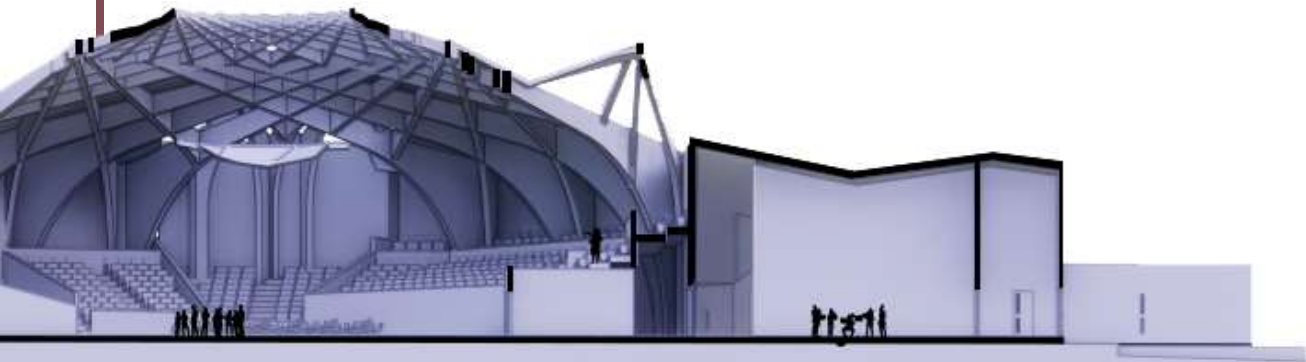
Section A



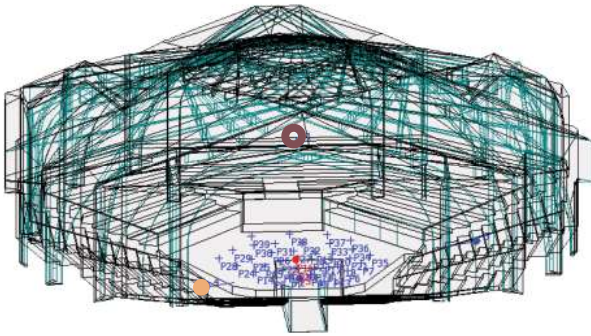
Section C



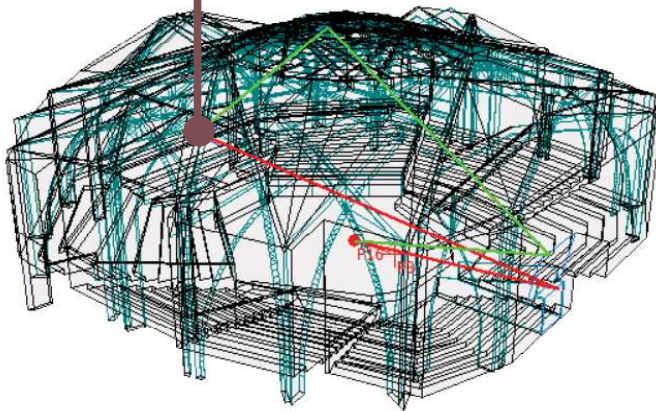
Section B



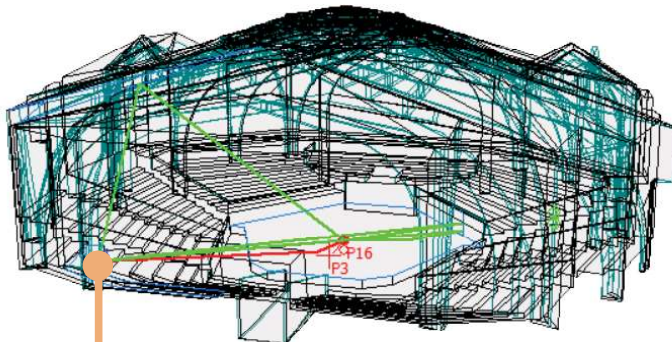
ACOUSTIC SIMULATION



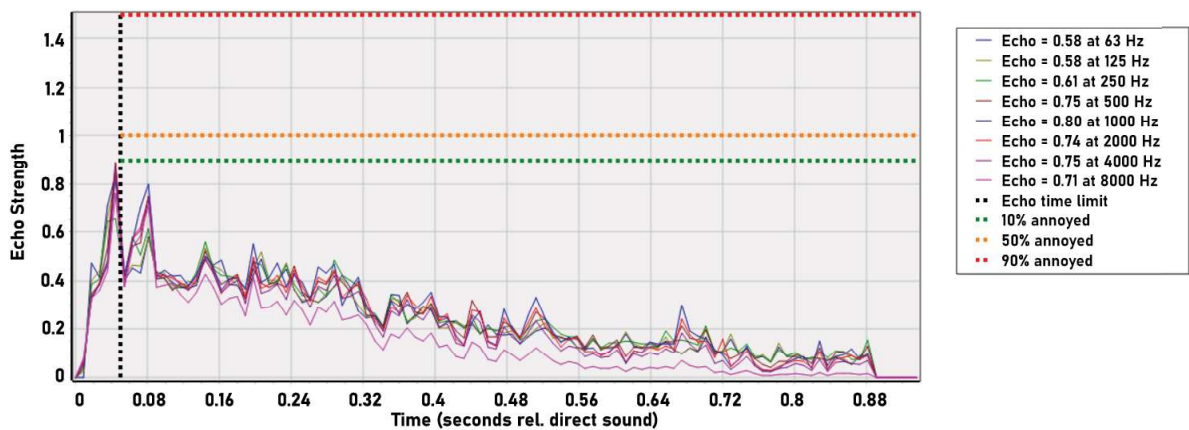
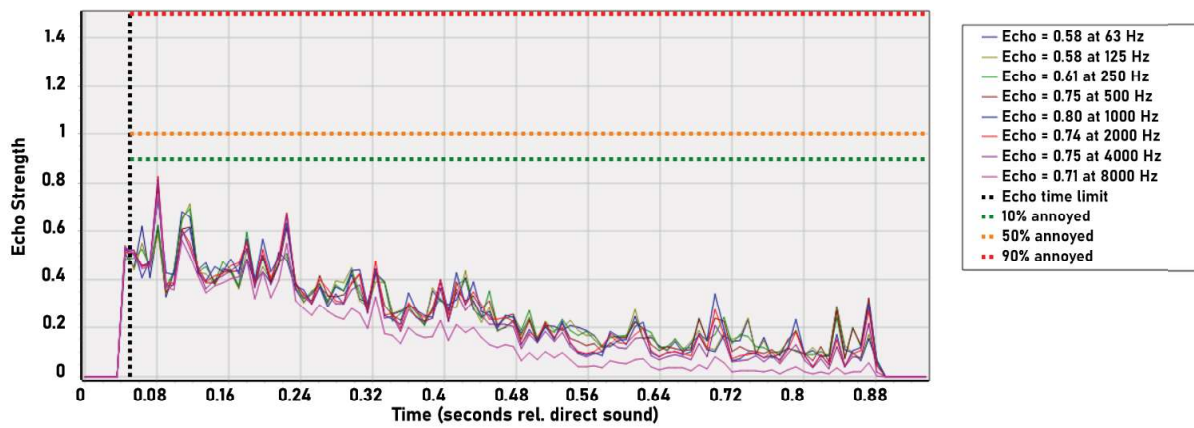
To the left is a diagram of the auditorium set up for Gustav Mahler's Symphony No. 1. The two audience members' sound experience are shown to the right. The reflectograms on the next page demonstrate the path sound takes from the performer to the audience the Dietch echo curves determine the quality of audio.

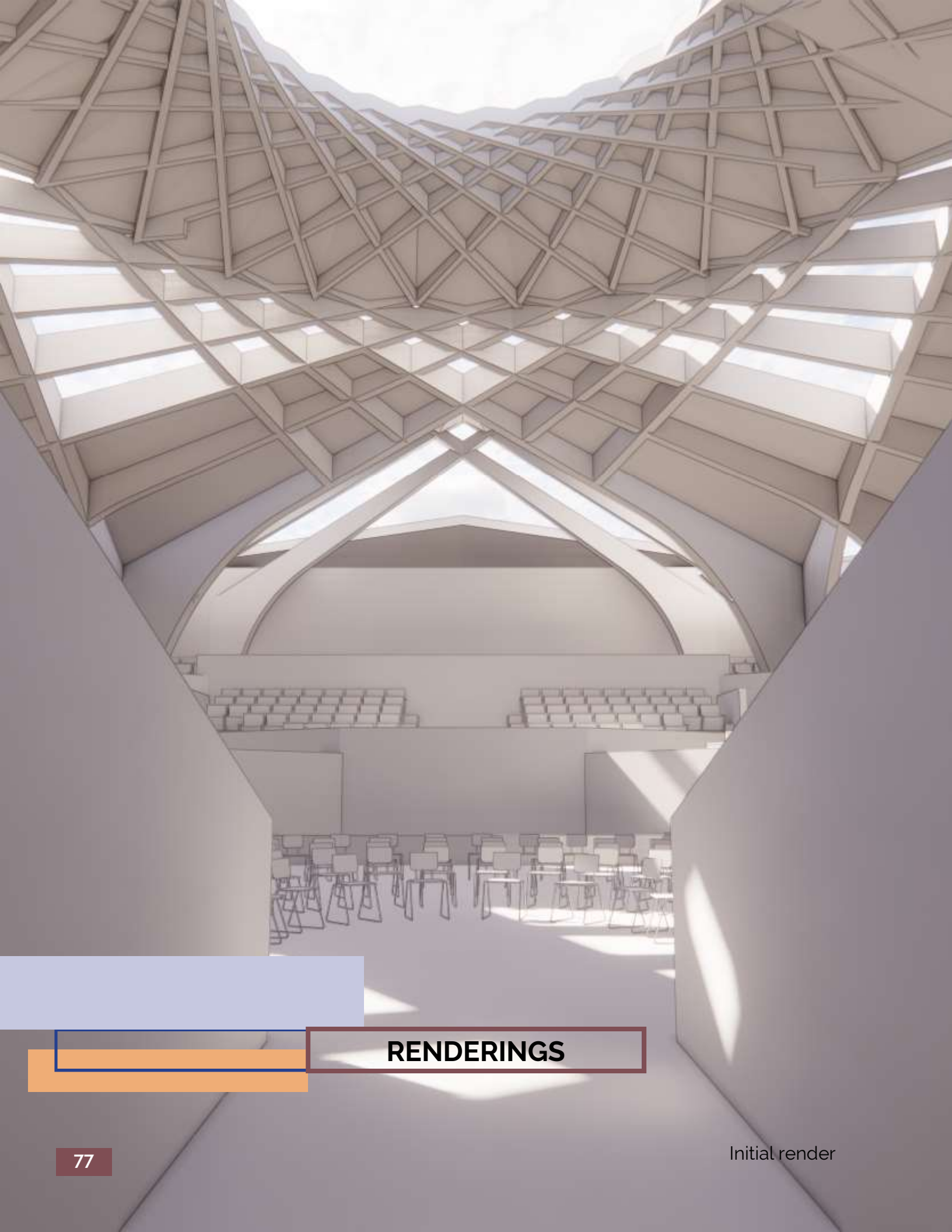


Scale: Music Time Rel. Direct	
200+	Light Blue
80-200 ms	Blue
20-80 ms	Green
2-20 ms	Yellow
0-2 ms	Red



Scale: Music Time Rel. Direct	
200+	Light Blue
80-200 ms	Blue
20-80 ms	Green
2-20 ms	Yellow
0-2 ms	Red

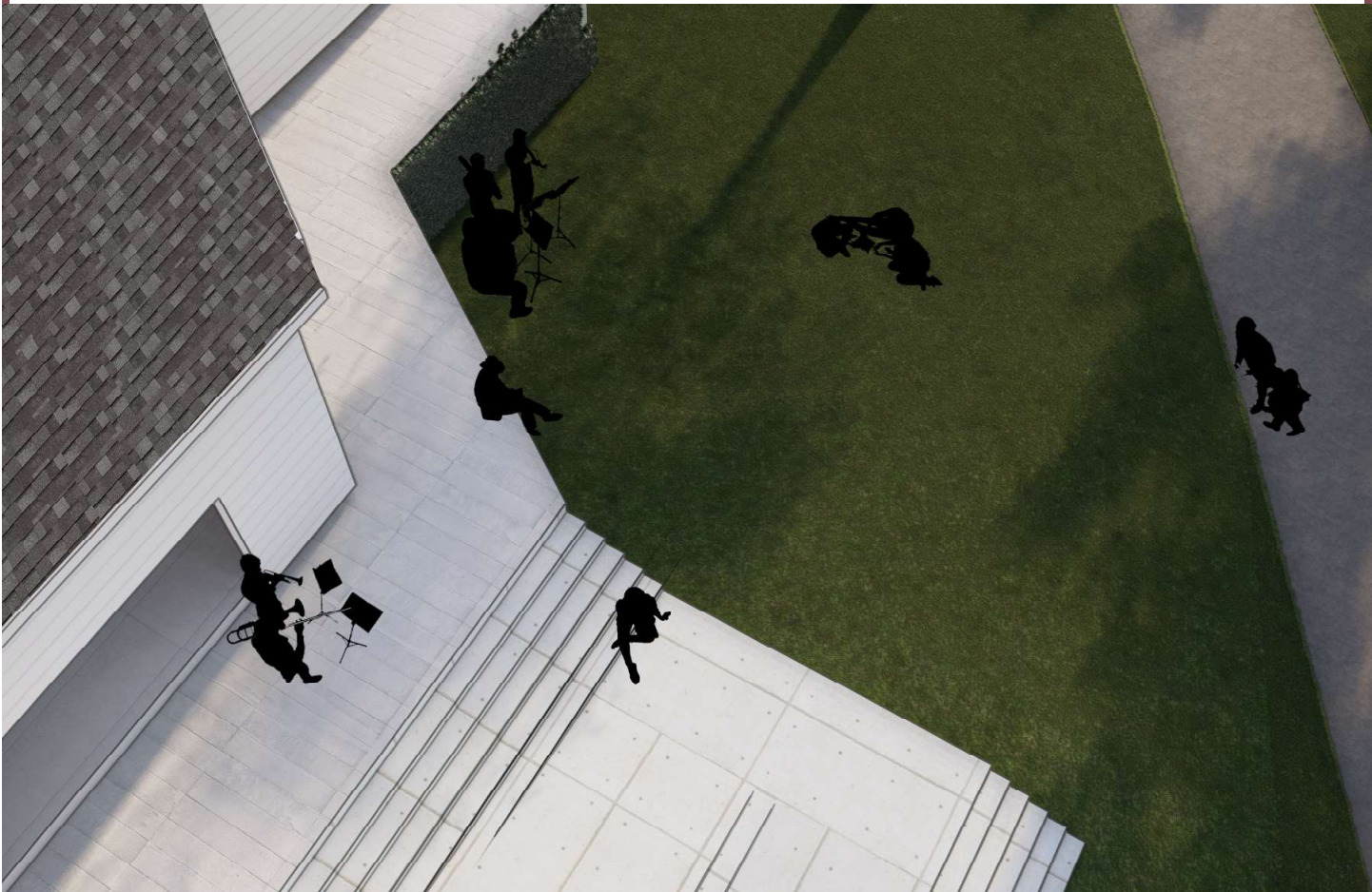




RENDERINGS



Front Exterior



Indoor/outdoor performance/rehearsal space



Studio/gallery space



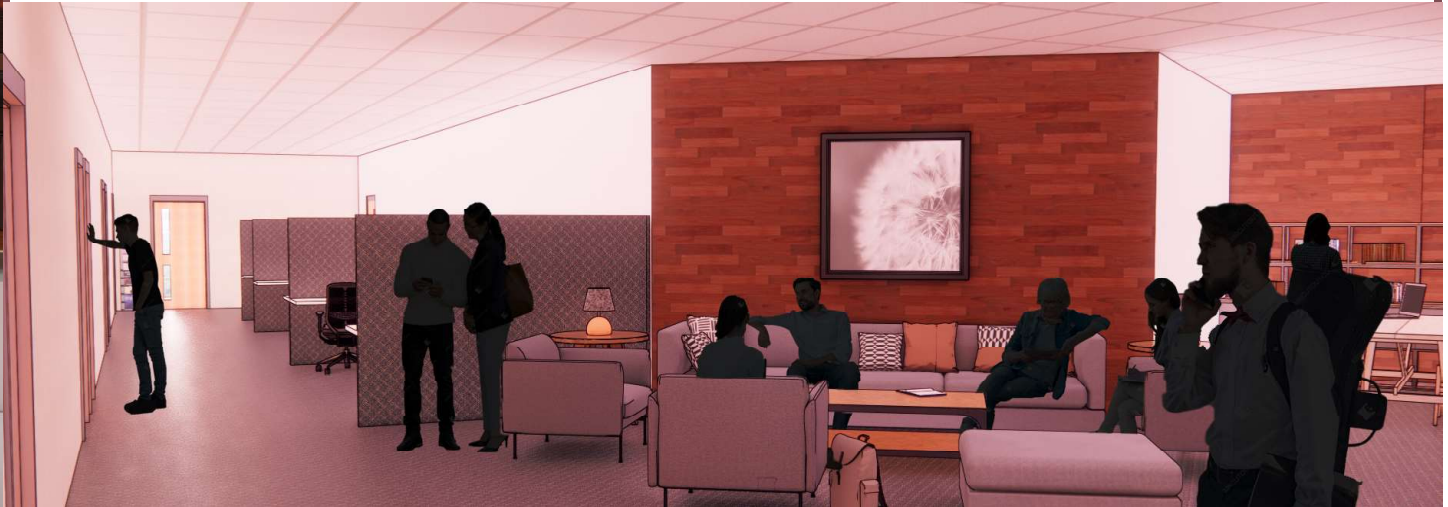
Rehearsal/classroom



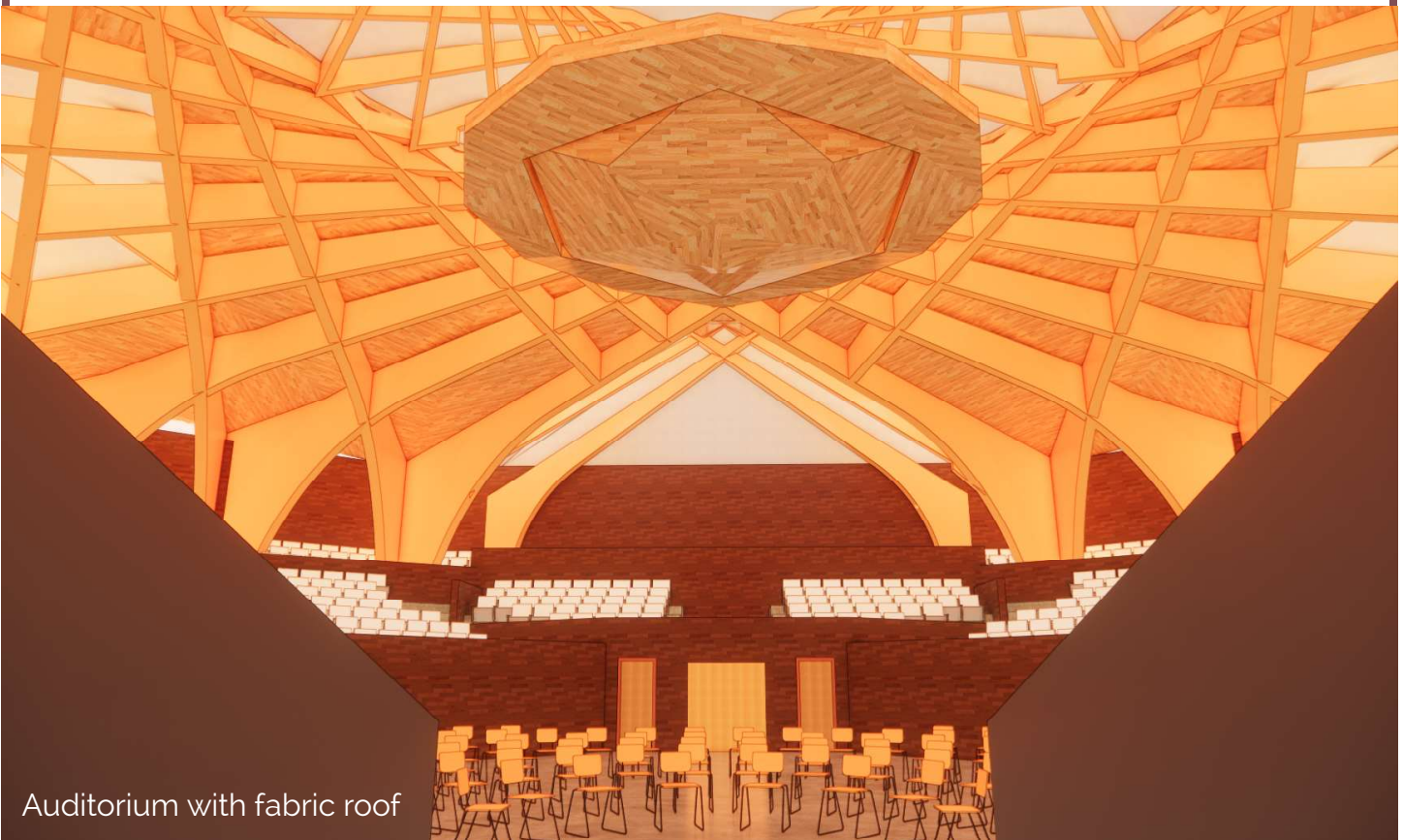
Pod dorm

Hostel Dorm

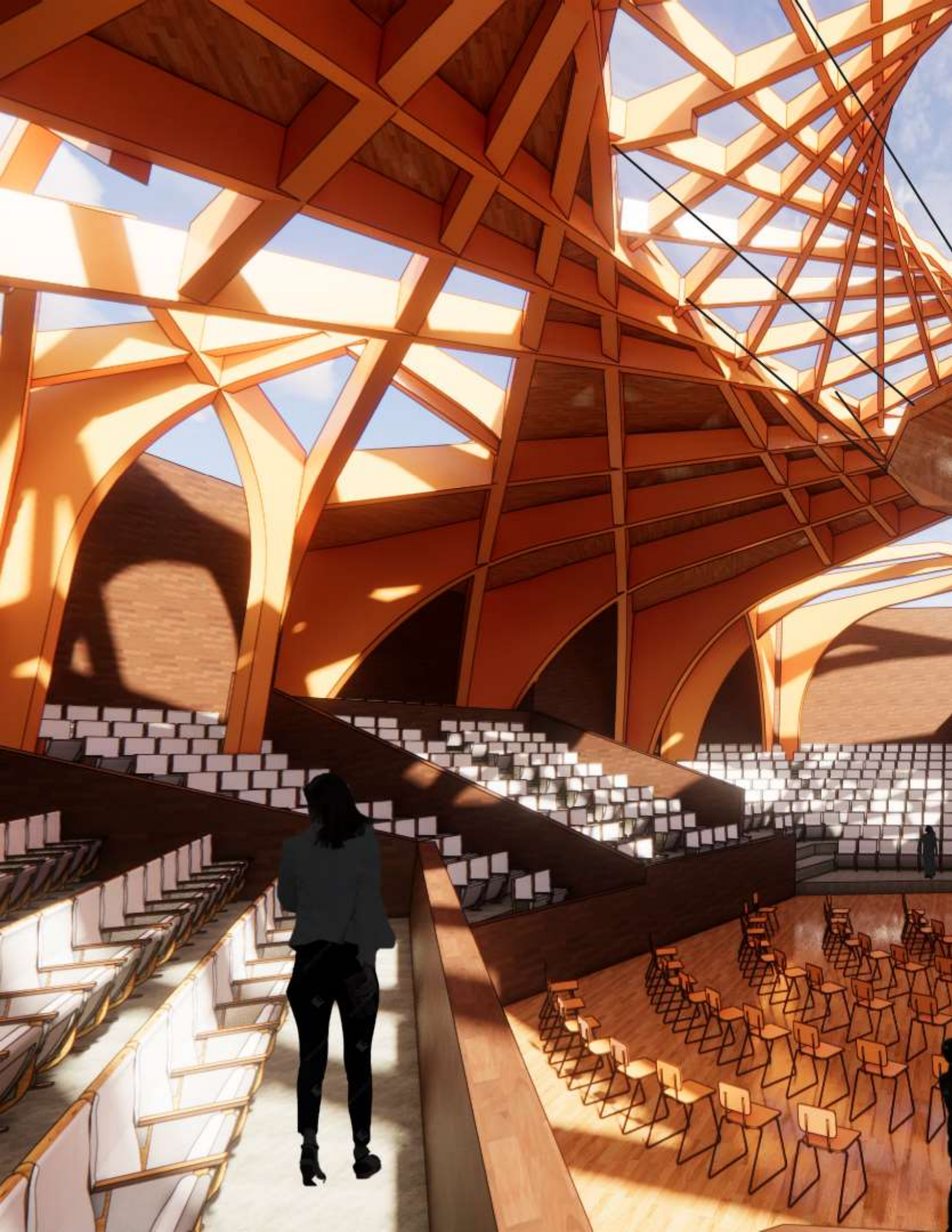
Staff bedroom

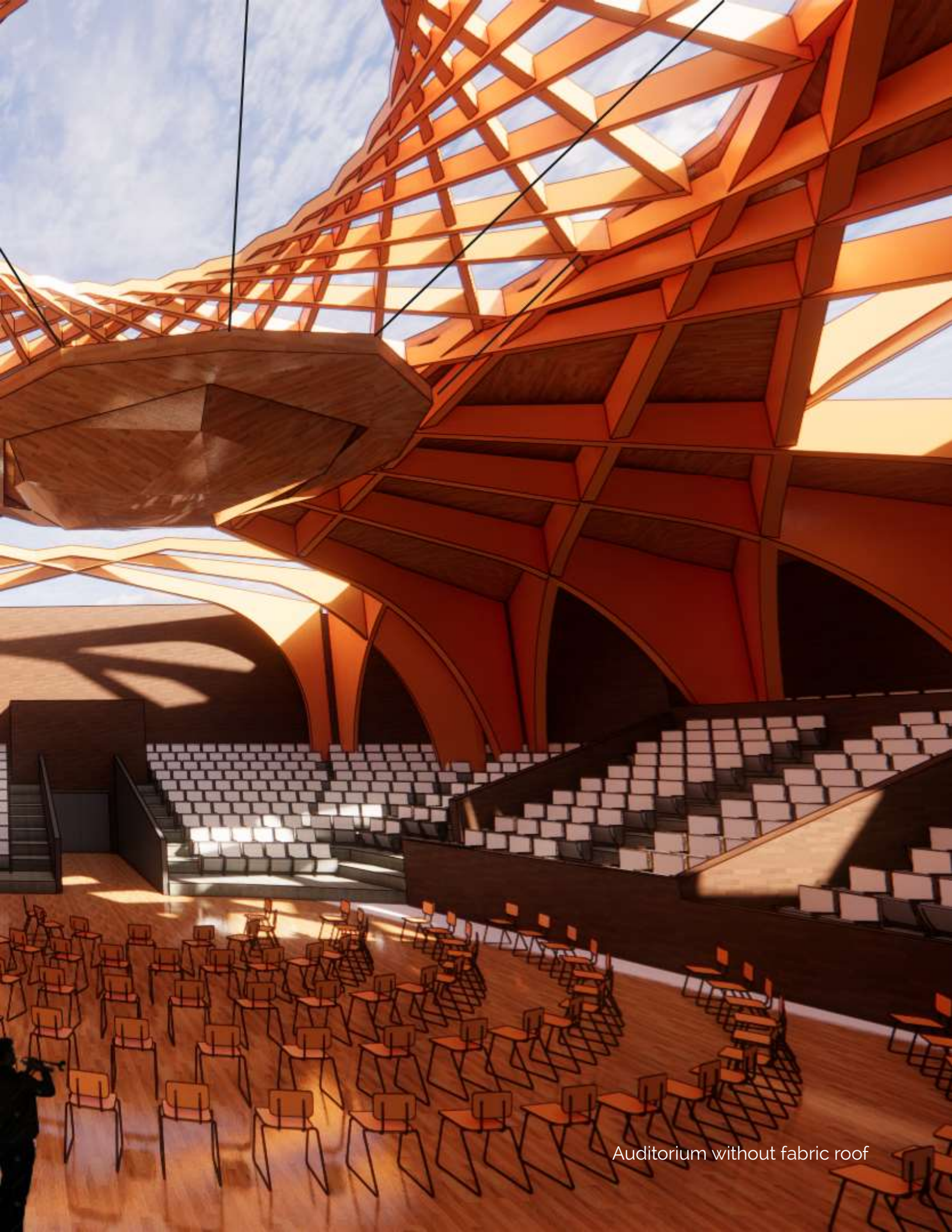


Staff lounge

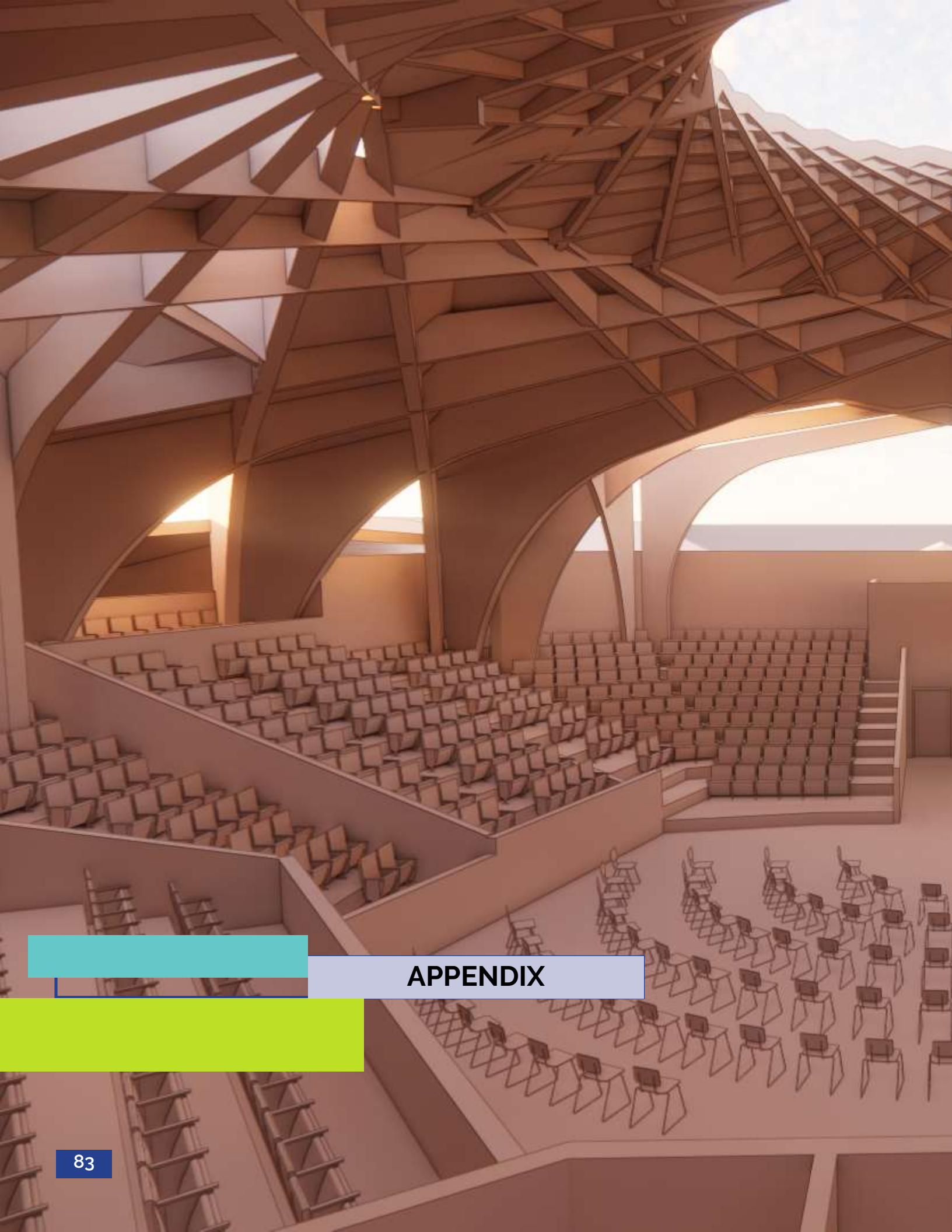


Auditorium with fabric roof

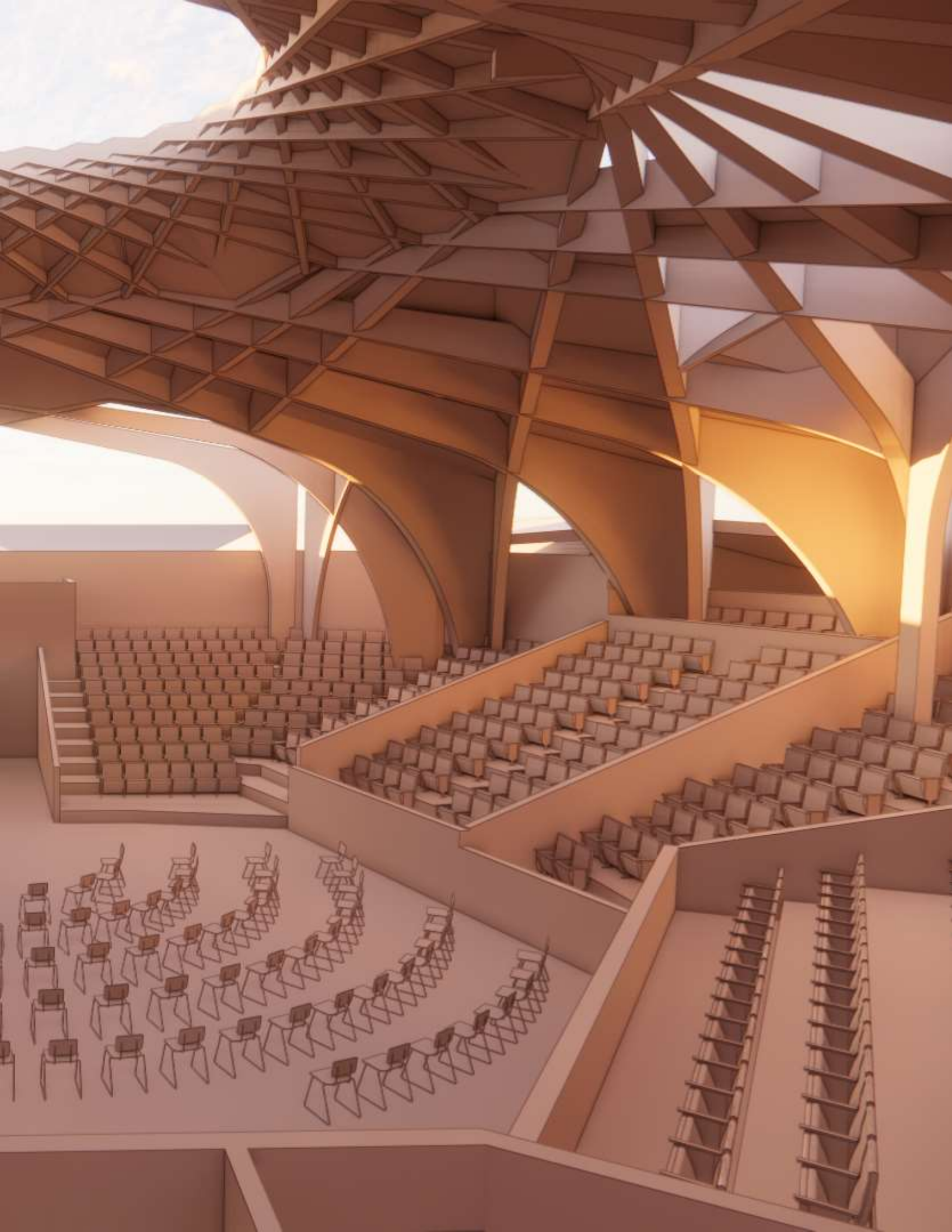




Auditorium without fabric roof



APPENDIX



RESOURCES

Arlington ISD. (n.d.). AISD Center for Visual and Performing Arts [Photograph]. AISD.Net. <https://www.aisd.net/center-for-visual-and-performing-arts/venue/>

Archdaily. (n.d.). Ballet Memphis [Photograph]. Archdaily. <https://www.archdaily.com/887483/ballet-memphis-archimania>

Archdaily. (n.d.). Tianjin Juilliard School [Photograph]. Archdaily. <https://www.archdaily.com/960166/tianjin-juilliard-school-diller-scofidio-plus-renfro>

Archdaily. (n.d.). Estudio Massana [Photograph]. Archdaily. <https://www.archdaily.com/910633/escola-massana-art-and-design-center-estudio-carne-pinos>

Spitzer, Michael Musical Human: A History of Life on Earth - A Bbcradio 4 'Book of the Week'. BLOOMSBURY PUBLISHING, 2022.

Cytowic, R. E. (2018). Synesthesia. Cambridge, MA: The MIT Press.

Jensen, Eric. Arts with the Brain in Mind. Hawker Brownlow Education, 2004.

Berendt, Joachim Ernst. Nada Brahma, the World Is Sound: Music and the Landscape of Consciousness. East West Publications, 1988.

"RICH HISTORY OF DEDICATION & PEACE." International Peace Garden, 9 Feb. 2021. <https://peacegarden.com/discover/history/>.

"About US – International Music Camp International Peace Gardens." International Music Camp, 19 Nov. 2021. <https://internationalmusiccamp.com/about/>.

Bluemle, John, et al. "Turtle Mountain." North Dakota Geology, 29 Sept. 2015. <http://johnbluemle.com/21-mountainous-areas-of-nd-turtle-mountain/>.

"Dunseith, North Dakota Population 2021." Dunseith, North Dakota Population 2021 (Demographics, Maps, Graphs), <https://worldpopulationreview.com/us-cities/dunseith-nd-population>.

AAA Native Arts. (n.d.). Creation of Turtle Mountain. Aaanativearts.Com. <https://www.aaanativearts.com/creation-of-turtle-mountain>

Wikipedia contributors. (2021, December 25). Tatev Monastery. Wikipedia. https://en.wikipedia.org/wiki/Tatev_Monastery

IMAGE CITATIONS

Academy of Sacred Geometry. (2014, April 9). Vitruvian Man [Illustration]. Academysacredgeometry.Com. <https://www.academysacredgeometry.com/courses/mysteries-vitruvian-man>

Archdaily. (n.d.). Ballet Memphis [Photograph]. Archdaily. <https://www.archdaily.com/887483/ballet-memphis-archimania>

Archdaily. (n.d.). Tianjin Juilliard School [Photograph]. Archdaily. <https://www.archdaily.com/960166/tianjin-juilliard-school-diller-scofidio-plus-renfro>

Archdaily. (n.d.). Estudio Massana [Photograph]. Archdaily. <https://www.archdaily.com/910633/escola-massana-art-and-design-center-estudio-carne-pinos>

Arlington ISD. (n.d.). AISD Center for Visual and Performing Arts [Photograph]. AISD.Net. <https://www.aisd.net/center-for-visual-and-performing-arts/venue/gallery/>

Coltrane, J. C. (n.d.). John Coltrane's Circle of Fifths [Diagram]. Faena. <https://www.faena.com/aleph/john-coltranes-drawing-of-the-mathematical-soul-of-music>

International Music Camp. (n.d.-a). Bert/Mayer Outside [Photograph]. Internationalmusiccamp.Com. [https://internationalmusiccamp.com/gallery/dorms/#prettyPhoto\[group-851\]/6/](https://internationalmusiccamp.com/gallery/dorms/#prettyPhoto[group-851]/6/)

International Music Camp. (n.d.-a). Burdick Center [Photograph]. Internationalmusiccamp.Com. <https://internationalmusiccamp.com/about/facilities/alme-international-arts-centre/burdick-center-1-web/>

International Music Camp. (n.d.-a). Fine Arts Center [Photograph]. Internationalmusiccamp.Com. [https://internationalmusiccamp.com/gallery/out-and-about/#prettyPhoto\[group-673\]/4/](https://internationalmusiccamp.com/gallery/out-and-about/#prettyPhoto[group-673]/4/)

International Music Camp. (n.d.-a). Haugland/Solberg/Dow/Pollock Beds [Photograph]. Internationalmusiccamp.Com. [https://internationalmusiccamp.com/gallery/dorms/#prettyPhoto\[group-851\]/14/](https://internationalmusiccamp.com/gallery/dorms/#prettyPhoto[group-851]/14/)

International Music Camp. (n.d.). IMC Map [Illustrated Map]. Internationalmusiccamp.Com. <https://internationalmusiccamp.com/wp-content/uploads/2014/09/IMC-Map.pdf>

Quenzer, M. Q. (2012, June 10). Sky Woman [Illustration]. Journeytothegoddess.Com. <https://journeytothegoddess.wordpress.com/2012/06/10/goddess-awehai/>

Tatev Monastery. (n.d.). [Photograph]. Araratour.Com. <https://araratour.com/the-legends-of-tatev-monastery>

The Turtle and the Elephant. (n.d.). [Illustration]. Live-Science.Com. https://www.native-science.net/Turtle_Elephant_Myth.htm
https://www.archdaily.com/search/all?q=estudio%20mansana&ad_source=jv-header

SYNERGY

Integrating Performing and Fine Arts

Abstract

How do you create a space that is flexible, well-ventilated, and able to host a great collection of the fine arts? The goal for this project was to create a space that is flexible, well-ventilated, and able to host a great collection of the fine arts. The goal for this project was to create a space that is flexible, well-ventilated, and able to host a great collection of the fine arts.

Creating a space that is flexible, well-ventilated, and able to host a great collection of the fine arts. The goal for this project was to create a space that is flexible, well-ventilated, and able to host a great collection of the fine arts.

Process

The project began with a series of meetings with the client to discuss their vision for the space. The goal was to create a space that is flexible, well-ventilated, and able to host a great collection of the fine arts.

Keynote

The keynote address was given by the Mayor of the city, who spoke about the importance of the arts in the community and the role of the new building in supporting the arts.

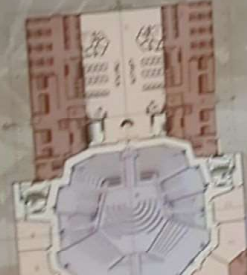
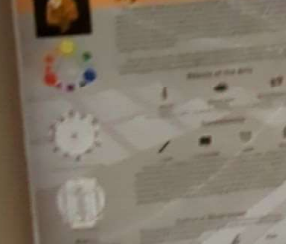
Keynote

The keynote address was given by the Mayor of the city, who spoke about the importance of the arts in the community and the role of the new building in supporting the arts.

Elevations



Significance of the Arts



Floor Plan

- Auditorium
- Gallery
- Rehearsal Room
- Office
- Storage
- Restroom
- Break Room
- Waiting Area
- Entrance
- Exit



Acoustic Simulation

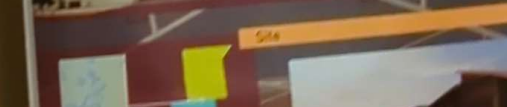
Acoustic simulation results showing sound wave patterns and frequency analysis for the auditorium space.

Reference

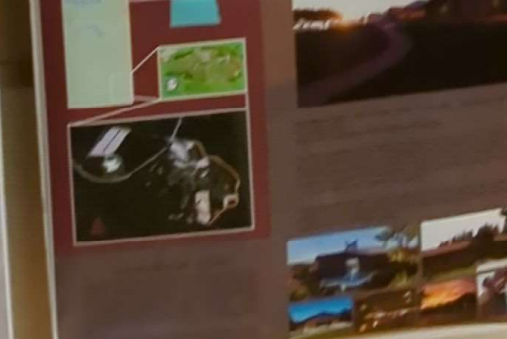
Reference images and documents used in the design process, including architectural models and site plans.

South-East Corridor

South-East Corridor architectural drawings and site plans showing the building's location and surrounding context.



Site



INSTALLATION



STUDIO EXPERIENCE

FIRST YEAR

FALL 2017 & SPRING 2018

Environmental Design | Heather Fischer

SECOND YEAR

FALL 2018 | CHARLOTTE GREUB

Tea House | Moorhead, MN

Boathouse | Minneapolis, MN

SPRING 2019 | AMAR HUSSEIN

Dwelling | Marfa, TX

Mixed-Use Apartment Complex | Fargo, ND

THIRD YEAR

FALL 2019 | REGIN SCHWAEN

Oscar-Zero Visitor's Center | Cooperstown, ND

Black Box Art Museum | Nekoma, ND



SPRING 2020 | EMILY GUO

Concrete House | Bismarck, ND

ND Capitol Office Complex | Bismarck, ND

FOURTH YEAR

FALL 2020 | MARK BARNHOUSE

High Rise | Miami, FL

SPRING 2021 | KRISTI HANSON

Vision for Medora | Medora, ND

FIFTH YEAR

FALL 2021 | GANAPATHY MAHALINGAM

Symphony Hall | Fargo, ND

SPRING 2022 | GANAPATHY MAHALINGAM

Design Thesis | International Peace Garden, USA-CA