

Research Plan

The Musical Promenade

2021-2022

Public Building Graduation Studio

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Research Questions

*How does our movement in space bring about an apparent motion of architecture that is physically fixed to its site?
What are the constitutional elements of the path and their roles in facilitating changes in perception of a building?
Is there a possibility that sounds expand their presence in music venues as integral spacemakers?
To what extent can interdisciplinary exchange of conceptual or notational practices guide architectural design?*

Problem and Relevance

In light of the perceived staticness of contemporary concert halls, I am thematizing **movement in space** to defrost the architectural type produced for music making. Music is deemed to be fluid because the listener can detect a dynamic progression of notes over a span of time. Architecture, on the other hand, tends to liberate itself from spatial fixation by introducing kinetic structures or adaptable configurations. Nonetheless, the semblance of a building constantly changing can also be achieved by **altering our own perception of it**¹ as we advance through a sequence of spaces. Over the course of navigating, the concurrent and continuous action of sensory impulses is likely to reshape our primary knowledge of the physical environment. Accordingly, circulation no longer remains a mere subject of delivering transport and logistics solutions, but rather transcends into the art of **unfolding a succession of events in time**. When people shift from one distinct vantage point to another, the building may be felt or thought of differently. Such capacity for virtual change, which is a mental construct in itself, has led me to examine the relationship between the **design of circulation** and the **phenomenological understanding** of architecture dedicated to music.

Any synthesized spatial sequence is inextricable from the form of **sensuous dialogue** it establishes with its surroundings². As John Locke argued, our idea on something “takes its beginning from two sources”³, one of which is the sensing of external “substances” containing and evoking “primary and secondary qualities”⁴. Throughout modern history, experiential qualities of architecture have oriented themselves largely toward our **sight**. For instance, the observer eye is presented with a series of still images in Le Corbusier's promenade architecturale to sensitize one's journey through his buildings. Such hierarchy of the human senses⁵ is at the expense of **knowing by hearing**. In music venues, the acoustic performances of their auditoriums are professionally addressed, but the **sonic phenomena** seldom diffuse beyond the individual programmatic containers and enrich the totality of the building. Whereas twentieth century avant garde composers have pioneered the addition of non-instrumental sounds to their work to renew audiences' notion about music, most architects are too comfortable with describing and dealing with buildings in primarily visual terms. Rarely do they recognise the significance of “sonic life of buildings”⁶, let alone availing themselves of the echo or silence in space to influence one's cognition of warmth, formality and intimacy⁷.

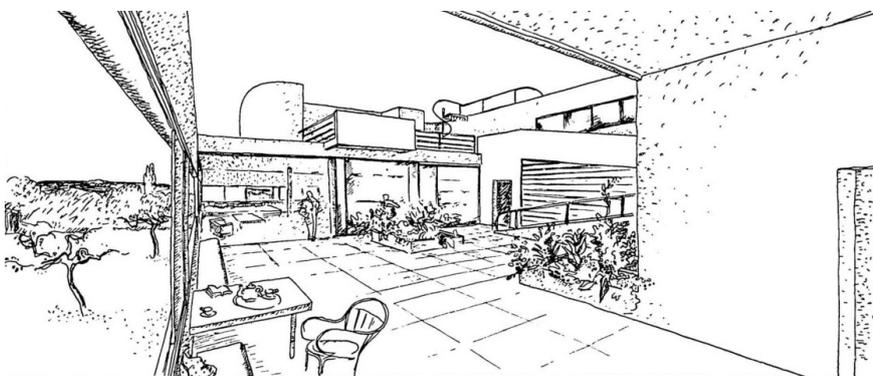


Figure 1: Charles-Édouard Jeanneret, *Du Jardin Supérieur On Monte au Toit* (1929).

Le Corbusier's sketch of the culminating point of his promenade architecturale in Villa Savoye prioritizes the visual perspective, exhibiting little auditory spatial awareness.

Source: Boesiger, Willy and Oscar Stonorov. *Le Corbusier et Pierre Jeanneret: Complete works 1910 -1929 / Vol 1*. (Basel: Birkhäuser, 2017): 188.

This research is not only intended to exploit the dramatizing potential of seeing, but also to explore the aural dimension of the experience of circulation. In order to integrate the two senses into the music venue, it is imperative to review the intrinsic difference in mechanisms for construing light and sound. Visual space, or architectural space in normal practice, is begotten by the successful identification and contextualization of **material objects or surfaces**⁸ from a distance. Emerging as independent entities, they can only occupy one place at a time and are arranged in accordance with imaginary straight lines converging into a vanishing point. In other words, viewing itself is bound to a step by step, monochronic logic of **linearity**⁹. Elements without definite outlines or planes are naturally excluded by the visual perspective¹⁰. Unlike the world of the reflected light, acoustic space features sounds that can come from all directions at the same time, conjuring an immersive sphere that centers the listener. Due to the **simultaneity and omnipresence** of audio projection¹¹, more attention is given to the instantaneous **happenings**¹² in place of solid bodies, especially when the sound sources are not directly visible. Moreover, the application of **layering** in visual space is often limited to either the three-dimensional **stacking of geometries** on top of each other or the **interlacement of screens** for dressing or spatial division purposes as in the Primitive Hut of Gottfried Semper. In contrast, sounds in acoustic space can be **overlapped or interwoven** to a greater extent on account of their **transparency**. Upon mixing, more dominant ones will usually mask their obscure counterparts without completely occluding them. Thus, it takes much greater effort for an untrained ear to distinguish between the individual members within an ensemble.

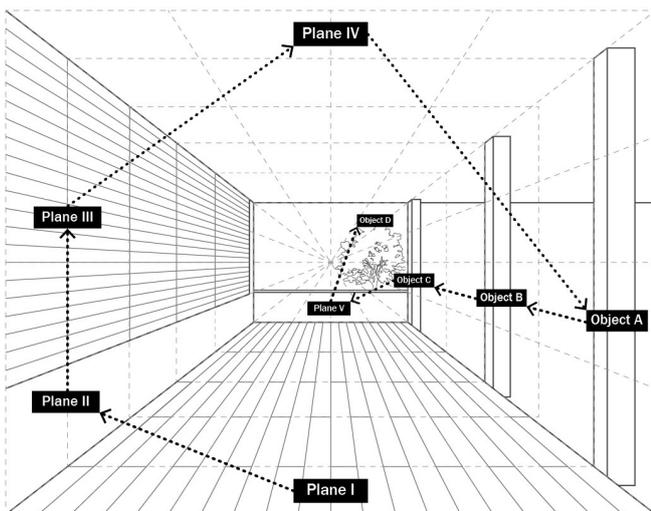


Figure 2:
To view a space where visual components are innately disconnected, the eye moves chronologically from one object or plane to another.
Source: Author's own drawing.

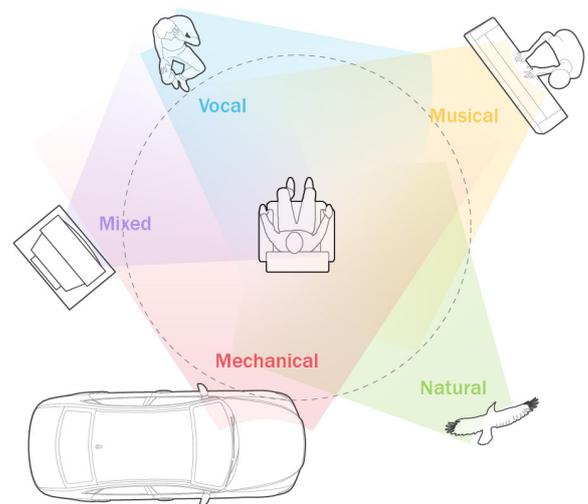


Figure 3:
The soundsphere lacks favoured point of focus and fixed physical boundary. Sounds can be received by the ear simultaneously.
Source: Author's own drawing.

The contrasting modalities of vision and audition makes me wonder how far can architecture embody the **multi-layered complexity**¹³ evident in acoustic space. I am also curious whether it is possible to **extract, cut up, fragment or displace** environmental sounds along a temporal axis such that boundless and undifferentiated acoustic materials are made compatible with optical space composed of disjunct matter. As opposed to diving into the technicalities of sensory processing of audio-visual inputs by our biological faculties or computation of decibel levels, the quest entails an inquiry into the **sonic attributes of space** and focuses largely on the **qualitative aspects of different sound types** in relation to their culturally learned semantics. For empirical studies have shown that the urban soundscape plays a part in enhancing or suppressing two prime atmospheres of space, which are calmness and vibrancy¹⁴. This does not mean that the effects of acoustics on our spatial perception can be reduced into simplistic classifications. Instead, it formulates a rule of thumb that may aid architects in composing with different sound types.

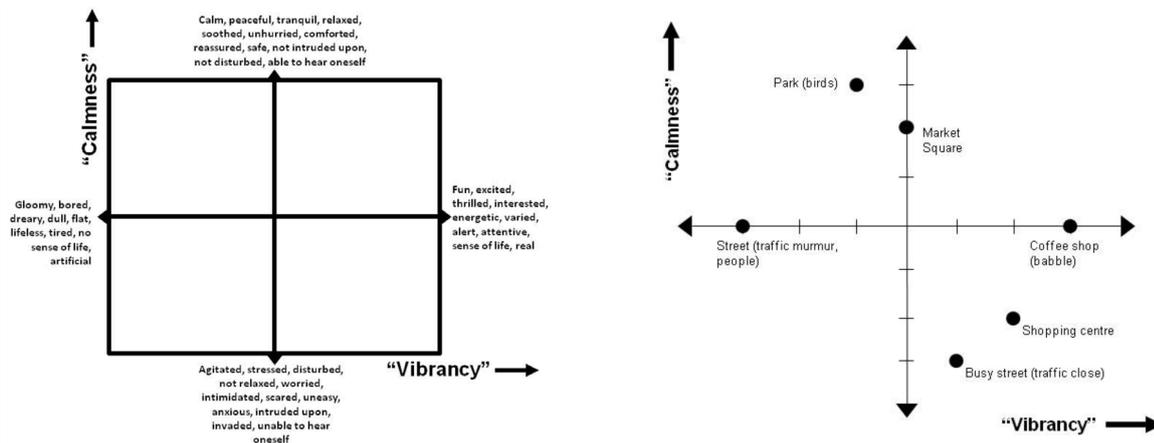


Figure 4:

Different types of sound in our urban environment are found to be connotative of a myriad of emotional responses to architectural spaces. They can be characterized in two principal dimensions for the ease of study, which are further defined by their corresponding “semantic descriptors” .

Source: Cain, Rebecca, Paul Jennings and John Poxon. “The Development and Application of the Emotional Dimensions of a Soundscape,” *Applied Acoustics* 74 no. 2 (2013): 8, 10.

Methodology and Objective

The problematics of choreographing an animated passage through a building will be addressed by a comparative method. Treating music as both a structural and analogical model, I am planning to draw on its compositional praxis, which have been adopted by musicians in the West for centuries to systematize abstract sounds into linear layers comprehensible by our visually-oriented minds.

For a piece of music, the inherent organization of its subdivided sections is effective in shaping the passing of time and eliciting rich impressions, be it a three-part song, fugue, rondo, minimalist cycle or aleatoric assembly. Just as a due selection of musical form can provide an overarching guide for reading music and give rise to a particular idiosyncrasy, the sequential arrangement of programs or themes along a path is set to impact the way people engage with the building and its sensory content. The sensation of balance, directionality, recurrence, suspense or indeterminacy commonly found in music can be reproduced the same way in architecture¹⁵. A further dissection of discrete sections of a musical work will disclose smaller musical phrases. Acting together to foster various forms of tension and release, they are suggestive of the localized strands of curated scenes in a building, such as a gradual increase in ceiling height on the way to a main hall or a sharp turn before an exit to an open field. It follows that the structuring techniques of music might be useful for the crafting of perceptual variations and relieving the monotony of architecture.

Three Part Song	$A - B - A$	Balanced
Fugue	$A - B - C - D - E$	Directional
Rondo	$A - B - A - C - A - D - A$	Recurring
Minimalist	$A - A - A - A - A$	Suspended
Alea	$A - A - B - X \text{ or } Y - C - D$	Indeterminate
Concertgoers	$A - B - C \text{ or } (D - E)$	
	Carpark Lobby Main Hall Small Hall Restaurant	
The Public	$A - B - X - Y - Z - E$	
	Carpark Lobby Education Cyber Patio Restaurant	

Figure 5: Common musical forms in classical and modern tradition.

Source: Author’s own drawing.

Figure 6: Programmatic sequence for different users in architecture as read in the lens of musical forms.

Source: Author’s own drawing.

Enlightened by preceding efforts of notating space, the **architectural score** that I am developing for my project will adhere to the indexicality of musical notation and yet play with the aforementioned filmic operations whenever suitable to provide an overview of the planned spatial sequences, as well as trying to articulate the **transitional details, choices or restrictions** present along a path. The challenge is to establish a "descriptive base" and "taxonomy of environmental and experiential factors"¹⁹, ensuring a meaningful outcome from which architectural spaces can be materialized. Similar to a symphonic score with separate but complementary **instrumental parts**, it is expected to comprise a minimum of three **layers of procession**, namely that of **concertgoers, performing artists**, and most importantly, **the public** whose sensory adventure is often truncated right at the foyer of music venues. With reference to the make-up of a musical score with instructions on pitch, dynamics, tempo and so forth, I hereby lay down the **tectonic elements** I deem essential for the architectural score to delineate spatial traverses in the music venue. They include sensory stimuli, form of movement, degree of enclosure, path structure and materiality. For the sake of clarity, I would like to give a tentative interpretation of what the proposed elements mean, in the hope of paving the way for their later transcription and unification into a legible architectural score at the service of analytical and design goals.

Sensory Stimuli

Visual components and environmental sounds are foundational to the creation of both visual and acoustic spaces, so it is of vital importance to specify of their points of revelation or duration of occurrence along the path. Examples of visual components are columns, trees and any prominent landmarks that are purposefully framed by the building. In the meantime, environmental sounds can be subcategorized based on their inherent timbres and spatio-emotional implications into mechanical, natural, vocal or musical sounds before being included in the score.

Form of movement

The simplest movement pattern is one that follows a linear direction and goes all the way to the destination free of interruption. When the movement takes a circular form and repeats itself, a loop is generated. Sometimes the path may fork, leading to branched movement with hierarchies. Sharp or gentle turns can also take place between consecutive path segments. That being said, a path normally does not exist on its own given the presence of multiple user groups in typical public buildings. In the case of a music venue, there can be zero, one or several crossings of different paths, which is commonly found in entrance plazas or foyers promoting relatively free movement.

Path structure

Path structure is constituted by its height, width, gradient and rhythm. Associated with proportion, the height and width of architectural spaces are crucial to the behaviour of sounds and perception of scale, while the deployment of a descending slope or a flight of stairs changes the walking pace and eye level. Depending on the frequency or spacing of sensory stimuli, the path gains its unique rhythmic disposition.

Degree of enclosure

The oscillation of a path between heavily sheltered and unenclosed spaces facilitates an interplay of light and shadow, apart from an alternation of outdoor and indoor views. Greater enclosure also favors wetter sound owing to an increase in its reflection. The openness of an architectural space is determined by the amount of physical confinements, together with the opaqueness of its outer envelope.

Materiality

The hue, texture and hardness of the selected construction materials can substantially transform what we see or hear. Fabrics, metal mesh and glass that are porous, translucent or transparent may all be the ingredients for visual weaving in space. The installation of stone panels induces stronger reverberation. Conversely, the use of plaster coating produces a more quiet space.

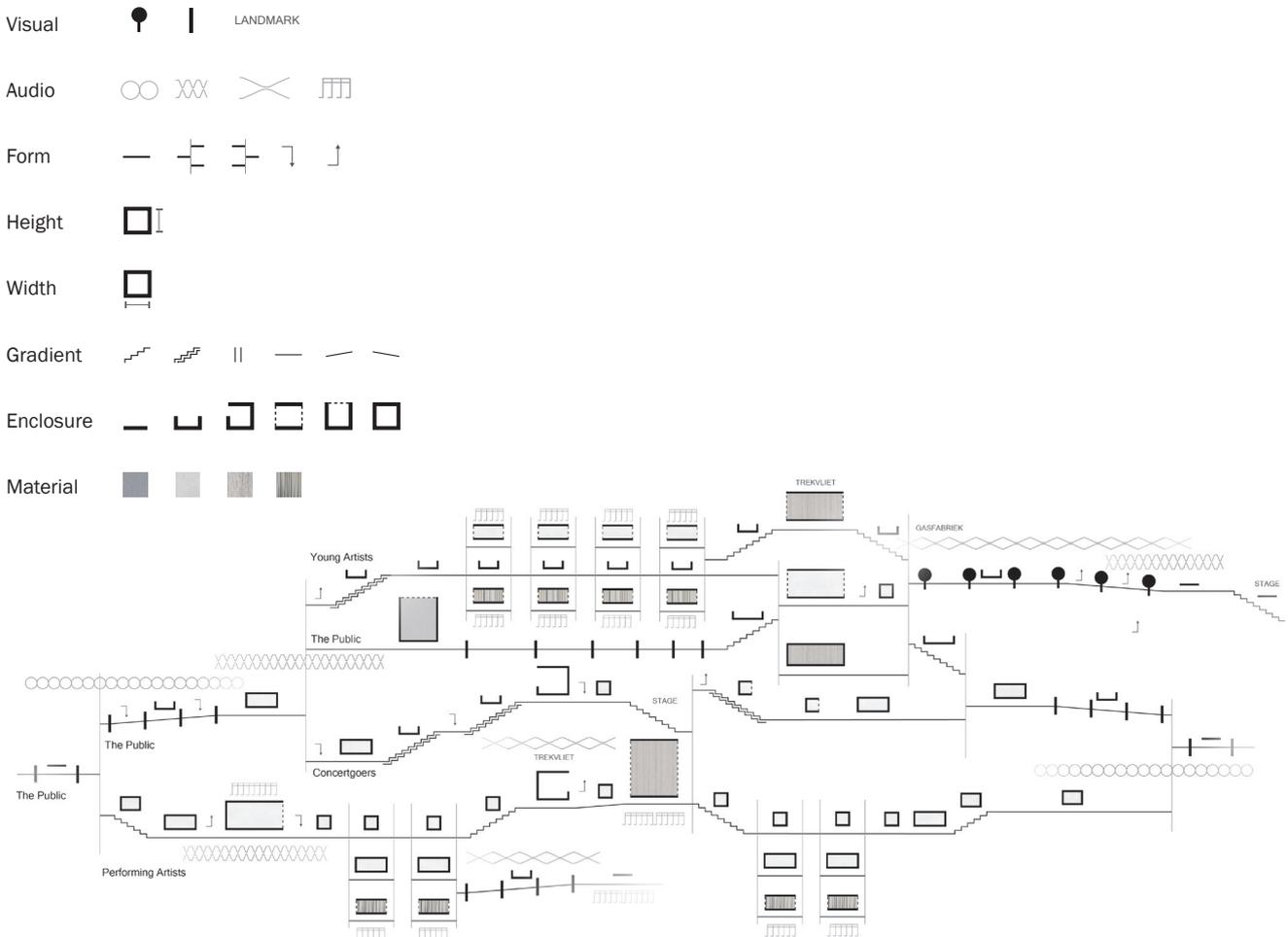


Figure 10:

A draft of the architectural score bringing together all the tectonic elements of a path, which will be developed further in the months to come.

Source: Author's own drawing.

As mentioned in the group abstract, a collective effort has been made in the last two months to devise a spatio-temporal notation for the soundscape of Binckhorst, upon which I am building my personal iteration. The result is in essence an environmental score of the site. Aiming to harness its heterogeneous character by documenting the wide range of sounds at play in twenty-four-hour cycle, it spells out the utilizable acoustic ingredients in the vicinity and serves as a supplementary basis for the central architectural score. The two notations operating in different scales and levels of complexity are used to recount an urban and architectural path respectively. Still, they are interrelated considering the fact that the musical venue will position itself as part of the site's vibrant whole. Since the architectural path in question is meant to set out from and culminate within Binckhorst, a reaction to or interaction with its sensory signals is inevitable.

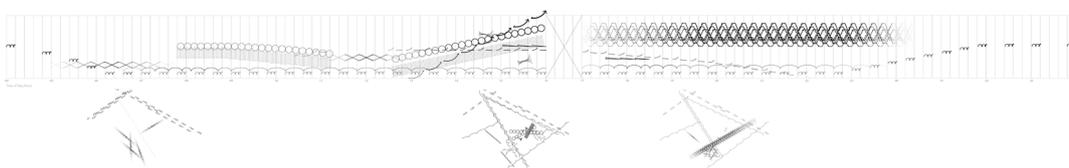


Figure 11:

Individual notation for Binckhorst. The work in progress concerns the acoustic conditions of the site. I will visit the site again to see what extra elements can be added to enrich it.

Despite my interest to experiment with a new mode of representation to express both continuity and transition in architecture for music, my project will continue to embrace standard research methods. On theory level, the research involves a review of literature which discusses experienced movement, graphic notation and phenomenology in architecture. On site scale, I will conduct an analysis of the mobility networks, distribution of public spaces and existing physical barriers with the use of Nolli Map. An acquaintance with the access to public transport, parking facilities and the layout of pedestrian routes is helpful to identify the constraints and opportunities pertinent to one's approach to and exit from the musical venue.

On building scale, architecture case studies are used to exemplify how the desired time-based continuum can be translated into projects designed to host musical events. As part of the group assignment for P1, I have looked into OMA's Casa da Musica in Porto, which brought the idea of a "public route"²⁰ into a concert hall and deployed it as a thread to tie together the programs and residual spaces. The ascending path, however, is experienced in a rather uniform fashion with only a few twists, except for the insertion of the framed view of Rotunda da Boavista statue at the grand auditorium and the roof-top patio that is refreshing to the eye. Apart from a realized building, Tschumi's competition entry for the Tokyo Opera House, albeit unexecuted, will be investigated. The notation he used to corporealize his building back then has inherited the parallel framework of the Manhattan scripts, but it appears to function more as a spatial abstraction of architectural programmes than a narration of the active movement of body in space. The clear autonomy of his programmatic bands again recall the splicing of individual film shots, but their lack of intersection, convergence or divergence is also questionable in today's context. Even so, the precedent is a seminal work in the sense that Tschumi did not regard the musical facility as one "homogeneous block" but strips of "independent, juxtaposed areas"²¹, suggesting an alternative approach to the expression and representation of architecture.

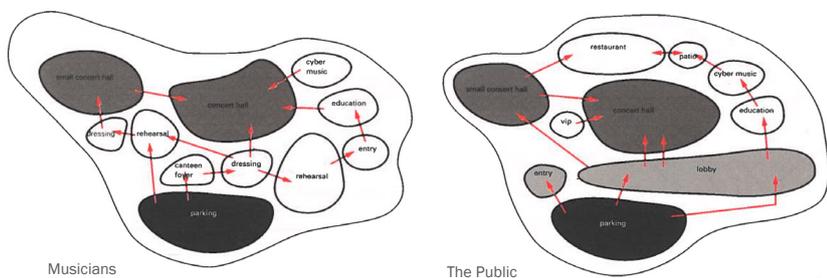


Figure 12: Programmatic diagrams of Casa da Musica.

Programs of OMA's concert hall were organized with respect to the flow of musicians and the public in the building.

Source: OMA@Work.a+u. Edited by Nobuyuki Yoshida et al. (Tokyo: a+u Publishing, 2000): 147.

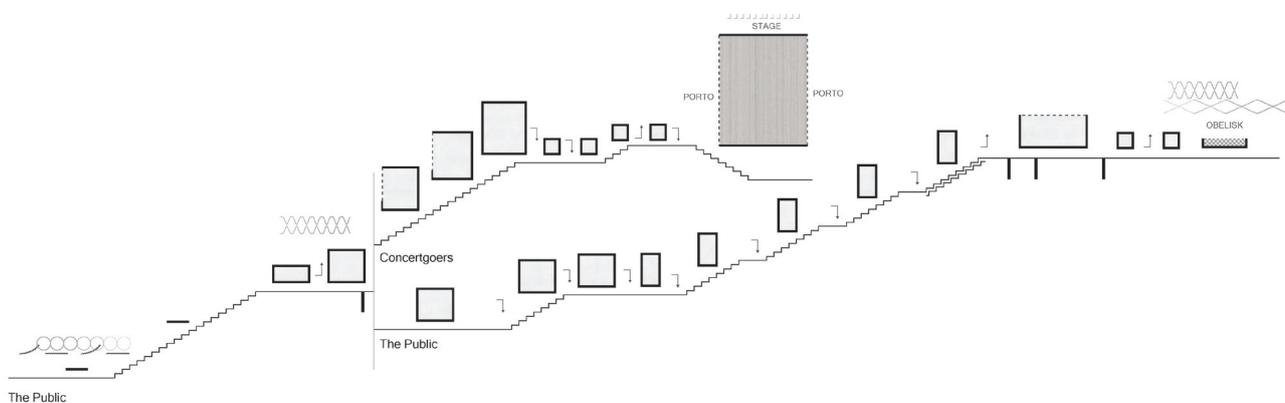


Figure 13: Casa da Musica analyzed by the proposed notational language.

Only until one's processional visit to Casa da Musica is notated in time we can grasp the nature of its public route, which is a straightforward climb up the building with highly repetitive stairways. The same conclusion can barely be drawn readily from a plan or section.

Source: Author's own drawing.

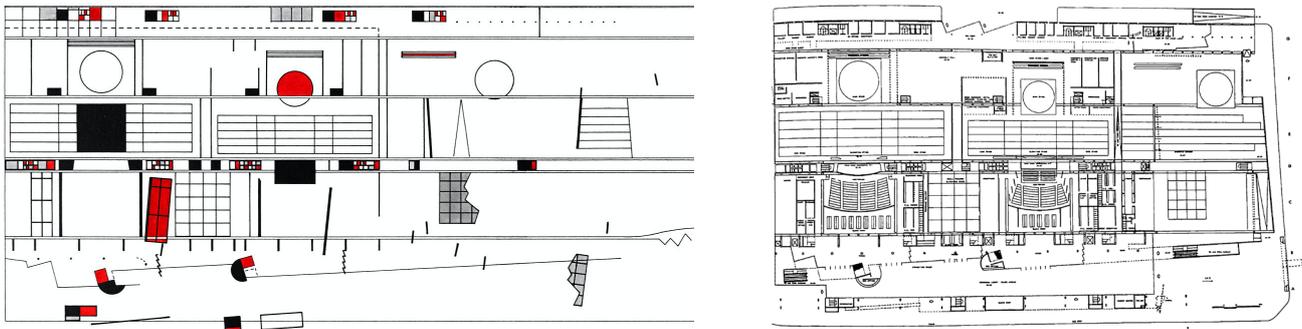


Figure 14: Notational diagram and resultant floor plan of the National Theater and Opera House Tokyo (1986).

Tschumi's Tokyo Opera House is a rare example of an architect extrapolating building functions and activities by a linear notation.

Source: Tschumi, Bernard. *Bernard Tschumi: Architecture: Concept & Notation*. Edited by Migayrou Frédéric. (Paris: Editions Du Centre Pompidou, 2014): 123.

Contribution

I believe this research is able to make three major contributions to the architectural discourse. First and foremost, I am **challenging the constancy of architecture** resulted from its physicality. The acknowledgement of the power of perceptual change allows for the manifestation of the very spirit of music in flux. Through the work of movement, the spaces of a music venue can be experienced to its full extent in time, regardless of its inanimate built form. Secondly, I am **combining at least two familiar but distinct art domains**, which analogizes the choreography and representation of circulation in architecture to the structure and notation of music compositions. Subsequently, the process of designing a music venue is reconceived as the scoring of how human body and senses drift in space. Last but not least, I am **reinstating the creative use of sound** as a fundamental constituent for architecture. Our spatial encounters with any buildings are multi-sensorial to begin with. Unfortunately, seldom does this reality stem from the conscious thought of architects. My project therefore calls for better **coordination rather than isolation of human senses**. This signifies a break from the visually dominant cultural practice and an **expansion of the sensory realm of architecture** that reinforce the graduation studio topic of **multiplicity**. Furthermore, architecture's conversation with the city is not anymore purely governed by pursuit of **physical connections or formalist gestures**. The intended non-passive exchange and sharing of sensual inputs between the city and the building is expected to resist the propensity of the music venue for turning into another "introverted" urban island functioning on its own.

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