

The Sonic Act as a Design Intervention



The Sonic Act as a Design

Michael de Beer Methods & Analysis Msc 4 studio 2017 - 2018

THE COMMONS OF VALPARAÍSO

Constructing the Commons in the Latin American Metropolis $2017 \ / \ 2018$

REFACE

THE ACT AS A DESIGN

"I could tell you how many steps make up the streets rising like stairways, and the degree of the arcades' curves, and what kind of zinc scales cover the roofs; but I already know this would be the same as telling you nothing."

Italo Calvino – invisible cities pg. 10

Positions in Practice : Constructing the Commons in the Latin American Metropolis

Graduation Studio (Msc 3 | Msc 4)

Valparaíso, Chile

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To listen and to make a noise, as sonic acts, formed the premise of the project. Continuing a lineage of inquiry of human conduct that is underpinned by the notion that humans engage in purposeful behaviour; the sonic act in the field of architecture questions how people behave sonically in their environments. The importance of this spatial query is underpinned by a premise positioned in the earlier research of the project, that sound is critical for experiential engagement and a defining feature of phenomenological attributes of spaces.

As with many forms of praxeological inquiries, which have given form to the typologies of buildings we have come to know and love; the project was underpinned by continual introspection as to the sonic inhabitation of spaces. Throughout the iterative design phases of the project, continual cycles of questions were being asked- What is the sonic behaviour and how does this form spatially (Vis-à-vis)? As with any academic research, this form of questioning was underpinned by a continual awareness of ones surroundings and there by informing design decisions - a methodological approach of observation and experimentation.

To account for each and every moment would be abortive. As importantly, the question moved beyond moments of interaction and rather aimed to consider the constant elements associated to particular sonic acts. In doing so the inquiry turned what may be perceived as being an ineffable subject into a defendable understanding of space and sonic action. Herein we understand that a church's architecture does not enable a single act but rather various acts to occur - often simultaneously as moments of occupation.

Yet, the church like the library or ones kitchen enables a space of particular mediation and action. The various acts seen collectively have given form to space. In sacred structures across the world, a commonality exists in the attention to the ceiling, not only as a connection to God/ God's but to form a resonance and reverberation the immediately draws attention to presence. Equally the intimacy of the kitchen is not only a place of work but is born from the hearth, the central fireplace of pre-industrial home/stead. It inspires and encourages intimacy amongst those that inhabit it. In this sense the inquiry of the sonic act is not defined by acoustic qualities but rather an emphasis in understand the commonalities of sonic action and employing them to determine a site specific design.

The most accessible manner in understanding the project is that of the four-box diagram tool formed during the research phase and employed during the design phase of the project. This offered a means to engage in the Sonic act of presence and its various components of intermission, intervention, intimacy and space of appearance. It enables a sonic interpretation of space and action. It is a tool for analysis and design and proved fundamental in the outcome of the project.

In defining the spatial logic of the project, the space of appearance as the public extension of sound, forms the primary route, spine, through the design. Off of this one finds instance of intimate spaces. Within this spatial logic the actions of presence may occur, be it one of intervention or intermission. The designed spaces offer a frame in which actions may be able to occur.

The outcome of the project presents four primary spatial interventions that each hold diverse qualities for the sonic ac of presence to occur. These are the learning centre; collective school environment; market square; and Sonic Vantage point. Each of which serve as precedent for the utilisation of the sonic act as being a core design tool in define the spatial logic through framing elements.

The learning centre, connected to the city, on the lowest part of the project is a public intervention. Imbedded in this environment is a sequence of spatial thresholds that define a movement from the space of appearance to an intimate one. The programmatic sequencing of the project was largely defined by the sonic acts of the learning centre. From the busy amphitheatre, a junction of the learning centre; the collectively silent space of the library, to the intimate spaces of work and reflection. The design sought to create a varied sequence of spaces not only in form and type but also materiality, in creating environments for specific acts. Small niches and courtyards offer a respite from what may be an overtly public space. Large spaces emphasise collective action, as the library as well as amphitheatre and workspaces each require sonic mediation amongst many individuals. Critically the variety of these environments relate to the commons, as collective mediation is central to the acts.

The Collective School is a private environment, dedicated to learning through play. Unlike the learning centre, the collective school's spatial logic differs from sequencing to rather a dialectic between large collective and smaller intimate spaces. The significance of this is in the operation of the school environment, as learning

is not solely orientated toward singular classrooms but rather a diverse range of spaces. In doing so allowing various activities to simultaneously occur. The collective school is thus nestled around a terraced courtyard, enabling a diverse range of activities. Critically, the ethos of the collective school is also situated toward the development of youth. It's form is one that emphasises an awareness of others, by virtue encouraging interaction through creating sonic connections.

precipice overlooking the city the fragile community. It is city below and upper school the space of appearance. As an area for the community of Cero Cordillera. Here the market will be and community hall will stand. At the heart a playground. On the other edge of restaurants and shops,

The Sonic Vantage Point, unlike the other proposed spaces, is one that is orientated toward intermission - one self and being. A tight knit of walls carved out of the cliff forms a primary walkway off of which sonic chambers and vantage points proliferate. Imbedded in the natural surroundings of the hill the space resonates with the sound of birds and ones own footsteps. Every now and then an echo of the city far below or the hills above transports one to an awareness of oneself in a larger environment. A space that one is unable to intervene in.

These four areas of the urban framework each have a unique quality that is informed by the sonic acts that take place within. Yet it is also critical to position that the project is not only informed by sound but has a diverse range of inputs. A key issue being the role of the project within the broader context. Valparaiso is a city of exchange dominated by a temporal population that is putting strain on the fragile hill communities such as Gerro Cordillera. It is this contextually defining feature that has motivated the types of programs that have been placed on the site, with the objective to support the hill community. These socially orientated forms of infrastructure are critical to the resilience of the community; by provide key public space and institutions that support the permanent population.

Today our world has been defined by visual elements as a means of understanding through logic and proportion. Yet, a body of knowledge is slowly building around the notion of affect, positioning the importance of experience as fundamental to how we engage the world around us. This premise motivated the need to follow a project that would be informed by how one would engage and experience the space. It is a move away from the current paradigms of design and advocates for a return to being- one which I would urge you to explore.



Competing sounds A rushing street shouting vendors blaring music an engulfing encounter

A turn away And up we go

Aside the unyielding climb An agonising funicular it's mechanical strugglea rumble, permeating a lush precipice

A turn away and in we go

Echoing cutlery distant screams a notable respite a chipper beat an intimate court[ing]

A turn away and through we go

Front to back performer to spectator dancing feet to a pattering beat act as appearance A turn away and in we go

Buenos Dias, Hello Hello An embracing chamber the Soniccity evicted one on one the welcoming junction

A turn away and in we go

Studious whispers the turning of pages tip toeing hush hush a divergent volume

A turn away and out and in?

Suddenly Imperceptible eavesdropping from below finally quiet unable to intervene meditative reflection

A turn away and up we go

Step by Step unfolding rhythm dialectic presence oneself & the city a public intermission A turn away and in we go

A resonating hum playful mediation youthful oratory familiar and engaged the collective

A turn away and ascend we shall

Gaggles and giggles ineffable moments distant humm, bark & chirp enclosed to exposed pockets of association

A turn away and here we are

Sonic array immersive appearance Collectivo! fruit and veg a youthful presence the cultural confluence

A turn away and away we go

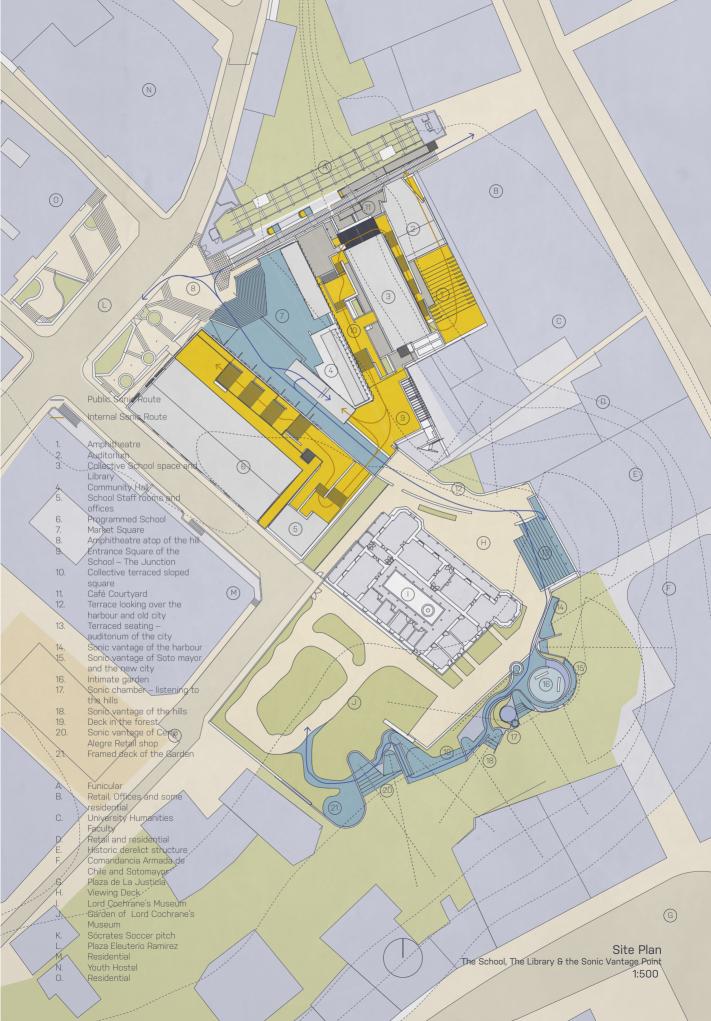
Overlook and overhear a distant presence here rustling leaves in earthen cavities frame the city sonic vantage

URBAN FRAMEWORK

The site sits on the spur of the hill of Cerro Cordilleraa, overlooking the city to the right.

The market, school and learning center are positioned adjacent to the funicular that climbs the steep slope between city and hill. To the South is the Sonic Vantage point that sits below the Lord Cochrane's Museum and park.

As the site is positioned in a Unesco Heritage area, the approach to the design and framework were to maintain all existing elements of the site and repair those that are in a severe state of decay - such as the viewing deck.



AXO OF PROJECT

The intervention is situated on the hill in a respectful manner to its context. Acknowledging the heights of surrounding structures and carefully climbing the hill. A critical part of the project is the extension of the public realm seen in light grey atop the hill and extending toward the Sonic Vantage point. In Yellow one sees the internal walkway of the structure that forms a continuous route that binds the buildings together.

Sotomayor, a primary square of the city is seen situated below the site and has a visual connection to the sonic vantage point. Atop the hill are primarily residential uses compared to the institutions and commercial areas below. A key intervention being the introduction of the market atop the hill, moving away from the status qou and offering the hill community a key open space for commerce and civic life.



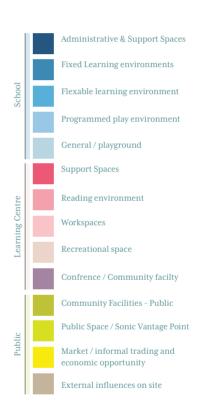
SONIC AC

PROJECT PROGRAM

The program of the project is situated on the sonic 4 square diagram that has enabled an understanding of the types of sonic environments being formed.

The diagrams Y axis are the realms of intimacy and space of appearance. The X axis is the act of presence that is composed of intervention and intermission.

The projects various components cover the entire square, highlighting the diversity of acts that occur within. This was essential in understanding not only the form, materiality and the act but also how the building would be positioned and arranged on the site.



The Act

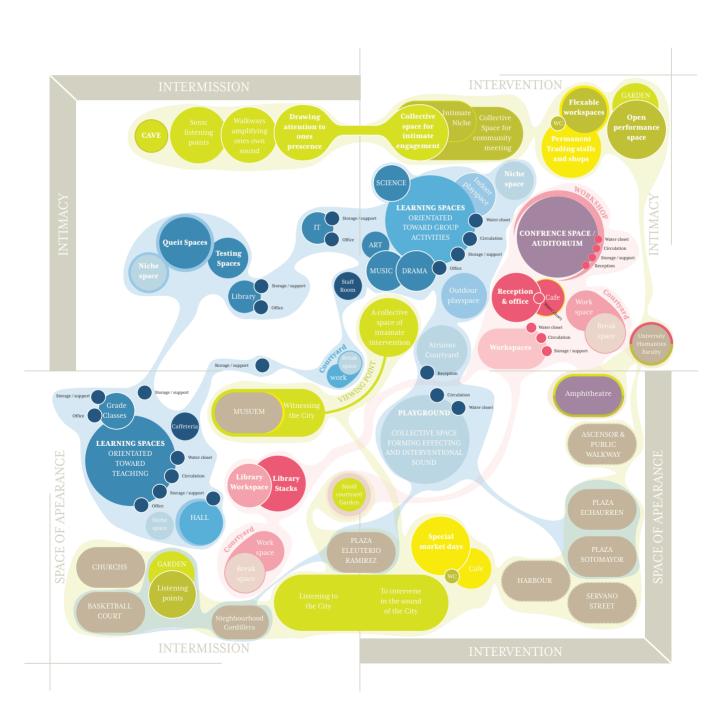
Intermission

Intervention

Realm

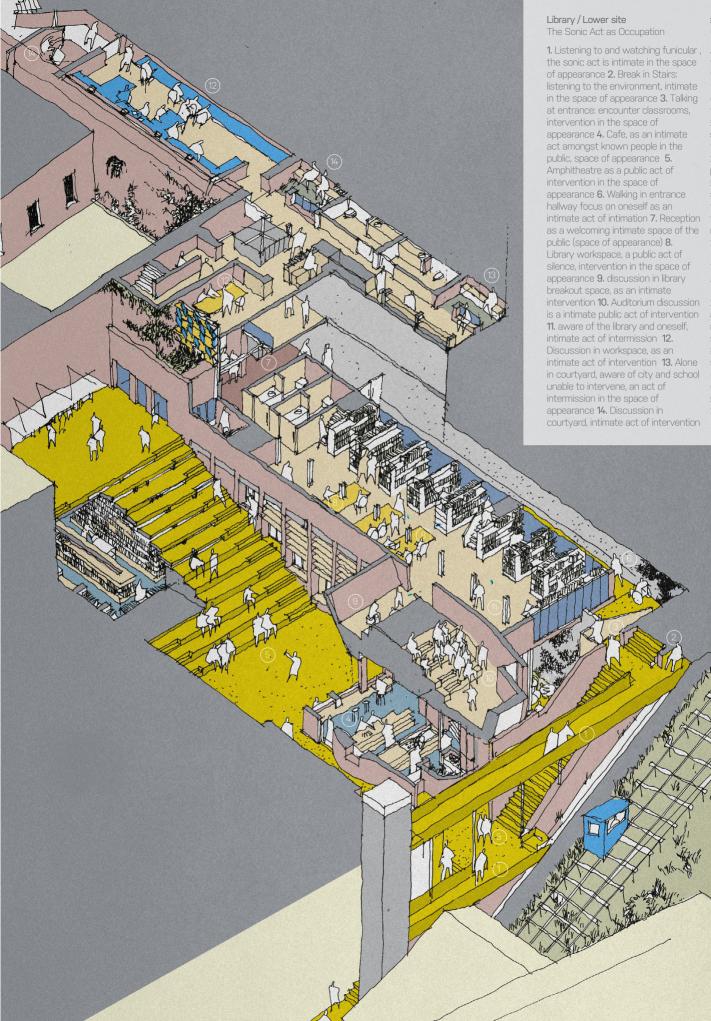
Intimacy

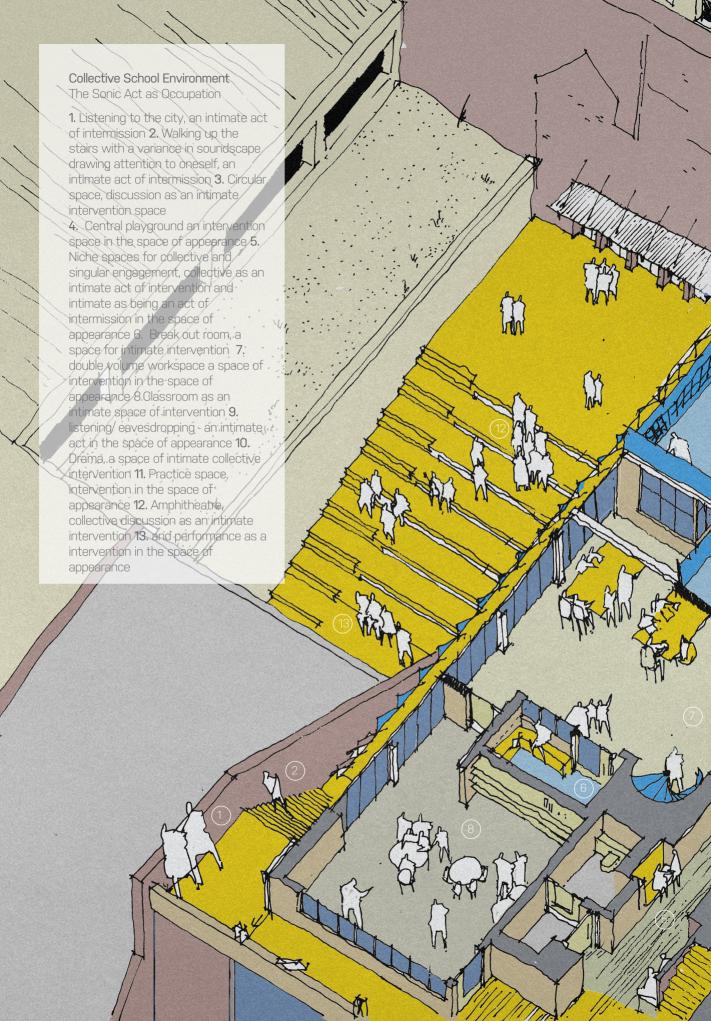
Space of Appearance

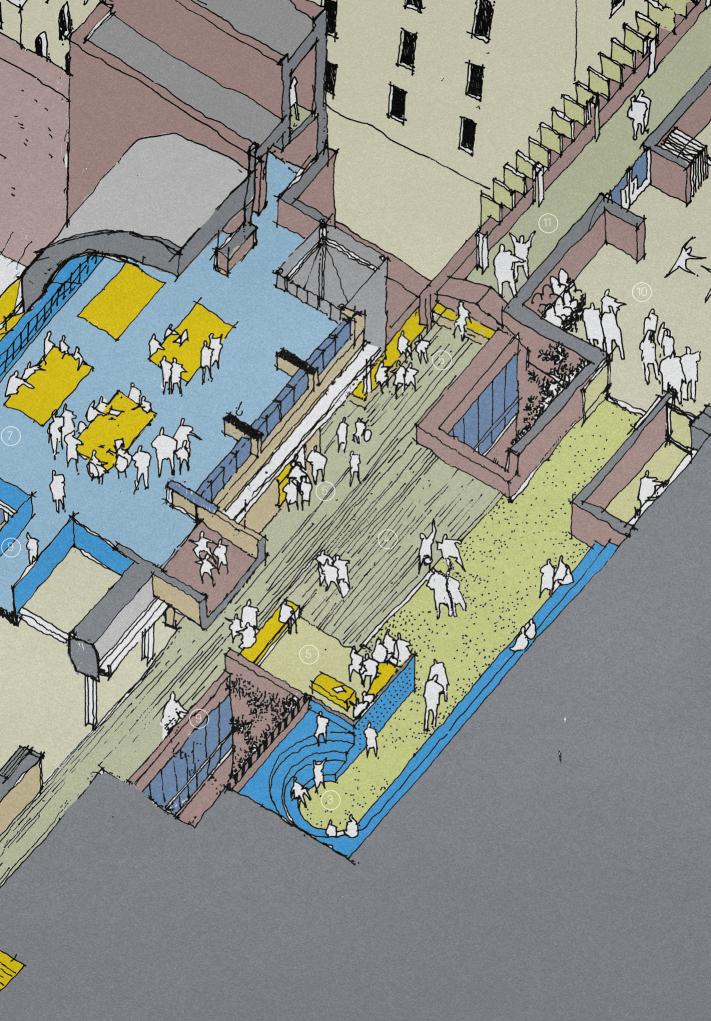


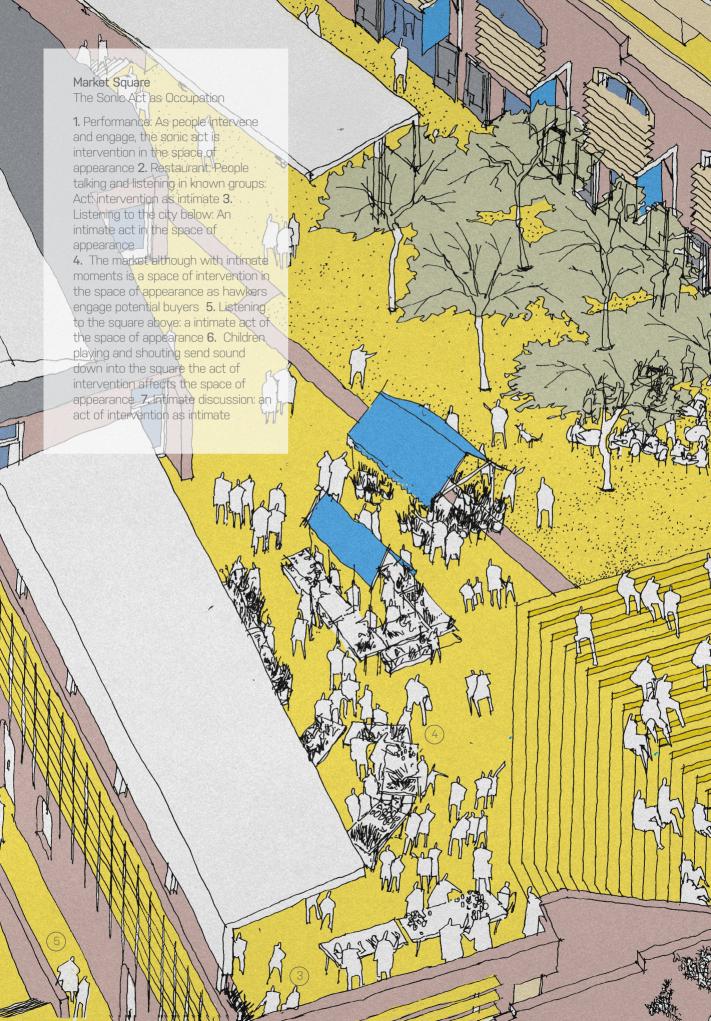
SONIC SPACES

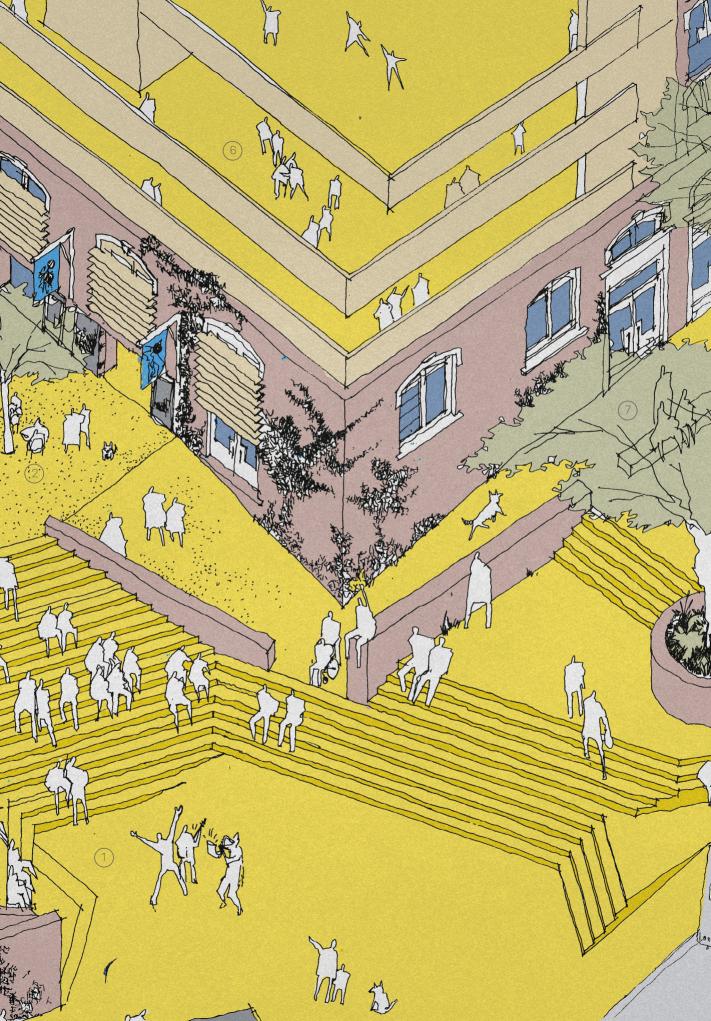
The following drawings represent the four key interventions in the project. Critically they aim to convey how the sonic acts may appropriate the structure. In each a variety of acts are occurring.





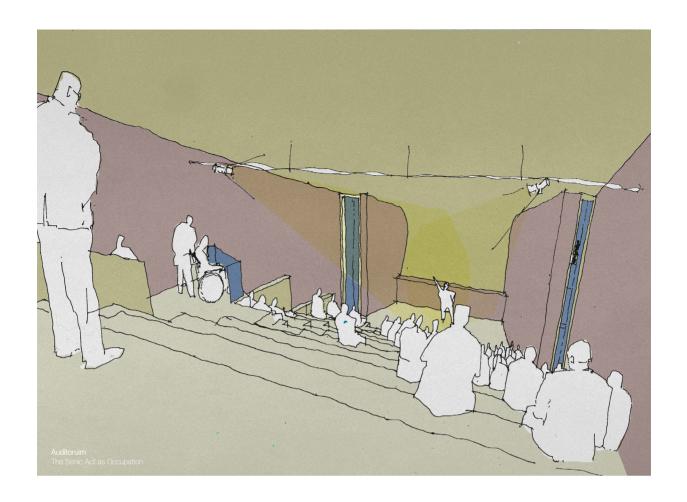








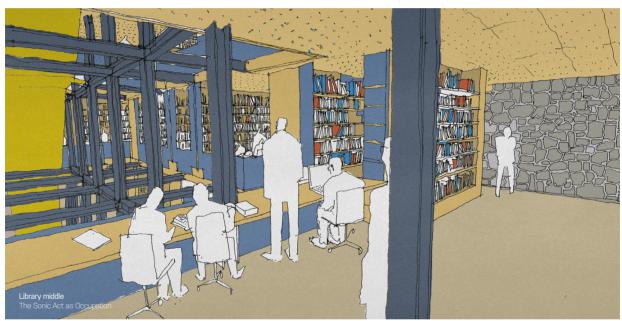




INTERIOR

The following sketch aim to show the variety of primary interiors of the building and the activity within. From the triple volume library, to the auditorium and Collective school environment.







PUBLIC ENTRANCE

The ground floor is the primary access into the learning center. The cafe is designed in such a way to mitigate against the reverberation of the funicular entering the space. Around this is the cafe courtyard where one is enclosed by the building, retaining wall and existing boundary wall. The Amphitheater behind the cafe forms the junction between university and learning center and is seen as a key public space intervention that can host events of various kinds or be appropriated by the daily life of Valparaiso.

Ground Floor Cafe, Closed stacks and work of library and Amphitheatre



- Café
 Amphitheatre
 Amphitheatre seating and
 stairs to university and
 library
 Café Courtyard
 WC
 Closed stacks of library
 Stairs to mezzanine: Library
 work space
 Lift shaft and services
 Lift for wheelchair access to
 site
 - Humanities Faculty of University Retail, Offices and some residential Funicular Retail and residential



LIBRARY

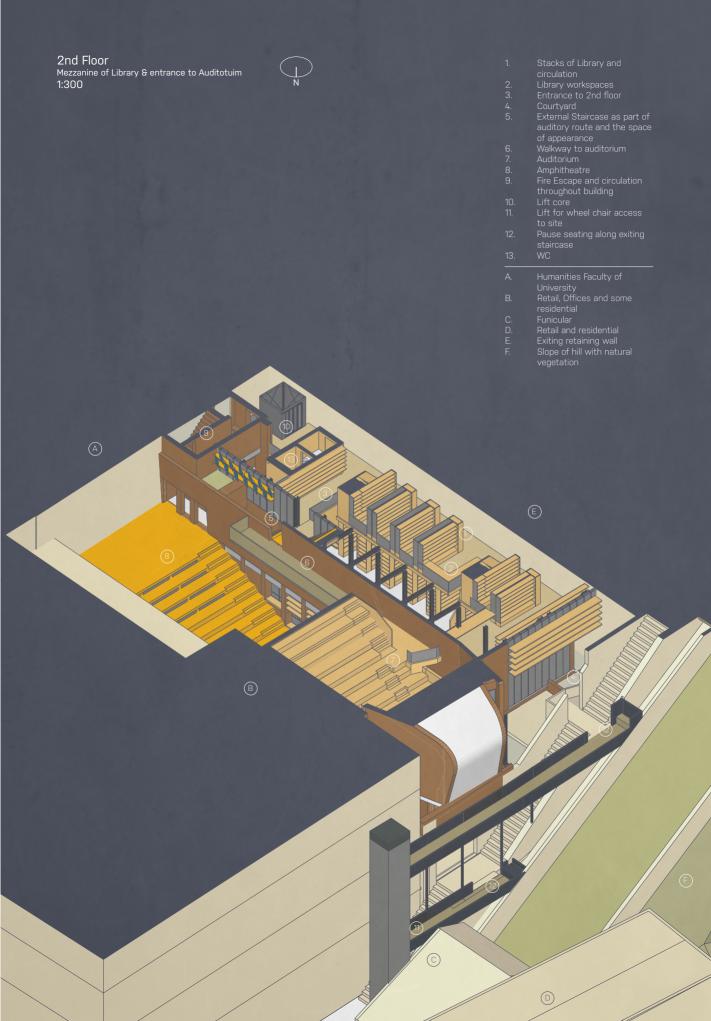
The first floor of the library holds the second entrance of the site, allowing for wheel chair access, through a long narrow corridor - designed to draw attention to oneself. At the back of the site is the reception space where the circulation core and services of the building are situated.

The library floor forms the primary area of the space, composed of a break out space and connection to the auditorium. In the library small staircases in the stacks allow one to move up through the building. Finally, the stairs, indicated as 3 on the drawing form the beginning of the internal circulation route that climbs the structure to the top.

Reception & Atrium Fire Escape and circulation 1st Floor First floor of Library as well as Amphitheatre Fire Escape and circulation throughout building External Staircase as part of auditory route and the space of appearance Entrance to Library through walkway & entry Courtyard Stacks of library Stairs to mezzanine Work spaces space and work
space
Auditorium (primary entrance
2nd floor)
Lift core
Lift for wheel chair access
to site Pause seating along exiting staircase starcase
Amphitheatre seating and
stairs to university and
library Humanities Faculty of University Retail, Offices and some residential Funicular Retail and residential Exiting retaining wall Slope of hill with natural vegetation (C)

LIBRARY & AUDITORIUM

From the yellow staircase that climbs up the structure from the reception one is able to entre the auditorium's primary entrance and the library. In the library, workspaces are integrated into the stacks, allowing for a vantage point into the void and an awareness of those using the space.



TOP FLOOR OF LIBRARY

The stacks form the center of the library space that is surrounded by niches and workspaces. An important part of this floor is the courtyards situated against the retaining wall and niche that one can see in the top left corner. Theses spaces offer a very different environment for the users of the building to engage, whether it is a group discussion or simply taking a break away from the public space of the library.

On the public staircase one can also seen the introduction of small seats as breaks along the massive staircase, which offer a vantage point over the surrounding area and towards the harbor.



WORKSPACE

Critical to the functionality of the library is the incorporation of areas for meetings, work and services for printing. This floor aims to provide a variety of different spaces in which people could work, read and deliberate.



THE COLLECTIVE SCHOOL ENVIRONMENT

The collective school works as a central space that is seen as a collective environment for play and learning. This primary environment is then surrounded by smaller niche spaces and classrooms that along for diverse activities to occur.

Here you can the tops of the small courtyards from the library, creating a sonic connection through the building. Along various walkways around the space one is either exposed to different parts of the city or entirely enclosed by the structure itself.



TERRACES AND VOLUME

This level is defined by to primary features; the terraced courtyard forming small areas for play and engagement; as well as the collective schools top level that is part of a double volume space. These two spaces, internal and external, perform a similar function in that one is sonically aware of the interactions occurring around. A key part of this is the ethos of the school that aims to encourage engagement and an awareness of other people critical for youth development.

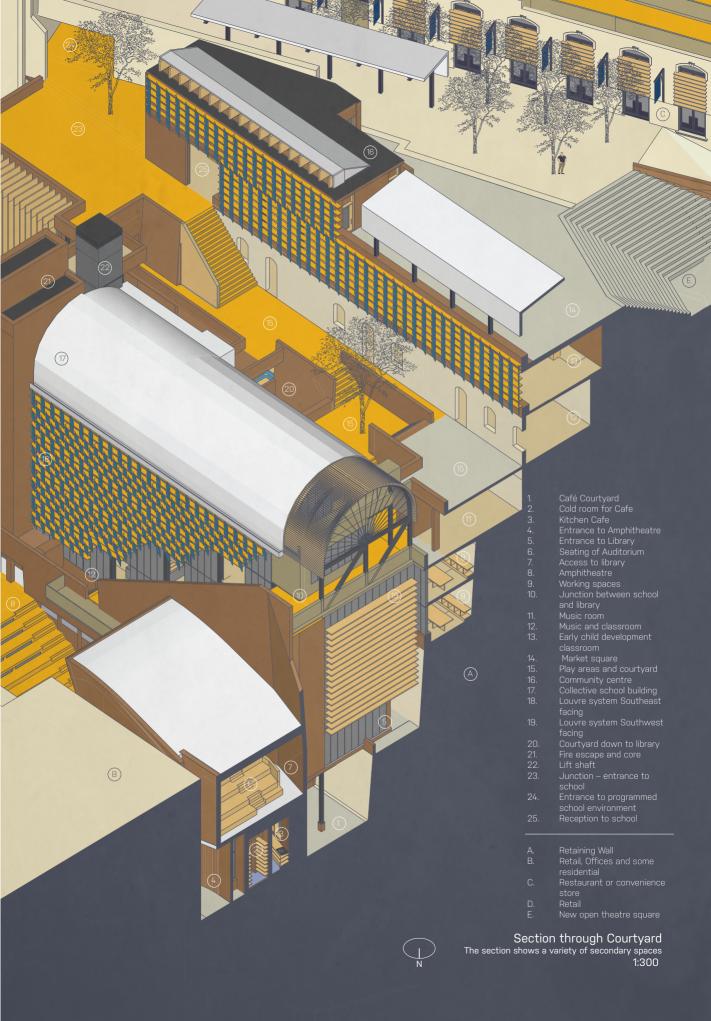
The central terraced courtyard is surrounded by active edges of classrooms that provide an active frame to the space.



ENCLOSED & OPEN

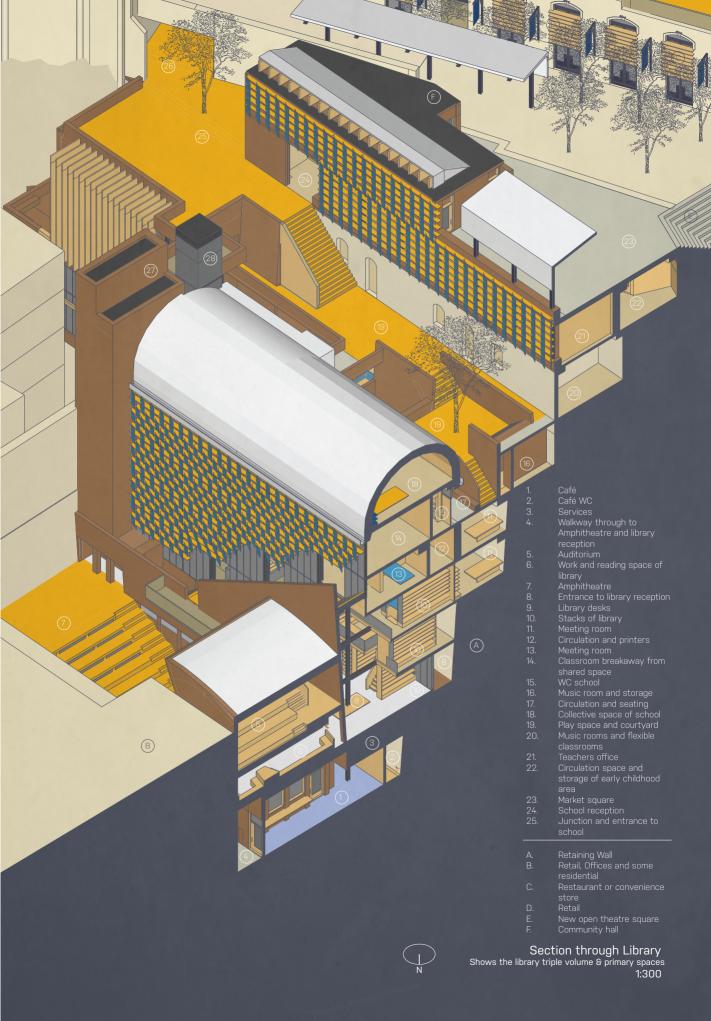
The section aims to show the cafe courtyard environment that is enclosed by the building. Open to the sky, the impressive climb of the building becomes evident as it traverse the slope. The courtyard is formed in such a way to reverberate sound from the city and valley into the space, creating a sonic connection to ones environment.

In contrast the Market Square at the top is open to the city, providing space for appropriation. Rather than the defined use of a cafe, the market square is seen to be flexible and able to perform various needs of the community - from festivals, markets, to civil meetings. The space is framed by the upper school and roof that enclose the space.



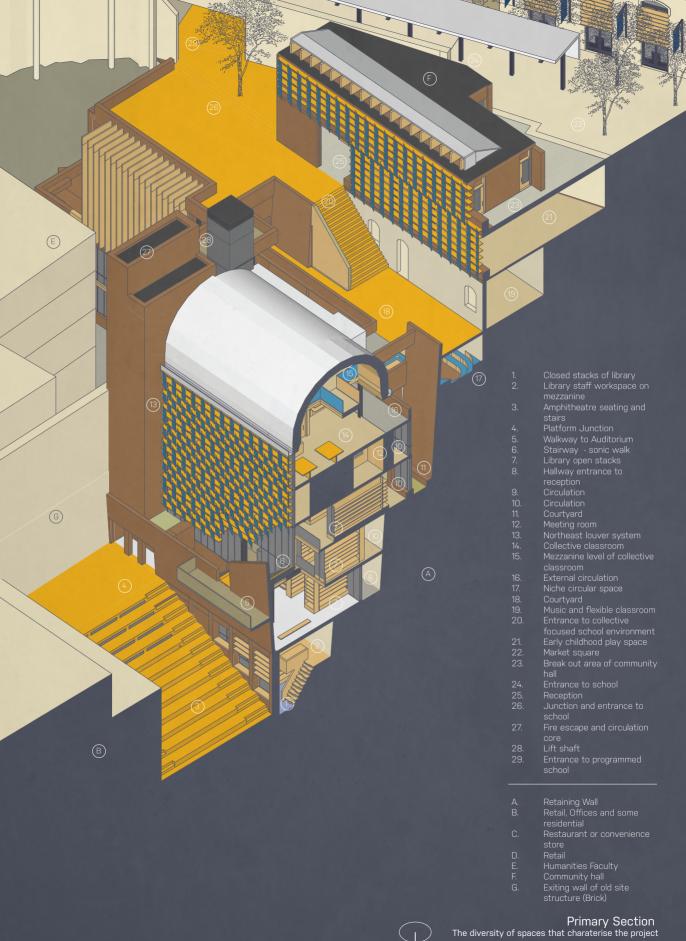
VARIETY

The section aims to show the variety of spaces that make up the intervention. critically one can see how in the learning center one moves from larger to smaller spaces. This relates to moving from the space of appearance to more intimate environments. Conversely the school is orientated around a central courtyard.



SONIC CONNECTION

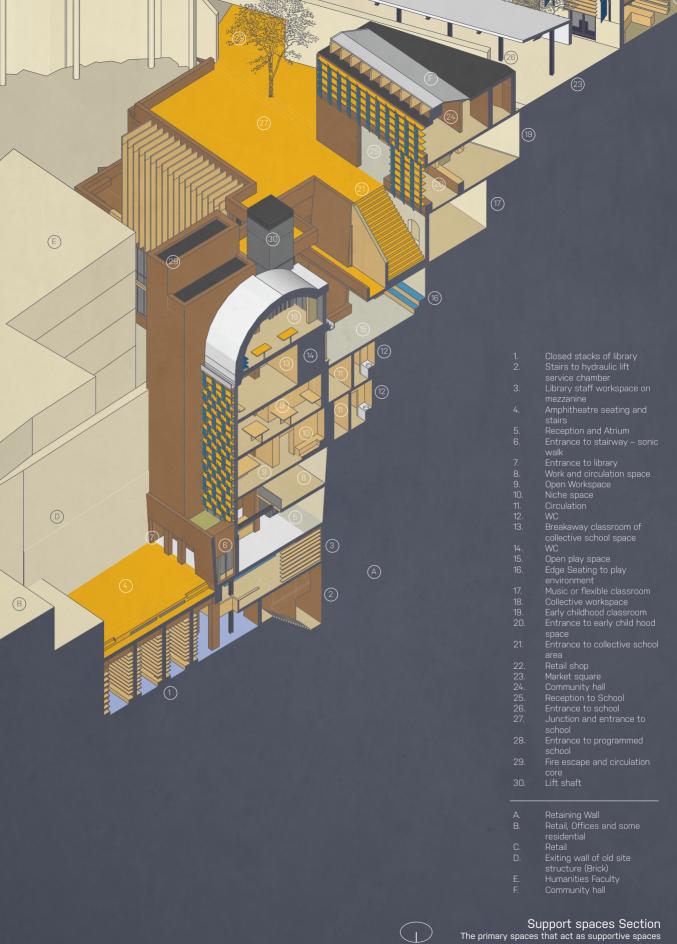
In this section several moments of connection become apparent. The library courtyard creates a connection between library and school. The library itself and the school, creating volumes in which people would need to sonically mediate between each other. The amphitheater and auditorium walkway form a connection as they overlook one another. Here to, the terraced slope meets the junction entrance of the school, where the collective school, early childhood development center, upper school and entrance to the school meet. At this point one looks over the city before entering enclosed environments. The open junction also connects to the Market Square and sonic vantage point above.





JUNCTION

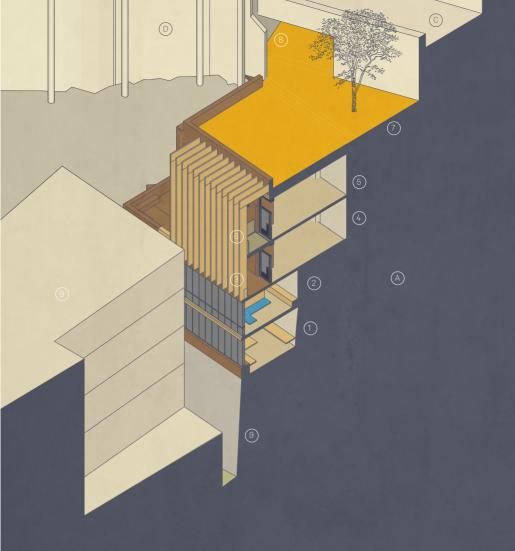
This section shows the two junction points within the buildings, namely the amphitheater and the entrance to the school. These two spaces are remarkably different. One projects out to the city, allowing the voices of children to carry in the wind, while the amphitheater is entirely enclosed. This not only speaks of the context from which they originate, hill and city, but also an ethos of approach in understanding the intention of the sonic act in these environments. The Amphitheatre forms amplification, making one aware of ones own influence in the space, as one begins to enter the university and learning center. The school entrance however is open and speaks of presence.





THE VALLEY

The end of the building is structured with an open roof, the junction of the school, and work places below. The reason for this is that this space is seen to be quitter than many other points of the project, as the cliff and buildings create a valley. Supporting the classrooms and workspaces are breakout spaces at the end that also form a fire-escape. These spaces aim to allow for sonic intermission, as the most intimate of environments.



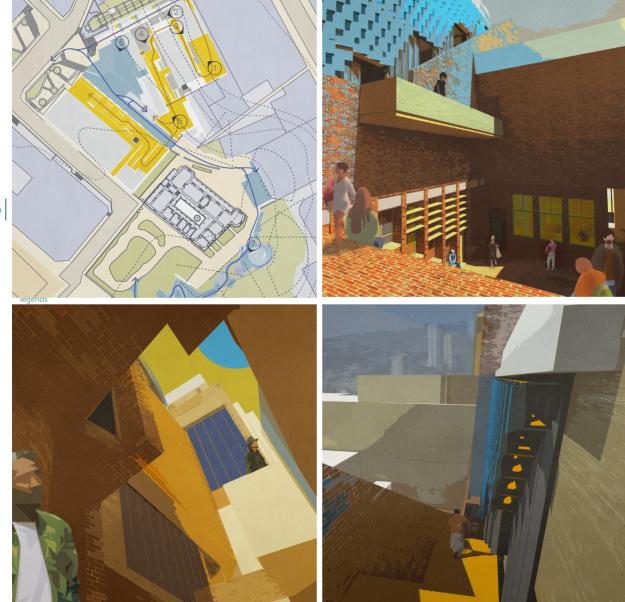
- Work Area
 Work area with break out
 spaces
 Break out spaces for drama
 classrooms
 Drama Classrooms
 Art Classrooms
 Balcony
 Junction square for entrance
 to school
 Entrance to programmed
 school

- Retaining Wall Humanities Faculty Continuation of Public Sonic walk to the Sonic Vantage Point Retaining wall



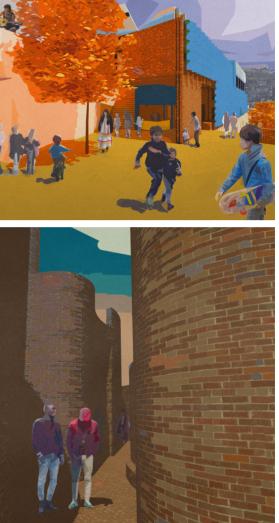
THE WALKWAY

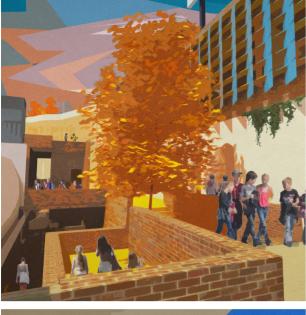
The following renders run allow the binding walkway through the project. Here one is exposed to the variety of external spaces that support the intervention and highlight the significant public contribution the project aims to make to the surrounding city fabric.



46

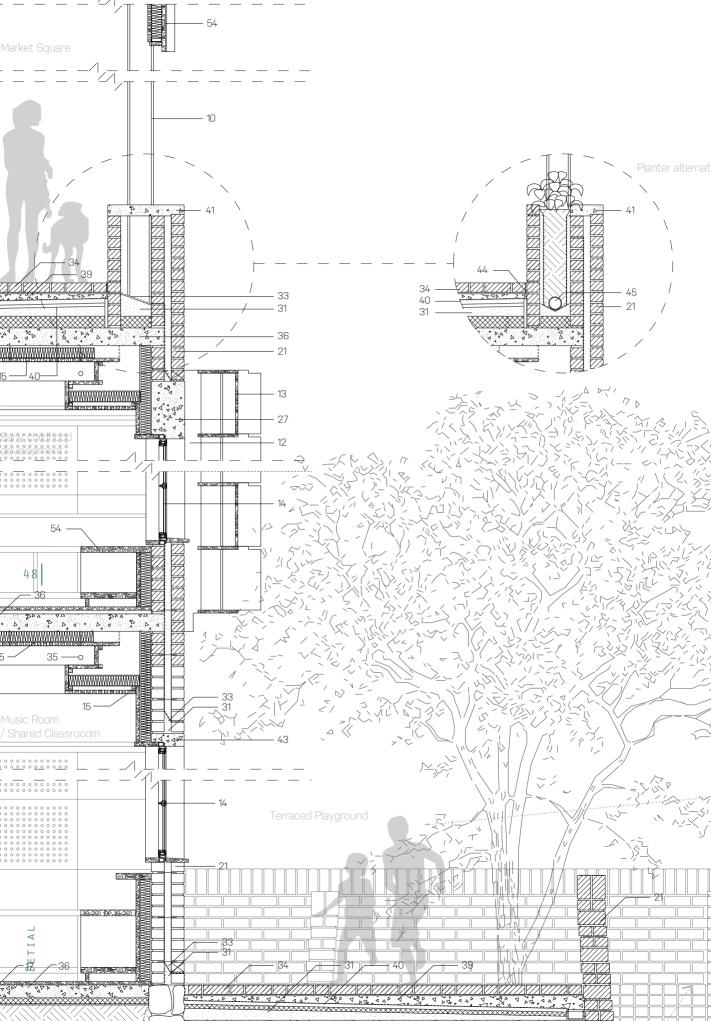
SPACE OF APPEARANCE



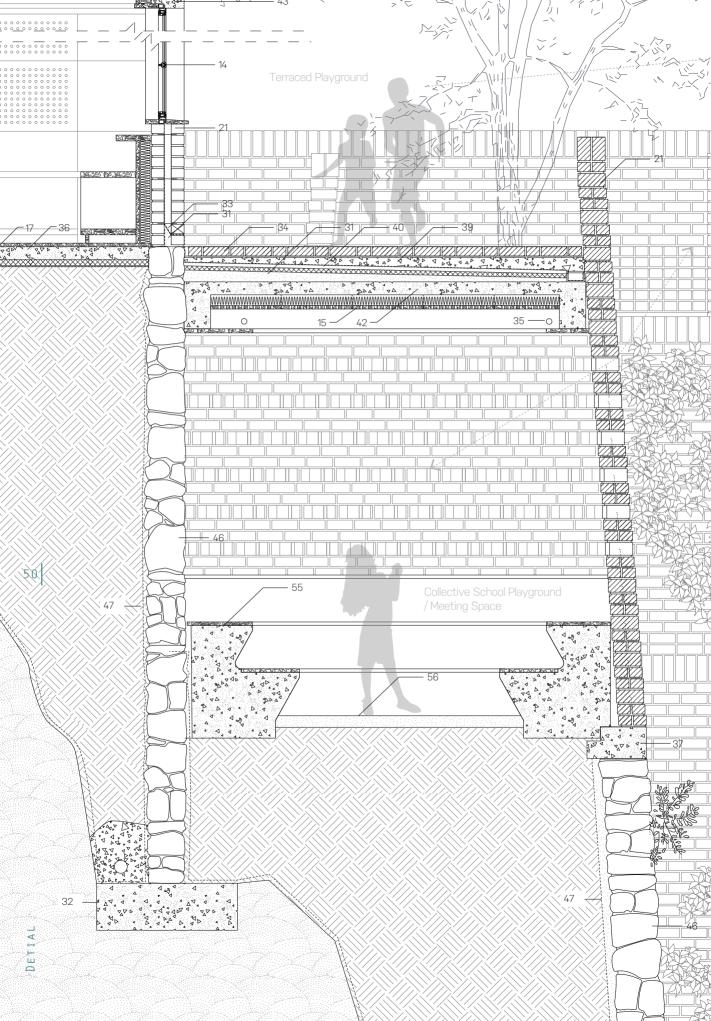


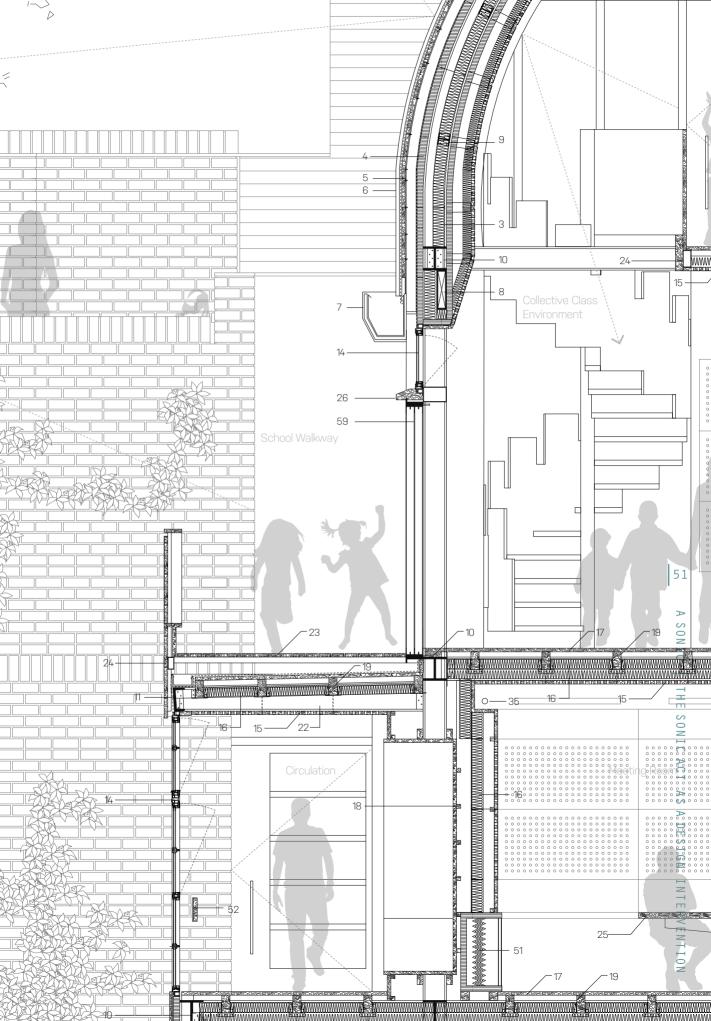


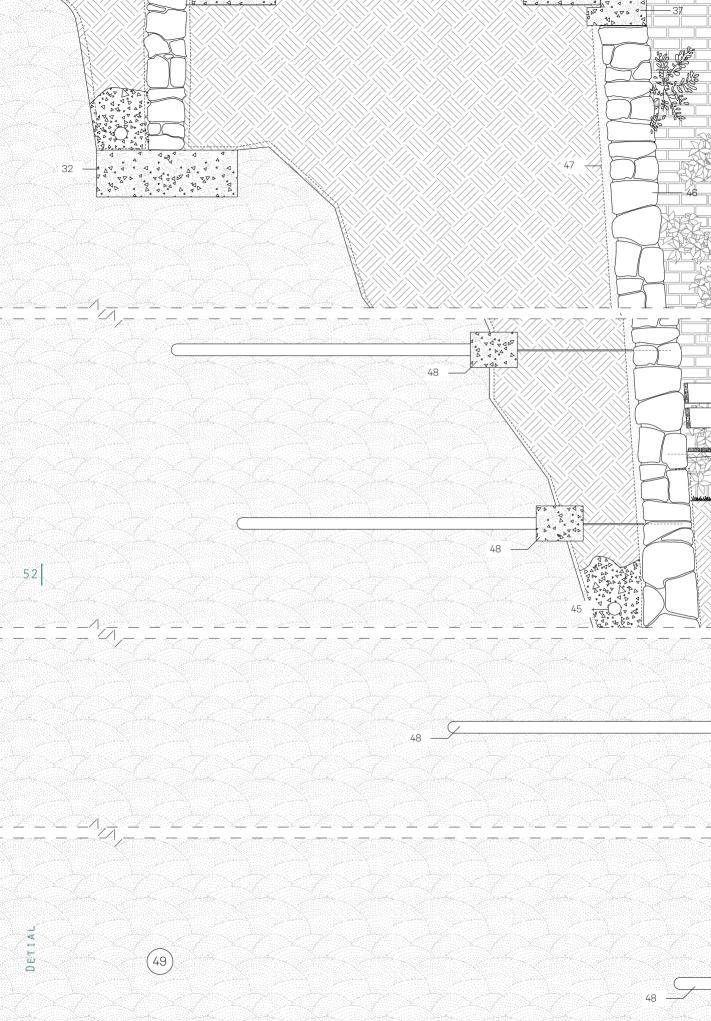
- 1. Amphitheater
- 2. Courtyard
- 3. Stairway adjacent to library
- 4. Terraced Courtyard of school
- 5. Entrance junction to school
- 6. Sonic vantage point

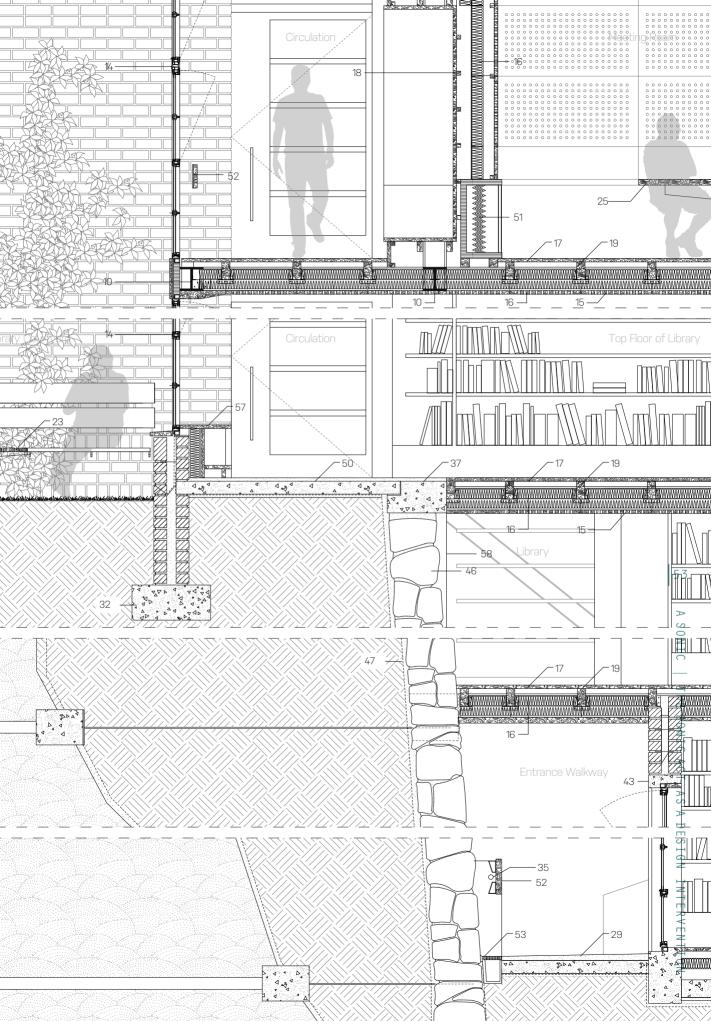


Legend Steel t-section 30x30, welded to steel plate connecting to frame structure. 30x 600x1200 hardwood plywood with holes cut into centre, backed by Steico wood insulation Steico wood insulation Steel Structural Thermal Break plate 25x200x350 (attached to steel substructure) Gypsum board 51x600x1200 panels, attached to exterior of core steel structure and surfaced by damp proof membrane. 100x100 bent I-beam attached to structural thermal break, forming air gap for air movement within the roof. Steel-T sections running perpendicular create substructure for 30x 600x1200 hardwood plywood panels, Damp proof membrane secure to exterior surface of plywood panels 0.60 Corodek, roof sheeting for curved surfaces – final application of flexible solar modules Electrical duct Gutter, fibreglass structure connected by flashing to roof structure bound by metal sheeting for support 6x100x100 Steel I-Beam 18x200x200 Steel I-Beam 9 12x100x200 Steel C-Section 8x100 Steel plate, welded with steel connections 13. Prefabricated Timber louver system, finished with paint which is breathable Double-glazed steel frame window and door system. Substructure contains thermal breaks. 15 30x 600x1200 hardwood plywood with holes cut into centre, Sound Insulation Coconut fibre based Steico wood insulation Teak flooring system – locally produced. Teak wood panelling/ Plywood, constructed to 18. carpenter specifications. 70x150 timber beam structure Gypsum boarding, cut to local specification. 80x110x220 engineering brick Tapered Beam constructed by welded plates 20. Teak timber (locally produced) – treated for outdoor use. Steel section (varied sizes) Teak furniture, - table top 70x1200x2800 26 Timber mullion Reinforced concrete beam, cast-in-situ Teak wood panelling/ Plywood, constructed to carpenter specifications. Reinforced concrete slab, 110mm thick, 3x3m gauging/movement gaps, - Steico wood insulation 50mm thick, damp-proof membrane, sand, compacted around. Screed tapered Screed fill Reinforced concrete foundation - castinsitu Damp proof course 34 ROK brick for flooring lighting Cast InSitu Reinforced concrete 150mm Cast InSitu Reinforced capping 37. beam to retianing wall Steico wood insulation 100mm 39 40 Gravel Bitmum and surface treatment Concrete Capping Reinforced Concrete slab and beam 41 Reinforced Concrete Lintel Sponge tubing, Expansion joint filler 110mm pipe 46 Rock Retaining wall (Existing) Bitimum layer Mirco Pile foundations drilled into retaining wall 110mm reinforced concrete slab 150. with terratzo finish (30mm) Diaphragmatic box (used for dampening low frequency noise). Intial memebrain of 5mm hardboard to absorb vibration, inner chamber of high density carbon fibre. Timber railing 53. IBR Sheeting, attached to hardwood plywood, Sound Insulation Coconut fibre based. 30x 600x1200 hardwood plywood with-holes, Steel substructure attached to 200 x 200 Earlychildhood furniture, 500 table top hieght 55. Precast concrete seating, with timber panel cut to fit (30mm thick) Compacted gravel on compacted soil Library Furniture - seating and storage space Concrete column (elevation) base to steel frame structure connected to concrete beam. 58. 59 Aluminium sliding door frame 9 5 6 -10 24









Vertical Section B Legend 6 9. 10 14. 17 18. 19 54 30. 31. 33. 17 34. 35 36. A H

- Steel t-section 30x30, welded to steel plate
- connecting to frame structure.

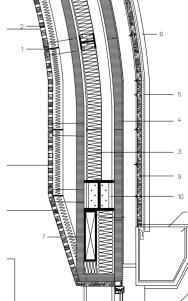
 30x 600x1200 hardwood plywood with holes
 cut into centre, backed by Steico wood insulation
- 100mm Steico wood insulation
- Steel Structural Thermal Break plate 25x200x350 (attached to steel substructure) Gypsum board 51x600x1200 panels, attached to exterior of core steel structure and surfaced by damp proof membrane.
- 100x100 bent I-beam attached to structural thermal break, forming air gap for air movement within the roof. Steel-T sections running perpendicular create substructure for 30x 600x1200 hardwood plywood panels, Damp proof membrane secure to exterior surface of plywood panels
- 0.60 Corodek, roof sheeting for curved surfaces final application of flexible solar modules.
- Electrical duct
- Gutter, fibreglass structure connected by flashing to roof structure bound by metal sheeting for support 6x100x100 Steel I-Beam
- 18x200x200 Steel I-Beam
- 12x100x200 Steel C-Section
- 8x100 Steel plate, welded with steel connections
- Prefabricated Timber louver system, finished
- with paint which is breathable

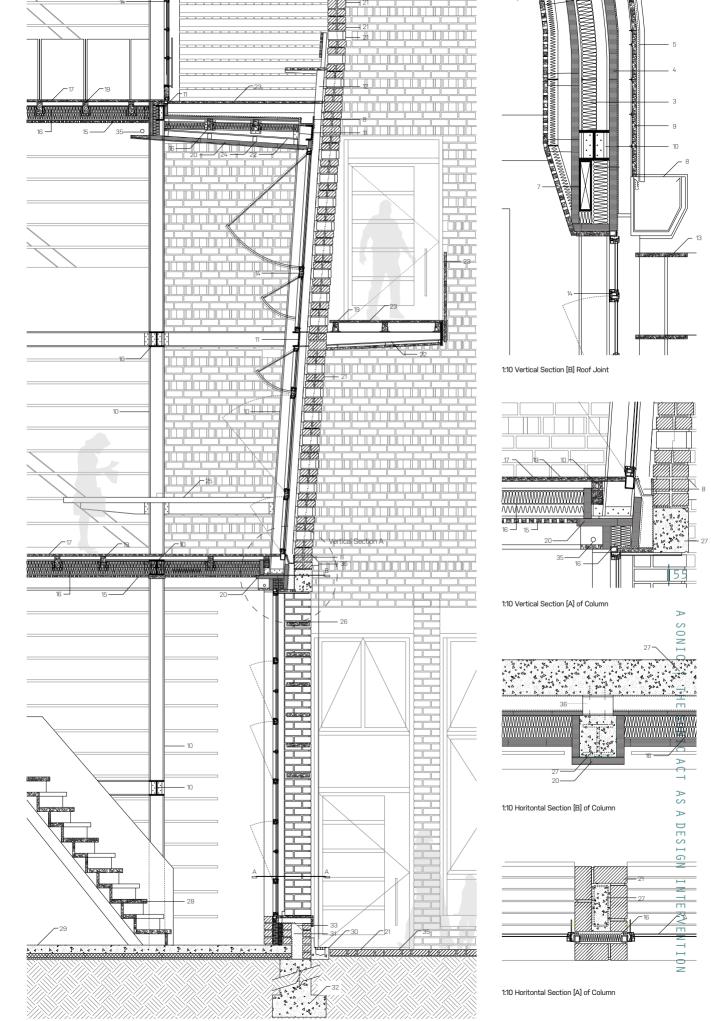
 Double-glazed steel frame window and door system. Substructure contains thermal breaks.
- 30x 600x1200 hardwood plywood with holes cut into centre, backed Sound Insulation Coconut fibre based
- Steico wood insulation
- Teak flooring system locally produced.

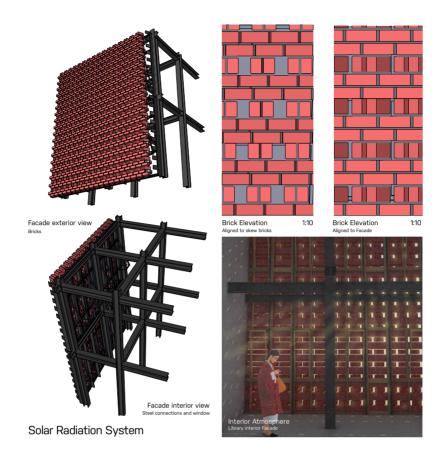
 Teak wood panelling/ Plywood, constructed to carpenter specifications.
- 70x150 timber beam structure
- Gypsum boarding, cut to local specification.
- 80x110x220 engineering brick Tapered Beam constructed by welded plates
- Teak timber (locally produced) treated for
- outdoor use. Steel square section
- Teak furniture, table top 70x1200x2800 Varnished teak louver system Reinforced concrete beam, cast-in-situ

- Teak wood panelling/ Plywood, constructed to carpenter specifications.

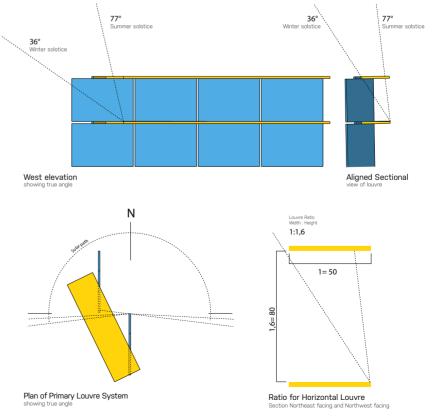
 Reinforced concrete slab, 110mm thick, 3x3m
- gauging/movement gaps, Steico wood insulation 50mm thick, damp-proof membrane, sand, compacted ground.
- Concrete precast gutter Screed fill
- Reinforced concrete foundation castinsitu
- Damp proof course
- ROK brick flooring on sand, on compacted
- lighting
- Concrete Structural Thermal Break



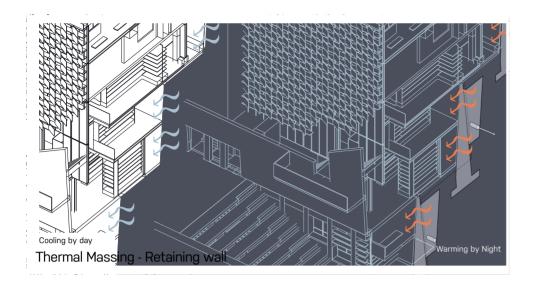


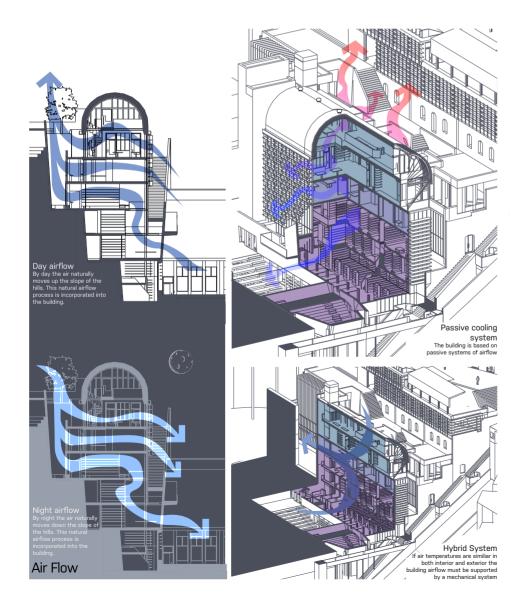


56 FACADE SYSTEMS



Solar Radiation System





CLIMATE 57