

# TACTILITY+AUROVILLE

Understanding the Role of Architecture in directing comprehensive tactility in spaces- through institutes of auroville, India.

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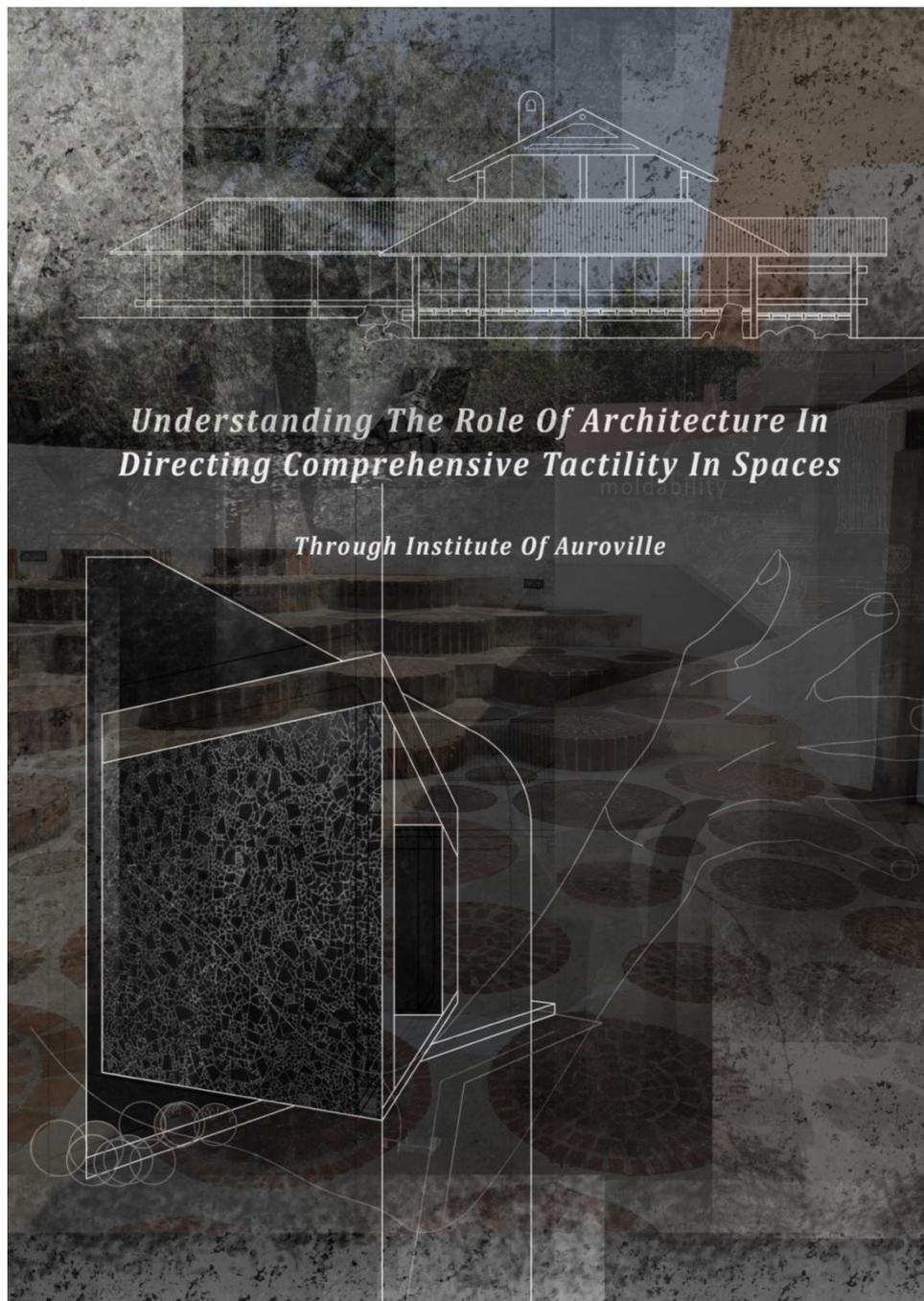


Figure 1 : Research Cover ( Source: Author)

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## Abstract

People's experience of built environments is deeply multisensory, engaging light, color, sound, smell, and the feel of materials to create profound architectural experiences. While architectural design has often prioritized **visual form** to convey identity, a full understanding of buildings also involves foregrounding a range of **corporeal interactions** that foster human sensitivity and emphasize immersive familiarities.

Physical touch, generally alluding to the '**tactile**' sense is one such connotation that establishes an ardent connection between our body and the world, prioritizing a sense of 'place', 'people' and 'essence' of time. This research expands the definition of tactility beyond mere physical contact, drawing from 19th-century architectural thought. It highlights tactility's significance in India's mid-century modern architectural heritage, where it manifests in both "**surface realities**" and "**space scenarios**." Post-independence architecture in India, particularly Roger Anger's Auroville (Kundoo, Anger's Auroville, 2008), excelled at blending *visual* and *tactile* elements through masterful spatial forms and material execution.

By introducing the term '**Comprehensive Tactility**', this research explores how architectural principles and design intentions cultivate intimate user-environment connections. It further extracts a range of relationships **between materiality, architectural imagery, and tactility** through various **themes** by examining the haptic environments in contemporary works from Auroville. Lastly, through the lens of dynamic processes of '**making**' and '**culture**'—material and immaterial this research attempts to establish a deeper knowledge of how the underlying layers of tactility anchor some spaces to our memory, why some buildings emerge as timeless, and how some spaces hold deeper meanings – creating 'The magic of the real'.

**Keywords:** Comprehensive Tactility, multi-sensory experiences, Indian Modernism, materiality, Movement

## 1.1 Introduction

Traditionally, tactile design has always been a crucial factor in architecture. Ancient civilizations frequently engaged a rich multiplicity of materials as well as textures in their buildings, which are now suggestively prompting contemporary architectural practices. Contemporary architects endure to lure stimulus from these marvels, further modernizing with new resources that magnifies tactile potentials. But the pursuit to create enriching atmospheres (Zumthor, 2005), comes with a huge challenge of generating and maintaining a vigorous equilibrium between technology and tradition. Decoding this balance can be a turning moment for effectively assimilating tactility into architectural designs. The basic concept of tactility in spaces has developed over the years. Architecture in the Anthropocene incorporates physical as well as digital interfaces, like touch screens and tactile feedback systems, has extended the sensory understanding to new arenas. This hybrid tactic syndicates traditional tactile methods with contemporary technologies, henceforth carving the way for future material explorations and highly interactive processes.

These complex systems and technologies are developed based on '**tactile principles**' that need to be comprehended in relation to the built environment. This idea indicates the need for investigating the basis of '**tactile perceptions**' rooted in human embodied cognition. Our embodied existence formed via a profound

impact of touch on our perception, self-awareness, and interaction with the world, is composed of a more complex stimuli system which extends the meaning of **'Tactility'** beyond literal touch.

### 1.1.1 Tracing Tactile Perceptions:

Conventionally, the word **"tactile"** comes from the latin roots- tango, tetigi and tactus, an adjective used to describe something that appeals to the human sense of touch (Mark.C, 2012). **Tactility**, by meaning, is usually understood as the responsiveness to the stimulation of sense of touch, concerning the sensory modalities of pain, thermal changes and kinesthesia-all part of man's somatic senses responsible for translating tactile stimuli to human perception. However, the study of tactility involves understanding the fundamental construct of the *mediums* through which it is experienced and their *material extensions*.

According to anthropologists Ashley Montagu - the somatic senses of a human body, which acts as a site for tactile receptions, are accessed by **'Skin'**- the most sensitive of our organs and also the first layer of our communication with the physical world.

*'My body is the very locus of reference, memory, imagination and integration'- Genus Loci.*

**The Shape of Touch** - Human beings cognitively store an entire library of tactile memories through experiences of touching materials from an early age. The 'skin' that reads the textures of surfaces, weight, density and temperature of matter defines the nature of physical contact that further characterizes the experiences humans have. Analogically, in the prenatal and postnatal maturation processes (Kuekelhaus, 1972) of human beings, 'touching' and 'being touched' gets embedded as mediums of unconscious visions, enabling us to perceive spatial depth, weight, three-dimensionality, shape, solidarity, materiality and distance – all by way of the skin. Primacy of the tactile sense gets established as we see through the skin, but gets further developed with hapticty and peripheral unfocused vision i.e; via eyes also (**Figure 2A,B**).

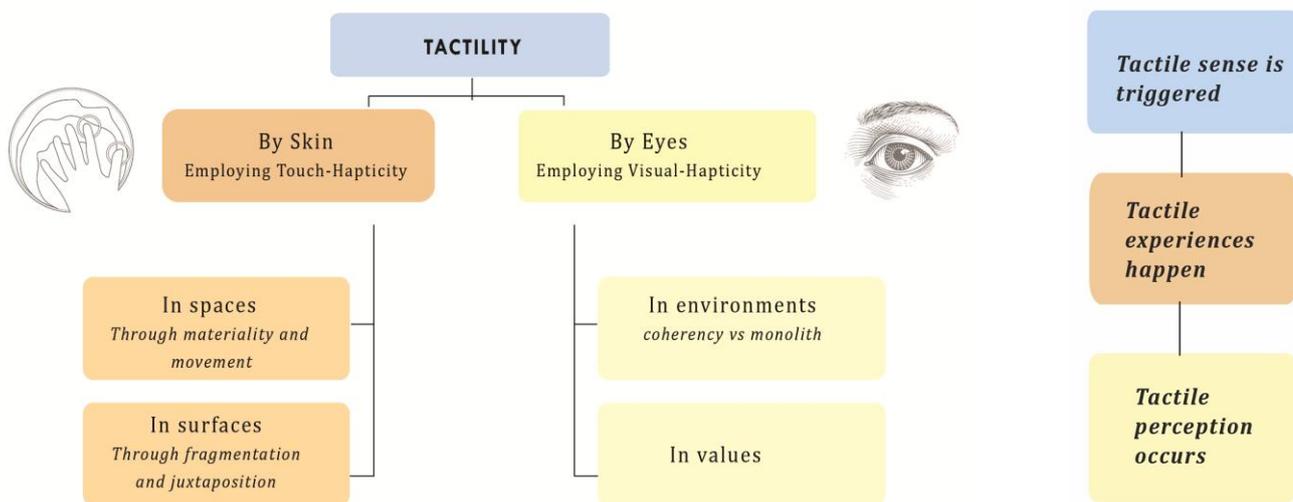


Figure 1: (A) Modes of Tactile Perception. (B) Tactile perception. (Source: Author)

**Embodiment in Architecture** - In architecture, Alvar Alto derives a direction for understanding the idea of Tactility. According to him, the stimuli aroused via meeting of the object and the body, exhibits muscular and haptic presence- dislocations, skews, irregularities, polyrhythms, polarities all incorporate what we term as **'Tactile experiences'**.

*'The ultimate meaning of any building is beyond architecture; it directs our consciousness back to the world*

and towards our own sense of self and being. Profound architecture makes us experience ourselves as complete embodied and spiritual beings.<sup>27</sup> (Pallasma, 2005, p. 11)

Juhani Pallasma hints that the elaborate surface textures and details, crafted for the hand invite the sense of touch and create an atmosphere of intimacy and warmth. He introduces 'architecture' as the harbor between the body and the physical world, adhering to an understanding of how architecture, instead of "merely creating more objects of visual seduction, seeks to relate, mediate and project meanings". (Pallasma, 2005, p. 11). It catalyzes interactions that confront and change, oppose and combine, creating polarities and form human perception of the physical world. As George Scott warned in 1954, excluding *touch* limits sensual detail. Architects must understand tactility's nuances to realize the haptic realm's relevance, identifying how touch translates into *spatial realizations* and triggers tactile sensations through *surface realities* (Figure 3 A,B,C,D).

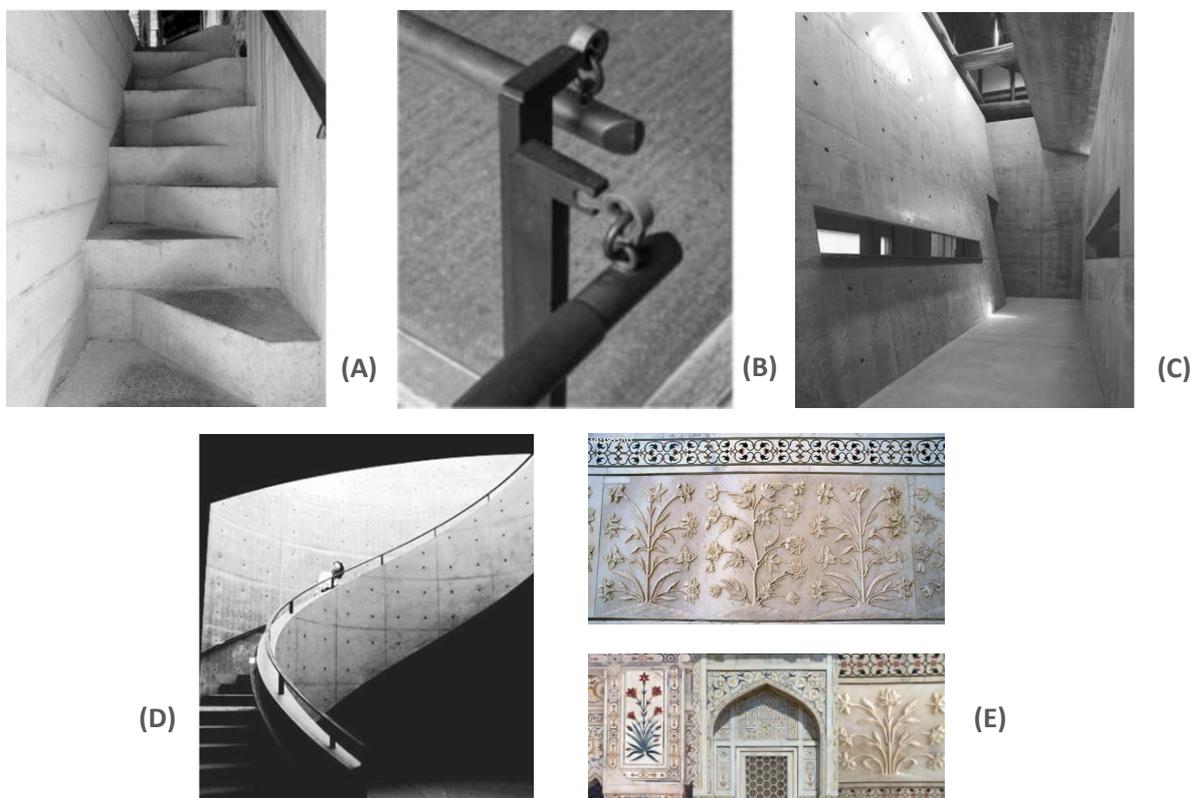


Figure 3: (A) Castle Vecchio, Carlo Scarpa\_Skewed Steps, B. Catele Vecchio Handrail detail ,C. Saynatsalo town hall\_Alvar Alto, D. He Art Museum(HEM),Shunde\_Tadao Ando, E. Pietra dura at Taj Mahal

**Haptic Environments** - The questions of tactility extend from perceptions to environments. The **haptic dimension** anchors our perception, making architectural spaces undeniable. Touching a building evokes a visceral, bodily response. Architecture facilitates these *tactile experiences*, restoring our tactile perception.

*Sensuous concrete and tactile elements of either topographic or tectonic nature introduce borderline cultural manifestations vital to the making of an 'atmosphere' or cultivating the 'culture of a place'. (Shirazi, 2013),Pg.9, writings by Kenneth Frampton)*

Writers like Kenneth Frampton have further signified 'Tactility' as a unique consequence of cultural identity of a 'place'. Tactile elements of topographic or tectonic nature introduce borderline cultural manifestations. For ex- The craft of '*Pietra Dura*' or '*pachikari*' (in India) at 'Taj', proclaiming a tactile expression of the Mughal

culture is fine grained surface articulation in marble, adds to its cooling quintessence beyond simply contributing to its stunning monumentality (**Figure 3E**). **Details** and **tectonics** as these accelerate Taj Mahal's atmosphere of tranquility and fulfillment by adding to its textural quality experienced via spatial directions, levels of intimacy and distance- all attributes of movement. Similarly, Mud 'lippis' in Kutch Bhungas are tactile expressions of local craft and skill of artisans creating 'reflective' and 'opaque' polarities. The very derivation of local expression in architectural elements or surfaces becomes an '*act of tactility*'. Tactility thus becomes deeply intertwined in regional inflection and cultural values. It shapes our understanding of "place" and "realms," awakening our senses and fostering a heightened spirit.

Given these understandings of Tactility, it might be paradoxical to state that *the tactile* is experienced through vision also, but Alois Reigl and Adolf Hildebrand solve this paradox by introducing the postulation of the 'near view' and the 'distant view'/ models on tactility.

## 1.2 Notions on Tactility:

**Near and distant modalities of Tactility** - A work can be read as tactile without touching. Our eyes<sup>1</sup> read the material properties through a set of inbuilt tactile memories, even if we don't physically touch it ie; the **visual** becomes an extension of the **tactile**.<sup>2</sup> According to *Tonghson Lee* (Lee, 2002), our experience of a coherent colored plane visually cues the understanding of a tactile, impenetrable surface—a finished material entity. This appreciation of a surface's texture is primarily gained through **close proximity** or the **near view**.

### 1.2.1\_Hilderbrandian Model of tactility :

Adolf Hildebrand posits the **near view** to the **tactile mode** and **distant view** to the **visual mode** of perception (Figure 4A). He implied that the distant view, being a more clear and comprehensive perception of an architectural object or form resides superior to the near view which is unclear, fragmented and less coherent as it sans the appreciation of the 'whole' (Figure 4C). However, this thesis is contestable because it undervalues the crucial role of tactile experience and movement in forming a complete, embodied perception of architecture.

*Binocular Vision is maximized by standing close to object. When one approaches the object, one becomes unable to appreciate the object as a whole without continuous eye movement/scanning the object's surface-leading to less coherent visual impression- **Distant View***

*Binocular vision is minimized by standing at some distance from object. Clarity and coherence can only be acquired when user grabs complete image of object at a glance Therefore, for him, distant view is a superior mode of perception to the **near view***

<sup>1</sup> *The transparent cornea of the eye is overlain by a layer of modified skin, even in the literal sense, we **touch** the world through **eyes*** (Pallasma, *Eyes of the Skin*, 2012)

<sup>2</sup> *Tonghson Lee \_invites a discussion on the real and the unreal to explain the tactile and the visual. He explains how in Peter Zumthor's works finer textural qualities lead to tactile appreciations and emphasizes Zumthor's belief that tactility lies in the simplest and nearest (Lee, 2002, pp. 10-14). Overall, notion of tactility has been linked to nearness in writings of Kenneth Frampton and Micheal Benedickt.*

Figure 4 (A) Hildebrandian paradigm of binocular vision (Source: Author)

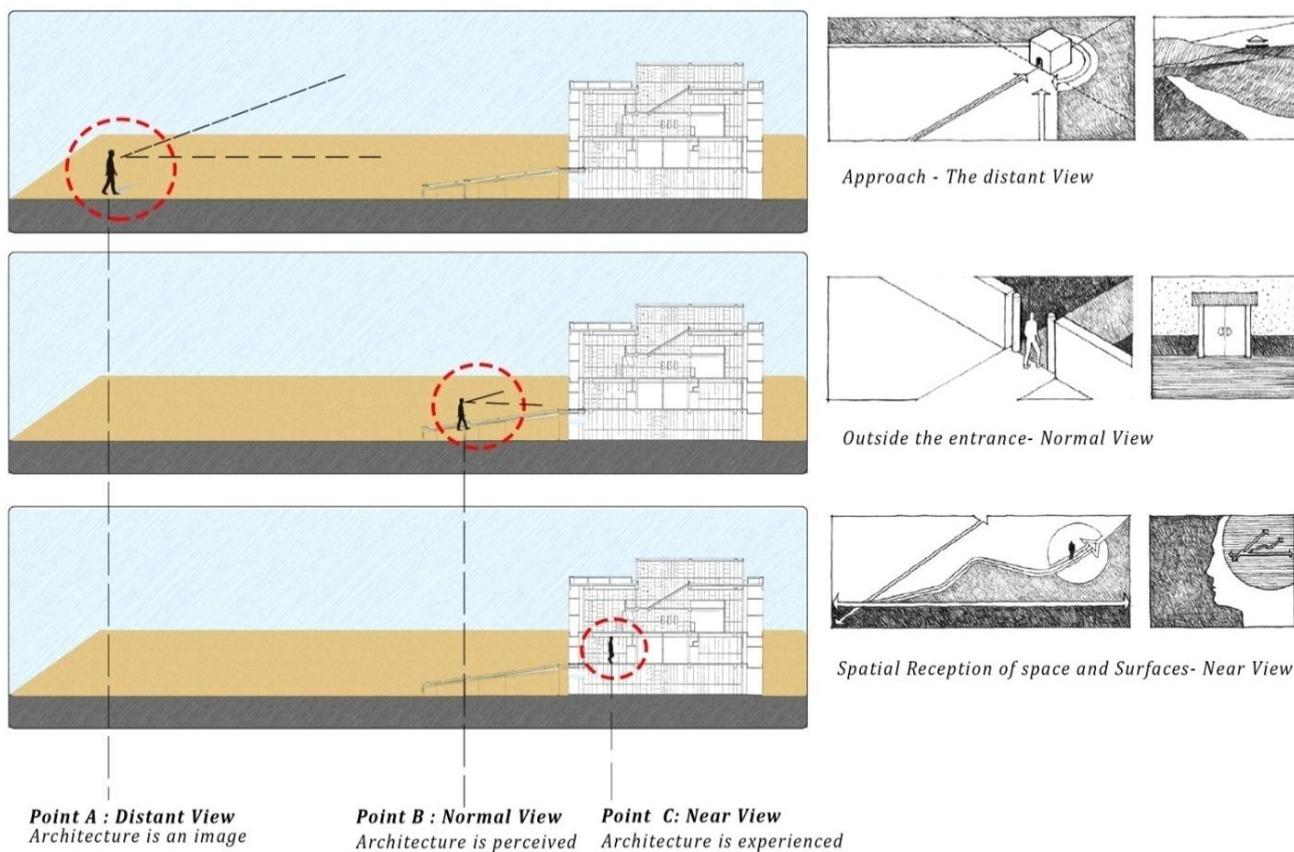


Figure 4 (B) Hildebrand's \_ The distant view\_ ATMA and the Tactile Phenomenon (C) Hildebrandian Vs Reigl Model on Tactility (Source: Author)

The "whole" is not solely a visual construct. Correspondingly, Le Corbusier, a pioneer of Modernist architecture, also emphasized the dominance of vision, famously stating, "I exist in life only if I can 'see' - everything is in the visual." However, his work, including the Millowner's Association Building in Ahmedabad, also reveals a strong **haptic sensibility**—a keen awareness of materiality, plasticity, and gravity. (Figure 5A)

This building exemplifies a fusion of tactile and optical experiences (Figure 5B). From a distance (*distant view*), the ramp leading to the building creates an impression of multiple floors and functions – the *appearance*. Yet, as one ascends the ramp (Figure 5C), the rough texture of the broad handrail and the smooth Kota stone floor engage the sense of touch (*near view*), rooting the experience in three-dimensional reality. Inside, the "brut beton" (raw concrete) columns, whitewashed walls, and red sandstone planes further showcase a rich tactility – the *essence* (Figure 5D). Thus, while vision is crucial, Hildebrand's theory of visual dominance only partially applies, as the building equally emphasizes sensory engagement through touch.



Figure 5: (A) The handrail\_ATMA\_Ahmedabad (openhouse, 2012), (B) The whole, (C) The Ramp, (D) Brut beton differently textured surface ATMA (divisare)

### 1.2.2\_Reigl's Model of tactility :

Alois Riegl<sup>3</sup>, in stark contrast, argued that the **near view** is the *only* way to truly grasp an external object's **material individuality**. He redefined Hildebrand's model of tactility, proposing three modes of perception: the **tactile view (near)**, the **normal view**, and the **optical view (distant)** (Figure 4B). Riegl emphasized that a **combination of vision and touch** is essential for proper perception, asserting that neither sense is inherently superior.

For him, architecture's dual responsibilities are to create '**enclosed space**' and define its '**borders**'. Through our sense of touch, we discern the impenetrable boundaries of a space—these borders being the very tactile surfaces of the elements that define and enclose it, ground our experience of the architectural environment. Taking the reference of Hussain-Doshi Gufa in India, one can understand Riegl's postulation that - the transient shift of focus of the observer from 'borders' to 'space' is equivalent to the development of human perception from '**tactile**' to '**optical**'. Gufa's china mosaic domes are visually striking, but its full spatial understanding—depth and light-defined borders—emerges with proximity. As one approaches, sinuous concrete surfaces, the water channels become apparent (Figure 6A). Inside, the Gufa transforms into a tactile cave, with smooth, curving concrete floors, walls, and ceilings. This intimate, haptic engagement with varied textures (rough columns, smooth floors) reveals the space's continuity and depth, surpassing purely optical perception Hence, **tactility**, as materiality, is evoked by both the physical '**surfaces**' and the immaterial entity- '**space**' (Figure 6B).

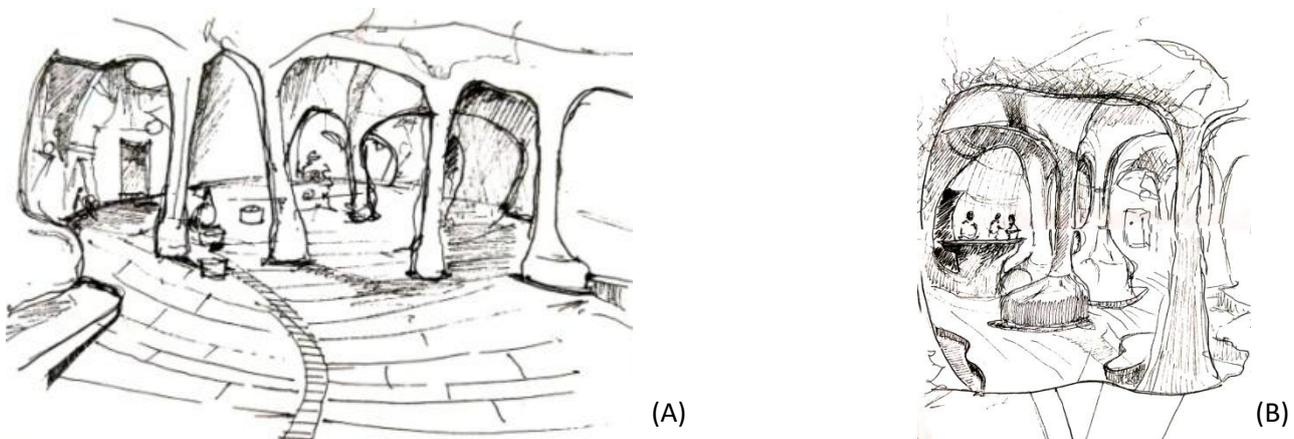


Figure 6: A) Hussain-Doshi Gufa-concrete columns (Source: Author), (B) Hussain-Doshi Gufa-concave floor (Source: Author)

<sup>3</sup> Alois Riegl, An Austrian Art historian also states the relevance of sense of touch –“ It gives us a sense of certaining about the external reality, the first hint of three dimensionality. Our sense of touch gives us definite knowledge of existence of dimension of depth, because it's manifolds organs permit us to check different points at the same moment.” (Lee, 2002)

## 2.1 Materiality- A leitmotif of Tactility:

### 2.1.1 The Shifting Landscape of Tactility and Materiality in Architecture

The relationship between **tactility** and **materiality** in architecture is akin to that of a reaction and its catalyst. Materiality, at its core, stems from an understanding of **material ethics** and material **compatibility**, influencing the visceral responses these materials evoke in human bodies when uniquely staged within architectural spaces. However, by the mid-20th century, theorists, critics, and architects began to shift the the notions of materiality from corporeal to incorporeal, challenging traditional considerations in architecture such as form, order, geometry, making ‘tactility’ merely a surface phenomenon.

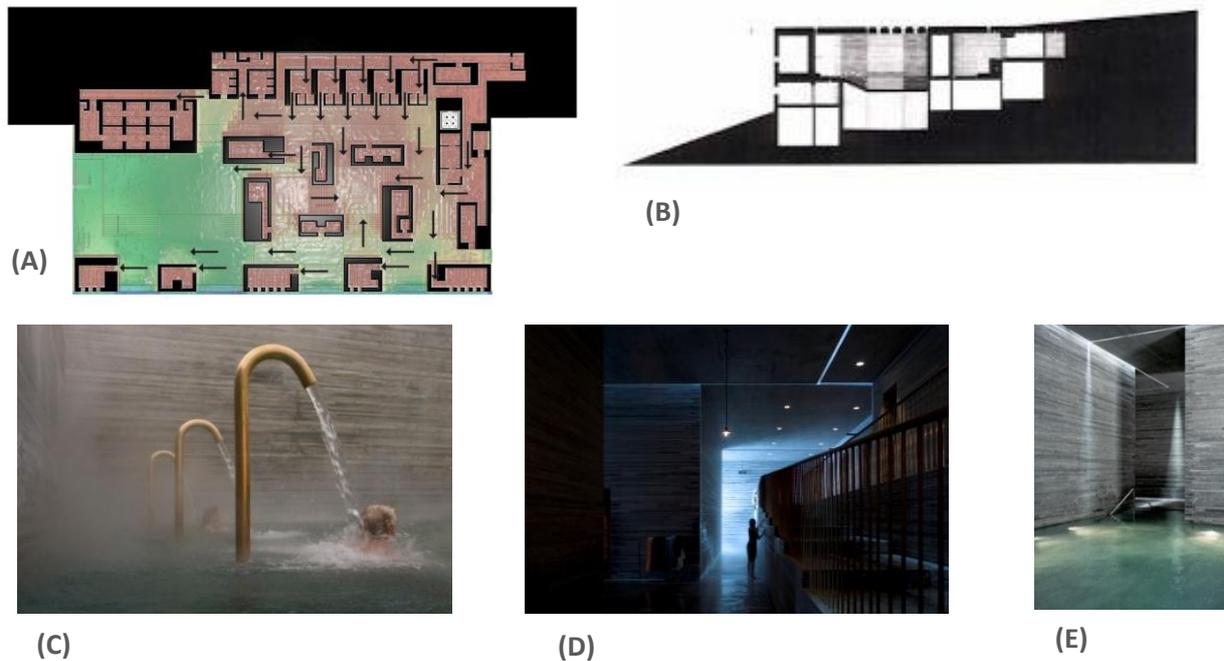
In the 1950s, **Reyner Banham** astutely observed that material ethics should extend beyond simply providing better life experiences, prioritizing environmental, economic, and social solutions that also align with foundational architectural principles. This perspective suggests that tactility doesn't diminish in importance when explicit material conditions are generated; instead, it becomes a conduit for realizing **true materiality** (Figure 7).



**Figure 7:** Peter Zumthor, Art Museum Bregenz, 1989-97, Bregenz, Austria \_Box aesthetics\_ Translucent finely-etched glass held by steel clamps, overlapping each other to allow light and air supported by a second layer of curtain wall. The material aesthetics evoke the **tactile** while also following **material ethic**. Image sources: 1. (Bianchini, 2019) 2. (metalocus.es) 3. (Binet, 2017) 4. (phaidon.com)cited in bibliography

Philosopher **Gernot Böhme**<sup>4</sup> further emphasizes the vital importance of materials due to their spatial reception. His views resonate with architect Peter Zumthor, who asserts that an architect's role is to strategically stage materials to achieve optimal spatial reception. This thoughtful staging, they argue, imbues architecture with meaning and profoundly impacts human tactile experience. Zumthor's Therme Vals (Figure 8), for instance, isn't perceived through a distant, optical view. Approached via a narrow underground tunnel, it's a building meant to be experienced via movement and the spatial presence of its materiality felt. Its internal journey, marked by gradually increasing scale and the homogenous Vals gneiss, amplifies a sense of a "*tactile landscape*," allowing for intimate exploration of stone composing a homogenous solid skin, and a strong sense of body's encounter with different temperatures of water- showering and static.

<sup>4</sup> *Gernot Böhme: A german philosopher, pioneer of German eco-criticism, shrewdly observes that material aesthetics have come an assessor of high profile public buildings. He terms this as-“trivial identification of the aesthetic and the beautiful”.*



**Figure 8:** (A), (B) Architectural plan and section of Thermal Bath in Vals (Guerra, 2016); (C), (D), (E) Materiality and textures of Thermal Bath (Guerra, 2016)

## 2.2 Architecture- A visually-Haptic Process

### 2.2.1 The Ocular Hegemony and its Consequences

The postmodern architectural regime, however, has often been criticized for subduing authentic notions of space and time, instead creating illusionary states of immateriality, agelessness, and perfection designed primarily to appeal to the "nihilistic eye." This aligns with the critique put forth by numerous art historians and architects, including Steven Holl, Juhani Pallasmaa, Kenneth Frampton, Michael Benedikt, Gernot Böhme, Steen Eisler Rasmussen, Maurice Merleau-Ponty, Walter Benjamin, Alois Riegl, and George Scott. These thinkers have consistently argued against the media-centric development of Western architecture and the subsequent *loss of tactile associations*.

Pallasmaa and Frampton<sup>5</sup>, in particular, concur that the Renaissance's foundational theories — rooted in visual perception, harmony, and proportion, as articulated by Leon Battista Alberti — inadvertently promoted "hegemony of the eye." This emphasis on sight, historically considered the noblest sense in Western culture<sup>6</sup>, led to a diminishment of the concrete responsiveness inherent in *tactile paradigms*. The advent of *architectural photography* further exacerbated this visual bias, contributing to an "image-rifled architecture." For example, Herzog & de Meuron's Ricola Mulhouse, with its facade motif derived from a photograph by Karl Blossfeldt, and the Eberswalde Technical School Library (**Figure 9**), which centered on the

<sup>5</sup> Frampton criticizes 19<sup>th</sup> century theoretician J.N.L. Durand, after following analysis of Brunelleschi and relies on Heidegger's essay "Building Dwelling Thinking". He is interested in the distinction between *raum* (place) and *spatium* in extension (space). He says: "perspectival space decomposes into instrumentality." (Lee, 2002, pp. 17-18)

<sup>6</sup> Western culture has regarded sight as the noblest of the senses and vision as humanity's greatest gift (Plato). Plato and Aristotle both also insisted that ethical universals must be accessible to 'the mind's eye' The Renaissance system of senses, tops vision down to touch. (Pallasmaa, 2005, p. 15)

"sheer materiality of photography," exemplify how imagery can prioritize visual appeal over tactile engagement. Such instances, while visually striking, often fail to appeal to the user's tactile senses.

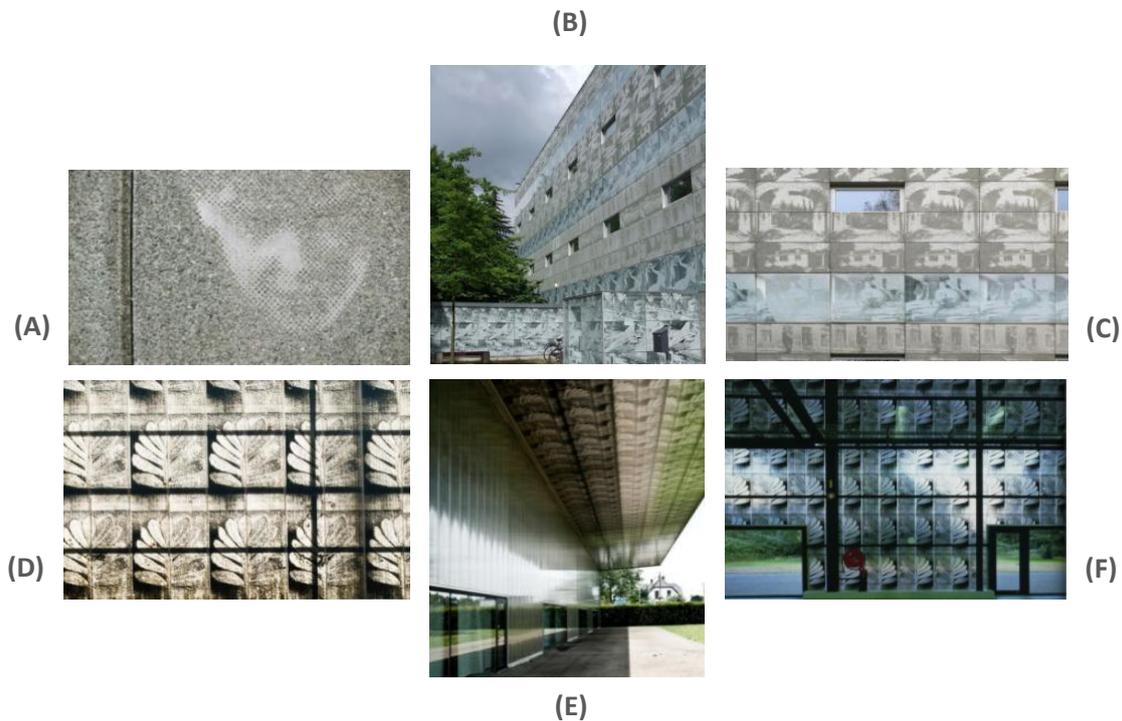


Figure 9 : Top Herzog De Meuron's Ebswarld Technical School Library. Bottom Ricola Mullhouse Image sources\_ (Lietman) (wien, 2016)

### 2.2.2 The Pursuit of Authenticity and Essence

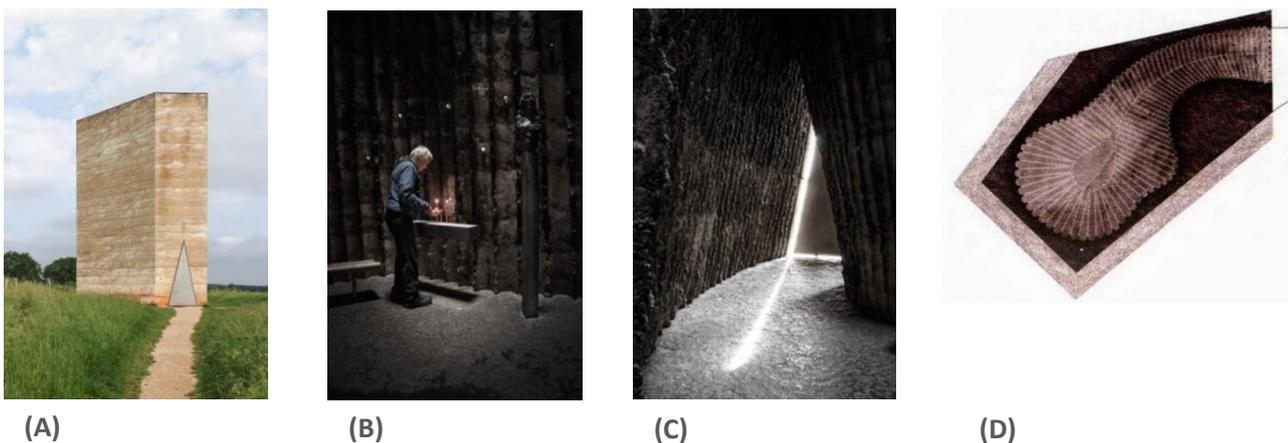
This overemphasis on visual imagery often results in a loss of authenticity, temporality, and experiential depth. Architecture, when reduced to flattened pictures in popular culture, loses the plasticity that these critics lament. Michael Benedikt<sup>7</sup>, discussing "Reality and Authenticity in the Experience Economy," argues that in our media-saturated environment, where the line between real and unreal blurs, buildings serve as benchmarks, helping us discern reality from the experience of reality. This highlights the vital importance of returning to the immediacy of bodily experience and the simplicity of everyday life. An architect holds the profound power to synthesize and materialize a privileged appearance that not only addresses formal concerns but also deeply connects humanity to its surroundings, making the "essence" of a space felt (**Figure 10**).

<sup>7</sup> Michael Benedikt, (Lee, 2002, p. 15) urbanist, writer of over 100 articles on architectural practice, design theory and research, in "Reality and Authenticity in the Experience Economy" looks upto architects like Aalto, Aldo Van Eyck, Louis Kahn and Carlo Scapa and Peter Zumthor for tactility.



**Figure 10** (A), Essence near modality of touch experience of reality (Source: Author); (B) Appearance distant modality of touch reality (Source: Author).

Peter Zumthor echoes this, stating that certain buildings "manage to move me," underscoring the architect's responsibility to achieve intensity and mood, expressing materiality from even the most immaterial entities. He is able to do so in many of his works one of which is the Bruder Klaus Field Chapel (**Figure 11**). For Kenneth Frampton, this "essence" resides in the "architecture of tranquility." Ultimately, true architectural essence is often captured in the near view, where visual dominance is minimized in favor of intimate, tactile interactions between the building and its occupant. Instances of such intimacy bring humans closer to living in genuinely **tactile environments (Figure 12)**. Therefore, effective architecture should embody a delicate balancing norm between appearances and essences, ensuring that the profound, multi-sensory experience of a space is cherished alongside its visual presentation. **Tactile associations lie in bodily interaction with natural environments and Levels of Intimacy** (as Hugo Kuekelhaus points out in 'From Animal Battery to Information factory'). It lies in experiential depth, in appearances, in surfaces and impacts that sustain over time, all constructed from **materiality**. Surface articulations, volumes, **rhythms** that evoke emotions all become a part of tactility prompting tactile pleasures and anchoring architecture to memory.



**Figure 11** (A) The appearance of Bruder Klaus Field Chapel (AMORETTI, 2016); (B), (C) The essence of Bruder Klaus Field Chapel (AMORETTI, 2016); (D) Plan of the Chapel (Source: ?)

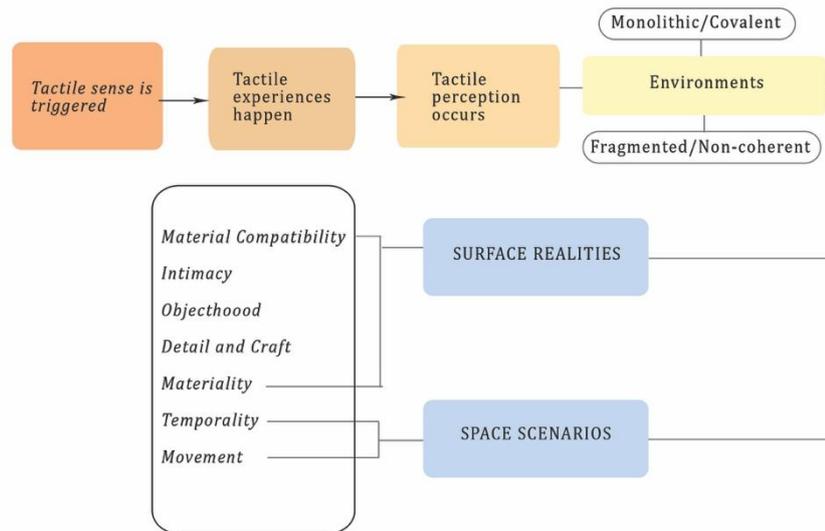


Figure 12: Surface Realities and Space Scenarios (Source: Author)

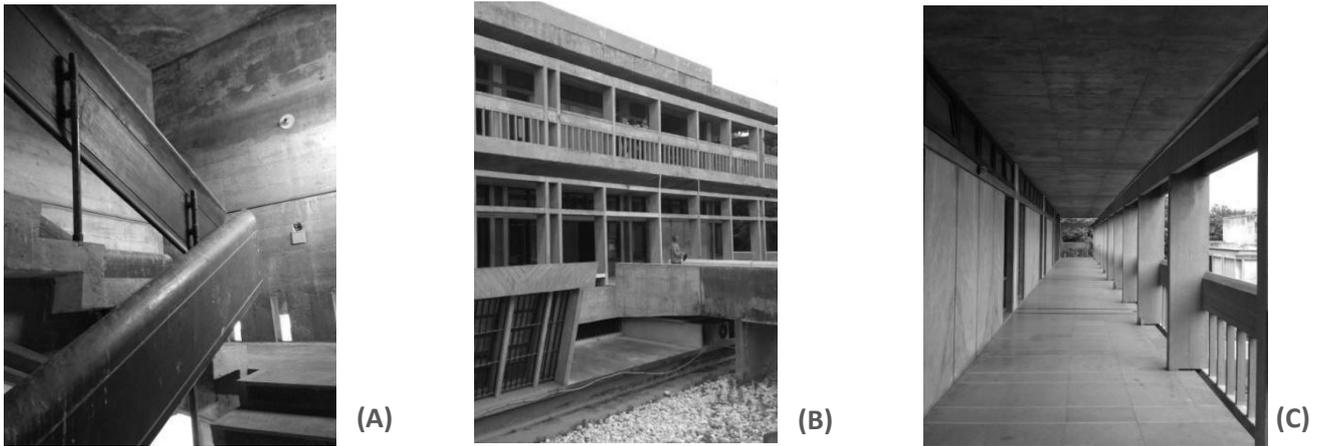
### 2.2.3 The Fusion of Visual and Tactile

Amidst modern and post-modern architectural shifts, works like Daniel Libeskind's Jewish Museum in Berlin demonstrate a powerful fusion of visual and tactile elements, profoundly embedding cultural narratives. This underscores how **tactile architecture** can shape social and cultural experiences.

Similarly, Indian architecture has a long-standing sensitivity to the **haptic dimension**, influencing modern and contemporary practices. Early modernists like B.V. Doshi, Roger Anger, and Nari Gandhi, alongside contemporaries such as Gurjit Singh Matharoo, showcase this cultivated appreciation for the tactile (Figure 12B). India's diverse landscapes, non-urban areas, and rich building crafts foster deep connections to a more haptic world, naturally promoting architecture that engages senses beyond sight. However, recent works have rarely explored the full spectrum of tactile details and surface pleasures, despite this inherent potential. Studying these limited examples offers crucial insights into how tactility operates in Indian architectural expression.

Synthesizing diverse theories<sup>8</sup> on architectural tactility reveals a framework (Figure 13) for how it's experienced. This prompts key questions: Does re-sensualizing architecture through materiality (Frampton), synthesizing privileged appearances (Benedikt), or achieving material unity (Riegl) truly evoke tactility? These questions will be explored by examining architectural aspects that direct tactility in spaces. Building on Frampton's concept of '**Comprehensive Tactility**,' and drawing from discussions on materiality, intimacy, appearances, surfaces, and natural environments, a coherent understanding of this multifaceted concept is developed.

<sup>8</sup> A Diagrammatic synthesis of all the theories after literature Review is presented in Figure 13 after this extract.



**Figure 12B:** (A), (B) *Museum of Indology by B.V. Doshi* - Rough texture of wooden planks embossed on concrete, (C) Use of place-form-culture-tactile Museum Of Indology Regional Inflection and Tectonic details (Nanwani, 2017). The above image portrays the tectoniks of concrete that replicates those of wooden elements. Concrete has been rendered the delicacy to produce a local expression resembling the wooden elements in the pols of Ahmedabad.

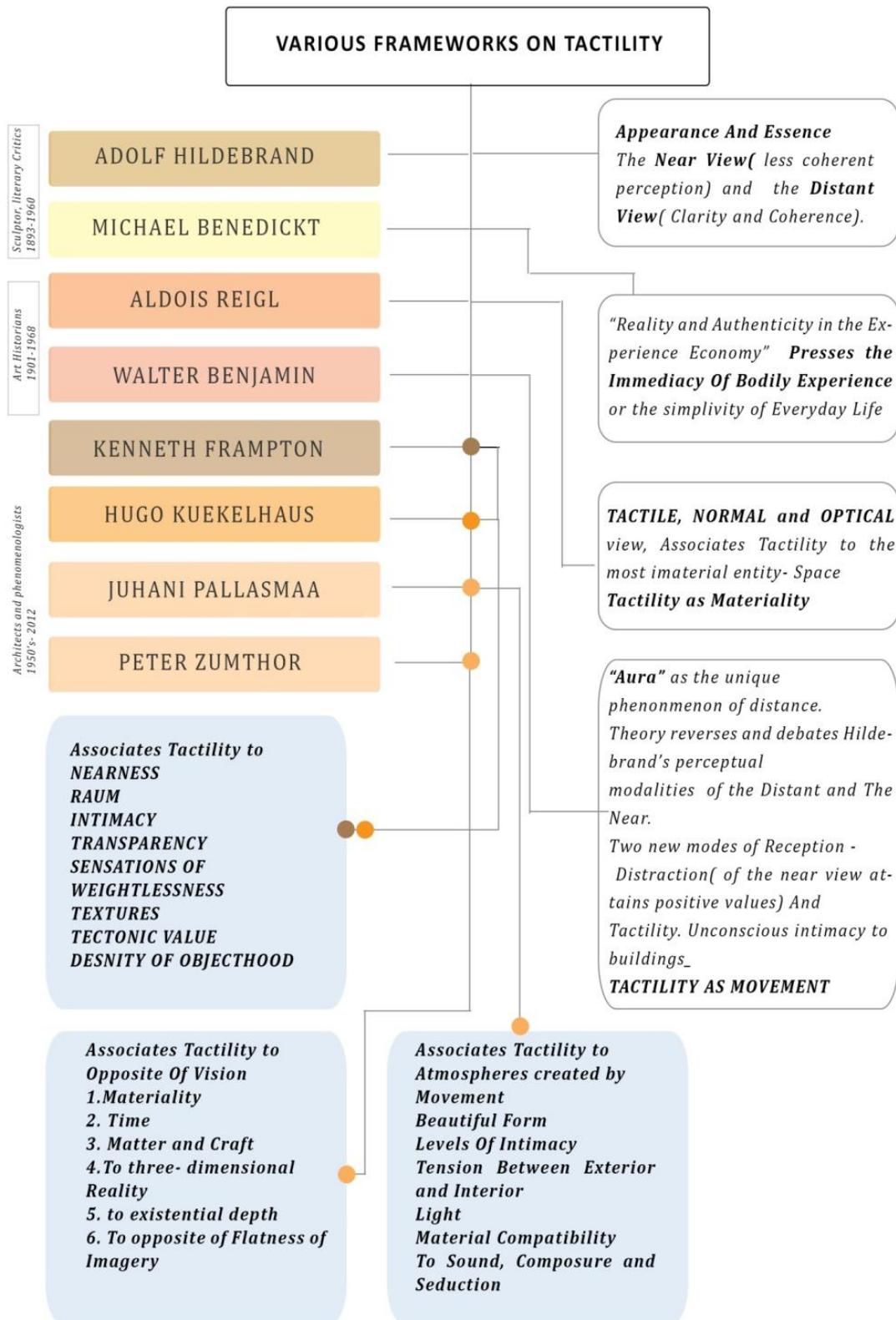


Figure 13: An overview of all the theories on tactility (Source: Author)

### 3.1 Theory of Comprehensive Tactility

**3.1.1 Understanding Comprehensive Tactility** – Architectural thinkers like Kenneth Frampton, Hugo Kuekelhaus, and Juhani Pallasmaa have significantly deepened our understanding of **tactility in architecture**. Pallasmaa highlights its general relevance, while Frampton shows how design actively shapes tactile experiences.

Tactility is profoundly experiential, occurring when our senses perceive a space's three-dimensionality through touch. As George Baird, a Canadian architect observed in Aalto's work, a door handle offers a brief tactile moment, but a railing extends this experience over time, creating an elaborate "network of touch." This underscores how precisely designed details and tectonics generate sensory responses, making tactile experiences central to human interaction with buildings. "The door handle is the handshake of the building," signifying that tactility links us to time, tradition, culture, and nature, as both Frampton and Pallasmaa articulate.

This understanding underpins the concept of an **Architecture of Resistance**, a sensitive and relevant approach contrasting postmodernism. Found often in "**peripheral nodes**" (fragmented environments) rather than an urban enclave, this architecture is deeply rooted in tactility. Frampton's **Critical Regionalism** connects tactility to local identity, place, and conscious design. He argues it "suspends the distancing character of images," bringing us closer to things through grounded, multi-sensory experiences. Architecture that incorporates contextual elements becomes a starting point for discovering tactile origins.

Crucially, **Tactility and Place** are intertwined. Frampton's phenomenological perspective links tactility to a place's **culture, identity, and essence**. Critical Regionalism, he posits, enriches visual experience by re-engaging our tactile perceptions. This "culture of place," expressed through tangible elements, fosters a sense of belonging and defines boundaries, overcoming "non-place urban realms." This essence is enhanced when building infuse a regional inflection, such as inlaying the building into topographical layers or responding to local light, profoundly affecting tactile senses.

Frampton, by emphasizing **direct lived encounter, bodily placement, topography, and tectonics**, frames tactility as a vital layer that transforms mere space into a meaningful place. This also contributes to his idea of Comprehensive Tactility. **Comprehensive Tactility** alludes to employing all the aspects that are antithetical to the reduction of building merely to spatial arrangements largely determined by proximal or productive considerations. It rather explores the underlined aspects in any architectural work that make **the tactile** happen.

**3.1.2 Tactile Functionalism** - Kenneth introduces various parameters on Tactile Functionalism. *In his writings on Critical Regionalism, Tactility* becomes one of the six points of an architecture of Resistance.

**Exploratory Study:** Alvar Aalto's<sup>9</sup> Saynatsalo town hall, 1949-52 (North European Expressionism)

*Bestowing to Finnish Culture, Aalto's Architecture takes a unique tactile legacy forward. According To Kenneth his work seems to evoke Comprehensive tactility because of his heterotrophic approach.*

*Saynatsalo Hall comprises both the town hall and the public library, laid out the square arena of an elevated atrium situated one floor above the general level of street.*

He introduces: **Haptic Juxtaposition, Layering, Heterogeneity, Rhythmicity, Irregularities, Asymmetry, Repetition**, as parameters that make Alvar Aalto's architecture tactile. For Kenneth, layers such as

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<sup>9</sup> *Aalto's emerging organic heterotopia demonstrated in the successive exhibition pavilions for the Finnish state –in 1937-1939- period where his quasi constructivist reinterpretation of Karelian vernacular came forth and he produced a mesa-like metaphor for edge of the forest in a form of an undulating cliff like face that was later translated in the Baker House Dormitory block, Cambridge, Massachusetts, 1949 (Frampton, 2015, p. 172)*

topography, climate context, light and tectonic form are the starting point for a tactile scenographic architecture. He is antithetical to reducing the building into merely spatial arrangements rather emphasizes **fragmentation**.

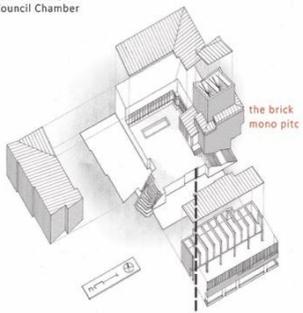
*The tactile becomes an important dimension that helps in perception of the built form supported by other sensory modalities of the body. It employs the entire body as a site of reception of all changes- the intensity of light or darkness, temperature (heat or cold), the palpable presence of bordering masonry as the body transfigures it's own internment, the momentum of a body's pace while walking and it's relative inertia while traversing the floor, even the echoing resonance of one's own footfall.*



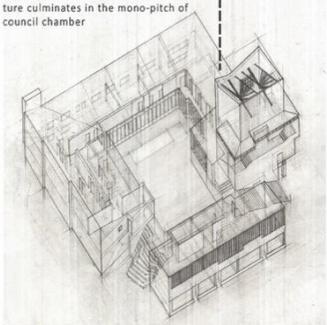
(B)



1. Access 1: organic, tree trunk risers covered in grass
2. Access 2: Monumental Stone stairway
3. Internal Bricklined stair
4. Public Library
5. Council Chamber



Tectonics of the Form  
Roofwork is brickfaced, concrete structure culminates in the mono-pitch of council chamber



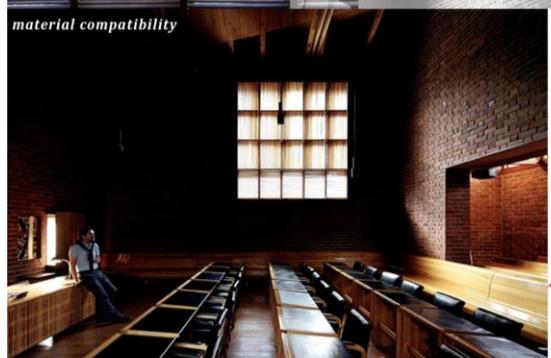
(A)



**polarities :**  
The transparent rhythmic corridors, connecting to nature vs The enclosing brick volumes



raked brickwork on the stair



material compatibility



juxtaposition of wooden intricacies over dominant brick form

(C)

**Figure 2:** (A) Saynatsalo Hall Analysis (Source: Author); (B) The rhythmic corridors (Clouse, 2014); (C) Form of the council chamber (Castro, 2018) *Photocollage (for analysis) courtesy\_Gazal Nnawani\_Haptic juxtaposition\_materiality\_polarities\_tectonics*

**Materiality:** The podium features two distinct stairways: a formal, dark stone ascent to the library, and a rough, grass-covered path with split tree trunk risers. Inside, the council chamber's brick-lined main stair creates friction, providing a kinetic, tactile, and visual experience. This contrasts sharply with the chamber's polished timber floor, which induces a slight loss of balance, highlighting its unique haptic quality. is evoked different element formations and use of compatible materials in an order.

**In Form:** A spiraling mass form that culminates in the mono pitch roof of the council chamber in brick – is the master volume of the composition.

**Heterogeneity:** The **transparent** façade and **rhythmic** corridor unify the perimeter of the rigidly square courtyard.

**Haptic plasticity:** allows architecture to mold itself organically to the earth, creating forms that appeal to a primordial need for comfort—a feeling perhaps rooted in our association with sacred, rock-hewn spaces merging with landscapes.

**Gravity:** Conversely, there's beauty in defying gravity, in structures that respectfully lift themselves off the ground, allowing the earth to flow unimpeded beneath. This duality highlights architecture's power to either embrace its terrestrial connection or transcend it, both offering distinct yet profound sensory experiences.

**Details:** Details create intimate spaces for personal associations, evoking memory and dreams. Colors also influence mood, forging unconscious oral and tactile connections, fostering a private dialogue between viewer and viewed.

**Polar experiences:** Elemental details, Rhythmic corridors, Volumes, materiality, all uniquely form part of Saynatsalo Hall. Also Alvar Aalto's other works reflect the same. (In detail in thesis Report). Other extracts include:

1. Tactile details respond to anthropometrical needs.
2. They highlight tactile elements of either topographic or tectonic nature, where tectonic value of each component arouses a certain architectural quality- be it object hood, or levels etc.
3. Parameters that evoke tactility are: Fragmentation, Layering, Multiplicity, Organic Growth, Haptic Juxtaposition, and Rhythmic Repetition.

**Levels:** The friction of these steps provokes a **kinetic impetus of the body** while climbing. These orchestrated stairs, to which one is not very habitual, are as much tactile as visual.

**Natural environments:** By introducing elements of water (ponds, pools), sky (courtyards, skylights) and earth (landscaping), one can incorporate nature into architecture, providing ample sensory stimuli.

Majorly taking from Kenneth Frampton's Tactile functioning, Hugo Kuekelhaus' focus on environments and polarities and Peter Zumthor's ideas on Materiality, the following aspects are listed which will be used for

analysis. **(Table 1)** The criteria for summarizing these was not only compiling the theories but also categorizing similar aspects into a singular cluster, inspiration for which was drawn from Niharika Sanyal's Synopses.

ARCHITECTURAL ASPECTS	CHARACTERISTICS / SUB PARAMETERS	ASSOCIATED TACTILE STIMULI
<b>Materiality</b>	<ul style="list-style-type: none"> <li>• Material compatibility</li> <li>• <i>Element formation</i></li> </ul>	Sense Of Relativity Inertia
<b>Gravity/Mass</b>	<ul style="list-style-type: none"> <li>• Weight/Weightlessness</li> <li>• Haptic Plasticity</li> <li>• <i>Mold-ability</i></li> <li>• Shaping</li> </ul>	Sense Of Weightlessness
<b>Details/Colors</b>	<ul style="list-style-type: none"> <li>• Textures</li> <li>• <i>Tectonics</i></li> <li>• Objecthood</li> <li>• <i>Repetitions</i></li> </ul>	Sense Of Three Dimensionality
<b>Polarities</b>	<ul style="list-style-type: none"> <li>• Contrast Of Temporal Experiences</li> <li>• Seamlessness/Tightening/Loosening</li> <li>• Places Of <i>Liminality</i></li> </ul>	Sense Of Tension/ Sense Of Security
<b>Heterogeneity</b>	<ul style="list-style-type: none"> <li>• <i>Palette of Materials</i></li> <li>• Orientation of Material</li> <li>• Response to light and landscape</li> <li>• <i>Surface Expressions</i></li> </ul>	Sense Of Quirk and Play Curiosity and Chaos
<b>Scale/Proportion</b>	<ul style="list-style-type: none"> <li>• Proximity</li> <li>• <i>Rhythmicity/Proportion Of elements</i></li> <li>• Anthropometry</li> <li>• Order</li> <li>• <i>Movement</i></li> </ul>	Sense Of Intimacy/Monumentality
<b>Layering</b>	<ul style="list-style-type: none"> <li>• <i>Juxtaposition Of elements/objects/movement</i></li> <li>• Fragmentation</li> <li>• Levels</li> </ul>	Heightened Imagination
<b>Natural Environments</b>	<ul style="list-style-type: none"> <li>• Dialogue between User and nature</li> <li>• <i>Interiority and Exteriority</i></li> </ul>	Sense Of Restful Contemplation Notion Of Escape

**Table 1: Associations of architectural aspects with tactile stimuli (Source: Author)**

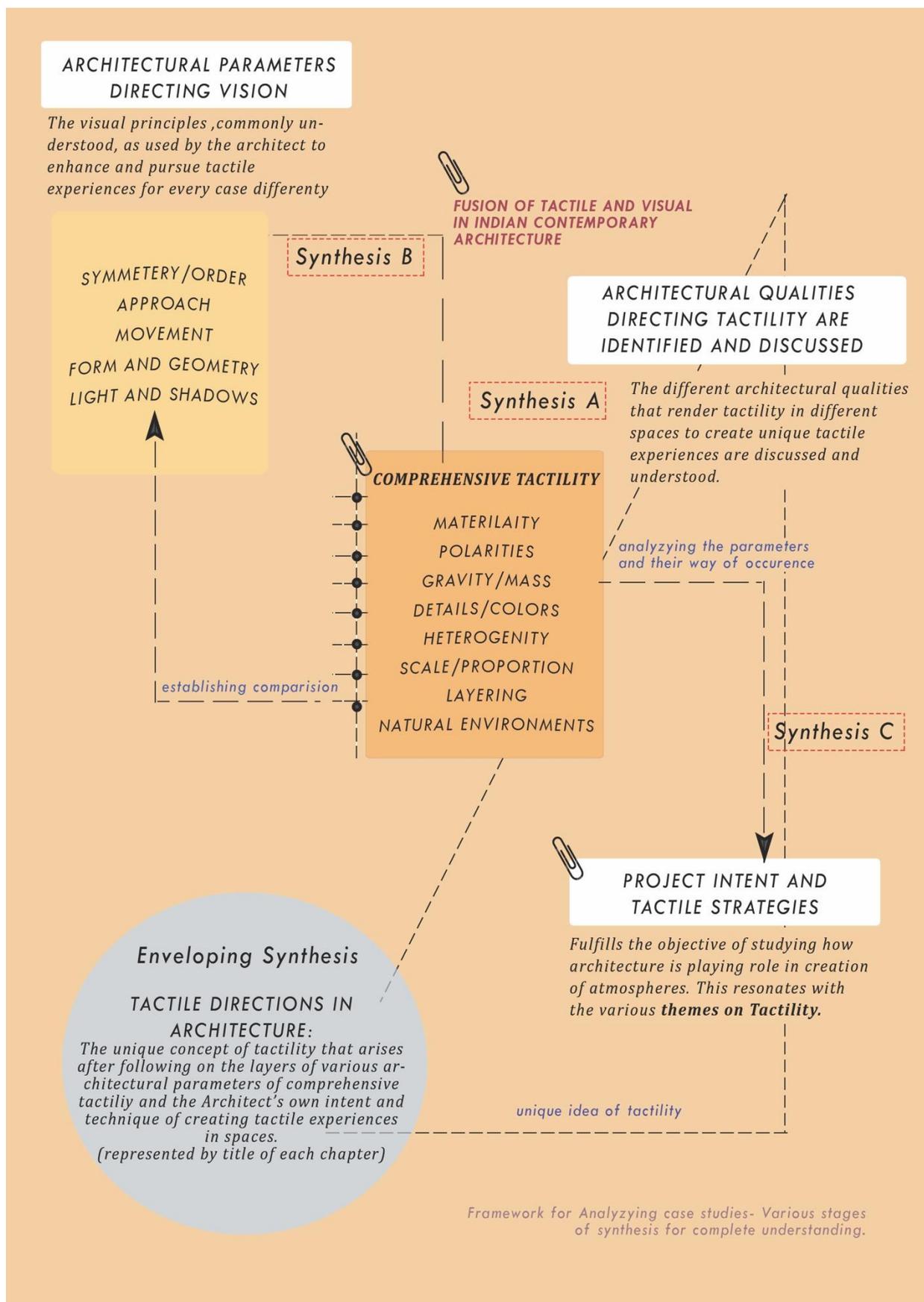


Figure 15: Framework for analysis (Source: Author)

This research synthesizes how architectural design fosters "Comprehensive Tactility." (Figure 15)

**Synthesis A** delves into architectural qualities that direct comprehensive tactility. Drawing from theoretical literature, it explains how specific qualities manifest in various architectural elements and environments, detailing how humans sequentially perceive and interpret these tactile experiences. This answers the fundamental question of what role architectural qualities play in shaping tactile perception.

**Synthesis B** explores how visual principles in architecture pave the way for tactile realizations. For instance, guiding a user along a brick wall or using light to direct movement can prompt physical interaction, enhancing material perception and proximity. This section compares the interdependent roles of visual and tactile senses.

**Synthesis C** reconciles project intent with design strategies focused on haptic experiences. It outlines techniques that fuse visual and tactile elements, providing a comprehensive understanding of how architects craft engaging sensory environments.

Tactile directions in Architectural Design are hence a syntagmatic consequence of intended and unintended instances in design but most importantly these instances are based on various architectural qualities that the architect seeks to incorporate. . **The various themes/ unique concepts on tactility are coherently discussed in each case taken for the study which are: The language of Tactility, Tactility in Continuum, A tactility of Polyrythms, A Layered tactility. This also becomes one of the bases for selection of case studies: observing a unique theme on tactility.**

#### 4.0 Auroville- The city with a 'spirit'

Auroville, in India, is a place where one can look up for the diverse tactile roots in contemporary architecture resulting from extension of nature into the manmade realm. A place that satiates man's internal sensation within his own being. Auroville, a place of unending education, belonging to nobody in particular, was born out of research for spiritual and living embodiment of an actual Human Unity by India's great philosopher yogi- Sri Aurobindo and spiritual partner Mira Alfassa- The mother. With the foundation stone laid on 28<sup>th</sup> February 1968, the dream of building a 'City Of Dawn' had begun. Auroville accelerated on ideas of environmental mentality trickled during the 1970's as architects like Rodger Anger, Piero and Gloria, Poppo Pingel stepped foot on the land. They became the early Modernists that paved ways for other architects to follow in creating a hectically rich environment.

**Tactile associations** thrived in such bohemian environments. In many studies done earlier on Auroville, the city has been established as a place in India that is often considered utopian, a model for the future. Niharika Sanyal mentions in a synopsis on Hugo's writings that the body learns by doing and discovering through spatailization- By engaging with an environment that responds to its needs and for her - Auroville exemplifies that **fragmented coherent environment** where architecture envelope's man in the womb of a society that enriches tactile sensing. Such environments fulfill man's need for comfort where differential states become cogent and experiences of polarities are realized in time as opposed to the **sterile monolithic city environments** where the textured, dehumanizing materials.

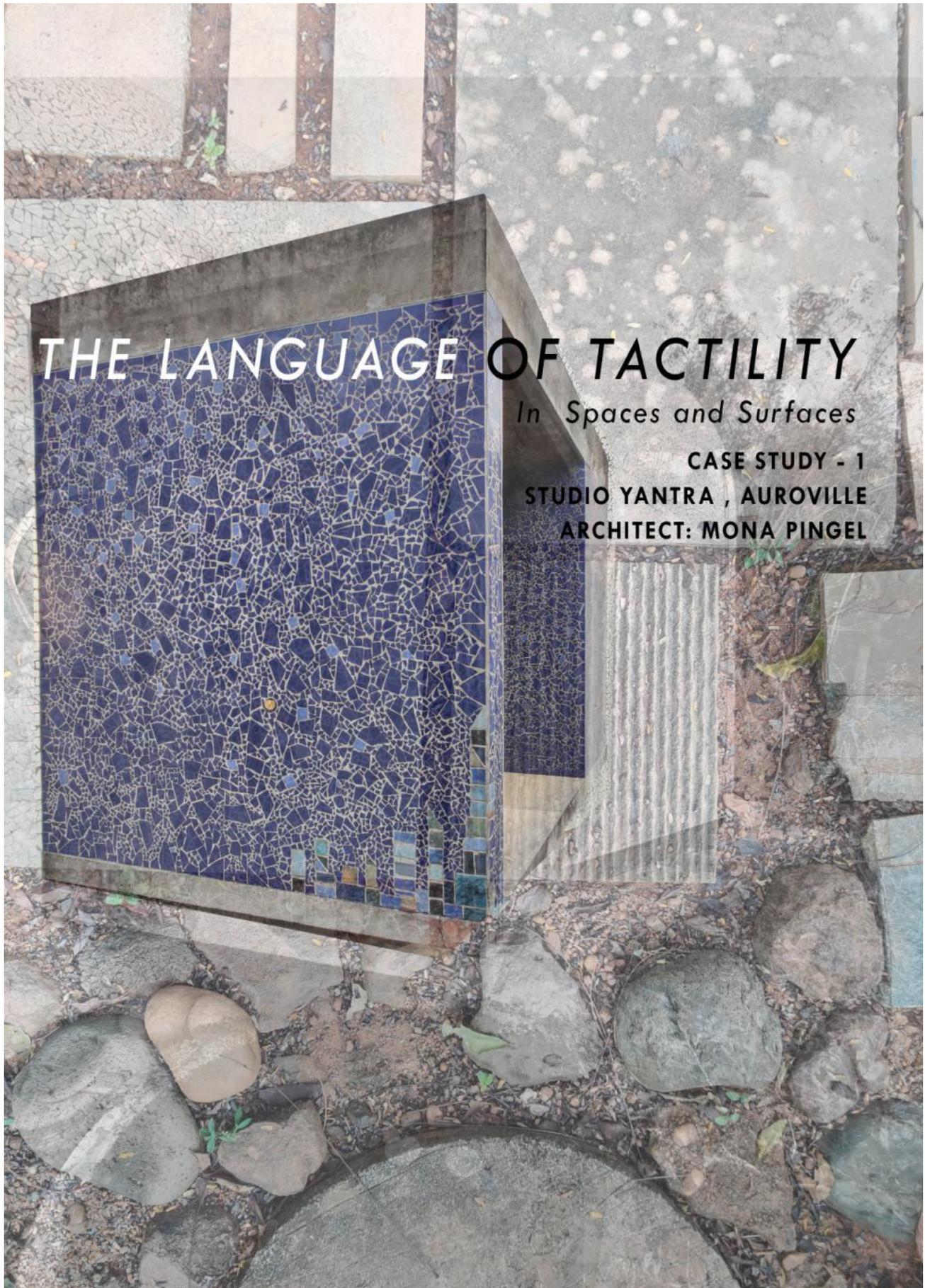
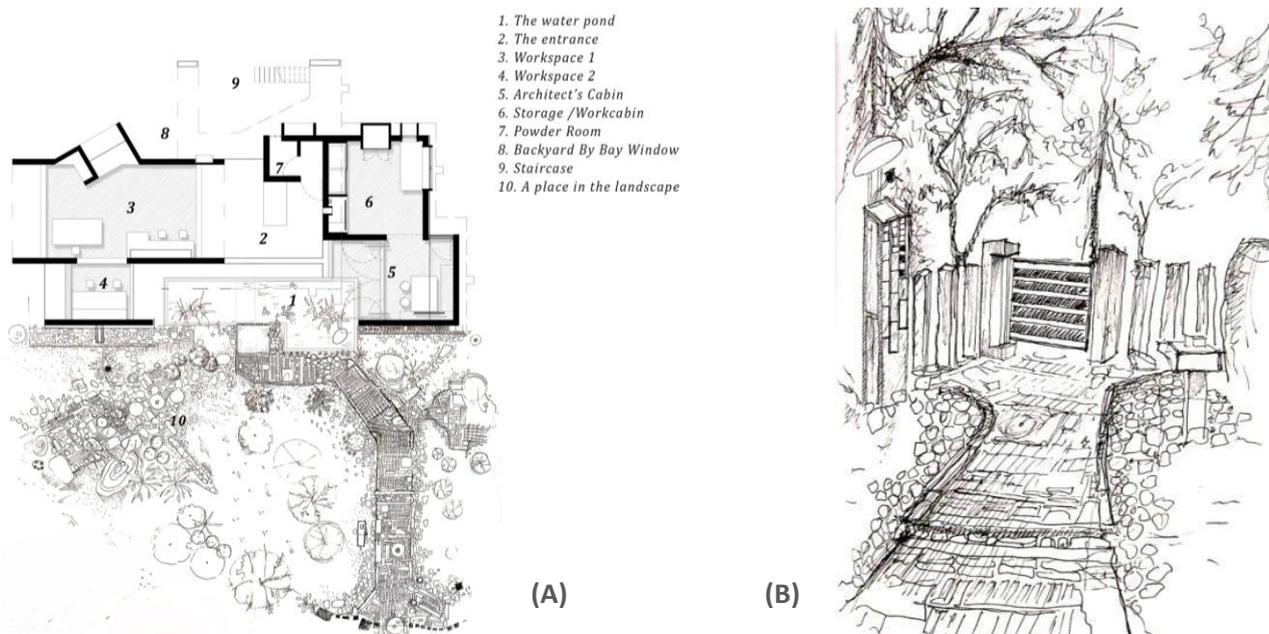


Figure 16: Theme 1\_ The Language of Tactility (Source: Author)

### 4.1 Case Study 1 : Studio Naqshbandhi

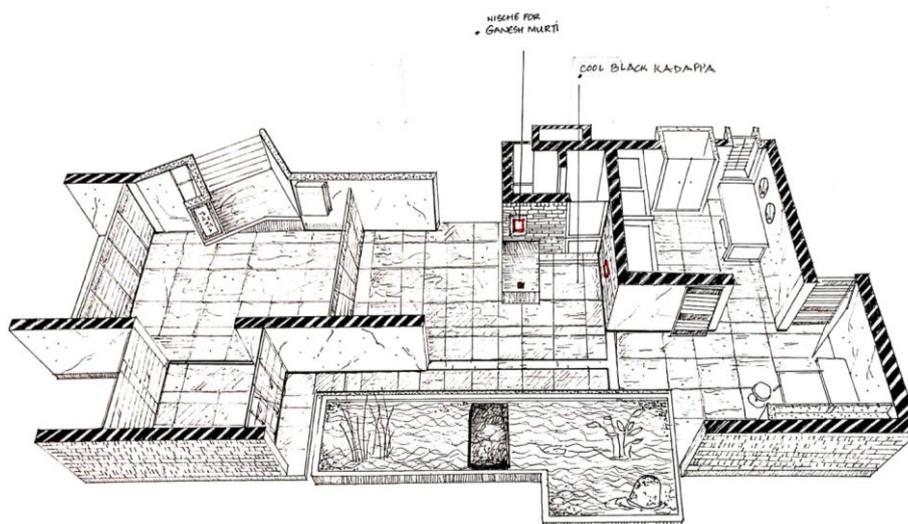
*Theme – The Language of Tactility | In Spaces and Surfaces*

Studio Naqshbandhi, A haptic environment created in this workplace is a united effort of the architect’s intention and execution. The five elements fire, water, earth, air come together to conceptualize this space where tactility emerges from materiality, intimacy and connect to nature. There is a contrast of temporal experiences that is observed. The very path that leads to the studio is elemental. The very first touch on the floor of the studio absorbs you in and indirectly leads you on an intriguing journey.

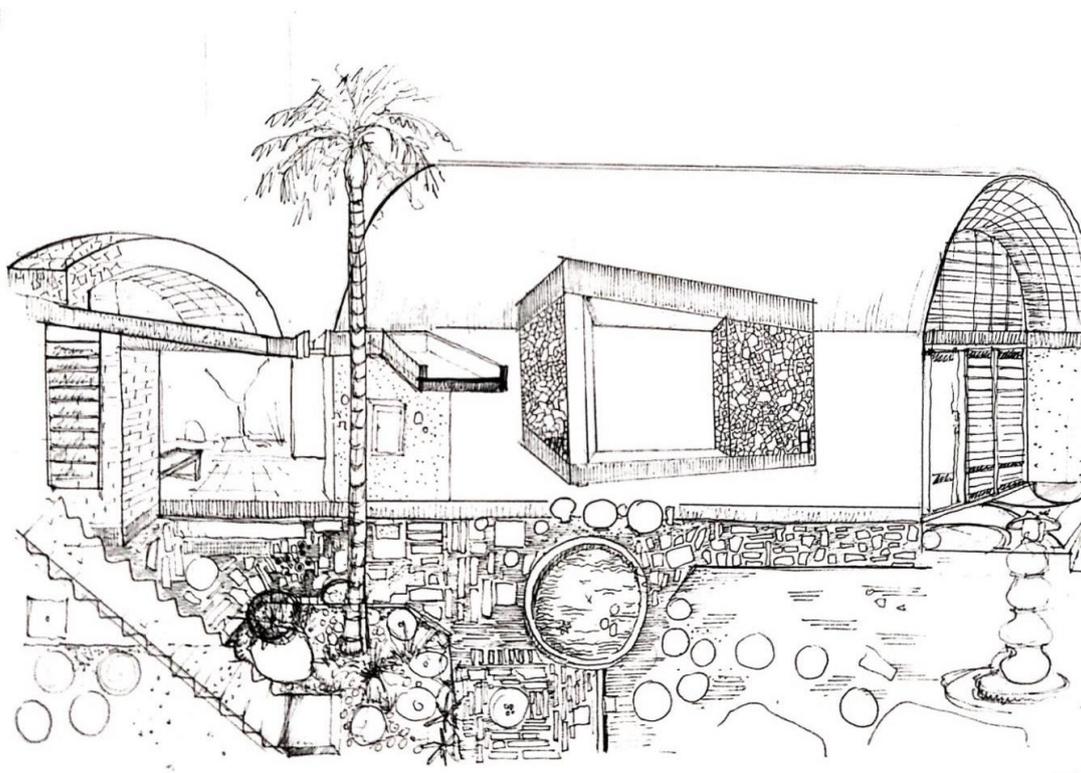


**Figure 17:** A. Studio Plan\_Landscape details, B. The granite senitals and studio lamp with colored tile patterns

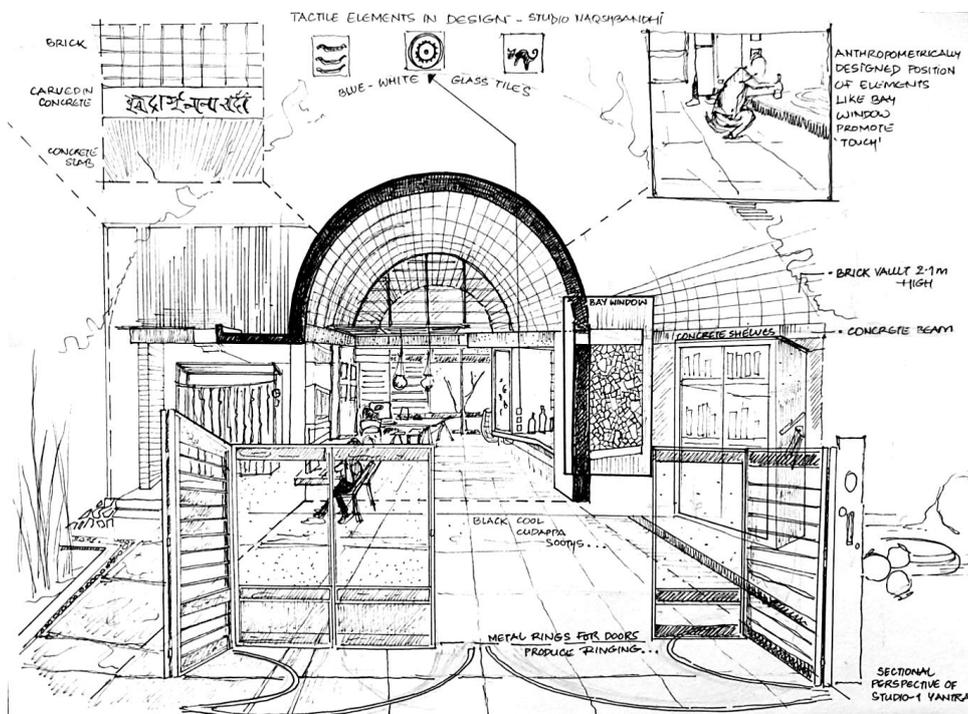
*Big boulders, small pebbles, colored stones, bricks laid in different directions, tiles and large rectangular sandstones to edge the pathway, it becomes a space in itself. The pressure exerted by each stone is different and awakes once senses to the presence of a ground where the feet step. These latent intent experiences you through to perceive the unimaginable.*



**Figure 18:** The dotted line present rhythm of alternate brick and lime shell walls that are not perceived from distant view, only after ending the studio, one realizes the pattern near view (Source Author)



**Figure 19:** The backyard Landscape Natural surroundings that envelop the studio Palette and orientation of materials Pleasure for the feet (Source Author)



**Figure 20:** Perspectival section of the Studio showing all details and heterogeneous compositions Source Author)

Studio Naqshbandhi exhibits a *Language Of Tactility*, in all architectural aspects – *Materiality, Levels, Polarities, Details/Colors, Heterogeneity, Layering, Scale and Proportion and Natural Environments*.



Figure 21: Materiality\_Polarities\_Natural Environments (Source Author)

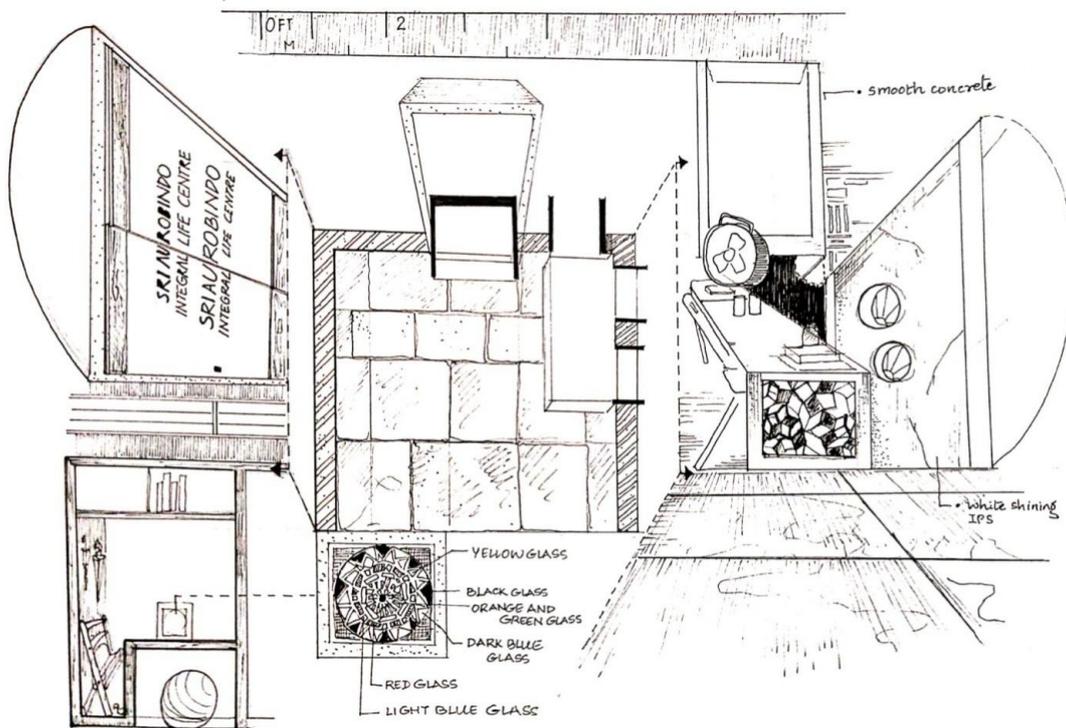


Figure 22: Inside the workspace Elemental Composition Patterns and Materials Layered (Source Author)

CASE STUDY 1: STUDIO NAQSHBANDI _ MONA PINGEL _ COMPLETE ANALYSIS			
Aspects/ qualities	Co-Relation with visual param (Refer Table 4.1.8)		Aspects/ qualities
Architectural parameters directing tactility	Materiality	<p>a. Materiality helps in developing the connection between two rooms. b. tactile elements discovered at special junctions - Pause after movement.</p>	Natural Environments <p>a. connection to environment generates tactile inertia</p>
	Gravity/Mass	<p>a. free-hanging forms at lower heights - proximity to touch - becomes place for everyday objects.</p>	Scale And Proportion <p>a. singularity of structure is overlapped by variation in proportion of vaults - defining uniqueness to each space.</p>
	Details/Colors	<p>a. Movement across different spaces reveal different textures of concrete (both rough and smooth), doors, junctions and floor that are rendered unique tactility.</p>	<b>Tactile Strategies used ( From Interview with architect)</b>  1. <b>Materiality and engravings:</b> The use of colored tiles and waste bottles for outdoor flooring gives a textural quality to pathway. Use of recyclable materials for making most elements, working with mosaics and understanding and applying patterns engraved in concrete was a conscious choice that became an evident tactile strategy.  2. <b>Bringing in tactile elements:</b> The Lampshade outdoor is made as element uses patterns in blue tiles designed specifically by the architect evokes tactile senses in a more corporeal sense.  3. <b>Spatial Tactility :</b> The architect aims to bring in the essence of all elements: fire , water, earth, sky and wind. This collateral concept blends in with design techniques to result in a comprehensive tactile language of the spaces.  4. <b>The architect finds tactility in creating heterogeneity.</b> Connections to natural environment are deeply held and detail is done to the utmost accuracy. The ideas of Materiality, gravity/mass, sustainability, levels and layering are persuasive in the architects intentions as well establishing a organized language of tactility.
	Heterogeneity	<p>a. Unique wall floor compositions in all spaces bring individuality.</p>	
	Layering	<p>a. layering of elements and textures in surfaces. Juxtaposed over layers of organization in plan</p>	
Levels of Intimacy			

Table 2: Analysis of Tactile Parameters\_Studio Naqshbandhi (Source: Author)

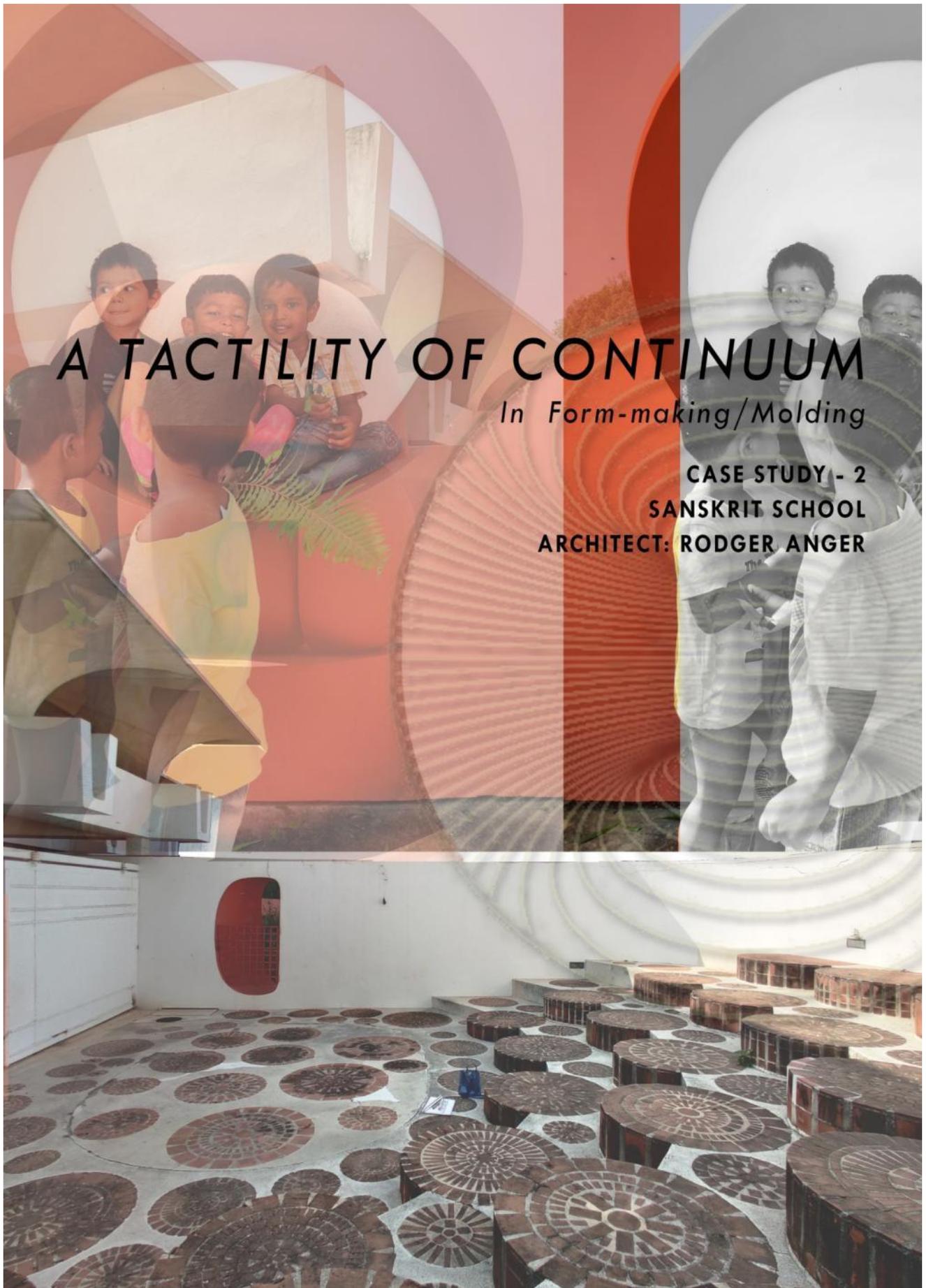


Figure 23: Theme 2\_ A Tactility of Continuum (Source\_Author)

### 5.1.1 Case Study 2: Sanskrit School, Rodger Anger

#### Theme – A Tactility of Continuum

The school is the earliest example of tactile architecture in India. With the beginning of modernist regime in India, Roger Anger, introduced a new tactile experience in the schools in southern India that inhibits an interactive and cutaneous holistic teaching and learning methods. Amongst a group of schools- The Transition school, Last schools I and II , After School, he did the Sanskrit school.

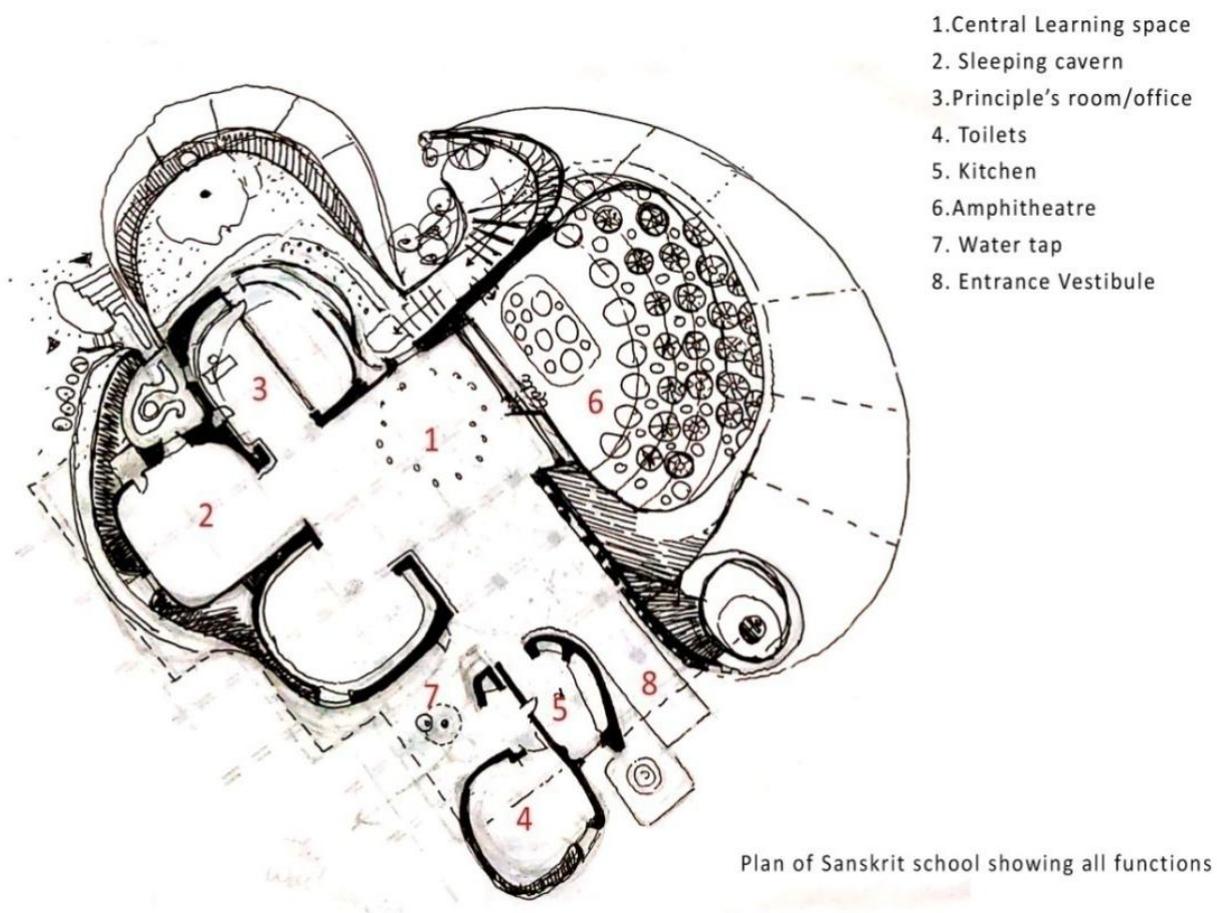


Figure 24: Plan Of Sanskrit School\_ Hand sketched To Scale sowing various spaces ( Source Author)

The principle of continuity, one of the gestalt principles of visual perception applies to tactile perception too. The tendency to see and perceive continuous patterns and elements , especially following a line or a curve is stronger than for those not following this. The Sanskrit school, is an example of this gestalt tactile principle, where all elements are weaved into a continuous form that 'touch' follows.

Details/Colors: As colors are also considered to create unconscious oral/tactile associations , all the elements. Theres use of dark sharon red walls on the exteriors, white in the interiors of the cavern as well as the amphithatre which are directly comparable.

In the Sanskrit school, the entire mass stems from the earth creating a swallowing water channel continuous around the entire body and moulds outwards to seem like hanging in the air. This sense of weight renders it the quality of a sculpture, playful in space. The sculptural mouldability of walls act like caverns for children. The truncations in the walls that shaped with the ground level serve as intimate interactive niches for children who fiabode in these fluid continuous forms.



**Figure 25:** Hapticity, Materiality in Form Anthropometrical details (Source Author)

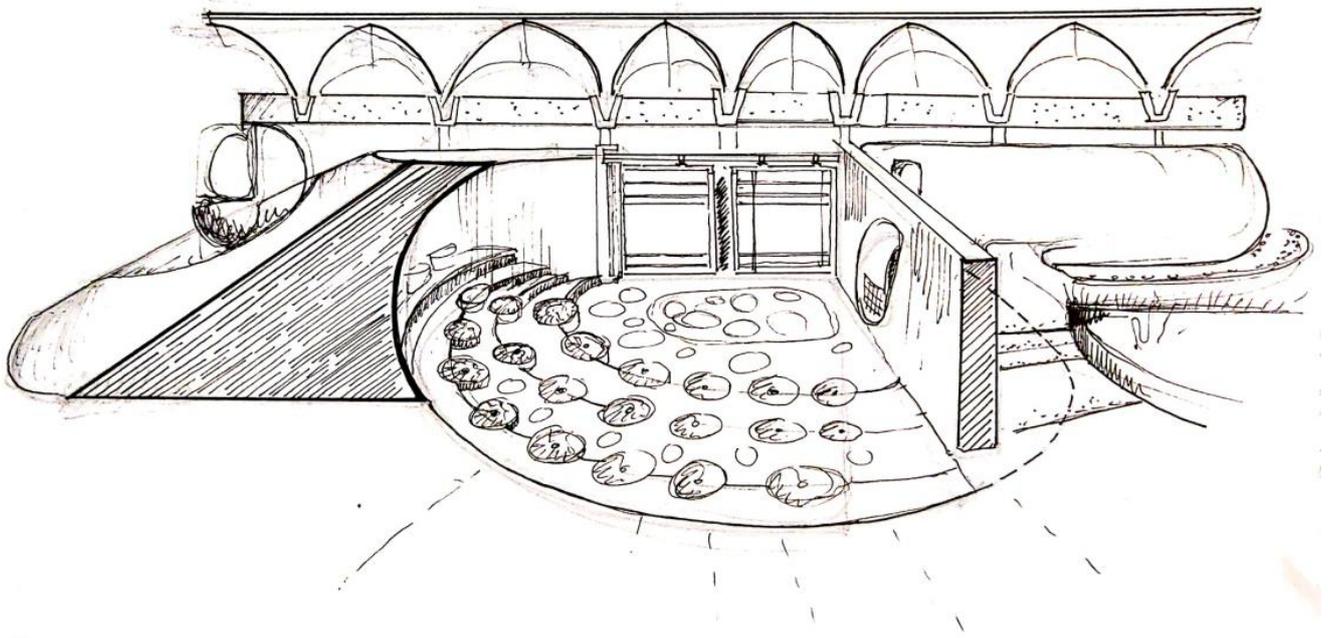


Figure 26: Section through the amphitheatre showing the scale of Roof and walls (Source\_Author)

CASE STUDY- 2 SANSKRIT SCHOOL, ROGER ANGER_COMPLETE ANALYSIS			
Aspects/ qualities	Co-Relation with visual param		Aspects/ qualities
Architectural parameters directing facility	Materiality	<p>a. all element formation in single surface that curves</p>	Natural Environments <p>a. connection to environment generates tactile inertia in children's play area</p>
	Gravity/Mass	<p>a. free-hanging forms- at lower heights- proximity to touch- becomes palpable to Touch</p>	Scale And Proportion <p>a. enclosures and openings per children's scale b. structure proportioned into 2: white roof and cavernous walls, create independent associations</p>
	Details/Colors	<p>a. Elements of everyday use, wash areas, lunch areas are detailed in colored tiles and stone patterns</p>	<p><b>Tactile Strategies used</b></p> <ol style="list-style-type: none"> <li>1. Sanskrit School Auroville 1971- almost like a cheese cake with various pieces curved moulded delicate finely cut coming out, scooped expressions , insertions and protrusions, expansions, carved expressions, monolith.</li> <li>2. Roger Anger works towards a kind of construction where form and material remain inseparable. He intends to create simple compositions and three- dimensional sculptural forms throughout the space and in structure that are striking.</li> <li>3. Architectural language characterized by sculptural plasticity and individualized, timeless modernity.</li> <li>4. Although aiming to create a continuity of Spatial experience, that continuity is molded into surface dimensionality also, making the school building uniquely tactile.- Continuity created between ceiling, curving walls, ground and furniture . Transparencies between various volumes in the interior contrasted by the opaqueness between the interior and the exteriors, integration of various elements constituting a single space result in a layered fragmentation of a larger mass that evokes tactile senses in a more corporeal sense.</li> </ol>
	Heterogenity		
	Polarities	<p>a. Polarities in the inner and the external spaces of school</p>	
Layering	<p>a. layering of roof and wall elements _tactility in space making</p>		
Levels of Intimacy	<p>B. curvilinear surfaces create a haptic plasticity, increasing intimacy</p>		

Table 2: Analysis of Visual Parameters\_Studio Naqshbandhi (Source: Author)

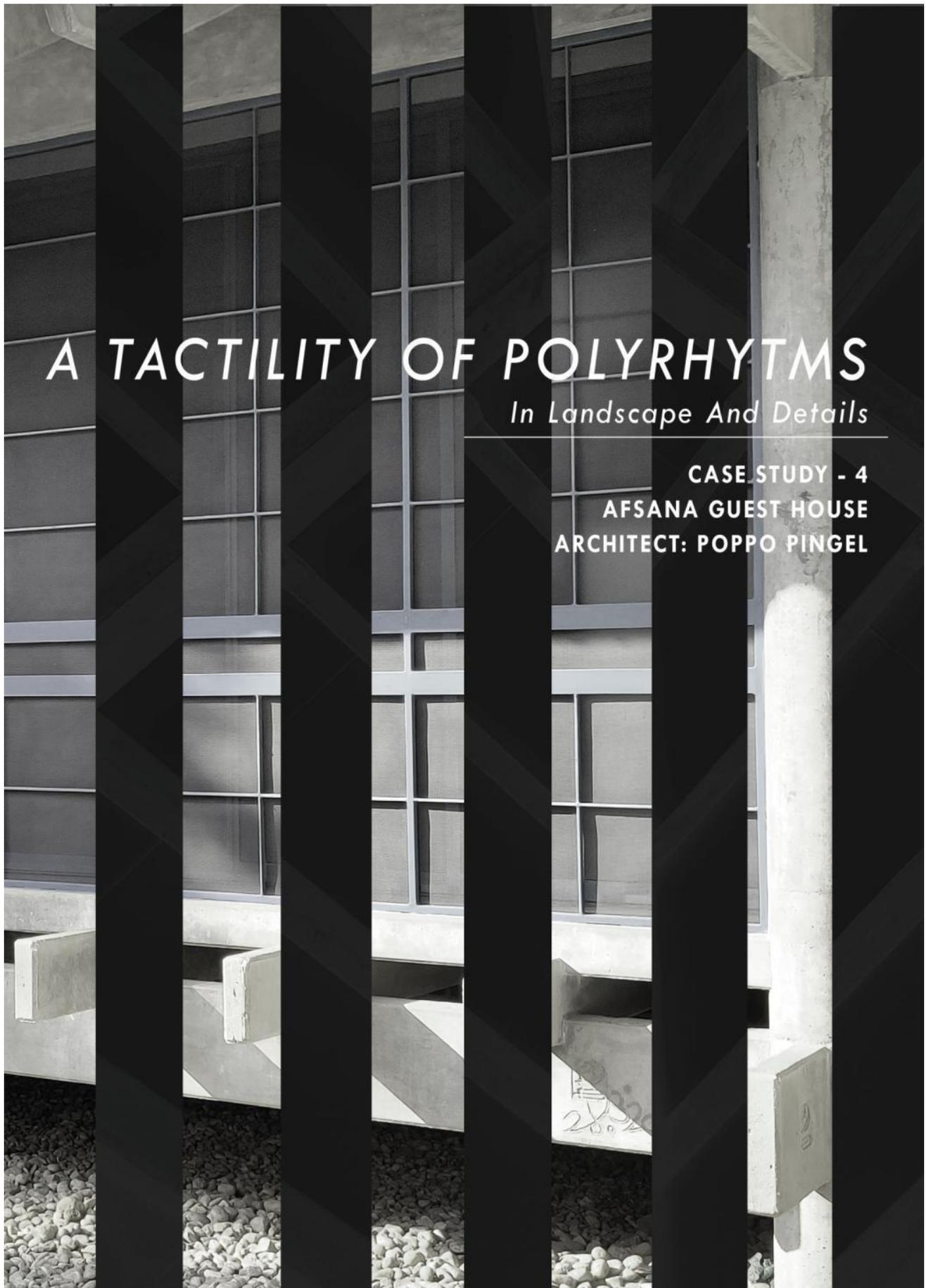


Figure 27: Theme 3\_ A Tactility of Polyrhythms (Source: Author)

### 5.1.2 Case Study 3:

#### Theme – A Tactility of Polyrhythms

A campus that evolved over an extended period of time and has at its core the challenge of embodying perceptible continuity and growth.

It presents the exploration of polarities, of static and dynamic modules at two ends of the creative spectrum vital to

For example: Poppo works on a co-relation between nature and architecture setting on one set of the rhythms that occur in the landscape. This rhythm is tuned to creating tension between exterior and interior and also gives a space that sets stage for perceptibility of the skin of architecture that he wants. Dynamic tuning of details of ridge beams and columns in concrete, in design of openings and of Sharon brick walls and setting impenetrable architectonic sense of tactility.

The second set of rhythms occurs when he moves into a more dynamic tuning of details of ridge beams and columns in concrete, in design of openings and of Sharon brick walls and setting impenetrable architectonic sense of tactility.

These static and dynamic rhythms result in the Rhythms require repetitions like flow requires movement. To use sharply contrasting or complementary Rhythms or both together decides the kind of music created.

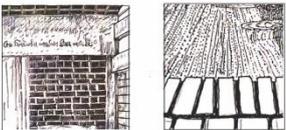
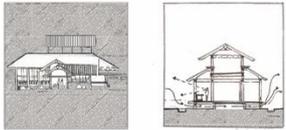
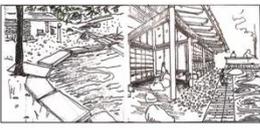
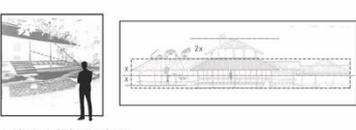
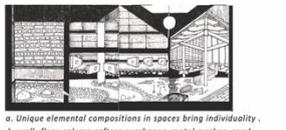
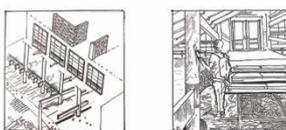
CASE STUDY 3: AFSANA GUEST HOUSE_ POPPO PINGEL_ COMPLETE ANALYSIS				
Aspects/ qualities	Co-Relation with visual param		Aspects/ qualities	
Architectural parameters directing tactility	Materiality	 <p>a. Materiality helps in developing the connection between two realms b. tactile elements discovered at special junctions - Pause after movement</p>	Natural Environments	 <p>a. connection to environment via movement generates tactile inertia</p>
	Gravity/Mass	 <p>a. free-hanging forms- elevated base plane- connecting views to exterior- tactile connection with nature and structure itself</p>	Polarities	 <p>a. creation of polar realms- Rock garden (zen) on south directed via movement towards water pond on east .</p>
	Details/Colors	 <p>a. Movement across different spaces reveal different textures of concrete (both rough and smooth); doors, junctions and floor that are rendered unique tactility.</p>	Scale and Proportion	 <p>a. alternate rhythm on columns</p>
	Heterogeneity	 <p>a. Unique elemental compositions in spaces bring individuality . b. wall- floor-column-rafters-overhangs- metal meshes- sand stones- pebbles- brick compliment each other</p>	Tactile Strategies used	<ol style="list-style-type: none"> <li>1. Independently treating each element.</li> <li>2. Detailing and shaping all elements in a unique way.</li> <li>3. Working intensively on material compatibility, on what meets what and where.</li> <li>4. Transcendence and embodiment achieved through movement that directs one.</li> <li>5. The architect is driven by naïve curiosity and insatiable longing. For him, optimization of traditional knowledge and working out an architecture between intuition and craftsmanship, that triggers sensorial experiences.</li> <li>6. The comprehensible acts of tactility Were done through Materiality Heterogeneity Attention to detail Scale and proportion</li> </ol>
	Layering	 <p>a. layering of elements and textures in surfaces- Juxtaposed over layers of organization in plan</p>		
Levels of Intimacy				

Table 3: Analysis of Tactile Parameters\_Afsana Guest House (Source: Author)

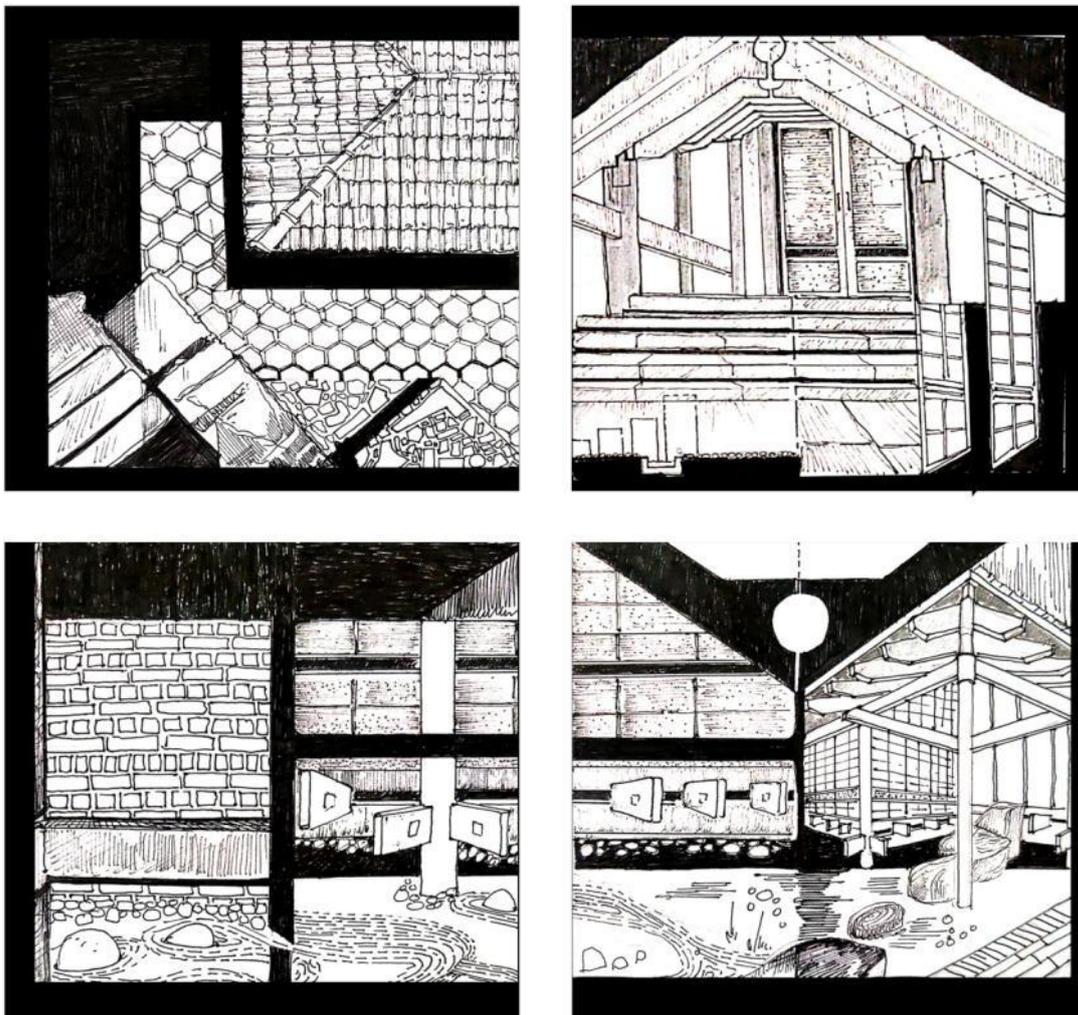


Figure 28: Polyrhythms in Tactility-Afsana Guest House (Source: Author)

STATIC	DYNAMIIC	RHYTHM
<p>1.South end rendered with small rock and sand garden with geometric lines</p>	<p>1. North end rises from pond which is also a rainwater catchment basin, with organic free flow edge</p>	<p>Rhythm- 1 (in landscape)</p> <p><b>The rhythm of designed polarity</b> in landscape, where one relates to transcendence , quiet contemplation , other translates active stimuli.</p>
<p>2.The adjoining canyon formed by years of erosion is a static juncture that is treated with definitive control in design to incorporate dynamic functionalism for the site.</p>	<p>2. Overflow due to heavy downpour is channelized into canyon via play of water cascades and rocks checking further erosion- forming an organic natural setting that persuades harmony and sense of unison in the environment.</p>	<p>Rhythm- 2 (in landscape)</p> <p><b>The rhythm of existing topography</b></p> <p>For the guest house is located at a low point of the west end of the Auroville plateau adjoining a canyon . Merging of the boundary edges, maintenance of contours and response to canyon have been in concatenated rhythm.</p>
<p>3.Pathways that have clearly defined edges are static .</p>	<p>3. Textures that change constantly within these pathways through chice and use of material along with shape and size, gradient and direction followed in by varying topography of site.</p>	<p>Rhythm- 3 (in landscape)</p> <p><b>The 'ground'reality</b></p> <p>The landscape around, in variable style and attitude influences kinesthetic, changing ground, levels with materials while also the perceptible scale of building.</p>
<p>4.The elevated floors on cantilevered beams, also to counter the rising damp and termite infestation, set a sense of weightlessness.</p>	<p>4. The concrete rafters and floor beams that weave these elevated floor system , mirroring the roof in conjoint precast elements , come to the fore exposing the structural skeleton supported on exposed columns</p>	<p>Rhythm- 4 (in landscape)</p> <p><b>The architectonic message</b></p> <p>This rhythmic repetition of the web of concrete elements that characterize the tensile and compressive strength of wood (not used) ,</p>

**Table 3:** Static and Dynamic Rhythms\_Afsana Guest House (Source: Author)

**Heterogeneity:** There are multiple palettes of materials used for pathways and flooring with a carnival of materials oriented to lead into movement towards pause areas and guest houses. For ex- The pathways are done in three, the rough foreground of the guest houses is done in hexagonal paving blocks, broken rustic stone (kaleji pattern) for pathways leading to guest houses, the local cuboidal stone blocks (farshi) meshed with terracotta roof tiles and pebbles in outdoor pathways and grey kadappa and granite for closed corridors and internal flooring. Light falls on these internal passages and outdoor pathways differently after being transposed through the overhangs and columns. The play of light and landscape in this unique way here imposes a tactile rhythm that directs movement. Similarly, concrete has been explored with a bit of color such as white for the top circle on the precast roof beam (ridge detail). Blue and yellow tiles for face of the toilets to bring contrast and other changes in surface expressions have been brought about.



**Figure 29:** Heterogeneity- Afsana Guest House (Source: Author)

**Details:** The Persian and English rendering of Afsana Guest House on vertical granite posts and symbols of peace and harmony on concrete columns and bands that are arranged in 'trabeate' style reflect meaning and simplicity that touches one's perception in realm of craftsmanship.

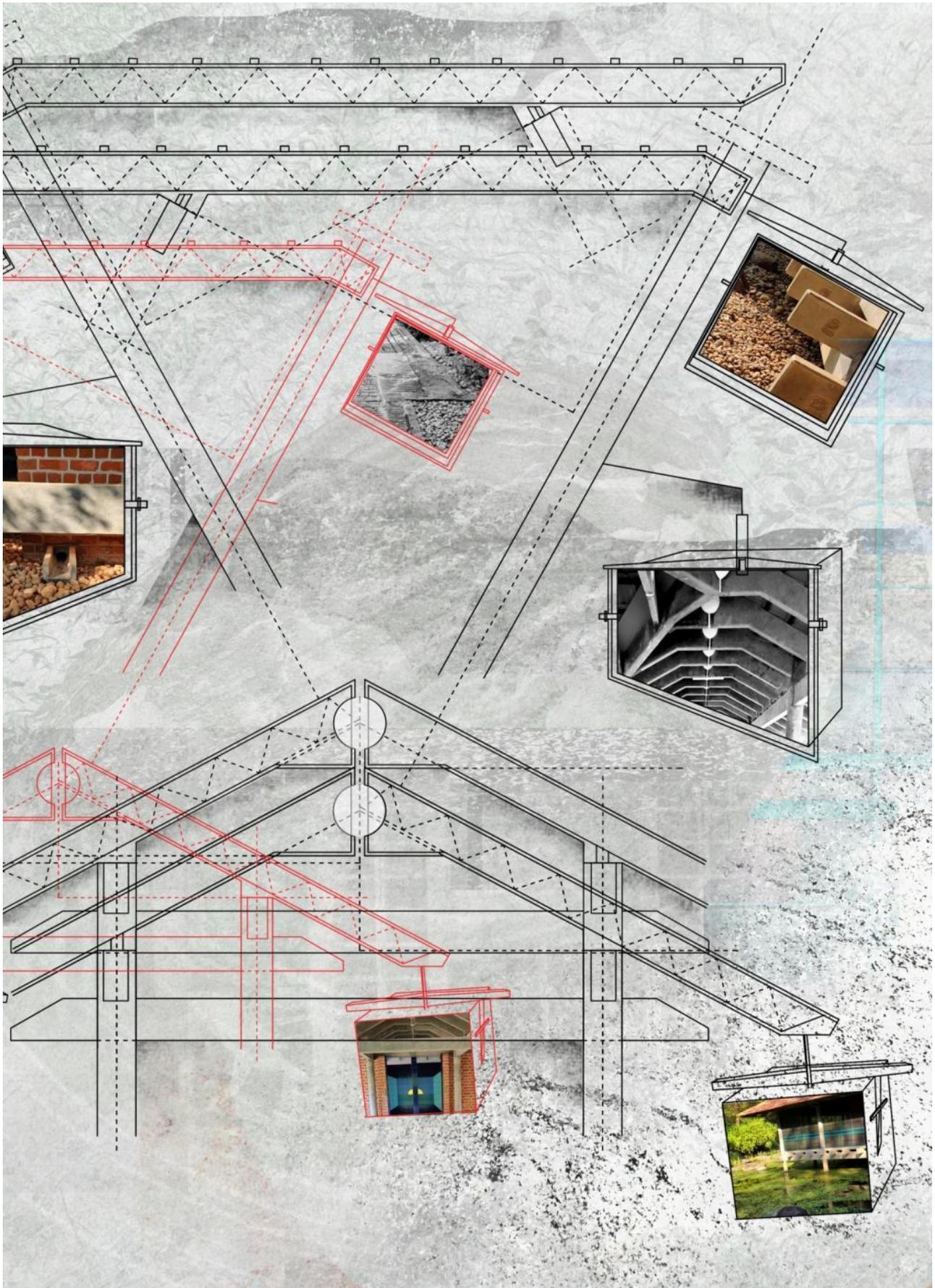


Figure 30: Details- Afsana Guest House (Source: Author)



Figure 31: Theme 4\_ The Layered Tactility (Source\_Author)

### 5.1.3 Case Study 4:

#### Theme – A Layered Tactility

**Dustudio is a part of the Swayam Community-** A high density low rise gated mixed-community residential community. The studio is the sample of this experiment (cluster of units) by the architects focusing on creating a living and working culture in a sustainable and ecologically sound environment. **All traditional techniques of guna tube vault, oxide flooring, pottery craft have been implemented here creating an eccentric tactile jargon (from perceptual and conceptual layers) that can become one of the prime examples of a layered tactility.**

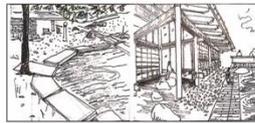
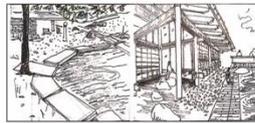
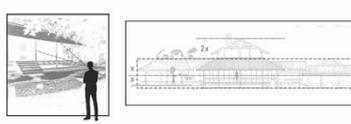
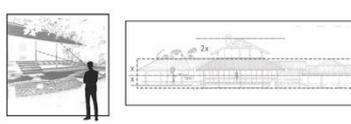
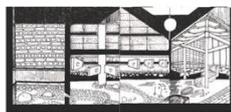
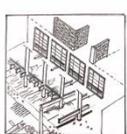
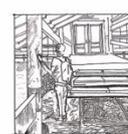
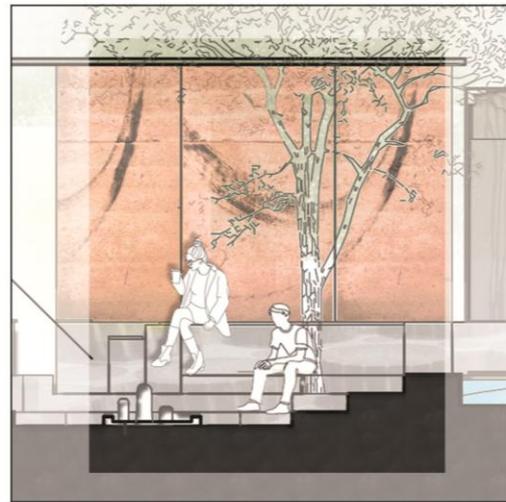
CASE STUDY 3: AFSANA GUEST HOUSE_ POPPO PINGEL _ COMPLETE ANALYSIS			
Aspects/ qualities	Co-Relation with visual param		Aspects/ qualities
Architectural parameters directing tactility Materiality Gravity/Mass Details/Colors Heterogenity Layering Levels of Intimacy	  <p>a. Materiality helps in developing the connection between two realms b. tactile elements discovered at special junctions - Pause after movement</p>	Natural Environments  <p>a. connection to environment via movement generates tactile inertia</p>	Natural Environments  <p>a. connection to environment via movement generates tactile inertia</p>
	  <p>a. free-hanging forms- elevated base plane- connecting views to exterior- bodily connection with nature and structure itself</p>	Polarities  <p>a. creation of polar realms- Rock garden (sen) on south directed via movement towards water pond on east .</p>	Polarities  <p>a. creation of polar realms- Rock garden (sen) on south directed via movement towards water pond on east .</p>
	  <p>a. Movement across different spaces reveal different textures of concrete (both rough and smooth); doors , junctions and floor, that are rendered unique tactility.</p>	Scale and Proportion  <p>a. alternate rhythm on columns</p>	Scale and Proportion  <p>a. alternate rhythm on columns</p>
	 <p>a. Unique elemental compositions in spaces bring individuality . b- wall -floor-column-rafters-overhangs- metal meshes- sand stones- pebbles- brick compliment each other</p>	Tactile Strategies used <ol style="list-style-type: none"> <li>1. Independently treating each element.</li> <li>2. Detailing and shaping all elements in a unique way.</li> <li>3. Working intensively on material compatibility, on what meets what and where.</li> <li>4. Transcendence and embodiment achieved through movement that directs one.</li> <li>5. The architect is driven by naïve curiosity and insatiable longing. For him, optimization of traditional knowledge and working out an architecture between intuition and craftsmanship, that triggers sensorial experiences.</li> <li>6. The comprehensible acts of tactility Were done through Materiality Heterogenity Attention to detail Scale and proportion</li> </ol>	Tactile Strategies used <ol style="list-style-type: none"> <li>1. Independently treating each element.</li> <li>2. Detailing and shaping all elements in a unique way.</li> <li>3. Working intensively on material compatibility, on what meets what and where.</li> <li>4. Transcendence and embodiment achieved through movement that directs one.</li> <li>5. The architect is driven by naïve curiosity and insatiable longing. For him, optimization of traditional knowledge and working out an architecture between intuition and craftsmanship, that triggers sensorial experiences.</li> <li>6. The comprehensible acts of tactility Were done through Materiality Heterogenity Attention to detail Scale and proportion</li> </ol>
	  <p>a. layering of elements and textures in surfaces- juxtaposed over layers of organization in plan</p>		

Table 5: Analysis of Tactile Parameters\_Dustudio (Source: Author)



*Layer 1: Elements Of artwork and nature*  
*Detail 1: Oxide stanchions- hues of scarlet red, blue and black symbols*



*Layer 2: Layer of temporality*  
*Detail 2: The kund offers tiered oxide seating- pebble work and cool rammed earth walls with black symbols painted upon*



*Layer 3: Symbolism and objecthood*  
*Detail 4 : Rammed earth and wooden work*



*Layer 4: Tectonic composition*  
*iron detailing- circular patterns on brick and in railing*  
*Layers-Perceptual (Visual)*



**Figure 32:** A. Layered Details B. Fragmentation in Surface Articulation (Source: Author)



**Figure 33** : The close knit connection with nature and use of natural materials develops a stimulating intimacy with the surroundings contributing to tactile associations.

## 6.0 Inferences

**Studio Naqshbandhi**, in its full discernment is a rather generous tactile endeavor. At the core of the studio, lies materiality that drives this visually simple premise, dynamism. While comparing the visual and the tactile here, tactile connections seem to supersede visual connections to the ‘place’.

Reuse Of waste , creation of patterns or details , unique element formation all come to the fore for strengthening materiality. This materiality is only perceived by the near view via movement as one walks towards the studio. Spatial Reception weaves the narrative for a haptic sensibility here.

There is less variation in Form and the Studio engages in a axial organization. Howsoever, perceptually the experience of the humane scale of brick vault in the workspace, merging with the concrete that reaches the floor translates a sense of inertia.

The visual Parameters Form and Order are not perceived via movement also – The form of the vaults covered in white China Mosaic remains unfocused as the landscape below is absorbing; order is only for arrangement and does not relate to how the space is perceptually discovered.

Anthropometrically, all elements like the Bay window and concrete stations at pauses remain accessible to human touch. Light from the vault enhances the notion of textures in the space, even of the polished concrete or smooth lime shell white walls.

Details and Colors are a driving force for the experience of Tactility. The tactile supersedes the visual In this studio- thus architectural language of the place is ‘tactile’- cohering to the theme –“The Language Of Tactility”.

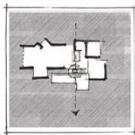
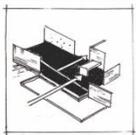
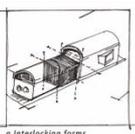
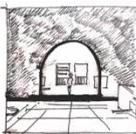
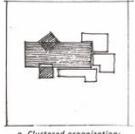
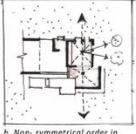
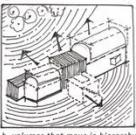
CASE STUDY 1: STUDIO NAQSHBANDI _ MONA PINGEL _ COMPLETE ANALYSIS			
Aspects/ qualities	Co-Relation with visual param		Tactile Experiences
Approach/ Movement 	 <p>a. stitching two entities</p>	 <p>b. movement and pause-creation of special elements</p>	<p>1. The idea of tactility is evoked in surface realities as well as in spatial scenarios.</p> <p>2. Easily perceived tactile elements appeal to the tactile sense of memory capacity and concentration.</p> <p>3. There is an enriched quality of ‘felt’ nature , via tactile surfaces that enable users to sense changes, strive to blur distance between perceived reality and more intangible elements of subtlety.</p> <p>4. There is a sense of mystique in some parts paralleling sense of restful contemplation in others. The balance of tactility and optically guides one.</p> <p>5. The kinesthetic qualities of the path appeals to the haptic senses of skin and muscle.</p> <p>Here, the floor speaks to the sole of the foot in the language of the deepest of senses- The sense of touch.</p>
Form 	 <p>a. Interlocking forms</p>	 <p>b. movement and pause-creation of special elements</p>	
Order/ Symmetry 	 <p>a. Clustered organization, Interlocking forms</p>	 <p>b. Non-symmetrical order in spaces helps create heterogeneity</p>	
Anthropometry 	 <p>a. close proximity</p>	 <p>b. surfaces in immediate contact</p>	
Light And Shadows 	 <p>a. light from vault enhances surface textures and elements</p>	 <p>b. volumes that move in hierarchy opening up connections to the surroundings</p>	

Table 6: Analysis of Visual Parameters - Studio Naqshbandhi (Source: Author)

**Sanskrit School** is a corollary of tactility in Form. The sculptural molding of the physical form, so omnipresent in its far as well as near appearances that it solely attracts the observer.

The visual layer of 'Form' is the tactile layer itself.

The visual and the tactile layers coincide in the school or rather The tactile drives the visual.

The Sanskrit schools omits to other layers of tactility like Heterogenity and Materiality.

Rather than working on elemental formation, all elements are worked out in two dividends- The roof and the walls.

Scale Of openings and other objects, all in immediate touch of the children are designed as per their anthropometry. This tactile attribute also aids visual walls are proportioned lower and separated from the independent roof form that is to be perceived from the outside only.

Light that is brought in intermittently reflects the smooth 'daanidar' floors.

**CASE STUDY- 2 SANSKRIT SCHOOL, ROGER ANGER\_COMPLETE ANALYSIS**

Aspects/ qualities	Co-Relation with visual param		Tactile Experiences
<b>Approach/ Movement</b> 	<p>a. stitching two entities</p>	<p>b. movement and pause-creation of special elements.</p>	<p>1. With this idea of spatial continuity, the architect succeeds in evoking a tactility through form</p> <p>2. There's a tactile feeling of enjoyment as the playspaces and all other elements that children are in contact with like the walls, toilets, watertaps, floors, render a differential experience, molded to suit their comfort.</p> <p>3. The atmosphere of the school becomes vibrant and easy flowing.</p> <p>4. There is a harmonious relationship established with the surroundings and the universal law of gravity is made apparent that roots the children to the place and provide secure feelings.</p>
<b>Form</b> 	<p>a. interlocking forms</p>		
<b>Order/ Symmetry</b> 	<p>a. Clustered organization; Interlocking forms</p>	<p>b. Non- symmetrical order in spaces helps create heterogeneity</p>	
<b>Anthropometry</b> 	<p>a. close proximity</p>	<p>b. surfaces in immediate contact</p>	
<b>Light And Shadows</b> 	<p>a. light from vault enhances surface textures and elements</p>		
<b>Volumes</b> 			

Architectural parameters directing Vision

**Table 7:** Analysis of Visual Parameters - Sanskrit School (Source: Author)

When a comparison is drawn **between the Visual and tactile, both dividends are independently rooted not co-relating to each other in Afsana**. The landscape in Afsana Guest House is the core of tactile perceptualities. Though axial movement towards each guest house is directed, each space is oriented towards the central dining space of the guest house. Movement is freely allowed between the guest houses and traces tactility in various paths that sprawl the campus that is free to explore.

The polarities- Rock Garden and water pond are additions to the meditative inertia of the place.

The strict symmetry of the plan and the elevation and Rhythmic repetition allow one to focus in the immediate haptic elements rather than deviate attention everywhere. Symbolism and Gravity enhance materiality that is expressed in the plastic concrete elemental formation. The visual and the haptic attain parallel rhythmicity. It is an apt example of tactility without touching as all the immaterial entities- space-structure, movement- water –wind generate materiality before the materials do.

**CASE STUDY 3: AFSANA GUEST HOUSE\_ POPPO PINGEL \_ COMPLETE ANALYSIS**

Aspects/ qualities	Co-Relation with visual param		Tactile Experiences
<b>Approach/ Movement</b> 		 a. stitching two entities b. movement along a linear axis and a circular axis- each exploring polar realms and tactile details	<p><i>What it contributes to the atmosphere of the place?</i></p> <ol style="list-style-type: none"> <li>1. The atmosphere of the place is rendered special tactile embodiment and sensory realism.</li> <li>2. Quite and contemplative, cool and meditative, all kinds of relaxing senses are triggered here.</li> <li>3. There is an enriched quality of 'felt' nature , the connectedness and transitions are generating tactility through instances of movement and apt pauses.</li> <li>4. There is a sense of inertia, that wants one to hold on to the place, for here, tactile sensations are accompanied by olfactory and hearing sensations.</li> <li>5. The guest house, guides one through the campus which is the womb and architecture offers tactile associations.</li> </ol>
<b>Form</b> 		 a. Interlocking forms b. Independent form- interlocking spaces  c. wooden-like forms of concrete elements - Materiality	
<b>Order/ Symmetry</b>  <b>Geometry</b>		 a. Radial organization; guides, engages relativity b. symmetrical order in spaces and axial approach layered over in a unique rhythm  c. Geometry - appeals to man's visual sense layered by heterogeneous tactile details of the facade	
<b>Anthropometry</b> 		a. close proximity - Accessibility	
<b>Light And Shadows</b>  <b>Volumes</b> 		a. play of light and shadow cast by overhanging roof on concrete and metal elements b. enveloping yet transparent volumes- developed connection with surroundings	

**Table 8:** Analysis of Visual Parameters\_ Afsana Guest House (Source: Author)

**Dustudio**, however, indulges in a visual hapticity. Tactile appreciation of Surfaces and volumes- params of visual design is applied. An axially ordered movement ties Materiality to tightly organized volumes. The play of interior to exterior however becomes the core of the tactile sensations of the place. The polarities are created by strategies of space making .

Objecthood is captured in essential spaces that make the connections stronger to elemental formations. Hence, Visual parameters are guided by tactile communication, contrary to what happens in Studio Naqshbandhi. Each transition is resorted to a view of that surface first. Fragmented volumes and surfaces are juxtaposed with light and volume to strengthen materiality.

Visual and Tactile Layers completely overlap to create a binary of sensual experience- Tactility here abides by Kenneth’s complete description of Tactile Functionalism.

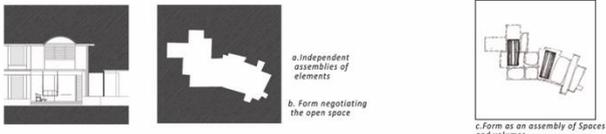
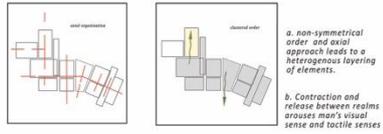
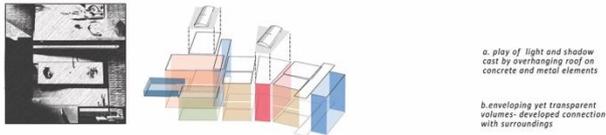
CASE STUDY 4: DUSTUDIO_DHARMESH JADEJA _ COMPLETE ANALYSIS		
Aspects/ qualities	Co-Relation with visual param	Tactile Experiences
<b>Approach/ Movement</b>   <p>a. Ascending the transitions- changing realms</p>		<p><i>What it contributes to the atmosphere of the place?</i></p> <ol style="list-style-type: none"> <li><i>1. The engaging atmosphere of the place results form the feel of a locally crafted expression of spaces and myriad range of materials explored.</i></li> <li><i>2. Quite and contemplative, cool and meditative, playful and enjoyable, all kinds of senses are triggered by consciously designed polarities.</i></li> <li><i>3. There is an enriched quality of 'tectonic' nature due to surface expressions, while the connectedness and transitions are generating tactility through instances of movement and apt pauses.</i></li> <li><i>4. There is a sense of vitality, from the diversity of crafts in one place that endure tactile sensations.</i></li> <li><i>5. The Volumes and play of Light, become indispensable to the experience of textured surfaces Of Rammed Earth , Brick and Oxide floors</i></li> </ol>
<b>Form</b>   <p>a. Independent assemblies of elements                      b. Form negotiating the open space                      c. Form as an assembly of Spaces and volumes</p>		
<b>Order/ Symmetry</b>   <p>a. non-symmetrical order and axial approach leads to a heterogenous layering of elements.                      b. Contraction and release between realms arouses man's visual sense and tactile senses</p>		
<b>Anthropometry</b>   <p>a. close proximity - Accessibility</p>		
<b>Light And Shadows</b>  <b>Volumes</b>   <p>a. play of light and shadow cast by overhanging roof on concrete and metal elements                      b. enveloping yet transparent volumes- developed connection with surroundings</p>		

Table 9: Analysis of Visual Parameters Studio Naqshbandhi (Source: Author)

## 7. Summing Up:

In regard to the analysis and inferences, the research has lifted an apostrophe of tactile awareness to the accord of tactility in architecture. We follow from the inferences of the various case studies that In Studio Naqshbandhi and Sanskrit School, the visual results from the tactile, while in the Afsana Guest house, both occur simultaneously yet independently, in Dustudio, the ‘tactile’ results from the Visual. Hence, whilst the fusion of Tactile and Visual occurs, both remain interdependent and driven by each other. The theory of Comprehensive Tactility as followed from the thesis holds true but with an inclusion that- Architectural design should be a balancing act between visual principles and tactile sensitiveness.

### 7.1.1 The Way Ahead

Much now as the world is at the verge of losing the capabilities of touch, moving slowly into a virtual reality, supposedly abandoning existential realities, a strengthening sense of materiality and the sheer nearness to tactile surfaces can offer a stimulating experiences. Objecthood is captured in essential spaces that make the connections stronger to elemental formations. Hence, Visual parameters are guided by tactile communication, contrary to what happens in Studio Naqshbandhi. Each transition is resorted to a view of that surface first. Fragmented volumes and surfaces are juxtaposed with light and volume to strengthen materiality.

Visual and Tactile Layers completely overlap to create a binary of sensual experience- Tactility here abides by Kenneth’s complete description of Tactile Functionalism.

The role of architecture in directing tactility in spaces is indispensable of the following concerns that could be and should be adhered to-

### 7.1.2 A Conscious Materiality

Instead of focusing on visual paradigms, architectural design involves taking more conscious design decisions like the spatial reception of materials.

### 7.1.3 A Sensitivity Towards Environment

As Hugo Kuekelhaus points out, bodily interaction is the core of our spiritual selves, touching the world with our eye still remains important. With the physical distancing now, the debate between visual and tactile loses to vision partially. But what stays is the core of the concept of tactility- Senses and sensibilities.

### 7.1.4 Tactile Appreciations

A multitude of ideas of the various tactile aspects in Architecture can strike that need to be guided by visual parameters but not solely depend on them.

#### ***Spirit and Matter:***

*"India has or rather had the knowledge of the Spirit, but she neglected matter and suffered for it. The west has the knowledge of matter but rejected the Spirit and suffers badly for it."-The Mother*

The very incarnation of this idea of 'spirit' in 'matter' is 'tactility' in 'architecture'. With the spirit of Tactility, 'Architecture' resonates human embodiment in the physical environment. This resonance, therefore, needs to be profound and intelligent, intuitive yet logical, for only that is when it would achieve a meaningful manifestation.

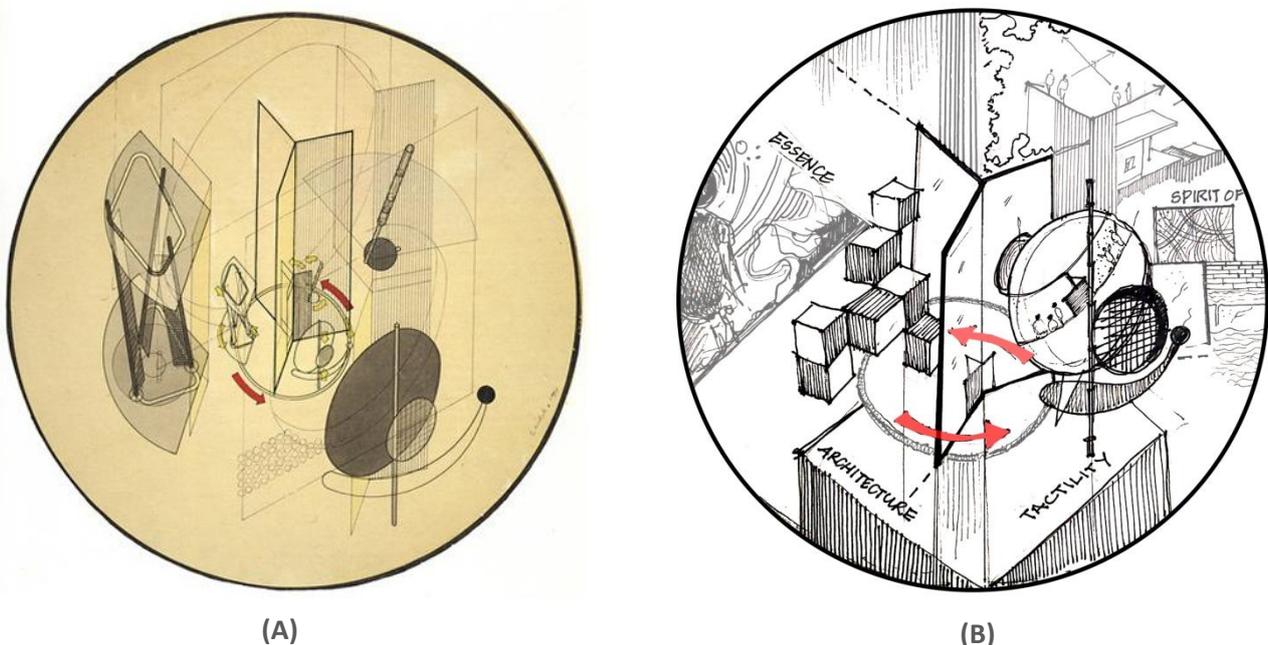


Figure 35: A. (Dataisnature, 2015) László Moholy-Nagy's Light Space modular diagram\_

B. Tactile dynamism in Architecture.

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### **Illustrations**

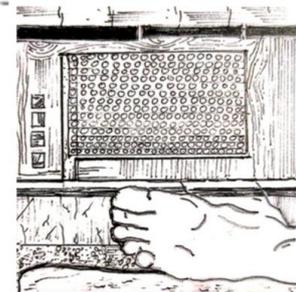
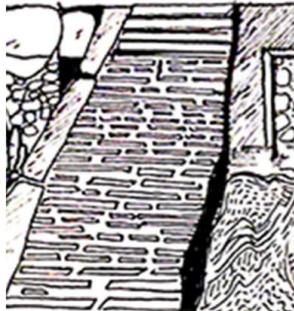
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