THE TOUCH

HAPTICITY AND MATERIAL PRESENCE IN ARCHITECTURAL EXPERIENCE

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Figure 1. Vecaza, *“Fingerprint”,* Pinterest. Accessed August 3, 2025.

KEY WORDS

Touch
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Materiality
Brick
Sensory Design
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Design sensoriale
Atmosfera
Memoria
Emozioni

ABSTRACT

Architecture is inherently a multisensory experience, activating the entire spectrum of perceptual channels. The field, nonetheless, has traditionally favored vision, with the other forms of perception often being undervalued.

This thesis focuses on one of those senses: touch, asking how material engagement can mediate a range of emotions and cognitive reactions that is specific to this sense, and can’t be replaced by any other. Brick is selected as the main material case study due to its expressiveness and cultural significance, making it an effective medium through which to explore a subset of the tactile experience.

Through a series of case studies, the research explores how tactile materiality supports the creation of spatial memory and atmosphere.

L’architettura è intrinsecamente un’esperienza multisensoriale, attivando l’intero spettro dei canali percettivi. Il campo, tuttavia, ha tradizionalmente favorito la visione, con le altre forme di percezione spesso sottovalutate.

Questa tesi si concentra su uno di quei sensi: il tatto, chiedendosi come l’impegno materiale possa mediare una gamma di emozioni e reazioni cognitive che è specifica di questo senso, e non può essere sostituita da nessun altro. Il mattone è selezionato come principale caso di studio materiale a causa della sua espressività e significato culturale, rendendolo un mezzo efficace attraverso cui esplorare un sottoinsieme dell’esperienza tattile.

Attraverso una serie di casi di studio, la ricerca esplora come la materialità tattile supporti la creazione della memoria spaziale e dell’atmosfera.

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INTRODUCTION

Architecture is fundamentally a multisensory, bodily experience, involving not the visual form alone, but auditory, tactile, olfactory, and even gustatory.

The thesis begins from this premise. It discusses how built space interacts with the body in more ways than through just visual forms, but specifically, through touch. Rather than treating material as merely structural or decorative, the thesis explores how texture, weight, and atmosphere contribute to our spatial understanding and trigger unique emotional responses.

This study emphasizes the significance of tactility and its expression within architecture through brickwork in order to highlight the importance and potential of touch within the architectural framework. The goal is to contribute to the existing discussion on sensory experience in architecture, one that promotes intimacy and physical presence beyond visual spectacle.

BACKGROUND AND MOTIVATION

The majority of viewers evaluate spaces based on their appearance, and rightfully so. While visual, auditory, and olfactory senses act subconsciously and are engaged without the user's cognitive participation, touch requires intent and forethought. Therefore, for most of us, tactile perception is far more overlooked in favor of visuals.

This bias is further proliferated by representational media and design culture, reducing architecture to two-dimensional images for simple consumption. As architecture ever more embraces digitization and an image-oriented direction, the reduction in material presence and sensorial richness increasingly resonates. In the era of remote interactions, sterile environments, and fast-track construction technologies, restoring harmony with the body's haptic mind has the potential to reinstate intimacy and truthfulness to the architectural experience.

This thesis is born out of an interest in these often overlooked dimensions of architectural experience. Brick, as a material with profound cultural significance and a unique tactile vocabulary, sparks special interest. By emphasizing the sense of touch, this thesis hopes to call attention to architecture's ability to engage the entire sensorium and restore its human-centered grounds.

BRESEARCH HYPOTHESIS AND METHODOLOGY

The central hypothesis of this work is that incorporating touch into architecture through material surfaces like brick can enrich the experience of viewers in unique ways. By stimulating the sense of touch, a very intimate and a curiosity-driven primal sense, viewers can feel more connected with architecture, create deeper and more persistent associations with the structure, and exit with a stronger, more lasting impression of the architectural piece.

This work contributes to an emerging discussion on embodied cognition and sensory architecture, and presents an alternative model that seeks to give precedence to material presence, and have an impact on how meaningful environments are built.

To pursue this goal, the research adopts an interdisciplinary and phenomenological approach, integrating architectural theory with perspectives from sensory studies, material culture, and embodied cognition, revealing how materials and spatial experiences shape perception. The methodology is as follows:

Phase one of this thesis establishes the foundation through architectural texts that explore the nature of perception, building up the idea that architecture is not merely observed through the eyes but experienced with the whole body, with the skin acting as a boundary and medium between self and space.

Phase two turns to the materiality of brick as a tactile medium to provide a specific example of a material that can provide architectural narrative through touch. Brick is chosen for its strong textural character, such as roughness, pattern, and surface articulation. These qualities are examined in relation to how they affect spatial perception and emotional atmosphere.

Phase three is composed of architectural case studies in which brick serves as a dominant element. Selected for their ability to demonstrate diverse tactile strategies and material treatments across spatial and cultural contexts, these examples also highlight how brick conveys local identity and cultural expression, rooted in regional traditions and craftsmanship.

STRUCTURE

This thesis comprises six chapters, progressing from theoretical framework to material analysis and case study evaluation.

Chapter 1, presented above, addresses the topic, defines the research question, formulates the hypothesis, and outlines the methodological approach.

Chapter 2 explores the contribution of multisensory perception to architecture, highlighting the importance of further incorporating senses other than vision into the sensory experience.

Chapter 3 addresses the tactile sense as mode of spatial knowing, and its relation to body, memory, and feeling.

Chapter 4 addresses the materiality of brick in relation to its tactility and cultural significance in both the past and present.

Chapter 5 addresses a series of case studies where brick is the central architectural feature, demonstrating how its tactility and materiality shape spatial experience.

Chapter 6 integrates the findings, looks at the implications for architectural practice, and recommends directions for future research.

1

ARCHITECTURE AS A MULTISENSORY EXPERIENCE

Psychologist James J. Gibson described perception as active and ecological, shaped by motion and context.[1] We accumulate spatial information as we move, not just from the traditional five senses, but also from systems such as proprioception and balance that enable us to move through, orient ourselves in, and inhabit architecture.

This chapter examines the sensory foundations of architectural perception from three interlinked perspectives. First, it considers the physiological and cognitive processes through which sensory data are translated into perception. Second, through the examples, it investigates how architecture engages each sense, including those of balance and movement. Finally, it addresses the role of sensory absence, its use and the impact it has on our connection to the built world.

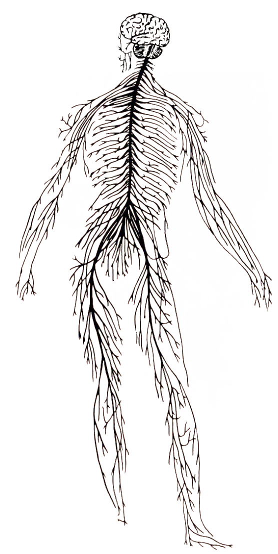

Figure 2. human nervous system. Frank J. McGuigan, *Biological Basis of Behavior: A program.* (1963).

[1] James J. Gibson, *The Senses Considered as Perceptual Systems*, (Boston: Houghton Mifflin, 1966).

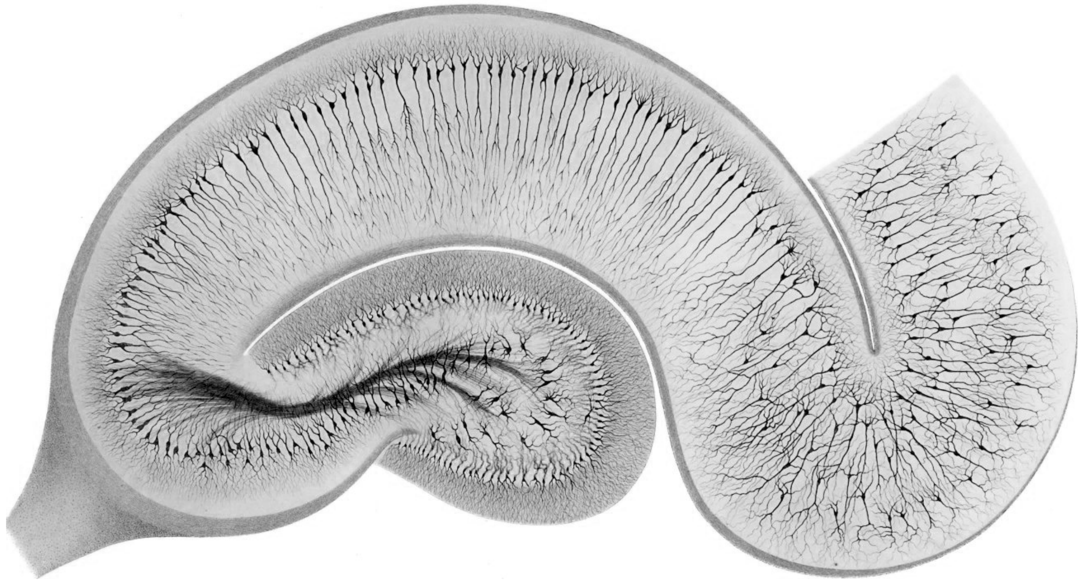

Figure 3. Camillo Golgi, *"Principal cells of the hippocampus."* (1894). Public Domain Review. Accessed August 5, 2025.

1.1 SENSORY PROCESS

To understand how the senses shape our experience of the built environment, it is useful to first examine the nature of sensation and its operation within the human body and mind.

Sensation refers to the physiological process by which the body receives external stimuli, such as light, sound, texture, or scent, through specialized sensory receptors. The receptors translate the physical energy of the stimulus into electrochemical signals, or a process called transduction, to enable neural pathways to convey this information to the brain.[2] When these signals arrive at the brain, they are not interpreted in isolation but in combination with cognition, memory, and emotional experience.

It is this synthesis that leads to perception - the mental representation and meaning we give to a sensory event. As psychologist Stephen E. Palmer describes it, perception is "not simply a direct reflection of the stimulus input but the result of interpretation, shaped by prior knowledge and context."[3] Thus, the sensory process is not linear or passive; it is dynamic, embodied, and deeply subjective.

One of the regions that is central to this process is the hippocampus (see figure 2), a seahorse-shaped area in the brain that is crucial to spatial navigation and the creation of long-term memories. Research by O'Keefe and Nadel (1978) demonstrated that the same areas that construct mental maps of spatial environments also store autobiographical memory.[4] This suggests that our physical experience of a space is inseparable from emotional memory and learned associations.

Through experiencing the built environment, the human body acts as an active sensor, continuously gathering and interpreting a complex array of stimuli. Movement, stillness, tactile contact, and the shifting qualities of sound all feed into the brain's interpretive processes, where they are intertwined with memory, emotion, and a sense of spatial orientation. Through this constant exchange between bodily perception and cognitive reflection, architecture is transformed from a physical setting into a lived, meaningful experience.

[2] E. Bruce Goldstein, *Sensation and Perception*, 9th ed. (Boston: Cengage Learning, 2014), 5–7.
[3] Stephen E. Palmer, V*ision Science: Photons to Phenomenology*, (Cambridge, MA: MIT Press, 1999), 9.

[4] John O'Keefe and Lynn Nadel, *The Hippocampus as a Cognitive Map*, (Oxford: Clarendon Press, 1978).

Figure 4. Camillo Golgi, *"Nerve cells."* (1885). Public Domain Review. Accessed August 5, 2025.

1.2 HOW THE BODY ENGAGES SPACE

Gibson redefined sensory perception as an active and exploratory process instead of a passive one. He stressed five interrelated sensory modalities through which individuals move around their spatial world: vision, hearing, touch, smell, and taste.[5]

However, these five senses alone do not exhaust the full register of spatial perception. As noted by Juhani Pallasmaa, our perception of architecture is an active, multisensory encounter that also relies on the body's sense of movement, balance, and orientation. As he remarks, "Gravity is measured by the bottom of the foot; we trace the density and texture of the ground through our soles." [6]

Therefore, spatial experience emerges from the body's dialogue with its surroundings, where orientation, scale, and enclosure are grasped directly rather than conceived abstractly.

An illegorical portrayal of the human senses is found in the painting series **"The Five Senses"** by Jan Brueghel the Elder and Peter Paul Rubens (See figure 3).

Visual perception orients us and enables us to interpret form, distance, light, and motion. It enables us to move through space, perceive depth, and interact with architectural proportion and scale.

Hearing is responsible for our perception of enclosure, openness, and rhythm. Through reverberation, echoes, and ambient sound, it is accountable for the character and intimacy of a space.

Smell triggers emotion and memory using atmospheric prompts. Gradual changes in scents can define spatial thresholds, giving identity and familiarity to rooms, buildings, or urban areas.

Touch puts us in direct bodily contact with surfaces and substances. Through texture, pressure, and temperature, it conveys properties unavailable to the eye alone, grounding us in place.

Taste, although rarely a primary sense in architecture, can emerge in sensory associations with materials, rituals, or cultural settings. It often works in tandem with vision and memory to evoke or embody responses.

"The body is our general medium for having a world."

- Maurice Merlau-Ponty [7]

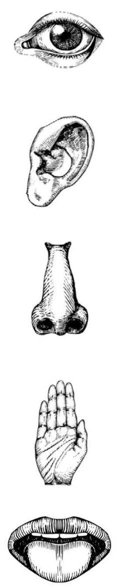

Figure 5. Illustration of the five senses. Vlada Young, *"Five Senses."* Shutterstock. Accessed August 5, 2025.

[5] James J. Gibson, Op.cit., 15.

[6] Juhani Pallasmaa. *The Eyes of the Skin: Architecture and the Senses.* (Wiley, 2005).

[7] Maurice Merleau-Ponty, *Phenomenology of Perception.* trans. Colin Smith (London: Routledge & Kegan Paul, 1962), 146.

Figure 6. Jan Brueghel the Elder and Peter Paul Rubens, *"The five Senses (Series)."* Oil on wood panels, 1617 - 1618. Wikipedia. Accessed August 5, 2025.

Carlo Scarpa's Brion Cemetery (Brion-Vega Tomb) exemplifies architecture that engages all five senses as well as the vestibular and kinesthetic systems, demonstrating how vision, hearing, touch, smell, and even taste converge in spatial experience. Here, materiality, spatial sequencing, and natural elements guide the visitor's body, creating heightened sensory awareness.

Designed as a memorial for the Brion family, the cemetery's function shapes its spatial language and atmosphere. Scarpa treats the human body not as a passive observer but as an active participant, composing sequences of thresholds revealed through movement, texture, sound, and light. As Robert McCarter notes, Scarpa constructed meaning through movement, guiding visitors across shifting planes, narrow water canals, and intimate enclosures that evoke sensory and emotional awareness.[8]

The cemetery's paths and floor variations engage the kinesthetic senses, requiring visitors to recalibrate balance while ascending steps or descending into sunken gardens (Figure 7). As Kenneth Frampton notes, Scarpa's design aims to awaken the physical presence of the body making the act of walking itself a form of architectural reading.[9]

Tactile perception is emphasized throughout Scarpa's careful selection of materials and attention to detail (Figure 9). Polished concrete, wood, and hand-finished stone create a tactile richness that grounds visitors in the physicality of space and invites close engagement with surfaces.

Interlocking circular openings at the complex focus on vision and symbolic meaning, framing views of the tombs and gardens (Figure 8); First encountered at the entrance as a "light at the end of the tunnel," the motif ecurs across the site, guiding movement and evoking themes of union, duality, life and death, and the physical and metaphysical.[10]

Sound and light are also integral. Water basins reflect shimmering light and generate ambient sounds that change with movement and weather (Figure 10). The trickling of water and the acoustics of enclosed chambers create what Pallasmaa calls the "acoustic intimacy of place,"[11] situating visitors within a lived spatial context.

The olfactory dimension adds subtle depth: moss, aging stone, and nearby vegetation give the air an earthy scent, grounding the space in time and season. Collectively, these elements stimulate introspection, memory, and emotion through the body's engagement with the architecture.

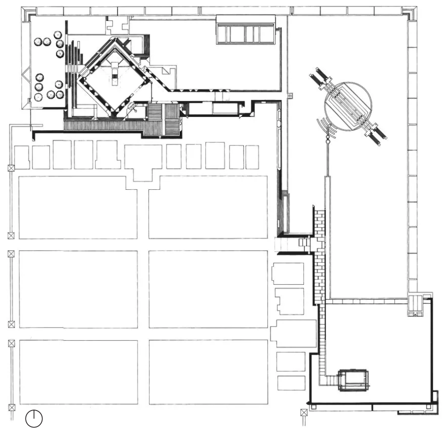

Figure 7. Floor Plan. Filippo Poli,"Carlo Scarpa Tomba Brion", Hicarquitectura. Accessed: August 6, 2025.

"We are presented with a tactile syntax that is grounded in difference, turning, that is, on evident transitions from rough to smooth, from polished to matte, from worked to unworked."

- Kenneth Frampton [12]

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[8] Robert McCarter. *Carlo Scarpa*. (London: Phaidon Press, 2013).

[9] Kenneth Frampton. *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture.*(Cambridge, MA: MIT Press, 1995).

[10] JT. M. Brandstrup.*"Tale of the double circle motif detail at Brion Cemetery by Carlo Scarpa."* Tanker Om Arkitektur. Accessed August 5, 2025.

[11] Juhani Pallasmaa. Op. cit., 52.

[12] Kenneth Frampton. Op. cit., 323.

Figure 8. Interlocking circular windows. Jacopo Famularo. Yinjispace. Accessed August 5, 2025.

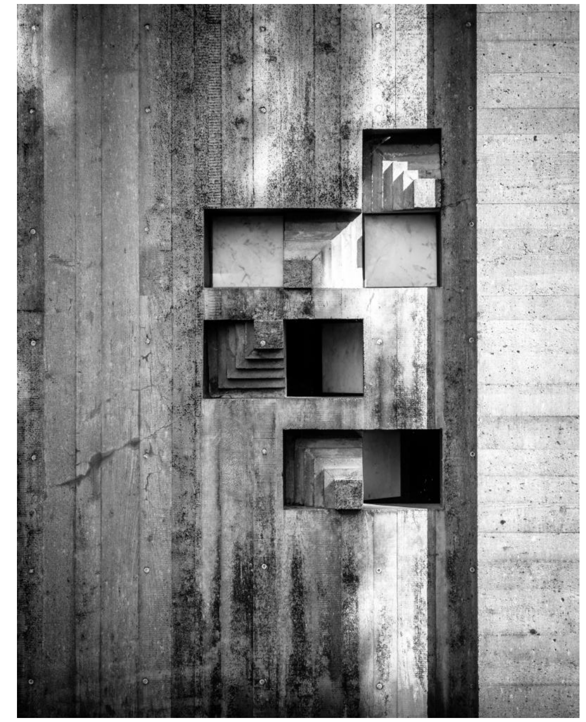

Figure 9. Concrete wall detail. Jacopo Famularo. Yinjispace. Accessed August 5, 2025.

Figure 10. Water ponds at the chapel's entrance. Jacopo Famularo. Yinjispace. Accessed August 5, 2025.

1.3 THE ABSENCE OF SENSES

What happens when the body is deprived of sensory input? If sensory design begins with stimulation, it also needs to account for its absence - never simply as a void, but as a state with quantifiable psychological, physiological, and architectural consequences.

Scientific studies on sensory deprivation, placing individuals in environments with minimal sensory stimulation, such as uniform lighting, no sound, neutral temperatures, demonstrate their disorientation, hallucinations, and cognitive decline within hours.[13] The brain, accustomed to receiving a constant stream of sensory input, attempts to compensate by creating its own stimuli. In other words, when the world falls silent, the mind grows louder.

This phenomenon is not limited to laboratory settings. It is present in many contemporary buildings, where the reduction of sensory engagement is an unintentional byproduct of functional priorities. Fluorescent lighting, synthetic materials, sealed windows, recycled air, and monotonous acoustics combine to create atmospheres that are operationally effective but experientially anesthetized. Architect Peter Zumthor has warned against such "neutral" spaces, arguing that architecture has to do more than shelter the body; it has to feed the senses.[14]

The built environment therefore holds double the power: it can stimulate, but it can also deprive.

Designing well, then, is not simply about adding sensation, but understanding its absence - when it is welcome, when it is harmful, and how it can be modulated. Controlling the sensory narrative is a powerful architectural tool, yet it requires precise calibration. Moments of quiet, simplicity, or blankness can offer sensory relief if they follow richness, rhythm, or intensity. Like a pause in music, silence in space must be carefully placed within an unfolding sensory story; otherwise, it risks becoming an empty void rather than an evocative experience.

This principle can be observed in Robert Rauschenberg's White Paintings (Figure 7), which reduce visual stimuli to near emptiness. The emphasis is on the subtle shifts in tone and light that invite the viewer to become aware of their own perception, prompting contemplation and drawing attention to details that might otherwise go unnoticed.

"To me, buildings can have a beautiful silence… a building that is being itself, being a building, not representing anything, just being."

- Peter Zumthor [15]

"I called them clocks. If one were sensitive enough that you could read it, that you would know how many people were in the room, what time it was, and what the weather was like outside."

- Robert Rauschenberg [16]

[13] Vernon H. Mark and Frank Ervin, *Violence and the Brain.* (1970).
[14] Peter Zumthor, *Atmospheres.* (2006).
[15] Peter Zumthor, *Thinking Architecture, 32.* (1999).
[16] *"Robert Rauschenberg: Among Friends."* Moma. Accessed August 6, 2025.

Figure 11. Robert Rauschenberg, *"White Painting"* (two panels, 1951). A visual void where absence itself becomes a presence. Moma. Accessed August 6, 2025.

Tadao Ando's Chichu Art Museum demonstrates how architecture can use deliberate sensory restraint to prepare and heighten perception, turning absence into an experiential tool.

Almost entirely embedded underground (Figure 13), the museum avoids intruding on the island's coastal landscape, making the architecture almost invisible from afar. Ando's intention was to "preserve the scenery" while creating a place where "people can think quietly and feel nature more deeply."[17] This is achieved through an architectural journey in which deprivation is used as a preparatory tool.

The Chichu Art Museum is composed of a sequence of geometrically precise spaces: triangular, square, and rectangular volumes arranged around open courtyards (Figure 12). Visitors approach through the Chichu Garden, where seasonal vegetation, colors, and scents contrast sharply with the subsequent descent into the museum. The entry corridors are narrow, bare concrete passages (Figure 14) in which daylight is reduced to fragments and shadows and acoustics are muted. These transitional voids compress perception: peripheral vision is restricted, footsteps lose their resonance, and the body senses subtle thermal shifts from the sunlit exterior to the cooler interior depth. The sequence slows both body and mind, deliberately conditioning visitors for what follows.[18]

For Ando, this restraint is not about negation, but about calibrating the perception. By temporarily withdrawing from sensory overload, visitors become more attuned to subtle shifts in light, color, and textures. Such modulation of experience fosters an embodied awareness of spatial sequences, emphasizing the relationship between architectural form and the perceiving body.

This design strategy culminates in the museum's galleries. Claude Monet's room is softened by a floor of white square tiles that absorb the sound of each step, encouraging silence and attentiveness. Surrounded by this stillness, visitors find themselves surrounded by Water Lilies (Figure 16), the vast canvases spanning across the walls in panoramic view, inviting a slow encounter.

James Turrell's Installation - Open Sky (Figure 15) frames a square aperture in the ceiling, allowing visitors to observe the sky while artificial lighting subtly enhances and shifts its colors throughout the day. The interplay of natural and controlled light produces gradual changes, creating an immersive, almost tactile visual experience.[19]

[17] Ando, T. *Tadao Ando: Conversations with Students.* (Architecture and Urbanism Press, 2003).
[18] Acuriouscloud, *"The Most Sublime Experience I've Ever Had in a Museum."* A Curious Cloud. (November 2, 2016. Updated January 19, 2018). Accessed August 9, 2025.
[19] Ibid.
[20] Charlotte Boates, *"An Exploration of Tadao Ando."* GOODLAND. (March 13, 2024). Accessed: August 6, 2025.

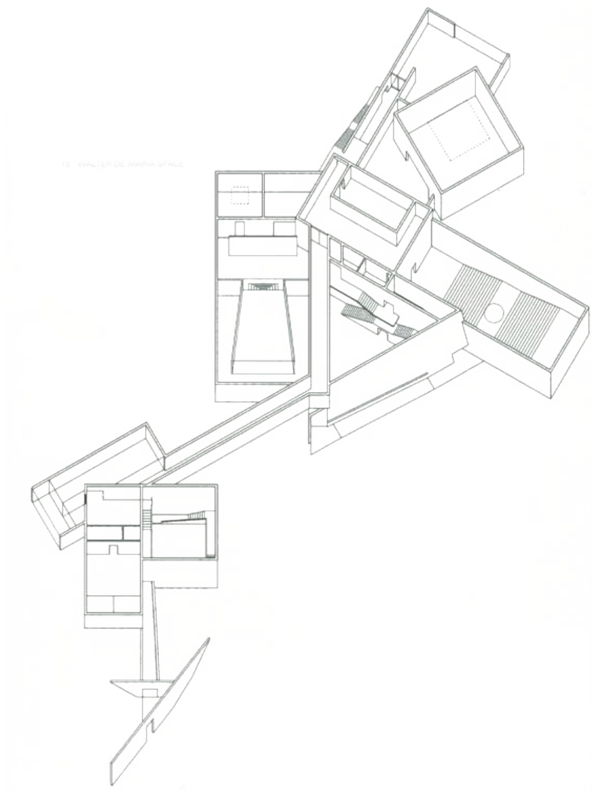

Figure 12. Axonometry. *"Le Chichu Art Museum, l'architecture sans façade."* VERNACULAIRE. Accessed August 6, 2025.

"You cannot simply put something new into a place. You have to absorb what you see around you, what exists on the land, and then use that knowledge along with contemporary thinking to interpret what you see."

- Tadao Ando [20]

Figure 13. Aerial view. *"Le Chichu Art Museum, l'architecture sans façade."* VERNACULAIRE. Accessed August 6, 2025.

Figure 14. Corridor window. *"Four plays."* art4d, July 16, 2020. Accessed August 6, 2025.

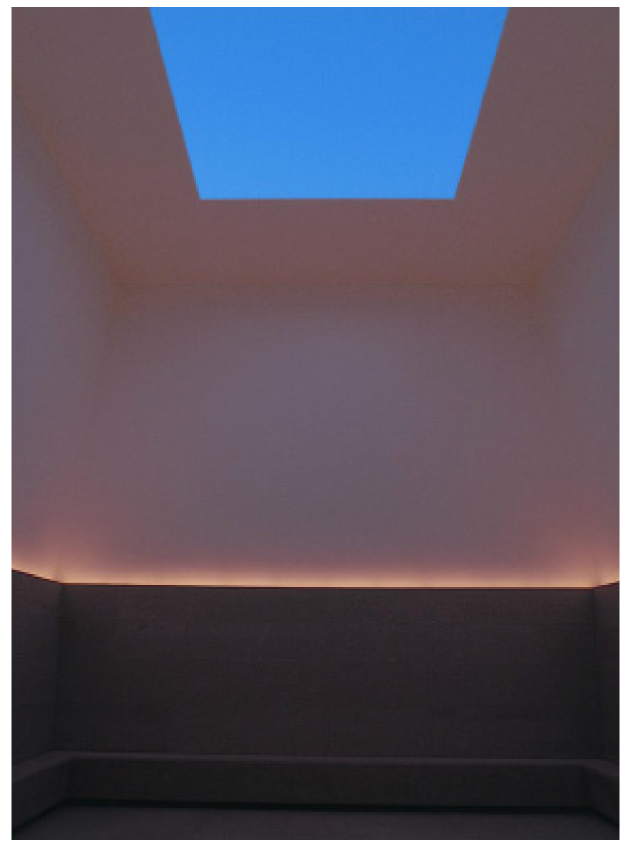

Figure 15. Open Sky Room. *"Other Horizon."* November 16, 2018. WikiArt. Accessed August 6, 2025.

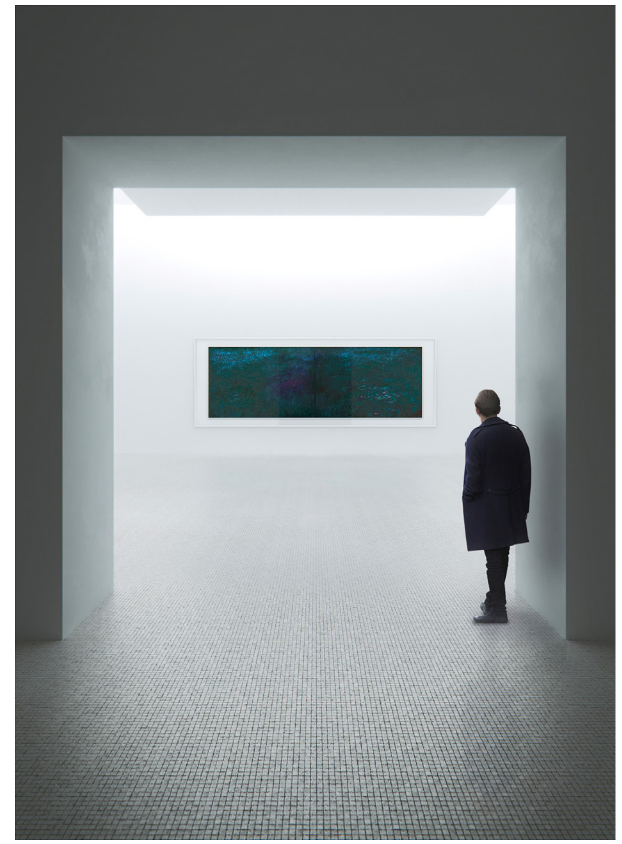

Figure 16. Monet room. HIDO. 2020. Accessed August 6, 2025.

2

THE SENSE OF TOUCH IN ARCHITECTURE

Pallasmaa describes touch as “the sensory mode which integrates our experiences of the world and ourselves. It is a parent of our eyes, ears, nose and mouth.”[20] In other words, touch can be described as the sense through which all other perceptions are anchored. Through the skin’s receptors, it is activated by sensations of pressure, texture, temperature, and even pain. While visual perception allows for the distance, touch requires closeness and engagement. It is perhaps the most intimately experienced of the senses, involving a direct, two-way relationship between the body and the physical world.

This chapter explores the multilayered role of touch in architecture, looking into the concept of hapticity and examining how materials communicate spatial qualities through their tactile presence.

Figure 17. *“Man Silhouette.”*
Rolffi Images, Accessed
August 9, 2025.

[20] Juhani Pallasmaa. Op. cit., 11.

2.1 SKIN AS AN INTERFACE: THE BODY AND THE BUILT ENVIRONMENT

Skin, as the boundary between the body and the environment, mediates continuous interactions with the world. Philosopher Drew Leder describes the skin as a "perceptual membrane", both a limit and a conduit through which external stimuli shape internal experiences.[21] In architectural contexts, this underscores the fact that the spaces are registered through direct bodily contact through a field of sensations, such as pressure, temperature, vibration, roughness or softness, that are processed by the skin in real time.

Anatomically, the layered complexity of the skin and the distribution of specialized receptors speak to its architectural potential. The areas that display a particularly high resolution of spatial acuity include the fingertips, face, lips and tongue. While the back, upper arm, and leg have a very low sensitivity to touch.[22] This uneven distribution suggests that architectural elements can deliberately engage particular sensory thresholds. Within this framework, researchers distinguish two types of touch: Active and passive.[23]

Active touch refers to tactile exploration initiated by the subject. It involves intentional movement, such as tracing a wall, holding a handrail, or sensing the texture of a surface. A good example is found at Alvar Aalto's Viipuri Library, where the curved timber handrails of the main staircase (Figure 18) invite tactile engagement - the hand instinctively glides along the smooth, warm surface, registering its shape and grain as the body ascends or descends.

Similarly, the facade of the 35 Green Corner Building in Muharraq, Bahrain, designed by Studio Anne Holtrop, features sand-cast concrete panels whose surfaces bear the imprints of textured, site-specific earth reliefs, covering both the exterior and interior surfaces (Figure 19 and 20). The irregular and tactile nature of the concrete invites visitors to run their hands across the rough surfaces, transforming the act of touch into a primary mode of experiencing the building. In this way, the facade does not merely serve as enclosure, but as a sculptural skin that directly engages the body.

Passive touch, by contrast, describes the tactile information received when stimuli act upon the skin without voluntary motion, such as the pressure or temperature changes.

These sensations operate largely beneath conscious awareness yet profoundly shape our spatial presence. Consider Parc des Buttes-Chaumont in Paris (Figure 21), where visitors experience a passive tactile dialogue with the environment: the gentle breeze rising from the bodies of water and the shaded greenery has a cooling impact on the skin, differentiating the park's microclimate from the surrounding urban heat. This involuntary tactile experience attunes the body to spatial atmospheres and climatic variations. In architectural design, acknowledging passive touch expands the scope of spatial experience beyond surfaces to include environmental phenomena that engage with the skin and contribute to the affective qualities of a space.

"Good architecture is like a good piece of furniture - it must fit people comfortably and suit their needs."

- Alvar Aalto [24]

[21] Drew Leder, *The Absent Body.* (Chicago: University of Chicago Press, 1990).
[22] E.R. Kandel, J.H Schwartz, T.M. Jessell, S.A. Siegelbaum & A.J. Hudspeth, *Principles of Neural Science.* 5th ed. (2013).
[23] A. Gallace & C. Spence, *In Touch with the Future: The Sense of Touch from Cognitive Neuroscience to Virtual Reality.* (Oxford University Press, 2014).
[24] David Pearson, *Alvar Aalto: Architect.* (London: Phaidon Press, 2009).

Figure 18. Curved wooden handrail. *"Vyborg Library."* Visit alvaraalto. Accessed August 9, 2025.

Figure 19. Interior wall. "Green Corner Building in Muharraq." Arquitecturaviva. Accessed August 9, 2025.

Figure 20. Study model for the wall. *"Green Corner Building in Muharraq."* Arquitecturaviva. Accessed August 9, 2025.

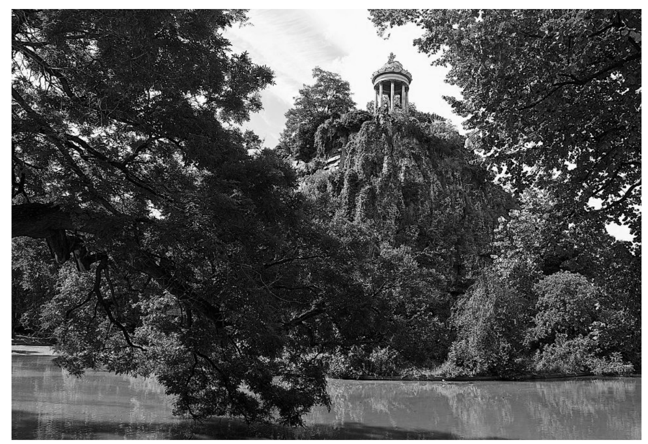

Figure 21. Temple at Parc des Buttes-Chaumont. Christian Mueller, *"Parc des Buttes-Chaumont."* Cntraveler. Accessed August 9, 2025.

2.2 MEMORY, EMOTION, AND THE TACTILE IMAGINATION

Touch in architecture is not merely a matter of physical contact; it is a process through which space is remembered, felt, and imagined. The body retains traces of its encounters, allowing past experiences to shape the perception of new ones. Neuroscience offers some insight into this through the concept of mechanical memory - the capacity of skin and muscles to preserve the impression of contact beyond the moment it occurs.[25] While this is a physiological fact, in architectural context it becomes a cultural and spatial one: impressions are translated into patterns of movement, anticipations, and emotional associations that shape how we continue to inhabit the world.

This embodied phenomenon extends into the cognitive realm through what is known as haptic memory - a mode of recollection that "lays hold of" the world in terms of sensation, feeling, and spatial orientation.[26]As tactile information is received through movement and muscular coordination, the perceiver thereby gains an understanding of spatial arrangements in a dynamic, experiential manner. In this context, hapticity refers not only to the act of touching, but to the spatial and temporal imprint left on the body - a residual resonance that includes emotional tone, atmospheric presence, and the imaginative projection of prior experiences.

Architectural theorists have long explored this interplay between bodily perception, memory, and emotional response. Aldo Rossi, in The Architecture of the City, presents the built environment as "the locus of the collective memory," where enduring spatial forms operate as shared mnemonic structures.[27] Such continuity in architecture enables the creation of legible sequences of movement and occupation, which function as shared mnemonic structures that anchor collective experience and reinforce a sense of belonging within a built environment.

Gaston Bachelard, in The Poetics of Space, brings this discussion to the scale of the intimate, where even the smallest remembered space, an attic room, or a narrow staircase, can retain a deep emotional intensity, shaping how we imagine and respond to other spaces throughout our lives.[28]

Gernot Böhme's theory of atmosphere takes this concept a step further by framing perception as a shared field between the body and its surroundings.[29]

[25] Elisa Corniani and Hannes P. Saal, T*actile Processing: From Peripheral Receptors to Behavior.* (2014): 1423–53.
[26] James J. Gibson Op. Cit.:104.
[27] A. Rossi, *The Architecture of the City.* (Cambridge, MA: MIT Press. 1982).
[28] G. Bachelard, *The Poetics of Space.* (Boston: Beacon Press. 1994).
[29] G. Böhme, *Atmospheric Architectures: The Aesthetics of Felt Spaces* (London: Bloomsbury, 2017).

Atmospheres emerge from the body's sensory engagement, which is always already infused with memory. Emotional tone is therefore not an after-effect but a constitutive part of tactile experience: warmth and softness can soothe, while constriction or coldness may provoke unease or alertness. These reactions are guided not only by the present encounter but also by the echo of earlier experiences embedded in haptic memory.[30]

Spatial design, in this light, is never neutral. Sequences of compression and release, changes in scale, or shifts in light are all orchestrations of bodily experience that will persist in memory. Architectural representation encodes such movements and encounters in advance, imagining the body's engagement with space as a temporal composition.[31] By doing so, the design deliberately intervenes in the continuum of memory, emotion, and imagination, ensuring that a space is not only seen but felt and remembered.

"Atmosphere is the shared reality of the perceiver and the perceived. It is the reality of the perceived as the sphere of its presence and the reality of the perceiver insofar as he or she, in sensing the atmosphere, is bodily present in a particular way. "

- Gernot Böhme [32]

Figure 22. Elene Kobaladze, Author's childhood house.

Figure 23. Elene Kobaladze, Author's childhood house.

"After twenty years, in spite of all the other anonymous stairways; we would recapture the reflexes of the "first stairway," we would not stumble on that rather high step. The house's entire being would open up, faithful to our own being."

- Gaston Bachelard [33]

[29] G. Böhme, *Atmospheric Architectures: The Aesthetics of Felt Spaces* (London: Bloomsbury, 2017).
[30] Ibid.
[31] C. Spence, *Senses of place: architectural design for the multisensory mind.*
[32] G. Böhme, op.cit., 23.
[33] G. Bachelard, op.cit., 15.

2.3 HOW MATERIALS SHAPE HAPTIC PERCEPTION IN ARCHITECTURE

By now, it has been established that our perception of space is deeply influenced by both physiological and psychological responses to tactile stimuli. Given this, the question arises: How can these dynamics be intentionally employed to enrich architectural experience? One of the most profound elements in this regard is materiality - not just as a structural or aesthetic choice, but as a contributor to how a space is sensed, inhabited, and ultimately remembered.

Material culture theory offers a point of departure. According to Semper's Bekleidung theory, the building's surface is central in meaning-making, not as an ornamental element, but as the tactile and symbolic "skin" of architecture, where the cultural imprint of craft and the sensory dialogue between body and structure are distinctive.[34] The surface, in this view, is an active participant in the encounter between human and building, addressing the haptic system directly.

Frampton's Studies in Tectonic Culture extends this, showing how the articulation of construction details such as the joint, the seam, and the residue of making, are inseparable from the way a building is inhabited.[35] Such details can quicken or slow a body's pace, invite touch or repel it, and tie the movement to the language of materials.

At the level of bodily perception, the haptic system reads materials through their intrinsic properties, actively shaping the body's experience of its environment. The human skin is equipped with specialized mechanoreceptors capable of distinguishing minute variations.[36] These stimuli aren't passive; they create ongoing feedback loops between the material world and the nervous system, and through this, generate behavioral, emotional, and cognitive reactions.

It is through this intertwining of body and material that atmosphere emerges. As Peter Zumthor observes, materials clothe a space, imbuing it with a distinct emotional tenor.[37] The atmosphere arises when the physical character of a material interacts with light, acoustics, temperature, and spatial proportion to create a unified sensory field. In such moments, the material is no longer perceived in isolation but as part of a total environment.

> *"The materials and surfaces absorb the traces of the world, and in turn, they radiate this presence back to us."*
>
> \- Peter Zumthor [38]

[34] Gottfried Semper. *The Four Elements of Architecture and Other Writings.* Translated by Harry F. Mallgrave and Wolfgang Herrmann. (Cambridge: Cambridge University Press. 1989).
[35] Frampton, Kenneth. Op. cit.
[36] Corniani and Saal, op. cit.
[37] Peter Zumthor. *Atmospheres* . Op. cit.
[38] Peter Zumthor. *Thinking Architecture.* Op. cit., 25

When theory meets practice in this way, the result is spaces where materiality becomes the primary element of experience. Few works embody this more fully than Zumthor's Bruder Klaus Field Chapel.

From a distance, the Bruder Klaus Field Chapel appears as a solitary block (Figure 25). Its rammed concrete surface asserts its presence long before it is touched. The path leading to it curves through fields, slowing the approach and heightening bodily awareness. Conceived as an irregular pentagon, the floor plan reinforces a sense of enclosure (Figure 26), while its asymmetry directs the body toward the central chamber.

At the entrance, a heavy steel door resists the hand. Inside, a narrow, curved tunnel compresses space, bringing walls close and drawing attention to the body's The sudden release into the twelve meters high chamber sharpens this contrast. Here, the concrete walls retain the charred negative of the timber formwork burned away after casting (Figure 24), and left with a vertical texture that invites the hand to explore. Light enters through small glass spheres and a single oculus, catching the skin as it passes. Underfoot, the floor, cast in solid lead, is dense and uneven. Every material decision in the space carries a tactile weight.[39]

Here, experience is built through touch. Surfaces bear the trace of their making, and the experience of the chapel is shaped not just by light or form, but by the way the body moves through and comes into contact with the building itself.

Figure 24. Inside view. Tim Van de Velde, *"Bruder Klaus Chapel."* SAVVY. June 13, 2023. Accessed August 10, 2025.

Figure 25. Entrance from the inside. Keenan Ngo, *"A Zumthor Endeavour."* Medium. June 30, 2022. Accessed August 10, 2025.

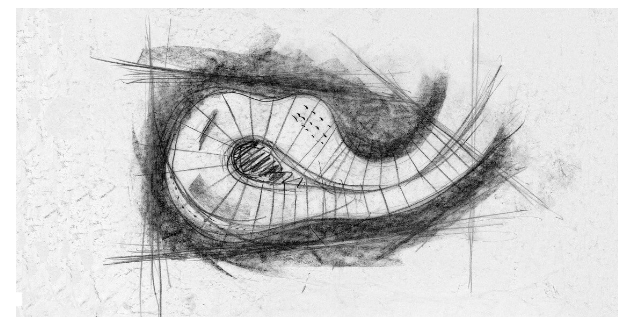

Figure 26. "Bruder Klaus Field Chapel." Archiweb. Accessed August 10, 2025.

[39] Keenan Ngo, *"A Zumthor Endeavour."* Medium. (June 30, 2022). Accessed August 10, 2025.

3

BRICK AND ITS ARCHITECTURAL SIGNIFICANCE

Building on the previous discussion of materiality as a fundamental category of architectural inquiry, this chapter turns to brick as a primary focus of material study.

Brick has been selected mainly for its tactile presence, as its surface, weight, and texture operates as a primary medium for the body's experience of architectural space. At the same time, brick is a material of profound cultural resonance: having been used over millennia across diverse civilizations has conferred upon it both symbolical and technical meanings.

Accordignly, the discussion unfolds across three interrelated dimensions.

First, through a **historical analysis**, it demonstrates how brick has operated across different societies and periods, both as a technical solution and as a cultural symbol.

Second, it examines the **material qualities** of brick and the conditions that shape its form and performance.

Finally, it links these physical attributes to **sensorial experience**, analyzing how brick's tactile and perceptual dimensions contribute to architectural meaning.

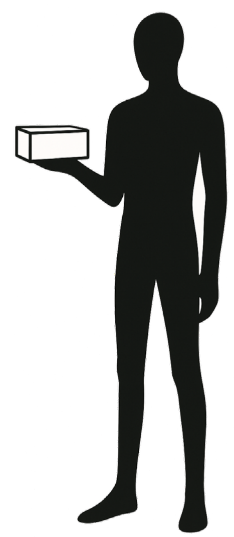

Figure 27. © Nutsa Kobaladze

3.1 HISTORICAL AND CULTURAL DIMENSIONS OF BRICK

The history of brick is not solely technical but is deeply rooted in the material, environmental, and cultural contexts of its production. Brick has consistently adapted to local geographies, construction systems, and symbolic needs, making its historical analysis important for understanding its sensorial legacy.

Early brick forms appeared in Neolithic riverine settlements, specifically in Mesopotamia and the Indus Valley (Figure 28). These sun-dried blocks, shaped from local clay and slit, reflected both local environmental constraints and the range of manual production. Though primitive, they were well-suited to the climatic conditions, offering thermal mass in hot environments and simple manufacturing methods.[40]

By the third millennium BCE, Mesopotamian innovations included kiln-firing, enhancing compressive strength and moisture resistance. Such technological advancements expanded the architectural scale, enabling the construction of city-walls and large-scale monumental platforms. Fired bricks also demonstrated the authority, often stamped with inscriptions, reinforcing their symbolic and political significance.[41]

Simultaneously, the Indus Valley adopted baked brick technology (Figure 29), characterized by consistent proportions (4:2:1 - length:width:height), which enabled coordinated urban planning and reflected a social imperative for order and standardization.[42]

The Roman Empire marked a significant moment in brick's technological and architectural history. Roman bricks were often longer and flatter than their modern counterparts (Figure 30), allowing for distinctive bonding patterns and greater structural versatility. Fired in kilns, they enabled the construction of complex forms that still endure, such as vaults, domes, and aqueducts. Roman brickmaking was highly organised, with stamps marking the date, place, and sometimes even the legion responsible for their production, embedding each unit with a traceable history.

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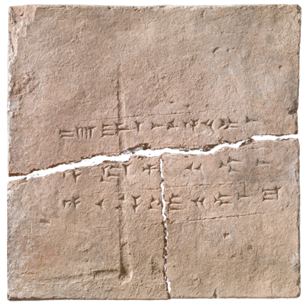

Figure 28. Mesopotamian brick. *"DNA extracted from 2,900-year-old clay brick."* The History Blog. (August 23, 2023). Accessed August 10, 2025.

Figure 29. Indus Valley brick. The British Museum, *"Brick, Indus Valley Civilisation, Mohenjo-daro."* bmimages. Accessed August 10, 2025.

Figure 30. Roman brick. Hartmann Linge. *"Roman Stamped Bricks."* worldhistory. Accessed August 10, 2025.

[40] A. Khan and C. Lemmen, *"Bricks and Urbanism in the Indus Valley: Rise and Decline."* arXiv, (2013). Accessed August 10, 2025.
[41] Ibid.
[42] Ibid.
[43] *"Roman brick."* Wikipedia, s.v., Accessed August 10, 2025.

In medieval Northern Europe, the Brick Gothic tradition (Figure 31) emerged in regions where workable building stonewas scarce, prompting the refinement of brick into both a structural and expressive medium. Builders experimented with intricate ornamental techniques, such as high-fired glazed surface, finely moulded tracery imitating stone carving, and complex polychrome bonding patterns to give façades a layered depth. These innovations not only compensated for the absence of stone but also established a distinctive regional architectural language.[44]

In China, during the Ming dynasty, brick was used in monumental applications for the reconstruction of The Great Wall (Figure 32). The employment of uniform, high-density bricks enabled a consistent architectural narrative across vast landscapes, reinforcing imperial cohesion and connecting monumental building to local material traditions.[45]

The nineteenth century saw brickmaking transformed by industrial innovations, most notably the Hoffmann continuous kiln (Figure 33), which allowed for uninterrupted firing and vastly increased output. Combined with mechanized molding and extrusion, these advances enabled standardized production at a vast scale, meeting the demands of rapidly expanding industrial cities. Brick became a defining component of factories, rail way infrastructure, housing, and public institutions, yet despite its mass production, regional identities persisted, shaped by variations in local clay composition, firing techniques, and aesthetic traditions.

Into the twentieth century, brick had a dual role: On one hand, it persisted as a pragmatic, cost-effective solution for mass housing, civic buildings, and infrastructure, valued for its durability, availability, and ease of construction. On the other, it was in and ease of construction. On the other, it was intentionally re-engaged as an expressive medium, with architects exploiting its chromatic range, tactile surface, and modular rhythm to articulate form, emphasise material authenticity, and create a sensory depth that transcended its purely functional origins.[46]

Across these transitions, brick continues to carry the sediment of cultural identity that provides the foundation for the following chapters, exploring its physical and sensorial qualities.

Figure 31. Dutch brick. *"Dutch Brick."* Wikipedia. Accessed August 10, 2025.

Figure 32. Chinese brick. Rafael Ben-Ari, *"Great Wall of China. Close Up."* Adobestock. Accessed August 10, 2025.

Figure 33. Industrial brick. Hoffmann brick. Klinker. Accessed August 10, 2025.

[44] *"Brick Gothic."* Wikipedia, s.v., Accessed August 10, 2025.
[45] *"Great Wall of China."* Wikipedia, s.v., Accessed August 10, 2025.
[46] K. De Decker, *"Rings of Fire: Hoffmann Kilns."* Low-tech-magazine.(October 19, 2009).

3.2 MATERIAL QUALITIES OF BRICK

The tactile qualities of brick depend on its mineral composition, forming method, and firing process, all of which influence surface texture, hardness, and porosity. Natural inclusions like quartz grains create granular roughness or small pits as they expand or burn out during firing. Clay minerals and firing atmospheres also affect surface hardness, influencing how rough or smooth a brick feels.[47]

Forming techniques produce distinct textures: hand-molding results in irregular, rough surfaces with visible impressions; extrusion yields wire-cut bricks with sharp edges and parallel striations; press-molding creates smoother, more uniform finishes. Other surface types include sand-faced bricks, which have a gritty texture from sand coating (Figure 34), and glazed bricks, which feature a smooth, glass-like surface (Figure 35). Each method impacts the micro-topography, altering how the surface feels to the touch.[48]

Porosity and density further influence tactile perception, as more porous bricks are lighter and can absorb moisture, which changes texture over time.The thermal mass of a brick also contributes to tactility, with denser bricks retaining and releasing heat more slowly to the touch.[49]

Environmental exposure gradually modifies surface texture and porosity, softening roughness or deepening pits, leaving a tactile record of the brick's history.[50]

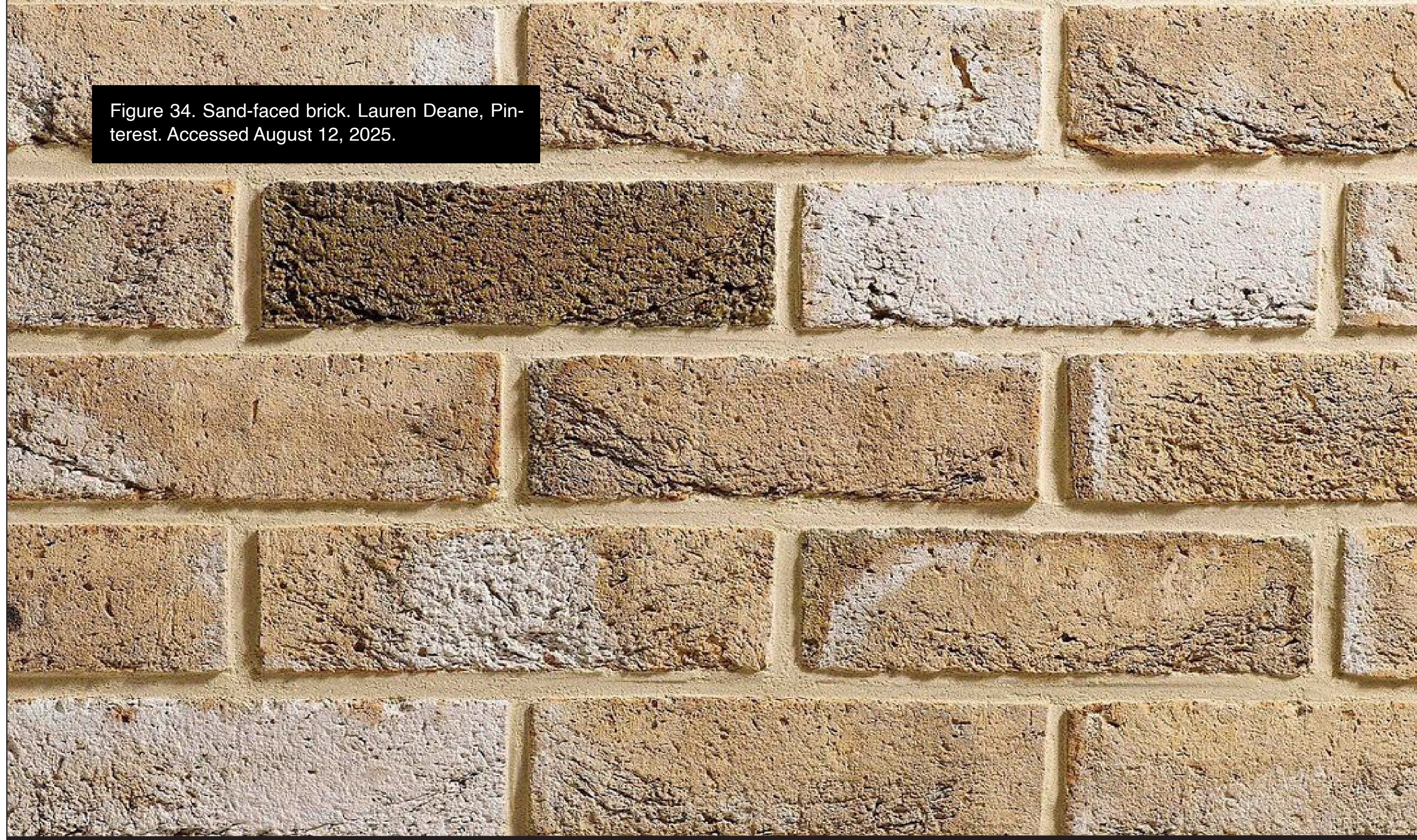

Figure 34. Sand-faced brick. Lauren Deane, Pinterest. Accessed August 12, 2025.

Figure 35. Glazed Brick. Trading Depot. Accessed August 12, 2025.

[47] W. G. Nash, *Brickwork 1*. 3rd ed. (London: Hutchinson, 1983).
[48] Ibid.
[49] Ibid.
[50] Ibid.

3.3 BRICK AS A HAPTIC MEDIUM

Brick invites the hand. Its granular surface, recessed joints, and characteristic thermal behavior create an information-rich interface for touch. Asperities of the fired surface and the relief of mortar joints provide cues about position, edge, and curvature, supporting both full-body wayfinding (e.g., tracing a wall) and exploratory touch (e.g., reading surface change). Insights from perceptual research clarifies why brick functions so effectively as a tactile medium.

First, thermal contact matters: in architectural conditions, where surface temperatures typically remain below 34 °C, materials with higher thermal effusivity feel "colder," while those with lower effusivity feel "warmer," even at the same temperature. Brick's effusivity lies below that of stone or concrete, yet above wood and many polymers, placing it in a perceptual mid-range: it does not withdraw heat as rapidly as stone or metal but still communicates environmental chagnes (sun versus shade, exterior versus interior). Experiments on material identification by contact confirm that such thermal cues are prominent in haptic perception.[51]

Second, brick surfaces support robust roughness and texture judgments, which are remarkably stable even when visual cues are absent. Humans detect spatial patterns across both micro and macro-scales.[52] This is precisely the range in which brick operates: sand inclusions, striations, arrises, and recessed joints provide distinct frictional feedback and micro-topography. This creates a tactile signature that encourages leaning, trailing, and sustained contact, while phenomenological studies note that brick is described as "steady," "grainy," and "assuring," with its irregularities read as evidence of making and time.[53]

Lastly, the same physical parameters that engineers track: porosity, firing atmosphere, and glazing, cascade into touch. Higher porosity tends to decrease effusivity and increase apparent warmth. Salt-glazed faces raise surface hardness and decrease moisture uptake, shifting friction and the "drag" felt under the fingers. While, hand-molded (Figure 36) vs. wire-cut (Figure 37) forming leaves different micro-striations.[54]

Taken together, brick's haptic efficacy emerges from the alignment of thermal response, tactile richness, and morphological stability, making it unusually capable of structuring bodily attention, while remaining responsive to light, air, and time.

[51] H. N. Ho and L. A. Jones, "Thermal Model for Hand–Object Interactions." 118–127. (2006). Accessed August 12, 2025.

[52] S.J. Lederman and M. M. Taylor. *Fingertip Force, Surface Geometry, and the Perception of Roughness by Active Touch.*(1972).

[53] S.J. Bensmaïa and M. Hollins. *The Vibrations of Texture.* 53–60.

[54] H. N. Ho and L. A. Jones, Op. Cit.

Figure 36. Hand-molded brick. UKBRICK. Accessed August 12, 2025.

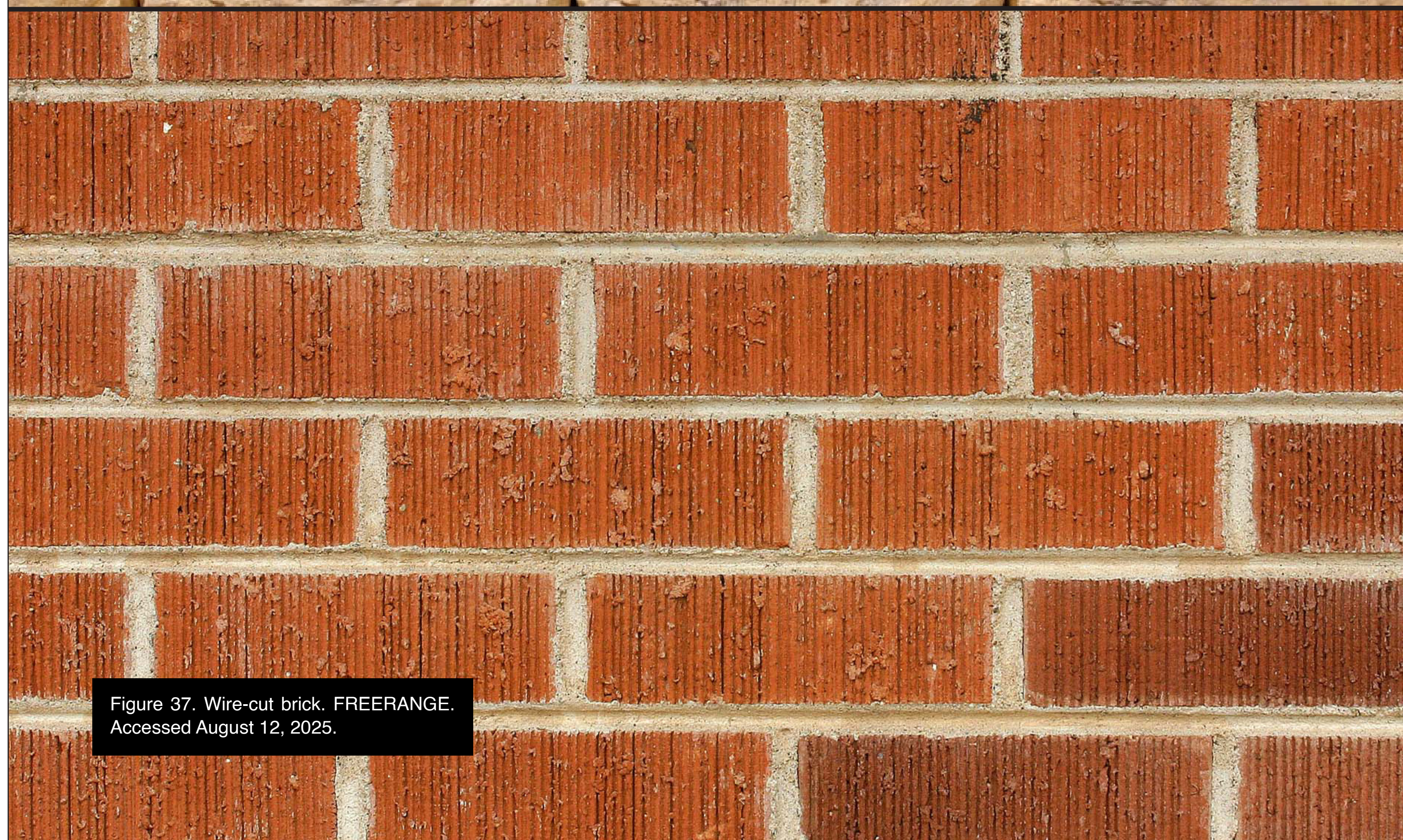

Figure 37. Wire-cut brick. FREERANGE. Accessed August 12, 2025.

4

CASE STUDIES

The case studies included in this chapter were selected on the basis of two primary criteria: their disciplinary significance within architectural history, and the distinct strategies by which they utilize brick as a material and cultural medium.

Each example operates at the intersection of material performance, spatial and conceptual conception, cultural expression, and sensory experience. The analysis is further supported by architectural drawings and photographs, in which the tactile logics of thickness, rhythm, and depth can be recognized. Together, they demonstrate how brick engages issues of climate adaptation, craft tradition, technological innovation, and hapticity.

Beyond these shared themes, the case studies were also selected for their individual qualities:

Louis Kahn's Indian Institute of Management in Ahmedabad reveals how brick can define form, mass, and structural logic at a monumental scale, while its careful articulation invites the tactile engagement.

P.V. Jensen-Klint's Grundtvig's Church in Copenhagen showcases the extraordinary interior atmosphere produced by its brick surfaces, where light and texture generate a powerful haptic response.

Herzog & de Meuron's Switch House at Tate Modern in London rethinks brick as a perforated skin, where depth and porosity generate shifting textures of shadow and light. The woven surface transforms the facade into a tactile field, as its relief is felt both by hand and in the atmosphere of the interior.

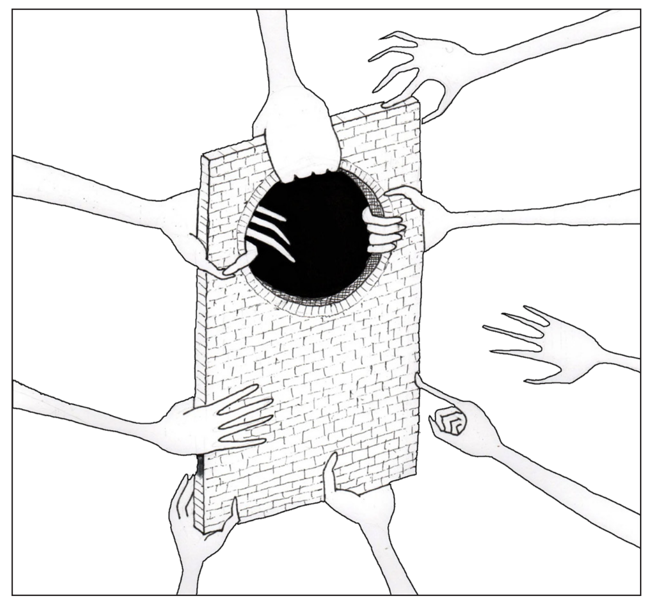

Figure 38. Tori Haynes. *"Kahn's IIM Dormitories."* ArchitectureTalk. Accessed August 13, 2025.

Figure 39. Facade of the academic block.
PW K-12 Studio. Pinterest.
Accessed August 13, 2025.

4.1

INDIAN INSTITUTE OF MANAGEMENT

LOUIS KAHN – AHMEDABAD, INDIA

The Indian Institute of Management Ahmedabad (IIMA) was commissioned in the early 1960s and represents a defining moment in twentieth-century brick architecture. The project represents India's aspiration at the time to combine modernist ideals with its craft-based traditions.[55]

When Kahn was called upon to design the IIMA in 1962, he not only discussed the concept of the institution but studied the tradition of Indian culture, the Indian way of life, and the city's institutional structures. His emphasis was on integrating education with culture as essential requirements of human growth, rather than just focusing on the functional aspects of the building.[56]

To quote B. V. Doshi, a practicing architect who assisted Kahn in designing the campus, "Lou has brought back the old technique of building in brick to the forefront. It has made us realise how beautiful things can become when they are integrally conceived and made".[57] The character and form that emerged out of this simple building was, strangely enough, similar to the buildings at Mandu, built during the 12th century.[57] Kahn achieved to create an institution which belongs to people, and yet is prototypical.

"In Lou's creation of the Indian Institute of Management, I feel that he has great deal of the temple tradition."

\- B. V. Doshi [58]

[55] *"IIM Ahmedabad by Louis Kahn: Blending modern architecture and Indian tradition."* Rethinking The Future. Accessed August 13, 2025.
[56] *"Kahn's Monastic Vision: Architecture at IIMA,"* Alumnus, (May, 1987), 6.
[57] Alumnus. Op. cit., 6.
[58] Alumnus. Op. cit., 6.

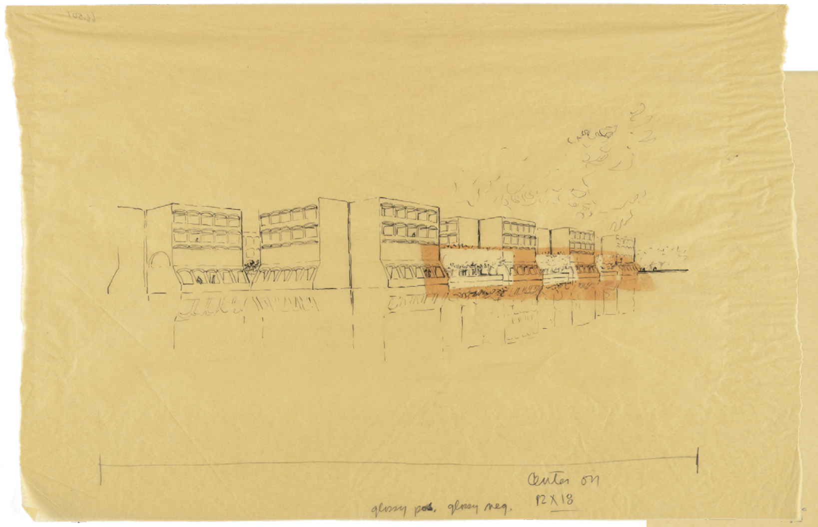
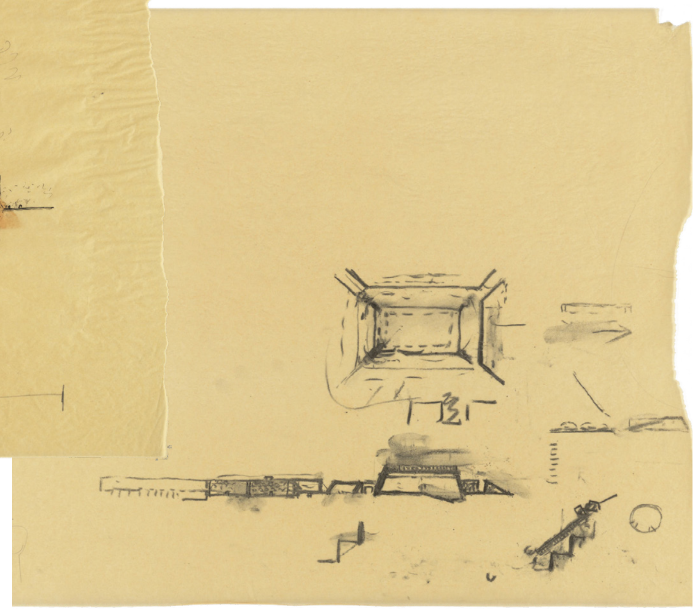

Figure 40. Perspective drawing of dormitories and plan - elevation sketches of classroom building. Estate of Louis I. Kahn. (1963) Moma. Accessed August 13, 2025.

Louis Kahn conceived the Indian Institute of Management as an integrated complex in which circulation and social life are organized through a sequence of courts, paths, and brick volumes. The coherence of both the academic precinct and the residential quarters derives not only from their geometric order but also from the material consistency of exposed masonry. Brick, through its mass, porosity, and grain, serves as the binding medium of the campus, shaping orientation and movement.

Within the academic core, apertures and voids are articulated as recessed, brick-bound thresholds. The depth of these openings modulates light, shadow, and air, so that transitions between interior and exterior acquire a palpable dimension. The courts that they enclose operate as sensorial fields, where scale,is apprehended directly by the body. (Figures 41, 42).

The dormitories extend this logic into a more intimate register. Their repetitive modular fabric (Figure 41), punctuated by smaller internal courts, establishes a haptic rhythm that structures everyday life. Narrow passages, enclosed stair towers, and sheltered courts generate sequences that are both human-scaled, while remaining linked to the academic ensemble through the same connective network of courts and arcades (Figure 41).

[59] *"IIM Ahmedabad by Louis Kahn: Blending modern architecture and Indian tradition."* Rethinking The Future. Accessed August 13, 2025.
[60] *"AD Classics: Indian Institute of Management / Louis Kahn."* ArchDaily. Accessed August 13, 2025.

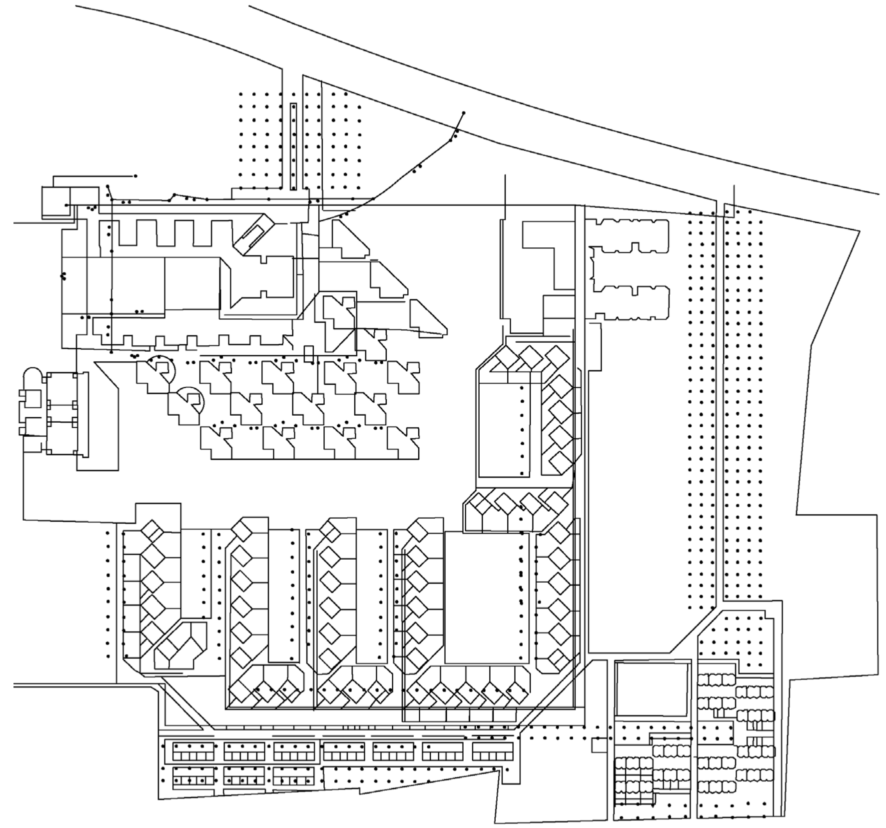

Figure 41. Site plan.

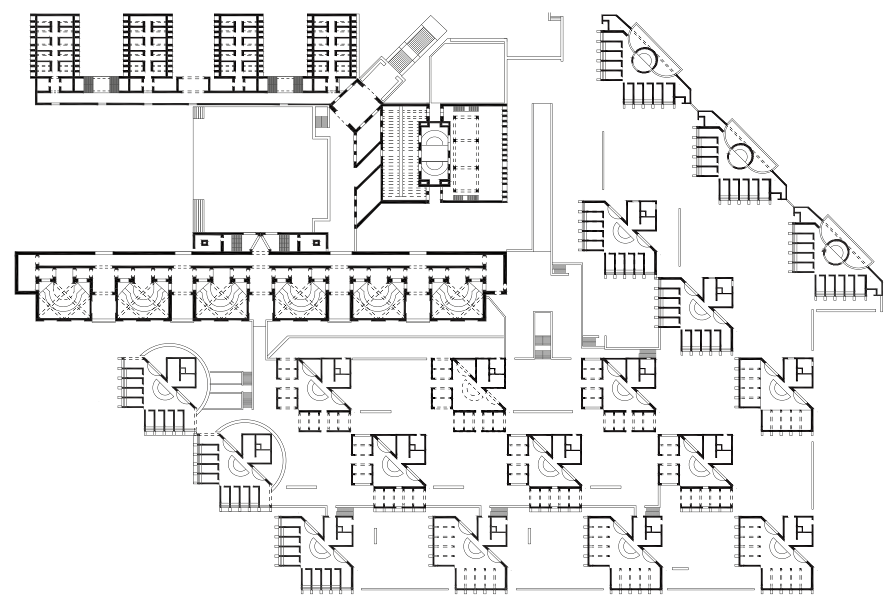

Figure 42. Plan of the school blocks and dormitory buildings.

Figure 43. Arnout Fonck, *"Indian Institute of Management Ahmedabad."* Flickr. February 1, 2012. Accessed August 13, 2025.

Louis Kahn's use of brick at the Indian Institute of Management Ahmedabad exemplifies his philosophy of honoring the intrinsic potential of materials. The bricks were hand-molded, porous units, whose roughness and variability demanded thick layers of mortar. To refine the texture of these walls, masons introduced a distinctive technique: a fine horizontal line was incised into the center of each mortar joint, lending the surfaces a precise and rhythmic character. In this way, the process of construction itself became legible as a tactile and visual articulation.[61]

Brick's environmental performance further enhances its presence: walls absorb daytime heat and release it gradually, stabilizing interior temperatures, while deep recesses act as built-in shading devices (Figures 44-45). These apertures, their directions and the surfaces "Seem to tell us of activity, one should anticipate."[62] The brick technology, expressed in load-bearing walls and arches that span or relieve structural loads, gives the campus a distinct rhythm, producing "different moods in different times of the day and different seasons."[63] (Figure 43). Kahn's careful orchestration of brick integrates tactility, environmental responsiveness, and spatial rhythm, resulting in a campus that is both monumental and profoundly human-scaled.

"Even a brick wants to be something... you say to a brick 'What do you want, brick?' And brick says to you, 'I like an arch.' "

- Louis I. Kahn [64]

[61] *"Louis I. Kahn / Balkrishna V. Doshi / Mahendra Raj: Indian Institute of Management."* SOSBrutalism. Accessed August 13, 2025.
[62] Alumnus. Op. cit., 6.
[63] Alumnus. Op. cit., 6.
[64] "The Best He Kahn: Melding Traditional with Modernity." Times of India. February 20, 2021. Accessed August 13, 2025.

Figures 44-45. Plan of the school blocks and dormitory buildings. *"Louis I. Kahn. Indian Institute of Management."* Hicarquitectura. (May 13, 2023.) Accessed August 13, 2025.

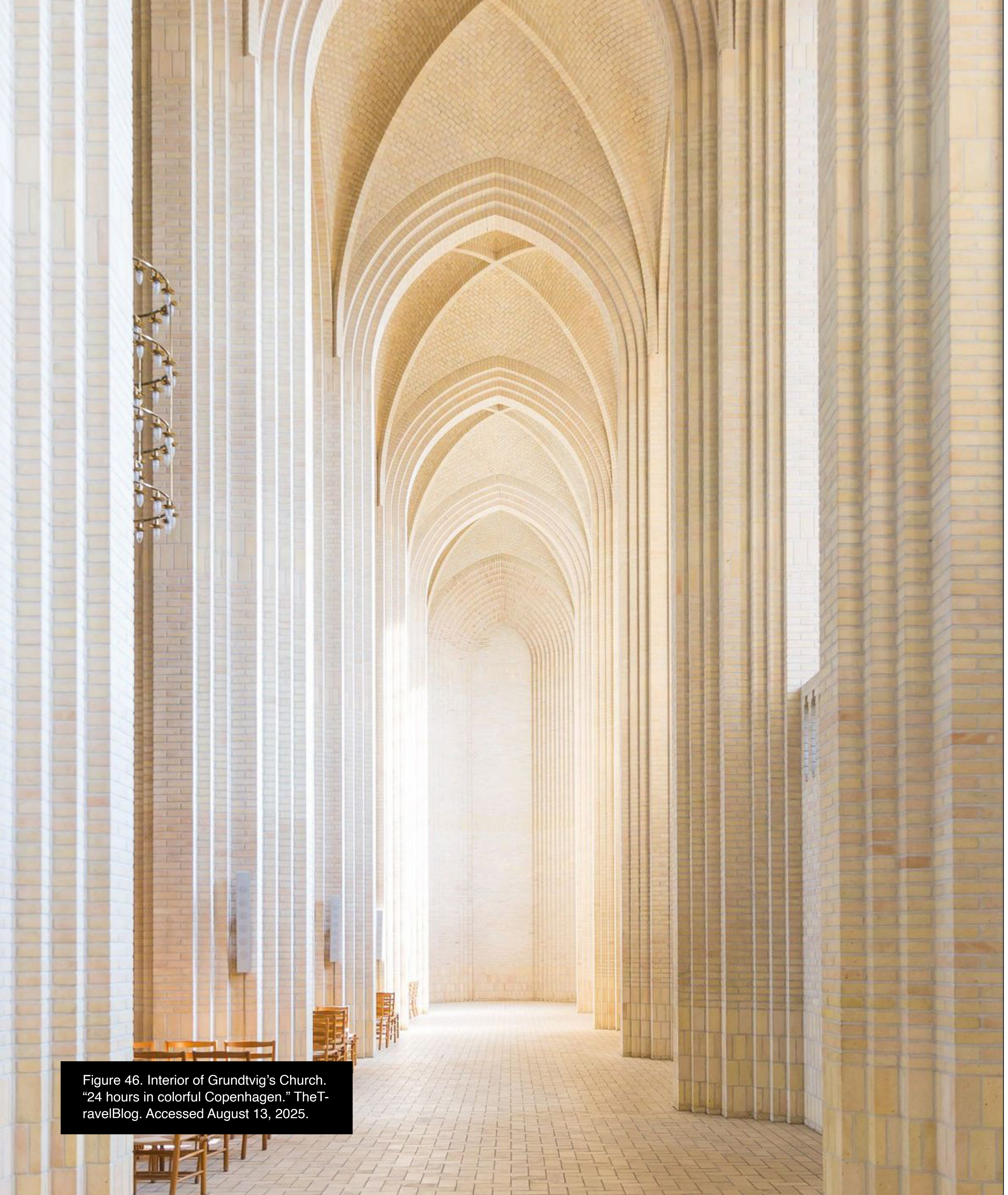

Figure 46. Interior of Grundtvig's Church. "24 hours in colorful Copenhagen." TheTravelBlog. Accessed August 13, 2025.

4.2

GRUNDTVIG'S CHURCH

P.V. JENSEN-KLINT – COPENHAGEN, DENMARK 1921 – 1940

Grundtvig's Church in the Bispebjerg district of Copenhagen is a renowned example of Nordic minimalism and world-class craftsmanship. This monumental work exemplifies the Danish cultural heritage and is tangible proof of the Klint family's unique architectural talents.

Conceived as a national monument to the theologian, poet, and hymn-writer N. F. S. Grundtvig, the church embodies the intellectual and spiritual ideals that shaped Danish cultural identity in the modern era. The project was awarded to Peder Vilhelm Jensen-Klint after a 1913 competition, and he regarded it as the defining work of his career.[65]

Construction began in 1921, and after his death in 1930, his son Kaare Klint faithfully carried the project through to its completion in 1940. While Kaare clarified proportions and resolved architectural details, the overall concept remained grounded in his father's original vision, preserving both continuity and integrity. Known particularly for its luminous interior (Figure 46), the church has become a cultural symbol: a monument to Danish craftsmanship and a testament to the architectural legacy of the Klint family.[66]

"Each brick was ground by hand to perfection - and while that may seem a bit over the top, the result is the supernatural softness you meet everywhere you look. Run your hands over a column or part of a wall and you can feel it clearly."

- Danish Architecture Center [67]

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[65] *"Grundtvig's Church."* Wikipedia. (Last modified: June 6, 2025).Accessed August 13, 2025.
[66] Ibid.
[67] *"Grundtvigs Church: Nordic church in a class of its own."* Dac.dk. Accessed August 13, 2025.

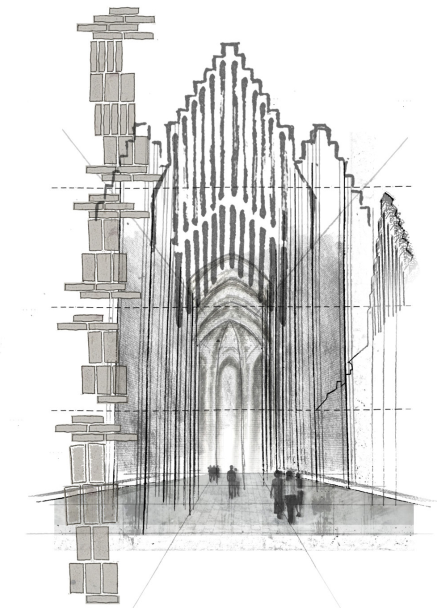

Figure 47. Interior view of Grundtvig's Church. Yannick Scott. Tumblr. Accessed August 13, 2025.

Constructed entirely from yellow bricks made of Danish clay, the church, when approached from the west, carries a rugged presence (Figure 51); its stepped gables reflect the vernacular tradition of Danish ecclesiastical architecture while the pollution-stained patina of its brickwork deepens this effect. At a distance, the sheer mass of the facade overwhelms the body with its solidity. Yet, getting closer, the individual bricks, each small and tactile in scale, emerge from the surface and the facade shifts from a singular presence to a field of countless tactile units[68] (Figure 54, p51).

Crossing the threshold, the body is drawn into a long nave (Figure 48). The rhythm of piers on each side presses the movement forward and each step seems measured by the brick. From herringbone floor to narrow windows and vaulted ceiling leading to the aisles, the same pale yellow bricks form almost every surface (Figures 49, 50). In a space where everything is brick that feels uninterrupted, the relative solidity and mass of the material is less apparent.[69] The result is a paradox: A Gothic spatial diagram, stripped of its flying buttresses and carved tracery leaving a continuous brick volume.

The north side extends the tactile logic of an unbroken material garment (Figure 52). Brick has no hierarchy. Standing against it, one can not separate structure from cladding, or ornament from substance; The body encounters only the tactility of the brick itself.

[68] Nick Green, *"Five million into one"*, Architectsjournal. (November 21, 2014). Accessed August 13, 2025.
[69] Ibid.

Drawing Credits:
Hedi Ataollahi,
Alisa Fainberg,
Lena Kitzbihler,
Ivana Heckmanns.

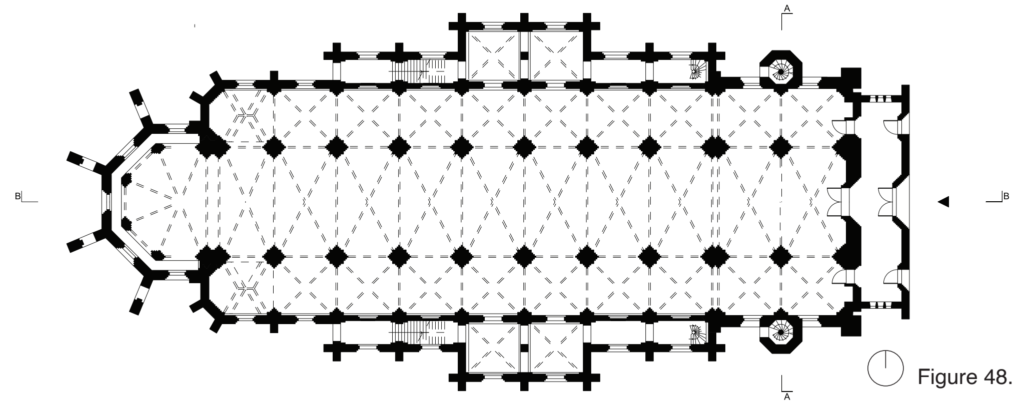

Figure 48. Ground Floor Plan

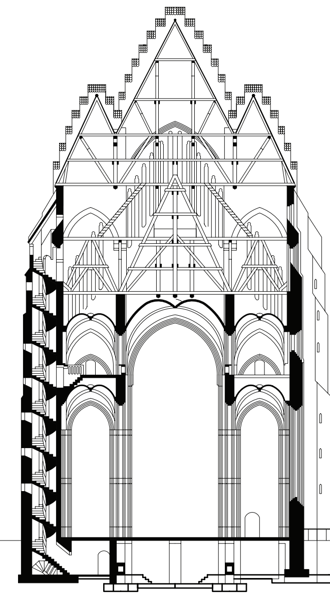

Figure 49. Section A - A

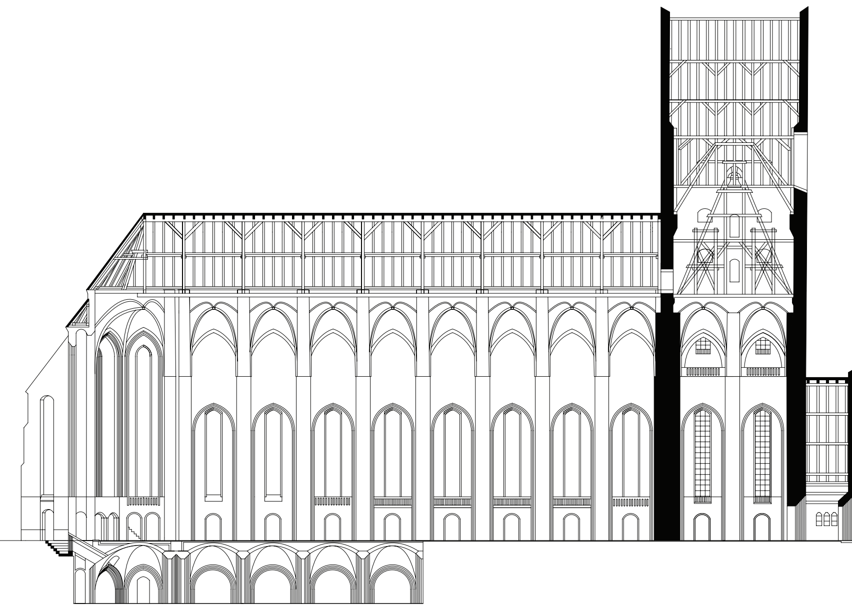

Figure 50. Section B - B

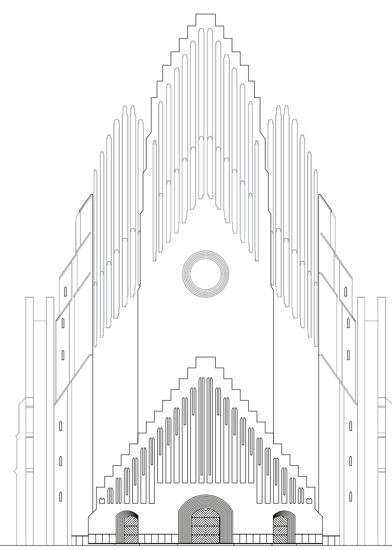

Figure 51. West Elevation

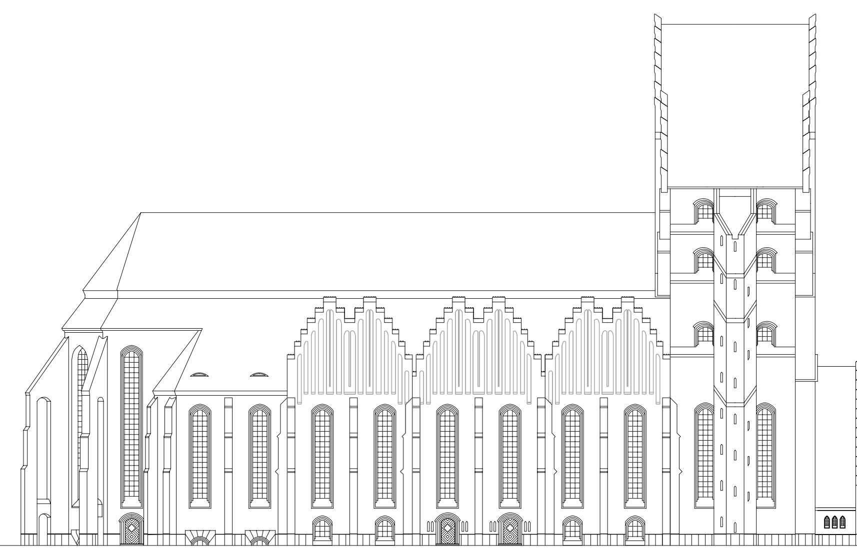

Figure 52. North Elevation

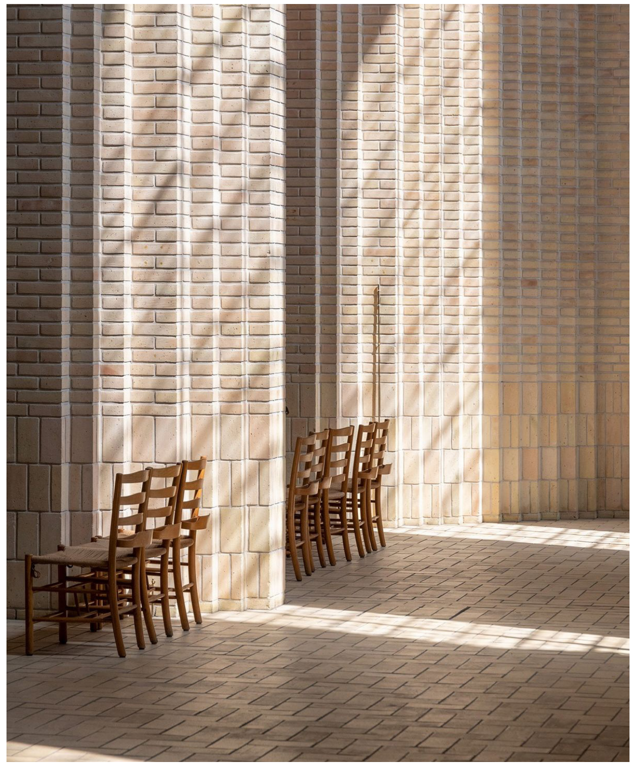

Figure 53. *"Grundtvig's Church - An architectural masterpiece."* Fredericia. Accessed August 15, 2025.

Two consequences follow from this approach. First, brick becomes ornament by subtraction, as the only "articulation" that's present is bonding, coursing and the rhythm of the units themselves. Tactile engagement is supported by this continuity, as the body reads the curvature of piers and the temperature of walls, while joint patterns serve as subtle guides.

Second, the careful hand-finishing of the bricks transforms their surface into a tactile medium that interacts with light: The hard, glossy outer layer of the bricks was carefully removed by hand to reveal a softer, more textured surface. In daylight, this produces a muted glow, a diffused radiance that makes the walls appear less heavy and more porous[70] (Figure 53).

The voussoirs were precisely cut and shaped to fit perfectly. Because such exactness was required, masons worked much slower than usual, laying far fewer bricks each day than normal.[71] These detailed processes are noticeable up close, giving walls a tactile quality that shows the care of skilled craftsmanship.

[70] *"Grundtvig's Church - an architectural masterpiece."* Fredericia. Accessed August 13, 2025.
[71] *"Grundtvigs Church: Nordic church in a class of its own."* Dac.dk. Accessed August 13, 2025.

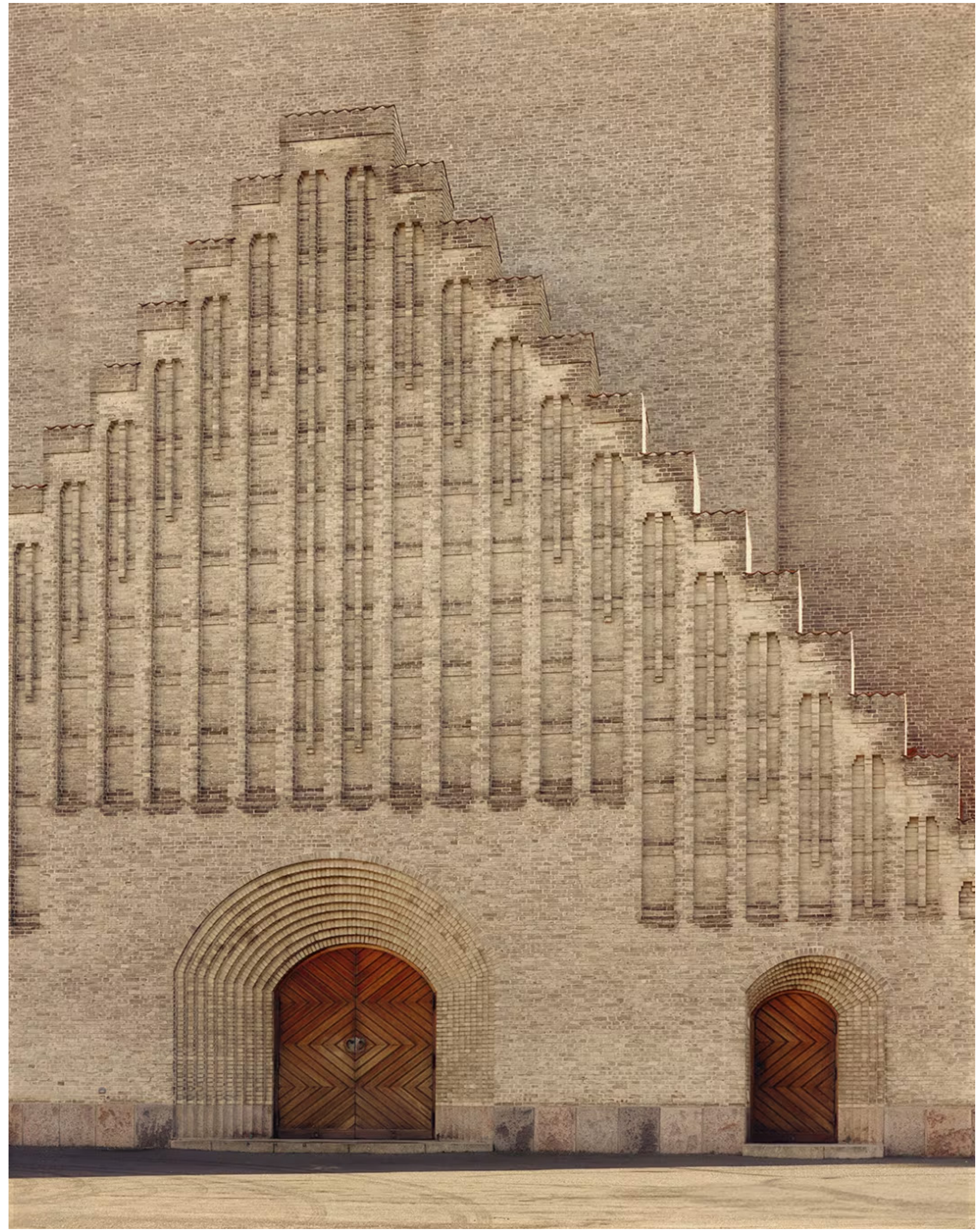

Figure 54. *"In Copenhagen, 6 million bricks make up the stunning Grundtvig's Church"*, Nana Hagel, Farandclose. Accessed August 13, 2025.

Figure 55. Facade close up of Switch House. “Tate Modern.” SHILDAN GROUP. Accessed August 13, 2025.

4.3

SWITCH HOUSE AT TATE MODERN

HERZOG & DE MEURON – LONDON, UNITED KINGDOM 2016

Completed in 2016, the Switch House at Tate Modern in London is an extension to the former Bankside power station, originally transformed into an art museum by Herzog & de Meuron in 2000. Rising to a height of 65 meters, the 22 500 square-meter addition expands the museum’s capacity by 60 percent, introducing new galleries, performance spaces and terraces while redefining the institution’s relationship with the city.[72]

When Herzog & de Meuron were invited to design the extension, they decided to approach the opportunity by deepening the connection between the new and the existing. Their intention was to maintain the material honesty of the original power station while reimagining its character for a modern public institution.[73]

Brick, in this context, was chosen deliberately in order to resonate with the monumental masonry of Giles Gilbert Scott’s original building. Yet, instead of replicating, the architects utilized brick as a perforated skin, giving the material new life as a porous, tactile, and light-modulating surface.[74]

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[72] *“Tate Modern.”* Wikipedia. Accessed August 14, 2025.
[73] John Hill, Thomas Geuder, *“A Pyramid Veiled in Brick.”* World-architects. (July 7, 2017). Accessed August 14, 2025.
[74] Ibid.

Figure 56. Study model. *"263 The Tate Modern Project",* Herzogdemeuron. Accessed August 14, 2025.

The exterior of the Switch house is cladded entirely in 336 000 bricks, composed into a lattice that defines the building as both heavy and permeable.[75] The monumental presence of the building recalls the solidity of the adjacent power station, but unlike it, the facade reveals a surface animated by variation. Rising as a twisting pyramidal form, the tower tapers as it ascends, its shifting geometry reinforcing the sense of a massive volume set in motion (Figure 56). The brickwork forms a woven surface whose angled planes lean outward, projecting mass into the surrounding space and intensifying the sense of material thickness. This continuous field is interrupted by the horizontal windows that cut across the surface, further increasing the flow of light inside (Figure 57). "It's all meticulously thought-out, showing a tactile sensitivity to light and materials." [76]

The exterior's tactile presence establishes an expectation of solidity that continues inside. The tower is organized as a vertical sequence of floors. Though the structural core is concrete, the brick envelope establishes the perception of enclosure and remains implicit in every gallery and circulation space. Movement between these levels is mediated by a central spiral staircase, which coils upwards and continues tactile journey enriched by perforated brick skin (Figure 58).[77]

[75]Nick Mafi, *"Tour the Tate Modern's Recently Completed Expansion by Herzog & de Meuron."* Architecturaldigest. (June 16, 2016). Accessed August 14, 2025.
[76] *"Magic in brick - new Tate Modern extension."* Grandtourmagazine. Accessed August 14, 2025.
[77] Eric Baldwin, *"Behind the Building: Herzog & de Meuron's Tate Modern Switch House."* Architizer. Accessed August 14, 2025.

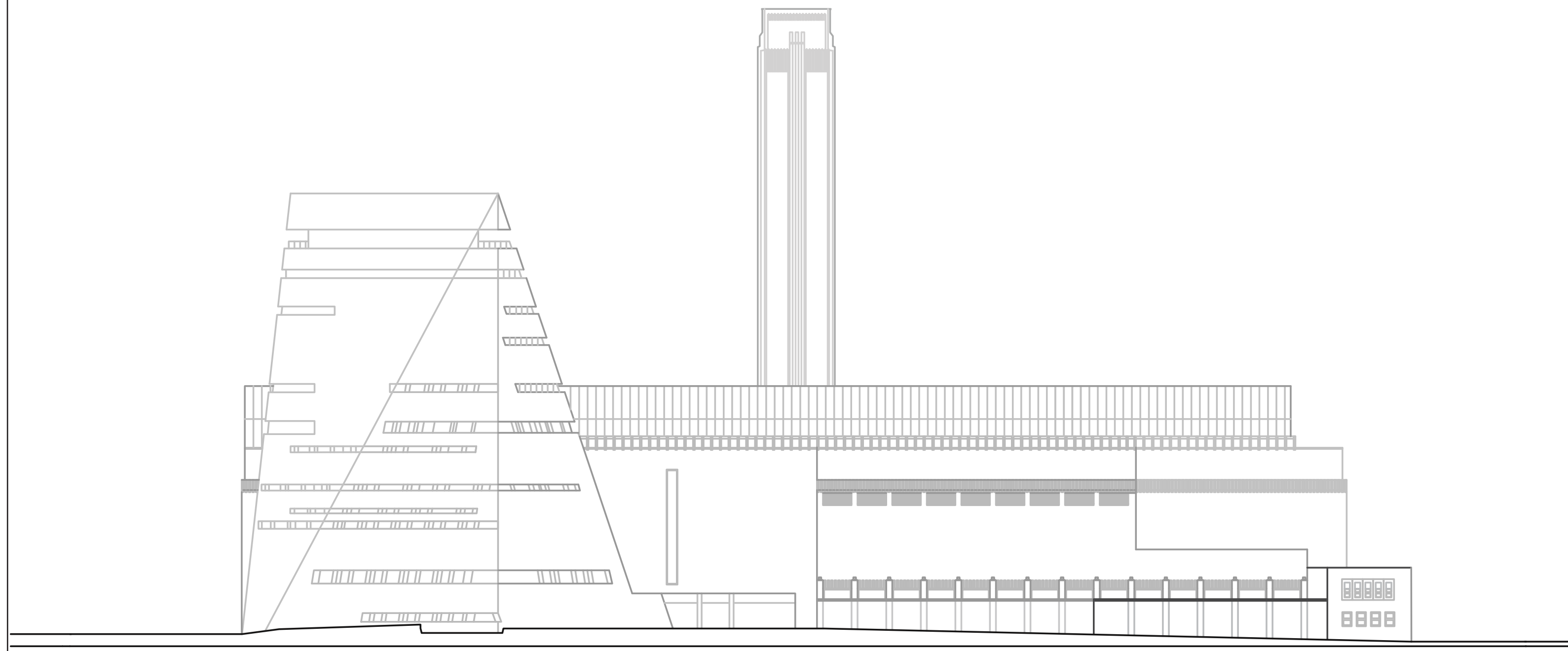

Figure 57. South Elevation.

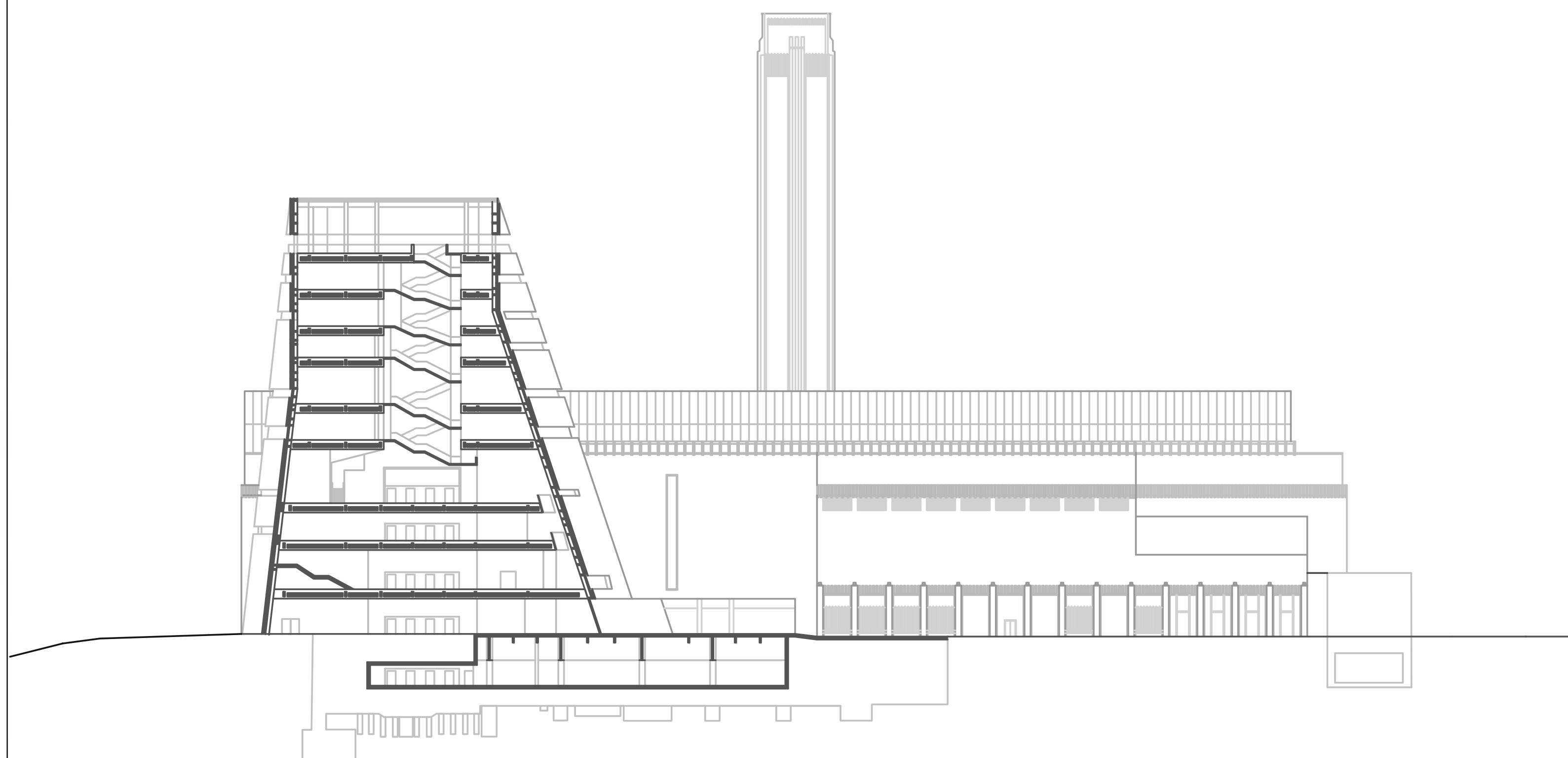

Figure 58. East-west Section.

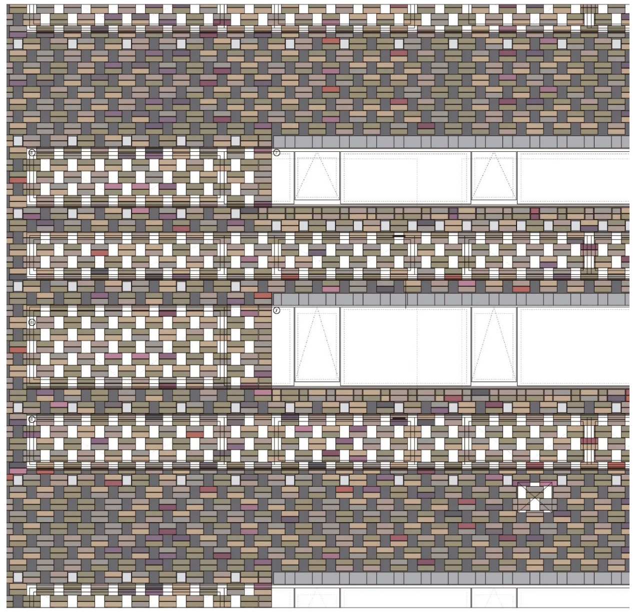

Figure 59. Facade detail. *Continuity and Invention, Arquitectura Viva.* no. 186 (2016), 44.

The tactile argument of the Switch House is ultimately built brick by brick. The cladding is assembled as a rear-ventilated, perforated brick screen: bricks are factory-paired modules that produce a rainscreen rather than a load-bearing wall.[78] The bond is derived from Flemish bond, but with header bricks intentionally omitted to create perforations; on sloping faces the double courses are stepped in and out (Figure 61), while vertical faces alternate between stepped (perforated) and flush (solid) areas, defining texture and openness (Figure 59).[79] Through these openings, daylight is allowed to filter into the interior, producing patterned shadows that extend the roughness of the brick into the atmosphere (Figure 60). In this way, light is not autonomous but becomes a tactile medium, conditioned entirely by the material fabric of the facade.

At corners and along the tower's creases, special-cut bricks are used, maintaining the continuity of the "woven" surface without breaking the tactile reading of the skin. Material depth is further enhanced by a mix of light, medium, and dark tones, achieved through producing the bricks in controlled batches so that the surface reads as a textile of chromatic shifts rather than a single color field.[80] The result is the facade that reads as a veil at the scale of the city while preserving the granular roughness of brick at the scale of the hand.

[78] Chris, "State of the art: Engineer Ramboll describes the technology in Switch House, Tate Modern." Brick Development Association. (November 20, 2017. Accessed August 14, 2025.
[79] Ibid.
[80] John Hill, Thomas Geuder, "A Pyramid Veiled in Brick." (July 7, 2017). World-architects. Accessed August 14, 2025.

Figure 60. Eric Baldwin, *"Behind the Building: Herzog & de Meuron's Tate Modern Switch House."* Architizer. Accessed August 14, 2025.

Figure 61. *"Magic in brick - new Tate Modern extension",* Grandtourmagazine. Accessed August 14, 2025.

5

CONCLUSION

5.1 SUMMARY OF FINDINGS

This thesis has sought to re-center the sense of touch within the architectural experience, situating hapticity not as an auxiliary mode of perception but as a fundamental category of spatial knowledge. In doing so, it has emphasized the broader significance of sensorial design and considered brick as a medium through which tactile perception may be studied and intentionally deployed. Across the theoretical framework and case study analyses, five central findings emerge.

Sensorial Design matters.

Architecture should be understood as a multisensory field in which the body is an active recipient of the stimuli. The neglect of senses in the design process and attempts to substitute it with visual oriented representations, has led to the attenuation of sensorial presence, producing environments that are experientially impoverished. In contrast, when design reclaims the full spectrum of perception, architecture regains its capacity to operate simultaneously on conscious and pre-conscious registers, restoring intimacy, atmosphere, and the embodied resonance of place.

Touch orients spatial perception.

From a phenomenological perspective, touch, understood as both cutaneous contact (active and passive) and the broader haptic system (proprioception, balance, kinesthesia), emerges as a device that binds the senses into a coherent spatial entity. Architectural experience is deepened when the body registers surfaces, textures, resistances, and temperatures, transforming spatial encounters into a tactile framework.

Materials are cognitive.

Materiality, in its articulations at the scale of the joint, arris, pore, or even the residual tool-mark, provides the body with dependable tactile cues that guide movement, pacing, and spatial comprehension. Such elements constitute an information-rich field of haptic data that fosters orientation, attachment, and memory.

Brick functions as an effective haptic medium.

The analysis of brick's production logics and material performance explains why this material holds exceptional efficacy for tactile design. Occupying a perceptual mid-range of thermal effusivity, brick communicates environmental differences (sun/shade, exterior/interior) without extremes of coldness or warmth. Its granular surface, recessed joints, and multi-scalar textures invite touch, offering a tactile richness. Furthermore, brick bears the imprint of cultural tradition and historical continuity: it carries traces of craft, labor, and temporal weathering, supporting the argument that cultural memory and material presence are intertwined.

Case studies demonstrate haptic strategies.

The selected case studies reveal distinct "tactile grammars" of brick that, while diverse in context, converge on shared principles. At the Indian Institute of Management (Ahmedabad), Louis Kahn deploys depth, mass, and recessed apertures to couple environmental performance with bodily assurance. In Grundtvig's Church (Copenhagen), the continuity of hand-finished brick surfaces transforms mass into luminosity, producing an atmosphere where tactility is experienced as light-diffused texture. In Herzog & de Meuron's Switch House at Tate Modern (London), brick is reinterpreted as a woven rainscreen, shifting from solidity to veil, its perforations casting shadows that extend texture into atmosphere. These examples collectively demonstrate that haptic quality is not tied to stylistic affiliation, but to the precise calibration of thickness, porosity, finish, and sequencing in relation to the function, climate, and the tempo of bodily movement.

The findings validate the central hypothesis: designing for touch deepens connection, strengthens spatial memory, and enriches atmosphere. Brick proves to be a precise medium for this aim, because of its thermal, textural, and constructive qualities, with the case studies confirming that when calibrated to bodily perception, it can profoundly enhance architectural experience.

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