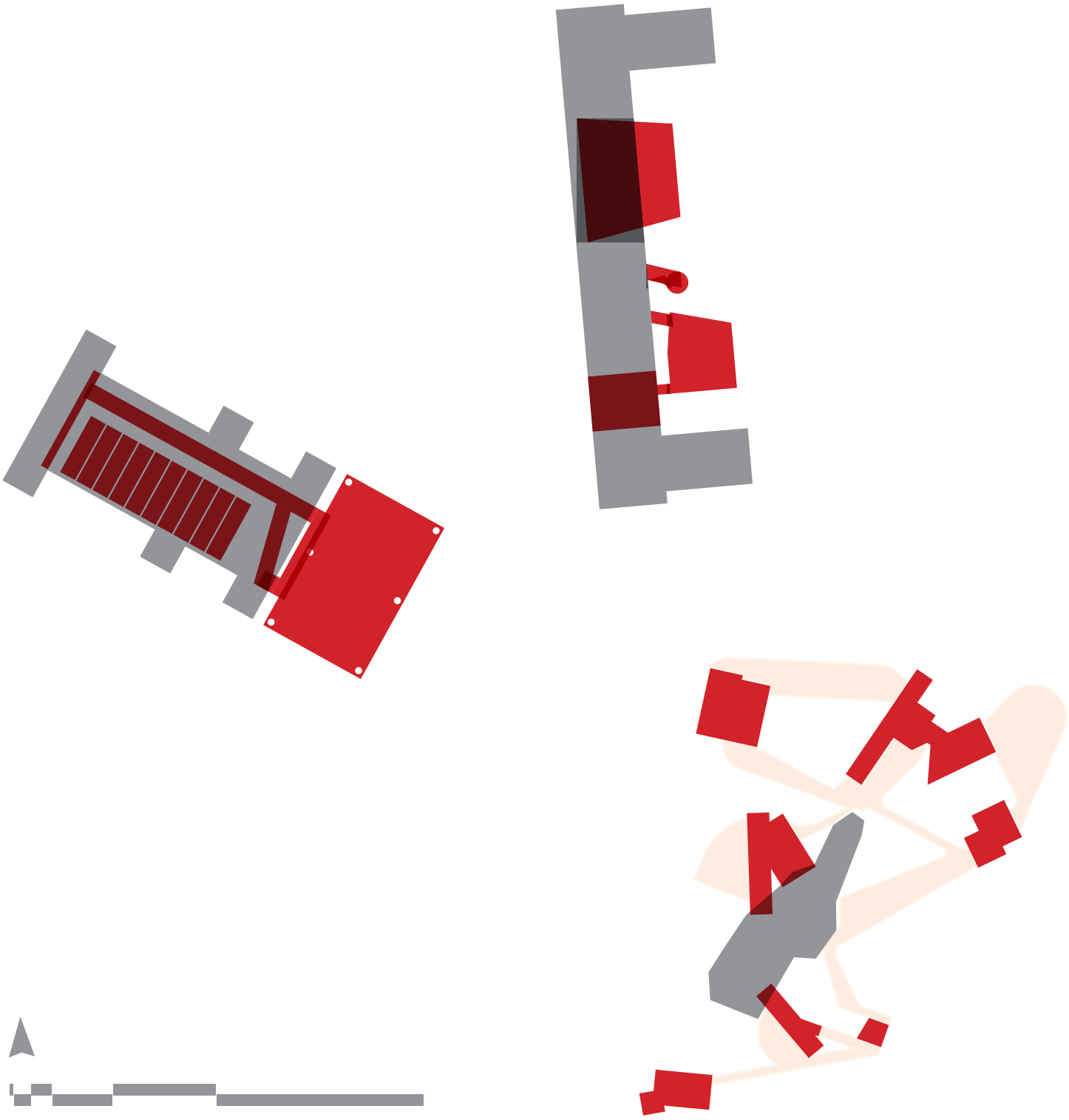


MAKING PAST PRESENT

XI JIN 2022-23 GSAPP

re·claim
/rəˈklām/

verb

1.
retrieve or recover (something previously lost, given, or paid); obtain the return of.

2.
bring (waste land or land formerly under water) under cultivation.

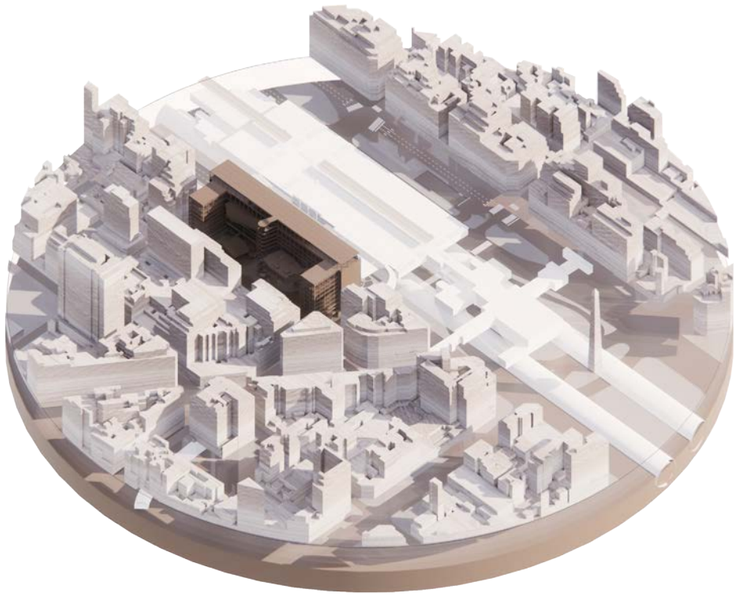
In the three semesters of studios, I have worked on three different "reuse" projects that are in very different conditions. This book also includes two pieces of academic writing that embrace re-interpretation and seeing existing works with new lens. I try to tell the story of an attempt on understanding adaptive reuse as a significant category of the architectural industry of our time. If we need to stop building to construct the future, re-claiming and re-purpose are the core to a sustainable future which carries the past to the present.

CONTENT

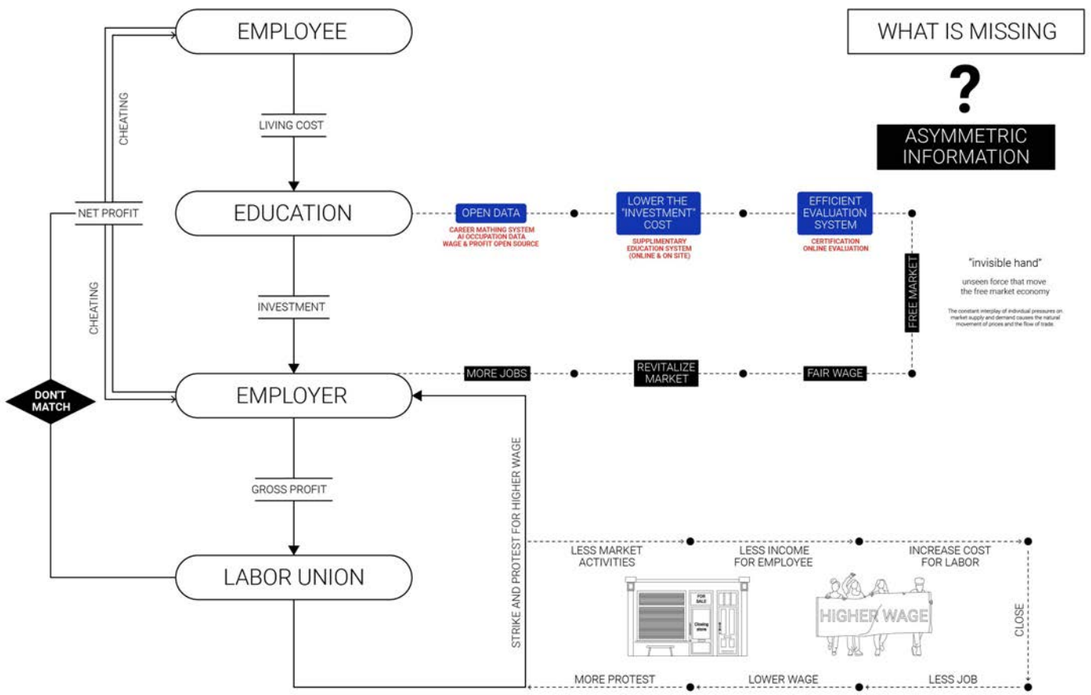
COLUMBIA 2023 Spring
Buenos Aires
Collaborators: Shuhan Liu, MinSoo Jeon
Prof. Galia Solomonof

Edificio Del Plata is an abandoned municipal building in central Buenos Aires. Given the publicity and accessibility of the site, this proposal suggests a transformation for a career-oriented urban learning facility that aims to reduce the current mismatch between education and occupation by providing information, certificate training, and career consulting services. The building provides different scales of learning facilities from classrooms for small groups, labs, and production studios, to auditoriums for hundreds of people. Public and private are considered not binary but a spectrum of experiences. The building promotes a new style of learning with no time limits and commitments. The structural strategy includes reinforcing existing columns, inserting new systems, and adding structurally independent volumes and a new core.

Calle Carlos Pellegrini 211
A MUSEUM OF LEARNING



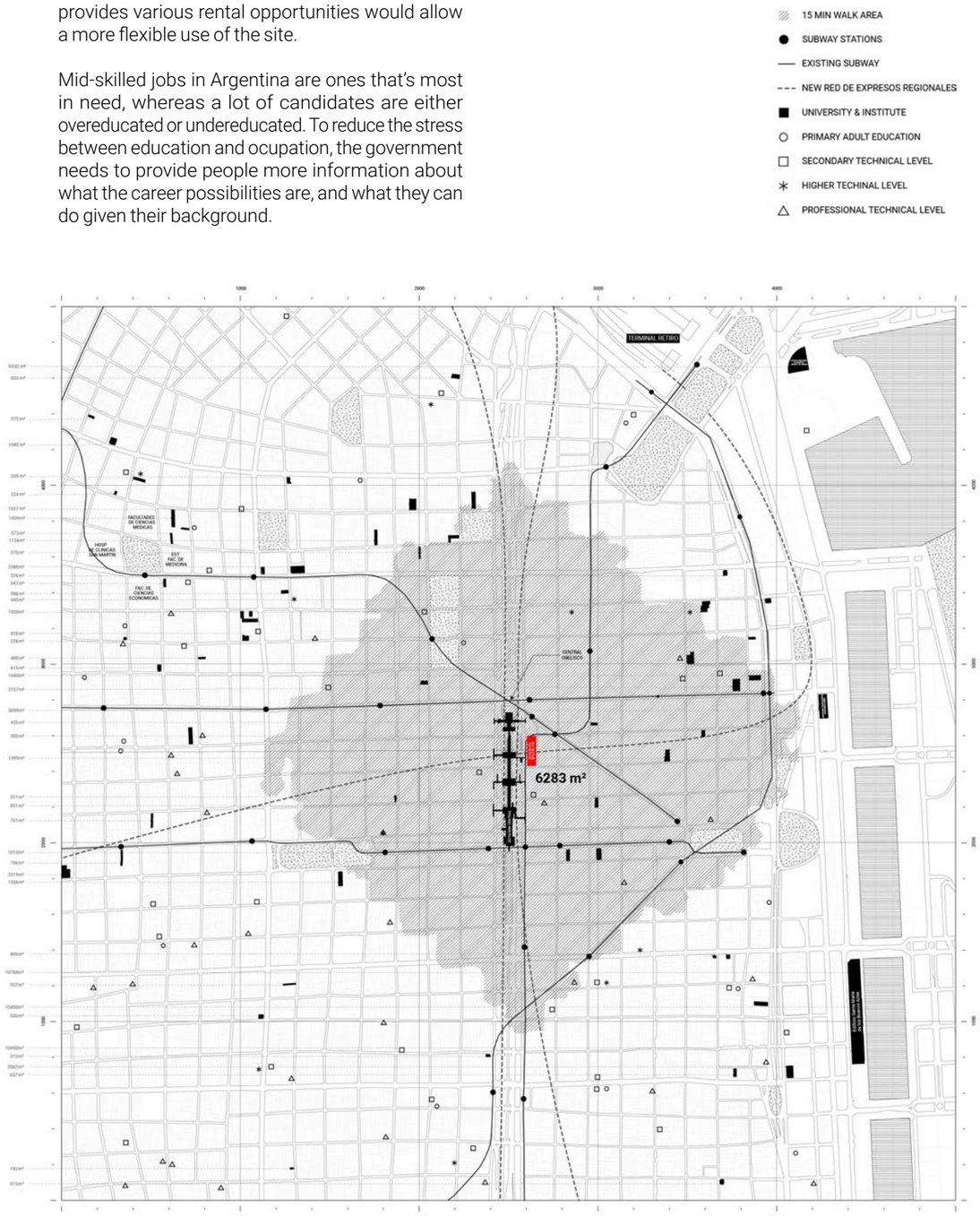
EDUCATIONAL SYSTEM IN ARGENTINA

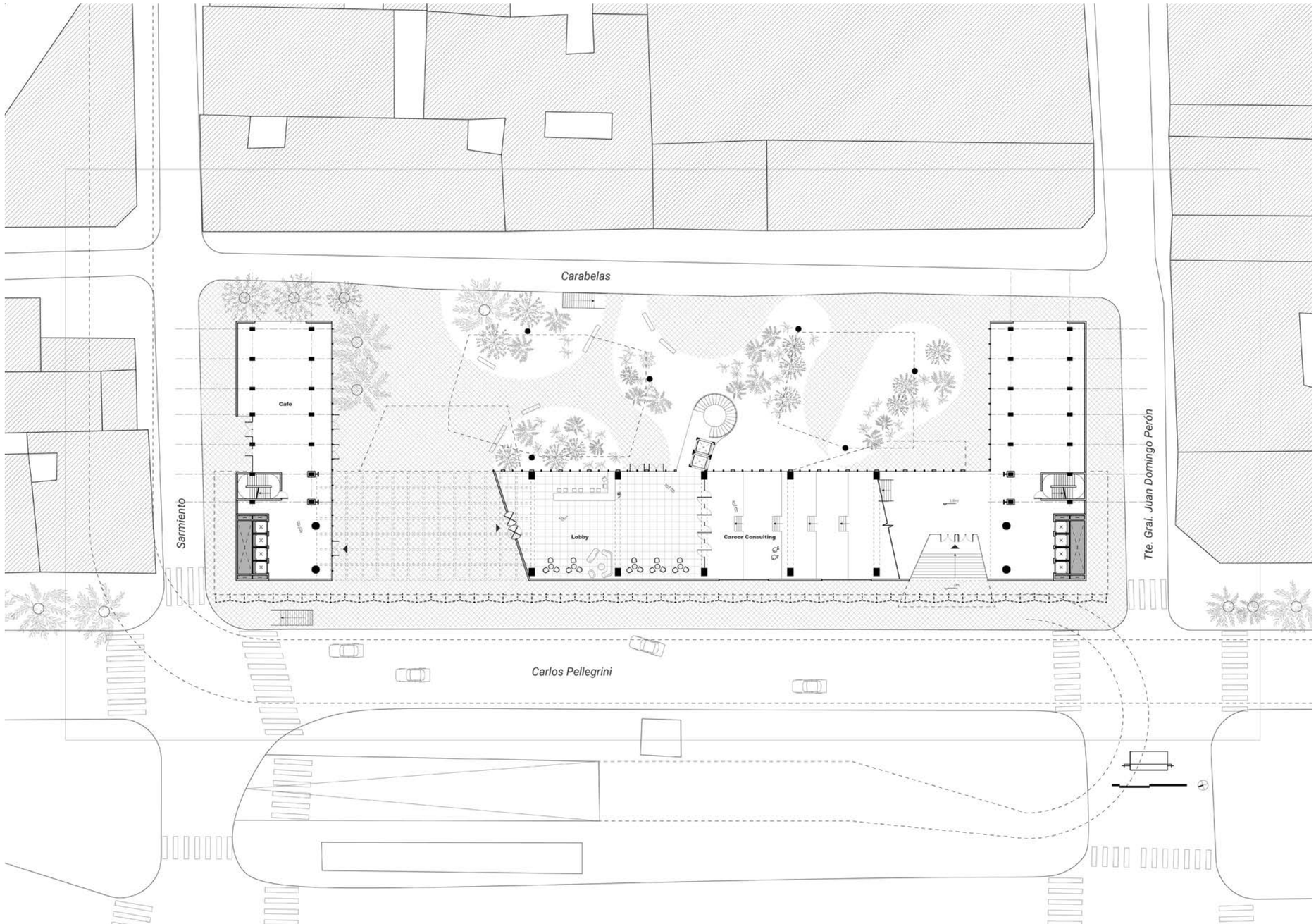


ADJACENT SCHOOL SYSTEM

Schools in central Buenos Aires are mostly small-scale properties. A central learning facility which provides various rental opportunities would allow a more flexible use of the site.

Mid-skilled jobs in Argentina are ones that's most in need, whereas a lot of candidates are either overeducated or undereducated. To reduce the stress between education and ocupation, the government needs to provide people more information about what the career possibilities are, and what they can do given their background.

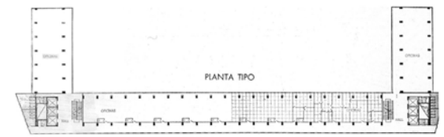




URBAN STRATEGY

To open up the narrow street in the back of the building, the existing podium of the building is removed and made a garden. A cut on the ground floor lead the public from the busy street to activate the back yard.

Two new subwar exits are placed separately in the front and the back of the building. An added core is accessible from both the lobby and from the back.



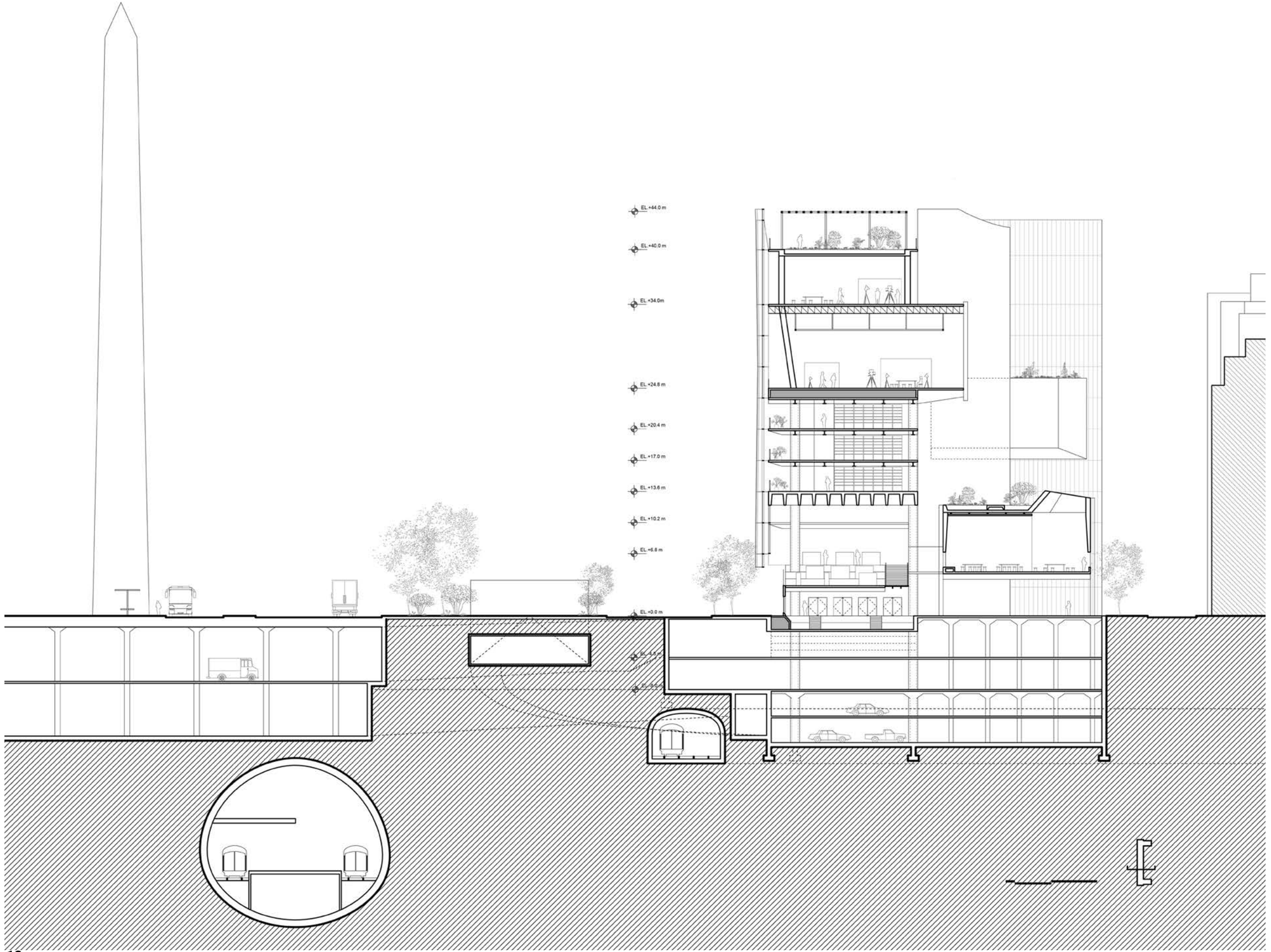
Building Under Construction

Existing Street in the Back

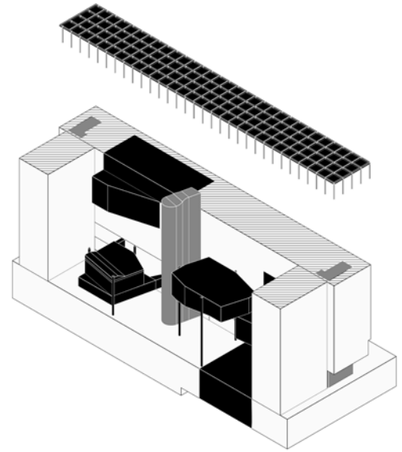
GALIA SOLOMONOF *SOLOMONOF ARCHITECTURE STUDIO*

TRANSPORTATION

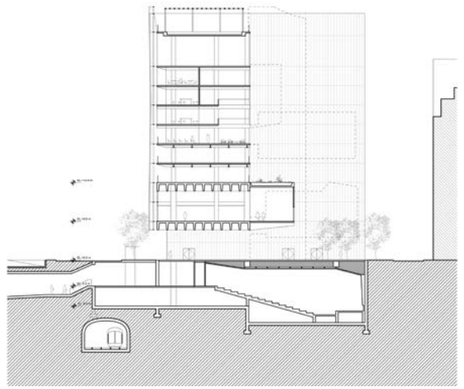
The central location makes the site easily populated and accessed. Existing subway, bus terminal, and the coming central train station are connected around the obelisk. The transcucency of the facade welcomes the public and showcases the depth of the building.



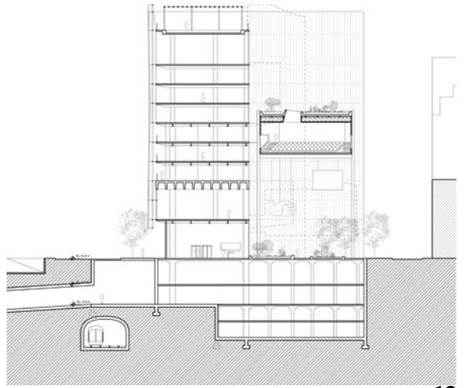
MASSING STRATEGY

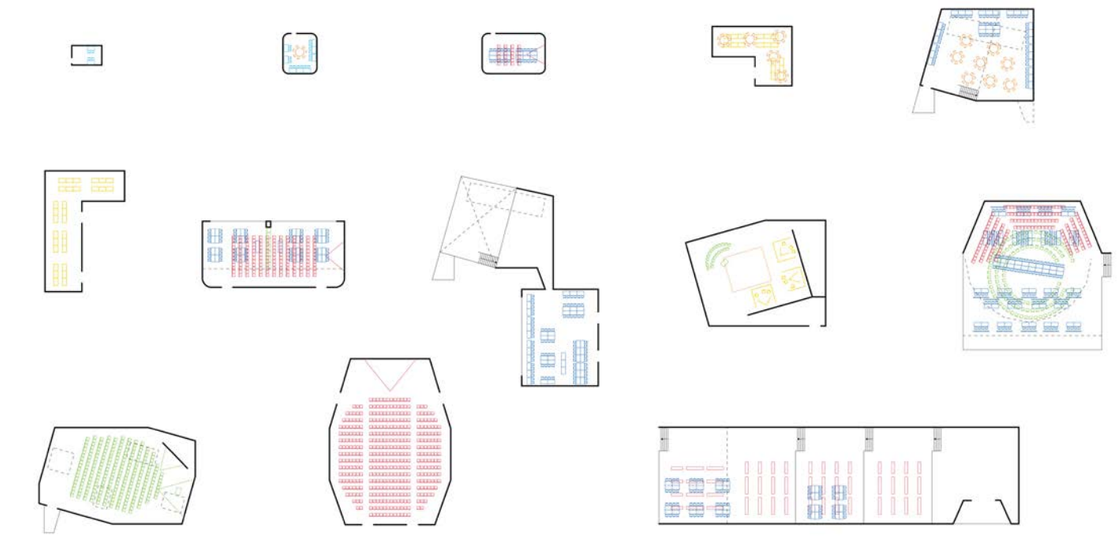


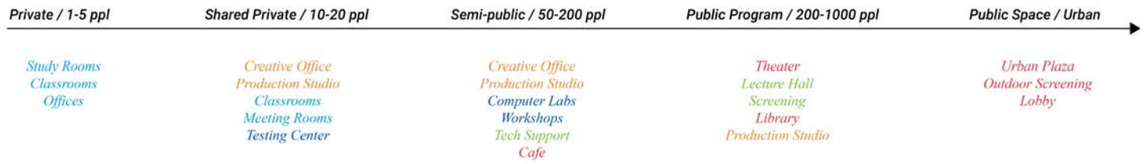
NORTH SECTION



MID SECTION





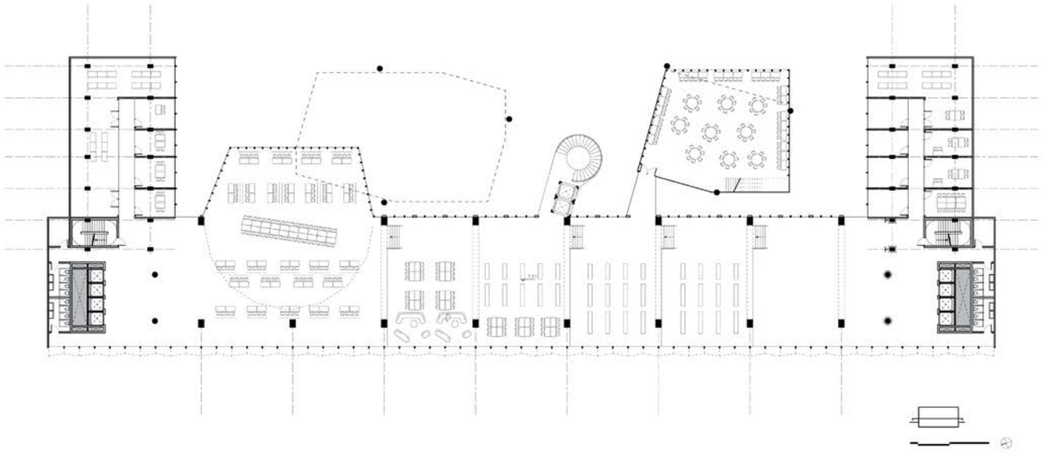


SCALES AND PROGRAMS

The proposed learning facility has various scales of learning spaces. It aims to blend different methods of learning and provide opportunities to meet as many needs. Private and Public are not binary, but a spectrum. These facilities are also rentable for the adjacent schools when needed.

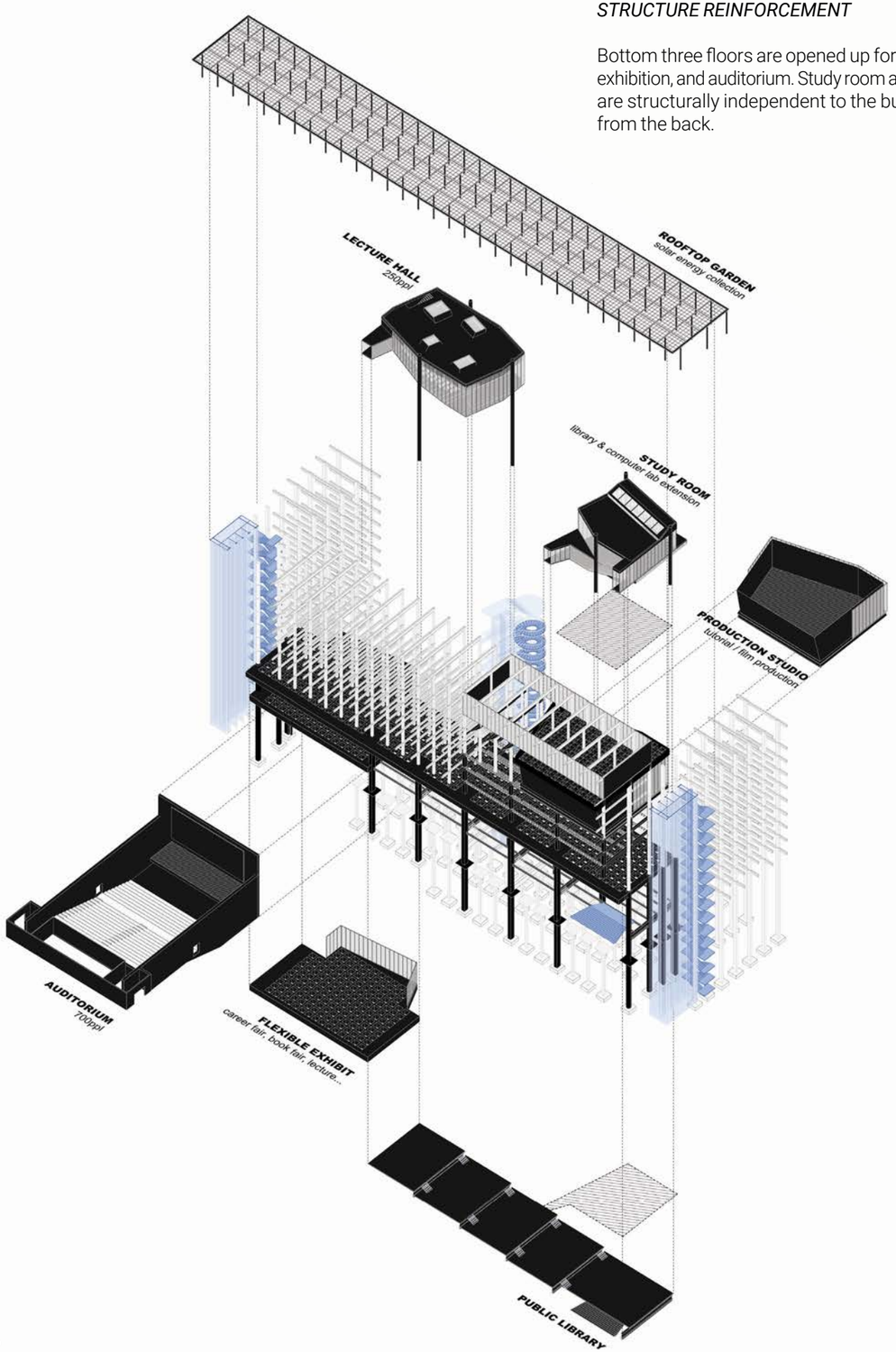
Large programs are inserted in the existing sturcture to expand public spaces. The technonic corresponds to the new parts of the building.

F3. PUBLIC LIBRARY



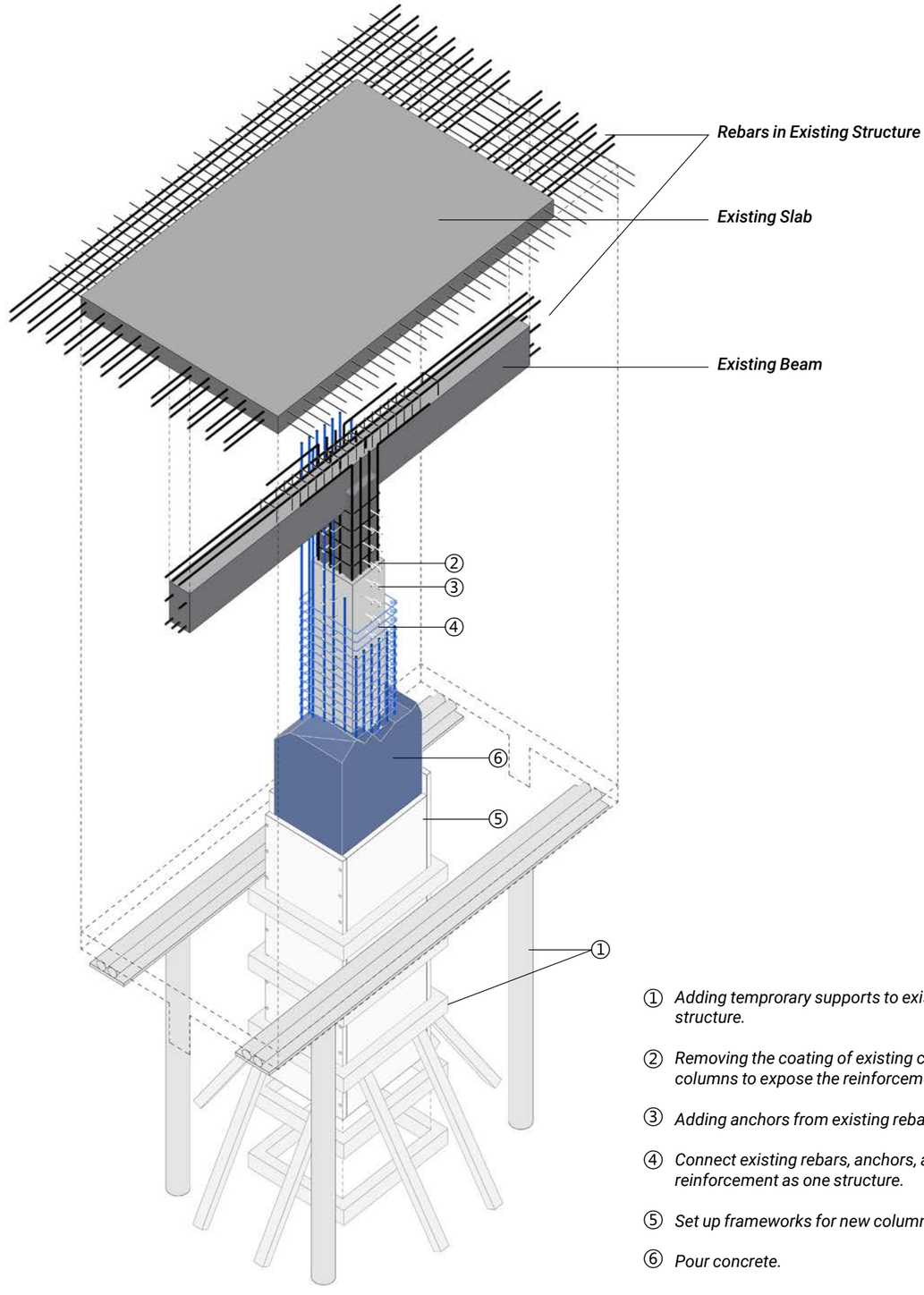
STRUCTURE REINFORCEMENT

Bottom three floors are opened up for public library, exhibition, and auditorium. Study room and Auditorium are structurally independent to the building, added from the back.



STRUCTURE REINFORCEMENT

Existing columns are selevtively reinforced by adding new rebars and another layer of concrete. The furface coat of the columns needs to be removed to expose the rebar as it is already damaged. With the reinforcement, the columns would allow longer span and more open space for public space.



① *Adding temprorary supports to existing structure.*

② *Removing the coating of existing concrete columns to expose the reinforcement.*

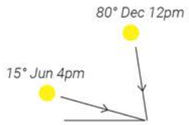
③ *Adding anchors from existing rebars.*

④ *Connect existing rebars, anchors, and new reinforcement as one structure.*

⑤ *Set up frameworks for new column size.*

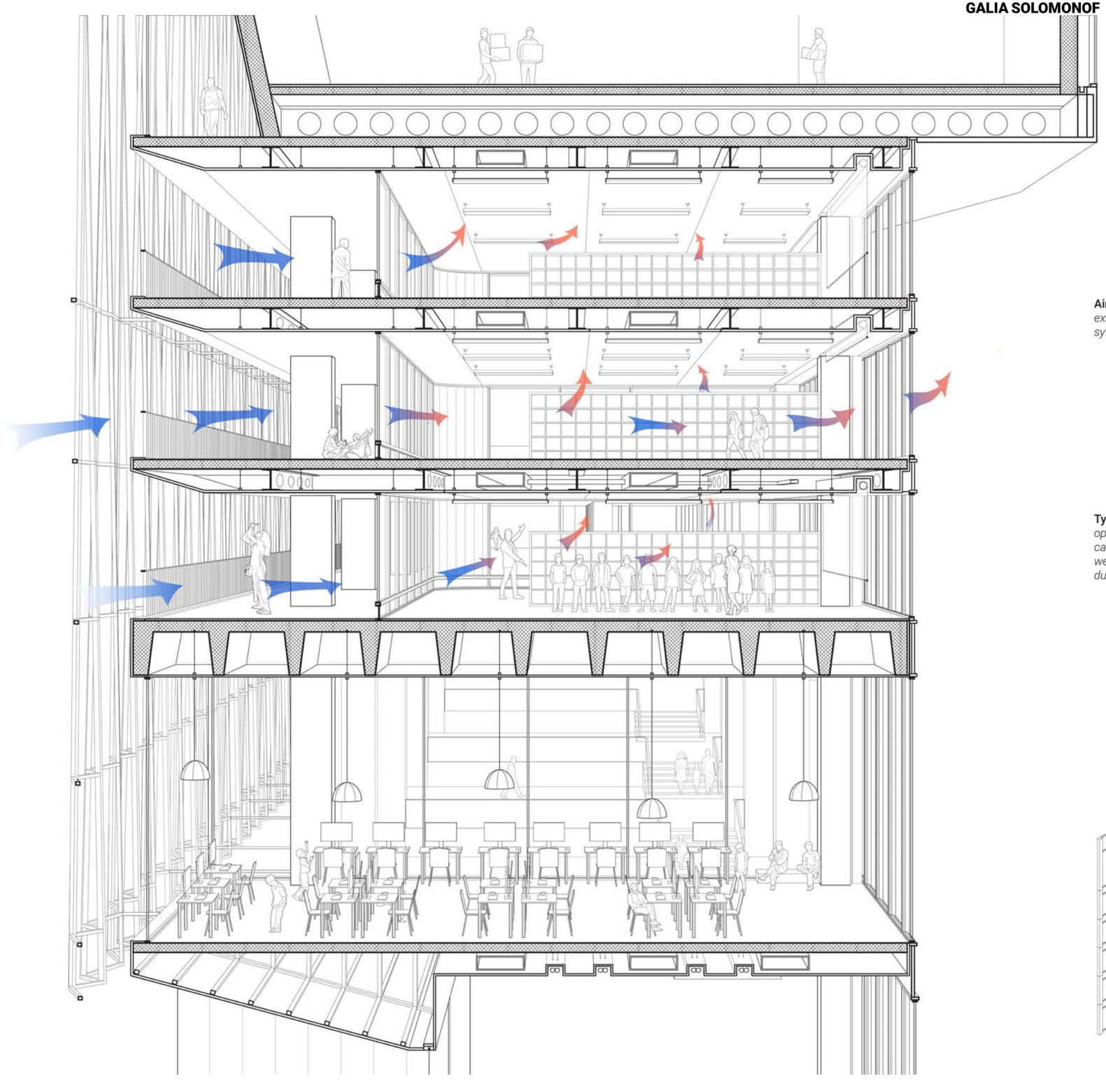
⑥ *Pour concrete.*

NATURAL VENTILATION & FACADE SYSTEMS



West Facade as Shading Tool
the front facade is a layer of fabric that allows air to travel through.

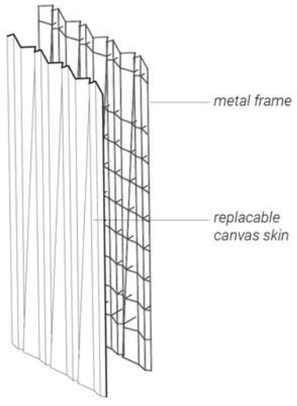
Fresh Air Intake
to take advantage of the narrow width of the building, fresh air flows through the shade and operable windows of classrooms.

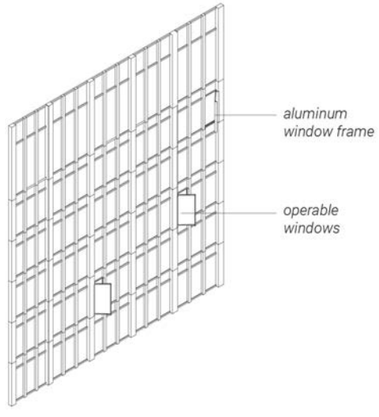


Air Exhaustion
exhausted air ventilates back to system from the ceiling.

Typical East Facade
operable windows with clear glass can control the air flow in pleasant weather and maximize daylight during the day.

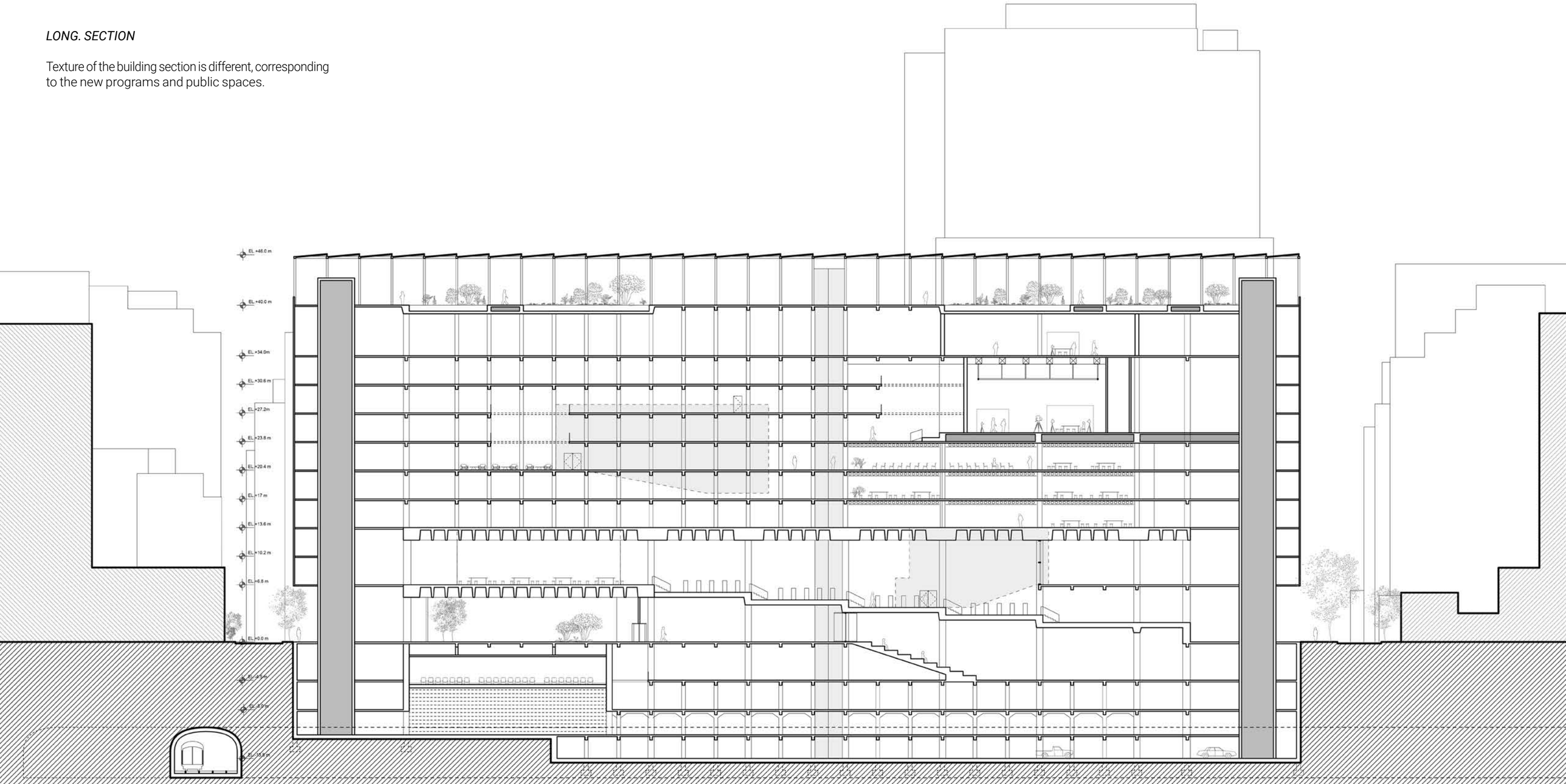
Recessed Outdoor Space
on medium-sized classtoom levels, glass facade is pushed back to allow more outdoor space.

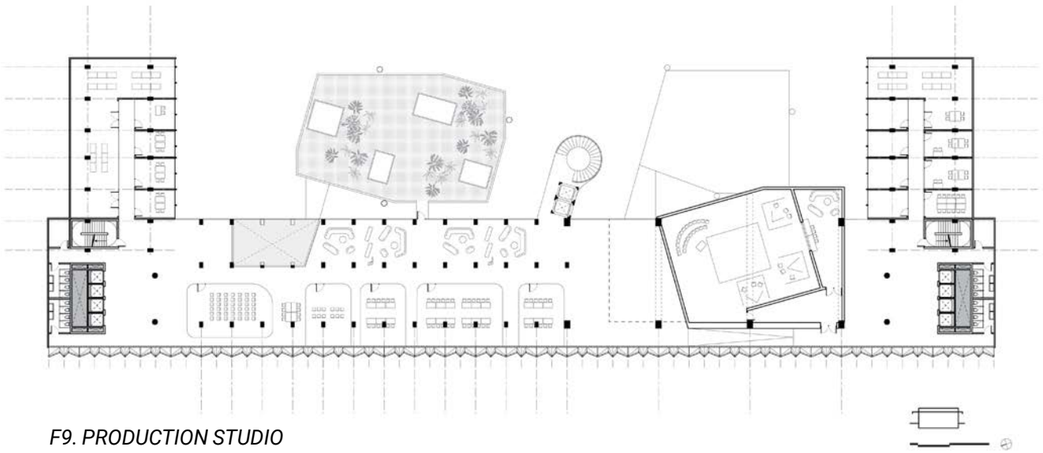




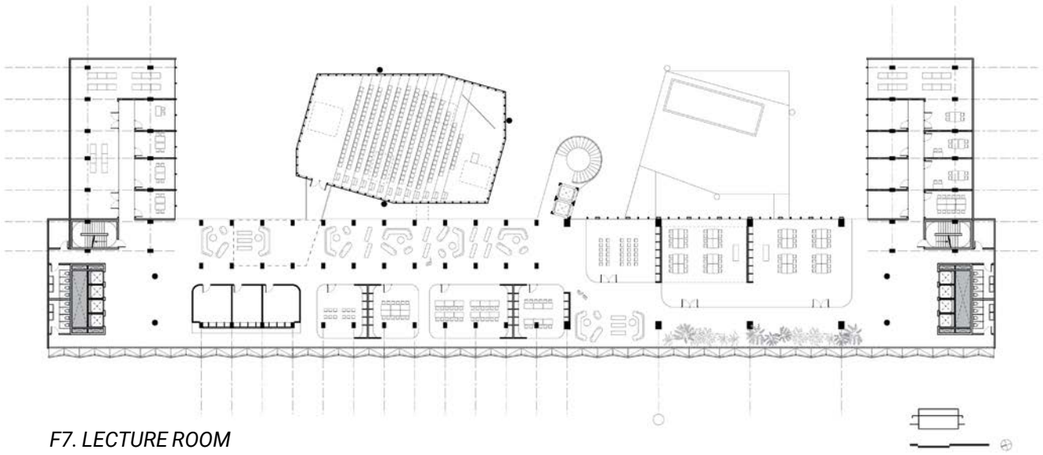
LONG. SECTION

Texture of the building section is different, corresponding to the new programs and public spaces.





F9. PRODUCTION STUDIO



F7. LECTURE ROOM

COLUMBIA 2022 Summer
Arduments
Instructor: Dariel Cobb

AUDIENCE ART

The audience, conventionally, is perceived as the receivers of messages sent out by performers. The performers are to play, and the audiences are to watch or listen; the performers are on the stage, and the audiences are off of the stage. Interestingly, in Joan Jonas' performance art, she includes many mediums and devices, such as projection, mirrors, screens, and sound…which transformed the traditional relationship between performer and the audience; through the lens of media, it provided different ways of seeing art. Jonas also pointed out that the exhibition space and spatial installations she has been working on are inherently architectural. She considers space, as the container of the art, the medium through which the artists imagine how the audience would perceive it. In the meantime, she claims to have no intention of including the audience as a part of the art.

Given the architectural nature of her work and the use of media, I argue that the audience is an important portion of Joan Jonas' work, and layers of approaches can be found in ***positioning the audience*** *(as the performers, users, and selves) create new conceptual and spatial boundaries and artistic experience. Furthermore, the dimensionality of the Mirror Piece speaks directly to architectural spaces; architecture is a similar mediated technology between designers and users, and the boundary can be the key to exploring new spatial experiences.*

JOAN JONAS: PLACING THE AUDIENCE

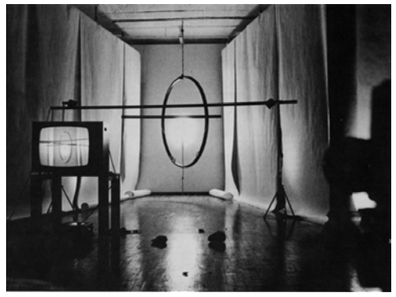
Audience As Performers

In “Mirror Piece I” (1969), actors were asked to walk as choreographed in a small black box theater, holding a piece of mirror or a pane of clear glass. The audience group, facing the stage, watches the actors’ movements and the reflections through the mirrors. The mirrors serve as the boundary between the actors and the audience, while seeing the reflections pulls the audience inside the boundary line. Conceptually, Joan Jonas does not see the audience as a part of the art as she claimed that she did not anticipate the audience to complete her work. To her, artists convey the idea “as clean as possible.” The mirrors here as a device not only blurred the boundary between performers and the audience, but also drew fragments of the performance space into the performance, forming the conjunction of the room, people, and time. Even though they are not expected and staged to be in the art, the viewers eventually appear to be an important part in the arena of the exhibit. Mirrors expand, double up space, and also transformed the audience.

Similar to the mirrors, monitors are more straightforward in placing the audience as the performer. “Untitled Video/Performance Piece,” 1974, included the spectators on the monitor screens while they are watching the performance itself. The camera placement “[assures] that each spectator will have at least two, and in some cases three, distinct vantage points on the video imagery.” Synchronized monitors in the exhibit invite the audience to scan through the imageries. The spectators watches the scene through screens that defamiliarize and detach them from the conventional audience position.

Figure1. mirrors and the audience

Figure 2. (one of) The monitors



Audience As Spatial Users

One major difference between theatrical and architectural performances is where the audience is positioned. Audience of a theatrical performance is conventionally the spectator, witnessing events that are evolving on the stage, and the edge of the stage is both the conceptual boundary and physical boundary between the art and the audience. Whereas in architecture, the users, are involved in the “play.” On this note, the Mirror Piece I is architectural by nature as it involves and unravels around the audience constantly.

“They are not just reflecting the audience,” Jonas explains, “the mirrors are reflecting the space and the other performers.” Jonas intentionally includes spatial events and various perspectives that happen simultaneously: audience, actors, ceiling, floor, lighting, and so on. It attracts Jonas that through installation, “multiple timelines can be collapsed in one performance space,” experienced by the audience. The performance itself is multi-dimensioned.

In an architectural context, the audience is named as “users” and placed in the field of design elements. “Multiple timelines,” or events/programs, collapse into one space and are experienced in conjunction. Benjamin describes architecture as “distracted art” which people experience when conducting their daily routines visually and tactilely. Of course, in an exclusive art performance, the practicality of the space is eliminated, but the mirrors here attempt to capture the multi-timelines that could happen in everyday architecture: people’s movements, change of illumination, visual access to every corner of a room.

Moreover, in the performance space, materiality becomes a mediated tool to amplify the clashing of all elements. The distinct material contrast seems intuitive but architectural as well. The sharpness and fragility of the mirrors in contrast with the bare feet, weight of the mirrors and cautious movements, shiny reflection and flesh body…architectural and material fragments place the audience as the meandering users in a piece of “moving architecture.”

Figure 3. fractures of space

Audience As Self:
experiencing art is identity construction

For the reconfiguration for Mirror Piece in 2014, Jonas explained her interest in seeing the audience being uneasy when looking at themselves in the mirror, revealing her interest in audience reaction. Concentrated, distracted, doubting, or blanking-out…different facial expressions are reflected by the mirrors. Through watching a performance that reflects them and the surroundings, the audiences identify and reconstruct themselves.

Borges was afraid of and obsessed with mirrors since he was a child. He believed that he had actually seen ghosts in the mirror when he was little. He described his worst dream as “I look into a mirror and there I see somebody else-very uncanny or horrible, somehow myself and not myself…” His fear comes from the belief that something in the mirror could distort his identity. As Joan Jonas explains in her lecture, influenced by Borges, mirrors are considered a metaphor for “the tenuous divide between subjective and objective vision, and the loss of fixed identities.”

In this sense, the art intentionally places the audience in the arena as themselves, hence the audience is expected to lose, question, and redefine the fixed identities.

As a comparison, in 2009, Marina Abramović conducted the performance art "The Artist is Present" in MoMA. The artist sits in the gallery on one side of the table, and visitors could come and sit in front of her, confronting her presence. In the meanwhile, the surrounding crowds as the spectators watching the event strengthened this confrontation and emphasized the performativity of the audience. By saying nothing but staring at each other, Abramović asks: I am the artist and who are you? What are you doing here? Furthermore, who are you as an audience and a person?

Jonas claims that she is never sure about audience reactions; it seems to be the reason she is interested in seeing them. For the reconfigurations of early works, her approach to time and changes is to maintain the work as much as possible; not to change the work based on site location and time. If artistic ideas remain the same, then what is changing is the self of the audience in the presence of the artwork. Each time that the audience Specifically in the Mirror Piece I, instead of having the artist ask ***"who are you,"*** the mirrors push the viewers to ask themselves, ***"who am I?"*** As how Borges would perceive it, mirrors signify reflection, shifts, distortion, and eventually self-awareness.

Figure 4. "Who am I?" and "Who are you?"

Strategies in Joan Jonas' media art, as above discussed, include ***placing the audience as the performers, spatial users, and selves***. Material mediums make the art interpretive and spatial. It resurfaces questions as follows: What does it mean when we talk about the audience in the context of architectural design? Where is the boundary between the performers and the audience, hence design and users? How does the medium change the audience-performer relationship?

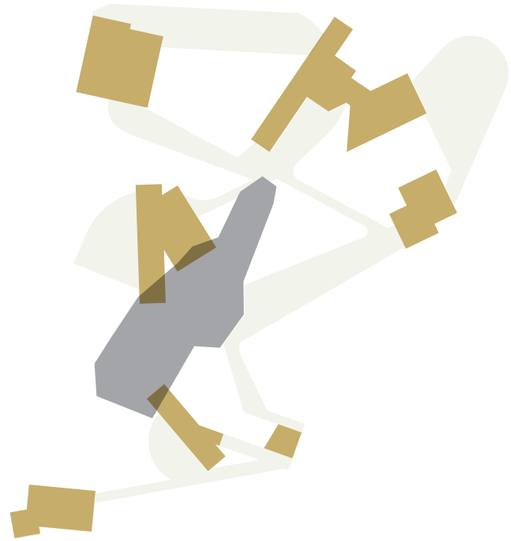
These are the inspirational questions for spatial designers as technology evolves and more mediums emerge. Where the audience is placed and what they are considered as may be the key questions to exploring the boundaries of art and space.

References:

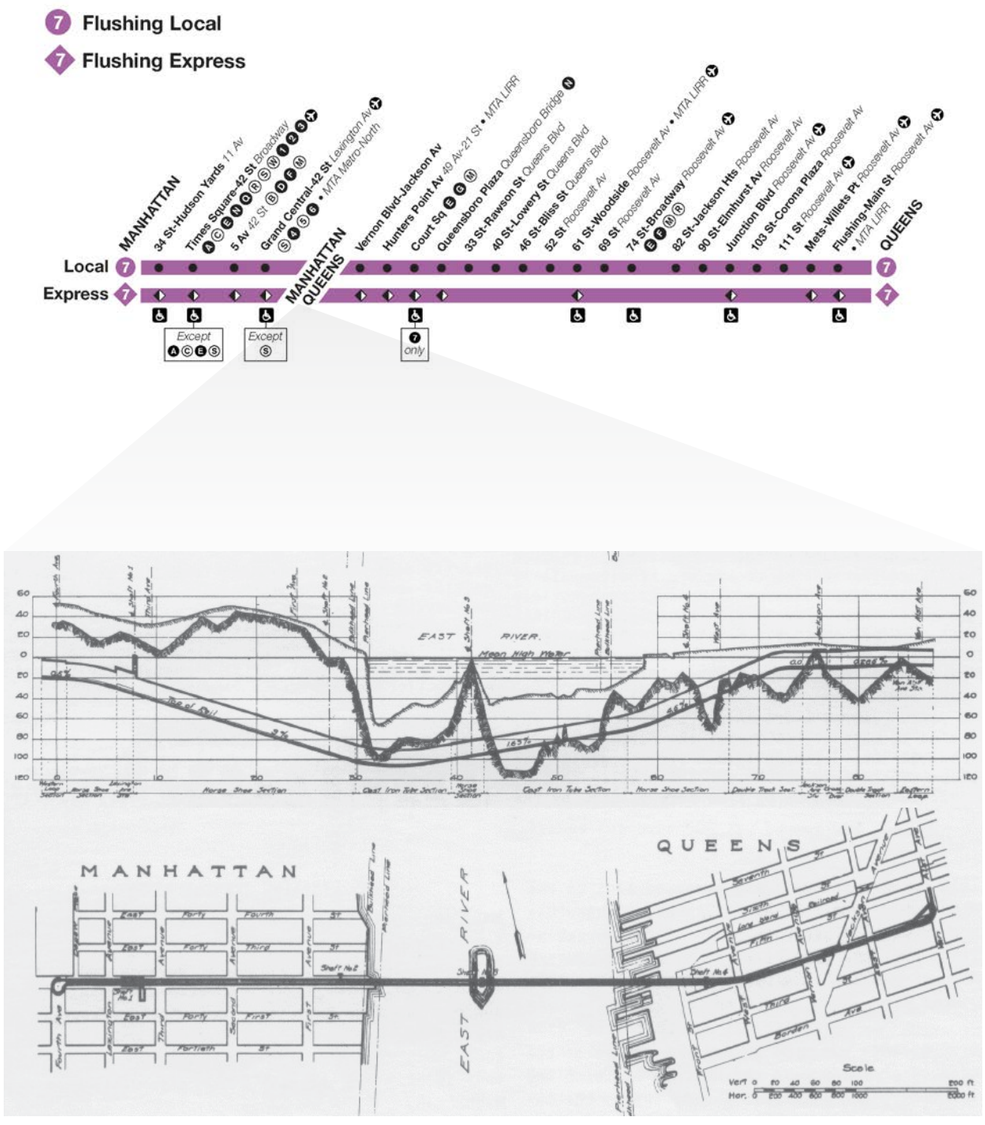
Art21. Joan Jonas in "Fiction." Vol. Season 7. Art in the Twenty-First Century, 2014.
Benjamin, Walter. "The Work of Art in the Age of Mechanical Reproduction." Translated by Harry Zohn. UCLA School of Theater, Film and Television, 1936.
Carroll, Noël. "Joan Jonas: Making the Image Visible." Artforum, April 1974.
Eco, Umberto. The Open Work. Harvard University Press, 1989.
Fields, Jamie Schilling. "Fiction as Mirror: Mirrors in the Fiction of Borges and Nabokov." English, Texas Tech University, 1989.

COLUMBIA 2022 Summer
NEW YORK, NY
Collaborators: YI-AN ZHOU, JULIA MAEVSKI
Prof. David Moon

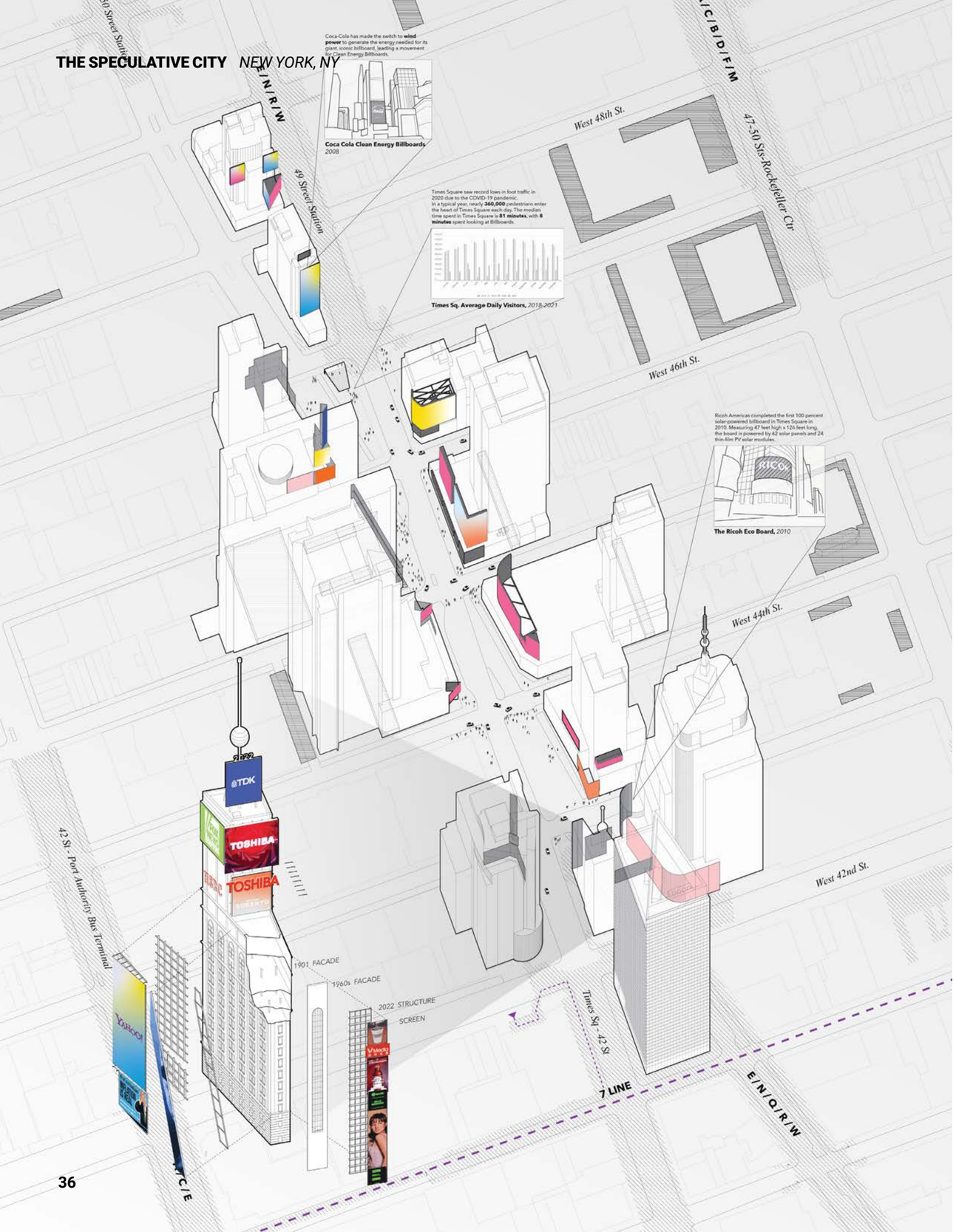
The Speculative City studio investigates New York City through the lens of the 7 train, spanning from hudson yeards to flushing, serving as a section of New York City. This project propose an incubator on the Belmont Island for discussing social justice of minorities, or “fringe” of the city. It is an alternative assembly space near the United Nation.

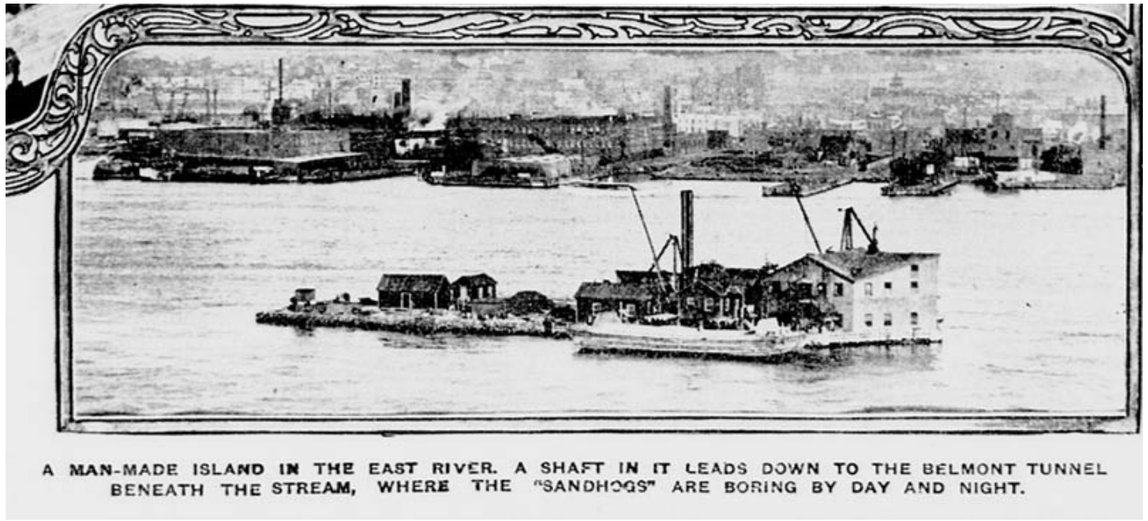


BELMONT ISLAND FRINGE COLLECTIVES

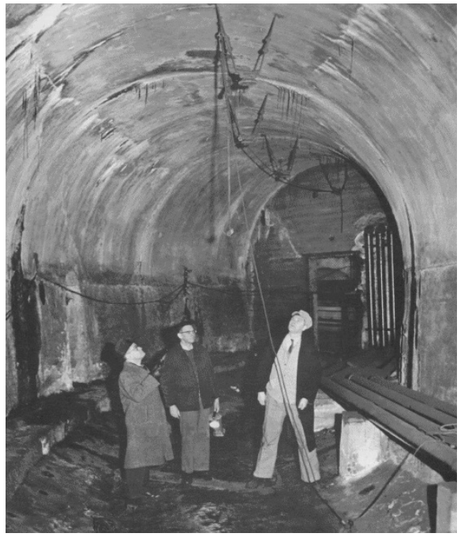


STEINWAY TUNNEL - BELMONT ISLAND, 1960





A MAN-MADE ISLAND IN THE EAST RIVER. A SHAFT IN IT LEADS DOWN TO THE BELMONT TUNNEL BENEATH THE STREAM, WHERE THE "SANDHOGS" ARE BORING BY DAY AND NIGHT.



STEINWAY TUNNEL, 1960

Belmont Island is a manmade island on the East River right above the Steinway Tunnel. Its formation was caused by the excavation of the tunnel.

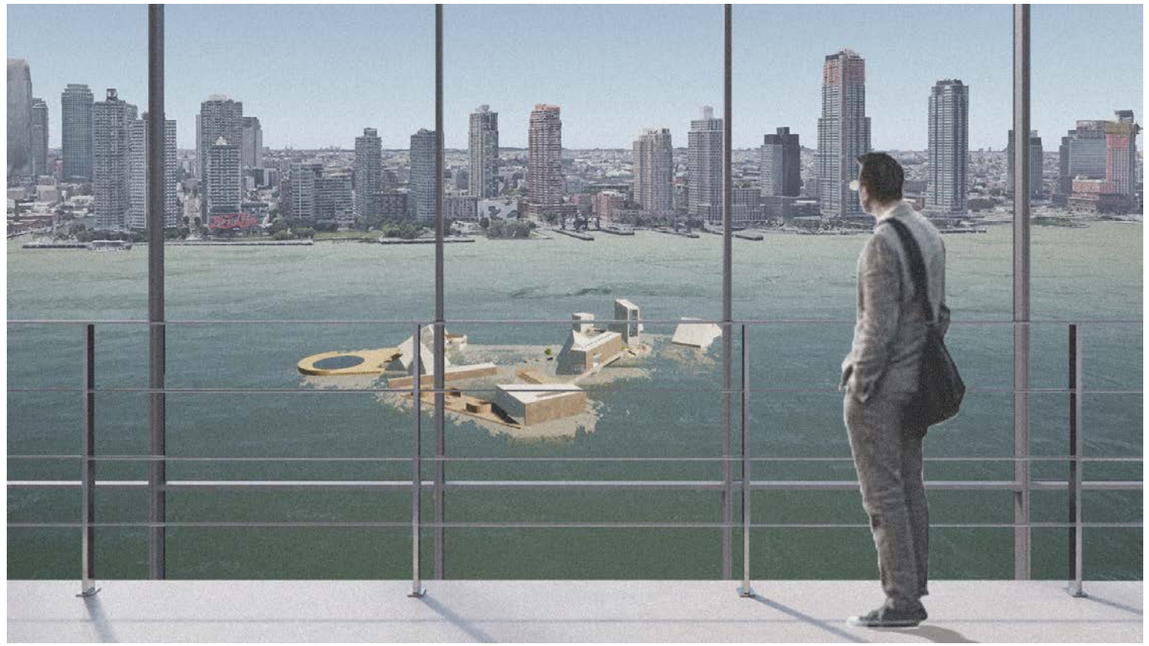
CASE STUDY

The studio case study is an investigation of the specculative moments along the 7 line subway. This case study of Times Square billboards intend to peal away the layering of commercial-covered facades and to reveal historical identities of architecture through time.

The Occupy Everything movement is a worldwide socio-political event as a format of protesting for equality and “real democracy“. The premise is to go out on the street and occupy physical spaces in order to be seen. Physical occupation is projected as societal and political occupation.

CONTEXT PLAN

The proposed site has existing transportation infrastructures including multiple ferries, and subway and driveway tunnels, including the Steinway Tunnel for the 7 line, Queens-Midtown Tunnels. Two additional docks and a subway station are proposed on site.



AERIAL VIEW FROM THE UN

The project intend to be a claim, in contrast with the grand top-down existing system of the United Nations.

FUNCTIONS

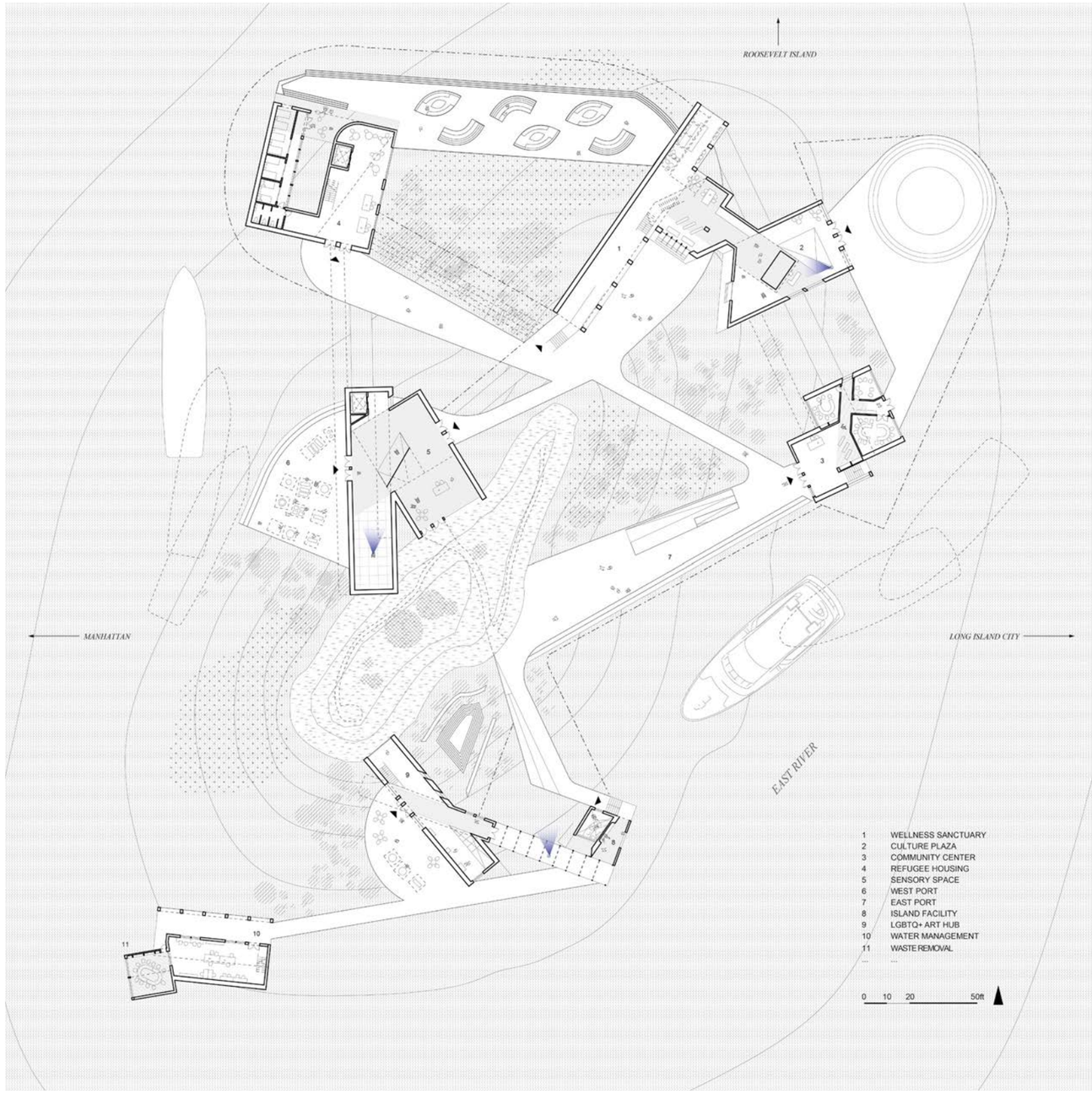
The Fringe Collectives consists of a series of islands that are made for minority groups to dicuss and mediate pressing social issues.

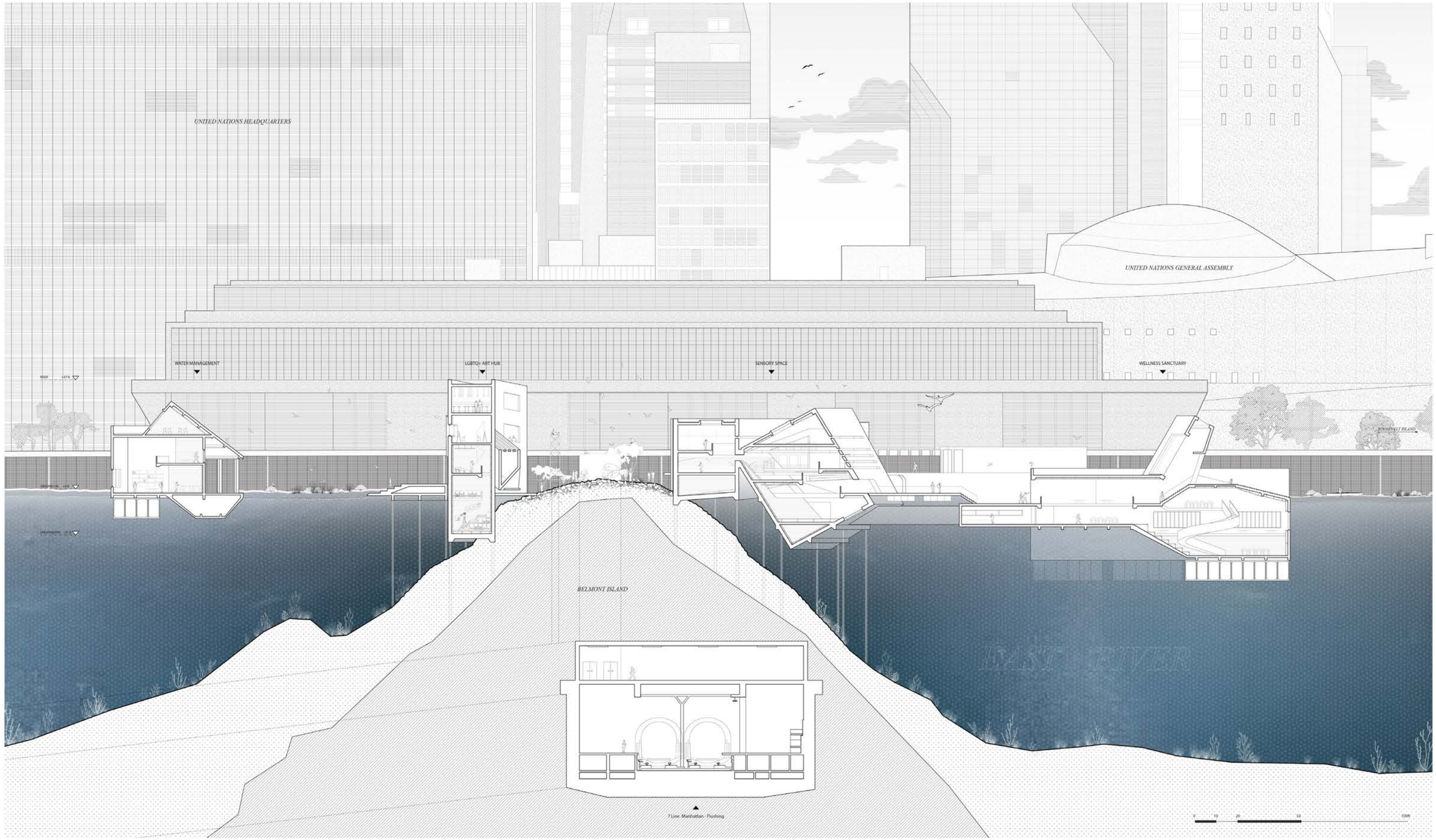
COMMUNITY KITCHEN

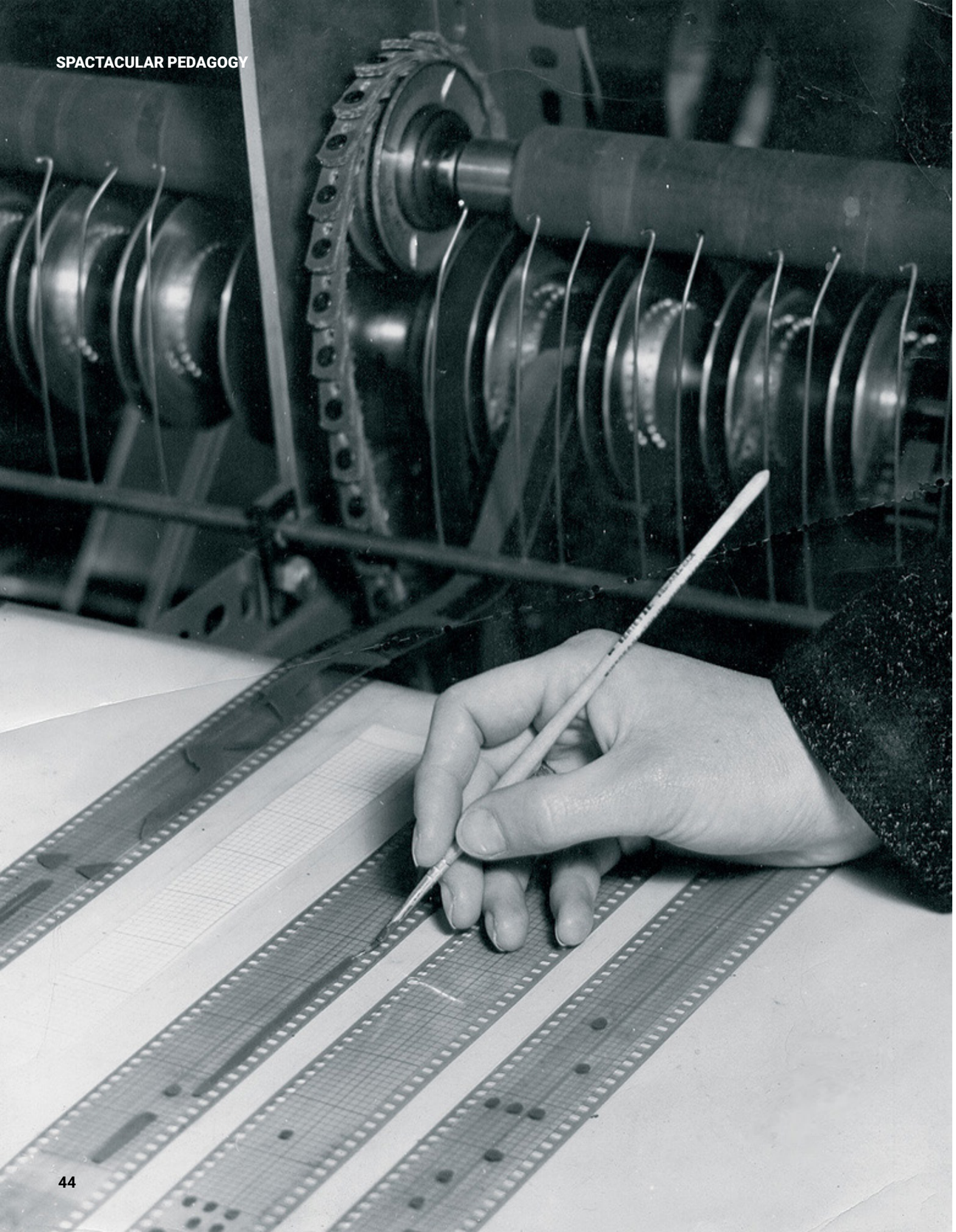
PLATFORM VIEW

SITE PLAN

The layout of the project give it possibilities to further expand. Platform sizes change with waterlevel change through the year.




UNITED NATIONS HEADQUARTERS
UNITED NATIONS GENERAL ASSEMBLY
WATER MANAGEMENT
LGBTQI+ ART HUB
SENSORY SPACE
WELLNESS SANCTUARY
ROOF +47 ft
GROUND LVL +0ft
UNDERWATER -17 ft
ROOSEVELT ISLAND
BELMONT ISLAND
EAST RIVER
7 Line- Manhattan - Flushing
0 10 20 50 100ft



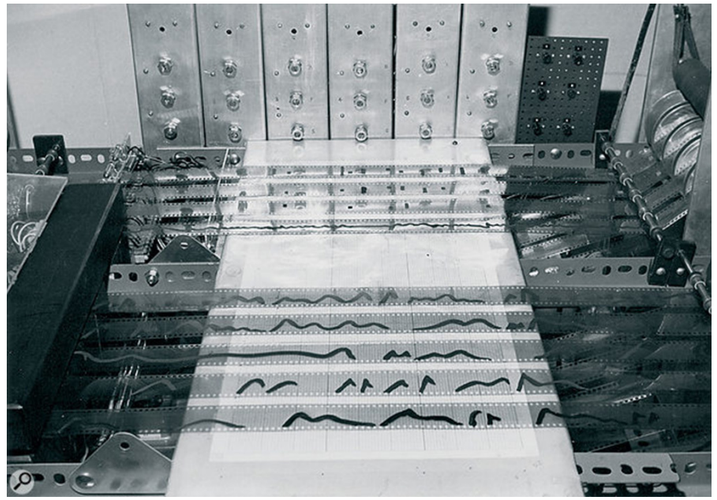
COLUMBIA 2022 Fall
Spactacular Pedagogy Seminar
Prof. Mark Wasiuta

MACHINE SOUND

Abstract

Daphne Oram's experimentation with recording devices and optical synthesizers was pioneering in postwar Europe. For investigating on the meaning and value of her endeavor, this paper is divided into 3 parts. Part 1 offers an overview of the Oramics machine and Daphne Oram's experience, interest, and methodology. Part 2 discusses Oram's philosophy through the differences and connections between interpretation and translation in her creative process; from seeing the uniqueness of her ideology, further explores how the Oramics machine was receipted and situated in the 1970s. Part 3 revisits the larger context of postwar zeitgeist in Europe and makes connections between technological and cultural implications, especially in music conceptualization and production. This paper argues that through analog techniques, early electronic music showcases human's ***kinship*** *to technology that was developed and popularized after the war, formulating technological and sonic spectacle incidences since the 1960s. In the other direction, this kinship and exploration bounced the* ***spectacularity*** *to everyday life and brought new vision to how music was conceptualized and pursued.*

THE ORAMICS MACHINE & SONIC SPECTACLE

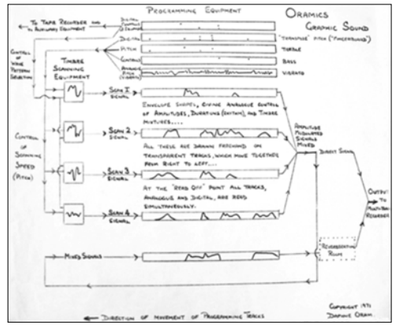


1.
From Composing Sound to Creating Sound

The Oramics Machine, also known as an optical synthesizer, was a great invention in the 20th century. In the 1950s, a synthesizer normally reads content recorded on a piece of tape and then manipulates the original sounds. The Oramics is a machine that synthesizes sound out of no sonic resource but graphics.

Its founder Daphne Oram adapted cutting-edge technology from the military radars, learning about it from her friend and colleague Graham Wrench. For ground-based radar particularly, a kind of video mapper was used to scan photographic images, such as the outline of a coastline, and import it to the radar interface. Oram was into this technology and adapted the scanner to be waveform based. Then she could feed the scanner with her hand-drawn graphics on 35mm film, and the machine will produce corresponding sound effects. The photocells, a light-to-electric sensor, in the machine can sense the pattern change of the graphics and then adjust and multiply the frequency of a sound. The four strips on the top would set the number of cycles per second in a unit, tens, hundreds, and thousands, resulting to different frequencies. The lower five strips are for controlling pitch, vibrato, tremolo, overall volume, and timbre ***(Figure.1)***. Each layer runs parallel to another, and the output is the combination of all layers.

Figure1. sketch of the Oramics



Before the Oramics, Oram composed electronic music with sine-wave oscillator and reel-to-reel tape recorders. However, using an existing recording was not enough for her. She wanted to generate her own sound. The Oramics machine was the tool that she developed from simply an idea to a working prototype. It brought autonomy to her music production as the nuances of Oram's hand drawing were read and translated through wave scanning. Thus, a sense of flexibility is embedded in the translation and interpretation of sonic ideas, from her thoughts into graphic patterns, then from graphics into electrical signals and machine-made sound effects. Meanwhile, flexibility and autonomy are mediated in clearly structured layers. Graphics on different strips of films are dedicated to the characters of a note for maximum control of the effect.

This approach may be inherited from Oram's experience of working in the BBC radio station as a "music balancer" for orchestra live broadcasts from the Albert Hall. ***(Figure.2)*** In 1942, she denied a job offer from the Royal College of Music but decided to be a studio engineer at the BBC. During the years there, she was exposed to and commissioned many tasks, working with recording technology. Meanwhile, her thoughts were always haunted by generating electronic sounds. One of her jobs was to operate a pre-recorded tape and the live performance in parallel. In case that the broadcast cuts off accidentally, she could switch to a recording of the livestream. Besides shadowing live performances at a turntable, in the 1950s, she became a studio manager and started to campaign for the BBC to explore electronic music facilities and avant-garde methods of musical composition. In 1958, she was assigned to co-direct a new Radiophonic Studio where she, for the first time, was commissioned to compose soundtracks for plays. In making the play-music, her focus had to be the plot arrangement and the compatibility between the drama and the soundtrack; while her interest is to focus on the music aspect , the exploration is not guided by any written prompts but by her own imagination.

Figure2. Oram in BBC studio

Although in most of her articulations regarding her music, she spoke about small units of sound, such as frequencies, reverberation, or duration of a particular note, being trained as a pianist, she had her own thoughts in terms of musicality and compositional motives. In her monograph on music, culture, and philosophy, she explained subjects such as how "the maximum effect of shock" was achieved by Haydn and John Cage, and the effect of silence . When speaking of the balance between individuality and areas of resonance, Oram holds onto her sensitivity and more importantly creativity as a musician:

> *"If we lean one way, we plunge into the futile void of the ineffectual sine wave; if we lean the other way we fall into the abyss of annihilating noise. To keep our balance, we must have individuality- individuality of character, individuality of style."*

Oram is a complex character who pertains contradictory characteristics. Was classically trained, but she was intrigued by machines and control tables; she had a take on music on both macro and micro scales; technicality and sensibility co-existed. Throughout her early career, she was determined that her interest was in creating her own electronic sounds, and she committed to do so by resigning from the BBC Radiophonic and starting up her studio in 1959, one year after she was promoted to lead the Radiophonic studio. Her sensitivity to sound quality drove her to create a pragmatic and clear workflow for the Oramics machine.

2.
In-between Machines and Minds:
translation and interpretation

Translation and interpretation, as a pair of linguistic operations, usually refer to textual content, meaning, and information delivery between different registers. However, they are crucial in understanding early music production and interaction with machines. Analog and electrical techniques link machines and minds.

In the early years of electronic music, musicians' kinship with machines was bridged through analog techniques, such as drawing, cutting, reconnecting, or wiring tapes by hand ***(Figure.3)***. In the case of Daphne Oram, she was able to draw a line for controlling each characteristic of a sound. Analog engagements with machines claimed the shift of focus to the syntax or structure of sound production. The syntax here, so to speak, is not in a scale of musical composition, but the birth of every particular incremental or "note." Those formal operations on the recording medium can directly influence the generation of sounds. Through analog techniques, music editing is made tangible and visible.

In the very early stage of making the Oramics machine, while Oram herself was not technical, she was clear about her intention to make a new system for making electronic music that "allowed the musician to be much more evolved in the 'production' of the sound". In other words, it is a system that links human input and machine translation; it triggers a process of sonic exploration rather than the completion of a constructed piece of musical composition. Therefore, in the design of the Oramics machine, one can see the utopia in which Ken Issacs saw architecture can be situated, where there is a dialectic between the external world of materials and the internal world of oneself. That is, the machine is a means

Figure3. Oram drawing on film strips

to record an oscillation between a mechanism and human input. "The great works of art are a projection of the human mind." Conceptually, the machine itself is regarded as a room-scale instrument that contains the function of music editing and production. In the gap between translation and interpretation lies Oram's ambition to express her thoughts clearly and deliberately.

As she sees it, machines are the external tools of human minds; on the other hand, human body and brain are also coworking as a machine-like system. In her monograph, "An Individual Note of Music, Sound and Electronics", many times, she tries to compare and identify resemblance between the human brain and machines. For example, in chapter 7, Oram explores "memory" as a philosophical term using the analogy of circuits and tapes, and the process of memorization engages the process of recording, feedback, and re-recording. In chapter 11, "[wishing] to 'humanize' the machine," Oram noted, various parameters, especially the pitch, of a note must change in a duration because it is not "human" to maintain anything steady for long. This is an important reason for hand-drawing undulating and linear shapes to feed the machine. She states:

> *"We wish to design this machine-with-humanizing-factors so that the composer can instruct it by means of a direct and simple language. He will want to transduce his thoughts as quickly as possible, via a channel which is logical."*

Machines and minds are one.

A machine that translates human input to sounds not only caused excitement but judgments and criticism. Officials of the Patent Office had several visits to Oram's Studio to see the machine. Oram wanted to have the machine patented. "It's too advanced, they said — there's no need for it", as her studio partner Wrench recalled. The office did not offer a patent right away but suggested that she could apply the technique to the shipyards. A machine like this would perform well in the industrial fields. As it is able to create specific frequencies of sound so accurately, when it is operated on the right resonate frequency, swarf on steel plates will fall off after drilling holes. She was not excited about this utilitarian idea. However, in 1964, Oram had the "Variable Electric Resistances" patented in the U.S. . Eventually, in 1969 and 1970, the U.S. and British Patent Office admitted and published specifications for Oram's design parts but not as an integrative whole. The U.S. patent gave recognition to the Oramics machine as a "waveform generator" that can be digitally controlled ***(Figure.4)***; The British Patent in 1970 acknowledges the improvements on "[generating] electric oscillations" that is controlled and accurate . Given that a patent is affiliated to technical inventions or systems that "can be made and used", most of the descriptions are for specifying machine parts and their electric functions. The lack of musicality in the

Figure4. Oram's U.S. Patent, description page

United States Patent Office 3,478,792 Patented Nov. 18, 1969

1

3,478,792
DIGITALLY CONTROLLED WAVEFORM GENERATORS
Daphne Oram, Tower Folly, Fairseat, Wrotham, Kent, England
Filed Apr. 11, 1967, Ser. No. 629,994
Claims priority, application Great Britain, Apr. 15, 1966, 16,660/66
Int. Cl. G10H 1/02
U.S. Cl. 250—202 5 Claims

ABSTRACT OF THE DISCLOSURE

Oscillations are generated by recurrently scanning a graphical representation of a waveform with an electro-optical scanner and the output of the scanner is applied to a transducer. The waveform of the oscillations is determined by the graphical representation and the frequency by the recurrence frequency of scanning. Digital control of frequency is described.

The present invention relates to the generation of oscillations.

It is sometimes required to be able to generate oscillations at any of a large number of frequencies and of a wide variety of different waveforms. This requirement arises, for example, in the generation of "electronic music" and in tone testing.

Referring to electronic music in particular, many proposals have been made such as those requiring recordings of oscillations on magnetic tapes and providing mixers and combiners whereby different combinations of the

2

It will be appreciated that the invention readily permits of a mixture of analogue and digital control since the waveform of the generated oscillations is the analogue of the graphic waveforms and the pitch, being determined by the velocity of scanning, can be varied under digital control.

Further according to the invention therefore the frequency of the generated oscillations as determined by the velocity of scanning is varied in steps under digital control.

The invention also provides apparatus for generating oscillations of variable waveform and fundamental frequency, the apparatus comprising an electro-optical scanning device adapted to scan a target in recurring scanning cycles for generating an electric oscillation having a waveform dependent upon the shape of the target, means for altering the scanning velocity independently of the target shape and brightness to vary the fundamental frequency of the oscillation, and a transducer connected as to be energized by the generated electric oscillation.

In using a linear scan in the electro-optical scanner an interruption occurs in the generated oscillation on the occurrence of each flyback, but, for audio-frequencies, it has been found that by making the flyback sufficiently short, the reproduced audio tone is not noticeably affected by the flyback interruption. This interruption can be avoided if necessary by making use of a circular scan and providing a target waveform along a circular track. Alternatively a low-pass filter can be used to remove the flyback-frequencies from the output before applications to the transducer.

The invention will now be described, by way of example, with reference to the accompanying drawings, in

governmental documents, at the root, questions the legibility of Oram's system as a means to produce music. As potentially both an industrial and a musical instrument, by the time the work prototype was successfully operated, the Oramics machine had few audiences who appreciate its mechanism as Oram expected. What the industrial audience and the patent office deny was the interpretive process she embedded in the way she uses the machine. For her, operating the machine by herself is a part of the machinic system, and furthermore a creative process. While, the industries read machines as tools that can be "made and used" to achieve a set of technical purposes; there is no other meaning, more than practicality, that can be either interpreted or translated. This mismatch intensified the tension between the Oramics' identity in the industrial and musical world. This loosely defined identity, on top of its technical complexity and delicacy, made it a working prototype that stayed only in her studio. Therefore, the machine, at the time, remained to be merely an intriguing object being seen as a spectacle.

Musicians in the mid-century formed a whole scenery of excitement, intellectual freedom, and fearless minds. After leaving the BBC, her practice was never fully embraced by the music industry. In her whole career, she composed commercial electronic music for ads to make a living. In the 1970s, the Apple II home computer was introduced and successfully mass-produced. She did not succeed but intended to make the Oramics a public computer program . Her ultimate interest was the negotiation between sound and human minds and their means of expression. Thus, the Oramics machine was thought through and developed over decades for better precision and more straightforward use.

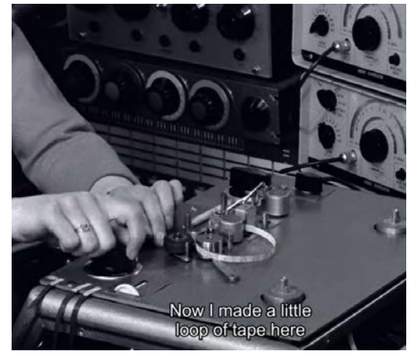
3.
Postwar music and attention:
the conception of music and recording machine

A lesson that can be learned from tape recorders and early synthesizers like the Oramics Machine is that ***attention*** can be formed and directed through human interaction with technology. In the BBC after WWII, Oram first directed a Radiophonic studio for making experimental soundtracks for the newly emerged surreal plays. The sounds were to help convey the plots. The bizarre fantasies needed a new style of sound which the BBC did not even call it music . Meanwhile, after the war, recording machines were also liberated, opening up the window of paying attention to sounds in mundane life and musicalizing them. In France, around the same time when Oram left the BBC broadcast to concentrate on making the optical

synthesizer, a group of musicians, Groupe de Musique Concrète, were exploring everyday sounds with tape recorders as they became popularized and affordable. Inherited from Duchamp, they played with the concept of "Found Object" (objet trouvé): recording sound from natural materials or everyday objects, then splicing and manipulating the tape for effects with various speeds, tones, and transitions ***(Figure.6)***.

Throughout the 19th century, industries had gone through significant mechanization and electrification. The process brought vast changes to communications, technology, and entertainment. Then in the first half of the 20th century, these changes encountered the surge of different acoustical thinking in the Avant-garde. "These developments in theoretical and applied acoustics took place alongside the widespread industrial and household use of electricity, and were concurrent with the first attempts to electrically generate sound." The two different purposes of the acoustics are, first, to verify, justify or explain sonic phenomena, second, to serve as a system for generating new sonic materials and configurations . Oram was clearly intrigued by the idea of sound as a new material. Growing up around chamber music, radio, and control studio, Oram has an intuitive sense to sound as a scientific entity. In Oram's mind, sounds are "out of the orthodox of musical scale". A note is not a pitch, named with a capital letter, but a frequency that can be calculated and modulated, and a figure that can be visualized. That is, we can write an analog of a sound, or draw an analogy of a sound, for a machine to read and create sound accordingly.

Figure 6.Oram wiring a piece of tape



What exactly is music?

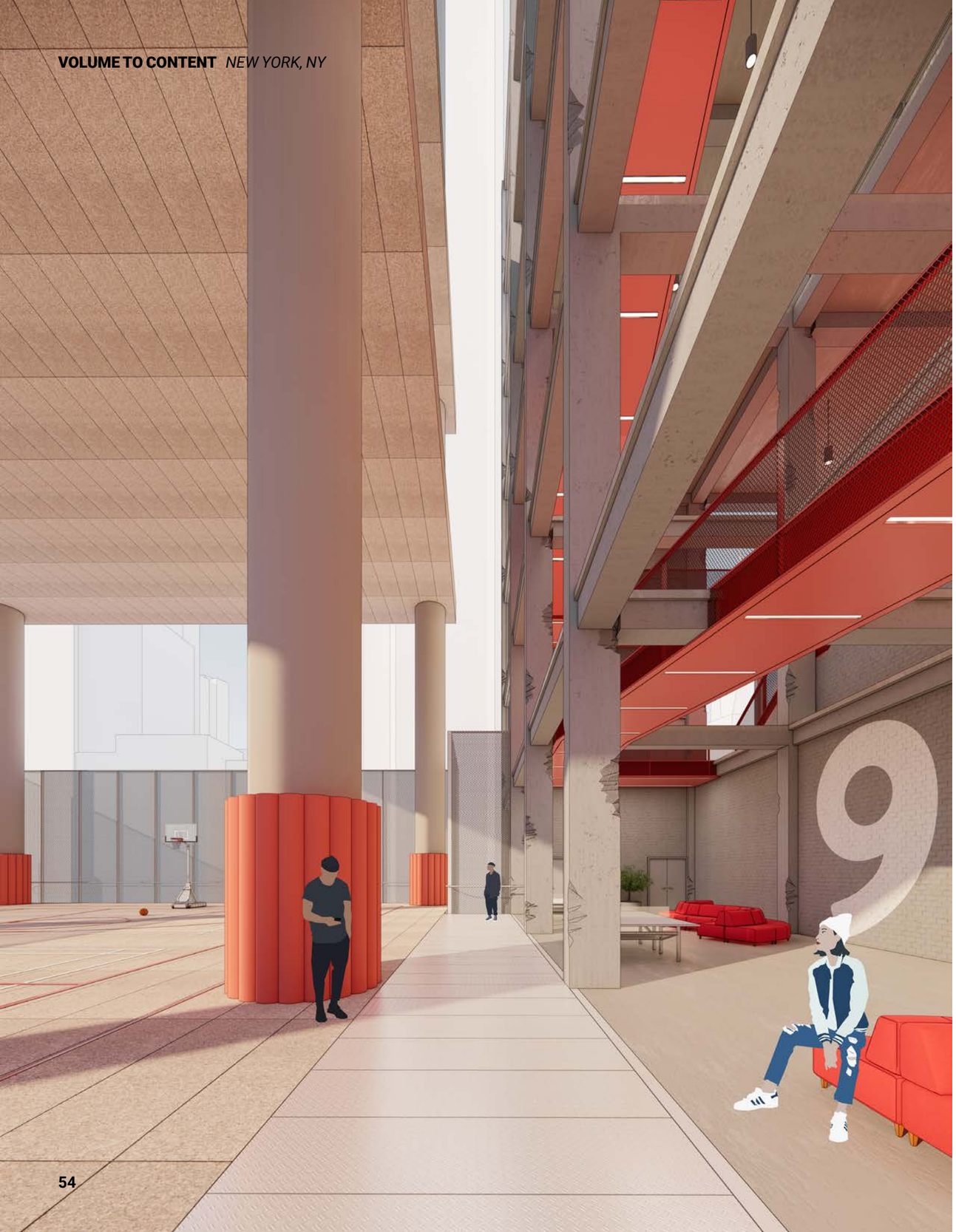
At the beginning of the century, in the clash of cultural and technological surges, Satie's furniture music directed the audience to drift the attention paid to his music to a milieu of urban noise. The role of music technology can be seen more clearly in comparison with the incident earlier at the beginning of the century. Before the tape recorder was widespread after WWII, French composer Erik Satie spotted the changing role of music, moving from inside the salons to the streets, and coined the concept of furniture music (musique d'ameublement) that is composed to set back behind the environment and events . In his practice, Satie did not state directly that everything is as intrinsically musical as a composition, instead, he pushed music to its functionality as an ambiance, similar to a piece of furniture, that can be "applied" to a situation outside the concert hall. The attention paid to his furniture music itself drifted away to a milieu of urban noise. However, half a century later, one can take a tape recorder and document the sound of a gravel box and claim the musicianship, and that was what later generations of musicians did. An empty tin can, a lamp shade...anything that can make a sound becomes an instrument in the presence of a recording machine. Now, anything is musical. Oram could scribble dots and lines on a film strip to create music, whereas what she drew on its own may not be understood as "musical" or a readable score at all. Through the lens of technology, every piece of recording is a unique musical instance generated directly from everyday life as a sonic spectacle because of intentional listening.

Sound can be both musical and spectacular. Even was trained as a pianist, Oram was more interested in directly "composing sound," as she states. As they were exploring the boundary between sound and music, musicians were trying to claim a new territory of compositional autonomy, independent from instruments but engaging with analog input. Autonomy is thus controlled and medicated.

One might ask: ***My fluorescent lights make a constant sound; is that music?*** Once the conception of musicality can be questioned and transposed, the spectacularity brought out from equipment and technical constructions was shifted to the perception of sound. Machines then were a trigger for listening to the surroundings.

References:

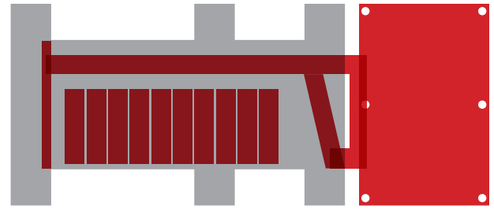
BBC. The New Sound of Music, 1979.
Blamey, Peter John. "Sine Waves and Simple Acoustic Phenomena in Experimental Music." PhD dissertation, University of Western Sydney, 2008.
Daphne Oram's 1960's Optical Synthesizer Oramics Machine, n.d. https://www.youtube.com/watch?v=mJ08diPUv6A.
Graham, James. "Musique En Fer Forgé: Erik Satie, Le Corbusier and the Problem of Aural Architecture." AA Files No. 68 (2014): 3–15.
Marshall, Steve. "Graham Wrench: The Story Of Daphne Oram's Optical Synthesizer." Sound on Sound, February 2009.
Oram, Daphne. An Individual Note of Music, Sound and Electronics. Galliard Ltd, 1972.
Patent Office (US). 1964. D. Oram: Variable Electric Resistances. US 3156890 (A), 10 November 1964.
Patent Office (US). 1969. D. Oram: Digitally Controlled Waveform Generators. US 3478792 (A), 18 November 1969.
Patent Office (GB). 1970. D. Oram: Improvements in or Relating to the Generation of Electrical Oscillations. GB 1189292 (A), 22 April 1970.
Rovner, Lisa. Sisters with Transistors. Documentary, 2020.
Semtek, Benjamin. "The Story of the Oramics Machine." Resident Advisor, October 12, 2011. https://ra.co/features/1305.
Smirnov, Andrey. Graphical Sound, 2011.
Daphne Oram - Electronic music pioneer. "The Oramics Machine." Organization, July 13, 2020. daphneoram.org.
Vear, Craig. The Digital Score: Musicianship, Creativity and Innovation, 2019.



COLUMBIA 2022 Fall
Collaborator: Nuofan Xu
Tribeca, NEW YORK, NY
Prof. Wonne ICKX

Located in center Tribeca, the AT&T Longline building has been abandoned for years. This window-less tower was overstructured and designed to be a data center; in this studio, we divide this large volume to be 70% affordable housing and 30% social infrastructure.

We argue that structure is the key in understanding adaptive reuse. The proposal redistribute materials from original facade to the proposed addition.



33 THOMAS ST.
VOLUME TO CONTENT

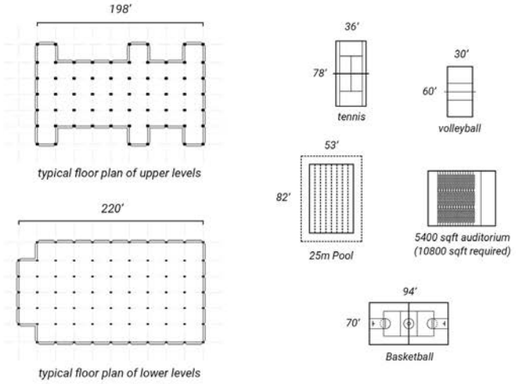
EXISTING BUILDING

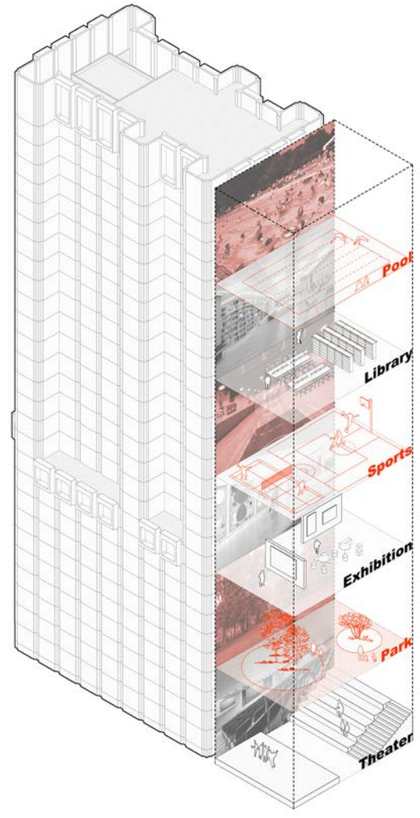
Iconic granite cladding covers up this windowless tower.

Structure has long been understood as the bone of a building. Typically, we consider programmatic types and then size bays accordingly. When it comes to adaptive reuse, the existing structure is a resource or sometimes an obstacle in design tasks. In adaptive reuse, we invert the two steps: investigating the existing structure, then critically evaluating how spatial needs could be fulfilled.

DESIGN CHALLENGE

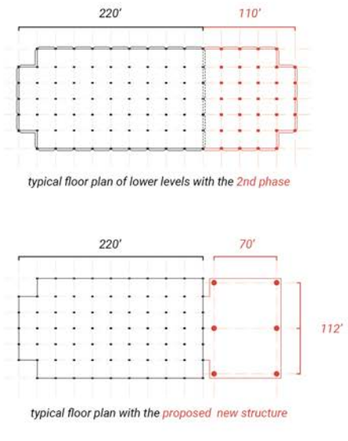
Amniety Programs such as sports and theater requires large column-less space.

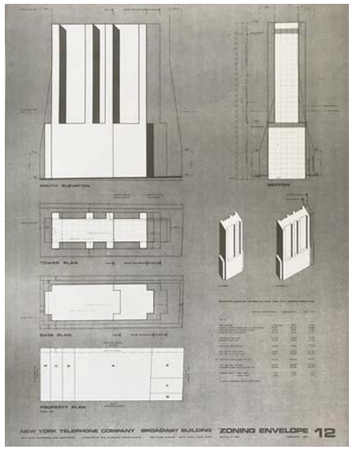




THE NEVER BUILT SECOND PHASE

Currently fenced and empty, the lot is more than 110 feet wide to the south-east of the site.

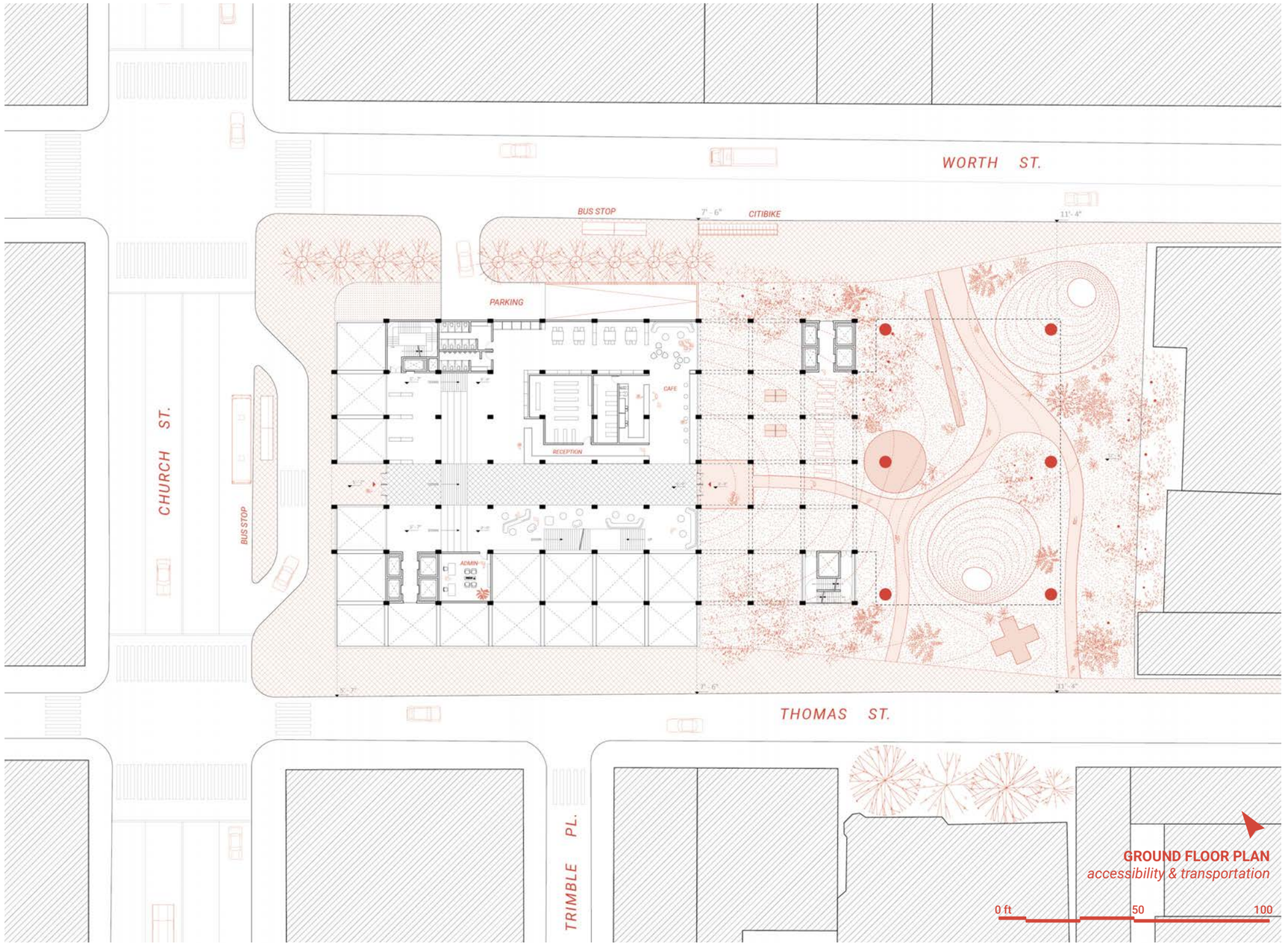




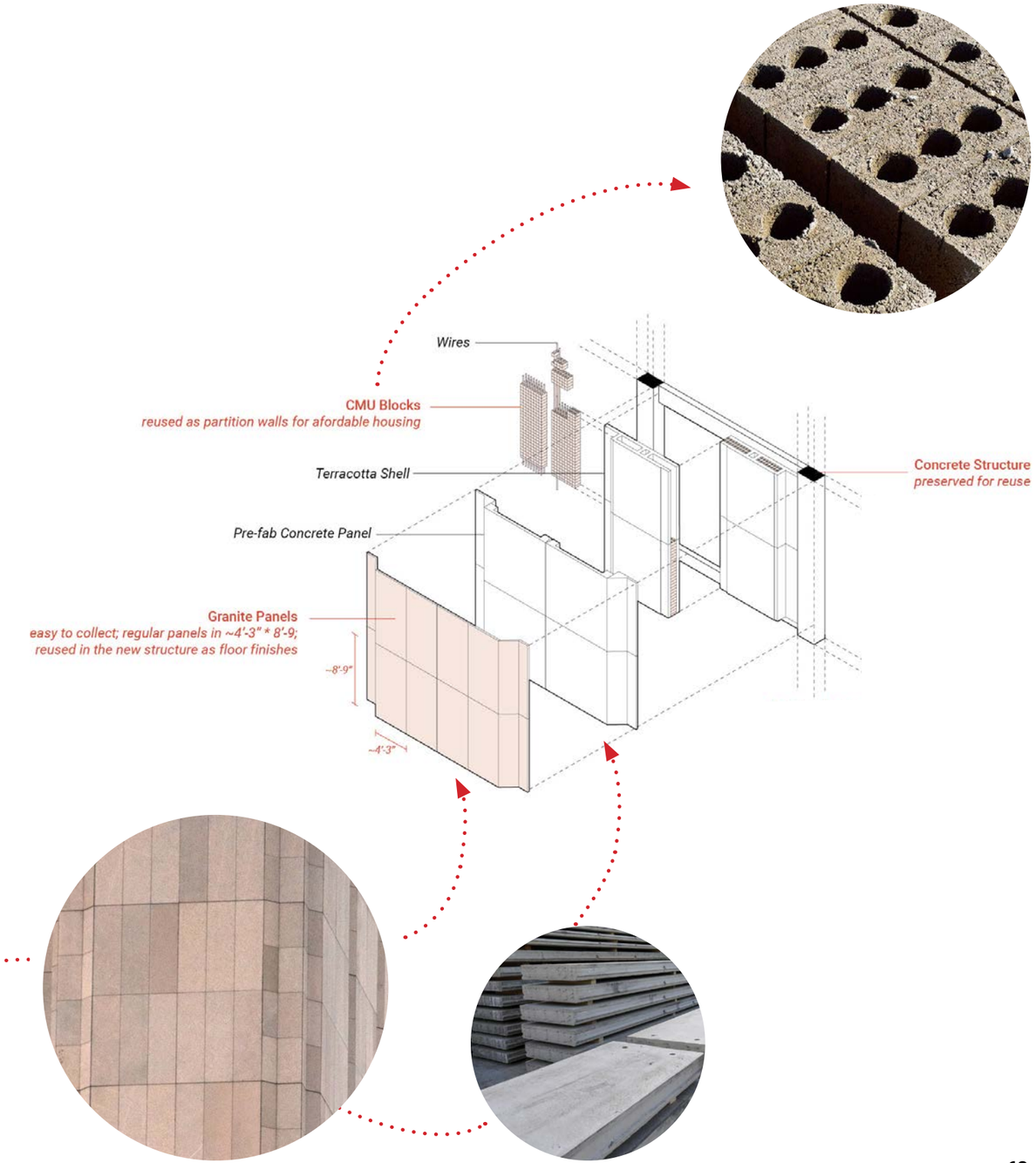

9
GYM
BASKETBALL
VOLLEYBALL
PINGPONG

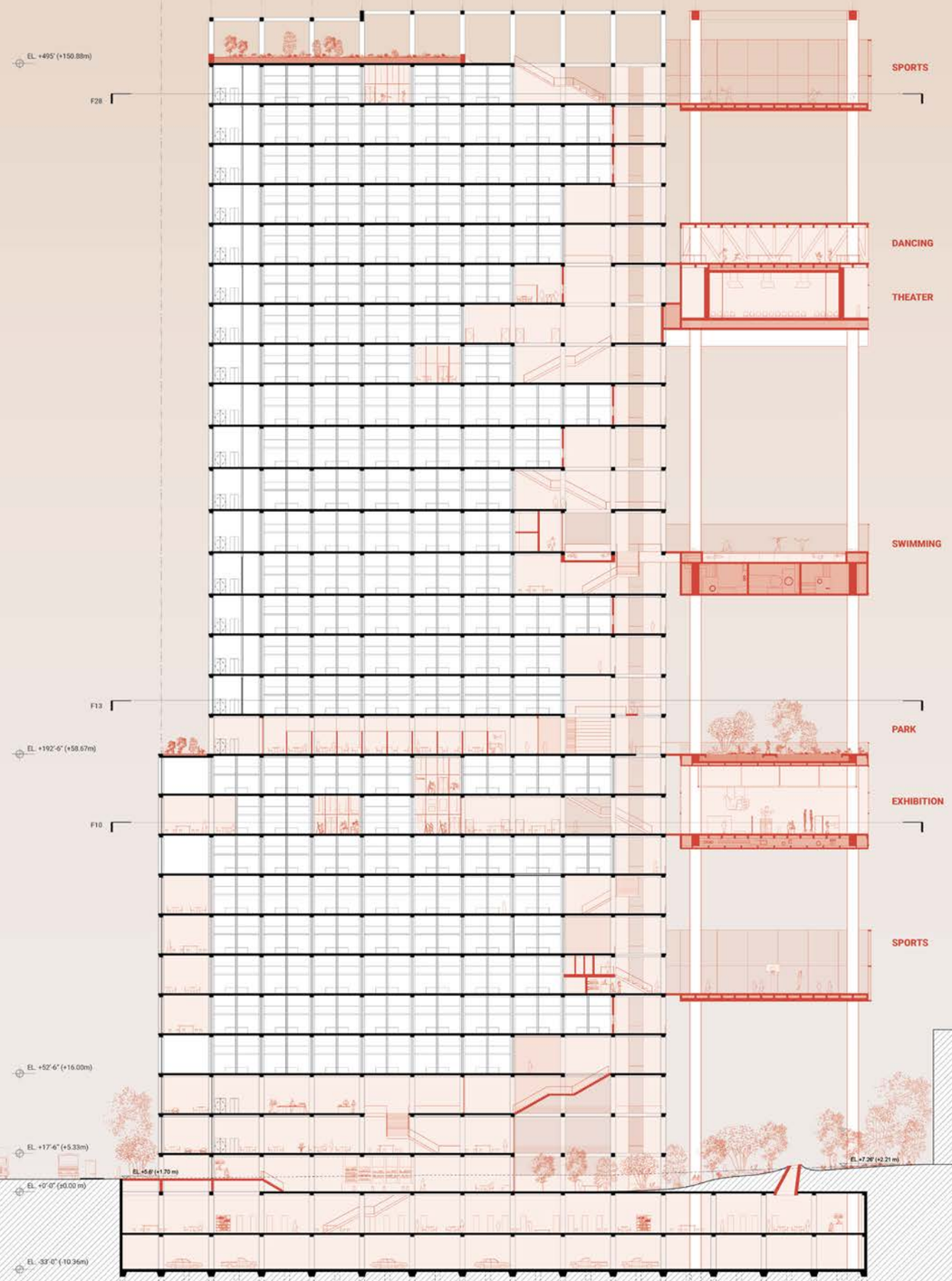

1/2
A/C/E
N/R/W
4/6
J/Z


NO
•LITTERING
•LOITERING
•SKATEBOARDS
•ROLLERBLADES
•BICYCLES
•BALL PLAYING
•ALCOHOLIC BEVERAGES
•PETS
FOR ADA RELATED CONCERNS
CALL 212-513-2081


WORTH ST.
BUS STOP
7' - 6"
CITIBIKE
11' - 4"
PARKING
CAFE
RECEPTION
ADMIN
CHURCH ST.
BUS STOP
THOMAS ST.
TRIMBLE PL.
GROUND FLOOR PLAN
accessibility & transportation
0 ft
50
100

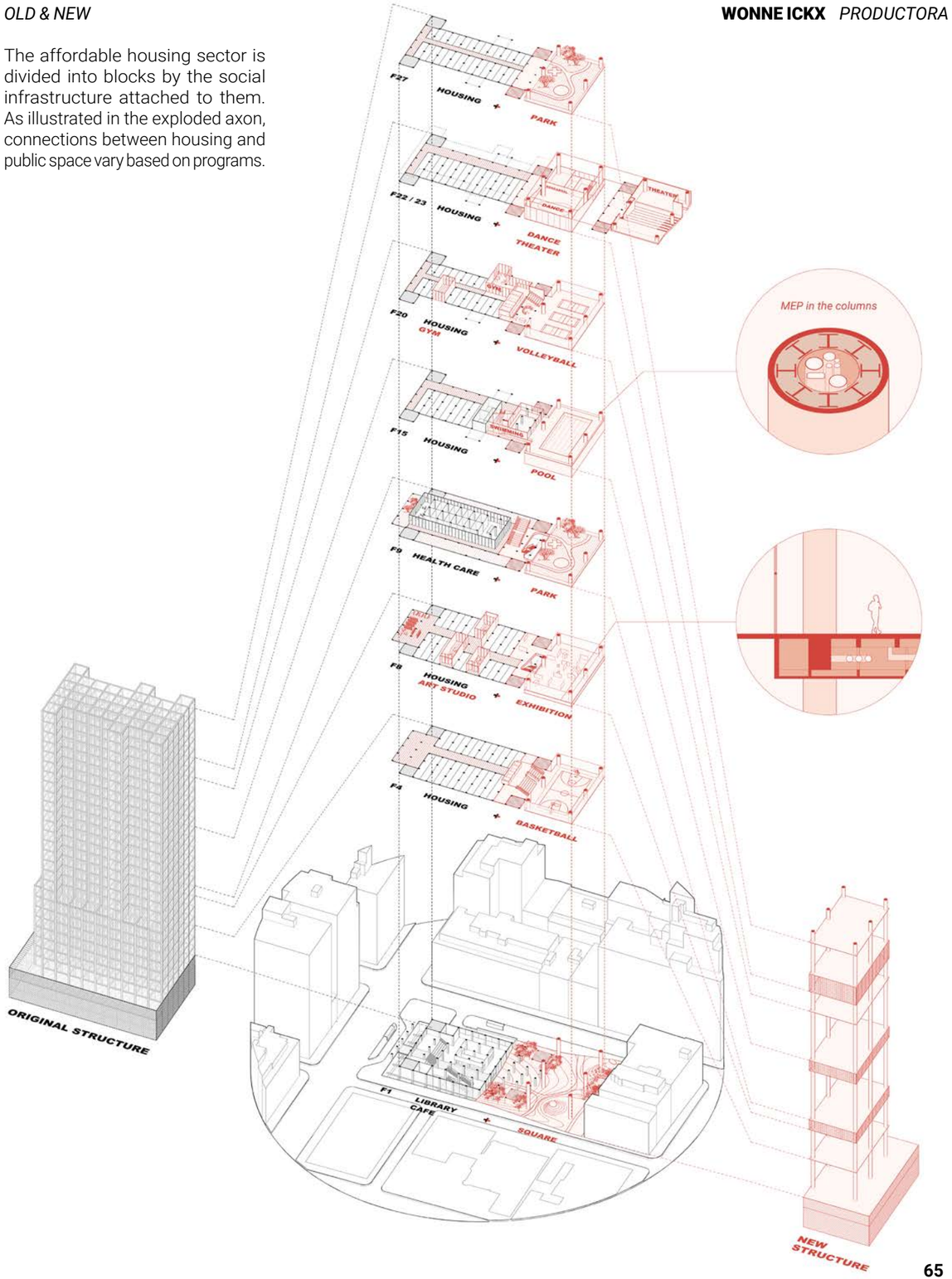
Facade panels from the original building are disassembled and repurposed in the new structure as finishes.





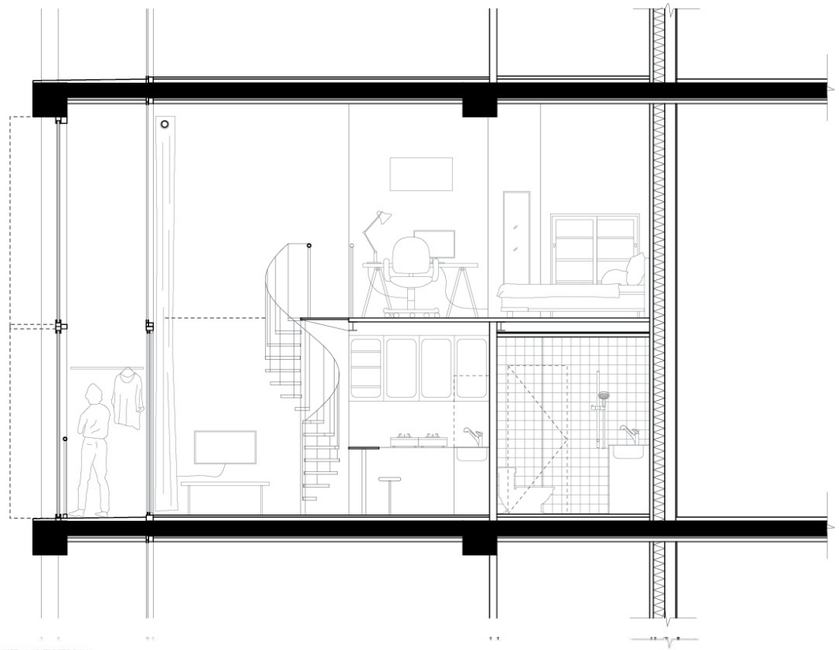
OLD & NEW

The affordable housing sector is divided into blocks by the social infrastructure attached to them. As illustrated in the exploded axon, connections between housing and public space vary based on programs.

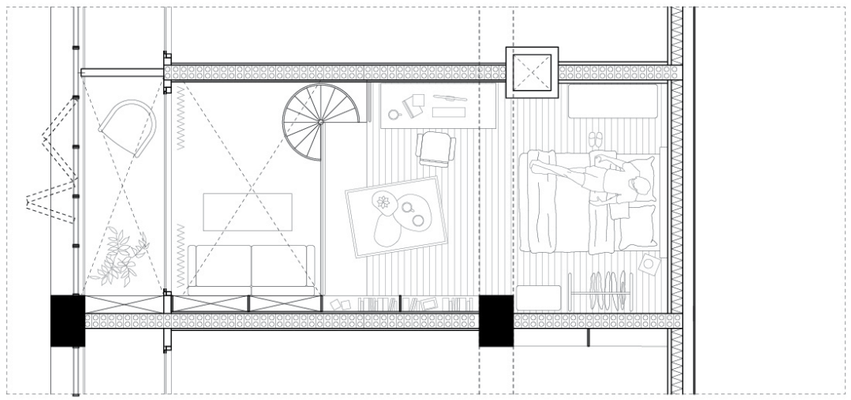


AFFORDABLE HOUSING

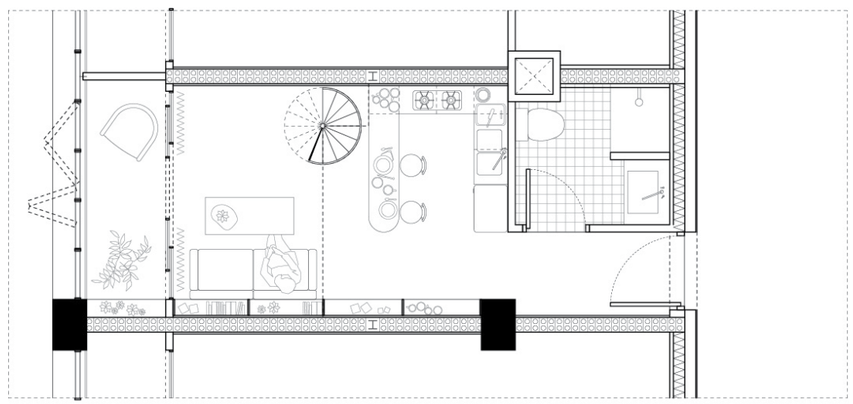
Given the single floor height of the existing structure, housing units are lofts with a light-weight steel sleeping platform. Recycled CMU blocks from the original facade panel is reused as partition walls for the units. Interior materials are mostly exposed



UNIT A SECTION

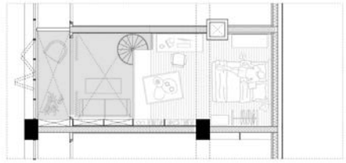


PLAN - SLEEPING PLATFORM

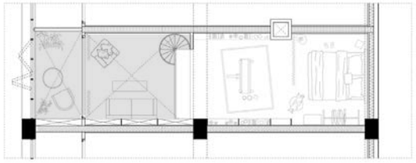


PLAN - LIVING

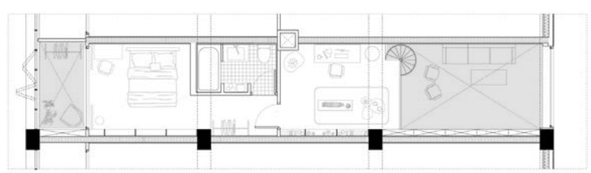
STUDIO UNIT SINGLE
425 sqft



STUDIO UNIT LARGE
590 sqft



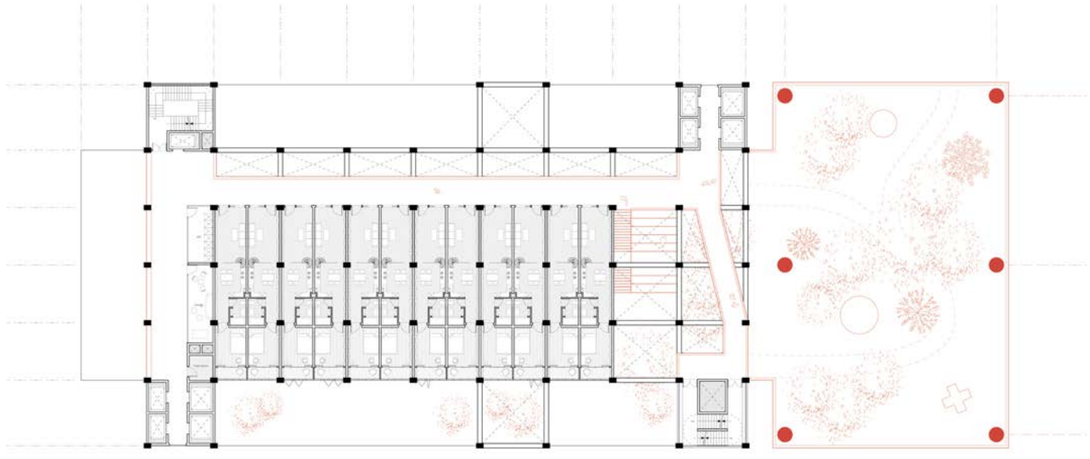
2 BEDROOM UNIT
945 sqft



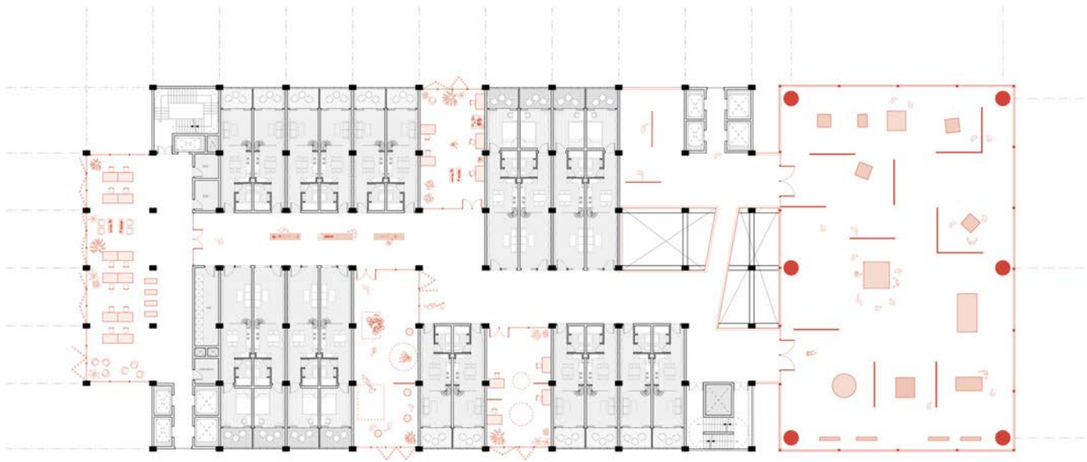
F20 FLOOR PLAN
sports & gym

FLOOR ARRANGEMENT

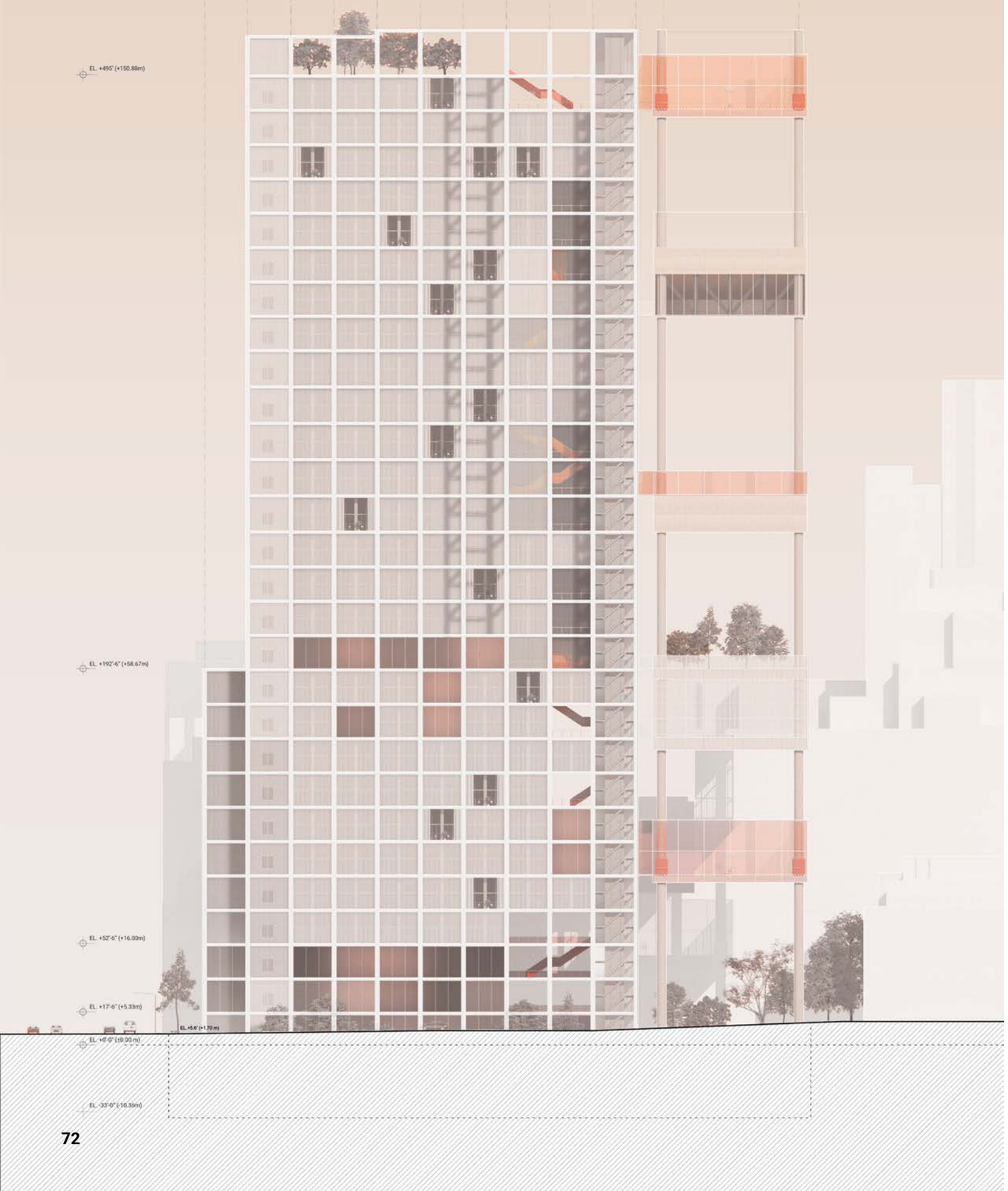
Each block of housing is anchored by a large-scale social infrastructure and features different connections. Housing scheme varies. The "inbetween" of the old and new structures is not merely a gap, but a series of intermediate spaces.



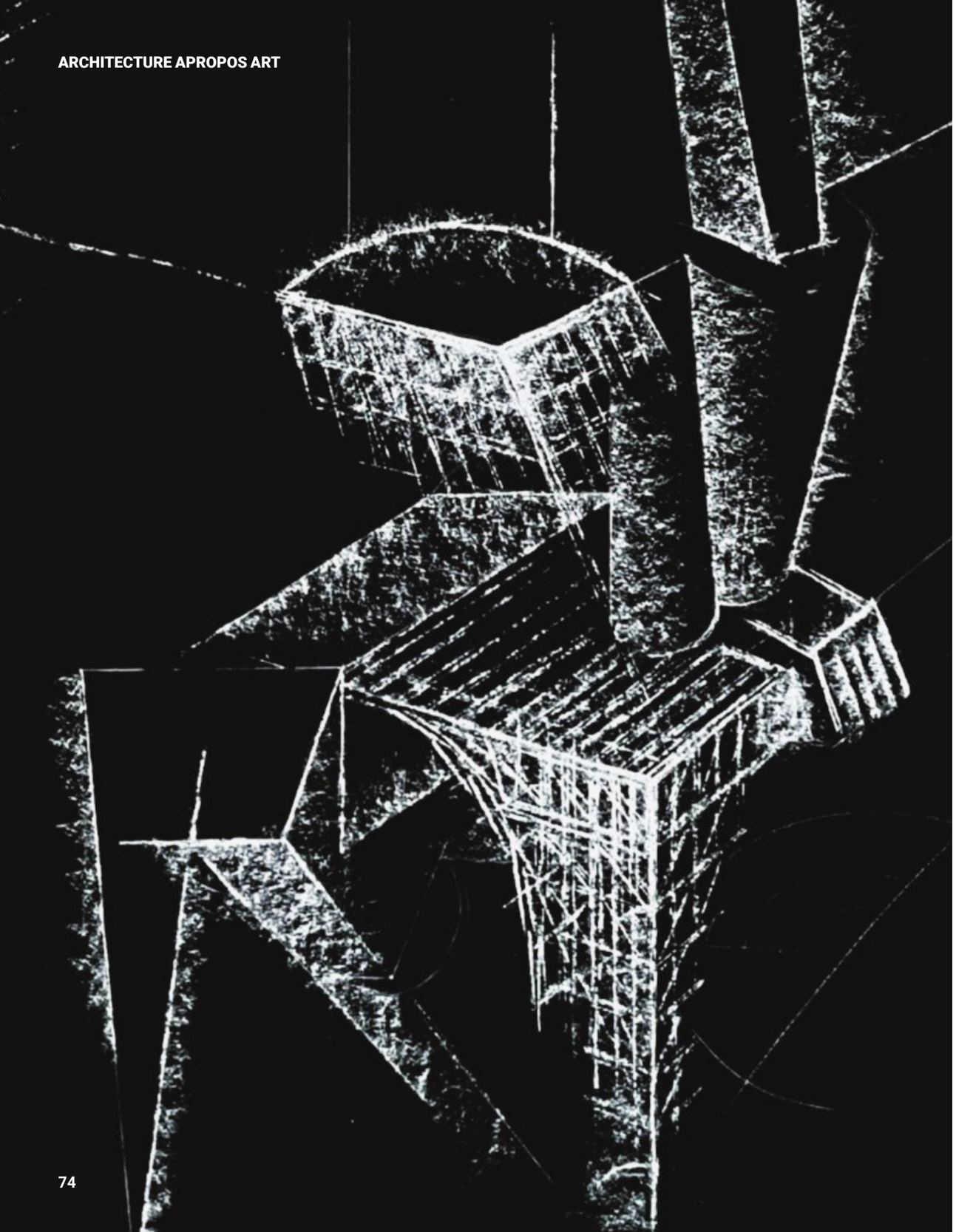
F10 FLOOR PLAN
typical upper floor housing



F8 FLOOR PLAN
exhibition & artist studio / workshop



BUILDING ELEVATION AND POSTCARD



Columbia Fall 2022
Design Seminar
Prof. Steven Holl & Dimitra Tsachrelia

This project seek for bridges between Russian constructivist architecture by Iakov Chernikhov and Cubo-futurism paintings by Lyubov Popova. Seminar explores the interconnecting relationship between Arts and Architecture in history.

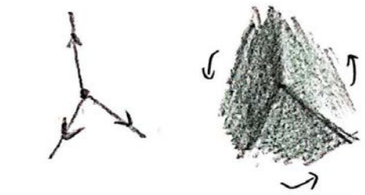
TECHTONIC PAINTING

PAINTERLY ARCHITECTONICS

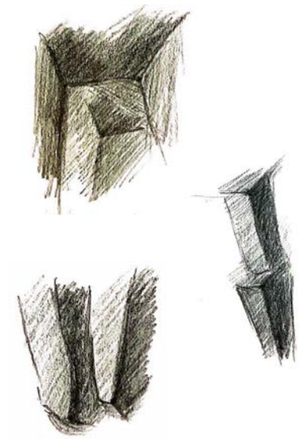
Female Model, Lyubov Popova, 1914

Lyubov Popova had a short but prolific life. Her early stage paintings reveal how her artistic ideology was formed from studying the human body and the conjunction of the parts. In her sketch of figures, she analyzed the human body with multiple three-dimensional axes. Her composition features very angular shapes, emphasizing edges and the intersection of volumes. In this sense, she constructed figures with edges, starting from a joint, and developing bones and muscles. This style carried on to her later practice, and she coined the term "Painterly Architectonics", pointing out that to paint is to construct.

Popova's painterly architectonics and Chernikhov's architecture on paper share very similar methodologies: intersecting planes and volumes, and extreme abstraction. If we look into the details, both were particularly interested in the joints. For Popova, it's embedded in the parts of figures and joints; and for Chernikhov, it started with pure geometric forms. His geometric compositions experiment with orthogonal and dynamic intersections. Architectural Fantasies included his constructivist architectural imagination, but intersecting volumes is still a motive.

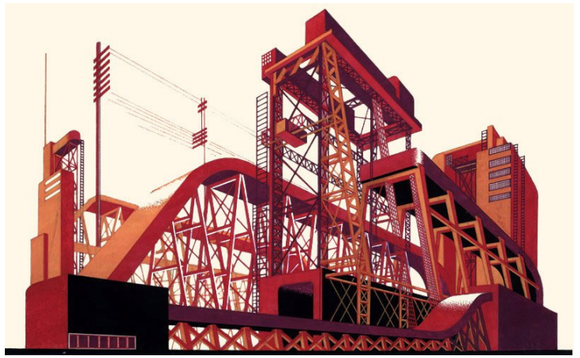


Constructing Volume



Study of a Model, Lyubov Popova, 1913

101 Architectural Fantasies
Iakov Chernikhov, 1930 - 31

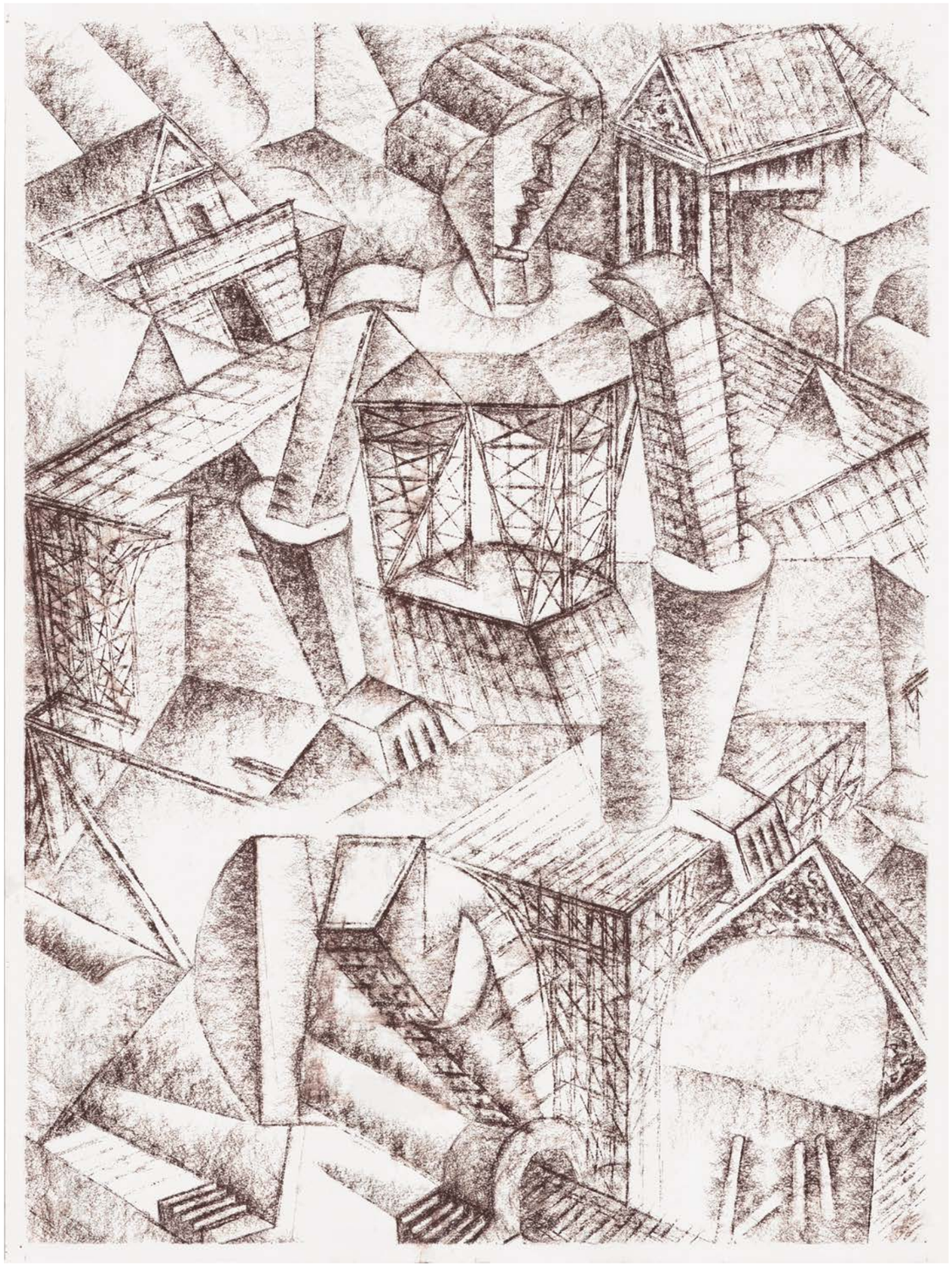


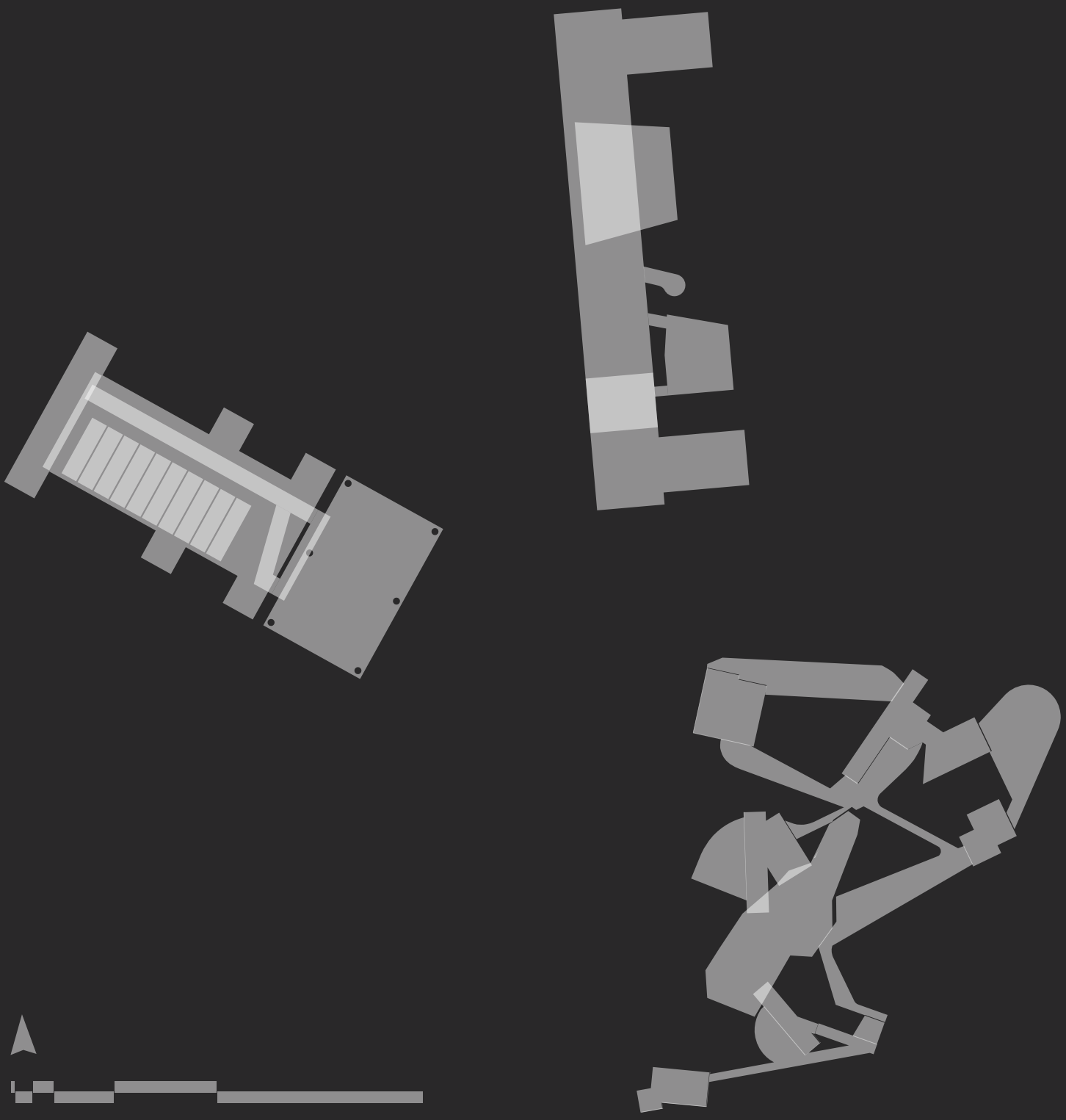
Seated Figure, Lyubov Popova, 1914
Oil on canvas, 115.2 x 85 cm.

Having found this connection, given all these moments of structural intersection, I merged the two worlds together and reinterpreted Popova's Seated Figure (1916) with architectonics. Architectonics gives the painting spatiality and connects volumes directly to architectural elements. The very angular and machine-like interpretation aims to explore spatial indications of the original painting. It also ties to her later works on both textile design and her societal engagements: the human body being seen as machine, strength, and resource.

Architectonics of *Seated Figure*
Conté Crayon, 24 x 32 in.

ARCHITECTURE APROPOS ART





MAKING PAST PRESENT

XI JIN 2022-23 GSAPP