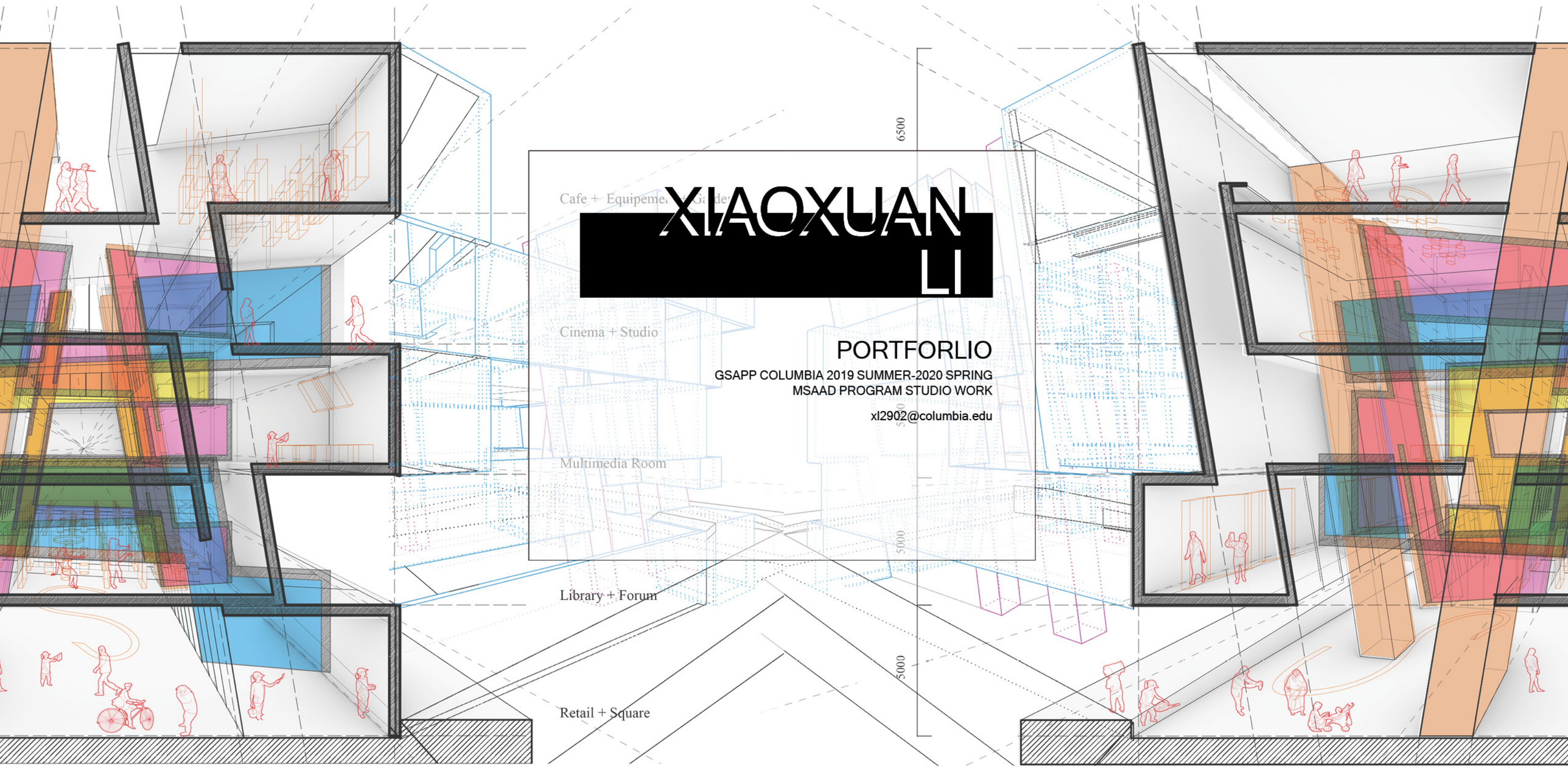


XIAOXUAN LI

PORTFORLIO

GSAPP COLUMBIA 2019 SUMMER-2020 SPRING
MSAAD PROGRAM STUDIO WORK

xl2902@columbia.edu

THAT ARCHITECTURE AS THE
ART OF ARRANGING FORMS
ACCORDING TO PRE-ESTABLISHED
CRITERIA IS FINISHED;

THAT BY THE TERM ARCHITECTURE
IS MEANT THE ENDEAVOR TO
HARMONIZE THE ENVIRONMENT
WITH MAN WITH FREEDOM
AND GREAT AUDACITY, THAT IS
TO TRANSFORM THE WORLD
OF THINGS INTO A DIRECT
PROJECTION OF THE WORLD OF
THE SPIRIT;

BY BRUCE STERLING

TABLE OF CONTENT

SOUND MUSEUM
connected / separated rooms and no-rooms

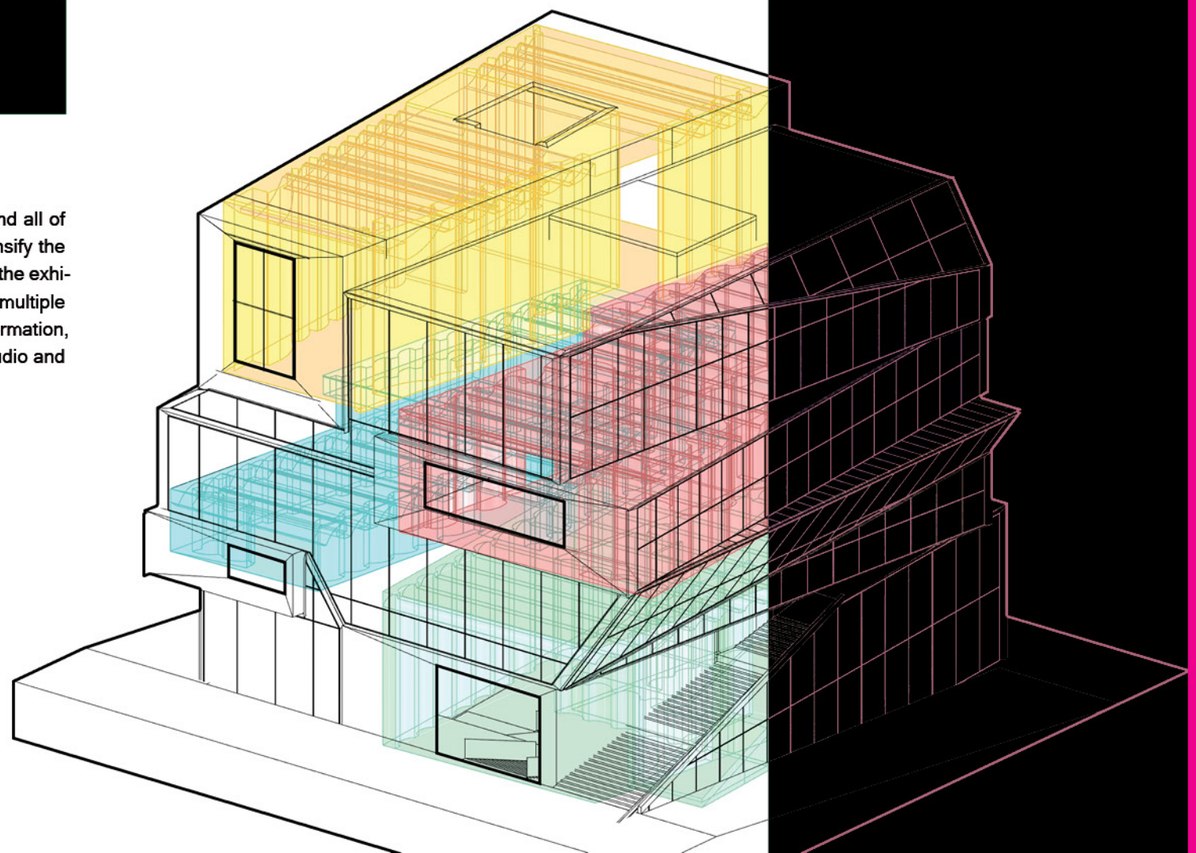
CULINARY CENTER
enviromental transformable program and heat studies

DIGITAL LANDSCAPE
rural rivival and self-media industry transition

SOUND MUSEUM

Advanced Option Studio /
Summer 2019
Instructors: Eric Bunge, Mimi Hoang
T.A.: Nanxi Su
Graduate School of Architecture
Planning and Preservation
Columbia University

Sounds and our sense of hearing shape our daily lives, our traditions, our history, and all of existence. The Galleries of Sounds employ sound in new ways to animate and intensify the experience of art. Organized vertically in shared hearing spaces to separated spaces–the exhibition explores different dimensions of sound and listening and its many functions by its multiple shapes of envelopes. The Museum space itself will become an instrument of transformation, containing immersive, site-specific installations, technologically equipped acoustic studio and productive spaces.



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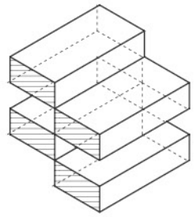
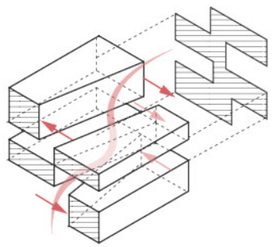
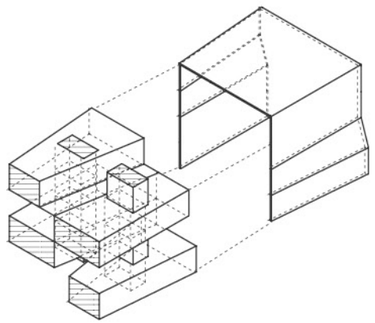
SEPARATED TUBES



STRETCH THE OPENINGS



ADDING CORE & ENVELOPE



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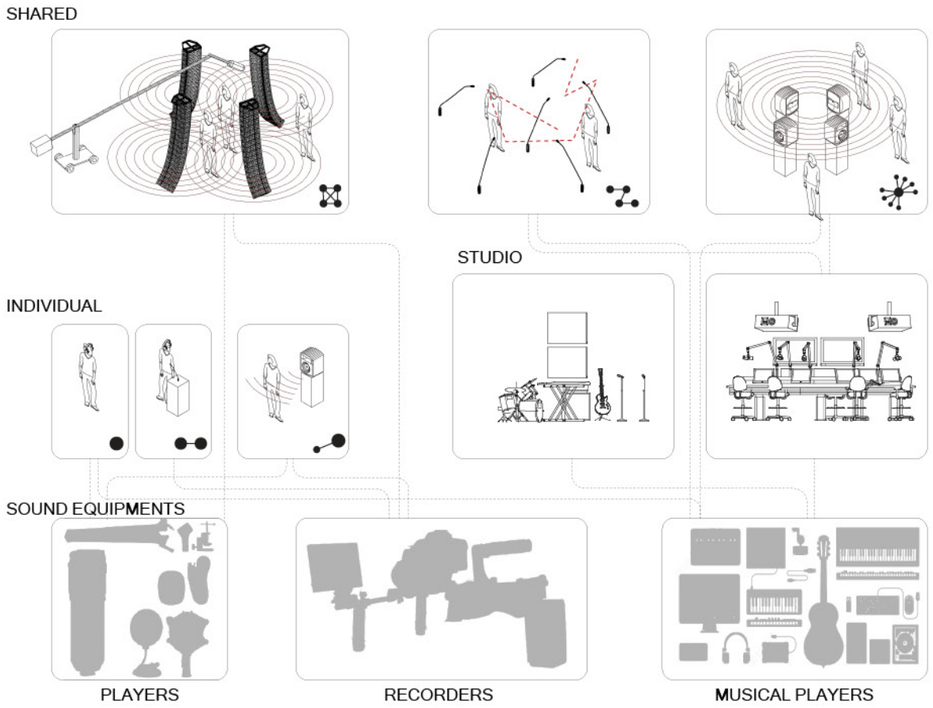


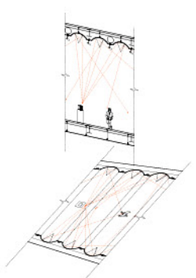
SOUND ARTS TYPES

Sound arts can be roughly categorized into two. One is an individual experience where people wearing headsets or staying in an acoustically isolated room, enjoy the sounds concentratedly. Another is shared experience where several artworks and the environmental sounds reverberate and interact with each other, creating ever-changing scenarios.

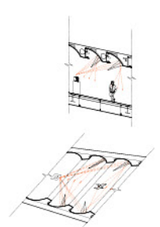
ACTIVE GROUND FLOOR

The ground floor plan is split by an open corridor into two parts, providing separated entrances for loading and office, and visitors. The corridor is covered with reflective boards, providing an equipped space for outdoor exhibitions.

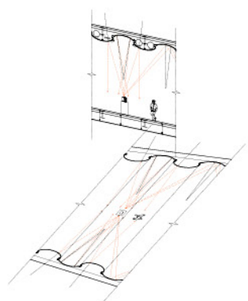
REVERBERATE



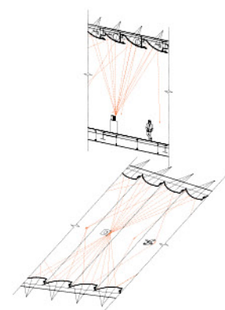
SCATTER



BLEND



BROADCAST



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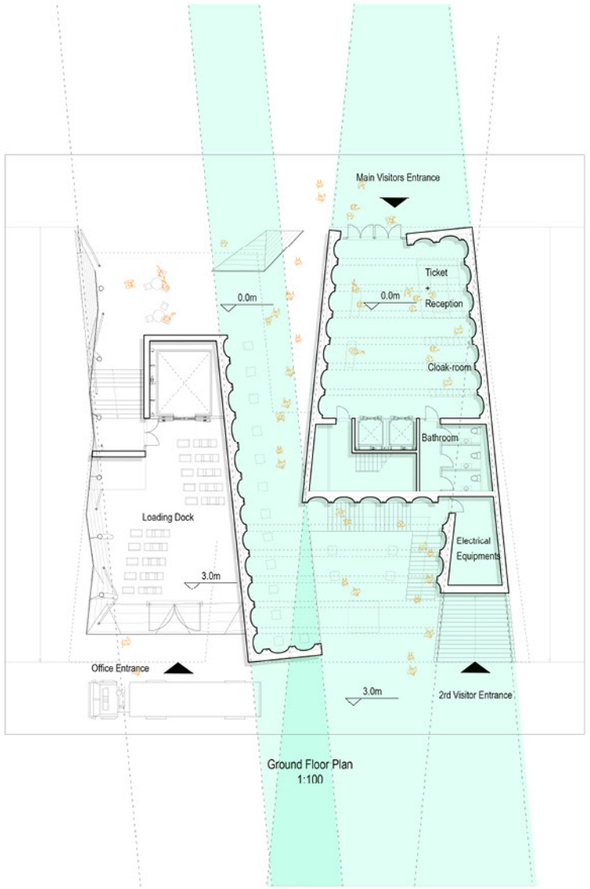
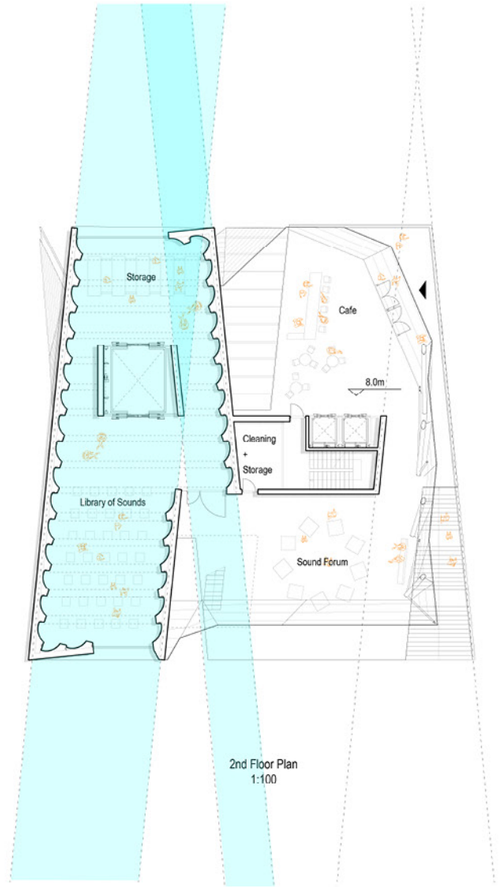
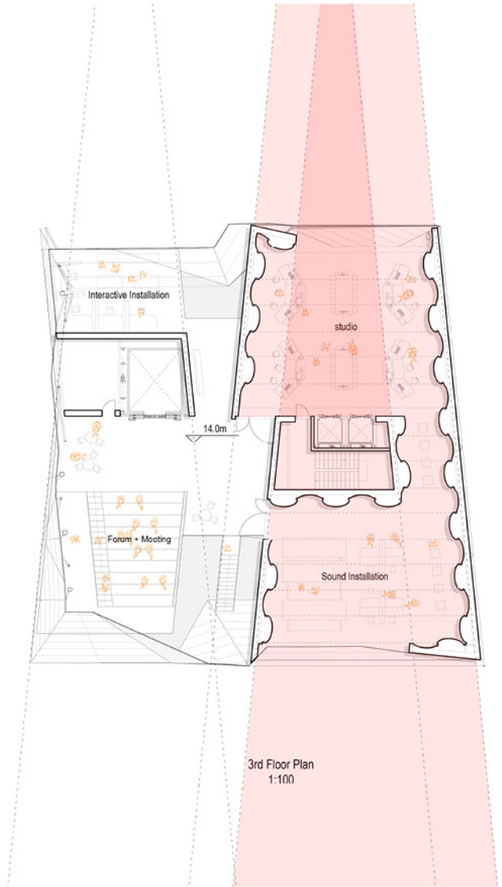


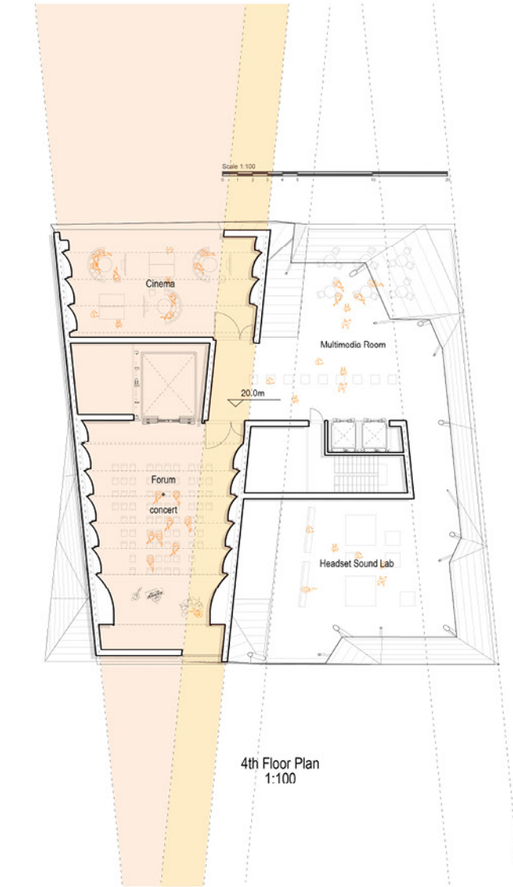
Ground Floor Plan
1:100



2nd Floor Plan
1:100



3rd Floor Plan
1:100



4th Floor Plan
1:100

OVERLAPPED TUBES & THE INBETWEEN

Separated tubes, designed for individual sounding experiences, are put one over another.
The interactive and shared experience occupying the space in-between, enveloped by translucent curtain walls.
4 tubes with different shapes of acoustic boards can meet all kinds of acoustic requirements such as reverberating, blending, broadcasting and scattering.

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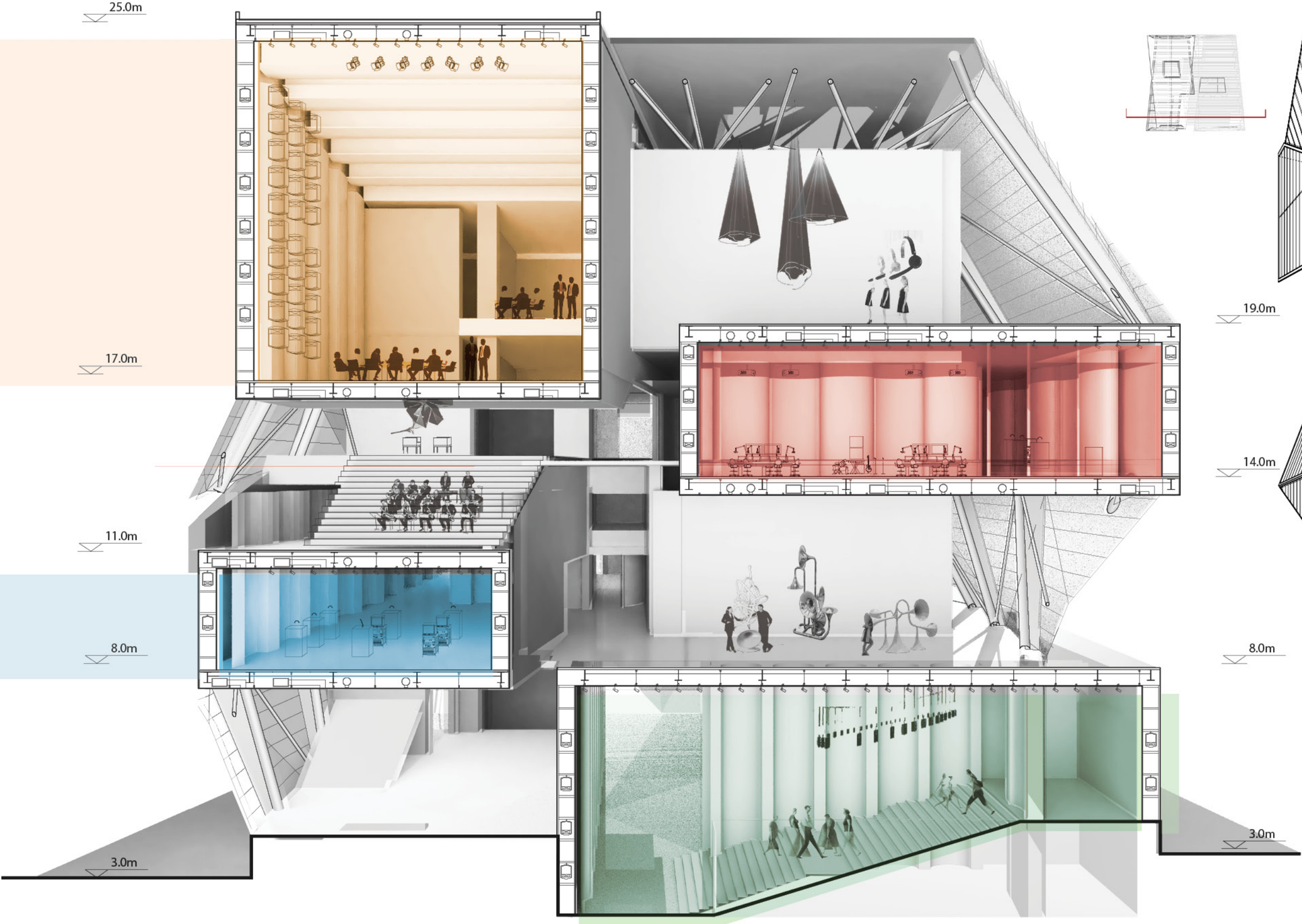

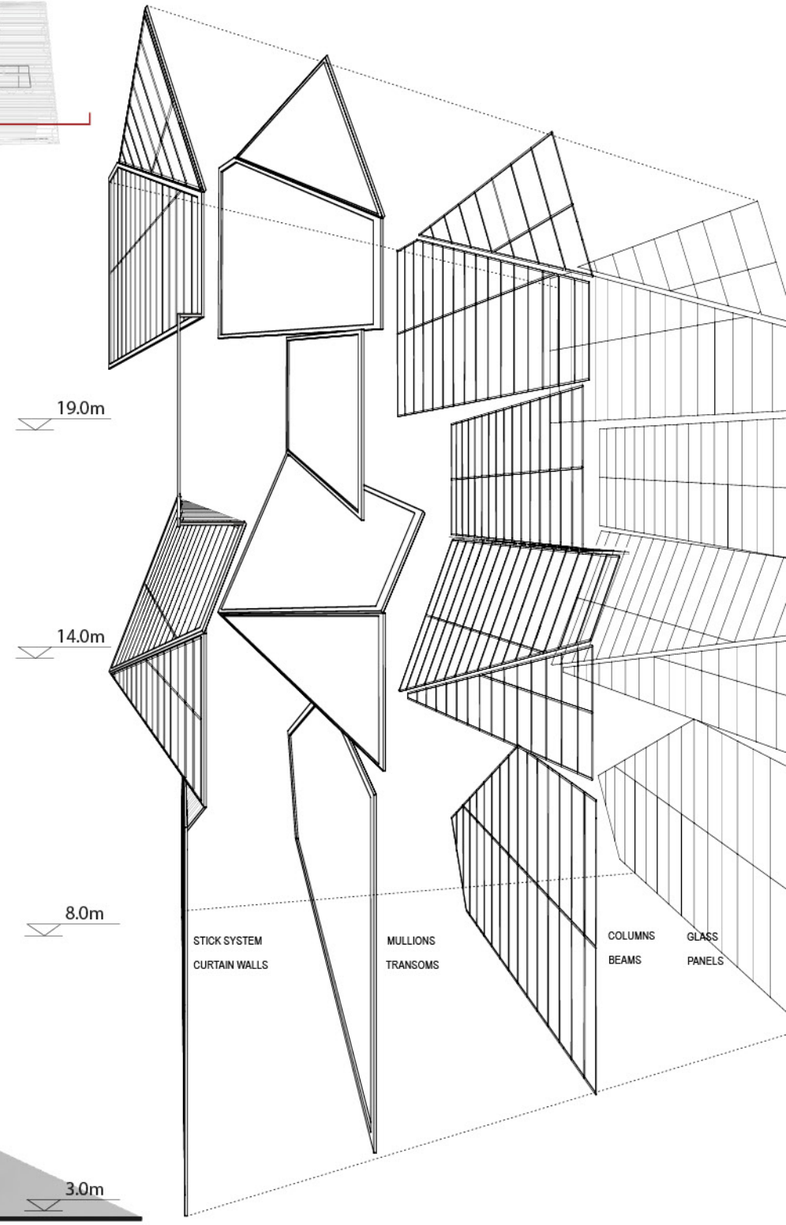

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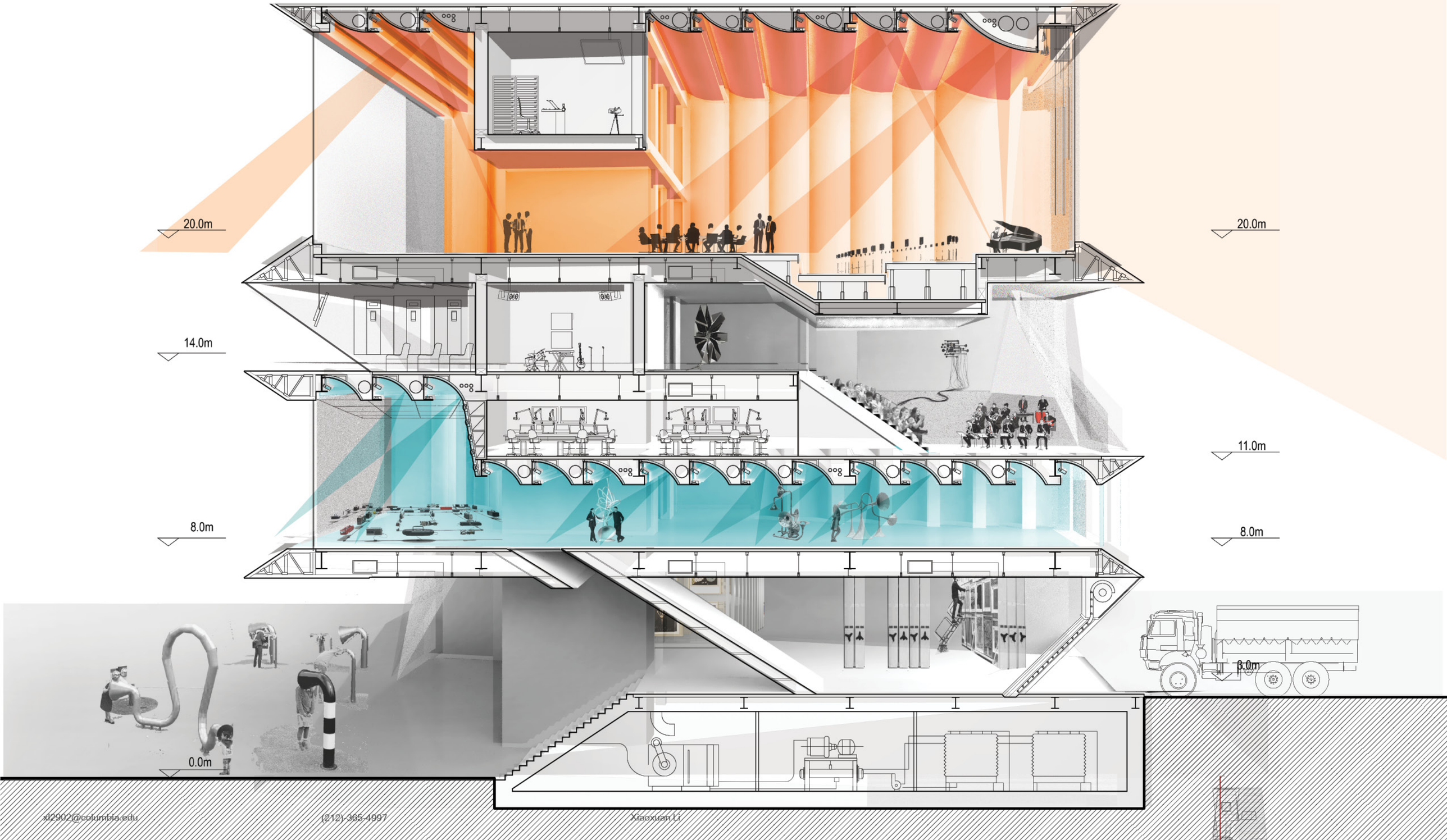

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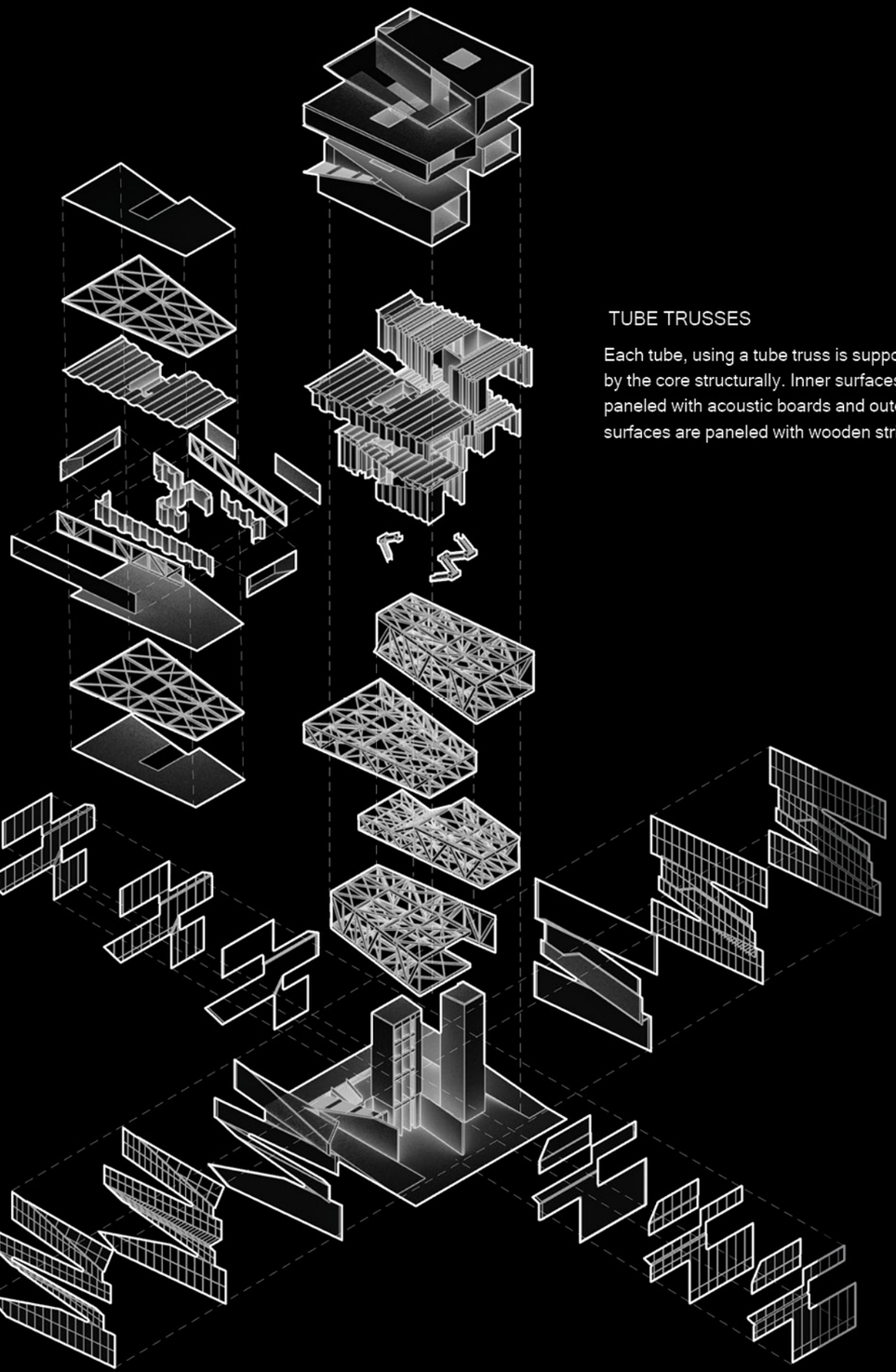
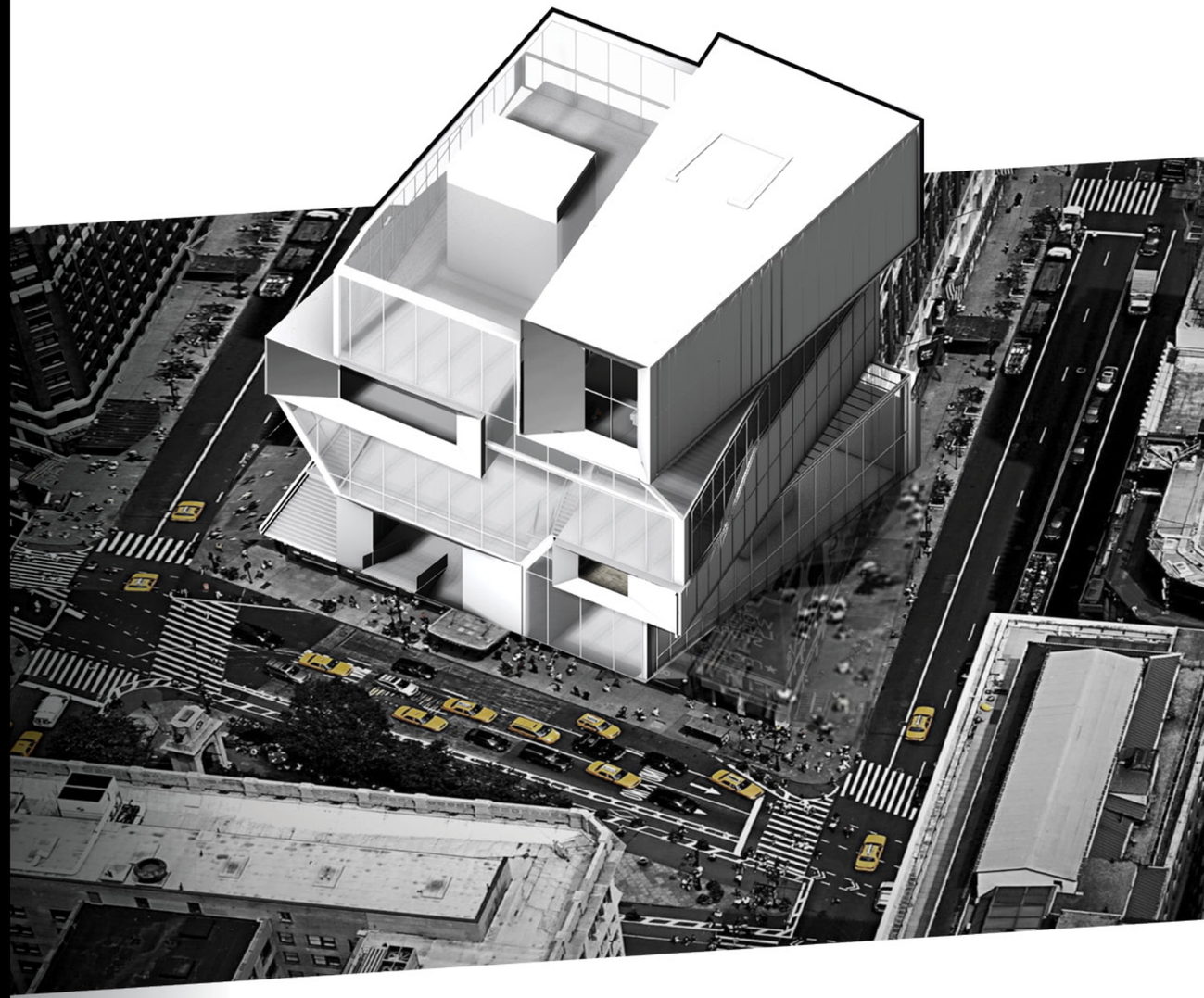


TUBE TRUSSES

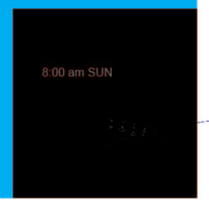
Each tube, using a tube truss is supported by the core structurally. Inner surfaces are paneled with acoustic boards and outer surfaces are paneled with wooden strips.

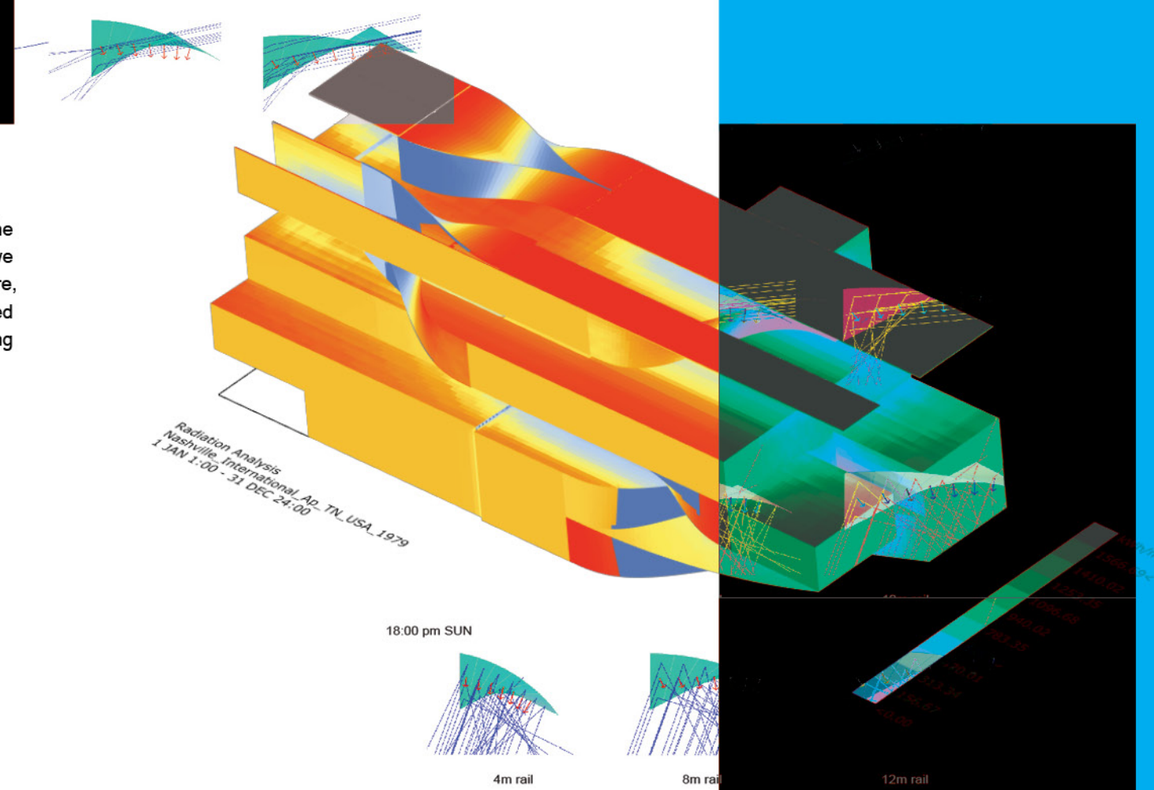


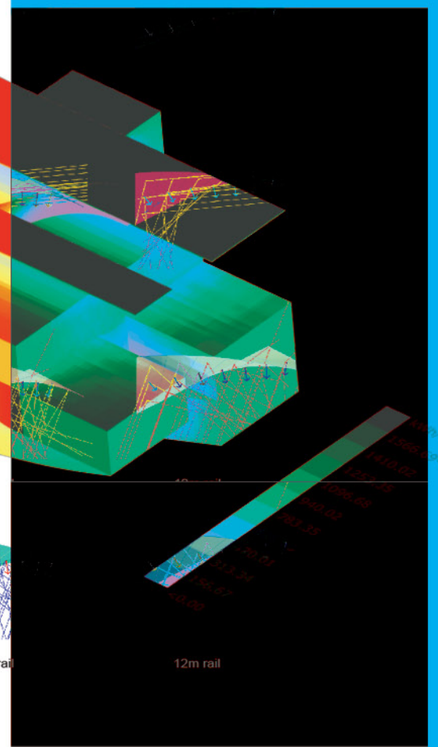
CULINARY CENTER

Advanced Option Studio /
Fall 2019
Instructors: Bernard Schumi
Group work with Jolene Jossif
T.A.: Esteban, Valeria
Graduate School of Architecture
Planning and Preservation
Columbia University

Our investigation questioned how programs can be situated and changed according to the seasonal heat gain and how programs could impact each other by heat exchange.Secondly we looked at how form can influence its performance. Programs are categorized by temperature, illustrated in color, and they are situated according to heat production. The new type is designed to have dynamic programs influenced by climatic changes and heat exchange, ultimately creating an adaptive building.







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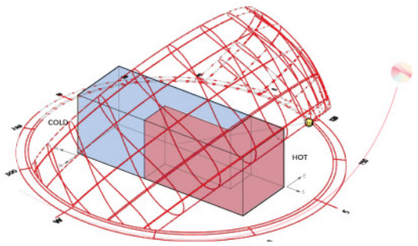
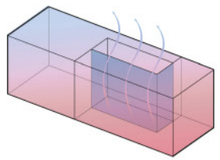
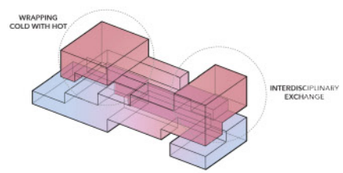
Orientation & Solar Heat Gain

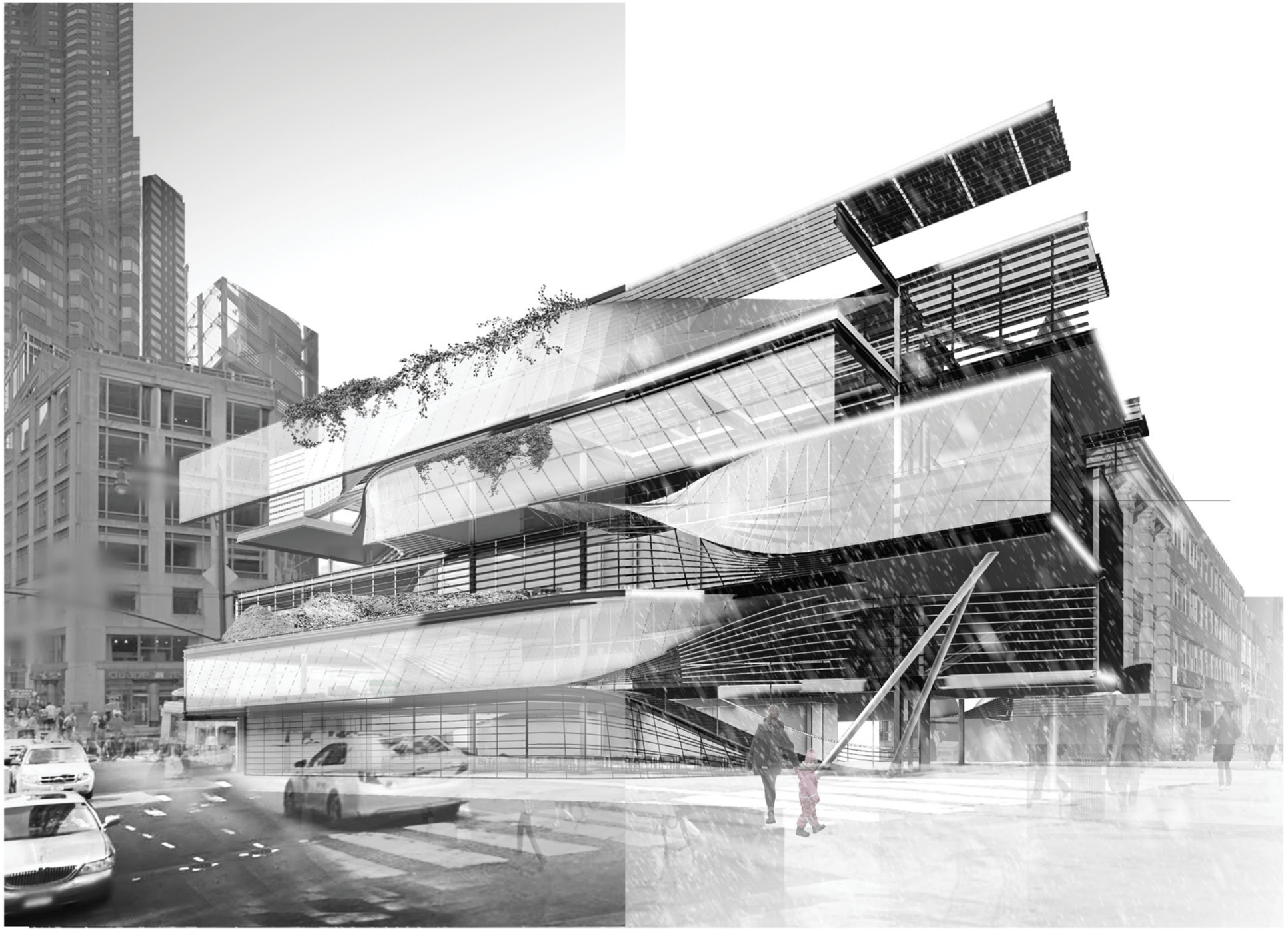


Evaporative Cooling



Stack Effect &Self-shading





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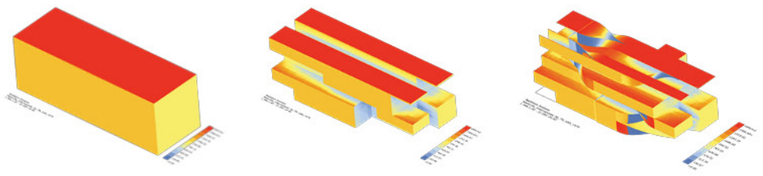
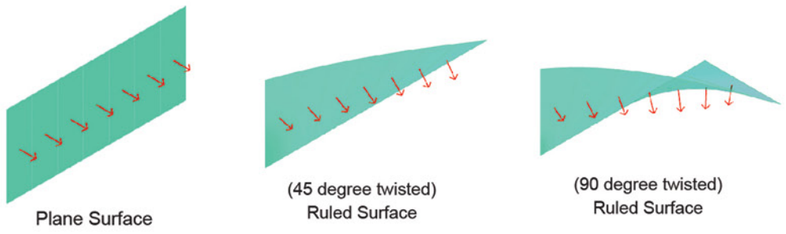


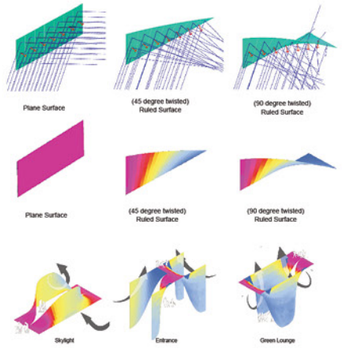
Massing for Less Solar Radiation Gain

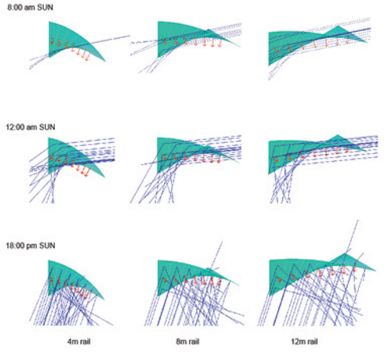


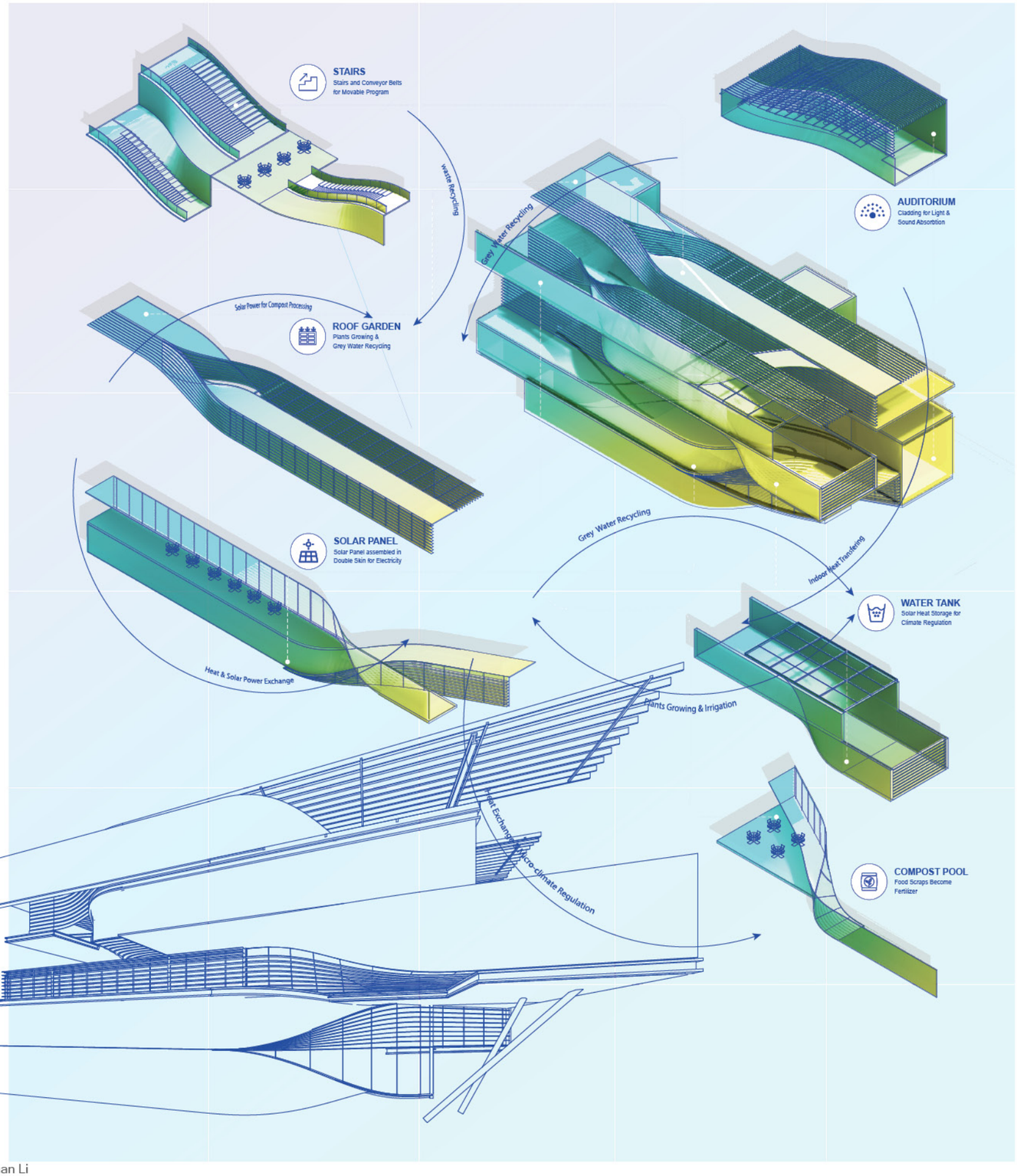
Plane Surface

(45 degree twisted)
Ruled Surface

(90 degree twisted)
Ruled Surface







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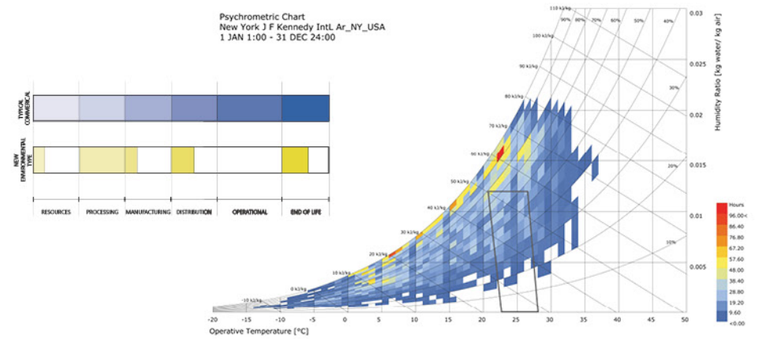

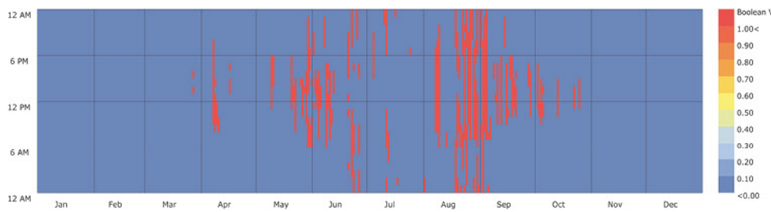

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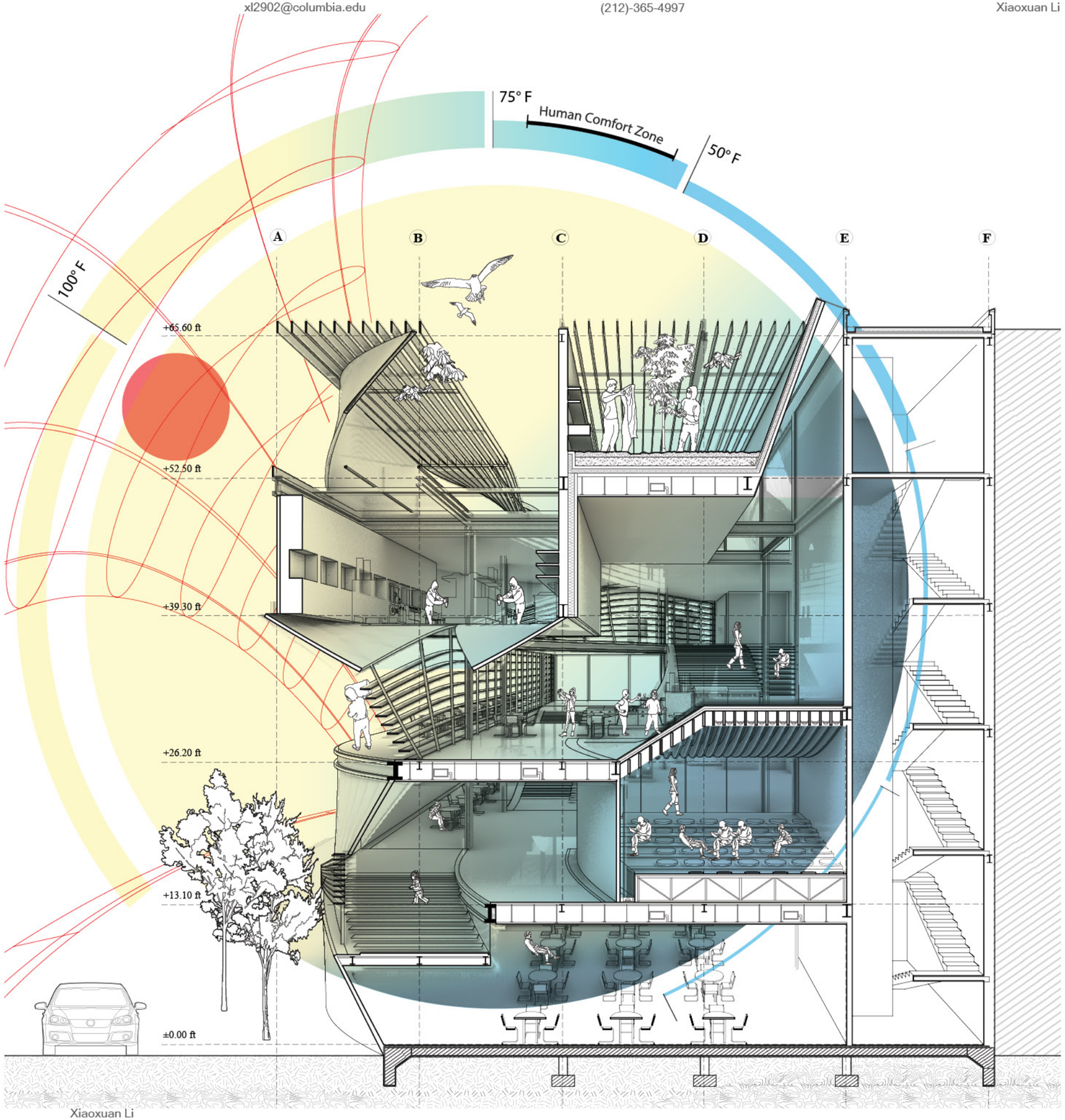

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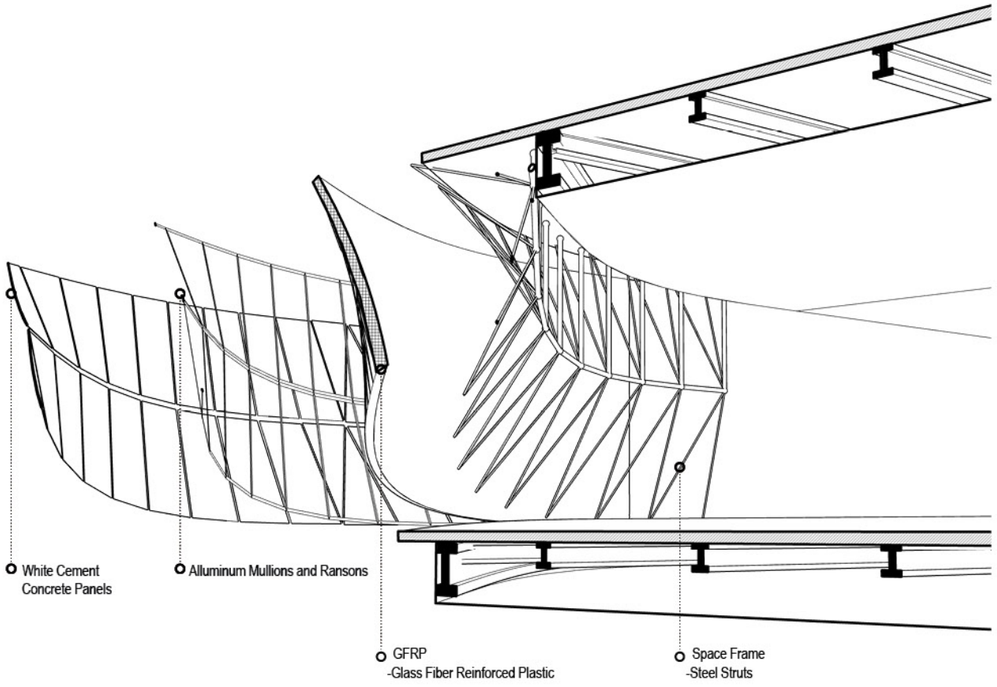
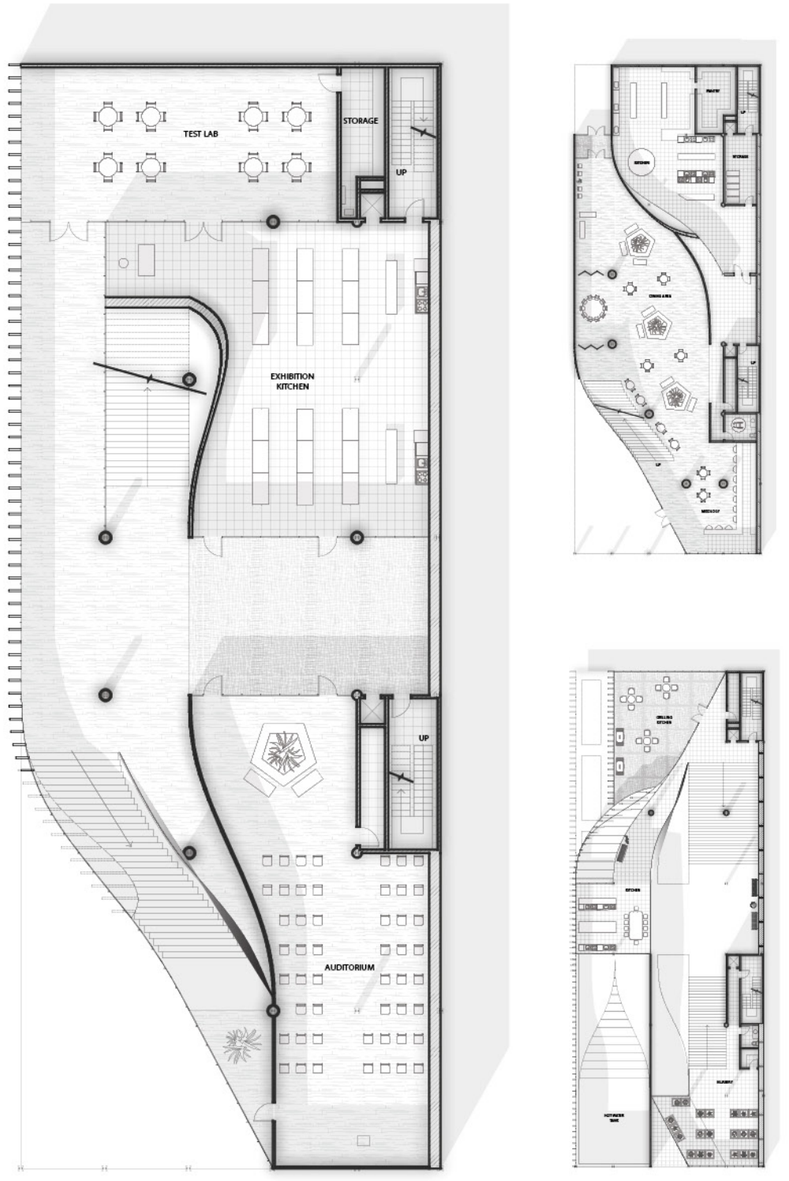


Construction Layers of the Twisted Surface

The space frames support the twisted part, with their end joints anchored to the floor plates. The walls use GFRP, each being individually molded and asssembled, providing durability and resistance. Stick system attached to the GFRP support white cement concrete panels to cover the facade and create a pure monolithic appearance.



In the plan, there is a division between areas of high solar heat gains where “cold” programs would be situated.While the “hot” programs would be located on the northern side where less sun is seen. Program transitions occur throughout the fall where furniture is moved across the building to ensure comfortable conditions.

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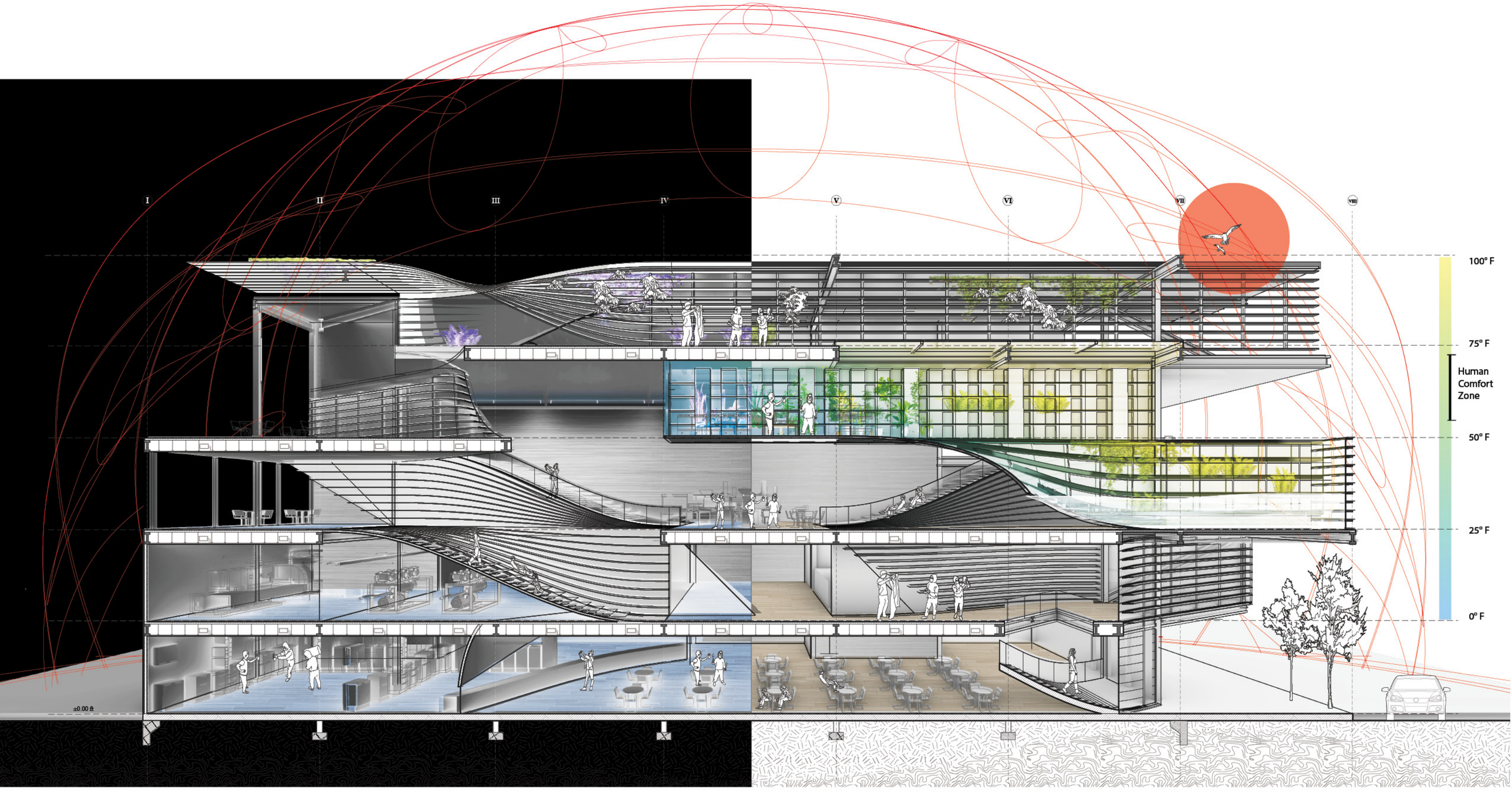

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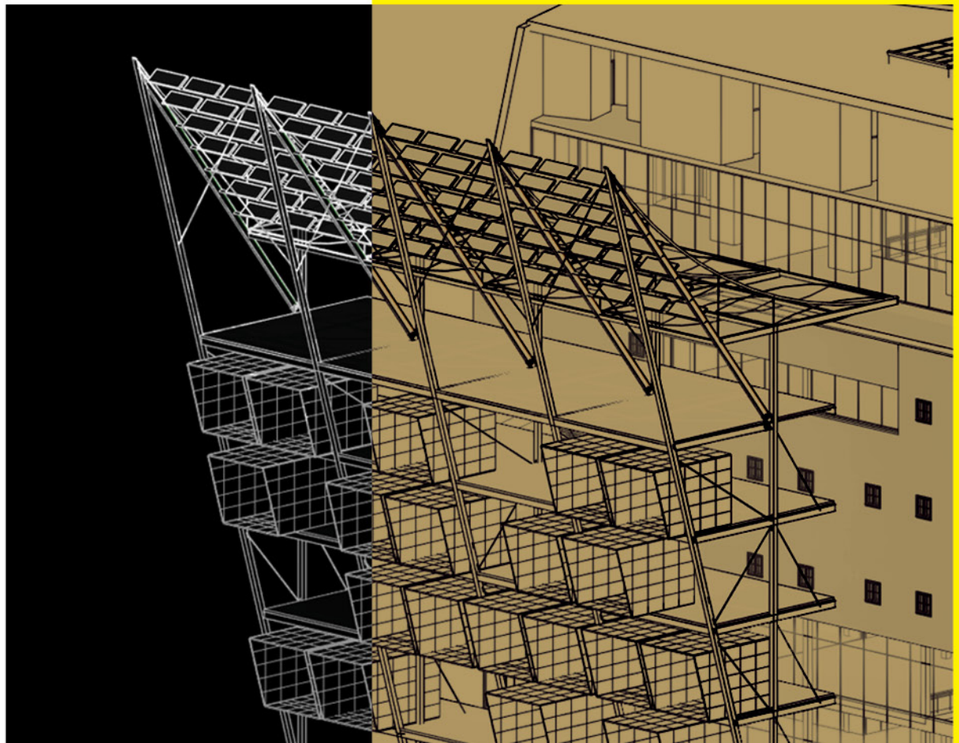
CULINARY CENTER

Advanced Option Studio /
Spring 2020
Instructors: Juan Herreros
Individual work
T.A.:Jesse L. McCormick
Graduate School of Architecture
Planning and Preservation
Columbia University

In a digital age, when industries and knowledge can be acquired online when the players in the industries can work remotely and collaborate across the globe, resources and technologies do not necessarily rely on the physical environment and infrastructure. To unlock the growth potential of rural areas, and improve the well-being of rural dwellers, We should prepare rural areas to embrace digital technologies.



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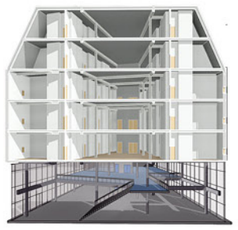

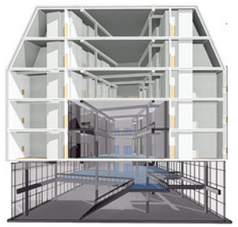

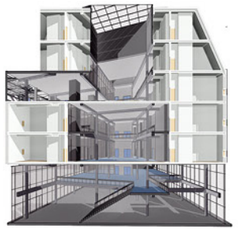

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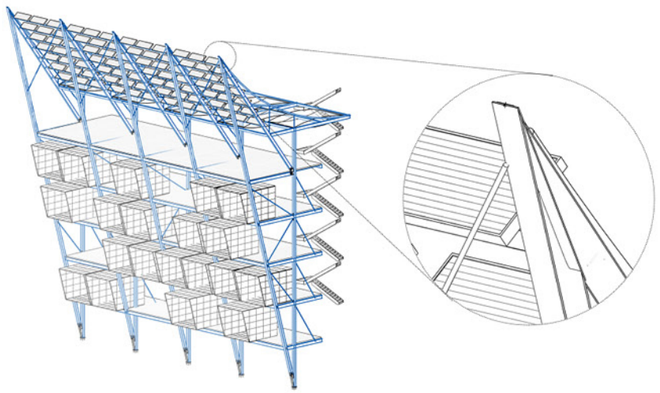
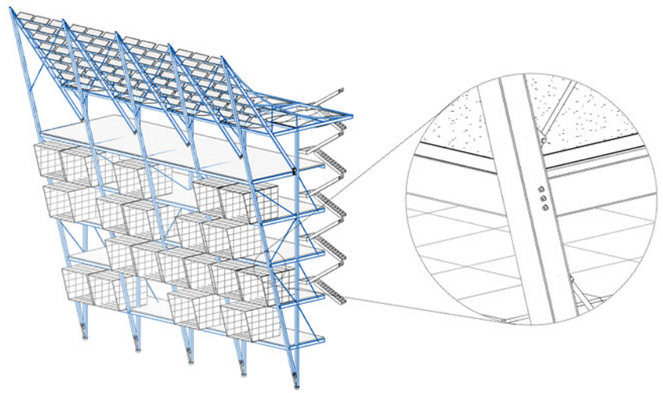
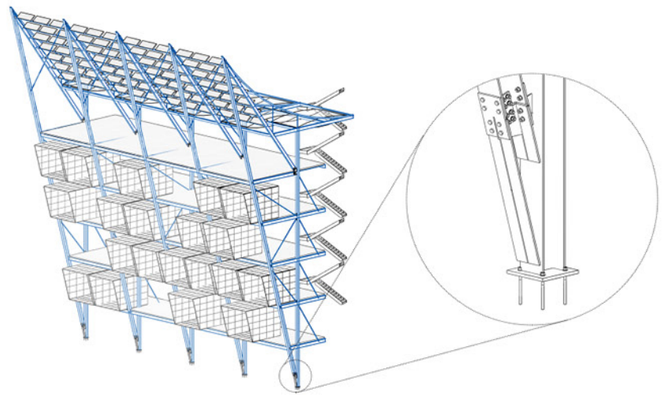
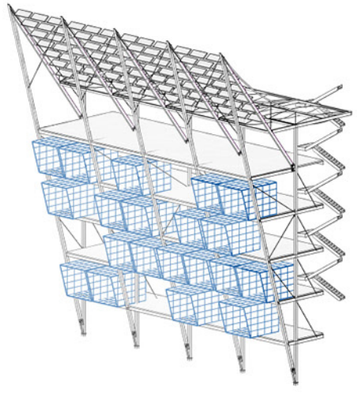
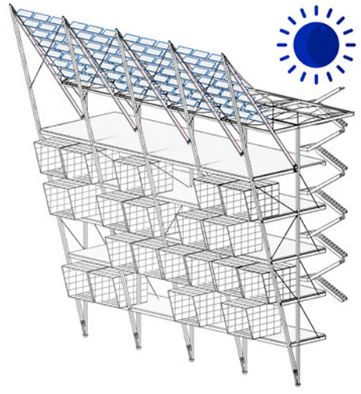


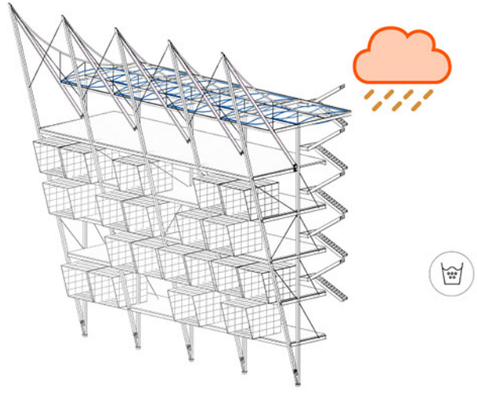








SOLAR PANEL
Solar Panel assembled in Double Skin for Electricity



WATER TANK
Solar Heat Storage for Climate Regulation

DIGITAL SURFACE

a steel structure of triangular truss columns and horizontal beam systems are self-support, rigid steel frames. Round bar braces between the truss columns are for resisting wind forces. The structure anchors to the ground, and bite into the jagged shape of the old building to complete its volume. The customized plug-in components are workstations for small groups of startups. Prefabricate panels, digital screens, support the industrial transition. Solar panels convert solar energy to electricity to support the digital industry that is based on electronic products Water tanks collect rainwater for recycling and regulate ambient environment temperature.

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NATURAL ROOFTOP

Renewable Energy Components work as both recycling systems and shading roofs for terraces, to establish a climate neutral economy and preserve natural beauty. The role of this building in this village is to provide a space for all, to exchange or rest, a place of shadow, of knowledge, of hope, and of culture.

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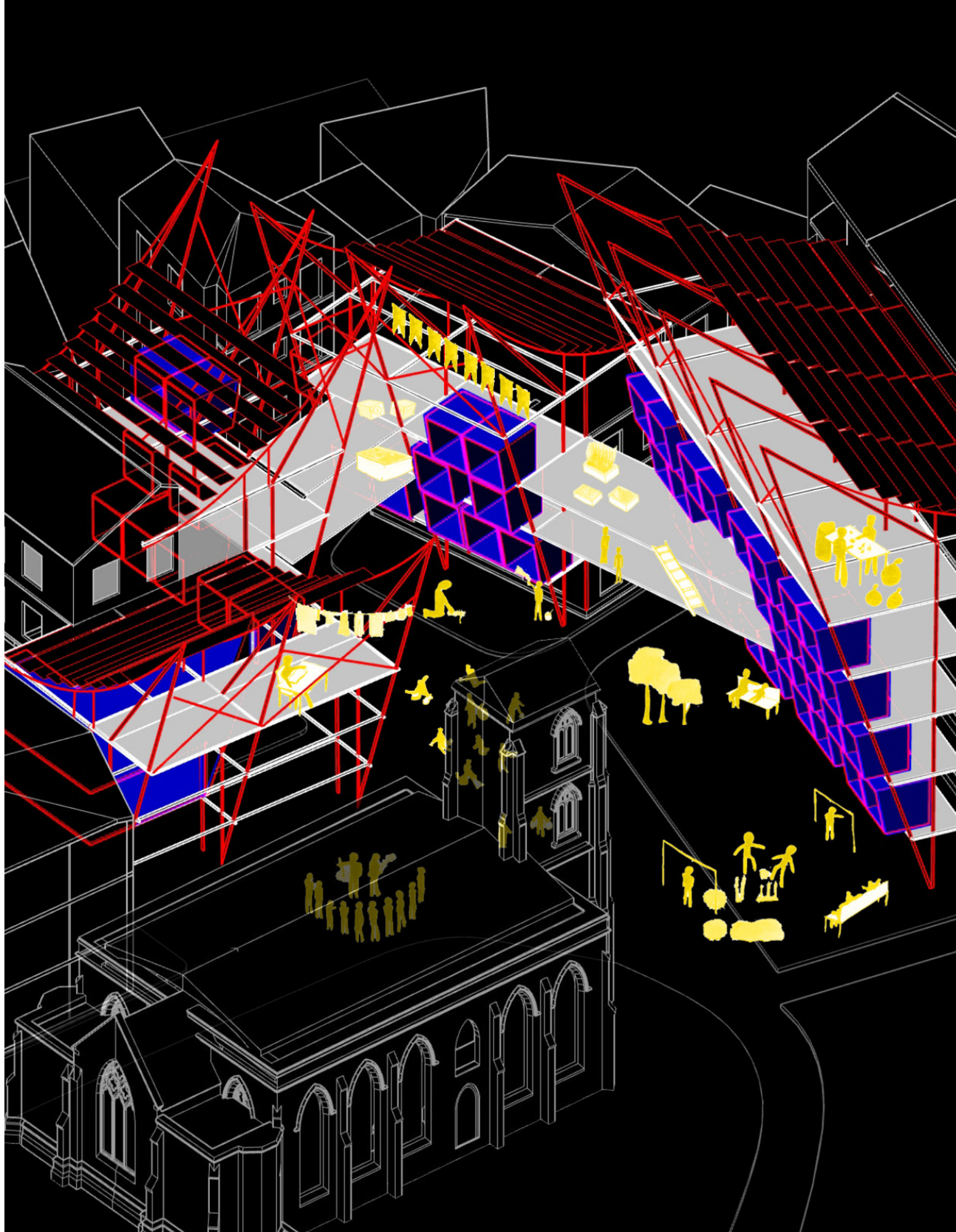

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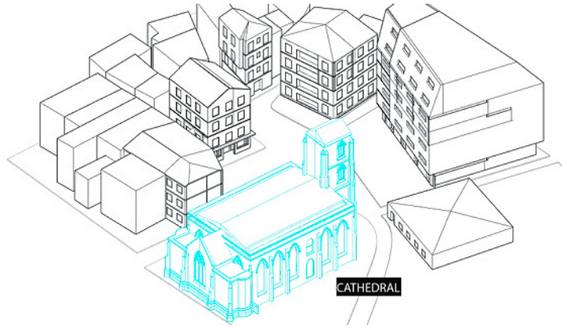

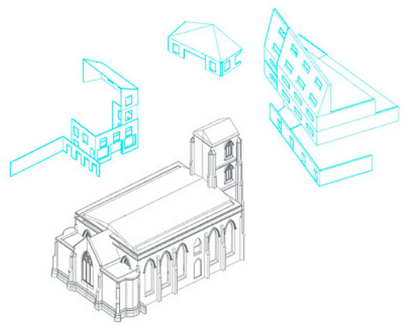

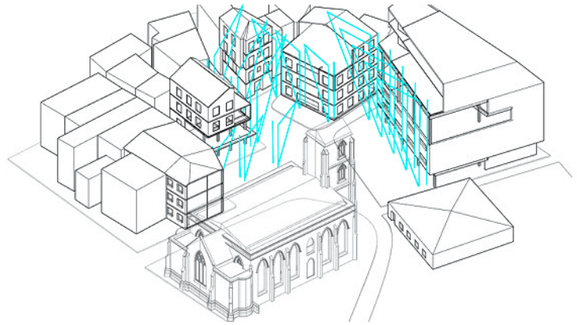

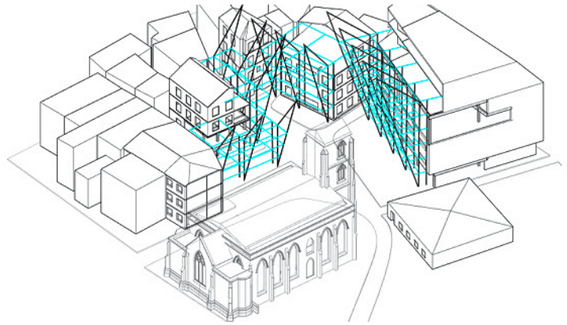

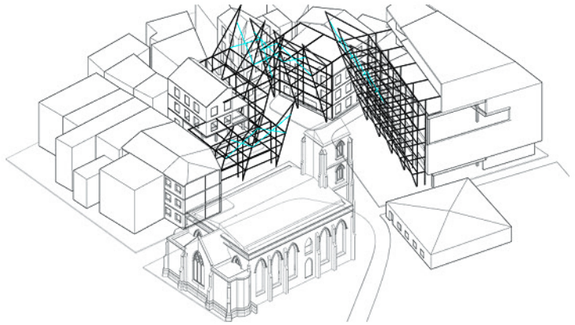

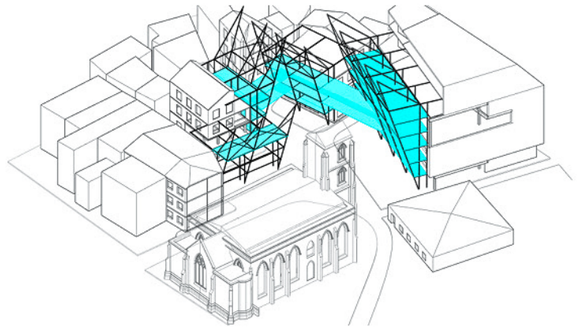

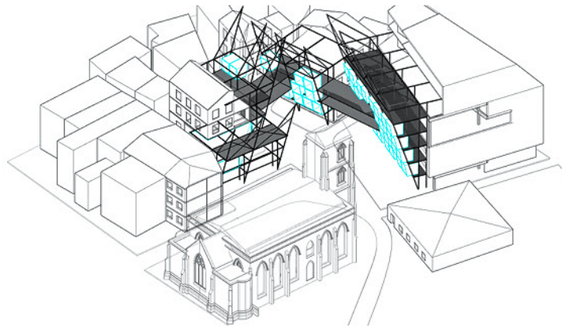

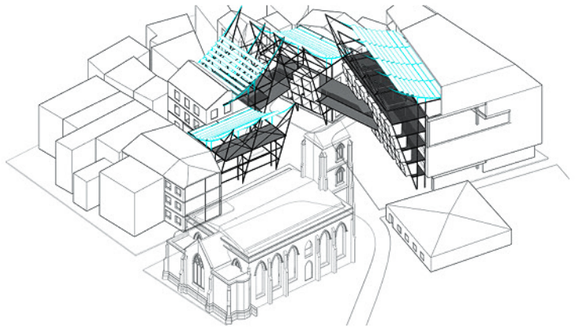

TRANFORM PHASES

The buildings are placed in a special position facing the cathedral and plaza. By removing the segments of street walls, the architecture is designed to lead the indoor life to the outdoor. Rehabilitating and attracting young users, can transform sacedon from a traditional agriculture industry to the data-driven farming and marketing industry.
The program has three parts, a public one that serves the all, libraries, community centers and health services. An intermediate one, where all the exhibition and conference uses would be. And a private one for living and co-working startup incubators. Three types of circulations that coexist and complement.

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CONNECTED DISTRICTS

Different communication environments are created where the architecture exists in synergies with a social dynamic around the disused historical heritage. The materials used in the extension, the metal, and the glass, is also a contrast between the old and the new. self-media newsrooms are placed in the boxes where celebrations, social dynamics, and rituals are recorded and are then placed on the surface of the box.

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RURAL
NEWS ROOMS

Rural areas are no more media deserts that lack the infrastructure to support people to be engaged and active citizens. Digital tools help young people of all backgrounds tell their own stories and develop and share their own expertise. The Digital Landscape, Allows for collaborative innovation systems among startup firms and research institutes, Increase efficiency of rural business and training of workers and farmers, open to a brand new RURAL 2.0 AGE.

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