

Light, Dark, and all That's in Between:
Revisiting the Role of Light in Architecture

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis.

This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Natural light, aside from its functional roles, has little significance in many contemporary spaces. The decline of its earlier shared cultural values and lack of any other to replace these translates into an impoverishment of architecture's deeper experience and significance. By evaluating the connections that exist between light and architecture, and, consequently, between light and man, a better comprehension can be attained of its present value and of its potential as a creative inspiration and as an agent of its expression.

By tracing the relationship between light and architecture in Western culture, the forces that have shaped its significance are revealed. From agrarian cultures that connected closely to nature, to the anthropocentric modern era, the way light is treated in architecture has expressed the cultural relationship not only to the sun, to the light itself, but also to nature and to one's own position within it. The understanding of this progression and the analysis of the contemporary episode of this narrative elucidates the current significance and approach to light in architecture. The profound focus on light by many individual architects and architectural writers acknowledges its importance in contemporary architecture, although its collective cultural significance remains uncertain.

A broader conception of light's significance and ways of integrating it more meaningfully with architecture can be derived from positioning three case studies as complementary to the contemporary episode of its story. These case studies – the tearoom of the Katsura Palace, Junichiro Tanizaki's book *In Praise of Shadows*, and photographic series *Colors of Shadow* by Hiroshi Sugimoto – exhibit nuance and subtlety in consideration of light and shadows alike, illustrating a different approach and attitude to natural lighting. Light becomes more than an enriching physical phenomenon or agent of poetic evocation, it creates a deeper connection of man to his surroundings.

Two designs – a house and a library – explore this connection and the potential of light to articulate dwelling. In these, the encounters with light and shadows are palpable and intrinsic to the architectural space fostering the ability to appreciate light and its attendant significance.

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Introduction

Poeticized in Virgil's *Aeneid* as the abode of the oracle Sybil, the myth infuses the unusual cave in Cumae with mystery and magic. However, on their own, the cave's chthonic nature, dramatically lit stone walls, and unusual cross-section are enough to make the experience of it potent. Its long passageway is cut from the volcanic tufa rock of the seashore cliff. The trapezoidal cross-section is proportionate to a man's upright body. Seven bands of light, creating a dramatic pattern of light and darkness, splice the corridor. The light is channeled sharply through the deep openings, yet the textured tufa spreads the penumbras softly. The termination of this rhythm makes the darkened chamber beyond the passage abrupt. However, the abyss at the end of the cave – the end of the known – beckons. The small dark room pales in comparison to the promise that both the epic myth and the darkness hold, yet, the passage to it is affecting.¹ Perhaps the oracle did prophesize to Aeneas, or perhaps the later cult of Sybil used this space for oracular rites.² Regardless of its history, the imagination makes this space more potent. Possibly, it is the nature of its form and light alone that inspires the feeling of awe. In either case, the experience can be an affecting one. In the right frame of mind, it leaves an imprint that does not fade with time.

This deeply poignant experience - of being moved emotionally by a space, a room, a house, the way light falls and dissolves into the ancient surface of the pliable rock - is akin to the *numinous*, a religious feeling described by Rudolf Otto in *The Idea of the Holy*. The nature of the numinous is "such that it grips or stirs the human mind" into an affected state.³ As a powerful emotion, it is so elemental and underivative that it is hard to describe it in language as language already rationalizes experiences. It is ineffable. Otto, attributes the deep impression to *mysterium tremendum*, an indescribable awe "like nothing human or cosmic; confronted with it,

1 Lacking the refinement of form and given its strategic location above the mooring, the theory of the cave having been a part of military fortifications gains ground.

2 Raymond V. Schoder, "Vergil's Poetic Use of the Cumae Area," *The Classical Journal* 67, no. 2 (Dec., 1971 - Jan., 1972): 102.

3 Rudolf Otto, *Idea of the Holy: An Inquiry into the Non-Rational Factor in the Idea of the Divine and its Relation to the Rational* (London; New York: Oxford University Press, 1950), 12.



man senses his profound nothingness”.⁴ This ‘awe’ can be found in “the atmosphere that clings to old religious monuments and buildings, to temples and to churches”.⁵ This ineffable quality can indeed be witnessed in churches and sacred sites, like the cave of Sibyl. Le Corbusier, who referred to this affecting experience as “limitless escape”, was “crushed by the superhuman aspect of the things on the Acropolis, crushed by a truth which is neither smiling nor light, but which is strong, which is one, which is implacable”.⁶ The *mysterium tremendum* is evoked by “the clear, clean, intense, economical, violent Parthenon – that cry hurdled into a landscape made of grace and terror”.⁷ Masterful manipulation of form, mass, and light elevates Le Corbusier’s own Notre-Dame-du-Haut at Ronchamp to the level of a spiritual experience. The numinous experience is not unique to the sacred buildings; Luis Barragán’s residential projects, such as his own house, can also elicit the awe that pervades his Capuchin Chapel.

Such spaces have multiple layers that coalesce to impress the visitor deeply, but none is more vital and arresting than the dialogue between light and architecture. Light is the most intangible and one of the most mysterious of physical phenomena. It is intrinsically indivisible from perception and is immensely powerful in shaping an experience of architecture.

Perhaps the reason why light is so affecting can be attributed to its long-standing significance as a spiritual metaphor, both in religious dogma and in sacred buildings. Light emerged as a concept of the divine essence and as such was adored, physically and metaphysically, in the sacred rituals and architecture of many cultures. Because of its own unfathomable character, light has been a powerful accomplice to these beliefs and faiths, and, yet, apart from these, it remains inherently numinous. These religious connotations and their eventual rejection complicate the search for a deep and resonant relationship between light and architecture. The search for a significance of light in architecture is also burdened by the absence of a commonly understood or shared meaning. This lack of any metaphorical value fails to inspire a conscious engagement with it in architecture. A better understanding of light’s own evocative power can provide a renewed significance for its role in architecture. Light can evoke multiple interpretations - some are explicit while others are more obscure – that can forge a deeper connection between it and man, and, in turn, between man and the natural world.

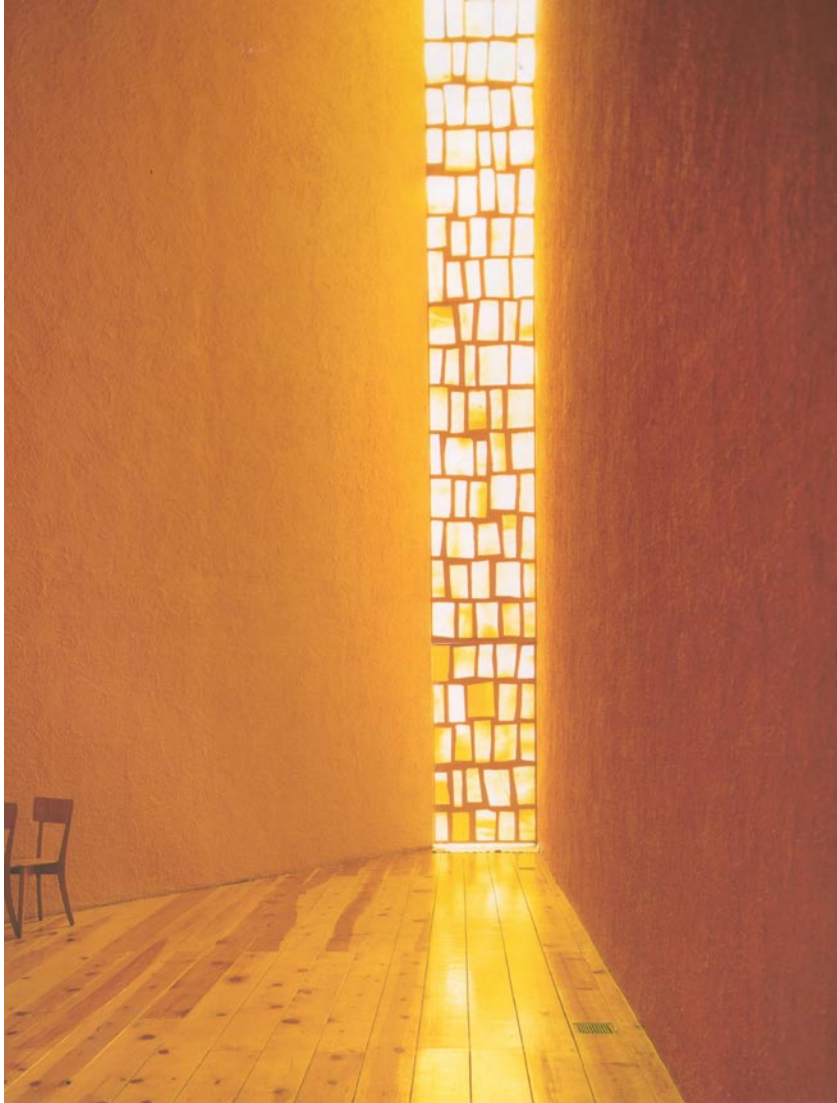
It possesses inherent meanings, such as the infinity of space and time; the connection to the past, present, and future; the passage of time; the

4 Mircea Eliade, *The Sacred and the Profane: the Nature of Religion* (New York: Harper & Row, 1961), 10.

5 Otto, 12.

6 Le Corbusier, *New World of Space* (New York: Reynal & Hitchcock, 1948), 66.

7 Ibid., 66.



3. *Capucin Chapel*, Luis Barragán, 1955

singularity of a moment; constancy and ephemerality; identification with place and nature; and many more. While these arise in the imagination, the richness and nuance of its effects can lead to profound physical engagement through the act of contemplation alone. The awareness of the potency of light and the multiplicity of its roles leads to design that provides opportunities for encountering it – the changing light and the beholder complete the experience.

The intensification of connections between light and architecture is significant as it makes one deeply aware of one's surroundings. The contemporary approach to lighting relies on instantaneous availability, abundance, and precise control. While artificial light answers all such demands, natural light resists as it is subject to diurnal cycles, weather conditions, and orientation of its sources. However, the convenience of artificial light comes at the cost of energy resources and disconnection physically and mentally from natural patterns. The dependency on – and

sensitivity to – natural light have receded only recently; men’s eyes still adapt to levels of light naturally if only given time to adjust. The patience needed for that or the effort spent familiarizing and adapting one’s schedule to the light cycles is counter to the attitude of instant gratification underlying the contemporary approach. If one considers the attitude towards using daylight ethically, rather than mechanically, a more natural mode of existence can be attained.

In the first section, the discussion will trace the history of the relationship between light and architecture in Western culture that has led to the contemporary relationship to light. From agrarian cultures that connected closely to nature to the anthropocentric modern era, the way light is treated in architecture has expressed the cultural relationship not only to the sun and to the light itself, but also to nature and to one’s own position within it. The analysis of the contemporary episode of this narrative elucidates the current significance and approach to light in architecture. While its collective cultural significance remains uncertain, the profound focus on light by many individual architects and architectural writers acknowledges its importance in contemporary architecture.

The second section looks at specific artifacts of another culture, one that does not share the historical narrative of light in Western culture. Through a discussion of its aesthetic philosophy and three case studies another attitude to engaging with light – and with physical world – is discussed. These case studies suggest that an engaged and contemplative way of relating to one’s environment forges a deeper understanding of the relationship between light and architecture and light and man. This, in turn, leads to a more profound intimacy of man and his surroundings, and of his place in the world. An understanding of the importance of both the object, light, and the beholder in the formulation of experience may lead to richer and more engaging architecture.-

The third section includes two projects, a house and a library. Within the designs, multiple encounters with light are created that explore how it affects form and the experience. In these, the ability of light to engage with built form enhances one’s ability to dwell and the connection to one’s surroundings.

Discussing Light: Terms, Roles, and Limits

Light is a very general term. In architecture, it describes more precisely the “effects of light” as seen on surfaces.¹ In this discussion, *light* is both the physical manifestation of natural illumination, however intangible, and the name of the topic that deals with all that it entails. Physical meanings of this term can also mean the sun, the source of illumination, and the total state of all light effects in one space. When considered as *effects of light*, in this discussion the term also includes the whole range of such effects from strongest to weakest manifestations, from bright illumination to darkness, including all the shadows and half-light tones in between. For physical manifestations, the term *light* is frequently preferred in this text as it encompasses a breadth of definitions, as opposed to the term *illumination*, which conveys a singular act or instance. Likewise, when used conceptually this word is very inclusive, encompassing within it ‘light’ as abstract title of the entire topic, as well as ‘light’ as both a concept and a physical phenomenon.

In Christian theology, light is differentiated into two types, *lux* and *lumen*. *Lux* is the physical light, illumination; *lumen* is the inner spiritual light, the divine light, transcendental and abstract. This distinction exists to differentiate the divine light as an analogy that illustrates Christian God and his divine nature. In architecture, *lux* and *lumen* inevitably overlap, as *lumen* inspires architectural interpretations.

In literal terms, light is the visible manifestation of electro-magnetic radiation. Its true physical nature as electromagnetic radiation remains to this day unclear, with many questions remaining. While many ways of creating and dealing with light have been discovered, as have many of its fundamental and absolute characteristics, the quantum character of light with its wave-particle duality and quantum potential is not yet fully understood by physicists.² The absolute irreducible nature of its qualities led to re-evaluation of the

1 Lou Michel, *Light: The Shape of Space: Designing with Space and Light* (New York: Van Nostrand Reinhold, 1996), xxi.

2 Quantum physics, a study of interaction of matter and energy, draws its name from quantum, or photon, a specific amount of energy in form of a radiation that the electron requires in order to jump between subatomic orbits.

understanding of speed, time and matter. As research into the quantum nature of light is not easily accessible and the nature of it is still habitually understood as particles or even rays, the mystery of the divine light was jettisoned for an equally inscrutable mystery of science. While early optical and light experiments were rational and easy to comprehend, contemporary experiments and discoveries are immense in their complexity and reach; they are impenetrable to most as they are so far removed from familiar physical reality.

Functional roles for light in architecture can be divided into illumination for vision, as well as thermal and electrical energy generation. Only the first deals truly with light, and is often of more value in terms of the quantity necessary for various visual tasks and human health. The other two deal with non-visual aspects of the electro-magnetic spectrum that inevitably accompany natural light. These are of great interest in sustainable building strategies, but their benefits are not due to the visible light, but to the companion invisible radiation. Thermal effects of sunlight come from infrared radiation, and energy generation by means of photovoltaic panels is the result of ultra-violet radiation that brings about chemical reactions accompanied by electricity generated by excited electrons. Similarly, light's most important functional role, that in photosynthesis on which most life on earth depends, is aided by invisible ultraviolet radiation.

Visible electro-magnetic radiation reflected off the environment is received as pulses of energy and the image is imprinted on the retina of the eye, an anatomical camera obscura, inverting the image upside down. Millions of receptors -rods and cones- convert the image into neural impulses and send it through the optic nerve to the visual cortex, where the information is reoriented, processed, and interpreted. The understanding of vision requires both the eye and the interpretive processes – cognition, such as reorientation and parallel processing. This makes visual perception inherently subjective and a process that can be easily subverted. Even before these neural processes were understood, vision was already implicated in a subjective relationship to its environment, and light was implicated alongside it, as the other half of all vision creation – light, the source, and eye, the receptor.

Light also plays a role in the physiology of humans, who are already phototropic. A third kind of photoreceptor in the retina is responsible not for vision, but for processing of light level information, and, in turn, regulating the production of melatonin and serotonin in the pineal gland. Together these account for mood disorders, immune health, circadian rhythms, and other physiological functions. Another health benefit of sunlight is its bactericidal property. These benefits were popularized by Florence Nightingale, a British nurse, who shook up the medical profession and hospital design with her

books *Notes on Nursing* and *Notes on Hospitals*.³ She advocated exposure to sunlight as treatment and designing for the sun and air. Confirmed by contemporary and later studies at the turn of the century,⁴ sunlight was used widely in hospitals at the turn of the twentieth century until it was replaced by antibiotics and stronger chemical cleaners. Light was incorporated into many modernist projects to take advantage of its multiple health benefits. Recently light treatments - the earlier type, heliotherapy, and the later, phototherapy - have found an enemy in skin cancer and sun-caused premature ageing. Although light's benefits are acknowledged, the sun is also shunned. These later developments of the twentieth century cast a negative connotation on the effects of sunlight on the human body, further widening the chasm between man and natural light.

The colour of natural light adds another level of nuance to architectural space. Sunlight is always permeated with a certain hue and daylight is coloured by the changing hues of the sky. Although light in question is natural light, the focus is on "white light"⁵ – clear, transparent daylight and tonal shadows.

Similar to this is the case of natural light from celestial bodies other than the sun. Although the light of the moon and the stars have had great significance for mankind in general, it has ceased to have any palpable relevance in Western architecture. As their symbolic significance diminished so did their presence in architecture, as they are not powerful enough as natural phenomena to re-assert their presence phenomenally. In addition, light pollution has long since alienated urban dwellers from the light of these, and in the case of stars, even from their sight. However, the celestial bodies have great value in other cultures and their value may be recaptured yet. While this discussion omits these forms of light from here on, light artist James Turrell might re-invigorate a deeper engagement, by championing them in his work – the Roden Crater:

I wanted to use the very fine qualities of light. First of all, moonlight. Also, there's a space where you can see your shadow from the light of Venus alone - things like this. And also wanted to gather starlight that was from outside, light that's not only from outside the planetary system which would be from the sun or reflected off of the moon or a planet, but also to emanate light from the galactic planes where you've got this older light that's away from the light even of our galaxy. So that is light that would be at least three and a half billion years old. So you're gathering light that's older than our solar system. And it's possible to gather that

3 Richard Hobday, *Light Revolution* (Forres, Scotland: Findhorn, 2006), 72.

4 Ibid., 73, 74.

5 Georges Teyssot and Jessica Levine, "The Simple Day and the Light of the Sun": Lights and Shadows in the Museum," *Assemblage* 12 (1990): 76.

light, it takes a good bit of stars to do that, and a good look into older skies, away from the Milky Way. You can gather that light and physically have that in place so that it's physically present to feel this old light. Now that's a blended light, of course, but it's also red-shifted, so it's a different tone of light than we're normally used to. But that's something that you can do here in a place like this, where you have good, dark skies. So to have this sort of old blended light and to have this sort of new, eight and a half minute old light from the sun - it's like having the Beaujolais and then having a finer, older mature blend [of wine] as well. And I wanted to look at light that way, because to feel it physically, almost as we taste things, was a quality I wanted. And this is where you can work with light like that.⁶

The following discussion excludes any further functional and technical roles of light, aside from the cultural meanings which originate from its practical characteristics. The combination of the warmth and photosynthesis that sunlight produces gives life to plants and humans alike, yet takes these when it is too strong or too weak. This particularly vital role initiated its cultural significance in the early agrarian cultures. The dependence of visual acuity of light, gave rise to its meanings associated with knowledge and comprehension of truth. In the modern era, as light was revealed to affect physical health, it came to mean - not only literally, but also to symbolize figuratively - well-being and purity.

The first part of this discussion is intentionally limited to the progression of light's significance in Western culture. Although many cultures have developed their own particular attitudes to light, none are as influential today on architecture as Western culture. As its social and economic ties strengthen and spread globally, so do its cultural values. This is clearly evident in the way light is addressed in architecture: the current significance it holds in the West is exported the world over. However, it has not been affected to the same degree by other cultures. As the significance of light has always been the drive for the creativity in how it is employed in architecture, it has a great influence on perceptual experience. Understanding the breadth and depth of the cultural value assigned to light in the contemporary context can expose shortcomings and opportunities that could enrich the way light relates to architecture and to man as well within the current episode of the Western narrative.

6 James Turrell, "Roden Crater" [interview], <http://www.pbs.org/art21/artists/turrell/clip1.html> (Accessed December 8, 2007).

Part One

Recent writing on the subject of light in architecture focuses mostly on either its phenomenological or its technical aspects. While this range aptly illustrates the prevalent attitudes, it also implicitly acknowledges an interest in and the importance of it. However, the near lack of a historic survey of its cultural significance reveals the failure to see this as an episode of a larger continuum and, as such, to consciously address its future direction.

Light's story is tightly bound to the entire cultural narrative of Western architecture. Although Western culture did not remain insular, it has a near-singular architectural progression that unfolded by successive reevaluation of its own traditions. As contemporary culture has become significantly more global, and cross-cultural communication increases, the values of the Western worldview and its values still resonate, strongly affecting perceptions of light.¹ The understanding of the convergence of these two histories exposes light as a gauge of how man relates to the phenomenal world and to nature in general. Lacking a story of light, some of it can be gleaned from a canonical history of architecture. As the nature of such a narrative is to identify various driving forces throughout the whole of architectural history, the story of light - only one of such forces - remains fragmentary and episodic. There, the episodes in which light is not explicitly addressed can reveal as much as those that depend on it as an inspirational force. By focusing on the one but not addressing the other, the narrative reinforces existing associations light has acquired.

Although many individual works stand out, crafting of this story requires some generalizations. However, once its own story is revealed, the nuanced role of light in the contemporary worldview and in architectural design may then illuminate the need for a new approach to exploring light in architecture.

1 This is relevant not only to architecture, but also to language in the connotations of various words and phrases: enlightenment, illuminated, illustrious, dark, left in the dark, delight, brilliant, in light of, etc.

Sun Worship

The known narrative of natural light begins with its source – the sun. In its early chapters, the dependence on its particular behaviour for life and growth precludes abstraction of ‘light’ from the sun; the two are indivisible culturally and architecturally – some of the earliest surviving architecture of such societies relates to the sun intimately. This dependence ensured the fundamental importance of sun and sunlight in their cultures and their persistence in their mythologies and architecture. As the state of the ancient world changed with time, so did the way it related to the sun. As the symbolic and religious worldview of primarily agrarian societies was replaced by the more rational cosmopolitan worldview of urban societies, the relationship to the sun became less important.

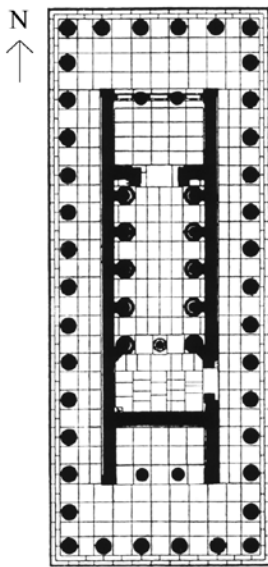
From Stonehenge to ziggurats, pyramids and sun temples, architecture of ancient cultures monumentalized the sun’s dominance in their worldview, the role of the sun in their cosmogony, and the direct relationship of man to the sun. These monuments revealed intimate knowledge of astronomical events and of sun’s patterns and cycles and those like the pyramids and sun temples of Egypt exalted the sun through phenomenological experience as well. In Egypt, this is especially acute and well documented as this monumental culture depended intimately on the sun and Nile, taking care to carefully document the behavior of each. There, the force of each to decide the survival of the inhabitants amounted to sublime scale and appropriately manifested as godly. Natural phenomena took on the abstract imagery of divine creatures, not metaphorical but fused together. By worshipping the divine figurehead of the sun, the sun was worshiped, but the reverse is equally true. Sunlight was related both mystically and directly. The point of the pyramid or of the obelisk represents the point of the sacred stone, *benben*, where Ra, the sun god, manifested himself during creation. The vertical axis of these connected living to the sky directly; their cardinal alignment corresponded to the geometry of the sun’s path. The slant of the pyramids is a ray of light, which the deceased climbs to join Ra in his vessel as he sails across the sky. Phenomenally, light pervaded the significant constructions. The gleaming limestone cladding of the pyramids glowed, infused with sunlight; the gilded cap shone, capturing a portion of the sun’s brilliance. The floors and walls of the temples glowed too, as the sun admitted through the clerestories was trapped in the alabaster veneer. In the sacred chamber, the statue of the god was washed with the zenithal light admitted through the skylight – its countenance changing as light changed with time or with a passing cloud.

The natural forces were less important in Greek mythology and worship, where the separation of the natural phenomena and their person-image progressed further. As deities became more humanized, some human heroes became more divine, reflecting the emerging importance of the

individual out of the importance of the collective, but also distancing of men from nature. The mythological faded in favour of human reason; the religion itself became more human-centric. The connection to the sun was not as potent as in Egypt; in Greek architecture, sun mainly played the role of illumination, but no temple monuments were dedicated to Helios.² However, light had a more mystical role beyond the light and shadow play in the crevices of the classical façade. Temples were oriented in a way that would ensure that the rays of the rising sun would reach the deity within the dark cella on its festival day through the only pair of doors, making it a singular and mythical event. As the religious worship underwent a change that allowed the worshippers to enter the cella, the deity's sacred space, the mystical light became internalized. The divinity was nearly always illuminated from a hypaethral opening, creating a dramatic light experience for the worshippers. However, a major break formally and in regards to lighting can be perceived in the Temple of Apollo Epicurius in Bassae (429-400 BC), where the individual ingenuity of its architect, Ictinus, resulted in a side-lit cella. Tight site conditions led to north-south orientation on its long axis, where as east-west is typical for such temples. Rather than forfeiting the east sun, an unusual side opening in the adyton admitted its rays that passed between two outer columns, illuminating with light from the side the cult statue of Apollo, for whom the sun is also an attribute. This created a drama of dark and light; the dark naos containing worshippers looked into the bright naos containing the god, as the sunlight traveled rapidly to illuminate its image:

The procession would then gather within the pronaos or the pitch-black interior of the cella. Here they would see the light of dawn flash dramatically into the still and dark adyton to spotlight the head and torso of the bronze statue of Apollo Epicurius. Within a few minutes the light would spread over the entire figure and make a bright line across the adyton floor. This light would remain for a brief twenty minutes, then narrow and quickly disappear. The temple would then return to darkness. [...] It appears that the temple was oriented and many elements within its plan were designed especially for this phenomenon.³

As societies grew more complex, spiritual concerns became secondary to practical ones. In Rome, the religious pantheon was foremost at the service of the state. As the empire grew, to pacify its conquests Rome imported foreign religions and deities. It accepted all those that would accept the religious pluralism of Rome. These imports were syncretized with local deities to cement political unions culturally and spiritually. However, this process



4. Plan, *Temple of Apollo Epicurius, Bassae*



5. View in the cella towards adyton, *Temple of Apollo Epicurius*

2 The cult in Rhodes was the only one in Greek lands dedicated to Helios.

3 Frederick A. Cooper, "The Temple of Apollo at Bassae: New Observations on Its Plan and Orientation," *American Journal of Archaeology* 72, No. 2 (1968): 111.



abstracted both the deity and the natural phenomena even further, creating unfamiliar state-sanctioned godheads. While the architecture was pervaded with symbolism, the metaphors became looser and more encompassing. The intangible and pluralistic nature of light led it to become a frequent metaphor that stood for many meanings. The importance of light yet the freedom to interpret it, technically and spiritually united to begin to envision architecture as phenomenal and experiential, one in which light played no small role. Its handling in architecture became freer developing a rich architectural vocabulary of illumination; inventive designs were created by individual architects who utilized light to create experiences for the inhabitants foremost, rather than symbolic connection to the sun or to a certain deity that represented it. The experience of a residential atrium house in Pompeii or of the Golden Palace in Rome was augmented by the thoughtful use of illumination. Sunlight was an instrument rather than object of veneration, reflecting the significance and altered meaning not only of the sun, but that of nature as well. The role of the sun became so abstract, that the entire relationship reversed and came full circle: the syncretized state godhead of Rome, Sol Invictus, was represented by the sun – whereas before, the sun was represented by the deity, now the sun was the symbol for the god.

Worship of the sun, which began as adoration of a natural phenomenon, was abstracted once the sun was represented as a personage. It was further removed from its original meaning when various solar deities were merged to unite cultures, creating syncretized godheads such as Amun-Ra in Egypt, from gods Amun and Ra; Apollo Helios in Greece, from Helios and Apollo; or Sol Invictus in Rome from the Sun God of Emperor Aurelian, El-Gabal of Emperor Elagabalus, and the god Mithras. Sun and sunlight,

Left

6. Axis through the atrium and the garden in a Pompeii residence

Right

7. The Octagon Room, *Golden Palace*

8. *The Pantheon*

“Above all it is the garment of light worn by the rotunda which connects the individual with the heavens, and which, appearing in movement on the architecture, bridges the intangible and tangible. The long cylinder of light that is shaped by the oculus and pries through the building is one of the greatest triumphs in architecture of the expression of a world-feeling”.

William L. MacDonald, *Pantheon: Design, Meaning, and Progeny* (Cambridge, Mass.: Harvard University Press, 2002), 91.



having been of paramount significance to earlier agricultural societies, declined as religious subjects in the ancient world as it grew more complex and less dependent on the earth's bounty. The prehistoric relationship with the sun, its cycles, and characteristics in architecture became less relevant until light became largely part of the phenomenal experience, enriched by individual inventiveness. Although the sun was still perceived as powerful, the weakening perception of a tangible connection between sun and survival made earlier faiths and beliefs less relevant for new urbanized cultures and their monuments.

Sacred Light

Inability to connect to estranged godheads and mythology contributed to the rise of Christianity. As earlier religions based on connection to natural phenomena lost their meaningfulness in a context of urban culture removed and independent from nature. A new anthropocentric view was reflected in the popularity of faiths that centered on humanity, such as Zoroastrianism, Mithraism, and Christianity. The latter, first accepted then banned, became dominant after Emperor Constantine legalized and eventually converted to it. As a fledgling monotheistic religion with obvious debts to earlier faiths, Christianity had to establish a solid dogma that severed any comparisons to “pagan” religions. It profoundly changed the relationship between man and the world and, in doing so, it changed his relationship to light itself and its role in architecture.

Light was significant for two reasons in the new theology: first, by using abstract light it could distance itself from dependence on the sun as the ultimate source of life, and, second – more importantly, by using it as a metaphor it could differentiate the nature of the Christian god from those of pagan gods. In the Bible, light is a universal metaphor for God permeated with recurrent divine light imagery – as the source of light, as radiance, often as ‘the lamp’. Fourth-century theologian St. Athanasius cautioned against literal interpretation of the Bible, suggesting that it should be seen as a pattern of imagery that together represents an analogy to the indescribable reality of the divinity.⁴ As neither earthly words nor images can come close to describing its true nature, suffering from “basic inadequacy,”⁵ light, the most intangible of earthly phenomena, only stands for the ephemerality, pervasiveness, and infinity of God’s essence. Light is the closest that humanity has for this purpose and a better metaphor should not even be attempted as it is “rash to pry into the incomprehensible nature [of God].”⁶ This frequent light imagery standing in for the divine established a notion of *homoousius*, the divine creative essence of God. Additionally, by using biblical light images symbolically rather than literally, parallels were reduced between usage of light metaphors in the Bible and in many pagan religions that referred to light literally, especially those of Near East, such as Zoroastrianism and Mithraism. To distance from these parallels and the mythical quality of the Old Testament, theologians like Athanasius read the Bible as a pattern of imagery.

Whether god was symbolic of the sun or the sun was symbolic of the god, sun worship was rejected by the Christians as having been associated with polytheistic pagan religions, even sunbathing was prohibited as “a pagan

4 Jaroslav Pelikan, *Light of the World; a Basic Image in Early Christian Thought* (New York: Harper, 1962), 26.

5 Ibid.

6 St. Athanasius quoted in Pelikan, 23.

practice synonymous with the sun worship.”⁷ Light’s primary symbolism and its metaphysical nature are affirmed in the creation myth of Genesis. Unlike in other cosmogonies of the Western World, where the sun and celestial bodies are among the first to be created, it differs in that one of the very first divine acts on the first day of Creation was to create light,⁸ preceding the creation of the sun or the moon, which were both formed on the fourth of seven days. Creation of light was his second act, following the creation of earth and heaven,⁹ his third act was to separate the mixed light and darkness into phases of the day: “having seen the light, God then separated it from darkness, these have become day and night.”¹⁰ In this cosmogony, both light and daylight are unaffected by the existence of physical sources because all light emanates from God; it is seen as order created out of chaos, a creative reason, the Logos. Light is also a metaphor of the absolute nature of the Logos – indivisible and eternal – “the Logos [...] had been the light of the world all along.”¹¹ Similarly in the heavenly city, new Jerusalem of St. John’s Revelation, the light exists independently from any sources, emanating from the presence of God: “the city has no need of sun or moon to shine on it, for the glory of God is its light.”¹² Sun and sunlight were expressly not part of the Christian faith; light, abstracted and uncoupled from its source, came to resolve an undesired comparison of this faith with its nature-based fellows.¹³

The divine essence, *homoousius*, represented analogously as divine light, *lumen*, also served to distance the new faith from other polytheistic religions and to address some dogmatic issues within the Bible. The presence of Father, Yahweh, and Son, Jesus, in the Bible and their filial relationship, reminiscent of the mythologies of gods of the classical pantheon, was reconciled, together with the Holy Spirit, by the divine essence into one entity, God. Therefore, all three divinities of the Bible are a manifestation of one and the same. The divine essence as illustrated by light was indivisible and infinite explaining the underlying unity of divinity. The divine essence, like light, is not diminished by division and, like light, is not derivative. This use of the biblical light metaphor became crucial as “through the evolution of the image of light and radiance from rhetorical naïveté to theological subtlety and

7 Richard Hobday, *Light Revolution* (Forres, Scotland: Findhorn, 2006), 14.

8 *Holy Bible: Containing the Old and New Testaments with the Apocryphal.* (New York: Oxford University Press, 1989), Gen. 1:3.

9 Gen. 1:1.

10 Gen. 1:4.

11 Pelikan, 51.

12 Rev. 21: 23.

13 Many individual solar deities had a festival day on December 25th, including Mithras and Sol Invictus, the day of Roman solstice and the day when the sun begins to reclaim its power - a rebirth in a way - same day as Jesus Christ’s birthday is attributed too.

precision, the dogma of Trinity came of age”¹⁴ and was later codified in the Nicene Creed. As the Holy Spirit resides in all enlightened men, “children of light,”¹⁵ Christ is the continuation of the Holy Spirit that resided in Mary all along. It follows then that Jesus Christ was eternal before his human birth and while derived from the Father, they have no typical filial relationship. This explained the nature of the Immaculate Conception, which otherwise still resembled old mythologies of Olympian gods.

Association of light with God and goodness creates a faith that sets up a contrast with darkness that is associated with the devil and evil. This powerful duality persists in Western culture. Since God created the world, as his creation, it is then full of goodness illustrated by the image of light; men, also his creations, are also of light and of goodness. As the opposite of light’s goodness, darkness “stood for sin, not merely as a moral evil, but as the threat of non-being.”¹⁶ The duality of light and dark as good and bad is emphasized when God is represented by light, since light is most tangible in darkness. The sin is the spiritual darkness, and sin and evil is then ‘non-being’, an illusion of reality, a false state of both the world and men. So the Heaven, the realm of light, has been considered the abode of God and the angels, and the darkness, Hell, belonging to the devil, Lucifer, and demons. Lucifer, literally ‘the bringer of light’, the man who denied goodness and God’s omnipotence, is submerged in darkness and sin. Unlike other beliefs and cosmogonies, where darkness is full of fertility and potency, in Christianity it has deeply negative connotations.

Light’s illumining quality represents Christ’s offer of salvation to the faithful from darkness redeeming the fall of the original sin. Christ illuminated the souls and rid them of the darkness of non-being, offering not forgiveness of the original sin but “metaphysical transformation of man into God”;¹⁷ he taught the knowledge of God and that man himself is part of divine *homoousios*. Referring to men as ‘children of light’ meant an integral relationship to God rather than a derivative one -that of creature created. Enlightened man saw himself as “a sharer in the nature of God.”¹⁸ Men’s being part of light, and subsequently of the divine essence, meant a direct unmediated relationship with God.

The analogy of a divine creator with light gives, abstract light another of its new meanings: the life and insight-giving ability of Christ, an enlightening divine essence. The equivocation of God with light, rather than with the sun and sunlight, bestows a spiritual quality on physical light by association. Light, removed from its celestial source, in Christian culture,

14 Pelikan, 55.

15 Ibid., 96.

16 Ibid., 108.

17 Ibid., 82;

18 Ibid., 85.

9. Hagia Sofia, 532-7

“... It abounds exceedingly in sunlight and in the reflection of the sun’s rays from the marble. Indeed one might say that its interior is not illuminated from without by the sun, but from within it, such an abundance of light bathes this shrine... The whole ceiling is overlaid with pure gold, which adds glory to the beauty, yet the light reflected from the stone prevails, shining out in the rivalry with the gold ... And so [the worshipper’s] mind is lifted up towards God and exalted , feeling that He cannot be far away, but must especially love to dwell in this place which He has chosen.”

Procopius, Justinian’s court historian, quoted in Robert G. Calkins, *Medieval Architecture in Western Europe: From A.D. 300 to 1500* (New York: Oxford University Press, 1998), 44.



acquires a metaphysical character – *lumen*, “an image for speaking at the same time about the nature of God himself and about the meaning of his creative act.”¹⁹ Metaphysical light contained multiple elaborate meanings that made it significant not only in dogma but also in architecture. Unlike sunlight, it was theoretical and lacked any connection to the physical world. However, it, too, found a way to translate physically into the architecture of the new Church. Although ecclesiastics explicitly did not see physical light as representative of its metaphysical abstraction *lumen*, the conscious exultation of light effects and illumination in Christian churches occurred for the same reason as did the sumptuous mosaics and frescoes portraying biblical content – they all stood for divine imagery and stories of the Bible, instructing the laity and glorifying the God. The evocation of *lumen* through corporeal light profoundly affected the relationship between light and architecture for the next millennium. The role of light in ecclesiastical buildings was fundamental to the development of the Christian Churches’ own expressiveness.

¹⁹ Ibid., 39.



10. Ceilings, *Basilica of Saint Mark*, Venice, 1063-1617

Although to find the most appropriate form for church architecture was difficult, the treatment of light was typical among many. Whether basilican, cross-shaped, rotund, or otherwise -like the complex spatiality of Hagia Sofia- the early Christian churches are lit from clerestory windows with light that falls from above; from the heavens, the heavenly light of God. This is especially clear in spaces with central domes where the murky upper vaults of the churches are pierced by the rays of light guiding the worshipper's eye heavenward. The domes themselves represented the "domical image of heaven"²⁰ and their vertical reach symbolized the reach for heaven. Decorative golden mosaics reflected light back, visually insubstantiating the massiveness of the ceiling and creating light-filled "airy volumes under the vaults"(Macdonald 45 eca). The clerestory windows were spaced apart from each other so that the wall dematerializes opening the upper spaces to the infinity of the sky.

Consideration of light was part of conceiving the processional experience, creating drama through variation in illumination. The experience of a narthex-fronted church accessed from the atrium, such as the Holy

20 William Lloyd MacDonald, *Early Christian & Byzantine Architecture* (New York: George Braziller Inc, 1962), 33.

11. Santa Sabina, 422-32



Sepulchre in Jerusalem or old St. Peters of Rome, “was created by the rhythmic sequence of light and less light and the repetition of carefully disposed emotional and architecture climaxes.”²¹ In atrium scenarios based on Roman domestic and public models of organization²² or in those without the atrium, the narthex served as the intermediary between light of the exterior and the twilight of the interior. The inner space of the church revealed itself with time as the eyes adjusted to the gloom, revealing the light – the divine – after one experienced the awe brought about by the darkness. Darkness was dispelled by the viewer’s own sight adjusting – literally and, perhaps, metaphorically. Characteristic emphasis on the relationship between light and architecture was evident in early Christian architecture already where “light was a prime ingredient, so channeled and manipulated as to increase the effects of mysteriousness and immateriality”²³ reflecting the mysterious and transcendent nature of *lumen*, and consequently of God.

A long interruption in the development of architectural form accompanied Europe’s descent into the Dark Ages and the following unrest; the reemergence of sacred building as Europe entered a period of stability continued the development of the relationship of architectural form and light. The approaches to illumination of the Carolingian and the Romanesque drew on the richness of early Christian Churches, but also expanded the vocabulary of illumination and treatment of light. While the early Christian practice of

21 Ibid., 21.

22 Ibid.

23 Ibid., 17.

making the upper space of the nave lighter persists at pilgrimage church Ste.-Foy at Conques (1050-1120), the light is layered richly and vibrantly:

Natural light filters across the tribune into the upper nave through twin, round-headed openings, one per bay, and spreads in lengthening bands on the floor across the aisles below. This diffuse illumination enhances height and emphasizes the east end of the church where large windows in the curved walls of the radiating chapels, and others directly below the apse half-dome, conjure a luminous crown that draws us toward itself.²⁴

The desire for more light entering the building from as high up as possible was so important that it led to structurally precarious placements of the windows immediately at the springing of the vaults, such as at churches of Sainte-Étienne in Nevers or Saint-Philibert at Tournus.²⁵ The desire for abundance of light contradicts the notion of sacred light, which is inner light. However, it is apparent from the risks taken in this construction approach that the natural light continued to develop as a metaphor for *lumen*.

This was also reflected in the way light was admitted to the interior. Compared to early Christian Churches, the placement and form of windows became more conscious and less habitual, changing the experience of the space and even pushing structural innovation to achieve certain effects. The window sizes gradually increased while the vault of the church reached higher and higher, and closer to heaven. Once admitted, light was layered and filtered through the aisles, colonnades, galleries, and curtain walls, caught in sculptural reliefs and reflected. The thickness of the masonry at the clerestory windows also served to diffuse the light entering within, creating an atmosphere infused with light. Manifestation of light as atmosphere of brightness was more fitting if the notion of *lumen* is to be expressed architecturally, as light is then distanced from the sun – a reminder of light's prosaic source and nature, *lux*.

Cistercian monks who censured the increasing monumentality and opulence of churches and services made appropriate distinction between inner light and literal light, yet, their churches are elevated by their light effects. St. Bernard condemned the Cluniacs' architecture for "the vast height of [the] churches, their immoderate length, their superfluous breadth"²⁶ while the money could have gone to the poor. He wished for spaces where "silence and a perpetual remoteness from all secular turmoil compel the mind to meditate

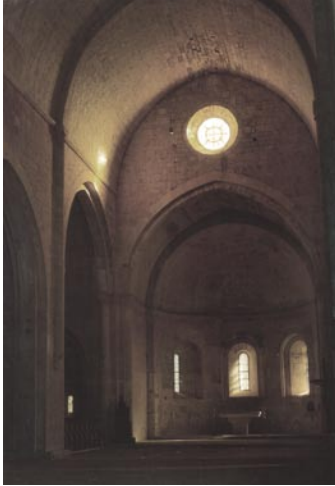


12. Ste.-Foy, Conques, 1050-1120

24 Spiro Kostof and Greg Castillo, *History of Architecture: Settings and Rituals* (New York: Oxford University Press, 1995), 307.

25 Robert G Calkins, *Medieval Architecture in Western Europe: From A.D. 300 to 1500* (New York: Oxford University Press, 1998), 115.

26 St. Bernard quoted in Calkins, 134.



13. Church of Le Thoronet,
1160-1240

on celestial things.”²⁷ Cistercians pared down their buildings so vigorously that even plastering was forbidden as it was the first step to decoration. Stained glass windows, popular at the time, were also banned by a decree and the existing ones were ordered to be replaced by regular glass. As a result, the design relied on proportion and light, the two primary elements in design of the Cistercian sacred spaces. However, the bareness of Cistercian buildings only serves to emphasize the richness and complexity of light effects and of the potency of natural light: “light and shade were the loudspeakers of this architecture of the truth, tranquility and strength.”²⁸ Another possible reason could be that lacking the need to address decoration, the designer consciously adorned their buildings with light and shadows. The challenge of such architecture is described by Spiro Kostof:

Intellectualized environments of faith, conducive to introspective, abstract spirituality, are not easy to bring off. To make certain they do not look secular or boring or both, one has to rely on beautiful construction with perfect, lucid detailing, a special feel for light, and a sense of architectural proportion which is infallible. Vague words all: beautiful, special, infallible. There is always an element of vagueness in discussing buildings that move us. It is never sheer size that is impressive but the quality of size; never the nature of materials but their handling. One has rules, of course, and they ensure competent, satisfying buildings. But they alone do not account for the making of eloquent space.²⁹

Such eloquence manifested in illumination, which – created out of restraint – assumed a larger prominence in Cistercian architecture that can be seen in Abbey Le Thoronet(1160-1240) or Abbey of Fonteney(1118-1147). In these sparse interiors, the relationship of light and architecture comes to the forefront. Rather than just illumination, it is the atmosphere or, rather, an immersive ambience that is created by amplification of light and reduction of material palette resulting in “solid luminescence.”³⁰ The handling of light in Le Thoronet illustrates its transcendence from abstract to physical, or as architect John Pawson puts it: “an extraordinary example of the way spirituality and philosophy can become architecture.”³¹ Here, light goes

27 St. Bernard quoted in Abbot of Saint Denis Suger and Erwin Panofsky, *Abbot Suger on the Abbey Church of St. Denis and its Art Treasures* (Princeton, N.J.: Princeton University Press, 1973), 12.

28 Le Corbusier, “Foreword,” in Lucien Hervé and Francois Cali, *Architecture of Truth : The Cistercian Abbey of Le Thoronet* (London ; New York, NY: Phaidon Press, 2001), 7.

29 Kostof, 328.

30 John Pawson, “Afterword,” in Lucien Hervé and Francois Cali, *Architecture of Truth : The Cistercian Abbey of Le Thoronet* (London ; New York, NY: Phaidon Press, 2001), 153.

31 *Ibid.*, 153.





Left

14. Nave and aisle, *Church of Le Thoronet*

Above

15. Lay brothers' building, *Le Thoronet*

beyond beauty as it “symbolizes the physical presence of the divine.”³² The powerful architecture of the Cistercian sacred buildings possibly had larger consequences as “the simplicity and austerity of this building style may have influenced the formulation of the Gothic Style.”³³

Although many elements of this new Gothic style were emerging in various Romanesque precedents of the earlier centuries, Abbot Suger of St.-Denis can be singled out as a character of special importance to formation of the Gothic Style, as it was he who “brought many of these elements together in a new synthesis.”³⁴ The elements that came to characterize the Gothic style— the eroded wall, the ribs of groin vaults, the pointed arch, and the flying buttresses – in combination created an airiness and elegance that sets them apart from the massiveness and solidity of earlier churches, first done so in apse of St.-Denis(1140-44). This resulted in a new kind of spatiality that together with unprecedented quantity of light united to create ethereal environments: “for the twelfth and thirteenth centuries light was the source and essence of all visual beauty.”³⁵ Suger’s philosophy had common principles of light,

32 Ibid.

33 Calkins, 135. Otto von Simson voices it more strongly when speaking of their philosophy -and criticism of earlier construction - rather than architecture: “the influence of Cistercian upon the first Gothic architecture is beyond question” (Otto Georg von Simson, *Gothic Cathedral: Origins of Gothic Architecture and the Medieval Concept of Order* (New York: Pantheon Books, 1965), 56).

34 Calkins, 172.

35 Otto Georg von Simson, *Gothic Cathedral: Origins of Gothic Architecture and the Medieval Concept of Order* (New York: Pantheon Books, 1965), 50

proportion, and material handling to those of the Cistercian buildings, but unlike these, Suger's additions to St.-Denis are minimally decorated yet opulent through rich structural form and luminosity. The new transparency achieved by enlarging the windows and reducing the solid mass produces immateriality that acted as counterpoint to the more solid contemporaneous built form. At St.-Denis the church become an otherworldly setting – a divine space: “the whole would shine with the wonderful and uninterrupted light of most sacred windows.”³⁶

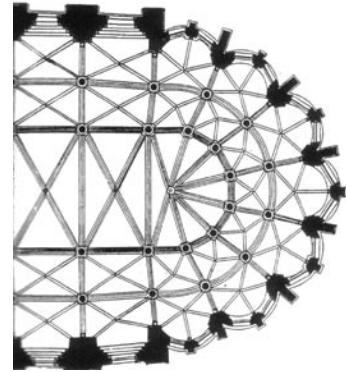
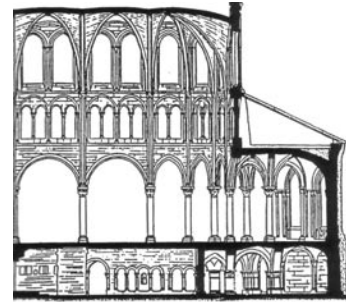
Suger was deeply fascinated with light and its sacred symbolism, inspiring his particular attention to it at St.-Denis. The dissolution of the wall mass reflects this interest in the symbolism of light, the theological preoccupation of the time, drawing on typical reading of light imagery in the bible as well in the writings of Dionysius of Corinth, mistakenly considered to be writings of St. Denis.³⁷ Dionysius wrote that all is light: “every creature, visible or invisible, is a light brought into being by the Father of the lights... This stone or that piece of wood is a light to me...”³⁸ As a “proto-humanist,”³⁹ it is fitting then that Suger would seek to embody the sacred light in the perceptual experience of its physical counterpart. In one of his inscriptions, it is clear that he felt that the brightness of the physical work would brighten the mind:

Bright is the noble work; but being nobly
bright, the work

Should brighten the minds so that
they may travel, through
the true lights,

To the true light where Christ is
the true door.⁴⁰

Contemporaries, too, considered *lux*, physical light, as analogous to *lumen*, transcendental light, as among “corporeal things light is most similar to Divine Light.”⁴¹ The analogous worldview bridges the gap between



16. Restored chevet section and plan, *St.-Denis* (William Clark after Sumner Crosby)

36 Suger in Abbot of Saint Denis Suger and Erwin Panofsky, *Abbot Suger on the Abbey Church of St. Denis and its Art Treasures* (Princeton, N.J.: Princeton University Press, 1973), 101.

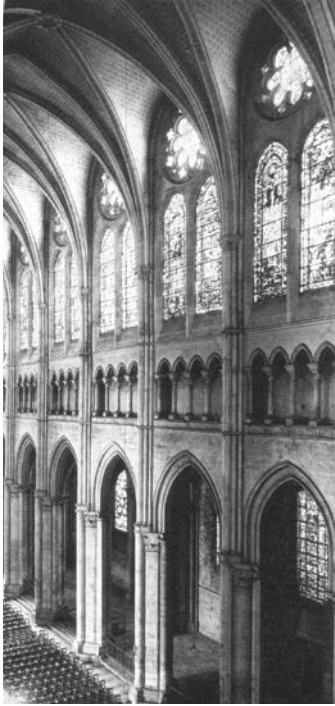
37 Erwin Panofsky in Abbot of Saint Denis Suger and Erwin Panofsky, *Abbot Suger on the Abbey Church of St. Denis and its Art Treasures* (Princeton, N.J.: Princeton University Press, 1973), 18.

38 Panofsky, 19.

39 Panofsky, 17.

40 Suger, 23.

41 Simson, 53.



17. *Chartres Cathedral*, 1194-1220

metaphysics and the aesthetics of Gothic lighting.⁴² Corporeal light thus represented the most valuable manifestation of the divine. It is “the noblest of phenomena, the least material, the closest approximation to pure form”.⁴³ In his thirteenth-century treatise “On light or the Beginning of Forms”, Robert Grosseteste shows mathematically the nature of the relationship between light and form:

the first corporeal form is, in the opinion of the philosophers, more exalted and of a nobler and more excellent essence than all the forms that come after it. It bears, also, a closer resemblance to the forms that exist apart from matter. But light is more exalted and of a nobler and more excellent essence than all corporeal things. It has, moreover, greater similarity than all bodies to the forms that exist apart from matter, namely, the intelligences. Light therefore is the first corporeal form.⁴⁴

Grosseteste’s thinking unites form through light as light is indivisible, and it unites visible and invisible dimensions of the world.⁴⁵ It is the fabric that joined the real and the apparent world of the Christians:

Light is conceived as the form that all things have in common, the simple that imparts unity to all. As an aesthetic value, light, like unison in music, thus fulfills that longing for ultimate concord, that reconciliation of multiple into one, that which is the essence of the medieval experience of beauty, as it is the essence of its faith.⁴⁶

Such was the power of the metaphor that it formed the impetus for further growth of light’s significance in architecture; however, more literal, biblical metaphors shaped the actual architectonic language of illumination. Rather than streaming light from above – as though from the heavenly God – the new approach to lighting took after the biblical description of the post-apocalyptic heavenly Jerusalem.⁴⁷ It has “a radiance like a very rare jewel, like jasper, clear as crystal”.⁴⁸ God is always present in this mythical city as light, so that there are no obvious sources of light and no need for the sun or the moon.⁴⁹ In the City of God all is precious and luminous and “the wall is built of jasper, while the city is pure gold, clear as glass.”⁵⁰ All kinds of

42 Ibid., 54.

43 Ibid., 51.

44 Robert Grosseteste, *On Light (De Luce)*, Transl. Clare C. Riedl (Milwaukee, Wis.: Marquette University Press, 1942), 10.

45 Simson, 51.

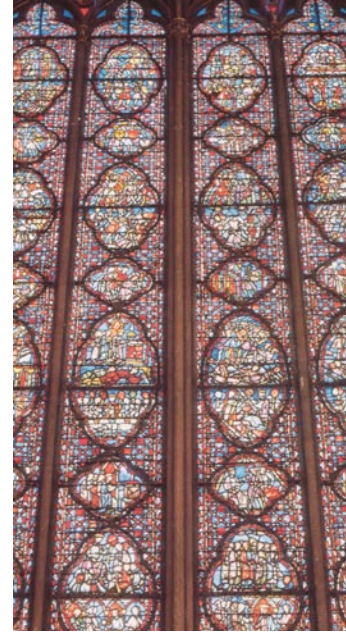
46 Ibid., 54.

47 Ibid., 8.

48 Rev. 21:11.

49 Rev. 21:23.

50 Rev. 21:18.



jewels adorn the city walls and gates and “the street of the city is pure gold, transparent as glass.”⁵¹ Inspired by these descriptions, Abbot Suger created a clear crystalline church that stood for the image of the heavenly city filled with objects encrusted with gemstones and precious metal. His contribution to the development of the idea of sacred space and sacred light formulated Gothic architecture. The illumination in the churches strove to replicate the radiance, a glow or a luminescence, that made the worshippers feel suspended and enveloped in dazzling light, an exuberant and awesome corporeal manifestation of *lumen*: “in the physical light that illuminated the sanctuary, the mystical reality seemed to become palpable to the senses.”⁵² Gothic light culminated during Rayonnant style, the ‘radiant’ high Gothic, best characterized by the church of Ste.-Chapelle in Paris. Richly-coloured stained glass windows allow luster but not brilliance, adding to their diaphanous and mysterious atmosphere and unearthly immateriality.

Italian architecture, largely free of Gothic influence, was influenced by humanist philosophy and classical revival resulting in the rational and serene architecture of the Renaissance.⁵³ However, this style was little suited to the pressing need of the Catholic Church to reignite religious fervor following the Reformation. In its stead, an architecture of drama and emotions rose to mark a new development in the relationship between religious architecture and sacred light: Baroque light.

Counter-reformation Church encouraged a personal relationship to

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18. Ste.-Chapelle, 1242-48

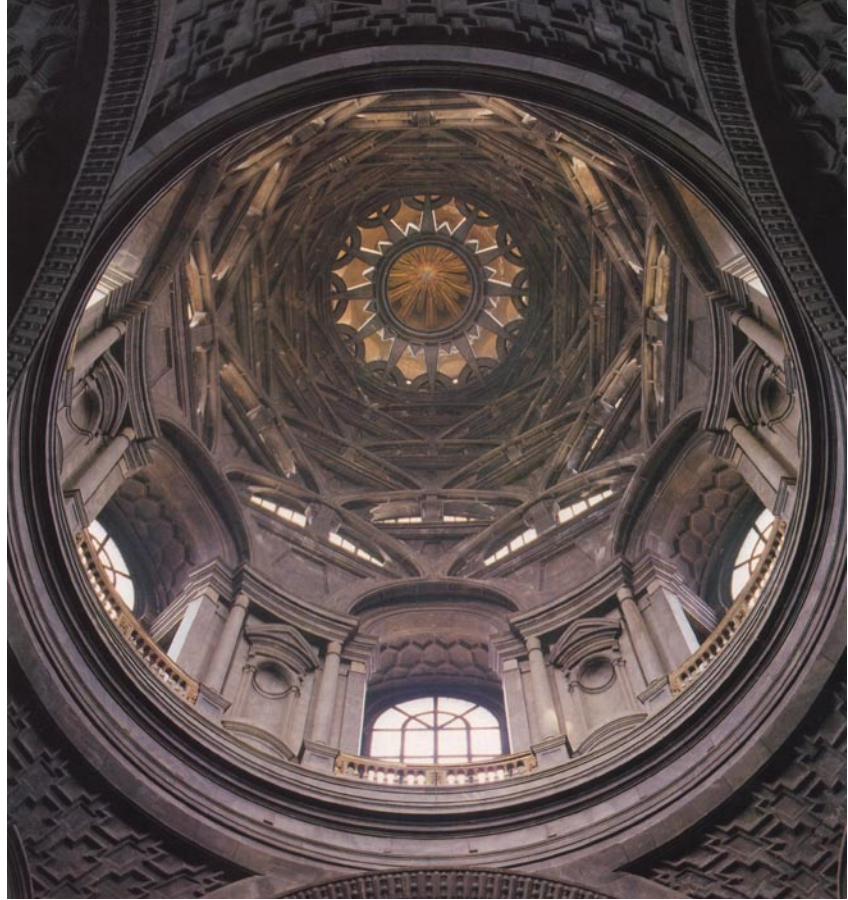
Right
19. Window detail,
Ste.-Chapelle

51 Ibid., Rev 22:21.

52 Simson, 55.

53 Renaissance is discussed in the next section, “Modern Light”.

20. Dome, Chapel of the Holy Shroud, Turin Cathedral, Guarino Guarini, 1667-90



the divine. In turn, this individualized spirituality led to placing a greater emphasis in architecture on “ ‘phenomenization’ of experience.”⁵⁴ This resulted in architecture with a “ theme of persuasion”⁵⁵ that sought a more visceral and passionate expression for faith, more exuberant and affecting. As sciences became more specialized, the architects found themselves less involved in the intellectual study of reality, and exploring more sensory and phenomenal subjects. The highly individual approaches of Giulio Romano and Michelangelo prefigured the expressiveness, freedom, ambiguity, and complexity of the Baroque. Arts – architecture, sculpture, and painting – allied to create the most intense impression in its viewer. In such a synthesis, light was essential to creating drama, movement, and force, evoking emotions from jubilation to terror. The new approach was unambiguously irrational rather than rational; Baroque buildings sought “to impress and overpower.”⁵⁶

54 Christian Norberg-Shulz, “ Baroque and Its Buildings,” in *Triumph of the Baroque: Architecture in Europe, 1600-1750*, ed. Henry A. Millon (New York: Rizzoli, 1999), 59.

55 Ibid., 72.

56 Hilary Ballon, “Architecture in the Seventeenth Century in Europe,” in *Triumph of the Baroque: Architecture in Europe, 1600-1750*, ed. Henry A. Millon (New York: Rizzoli, 1999), 111.



A new and inventive architectural arsenal of lighting techniques and effects reflected a heightened attention to light's significance in the architectural experience. The language and architectural vocabulary increased and expanded to engage with sculpture and painting, with ways of admitting light and light effects becoming more varied and expressive. Dome lanterns, flooding the altar with light, pointedly connected one to the heavens directly, inscribed with the divine symbol of the dove, and with domes reaching for heaven as though trying to bring the building closer to God. The illumination of the dome became more creative, such as in the chapel of Holy Shroud in Turin Cathedral, where the masterful window design by Guarino Guarini nearly dematerializes the dome evoking "lofty Gothic vaulting."⁵⁷ Often windows of yellow glass -either concealed or revealed- mingled their tinted light with sculpted gilded rays to create a nearly enflamed effect, suffused with passion and warmth, representing the light of God. The gilt ornament and metals picked up natural light and bounced the glitter back and forth, this too imbued with meaning, such as in St. Peter's, where the gold oculus is surrounded by gilt rays, representing the apostles, further spreading the enlightenment to the people.

The light of the Baroque was not the illumination of the Renaissance, or the suspended enveloping essence that filtered through the stained glasses of the Gothic. Instead, it was controlled, staged, and manipulated

57 Ibid., 103.

Left

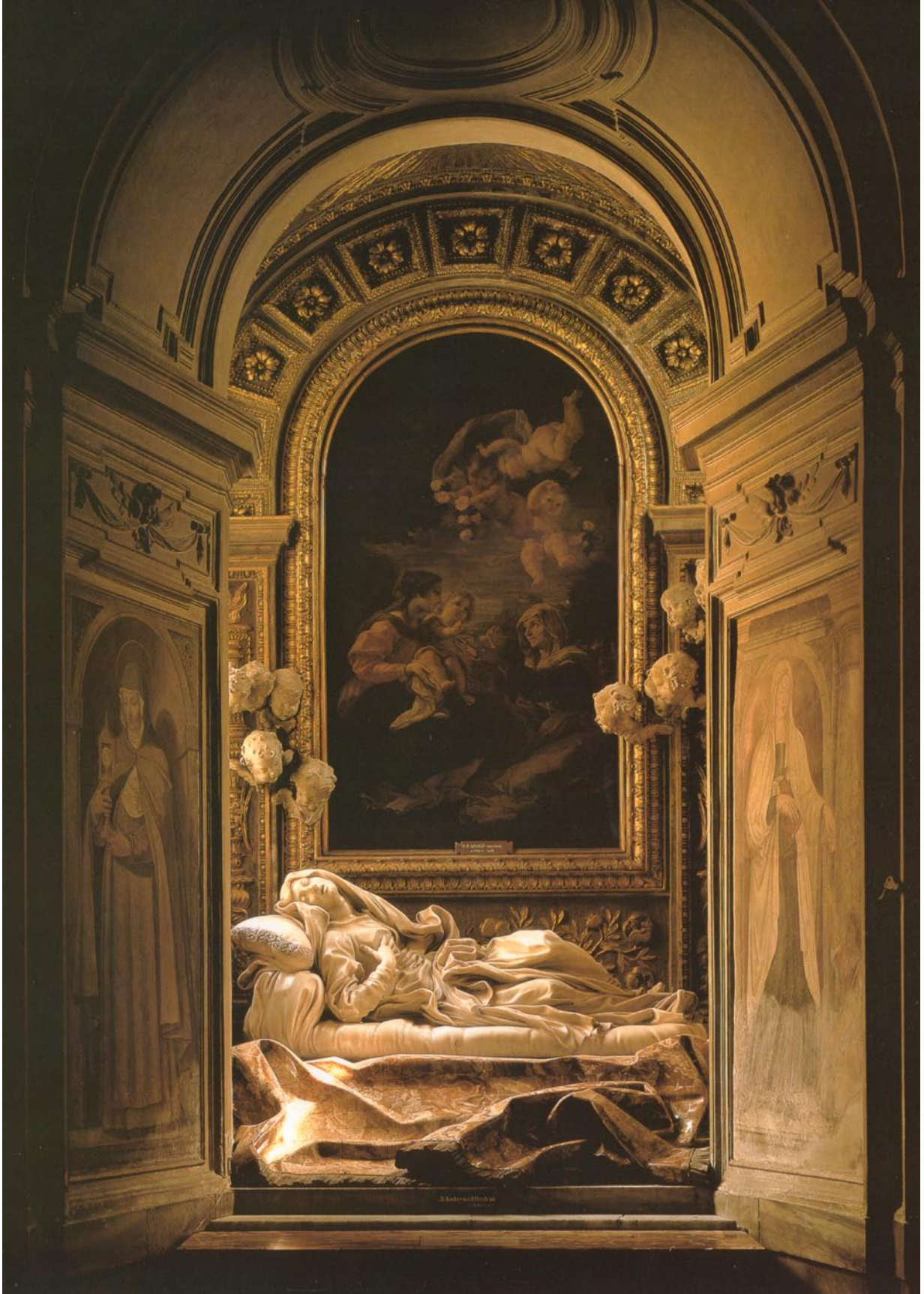
21. Altar, *St. Peter's Cathedral*, Gianlorenzo Bernini, 1658-65

Right

22. Hidden window illuminates from above sculptural group *Ecstasy of Saint Teresa*, *Coronaro Chapel*, Gianlorenzo Bernini, 1647-1651

Facing page

23. Hidden windows illuminate the sculpture from the side of the niche in *Altieri Chapel*, *San Francesco A Ripa*, Gianlorenzo Bernini, 1671-74





24. *The Inspiration of Saint Matthew*, 1602, Michelangelo Merisi da Caravaggio

into dramatic sequences for utmost impact. Light itself was designed. Gian Lorenzo Bernini – a main protagonist of this architecture – persuasively conveyed this by sculpting light as well as space and form. Light and shadow twisted and turned, augmenting space and infusing it with dynamic power. The space was animated with light's rippling and fluttering nature, aided by gilded materials and reflections from polished stone. Just as layered space contracted and expanded, layered light alternated with darkness, providing a drama of contrast. Shadows, too, were designed for full effect in architecture; culminating, albeit in painting, in the chiaroscuro style of Caravaggio. Pools of light flooded ceremonial centres taking advantage of the phototropic nature of people, drawing them towards places of significance. The light was strategically used to highlight focal points – as if spaces were carved out of darkness – or to give an ethereal quality to the space. Concealed and hidden clear-glazed windows admitted diffuse directional mysterious light that seemed to emanate from hidden sources, from beyond.

The mysterious origins of hidden light were associated with the mysterious nature of God, however, the mystery was no longer static, as in Gothic, but moulded to great effects. As the nature of Christian faith changed, the dogmatic concerns were less prescient and the sacred light, *lumen*, the omnipresent essence of God was no longer as necessary an idiom to re-affirm



Left
25. Dome, *San Carlo alle Quattro Fontane*, Francesco Borromini, 1637-41



Right
26. Dome, *San Ivo della Sapienza*, Francesco Borromini, 1642-60

the Trinity, nor was the literal representation of the church as the replica of the heavenly Jerusalem necessary to educate the pious about glory depicted in the Bible. Instead, light was used to assert the immediate presence of God in the church, almost more palpably than symbolically in Baroque churches. Rather than abstract spiritual light, *lumen*, the sacred light reverted to *lux*, direct light. Even though it was evocative and metaphorical, it was no longer deeply analogous as it was in medieval architecture when it exposed a separate but parallel divine reality beyond the surface of things that surrounded each worshipper.

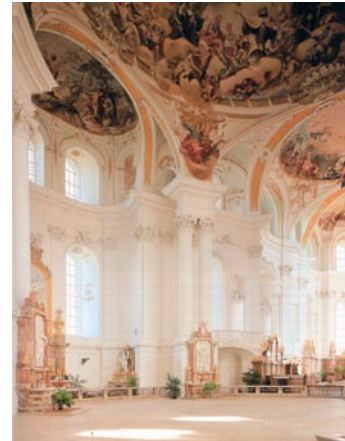
Unlike typical Baroque lighting, Francesco Borromini's architectural approach differed from chiaroscuro manner as light-colored surfaces and high windows allowed Borromini's churches to bathe in uniform ethereal light. The light colour of walls and the uniformity of their illumination banished the shadows, crucial to other Baroque churches – one was literally in brightness. Unlike the shadowy interiors that meant to inspire awe and trepidation in the congregation upon entering the church, the intellectual experience of light in his works is closer to the churches of the Cistercians. Perhaps, because his two famous churches, San Carlo alle Quattro Fontane and San Ivo della Sapienza were also built for men of the cloth, the need to awe and educate the viewer gave way to the search for spiritual truth. However, this mystical lighting through its diffusion and constancy, too, aimed to reassert God's omnipresence, albeit with static serenity unlike the passion of Bernini's works. In San Carlo, the church seems to be suffused with mysterious light in which "the source is mysterious and unknown, like the existence of God."⁵⁸

Together with Bernini and Borromini, the works of late northern Baroque architect Johann Balthasar Neumann illustrate the diversity of design

⁵⁸ Jake Morrissey, *Genius in the Design : Bernini, Borromini, and the Rivalry that Transformed Rome* (New York: William Morrow, 2005), 111.



Left
27. Church of Vierzehnheiligen,
 Balthasar Neumann, 1743-72



28. Abbey-Church of
Neresheim, Balthasar
 Neumann, 1747-92



29. Asamkirche, the Asam
 Brothers, 1733-46

but the uniformity of principles that guide Baroque lighting. Combining dramatic animation with the lightness of Borromini's interiors, Neumann achieves nuanced drama in his works such as those in Neresheim or in Vierzehnheiligen. With light surface treatments, lessening of the wall mass, providing many windows on many levels, and by modeling the walls around windows he achieves not only a subtle play of light and shadows, but also a sense of airiness, of enveloping atmosphere. One is immersed in dynamic affecting light.

Baroque light's theatricality devolved into Rococo's theatrics of superficial sparkle and unfocused glimmers. Rococo's light-coloured and pastel surfaces, curvilinear forms, softer angles, detailed ornament, and glitter

30. *The Mirror Room in Amalienburg*, François Cuvilliers and Johann Baptist Zimmerman, 1734-9



– in forms of gilt, mirrors, and crystals – caught light and bounced it around, creating an atmosphere of brightness and opulence that aimed to foster “the enjoyment of sensuous stimuli.”⁵⁹ Devoid of emotional significance and, fundamentally, a secular light, it was an agent of establishing an easy character but no longer a subject in its own right. The deeply valued relationship between light and architecture, and light and man of the medieval world lost relevance as the symbolic view of the world gave way to the reason and logic of the ‘modern’ world. The peak of the profound spiritual connection to light occurred during the age of Gothic architecture, aided by new architectural abilities and techniques. However as the faithful became further removed from the mystery of the divine and more empowered in their personal immediate experience of God, this need to refer to light declined and, in consequence, the connection to light declined as well. Since the experiential light related more directly to the worshipper’s experience than abstract light, the emotions were appealed to by the Baroque light. Yet this impassioned light came to be a corporal culmination of the sacred light and a decline of its symbolic significance.

59 Norberg-Shulz, “Baroque and Its Buildings”, 115.

Modern light

Emergence in fourteenth century and perseverance of the new age of reason exacerbated the crisis of the Christian church and, with it, its architecture and light, both emotive and theatrical. Rationality and knowledge were embodied in architecture and in the quality of light in the age of Enlightenment. Interiors flood lit with clear natural light evoked clarity of mind, visual and, implicitly, the intellectual ability to see; its brightness was the antithesis of darkness – ignorance. The enlightenment was literally discernable in the way light related to architecture. Lack of drama in lighting effects and the ability to see the sources of light created a sense of composure and truthfulness. The relationship between architecture and light changed to signify new ideals, turning progressively more secular and anthropocentric. The Christian sacred light transformed into new spiritual light of an abstract divinity, a creative force, the reason. This new approach was predicated on more literal characteristics of light that lacked the mythical dimension of earlier types; it was more utilitarian in nature, and, with time, it became more directly so, losing its symbolic associations. Lacking a belief system in which light was a key component, the engagement with light became peripheral and sporadic. The beginning of the modern era signifies the start of a long slow decline of light's significance apart from its utilitarian role as illumination. The immensity of its importance to architecture has not been paralleled since, resulting in a loss of a valuable source of inspiration.

Concern with the real world took over the spiritual and the abstract during the Renaissance. In arts, literature, architecture, and sciences, reason and humanism changed the relationships between faith and man, and collective and individual. Anthropocentric realism demanded different modes of representation. The symbolic hierarchies of medieval paintings gave way to Filippo Brunelleschi's perspectival representation; mystic methods of construction and secretive guilds were replaced by the measured descriptive drawings of Leonardo da Vinci and the emergence of architect as a profession at Leon Battista Alberti's instigation. New architectural principles of geometry and proportional harmony replaced the imagery of sacred light in representation of the divine reason. Although the Church remained a major patron and an essential part of everyday life, architecture was growing more rational. Truthful informative light in Renaissance palazzos, villas, and cathedrals, streams through clear glass. In Pienza cathedral, the walls are intentionally left white in order to appreciate the architecture rather than fanciful surface treatments; the intentional bareness is similar to that of Cistercian buildings but has an entirely different meaning: the light is direct, obvious and palpable, revealing architecture rather than being the focus itself – truthful and rational rather than artful and affecting.

Light and shadow are closely studied in paintings of Renaissance unlike in medieval painting. For masters like da Vinci and Masaccio, mastery



31. Ceilings, *S.Andrea*, Mantua, Leon Battista Alberti, 1470-6

"It should be of an enormous size and dark since this evokes a feeling of "horror" in people, the windows should be small and located so high up that it is not possible to look through them onto the surrounding buildings but only at the sky. In the shadow-free gloom of the temple the lights set up there glow all the more effectively." Alberti quoted on character of churches by Gerard Wolf, "Shadow Walk in Rome"

(Hélèn Binet, Roberto Casati, Werne Oechslin, and Tadao Ando. *Geheimnis Des Schattens : Licht Und Schatten in Der Architektur = the Secret of the Shadow : Light and Shadow in Architecture.* (Tubingen: New York, NY: E. Wasmuth; D.A.P., 2002), 20).



32. Interior, *Pienza Cathedral*, Bernardo Rossellino, 1459-62

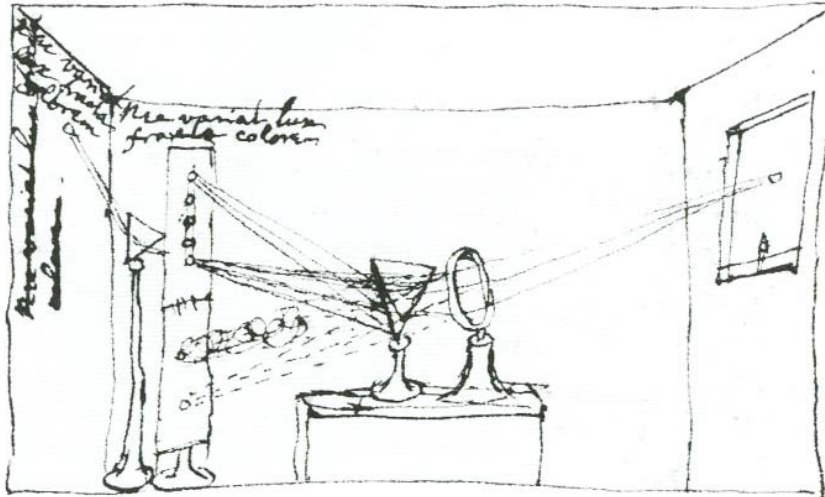
Right

33. Example of sfumato shadows in Leonardo da Vinci's *The Virgin and Child with St. Anne*, c. 1510



of light and shadow – like perspective – aided realism, creating a sense of spatiality and plasticity. Although light and colour are still used symbolically to represent aspects of divine, the main aim is to represent the world more truthfully. However, realistic and harsh shadows created by sunlight would have too much of a visual impact and detail would get lost in the darkest shadows; instead, directionally diffused lighting was preferred. To that end, Leonardo Da Vinci advised to paint as if the sky was overcast, using blurry weak shadows – ‘sfumato’ shadows – to deliver realistic shadows while retaining maximum visual information.⁶⁰

⁶⁰ Leonardo da Vinci quoted in Ernst Hans Gombrich, *Shadows: the Depiction of Cast Shadows in Western Art* (London: National Gallery Publications, 1995), 20.



34. Newton's sketch of his refraction experiment with prisms

Following Baroque, sacred light waned as scientific interest in light waxed, marking the age that fundamentally altered man's relationship to natural light. Although the scientific enquiry was seen earlier as an extension of one's piety, where knowing God's work and its wonders was in itself a form of religious worship and appreciation of divine creation, soon religion and scientific enquiry incrementally parted ways. Isaac Newton published his *Opticks* (1704) where he revealed many properties of light, including its colour spectrum, and postulated on the particle nature of light. His discoveries made light and optics a richer field of study. Light again became more objective through the science's renewed interest after the subjective manipulations of Baroque. The prism experiment demystified light further, robbing men not only of the mystery of the sunset but also of the miracle of the rainbow, "the covenant between God and mankind."⁶¹ In reaction to rationalization of these eternal lyrical inspirations, Johann Wolfgang von Goethe investigated the role the mind played in optics and in perception of light. He looked into the phantom colour spots and optical illusions, finding that the mind compensated for what it lacked, making perception of light and vision itself subjective yet again where "imagination joins with the experience."⁶²

In architecture, as the search for origins and fundamental truths began afresh after interruption by Baroque and Rococo, the classical tenets themselves were questioned. As architecture returned to true classical orders, the earlier playfulness and personal interpretation of classics diminished. As stylistic matters took precedence over experiential, light served more to illuminate the architectural form rather than being an agent of designed phenomenal – or spiritual – experience: "white light had triumphed, a light

61 Arthur Zajonc, *Catching the Light: The Entwined History of Light and Mind* (Oxford: Oxford University Press, 1995), 159.

62 Ibid., 194.



35. Interior, *Ste.-Geneviève*, Jacques-Germain Soufflot, 1757

Right

36. Windows in cross-arms, *Ste.-Geneviève*, Jacques-Germain Soufflot, 1757



that contained all the colors of the spectrum. The truth [...] was no longer offered to men, as it once had, through beauty, but through knowledge.”⁶³ Light as a metaphor of enlightenment and the desire for high visual acuity ensured that architecture of the time admitted an abundance of light, but it did not expand on its relationship with light, but rather contracted in its scope compared to the wealth of Baroque’s lexicon of illuminating spaces. Additionally, many classical forms did not allow for a variety of apertures and light, precluding a greater wealth of lighting effects.

Such is the illumination in *Ste.-Geneviève* in Paris(1757) by Jacques-Germain Soufflot, topped by a central dome with large windows set in its

⁶³ Georges Teyssot and Jessica Levine, “ ‘The Simple Day and the Light of the Sun’: Lights and Shadows in the Museum,” *Assemblage* 12 (1990): 76.

drum. Big lunette windows and a number of small arched windows flood the cross-arms with light. Even though this former church represents a typical approach, original drawings reveal that a design for the choir included an unrealized hidden window that would illumine the altar with mysterious light creating a “dramatic effect by concealing the floodlit opening, so that the visitor might receive the light as an excited revelation and be moved to reflect upon the sacred mysteries. In [this case] the ‘enlightenment’ of thought and the ‘lighting’ of architecture coincided.”⁶⁴ However, it is out of character creating “implications of this device in a building which claims a high, antique seriousness.”⁶⁵ Soufflot strove not only to marry classical proportions with the lightness of Gothic structure,⁶⁶ but also rational illumination of enlightenment with affecting *lumen*. This unusual feature in the choir heralded the return of affecting light.

In the spirit of rational inquiry, dominance of Classical style and its claim to universal architectural truths were challenged. As travel and trade expanded and archeological studies deepened, these revealed new and old cultures alike, challenging the existing totalizing worldview. With subsiding dominance of any one style and with new pluralistic acceptance across the arts, individuals begin to dominate the path of architecture. As with the approach to light, architectural or artistic merit was now based on personal subjective aesthetics, not on conventional aesthetic canons. A new intense approach to integration of light into architecture emerged – a unique attitude as it appealed to sensations and evocations. Shadows and darkness played a considerable role in this creation of dramatic effects. However, shadow and darkness took on positive connotations, not only associated with the unknown and irrational, but also with creation and with potential.

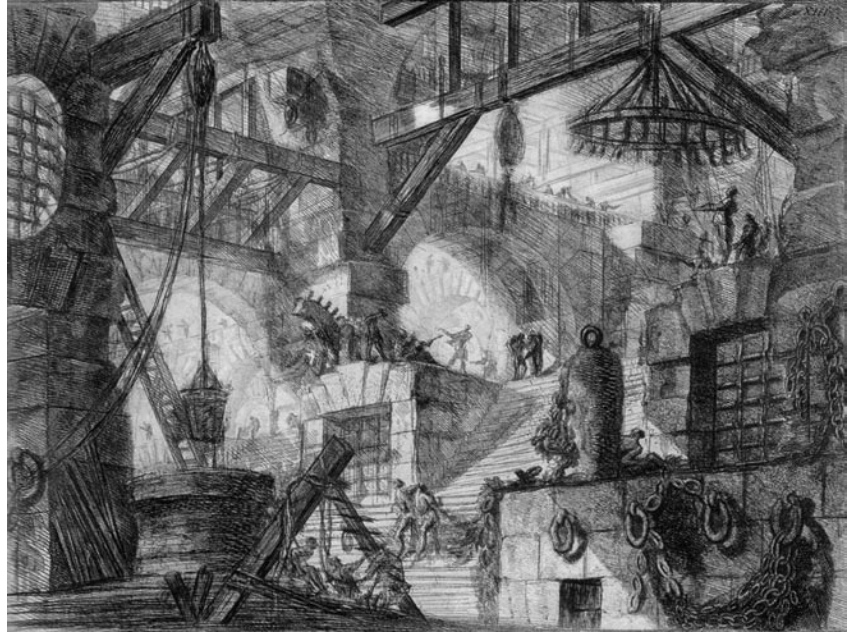
From Edmund Burke’s *Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful* of 1757, the notion of sublime emerged as a new merit of aesthetic appeal. The sublime was emotive, personal, and intuitive – and more appropriate to the time of emergent individualism than intellectual basis of classical beauty. Accommodating within it the mystical, the terrifying, and the irrational, in a way, it resurrected the awe of religious terror and mystery. As a foil to a relentless march of progress, the sublime was a foil to reason and science and its significance in art was a tribute to a more complex nature of man, emotional and irrational. So too, darkness and shadows were the foils to the informative and intellectual light. No longer abstract, but phenomenal, they enriched the architectural lexicon of illumination.

64 Ibid., 61.

65 Joseph Rykwert, *First Moderns: The Architects of the Eighteenth Century* (Cambridge, Mass.: MIT Press, 1980), 452.

66 Ibid.

37. *Carceri VII* print, Giovanni Battista Piranesi, 1749-50

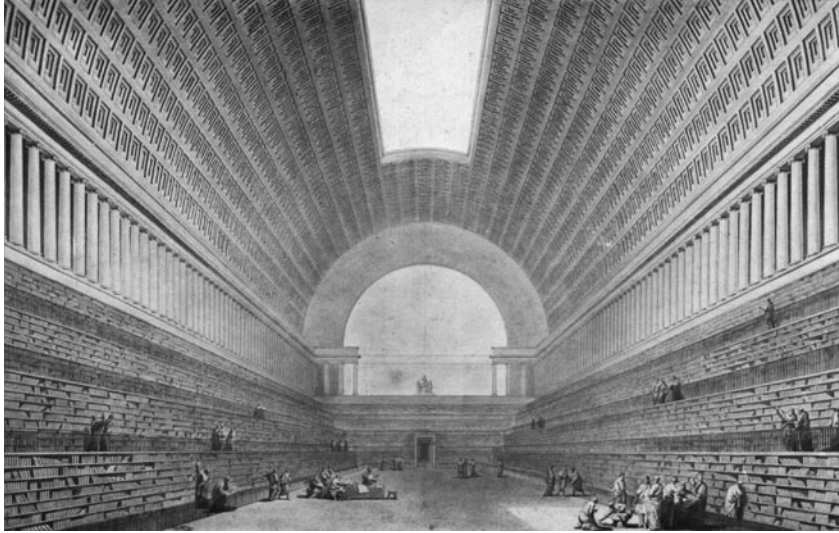


As with all aspects of natural world, light was progressively demystified by physicists, yet its effects still had emotive power. Some architects, like Giovanni Battista Piranesi and Étienne-Louis Boullée, poeticized light and explored emotional aspects of light and shadow, creating visions that seem akin to the sublime. In his prints, Piranesi fantasized dramatically lit prisons and romanticized decaying Roman streetscapes with dramatic shadows. The deep chiaroscuro of his prints created dramatic environments, full of emotion and movement, unlike the static nature of contemporaneous work. On the other hand, the grandiose inert designs of Boullée, such as the project for Newton's Cenotaph (1784), overwhelmed with their singularity of character and with succinct expression of shadow or light that unfolded on a tremendous scale. He engaged with shadows in a nuanced way as evidenced by his words – to create a somber atmosphere he wrote of a need to “create a black image of an architecture of shadows outlined by even darker shadows.”⁶⁷ He claimed to have created a new way of designing: “this type of architecture based on shadows is my own artistic discovery.”⁶⁸ Just as significant is Boullée's writing on the topic of light in architecture; a return to a tradition little explored in depth since the time of Gothic Cathedrals. In his essays he refers to light constantly as a sign and metaphor of nature, as an agent of creating a certain character, as a poetic evocation, and - with incredulity and pride - of his own undoing of light's previous neglect, such as in this description of one inspiring encounter with light:

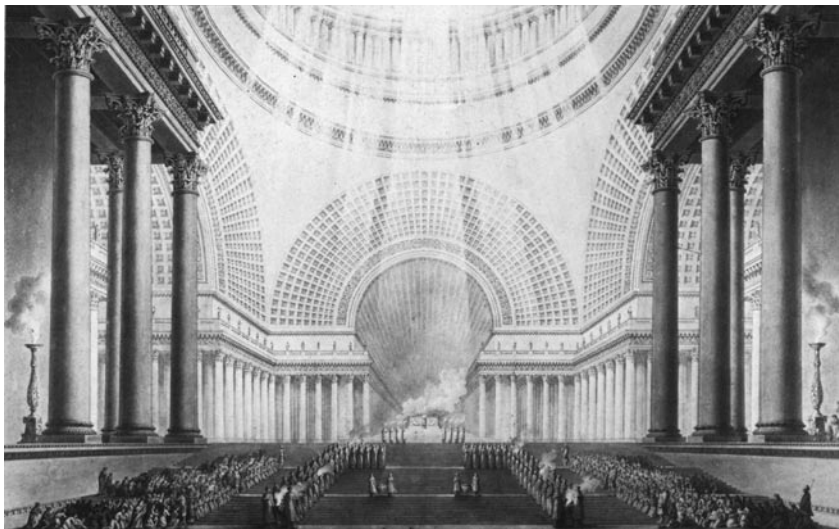
Nature offered itself to my gaze in the morning. I was struck

67 Étienne-Louis Boullée, “Architecture, Essay on Art,” in Helen Rosenau, Boullée and Visionary Architecture (New York: Harmony Books, 1976), 90.

68 Ibid.



38. *Bibliothèque Nationale*, Etienne-Louis Boullée, 1785



39. *Metropole*, Etienne-Louis Boullée, 1782

by the sensations I was experiencing and immediately began to wonder how to apply this, especially to architecture. I tried to find a composition made up of the effect of shadows. To achieve this, I imagined light (as I has observed it in nature) giving back to me all that my imagination could think of. That was how I proceeded when I was seeking to discover this new type of architecture.⁶⁹

However, Boullée did not neglect light and brightness and wrote of these as much; he embraced the entire range of light effects that could affect an architectural experience and to make it sublime.

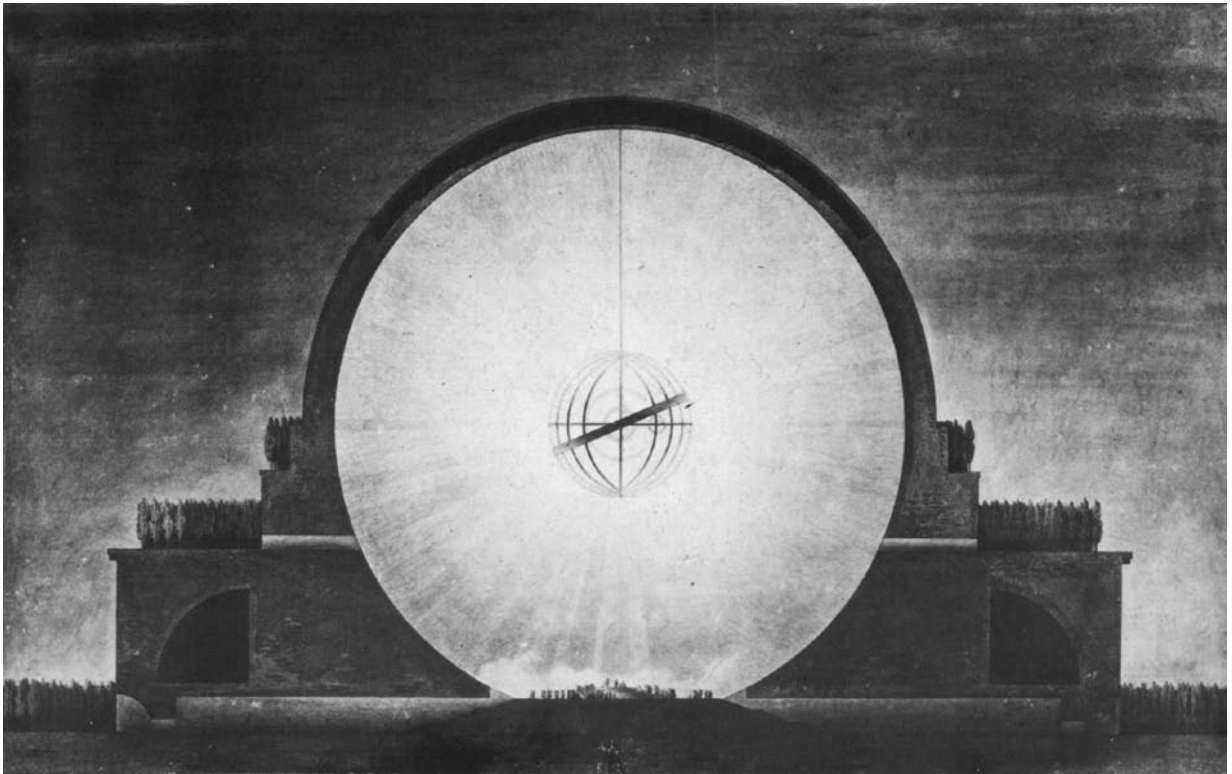
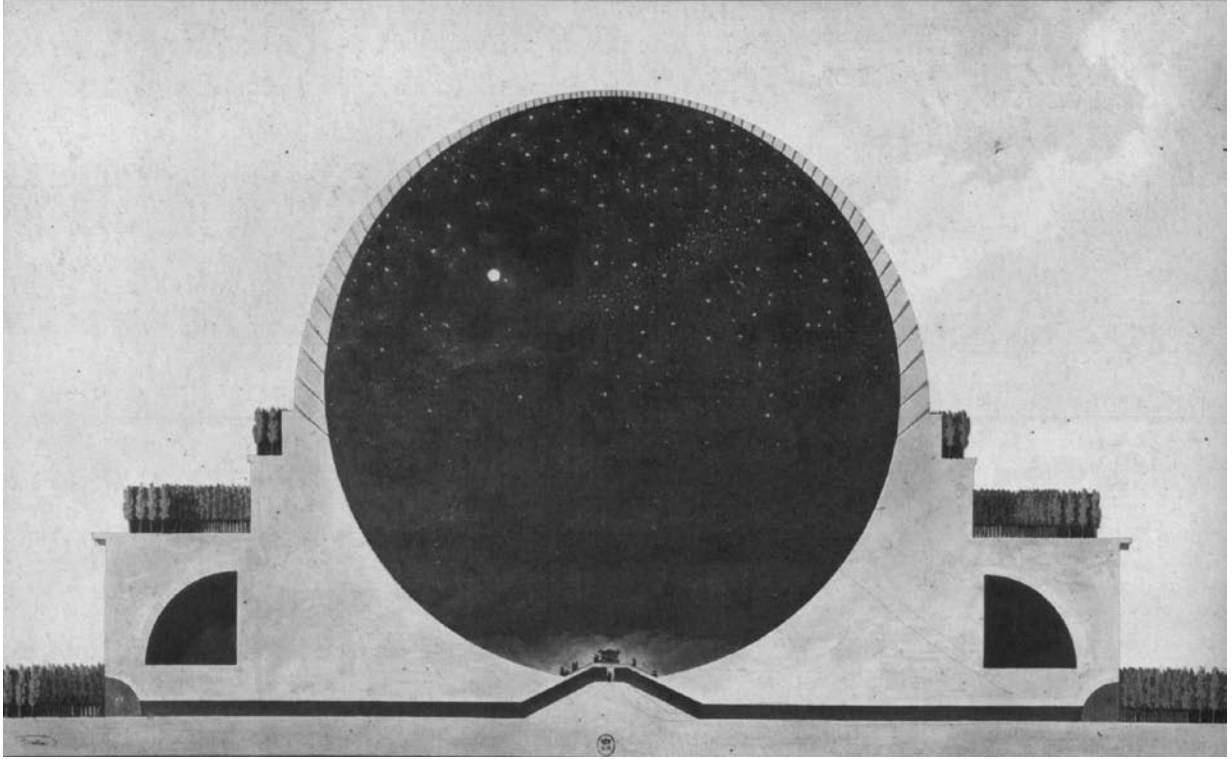
A particular and large store of lighting techniques, an intense interest in light, and appreciation of darkness distinguish the work of Sir John Soane

⁶⁹ Ibid.,106.

Facing Page:

Above
40. *Newton's Cenotaph* at daytime, Etienne-Louis Boullée, 1784

Below
41. *Newton's Cenotaph* at night, Etienne-Louis Boullée, 1784





42. Consols Office, *Bank of England*, Sir John Soane, 1798-9

who while striving to use forms of classical style “subverted it”⁷⁰ and, instead, arrived at unorthodox spatiality and rich lighting effects. These were as complex and as rich as during the Baroque and, in his Bank of England (1788-1808), the refined almost austere architectural surfaces and volumes, and minimal decoration, forced the light drama to the forefront. The lighting was beyond illumination, it was an essential quality that elevated spaces, such as at his house at Lincoln’s Inn Fields where light created a “succession of fanciful effects which constitute the poetry of architecture.”⁷¹ Soane, like Boullée, saw incredible power in the use of light in architecture, calling it:

70 Robin Middleton, “Soane’s Spaces and the Matter of Fragmentation,” in Mary Anne Stevens and Margaret Richardson, eds. *John Soane, Architect: Master of Space and Light* (London: Royal Academy of Arts, distributed by Yale University Press, 1999), 29.

71 John Soane quoted Stevens, 167.



Left
43. Breakfast Room, *Lincoln's Inn Fields*, Sir John Soane, 1792-1824



Right
44. 'Museum' in *Lincoln's Inn Fields*, Sir John Soane, 1792-1824

A most powerful agent in the hands of a man of genius, and its power cannot be too fully understood, nor too highly appreciated. It is however little attended to in our Architecture, and for this obvious reason, that we do not sufficiently feel the importance of Character in our buildings, to which the mode of admitting light contributes in no small degree.⁷²

It is then fitting that that he aspired to create this *lumière mystérieuse*, mysterious light, in his projects. To that effect he admitted light in multiple and inventive ways compared to those of an earlier era.

Although the technical ways of admitting daylight increased in number and sophistication in works of contemporaneous architects, the main change was to the relationship of light and architecture:

even more important were the attempts - between the end of the eighteenth century and the beginning of the nineteenth - to compose the building with shadows and light. These attempts were informed by more than a symbolism of a philosophical and deist stamp. Not coincidentally, in this period, there appeared a group of architect-painters sensitive to the "nocturnal" as well as the "diurnal," in other words, to the result of the refraction of solar light in the air, to sun light, to the "outdoors." Such artists, "ruinist" painters or architects of the paintbrush, opened the walls to the *lumière mystérieuse* that so fascinated John Soane; they

⁷² Ibid., 101.



played with atmospheres, vaporized constructive elements, and raised stormy clouds up to the vaults. They formed an aesthetic of imperceptible architecture.⁷³



Left
45. *Wanderer above the Mist*, Caspar David Friedrich, 1818

Right
46. *The Polar Sea*, Caspar David Friedrich, 1824

The individual search for interpretations and role of natural lighting had emerged earlier in the Enlightenment, but the crisis of light's significance became acute in this age in particular, as shared values have been displaced by emergent individualism. Because of the rejection of Christian spiritual light, the artists and the architects had to find their own value and meaning in light and in shadow. This struggle to individually interpret light, an inevitable presence in any inhabited building, to this day continues to lack a coherent or widely accepted meaning in the relationship of light and architecture.

The rise of individualism fueled interest in experiences and impressions, growing more potent in the nineteenth century. Expressive painting of artists from J.M.W. Turner to Claude Monet rejected visual clarity and the objective realism of Enlightenment painting concentrating instead on their individual subjective perception, "*sensations* as well as appearances."⁷⁴ Here light played a very special role as it affected character and atmosphere of the scene, and in turn affected perception of it. As it changed, so did the experience of the view. Interest in light, its effects, and its ephemerality led many to paint cycles of paintings with same literal subject but in different light condition. In such cycles, the subject ceases to matter, as light and its changeability – and implicitly nature – become the real theme.

The cycle painting reaches its height in works of Monet who painted light cycles for most of his life, such as his famous *Haystacks* (1890-91)

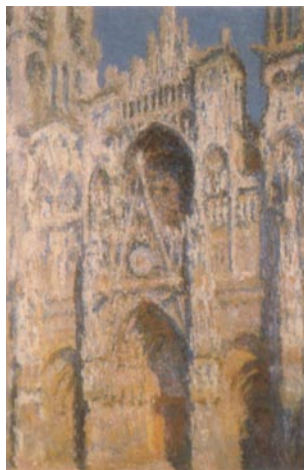
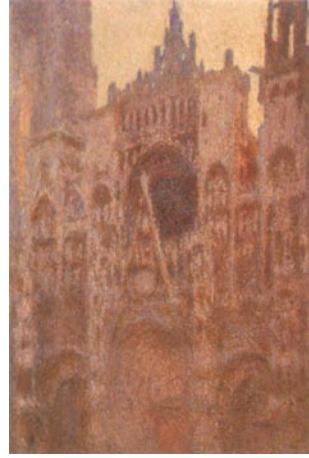
Facing Page
48. Nine paintings from the *Cathedral* series, Claude Monet, 1892-93

47. *Rain, Steam and Speed-The Great Western Railway*, J. M. W. Turner, 1844



73 Teysott, 78.

74 William Chapin Seitz and Claude Monet, *Claude Monet: Seasons and Moments* (New York: Published for The Museum of Modern Art by Arno Press, 1969), 31.



and *Poplars* (1890-91). Monet documented different light conditions or, rather, his sense of them repeatedly trying to capture a singular moment, “instantaneity”,⁷⁵ as it was conditioned by the light. The paintings were not created individually “but were conceived, thought out and worked out together, and as such were almost inseparable.”⁷⁶ Only as a series can they testify as an experience, comprised of singular moments yet infinite – giving the viewer an experience of time through light. He worked rapidly on his paintings, going through several canvases in a sequence: “on returning to his motif from day to day, he could choose one [canvas] that best conformed to the light of the moment, continue working until the light changed (seldom more than half an hour) and replace it with another.”⁷⁷ The obvious interest in transience and ethereality and, at the same time, richness of atmosphere and experience through light’s changeability speak of his incredibly immediate connection to nature and the world.⁷⁸

As scientific and industrial progress advanced, new technologies and methods emerged that fundamentally changed architecture, its relationship to light, and even people’s daily lives. Development of viable, accessible, and eventually cheaper iron, steel, glass, and electricity⁷⁹ transformed not only manufacturing, construction, and building environments but even living patterns. As larger glass sizes became available with improved methods of manufacture, the potential of glass and iron in combination to create light-filled transparent dematerialized structures was realized in such types as greenhouses, train sheds, markets, stores, and arcades, culminating in Joseph Paxton’s spectacular Crystal Palace (1851). It was the first time walls and whole buildings have achieved such dematerialization; the achieved brightness was unprecedented for interior environments as was their structural lightness. As floodlit glazed buildings first found acclaim in the commercial sector that demanded high levels of illumination needed for maximum visual acuity, the qualitative effects of light were of little concern. However, such buildings were not of the architectural order of the day; it was years still until

75 Ibid., 23.

76 Joachim Pissarro, *Monet’s Cathedral: Rouen, 1892-1894* (London: Pavilion, 1990), 6.

77 Seitz, 16.

78 Monet has written about this connection: “The motif for me is nothing but an insignificant matter – what I reproduce is what there is between the motif and myself” (Pissarro, 21).

79 Edison’s contributions were the new invention of the incandescent bulb, debuted in October 1879 but was preceded Joseph Swan’s debut of similar kind of carbon-filament evacuated incandescent bulb in February of same year– later settled out of court in 1882, two join forces in 1883 in joint partnership; and the generating stations that made electricity progressively more available and cheaper. (Mark Major, Jonathan Speirs, and Anthony Tischhauser. *Made of Light: The Art of Light and Architecture* (Basel; Boston: Birkhauser, 2005), 4-5.)

49. *The Bibliothèque Nationale*, Henri Labrouste, 1859-68



50. *Galleria Vittorio Emanuele II*, Milan, Giuseppe Mengoni, 1865-7



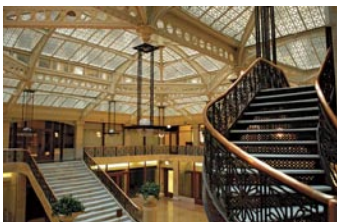
51. *Crystal Palace*, Joseph Paxton, 1851.



52. Large plate glass windows
Reliance Building, Chicago,
Burnham and Root Architects,
1890-5



53. Atrium, *Rookery Building*,
Burnham and Root, 1886-8



this construction method entered common architectural vocabulary.

A similar utilitarian approach dematerialized envelopes of commercial buildings in Chicago's downtown. Soon after William Le Baron Jenney first used a riveted steel frame in his Second Leiter Building of 1884, mass-produced steel-framed curtain-walled buildings became ubiquitous. The frame liberated the façade, resulting in the possibility of glazing large parts of the building envelope. Together with availability of newly domestically produced glass -beginning in 1875 – it ensured an abundance of natural light unknown before in buildings of this type, paving the way for many similar buildings that followed. The airy sheds transformed into light-filled atria like the ornate one of the Rookery Building.

With time, metal and glass found wider acceptance. While architects of the Chicago School were dissolving the walls of the office towers, Frank Lloyd Wright was doing the same in domestic architecture by replacing cut out windows with “lightscreens”, planes of glazed areas that helped unite the interior and exterior. Similar to Wright's tracery, but with sinuous rather than geometric forms, characterized many domes by European Art Nouveau architects, in their interplay of light and colour, glass and metal, creating a rich luminosity.



While electrically powered light bulbs had been invented before Michael Faraday’s electromagnetic induction discovery in 1831, that made electricity more accessible, it is this discovery and that of the new incandescent bulbs that made electricity and electric light efficient and economical. Electrical lighting spread rapidly, starting with the first public installation powered by a central generator in London in 1882,⁸⁰ but “by 1900, electric light was an accepted fact of urban life”.⁸¹ As more generators were built and the bulbs became cheaper and longer lasting, the price of electrical lighting diminished while the new infrastructure increased in availability. On the cusp of the twentieth century, commercial and domestic electrical lighting became common, changing the appearances of buildings, which had been previously lit only by flame and natural light. Since earlier gas lighting was used very sparingly compared to electric due to its exorbitant pricing and risk of fires, the change was significant enough to affect the daily patterns of the inhabitants. Thanks to electric lighting, with time, the luxury of light disappeared and artificial illumination came to be taken for granted. As nighttime illumination often transcended its function to become a physical celebration of victory over darkness, the resulting legacy of abundant electric light was to dissociate man from the cycles of the day and natural time patterns of the world.

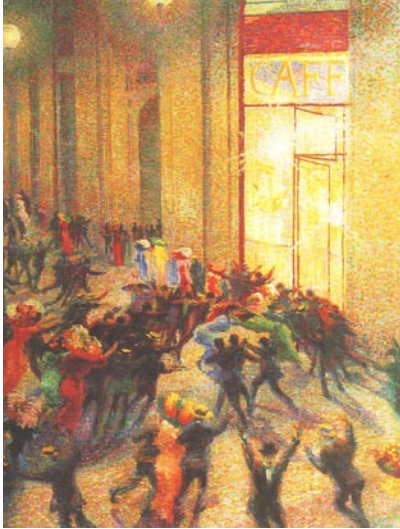
The rapidly changing fabric of society affected culture and in turn architecture, eliciting both concern for the effects of progress and the exuberance of future potential that change would bring about. To the avant-garde architects of the early Modern movement some of the other parallel

Left
54. “Lightscreens”, *Robie House*, Frank Lloyd Wright, 1909

Right
55. Dome, *Van Eetvelde House*, Brussels, Victor Horta, 1895-8

80 Mark Major, Jonathan Speirs, and Anthony Tischhauser. *Made of Light: The Art of Light and Architecture* (Basel; Boston: Birkhauser, 2005), 5.

81 Witold Rybczynski, *Home: A Short History of an Idea* (Berkshire: Simon & Schuster, 2001), 151.



Left
56. Riot in the Galleria, 1910,
 Umberto Boccioni



Right
57. City Rises, 1910, Umberto
 Boccioni

strands - such as Expressionism, Art Nouveau, and the work of highly individual, expressive, and uncategorizable architects, such as the primal and untamed buildings of Antonio Gaudí - were of passing importance to the larger issues such as grappling with nature and the consequences of industrial progress. While many concentrated on standardization, prefabrication, and speed of construction to address urgent demands of growing populace and industry, others reveled in speed, dynamism and new technologies that accompanied the brisk pace of progress, qualities which they felt were not reflected in contemporaneous architecture. Like a barometer of these attitudes, light became functional and expedient in one case and effusively exuberant in the other.

In the early twentieth century, radical to the point of wanting to raze traditional cities and buildings, the Italian Futurists were inspired by speed and movement, envisioning architecture as an avant-garde agent of change. Although they adamantly carried their philosophy across all cultural fields, it is in painting that their relationship to light can be understood best as most of their architectural output – mainly by Antonio Sant’Elia – remained unbuilt. In the paintings of Futurist painter Umberto Boccioni, light is an exultant celebration of power that possesses force and speed. Influenced by the Impressionist movement,⁸² the treatment of colour, form and light, is inspired by the Impressionist manner, but the confident brushstrokes are endowed with urgency. Besides the Futurist’s obsession with speed and power, the more precise ideas of ‘dynamism’ and ‘simultaneity’ were inspirations for the paintings. These were represented by rapid brushstrokes that blurred the edges of colour fields smeared into one another giving paintings a sense of universal motion, as in *City Rises*. The light merges with form until it is dematerialized in *Riot in the Galleria*, where everything remains indistinct, but the powerful

82 Rosa Trillo Clough, *Futurism: The Story of a Modern Art Movement, a New Appraisal*. (New York: Philosophical Library, 1961), 219.



58. *Homage to Blériot*, 1914,
Robert Delaunay

halo-like glow from the café in the centre of the image seems to send out pulsing rays of light onto the revolutionaries below, engulfing them in its power. It expressed dynamism and energy, an ethereal dimension of matter. Light is seen as a intangible and changeable counterpoint that defies static states, an agent of progress: “obviously even light is qualified as a destructive element in respect to a normal or empirical notion, to represent a more acute and more modern stage of sensibility.”⁸³ When abstract, it represents an agent of instability: “since the light itself as a spiritual expression is symbolical, it is in opposition to the materialism of the objective datum.”⁸⁴ Although light was often treated conceptually by Futurists as energy force, when literally represented in painting it was “always or almost always artificial light, the light of the city street, cabarets, the symbolic light of ‘modern life’ which in particular, overturns conventions and traditional notions. As such, light is ‘dynamic’ because the ‘modern soul’ is *a priori*.”⁸⁵

Although artist Robert Delaunay and the Futurists disagreed on the nature of simultaneity and the nature of avant-garde art, Delaunay also used light, together with colour, as the ultimate theme of his art: “I love Art

83 Ibid., 221.

84 Ibid.

85 Ibid.

59. *Glashaus*, Bruno Taut,
1914



today because I love above all light and all men love light above all.”⁸⁶ For Delauney, light not only reflected energy and motion but determined the reality, as only in light one can see; as it enables all perception light is of greater significance than all else. Drawing on light experiments of the Impressionists, for him everything changes when light changes. Unlike the chaotic and forceful light of the Futurists, the living light of the Impressionists reflected the sequential nature of light that inspired Delauney to paint light in “colored ways that follow one another [which are] the key to the mystery.”⁸⁷ In changing light “the real image evaporates according to the effect of light”⁸⁸ creating abstract art, the only art of the future Delauney could see. He declared the use of object-painting to be a dead-end and “an antonym of life.”⁸⁹ However, light was only a symbolic theme for Delauney, interpreted through colour-blocks and rhythmic pattern in his painting. As he interpreted nature as rhythmic and infinite through repetition, in creation of succeeding waves of colour fields he represented movement and light trying to achieve the appearance of the infinite.

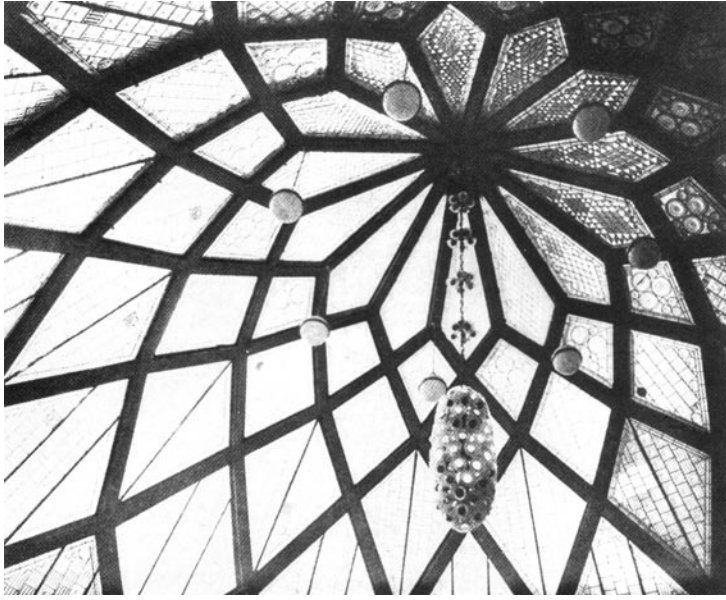
Modern architect Bruno Taut celebrated exuberance of light and a new kind of expression of glass in his works such as the *Glashaus* of 1914. Finished completely with clear, coloured, and translucent glass, it had glass

86 Robert Delaunay, Sonia Delaunay, and Arthur Allen Cohen, *New Art of Color: The Writings of Robert and Sonia Delaunay* (New York: Viking Press, 1978), 80.

87 *Ibid.*, 57.

88 *Ibid.*, 56.

89 *Ibid.*, 78.



roof and stair treads, translucent glass walls, and glass mosaic tiles: a “magic, phantasmagoric vision for an incandescent future.”⁹⁰ Taut was inspired by the expressionism of Paul Scheerbart, a writer who “developed the theme of earthly paradise which was founded on a new architecture of colour and glass.”⁹¹ Scheerbart, at Taut’s invitation, composed twelve aphorisms that were inscribed on the pavilion’s walls among which were: “Glass in tints: Hate relents” and “Life sans Glass? A pretty pass!” Others praised the practicality and novelty of glass. The unusual new form of the Glashaus and the novel use of the material signified “the purity of the tabula rasa” that Taut was seeking;⁹² the new start that would not only create a new architectural form, but would also have the purity and innocence of a new beginning. “Purity” would apply not only to architecture, but also to “the ‘pure’ society of the future.”⁹³ For Taut’s *Glass Chain* group,⁹⁴ crystal was the “favored symbol of primitive purity.”⁹⁵ Purity was represented by glass and, in turn, by transparency and admittance of light. This shadowless enveloping in light may be unconsciously revisiting Christian connotations of light and purity. However, foremost, for Taut, architecture, glass, and light were all agents of change in the world, seeking freedom and new values as the old were being

Left
60. Dome, *Glashaus*, Bruno Taut, 1914

Right
61. Stair, *Glashaus*, Bruno Taut, 1914

90 Kostof, 690.

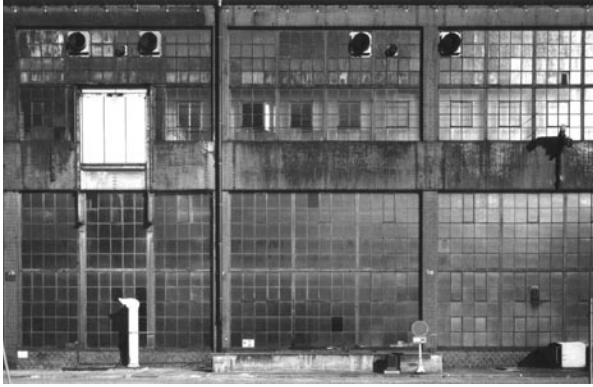
91 Iain Boyd Whyte, *Bruno Taut and the Architecture of Activism*. (Cambridge: Cambridge University Press, 1982), 32.

92 *Ibid.*, 189.

93 *Ibid.*

94 Glass Chain group, Gläserne Kette, was a correspondence ring between thirteen architects and artists who shared in the fascination with crystalline environments. It was started by Taut and functioned briefly from December of 1919 until April of 1920. See Whyte, 174-206.

95 Whyte, 191.



Left
62. AEG Turbine Factory, Peter Behrens, 1908-9



Right
63. Chrysler Tank Arsenal Assembly Building, Albert Kahn, 1941-3



64. Interior, Fagus Factory, Walter Gropius, 1911-12

rejected.

The lyrical side of modern architecture as represented by the Glashaus and other expressionist buildings,⁹⁶ was rejected by the functionalist movement, which denied the appropriateness of individual expression. Although Taut's vision was the closest in spirit to the modernist mandate of architecture as an agent of change, he was seen as a "pure fantasist, with no feeling for reality,"⁹⁷ most modernist architects were preoccupied with the functionality of glass or with its tectonic considerations. Those like Albert Kahn and Walter Gropius were looking to industrial and commercial buildings to inform a new functionalist aesthetic. Functionalism, rather than glorification of speed and technology, was their interpretation of the necessary emerging values. Behrens's AEG turbine factory and Gropius's Fagus Factory perfected relentless glass curtains that wrapped their buildings and let in maximum light. The re-imagining of the building's form as volume instead of mass led to conception of walls as planes; the skin often dematerialized with curtain or window wall. As the relationship with light remained as mainly functionalist - to provide illumination - the Modern movement in its many forms assigned no coherent meaning to light beyond its utility, as illumination and for health benefits associated with sunlight. Although Taut, Sheerbart, Delauney and the Futurists explicitly or otherwise forged their own terms in dealing with light and its possible new meanings, having rejected sacred light, modern architects failed to move forward to forge an alternative. Consequently, light as a creative metaphor and an inspiration virtually disappeared within mainstream modernism.⁹⁸

The International Style gained ground post-World War II, replacing classical language that acquired an unwelcome aftertaste of the destructive regimes

⁹⁶ Early modernism ideologically split as Werkbund split into two camps: functionalist Typisierung, included Behrens and Gropius, and expressionist, Kunstwollen, included Taut and Van de Velde (Kenneth Frampton, *Modern Architecture: a Critical History* (New York: Thames and Hudson, 1992), 116).

⁹⁷ Whyte, 206.

⁹⁸ Its generic aesthetic was dubbed 'International Style' by Philip Johnson.

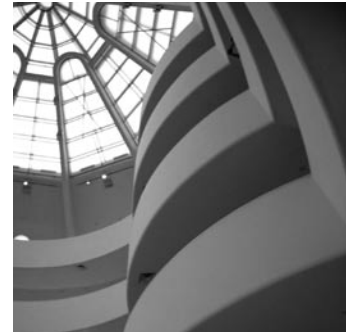
of World War II that embraced it as part of their propaganda. However, International style did not become universal. Repetition, ubiquity, inability to reflect place, or local culture made it too generic while its inability to reflect climatic condition often made it inconvenient. Theoretical splits, questioning of modernist dogma, and individual artistic endeavor -often independent of ideological agendas - ensured a variety of design attitudes during the post-war period.

This diversity of approaches was also evident in the handling of light and shadows. In a search for more intangible qualities, many architects questioned and explored the relationship of light and architecture, creating a rich and complex library of strategies of handling light in their architecture. Unlike the anti-monumental glass walls and open plan of International Modernism, acknowledgement of the need for monumentality and privacy called for walls, which in turn provided an ample canvas for light. As light only visibly exists through its effects, dematerialized abstract light was embodied palpably on surfaces.

A consumerist individualistic culture that developed by the 1960s demanded variety; the International Style, with its rigid rules and universal aesthetics, was on the wane. This decline, however, was already superseded by designs of many 'modern' architects, such as Frank Lloyd Wright, Alvar Aalto, and Le Corbusier, who favoured unique responses in their later work – responses in which daylight played an even more crucial role than in their earlier buildings. These liberating designs of major modernist architects inspired new expressiveness and individualism in architecture.

Wright responded with newfound plasticity and curvilinearity culminating in his Solomon R. Guggenheim Museum (1943-1959). There, a sculptural spiral sweeps up to the immense skylight and the curved ceilings are grazed by light from a continuous slot on the outer perimeter. A more conventional luminous interior of Beth Shalom Synagogue (1954-1959) follows in his explorations, enveloping and immersing one in light, with a remarkable, if flat, effect. In his works, Wright experimented with apertures as well as with glazing, from stained glass lightscreens in his Prairie houses to plastic tubes in his Johnson Wax headquarters; he worked with a variety of glazing – clear, coloured, and translucent.

Alvar Aalto's tenuous connection to mainstream Modernism dissolved in favour of his own particular sensitive idiosyncratic design approach, which only grew more poetic with time. From his streamlined Paimio Sanatorium (1928-1933) to the curving and textured Baker House (1947-1949), a definite sculptural quality was emphasized by an engagement of light with the plasticity of form and surface finish. In his libraries and churches, the bright but subdued light washes walls from slots and is bounced from hidden windows into white sinuous interiors. Aalto carefully crafted light into his interiors with technical savvy and consideration of the inhabitants and their



65. Guggenheim Museum,
Frank Lloyd Wright, 1943-59



66. Beth Shalom Synagogue,
Frank Lloyd Wright, 1954-9



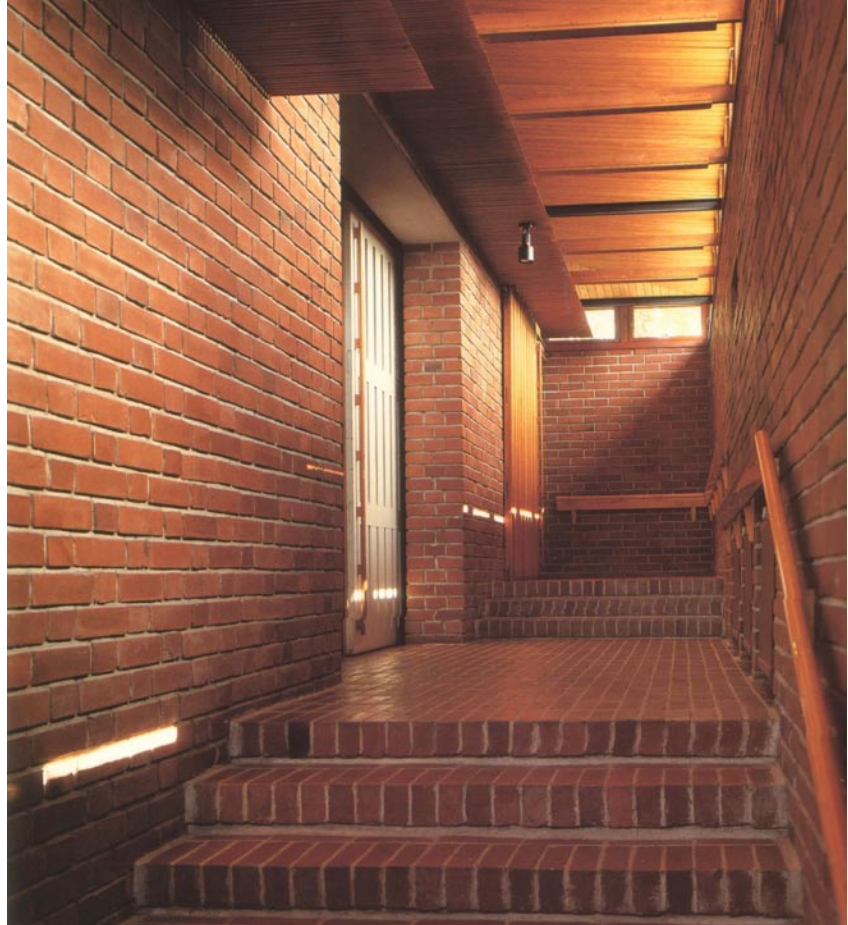
**67. Johnson Wax
Headquarters,** Frank Lloyd
Wright, 1936-9



68. *Mount Angel Abbey Library*,
Alvar Aalto, 1970

Right

69. *Säynätsalo Town Hall*,
Alvar Aalto, 1949-52



activities, such as in his library designs: “I try to get light which spreads in the room so that no matter at which angle you hold the book there will never be hard reflection in your eyes.”⁹⁹ In contrast to bright interiors of libraries and churches, in his Säynätsalo Town Hall there is tranquil, warm play of shadows in semi-darkness. There Aalto captured elusive subtleties of “volatile, ever changing, Nordic light”¹⁰⁰ with textures and shadows, expanding his vocabulary of light.

With his painter’s and sculptor’s special eye for form and lighting, Le Corbusier always retained a sculptural and plastic character in many of his buildings. The departure from his earlier pre-World War II works is obvious; the sublime intensity is reflected in spatial twists, turns, curves, and pockets as well as in dramatic handling of natural light within shadowy spaces. One of these, the chthonic and massive chapel of Notre-Dame-du-Haut at Ronchamp (1950-1955) emerges from its hilltop site like his much admired Parthenon on the Acropolis, resonating with its surroundings as their “acoustic

⁹⁹ Alvar Aalto quoted in Donald Canty, *Lasting Aalto Masterwork: The Library at Mount Angel Abbey* (St. Benedict, Oregon: Published by Mount Angel Abbey, 1992), 29.

¹⁰⁰ Richard Weston, *Alvar Aalto* (London: New York: Phaidon Press, 2005), 128.



response.”¹⁰¹ The hooded light-catching towers of Ronchamp are precisely oriented, opposing each other, colouring the light after it bounces within them off brightly painted walls. Inset with stained and clear glass, perforations within the thick chapel wall spread the light, animating the wall and the space. Slots of light detach masses from each other, one washing the ceiling and giving the roof the appearance of floating above the walls. Although such emotive handling of light and shadow or the same sculptural intensity does not recur in his other works with the same forcefulness, robustness and the intricate set of relationships between light and form appear in his La Tourette (1953-1960) monastery and the government buildings of Chandigarh (1951-1965).

During the decline of modernism’s popularity, emerged Louis Kahn, whose designs, like the late works of Le Corbusier, drew on modernist rigour but with a new sentiment. Unlike Le Corbusier’s emotive environments, Kahn kept his designs rational and functionalist but humanist; he embraced monumentality and representation in architecture as he thoughtfully combined function with form and structure, and with light. Because of this sentiment and this ideal of humanism, Kahn’s architecture strived to be “a harmony of spaces

70. Interior, *Notre-Dame-du-Haut*, Ronchamp, Le Corbusier, 1950-1955

101 Le Corbusier quoted in Alexander Tzonis, *Le Corbusier: The Poetics of Machine and Metaphor* (New York, NY: Universe Publishing, 2001), 178.



71. Kimbell Art Museum, Louis I. Kahn, 1966-72



72. Yale Center for British Art, Louis I. Kahn, 1969-74



73. Fisher House, Louis I. Kahn, 1960-7

in light.”¹⁰² Although his Kimbell Art Museum (1966-1972) is considered a masterpiece of handling natural light, to single out any one of Kahn’s projects for the quality of daylighting or concern with light and shadows is difficult as he developed a rich vocabulary of effects of light and approaches to achieving them.

While designing with light and shadows in mind, Kahn was also vocal about the role of natural light in architecture. Kahn was an advocate of light unlike anyone of his age, of both its physical manifestations and its metaphysical meaning, which he interpreted somewhat mystically – like Wright. He also denoted by the name of “light” a creative force,¹⁰³ an allusion that was similar to that of the Christian divine light. This interpretation of light echoed Grosseteste’s writings in aphorisms like “light is material life”¹⁰⁴ and that all natural elements are “spent light.”¹⁰⁵ Not only did light illumine architecture, but architecture helped illustrate the potential of light: “sun never knew how great it is until it struck the side of the building.”¹⁰⁶ Kahn criticized dependence of spaces on artificial light and lack of natural light: “a room without natural light is not a room.”¹⁰⁷ The lack of natural light deprived spaces of an enriching animating layer that elevated them to realm of ‘architecture’: “A space can never reach its place in architecture without natural light. Artificial light is the light of night expressed in positioned chandeliers not to be compared with the unpredictable play of natural light...”¹⁰⁸ Urs Büttiker observed an example of such a space is in the Esherick House(1959-1961) that is alive “because of changing light and the progression of the light throughout the year, it is a house which reveals a different side of its character upon every visit.”¹⁰⁹ Unlike the vacuous brightness of many modernist interior Kahn comprehended light in all its forms, from light to darkness. Significantly, the quantity and quality of it determined the character of the space:

Even a space intended to be dark should have just enough light from some mysterious opening to tell us how dark it really is.

Each space must be defined by its structure and the character of its interior light.¹¹⁰

102 Louis I. Kahn, “Form and Design,” in Robert McCarter, *Louis I. Kahn* (New York, NY: Phaidon Press Inc., 2005), 468.

103 Robert McCarter, *Louis I. Kahn* (New York, NY: Phaidon Press Inc., 2005), 479.

104 Louis I. Kahn, “The Room, the Street, and Human Agreement,” in Robert McCarter, *Louis I. Kahn* (New York, NY: Phaidon Press Inc., 2005), 485.

105 Ibid.

106 Louis Kahn’s words in Figure 4 in McCarter, 225.

107 Louis Kahn quoted in Urs Büttiker and Louis I. Kahn, *Louis I. Kahn: Light and Space* (New York: Whitney Library of Design, 1994), 18.

108 Louis Kahn quoted in Büttiker, 24.

109 Büttiker, 18.

110 Louis Kahn quoted in Büttiker, 24.

These architects represent only a few of many who were rediscovering light as a creative inspiration and engaging with light in a way that produced an infinity of possible effects. Luis Barragán, Eladio Dieste, Sigurd Lewerentz, Aldo Van Eyck all crafted the character of their interior spaces with light. Light became an occasional focus of verbal and written expression with Wright, Le Corbusier, Kahn, and others discussing its nature and role in their architecture. Although some, like Wright and Kahn, expressed their understanding of light mystically, light was investigated phenomenologically, for its effects and the experience it created. Reacting to the prevalent architecture of glass, Barragán expressed the desire for conscious approach to light as it affects one's experience and life :

Architects are forgetting the need of human beings for half light, the sort of light that imposes a sense of tranquility, in their living rooms as well as in their bedrooms. [...] About half the glass that is used in so many buildings – homes as well as offices – would have to be removed in order to obtain the quality of light that enables one to live and work in a more concentrated manner, and more graciously. We should try to recover the mental and spiritual ease and to alleviate anxiety, the salient characteristic of these agitated times, and the pleasures of thinking, working, conversing are heightened by the absence of glaring, distracting light.¹¹¹

High modernism spread across the globe as in wake of World War II the world shrunk thanks to increased global communications, trade, and travel. The United States emerged as a global power politically, economically, and culturally; its corporate values of efficiency and modernization were aptly reflected by the modernist aesthetic. The embodiment of corporate America in minimalist glazed towers transcended the office tower type, making the curtain-walled aesthetic ubiquitous globally for many building typologies. As modernism spread so did its non-relationship with natural light in its buildings.

Many prominent modernist architects such as Mies van der Rohe and Walter Gropius among others who emigrated to the United States, continued to explore the glazed aesthetic, with glass treated as a thin dematerialized skin. Although interested in the transparency of glass, Mies's fascination was with glass' reflections. To these he sacrificed interior light and the shadow play on the exterior facades, such as in his skyscraper projects of 1921 and 1922, since "it is not an effect of light and shadow one wants to achieve, but a



74. Living room, *Casa Barragán*, Luis Barragán, 1947

111 Luis Barragán quoted in Clive Bamford Smith, *Builders in the Sun: Five Mexican Architects* (New York: Architectural Book Pub. Co., 1967), 74.



75. Glass skyscraper, Ludwig Mies van der Rohe, 1921



76. Barcelona Pavilion, Ludwig Mies van der Rohe, 1929

rich interplay of light reflections.”¹¹² The interest in ‘light reflections’ speaks less about light than about interest in crystalline forms as he was “no doubt influenced by the Expressionist movement unfolding after the First World War.”¹¹³ He also explored the nature of glass beyond its transparency in his Barcelona Pavilion of 1929 where the reflectivity is the barest suggestion of materiality. It is seemingly an intentionally obfuscating yet transparent element of the environment, engaging not only the reflectivity of glass but also of the metals and stone slabs. This is further amplified by use of glass as the outdoor screen; a spatial boundary, nearly transparent except for the spectres of reflection. Mies used four different types of glass ‘grey, green, white and translucent’¹¹⁴ to enhance the reflections and the resulting obfuscation. The light striking the translucent screen, which functioned as an artificial ‘lightbox’ at night, was diffuse and uniform, making the glass seem ethereal, dematerialized. His abstracted renderings of interiors spoke only of transparency, never of engagement with the admitted light. He did not discuss the transmission of light or light on the interior; it only served as a tool to dissolve the plane.

Although many glazed office towers preceded those of Mies van der Rohe, such as the United Nations tower in New York, he greatly contributed to the popularity of the glazed skyscraper, inspired tributes, and like buildings by many other modernists. In both of his preferred types – the tower and the pavilion – the glazed façade reads like a skin due to near-frameless appearance of the windows and detachment from actual structure. However, some of Mies’s more ephemeral interest in the nature of glass did not occur in the designs of those who followed him, such as the firm of Skidmore, Owings, and Merrill, who instead ran their office with “economic efficiency, on a model drawn from the American business world.”¹¹⁵ Their prolific output varied little, concentrating on glazed tower and “producing a model for the international marketplace.”¹¹⁶ As many corporations decentralized, the firm used their glazed precise aesthetic to create low sprawling complexes for various companies’ headquarters. The curtain-walled box spread through commercial America and the world, while domestic architecture followed the glass box model popularized by architects like Richard Neutra, John Lautner, and the Case Study Houses’ architects on the West Coast who sought to dissolve the boundary between the interior and exterior, transcending the division between house and nature. Mies’s earlier Barcelona Pavilion or the

112 Mies van der Rohe quoted in Claire Zimmerman, *Mies van Der Rohe 1886-1969: The Structure of Space* (Köln: Taschen GmbH, 2006), 25.

113 Claire Zimmerman, *Mies van Der Rohe 1886-1969: The Structure of Space* (Köln: Taschen GmbH, 2006), 25.

114 Zimmerman, 39.

115 Hasan-Uddin Khan, *International Style: Modernist Architecture from 1925 to 1965* (Köln: Taschen, 2001), 130.

116 Ibid.

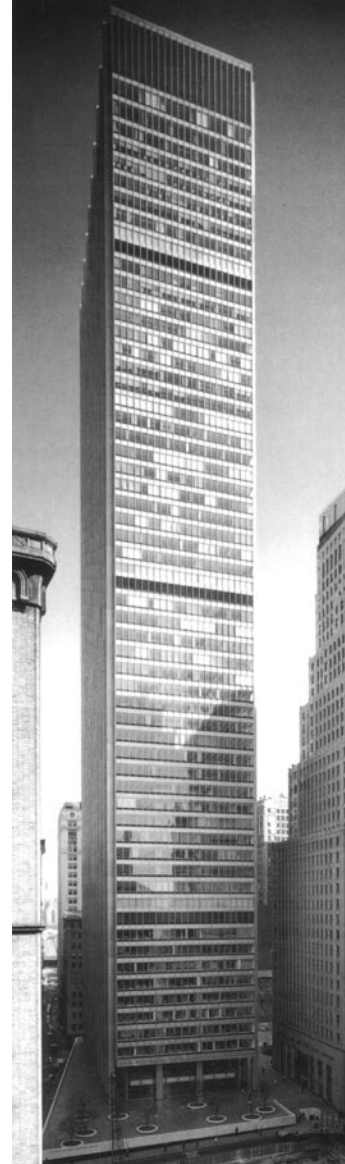


Tugendhat House(1930) might have inspired these, and, in turn, Mies himself followed these later with his own glass box, the Farnsworth House(1951), the epitome of its type.

The glazed box established a paradigm not only of form and architectural language, but also for the means of lighting as well. The glazed towers with repetitive stacked floors illuminated either by curtain wall or by rows of fluorescent lights soon became a standard all over America and the world. Irrespective of climate or orientation, the universal glass tower was less adaptable to the specifics of the site. As a result, although glazed perimeters created “light and airy offices”, the solar heatgain these caused, required intensive mechanical ventilation systems, while occupants handled glare by closing the blinds. It was not unusual to turn on artificial lighting while attempting to block the intensity of the sun; it is also a common contemporary practice as computers, now prevalent in office environments, tolerate glare poorly. Both ‘light’ and ‘air’ were abstract notions in the designs, as the real light and air were often artificially delivered.

While the future was bright and the resources seemed limitless, these glass boxes consumed energy voraciously, powering their mechanical systems. Artificial light, cheap and abundant, undermined the value of natural light, even for illumination. Ironically, the functional light of modernism is compromised as utilitarian. Through both architectural design and ethical attitude in indulgent architecture of this kind, natural light lost not only much of its meaning, but also much of its value.

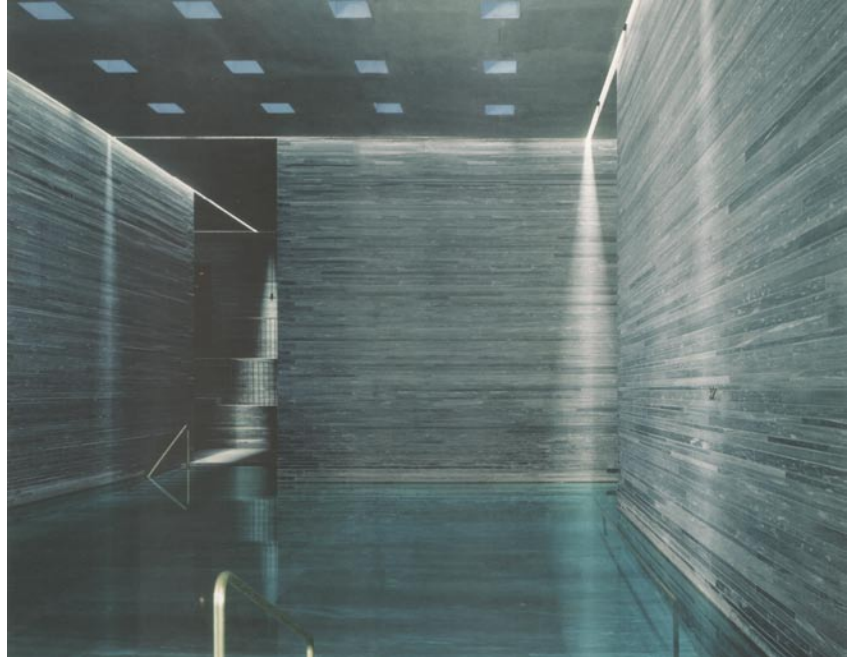
A seeming abundance and low costs of resources and energy alike led to placement of lower significance on natural light - even as illumination



Above Left
77. Executive Suite, Toronto Dominion Bank Building, Ludwig Mies van der Rohe, 1963-7

Above Right
78. Chase Manhattan Bank Building, Skidmore, Owings, and Merrill Architects, 1955-61

79. *Thermal Baths*, Vals, Peter Zumthor, 1990-6



– further compromising man’s ability to relate to it meaningfully. However, this insensitive approach to natural light did not always reflect the general attitude that naturally valued functionalism of light, if not always its cultural significance. The energy crisis reinvigorated the utilitarian value of natural light as sustainable architecture emerged to counteract high energy consumption and dependency on availability of natural resources. The inevitable exhaustion of non-renewable resources and damage from their extraction and use were also highlighted by sustainability advocates who called for more ecological ways of living and building. In sustainable building, both light and sunlight play key roles in passive and active architectural strategies, taking advantage of the sun’s renewable power. This resulted in architecture that is sensitively oriented to the sun and intimately connected to the sun’s daily cycle. The value of sunlight thus regained some of its potency. As light has become more attentively considered it regained, if not meaning, then value and, in that, appreciation.

Although not concerned with an explicit sustainability agenda, other thoughtful and sensitive approaches to natural light have also emerged in many contemporary works, reflecting a great engagement with light and desire to give it a greater place in architecture. Peter Zumthor and Tadao Ando, among others, have made light one of the main themes in their projects. However, if any cultural significance exists beyond aesthetic richness, it is often elusive and individual to the authors. Unlike Wright or Kahn who developed deeply personal philosophies of light, many contemporary architects that masterfully engage with light shy away from any such contributions apart from discussing light’s obvious character and its inherent value to men.



80. *Koshino House*, Tadao Ando, 1979-84

From the historical overview it can be seen that light has been implicated in a pattern of oscillation where a spiritual worldview alternated with subsequent rejection of this spirituality in favour of rationality, reflected in the role light takes on in architecture. The earlier ancient agricultural mythologies were succeeded by classical reason as was the symbolic Christian worldview by that based on the scientific method and reason - an anthropocentric worldview that David Harvey refers to as the “Enlightenment Project.”¹¹⁷ In the process the metaphysical nature of light was discarded, precipitating a crisis of the old approach to light in architecture and of man’s relationship to light. Failing to replace the old approach with a new one of equal or greater depth, a deeper engagement with light was not forthcoming as there was no cultural impetus to revitalize its worth. Although aesthetic impetus ensured its enriching presence, its significance remained ambivalent. This ambivalence is rather indicative of the multiplicity and uncertainty of the culture, a mark of the condition of postmodernity: “Modernist sentiments

117 David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change* (Cambridge, MA; Oxford, UK: Blackwell Publishers Ltd., 2001), 13.

may have been undermined, deconstructed, surpassed, or bypassed, but there is little certitude as to the coherence or meaning of the systems of thought that may have replaced them.”¹¹⁸

Postmodernism developed as ‘anti-modernism’ out of the perceived tyranny of modernist dogma and out of the failure of modernist architecture to become an agent of social change as it aimed to be. When avant-garde modernism “became establishment,”¹¹⁹ the rejection of modernism and its functionalism led to a ‘postmodern’ attitude emerging “out of the chrysalis of anti-modern movement.”¹²⁰ The return to a language of symbols and recognizable imagery, an antithesis to the minimalism and abstraction of modernism, was inspired by the writings of Robert Venturi in *Complexity and Contradiction in Architecture* of 1966. Architecture that emerged from this critique became a distinctly visual style, dubbed ‘Post-modern’ by Charles Jenks; Venturi’s own works and - at its most exuberant - Piazza d’Italia by Charles Moore best exemplify it:

Each in his own way, Moore and Venturi set out to use the architecture of the past as a set of visual signs as seen through the eyes of the twentieth century. The inner meaning of that architecture, however, cannot be transported in this way.¹²¹

Although the ‘Postmodern’ movement in architecture is a distinct style, it is only one of many postmodern architectural approaches. ‘Postmodern’ no longer signifies “simply a reaction against modernism – a meaning that no longer corresponds to present-day usage – and now acquired a new sense: ‘All is permitted’.”¹²² This new permissiveness reflects an acceptance of multiple viewpoints and approaches. The result is an uncertainty that comes with this acceptance. Postmodernist thought contains multiple narratives with “fragmentation, indeterminacy, and intense distrust of all universal ‘totalizing’ discourses”¹²³; Lyotard characterized it as “incredulity towards meta-narratives.”¹²⁴ This respect for multiple narratives is fundamental: “The idea that all groups have a right to speak for themselves, in their own voice accepted as authentic and legitimate is essential to the pluralistic stance of

118 Ibid., 42.

119 Ibid., 35,

120 Ibid., 38.

121 Hanno-Walter Kruft, *History of Architectural Theory: From Vitruvius to the Present* (London: New York: Zwemmer; Princeton Architectural Press, 1994), 442.

122 Ibid., 443.

123 Harvey, 9.

124 Lyotard in Harvey, 45.

postmodernism.”¹²⁵

The acceptance and uncertainty of postmodernism has a downside – the plurality is paralyzing, plagued by “relativism and defeatism.”¹²⁶ The ability to create a new direction can come either from an individual effort – although such totalizing effort is counter to spirit of postmodernism - or from new shared and meaningful cultural attitude. Lacking either, as the postmodern fragmentary narratives are derivative and fail to produce a subject, postmodernism fails to emerge from within its own nature and unable to answer Harvey’s fundamental question:

How can we build, represent, and attend to these surfaces with the requisite sympathy and seriousness in order to get behind them and identify essential meanings? Postmodernism, with its resignation to bottomless fragmentation and ephemerality, generally refuses to contemplate that question.¹²⁷

Although, however damaging this permissiveness can be in other areas, in architecture it resulted in a plethora of views and attitudes towards building that can not be easily comprehended in relationship to one another. This, argues David Harvey, sets a new norm of aesthetics for all, including architecture, that can only be evaluated by its one shared value - amusement: “Refusing all authoritative or supposedly immutable standards of aesthetic judgement, postmodernism can judge the spectacle only in terms of how spectacular it is.”¹²⁸

The fragmentary meanings and referentialism in postmodernism is rejected in the new neutral architecture that does the opposite - refers to little else besides itself. If a characteristic of postmodernism is to “plunder history and absorb all that it finds there as some aspect of the present” (Harvey 54), then, perhaps, new type of architecture – a neutral and self-referential kind – is indeed emerging. In *Supermodernism*, Hans Ibelings describes the new global architecture of intentional detachment and seemingly stylistic anonymity that, like modernism, eschews referentialism. He characterizes ‘Supermodernism’ as “the sensitivity to the neutral, the undefined, the implicit”¹²⁹ that is epitomized in glazed or smooth monolithic boxes such as some works of Herzog and De Meuron, Jean Nouvel, John Pawson, SANAA, and Peter Zumthor among others. The neutrality of supermodern buildings exhibits a conscious rejection of association, meaning, or symbolism, and, unlike postmodernism, exhibiting a “remarkable lack of concern for, if not antipathy

125 Harvey, 48.

126 Ibid., 52.

127 Ibid., 59.

128 Ibid., 56.

129 Hans Ibelings, *Supermodernism: Architecture in the Age of Globalization* (Rotterdam: NAI Publishers, 2002), 62.



81. *Signal Box*, Herzog and De Meuron, 1994-7

Right

82. *Kunsthau Bregenz*, Peter Zumthor, 1991-6



83. *New Museum*, SANAA, 2002-7

toward, formal considerations.”¹³⁰ The new neutrality actually harkens back to the modernist period:

During the postmodern period, this minimalist neutrality was severely criticized for its alleged meaninglessness but this ignored a unique quality of such architecture: its ability, through total abstraction, to evoke deafening silence.¹³¹

However, the ‘deafening silence’ of new neutrality can be seen as something that refuses to instruct or to have an intellectual narrative at all, instead allowing interpretation through experience rather than through signage. This reversal is “not merely a negation, for blankness has a positive side as well.”¹³² In that sense, this new approach may be continuing postmodernism’s acceptance of multiple meanings. However, instead of meanings and significations given to the work by its author – through fragments and reference or otherwise – it is done by the perceiver. It can be interpreted in any way he or she desires or it may remain mute concentrating on phenomenal experience instead, depending on the choice of the observer.

Although neutrality has replaced symbolism, meaning did not disappear. Rather it became even more personal, having morphed from the symbolic meaning of postmodernism to an experiential meaning in the new architecture:

To say that architects are searching for an architecture without symbolic or metaphorical allusions is not to imply that there is no

130 Ibid., 57.

131 Ibid., 45.

132 Ibid., 89.

meaning at all anymore. Just that the tendency of postmodernists and deconstructivists to look for hidden meanings everywhere has become largely superfluous for the simple reason that, more often than not, there is no hidden meaning. In its place we now have a form of meaning that is directly derived from how the architecture looks, how it is used, and how it is experienced. After postmodernist and deconstructivist architecture, which appealed primarily to the intellect, a new architecture is evolving which attaches greater importance to visual, spatial and tactile sensation. The disappearance of the compulsive tendency to construe everything in symbolic terms, has not only freed the designer from an onerous duty to keep on producing 'meaningful' architecture, but has also made it possible for architects, critics and historians to view architecture differently in that things are now accepted phenomenologically for what they are. The moralism and dogmatism implicit in postmodernism has made way for realism.¹³³

The primacy of the phenomenological experience culminates the long journey that led from symbolic and representative meanings to confrontation and acceptance of reality. While intellectual meaning may be divisive by its viewpoint and its exclusivity – postmodernism and Renaissance mannerism have both relied to an extent on certain academic erudition rather than understanding – experience may be unifying. While codified meanings are not open to interpretation, reality and experience are. The imagination of the viewer is then empowered to impart or extract its own meaning from architecture as well as from the role of light in architecture. The architecture is fully realized only when it is an experience, that is, when it is completed by the presence and participation of its observer. Even the suggestion of this creative empowerment through experiential interpretation has a value of its own, as it creates a stronger engagement with one's environment and, as a result, a fuller way of inhabiting.

In the phenomenological approach to architecture, light is paramount. It affects experience and, in turn, it can create experiences. As an agent of creative inspiration, light lacks any one shared value akin to the powerful metaphors of earlier epochs. Phenomenologically, however, light is valued for its effects and the evocativeness that arises from its more inherent qualities. The writings of architects who are concerned with phenomenology uncover these qualities, reinforcing the potential significance light has to impart to the architectural spaces. This attention to light and to its handling can be seen as a reversal of approaching architecture abstractly and conceptually, reaffirming

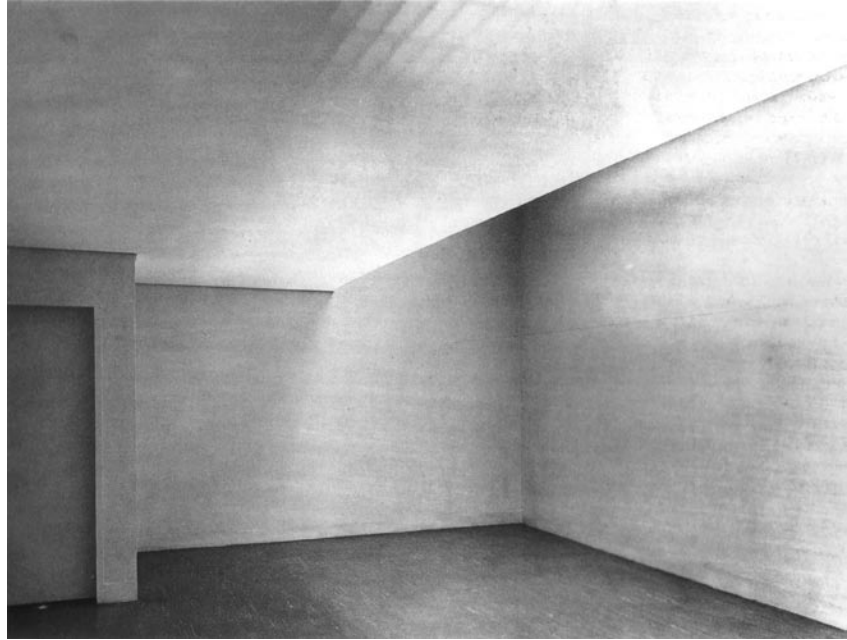
133 Ibid., 133.

84. *Fractured Light - Partial Scrim Ceiling - Eye-Level Wire*, Robert Irwin at Museum of Modern Art, New York, 1970-1.

For Robert Irwin light is indispensable in questioning issues relating to perception and cognition: “direct experience (responsibility) vs. prestructured expectation, phenomena vs. permanence, presence vs. abstraction” (Irwin, quoted in Sally Yard, “Deep Time” in Robert Irwin and Russell Ferguson, *Robert Irwin* (Los Angeles: Rizzoli, 1993), 66).

“The initial response to many of Irwin’s works has been that there is nothing there. Many of his pieces [...] have comprised only the barest and least substantial materials, such as string, scrim, and what Irwin calls ‘givens’ – light, space, ambiance. The burden is almost entirely on the viewer to perceive the piece and to distinguish its properties. The shape and presence of these pieces varies with the individual, and no two participants are apt to have the same response to any work. Some, indeed never manage to perceive the work at all.”

Jan Butterfield, *The Art of Light and Space* (New York: Abbeville Press, 1993), 23.



the connection of the individual to the world. Both the efficient architecture of capitalism and the formal preoccupations of modern and postmodern architecture served to distance it from its inhabitants. This new existentialism is seen as positive and ontological rather than the alienating experience of the modern man.

In *Genius Loci* (1979), Christian Norberg-Shulz takes his first step “towards a ‘phenomenology in architecture’, that is, a theory that understands architecture in concrete, existential terms.”¹³⁴ Influenced by Martin Heidegger, especially by his concept of *dwelling* from the essay “Building Dwelling Thinking” (1951), Norberg-Shulz looks for an existential dimension in interpretation of and interaction with architecture. This existential dimension is approached by understanding that spaces of dwelling become places by acquiring “a distinct character.”¹³⁵ Historically, this character “*genius loci*, or ‘spirit of place’” must be visualized in architecture as “the task of the architect is to create meaningful places, whereby he helps man to dwell.”¹³⁶ By expressing the nature of the place through architecture, one reinforces the connection between self and nature. The place becomes more meaningful as it solidifies the ties to its inhabitants. The understanding of one’s place in nature creates an “experience of *meanings*,” rather than just an experience of “mere phenomena.”¹³⁷

As well as in the works and writings of other writers who were

134 Christian Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture* (New York: Rizzoli, 1980), 5.

135 Ibid.

136 Ibid.

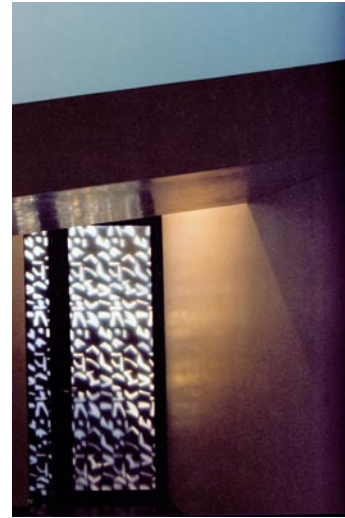
137 Ibid., 23.

concerned with phenomenological and existential approaches to architecture, light came to be of particular importance. Light is ever-present and so, unquestionably, its changes affect the perception of all else, altering the experience. For Norberg-Shulz, light among basic categories of natural understanding – together with thing, order, character, and time – which “designate the meanings man has abstracted from the flux of phenomena.”¹³⁸ Light is a universal phenomenon; it is also most ephemeral, changing continuously as time and weather affect it and “thus, is intimately connected with the *temporal rhythms* of nature.”¹³⁹ It is instrumental to the identification of man with a place, as the place cannot be separated from these rhythms; these “contribute decisively to its character.”¹⁴⁰ The special characteristics of light in various sites around the world also deeply affect the cosmogonies and mythologies of the people that inhabit them, tying them more intensely with the specificity of their environments.

Both the light itself and the lore it inspires influences art and architecture. Its ephemerality too makes light “a live and strongly poetic element.”¹⁴¹ Since the time of medieval cathedrals, light has become a “primary means of architectural characterization,”¹⁴² that is architectural expression of *genius loci*, or spirit of the place. As “light, things, and places can only be understood in their mutual relationship,” it is then so that “the phenomenology of things and places, is also phenomenology of light.”¹⁴³ Through light, a “friendship with environment is established, and we may say that we dwell.”¹⁴⁴

The phenomenological approach to architecture and light can also be a response to image-driven perception and the primacy of vision in experience of environments and architecture. Juhani Pallasmaa argued for a more multisensory approach to perception in *The Eyes of the Skin: Architecture and the Senses* (1996). He calls for a reevaluation of the role of the senses:

The inhumanity of contemporary architecture and cities can be understood as the consequence of an imbalance in our sensory system. The growing experiences of alienation, detachment, and solitude in the technological world today, for instance, may be related with a certain pathology of senses. The “art of the eye” and the suppression of the other senses tends to push us into isolation,



85. *Planar House*, Steven Holl, 2002-5

138 Ibid., 32.

139 Ibid.

140 Ibid.

141 Ibid., 40.

142 Ibid., 54,

143 Christian Norberg-Shulz, “Introduction,” in Henry Plummer, *Poetics of Light* (Tokyo: A + U Publishing Co., 1987), 5.

144 Ibid.



86. *Cranbrook Institute of Science Addition*, Steven Holl, 1991-8

detachment and exteriority.¹⁴⁵

Mental alienation is reinforced through vision as it reaffirms the individual viewpoint and, in turn, enhances “Western ego-consciousness.”¹⁴⁶ So the crisis created by reliance on vision deprives men of common viewpoints at the expense of the collective, making creation of architecture that allows shared cultural meaning difficult. It is particularly acute in the discipline of architecture, as it is its task to construct a “world, in which we are not mere spectators, but to which we inseparably belong.”¹⁴⁷ The totality of senses would deepen the connection between man and his environment, making this environment more meaningful. Pallasmaa argues that richness of experience can be created in new contemporary architecture with “subtle and changing sensations of space, movement and light.”¹⁴⁸ Yet, even in such literal modes of experiencing architecture, certain elements, like light, remain evocative.

Pallasmaa urges us to consider light and shadows alike as vital, affirming the need for darkness. Shadows interact with light to create a drama of chiaroscuro, making the visual scene more vivid so that “there is a constant breathing of shadow and light; shadow inhales, and illumination exhales, light.”¹⁴⁹ While lighting is phenomenologically enriching, it is the shadows and darkness that are of utmost importance to Pallasmaa as they weaken the hegemony of the eye: “deep shadows and darkness are essential because they dim the sharpness of vision, make depth and distance ambiguous and invite unconscious peripheral vision and tactile fantasy.”¹⁵⁰ The imagination is awakened in the shadows because the mental activity is unfocused.

Revaluation of light and, of course, shadow is significant if the deeper sensory connection is to be established to and through architecture. The qualitative nature of handling light is absent in many contemporary situations as “in our time light has turned into mere quantitative matter.”¹⁵¹ The poverty of design that does not engage with light creates environments where “homogeneous bright light paralyzes the imagination.”¹⁵² The missed opportunity to engage light is also a missed opportunity to ontologically establish oneself. The relationship to light is part of the larger way of relating to the world, as architecture “enables us to perceive and understand the

145 Juhani Pallasmaa, *Eyes of the Skin: Architecture and the Senses* (Chichester: Hoboken, NJ: Wiley-Academy; John Wiley & Sons, 2005), 9.

146 *Ibid.*, 15.

147 *Ibid.*, 16.

148 *Ibid.*, 23.

149 *Ibid.*, 33.

150 *Ibid.*, 32.

151 *Ibid.*, 33.

152 *Ibid.*, 32.

dialectics of permanence and change, to settle ourselves in the world, and to place ourselves in the continuum of culture.”¹⁵³

The most thorough phenomenological exploration of light in architecture comes from Henri Plummer, who weaves writing and imagery to present sensory experiences of light in his three books *Poetics of Light*(1987), *Light in Japanese Architecture*(1995), and *Masters of Light*(2003). In the first of these, written in a manner after Gaston Bachelard’s *Poetics of Space*, Plummer also addresses deeper ontological meaning of light as well as investigating light as a phenomenon.

The inspiring nature of light found outlets in the creation of “myths of luminosity, which may well continue to reverberate in our subconscious.”¹⁵⁴ The connotations that light has acquired in earlier epochs enable perception of light to transcend its physicality. The previous meanings of light can become a vocabulary of poetic metaphors that engage imagination, reaffirming active cerebral partaking in a visceral experience. However, although the physical effects of light continuously feed the imagination, the effects of light themselves are significant as their “energy transcends and lives apart from their iconography.”¹⁵⁵

Light effects can affect perception creating such optical and kinetic richness that “through light the physical world is able to undergo a heightening of existence.”¹⁵⁶ Engaging with light in conscious manner in architecture creates “phenomenal invigoration.”¹⁵⁷ Its ephemerality combined with its power of giving life combine to create “a direct association of between luminosity and living energy.”¹⁵⁸ The quality of vitality in such an environment is akin to Christian Norberg-Shulz’s “spirit of the place”. It creates both specificity and potency. In such an animated world one can find a “state of sympathetic belonging rather than petrified alienation.”¹⁵⁹ Particular characteristics of light in a certain place can:

endow places with a kind of soul, an image of our own existence that permeates yet is apart from matter, allowing us to feel related personally to our surroundings. By striking everchanging sympathetic chords, light enhances the physical world’s capacity for human identification and communion, relieving some of our basic ontological solitude.¹⁶⁰



87. Chapel of St. Ignatius,
Steven Holl, 1994-7

153 Ibid., 50.

154 Henry Plummer, *Poetics of Light* (Tokyo: A + U Publishing Co., 1987), 15.

155 Ibid., 17.

156 Ibid., 9.

157 Ibid., 75.

158 Ibid., 13.

159 Ibid., 15.

160 Ibid., 139.



88. *Chapel of St. Ignatius*,
Steven Holl, 1994-7

As with Pallasmaa, for Plummer shadows and darkness are agents of inspiration as “matter attains certain magical properties that evaporate in a clear and rational light.”¹⁶¹ This loss of acuity liberates the unconscious, further engaging imagination to participate in the surroundings. Yet, darkness also allows the suspension of passing time making it “thus pacifying biologically as well as optically.”¹⁶² The return to appreciation of shadows and darkness in a phenomenological way signifies an appreciation of the light effects themselves and a liberation from earlier connotations; it also creates an openness to new interpretations of these phenomena. The void of the darkness is an open-ended potential, in which “a negative atmosphere, emptiness, is a means of more Eastern than Western of eliciting sublimity.”¹⁶³ When design deeply engages with light and shadows,

We leave behind a humdrum world that is optically safe and comfortable, yet which has also debased our humanity because it is so obvious and habitual [...]. The shadow walker is emancipated from the passivating experience of foretold situation, from automatism, to be a spontaneous force in an indeterminate world where he can respond creatively to uncertain situations.¹⁶⁴

The animation of spaces with constantly changing light is also evocative and immersive. It is beyond merely perceptual and fosters a “participation in time made possible by the evolving lights, we are freed from being the passive receptors of cadaverous images, and act as missionary poets in the ongoing re-creation of a living world.”¹⁶⁵ Drawing on Martin Heidegger’s concept of becoming, Plummer views this mutability “in contrast with the non-being of repetitive and constant states, being charged with the power of becoming, and is a genetic experience based upon change.”¹⁶⁶ Consequently, engagement with light in architecture has bigger ontological implications:

Since the primary phenomenon of change in our world is daylight, not only sparking organic movement in the first place but giving continuous optical play to the world, we might venture that an incorporation of luminous mutations in built space will enhance the world’s “becoming” as well as man’s ability to identify with

161 Ibid., 75.

162 Ibid., 81.

163 Ibid., 83; references Rudolf Otto’s statements (Rudolf Otto, *Idea of the Holy: An Inquiry into the Non-Rational Factor in the Idea of the Divine and its Relation to the Rational* (London; New York: Oxford University Press, 1950), 68.)

164 Plummer, 77.

165 Ibid., 139.

166 Ibid.

that transience and feel vibrant himself.¹⁶⁷

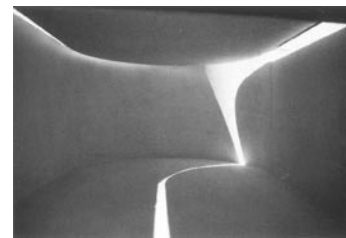
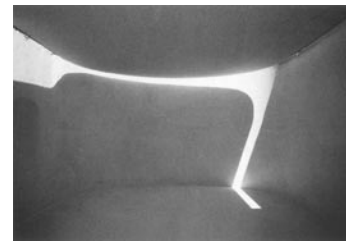
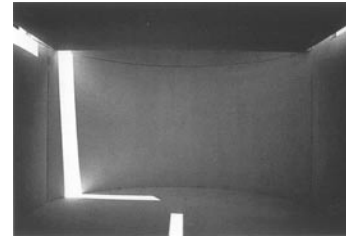
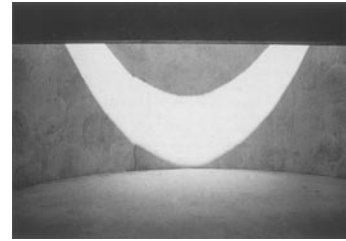
The existential character of light is also inferred from its relationship to time. Although measured time is an abstract notion “daylight concretizes time and brings it alive to our senses, directly imprinting celestial currents onto the built world.”¹⁶⁸ It creates connection to the cosmos that is palpable rather than abstract. Plummer terms time revealed through experience of light “human time rather than machine time, a qualitative rather than quantitative time.”¹⁶⁹ The passing of time observed through light changing goes beyond aesthetic effects produced; it relates to understanding of inevitable human mortality making time more precious. So light heightens the experience of momentary existence – makes one more alive. This happens “only when we can sense our passage from a past into a future that we know ourselves to be truly present, and this awareness of temporal procession is supplied largely by light.”¹⁷⁰

To engage with the passage of natural time and to benefit from an understanding of the relationship between man and time, light as an agent of natural time must be engaged. Plummer criticized contemporary buildings for not allowing this phenomenon to be revealed:

The steady and always highly programmed light of the modern environment, which has been so effectively murdered and embalmed, is in many ways an outcome of this denial of living time, and generally of an anti-process culture, and condemns human beings to a morbid optical permanence.¹⁷¹

Unabated by the rather recent ability of man to control levels of lighting physiological mechanisms that bodies use to regulate their functions “persist unchanged and may well need to be reaffirmed and satisfied for us to feel alive and fulfilled as participants in the universe around us.”¹⁷² This also results in growing alienation from natural processes and nature, from understanding of natural time and, subsequently, from time’s continuum in the world, of which human lifespan makes up only a segment. Without a way of observing light and light’s changes it feels as though “stripped of living time, we are uprooted and set adrift, no longer participating in a world sympathetic to our biological identity.”¹⁷³

By engaging with light in architecture, it is possible to reassert the connection between the man and the world. Light as both agent of place and



89-92. Light studies, *Cassino Museum of the City*, Steven Holl, 1996

167 Ibid.

168 Ibid., 141.

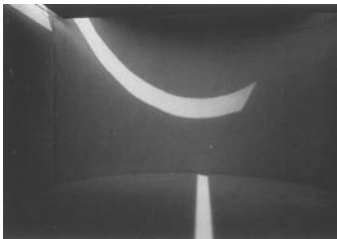
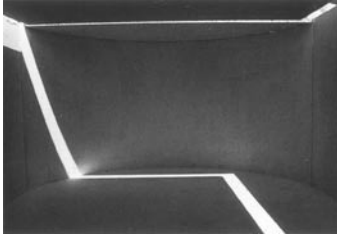
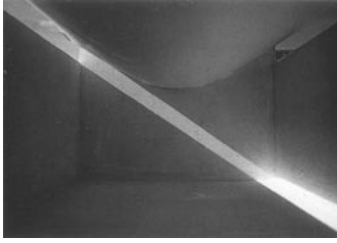
169 Ibid.

170 Ibid., 143.

171 Ibid.

172 Ibid., 145.

173 Ibid.



93-96. Light studies, *Cassino Museum of the City*, Steven Holl, 1996

time, serves to ground man's existence in his environment, in a newfound appreciation of light and its sources:

Our ontological alienation in the world- our individuated rootlessness and anxiety, is partly overcome by reaffirming an involvement with the grand realities of "where" we are, "when" we are, and "how" we will be. Our unquenchable thirst for being and real existence is nourished by communicating with the heavens.¹⁷⁴

In the works and writings of contemporary architect Steven Holl, the phenomenological approach to designing with light is explicit. Deeply influenced by the phenomenological philosophy of Maurice Merleau-Ponty, he has written about phenomenology's role in his work. Like Pallasmaa, criticizing visual dominance in culture and media, Holl prizes direct experience above all else:

If we allow magazine photos or screen images to replace experience, our ability to perceive architecture will diminish so greatly it will become impossible to comprehend it. Our faculty of judgement is incomplete without this experience of crossing through spaces.¹⁷⁵

Inevitably direct, architecture transcends any other forms of man-made experience such as cinema as "it has all-encompassing qualities"¹⁷⁶

For Holl, light is of utmost importance because any experience is affected by it. Any spatial experience is dependant on the light as it affects spatial perception. Light is indivisible in spatial perception so that "the silver light of the sun, the tree-cast shadow, and the glossy surface of concrete walls interact in a shadow play with the body's movement through them."¹⁷⁷ It is one of Holl's three key ingredients of architectural or urban perception "in a web of movement, parallax, and light."¹⁷⁸ In architectural experience, tectonic elements are mixed with natural absolutes where "a complex interlocking of time, light, and details creates the cinematic whole wherein we can no longer distinguish individual elements."¹⁷⁹

Although light, too, is inspirational beyond physical effects, the nature of light inspires through its mystery. Light is inherently mysterious and meaningful. Holl likens light to language, in a sense that it is abstract yet evocative, "it has essences that transcend specific meanings and purposes."¹⁸⁰ Its hidden scientific nature inspires awe in Holl that he uses to poeticize

174 Ibid.

175 Steven Holl, *Steven Holl: Luminosity* (Tokyo: Totoshuppan, 2006), 26.

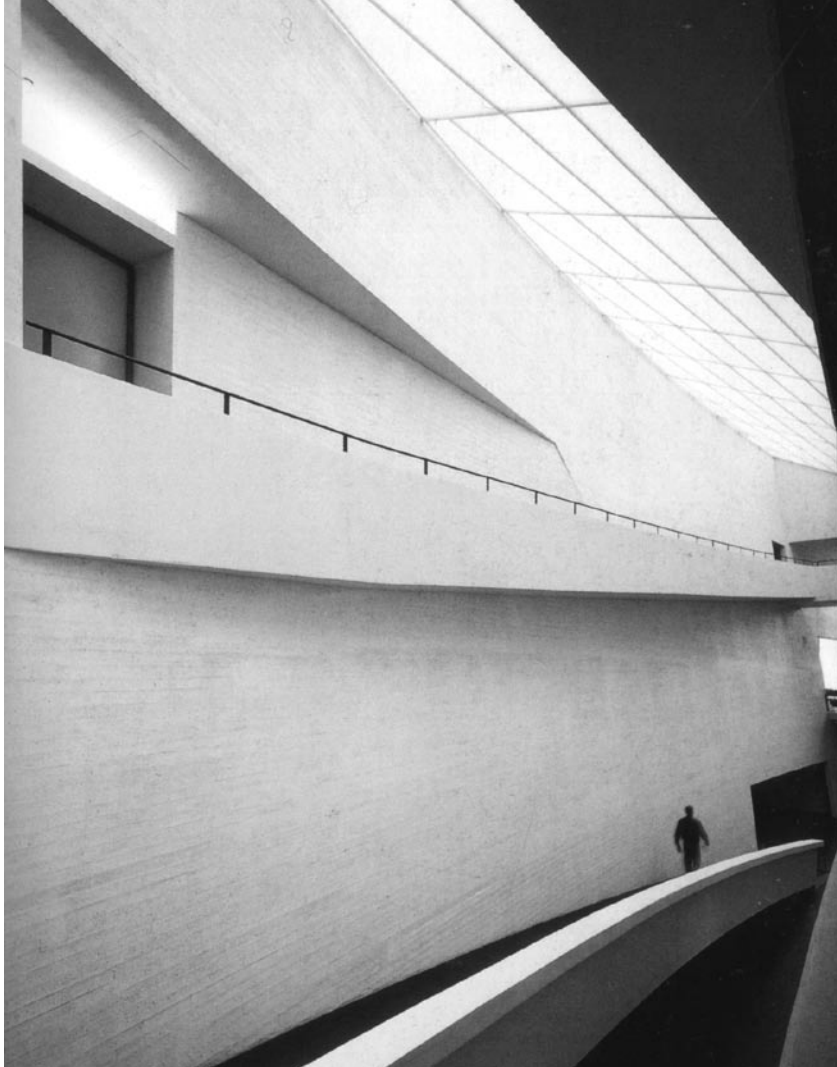
176 Ibid., 56.

177 Ibid., 31.

178 Ibid.

179 Ibid., 65.

180 Ibid., 104.



97. Stair, *Kiasma Museum of Contemporary Art*, Steven Holl, 1992-8

Left

98. *Kiasma Museum of Contemporary Art*, Steven Holl, 1992-8

his buildings. While he speaks in language of physics when he states that “the presence of light is the most fundamental connecting force of the universe,”¹⁸¹ it seems that light is seen as a greater force than only physical, but poetical and spiritual as well. It is a key element of his architecture intellectually, physically, and spiritually:

The mysteries of the science of light approach the physiological delights of natural light in architecture: the faint glow of dim reflected daylight, the sheen of plaster wall in a wash of sunlight, and the variations between heavy shadows and light shadows with reflected colour. The range of astonishing phenomena of light and shadow contain mysterious ambiguities that glow elastically in a dreamlike uncertainty. A luminescence of shadow lines against a canvas or a sheet of white glass in the open air crystallize the theater of light. The infinite possibilities of architecture and will

181 Ibid., 111.

continue into the future.¹⁸²

While Holl remains initially inspired by many concepts beyond experiential sensory dimension of architecture – such as scientific and philosophical concepts – he creates architecture mindful of light and shadow. Sensitive to both place and time as signified by light, light becomes a dramatic character that entertains as well as connects one to the world beyond the windows.

In his volume *Parallax*, Holl describes the indescribable architectural experience: “The phenomenon of ineffable space refers to the maximum intensity and the quality of execution and proportion - an experience becomes radiant. Dimensions alone do not create this space; rather the space is a quality bound up in perception.”¹⁸³ Although he does not identify light contributing to this affecting experience and speaks mostly about bodily experience of space in motion, it can be inferred as he stresses light throughout his writing and believes light and spatial perception are indivisible; light must be paramount to what creates Holl’s “ineffable experience.” For Holl, Le Corbusier’s La Tourette exemplifies “ineffable space.”¹⁸⁴ He terms “magnificent” those spaces where light engages architecture, “changes and appears to describe form.”¹⁸⁵

These explorations reveal that light has intrinsic attributes that can ensure its significance in architecture. The phenomenological approach to light has been an obvious and fitting companion to architecture that eschews conscious and unconscious references and significations. Additionally, without any collective notion for light, it is only due to its phenomenal richness that it can persist to reveal other dimensions of value to the viewer: there is no shared significance, but the experience of this phenomenon is. However, beyond any representative or exterior meanings assigned to it by Western or any other culture, light possesses poetic meanings and value in its phenomenal richness. As light remains an essential and inseparable companion of architectural spaces, the opportunity to contemplate light and its qualities can be created in architecture, enriching both the light - by drawing focus to it - and the architecture itself. These opportunities can foster a consciousness and appreciation of light that would amplify its value and significance in architecture. In turn, the contemplative relationship between light and man may provide men with more meaningful ways to inhabit architecture and to see themselves in the world.

182 Ibid.

183 Steven Holl, *Parallax* (New York: Princeton Architectural Press, 2000), 31.

184 Ibid., 33.

185 Ibid., 112.

Part Two

The uncertainty of the role of light, aside from functionality, in contemporary architecture leads to its intermittent significance in today's buildings. Although light is an indivisible and significant component of architectural experience, the emphasis on the phenomenology of architectural experience rather than symbolical or intellectual interpretation of architecture, reclaims light's due importance. As both the design of interior space and the experience of it become phenomenal, the relationship of man and architecture and man and light becomes more open-ended. Although the sensory experience of architecture may be seen as lacking significance, the shifting of the responsibility of the designer is to create architecture where the interpretation of the experience lies with the beholder. This implies a need for a new attitude for understanding and inhabiting this kind of architecture, an attitude that could either engage one's imagination in further interpretation of an architectural experience or create a direct close engagement with one's environment. Such an approach to understanding one's surroundings pervades the aesthetic philosophy of traditional Japanese architecture and culture.

An attitude of contemplative meditation and deep personal engagement in experience as a means to achieving significant appreciation of light, or shadow, is evident in three examples of inhabiting lit spaces: the Shokin-Tei tearoom of the Katsura Detached Palace in Kyoto; the literary essay by Japanese writer Junichiro Tanizaki *In Praise of Shadows* of 1933; and the photographic series *Colors of Shadow* of 2005 by Japanese-American artist Hiroshi Sugimoto. Besides their intense engagement with light and shadow, each demonstrates the influence of traditional Japanese values and cultural constructs. keystones of aesthetic philosophy of Zen Buddhism can be traced in these works, explicitly or otherwise, in the concept of *wabi sabi*, the concept of the 'void', and most importantly, a contemplative and engaged attitude with physical reality. Although both the Zen aesthetic and outlook are present in other works of art and architecture, these particular works are singled out for their attentiveness to light.

The relationship between light and architecture and light and man in Japanese cultural history, as in the West, has historically had multiple meanings and roles, but unlike the West, it has lacked the same singular, forward-bound progression. As earlier expressed, Western Culture has seen a

linear succession of attitudes towards, and meaning attached to, light: from the importance of light in agricultural sun-worshipping communities; to abstract light in a major religious movement; and to lack of assignation of any one particular symbolic metaphysical significance. However, in Japanese culture these have coexisted simultaneously and often peacefully. This coexistence comes from the spiritual pluralism of the culture. In the West, each successive stage rejected the values and worldview of the previous period and, along with them, the meanings and significance attached to light. In Japan, the significance of light persisted, despite cultural shifts.

The plurality of light's meanings is the result of a spiritual pluralism of traditional Japan. The indigenous religion, Shinto, deifies nature and natural forces. The gods of nature, *kami*, embody these natural forces and can inhabit or manifest in special trees, unusual rocks, waterfalls, and other remarkable natural features. The veneration of *kami*, that continues today, can take the form of either constructing shrines or even simpler gestures, like roping off the special object or area with a sacred rope or by placing a gate, *tori*, that signifies the entry to a supernatural site. The veneration is always of nature, not of the built object, which is only the marker of natural power. The main deities of Shinto, the goddess of the sun, Amaterasu, and the storm god, Susanowo, responsible for rain, reflect the agricultural nature of this early form of worship that was closely bound up with nature.

The later arrival of Mahayana Buddhism came first during the Asuka Period(552-646 AD) in two forms, Esoteric Buddhism and Pure Land Buddhism, and then, during the Kamakura period (1185-1392), in the form of Zen Buddhism. Esoteric Buddhism relied on a complicated hierarchy of deities led by universal Buddha - Daimici, literally 'great sun' - veneration of all of which would lead to enlightenment. Pure Land Buddhism relied on faith and simple chanting alone to deliver one to enlightenment in the paradise of Amida Buddha, Buddha of Light. The light of Amida Buddha is abstract and disconnected from agricultural worship. Like Christian light, it is a metaphysical manifestation of a divine being. All of these forms of Buddhism are anthropocentric spiritual movements that stress individual enlightenment, with Zen Buddhism lacking any gods or goddesses and essentially being a way of life rather than a religion. Zen Buddhism relied on the individual to achieve enlightenment through meditation rather than on faith in other deities or buddhas. The philosophy and personal discipline required made Zen popular among *samurai* warriors, quickly becoming popular among the militarized elite of medieval Japanese society. Zen aesthetics emerged becoming more sophisticated and subtle by association with the higher social classes and influencing much of Japanese art thereafter.

Japan, traditional and contemporary, embraces both Shinto and Buddhism. From the time that Buddhism was imported, the two existed alongside one another without much interference because "one seeks

enlightenment, the other purification, and since these ideals did not clash, neither did the two forms of religion.”¹ These continue to coexist together and people participate in Shinto rituals as well as in Buddhist practices, such as having a Shinto wedding, but a Buddhist funeral. Even Zen monks, such as those in Daitoku-ji monastery in Kyoto, in their daily two hour ceremony venerate not only buddhas and bodhidharmas but also Shinto deities and Chinese folk gods - albeit without as much reverence.² This mixed theology forms a part of many contemporary lives, although today most consider themselves non-practicing.³ The coexistence of Shinto and Buddhism is indicative of a greater plurality of religious and cultural acceptance: Japan has many religions; Buddhism has many sects within itself; and Japan has historically been culturally cross-pollinated by Chinese, Korean, and other influences of South Asian cultures. This acceptance of cultural and spiritual values ensured an accompanying cultural pluralism.

Much of traditional Japanese aesthetics draws on Zen Buddhist principles. Japanese aesthetics value “a love of natural materials, a taste for asymmetry, a sense of humour, and a tolerance for paradoxical qualities.”⁴ The reflections of Zen tenets in aesthetics emerged in the Momoyama period (1568-1603), a key period in artistic history. Zen Buddhism in itself was permissive and accepting of other traditions and values, and, in the Edo period (1603-1868) that followed, “a pluralistic cultural atmosphere developed unlike anything Japan experienced before.”⁵ Some of the key Zen concepts pervade the aesthetic of these times and manifest in later art and architecture as well.

The philosophy of Zen Buddhism stresses the transitory nature of life and death. The individual goal is to attain “enlightenment”, *satori*, “comprehension of the nature of reality.”⁶ The fragmentary reality of the physical world, its divisive nature, and, in turn, ensuing conflicts, can be overcome by an insight into the deeper nature of the world where “an underlying unity or reality which, when the surface illusions are removed, can be perceived as a ‘great void’, a reality that is infinite.”⁷ The superficial world is only the apparent world of the infinite continuum; the “world of realities is the spiritual world and not material world, which is only the visible and ephemeral expression of the former.”⁸ Rather than

1 Marilyn Stokstad, David Cateforis, and Stephen Addiss, *Art History* (New York; London: Harry N. Abrams, 2002), 435.

2 Jon Covell, *Zen at Daitoku-ji* (Tokyo: Kodansha International, 1974), 18.

3 W. Scott Morton and J. Kenneth Olenik, *Japan: Its History and culture* (New York: McGraw-Hill, Inc. 2005), 279.

4 Stockstad, 858.

5 Ibid., 866.

6 Mikiso Hane, *Japan: A Historical Survey* (New York: Scribner, 1972), 93.

7 Ibid.

8 Heinrich Engel, *Japanese House: A Tradition for Contemporary Architecture* (Rutland, Vt.: C. E. Tuttle, 1964), 375.

just uncovering this reality, the object of the Zen practitioner is to “enter this reality itself” to become one with this ‘underlying unity’. As the nature of the unified harmonious reality cannot be grasped by man-made constructs - “embellishments and trimmings” - and the path to *satori* lies through meditation and contemplation, intuitively rather than through logic, “liberation of the unconscious.”⁹ The resulting engagement with the world is profoundly direct and aware, emphasizing “living in the ‘now-moment’”¹⁰ and dealing with ontological existence frankly rather than in an interpretive or symbolic manner as do other religious beliefs, such as Shinto or Christianity. The awareness of the present, of one moment, becomes the awareness of the continuum of such moments, in fact, a contemplation of an eternal continuum. This immersion into deeper engagement in the world transcends life and death and time itself. Zen practices an awareness of the momentary nature of living and a direct engagement with the corporeal, while also practicing mental detachment and intuitive contemplation reflected in both spirituality and culture. “Zen’s emphasis on discipline, single-minded concentration, simplicity, and a direct and decisive approach to life and reality”¹¹ permeates not only the worldview of its practitioners, but also aesthetic approaches to art.

Concepts of the *wabi*, *sabi*, and the void originate with fundamental philosophies of Zen and translate in multiple practices, from making tea to architecture. *Wabi* and *sabi* are seen as forming one aesthetic, but they are both part of it rather than interchangeable. A subjective feeling, *wabi* “embodies the sense of solitude and melancholy but also tranquility”¹² that comes from simplicity, a key Zen principle. *Wabi* creates an approach of an implicitly understated aesthetic, a “rejection of everything pretentious and gaudy; it consists instead of seeking simplest expressions those that are closest to nature.”¹³ In works such as pottery or design of a tearoom, *wabi* is a refinement and elegance through austerity and naturalness, although it is also seen as poverty and rusticity of peasant culture, the intuitiveness and lack of pretension of which is held in high esteem by Zen artists.

Sabi is an “objective quality”¹⁴ that is inherent in nature and its processes that are “beyond man’s control.”¹⁵ It represents life’s transience through weathering, ageing, decomposition, and wear, a character that can only be acquired with time. This temporal dimension of existence has “a

9 Hane, 93-94.

10 Covell, 147.

11 Hane, 95.

12 Ibid., 121.

13 Covell, 56.

14 Hane, 121.

15 Covell, 59.

quality of mellowness and depth that is acquired through use and ageing.”¹⁶ When perfectly integrated in a tearoom *wabi* and *sabi* create an atmosphere in which :

loneliness penetrates to the marrow of one’s bones. Even within the intimate space of a two-mat tearoom, one can feel immensely lonely and yet identify with all that is in the natural world.¹⁷

The notion of facing the infinite void and the unity of the world simultaneously underlies *shibui*, the aesthetic approach of incorporating *wabi* and *sabi* qualities. *Shibui* refers to an aesthetic that is characterized by “that which is austere, sober, and subdued.”¹⁸

‘The great void’ that underlies the superficial reality is a “basic concept of emptiness,”¹⁹ the negative that is opposite to all that is obvious and apparent. The ability to sense the emptiness through its opposite, the material world, is instrumental in spiritual comprehension of the ‘void’ – “this Zen conception of greatness in the smallest incidents of life.”²⁰ And so, too, the greatness exists in man as well, as he is the part of the world; he can search “in his own life the reflection of the inner light.”²¹ *Satori* is this utter immersion of man in the physical world to uncover the void as “Zen conceives of one absolute state where the beholder and his object, the thinker and his subject matter, merge into one; a state of an ‘absolute emptiness’ or ‘utmost transparency’ where no barrier between the self and the other exists: the ‘ultimate oneness’.”²² Beyond and unlike the world in which all is evident and concrete, the void “holds potential for action”²³ and is fertile with possibilities. The void is simultaneously negative in connotations of vastness and the unknown, and positive in connotations of possibility and creation. The contemplation of the mundane and corporeal is pursued to unite with the void as reflected in the principle of creating forms that apply Zen ideals:

The principle is derived from the realization that comprehending and appreciating an object is not a passive reaction, but an active process, i.e., the act of becoming one with the object. For this act the completed and perfected form- no matter how simple and inconspicuous – is not appropriate, because it hardly leaves any room for imagination and hence excludes the beholder from participation. Though an object is apt to disclose its inner meaning

16 Hane, 121.

17 Covell, 67.

18 Hane, 121.

19 Covell, 58.

20 Kakuzo Okakura, *Book of Tea* (Tokyo; New York: Kodansha International, 1989), 71.

21 Ibid., 70.

22 Engel, 367.

23 Covell, 56.

by simplicity of form itself, it does not invite participation if its theme is already fully exhausted.

Zen, therefore, attempts to provoke a strong association between the object and the beholder less by “what is” than by “what is not”.²⁴

The approach to inhabiting the world is always active, always engaging the viewer directly. Furthermore, the viewer consciously engages with the experience and interpretation of the experience and of environments.

The Buddhist philosophy, the void, and the aesthetic of *shibui* that envelops the qualities of *wabi-sabi* influenced art and secular Japanese culture. Although this religious philosophy permeates artistic interpretation, the artifacts themselves are the results, not the tools, of the Zen search for *satori*:

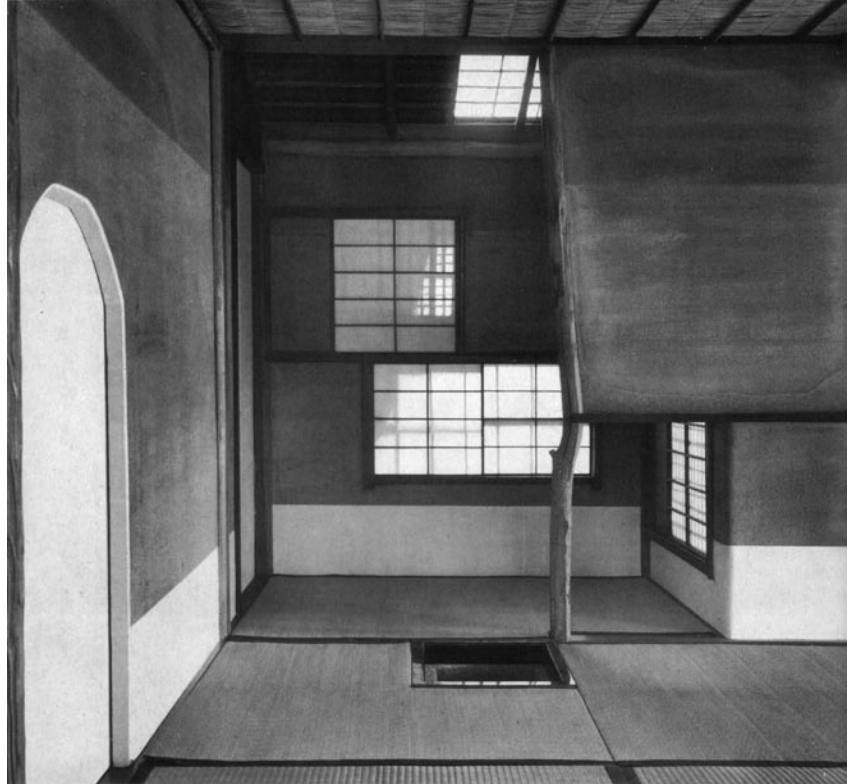
There is no evidence that Zen, in its attempt to teach with realistic methods, used spatial concepts of architecture to raise cognizance of this ‘philosophical place’, which freely of earthly limitation and devoid of physical attachment, was thought by the Buddhist mind to be the state of ultimate realization and salvation. Nor is it likely that Zen would want to relate the ‘ultimate space of enlightenment’ to architectural space and thereby lead back to the realm of human conception and their inherent limitations on the full comprehension.²⁵

Instead, architectural space is a consequence of the Zen philosophical worldview that permeates not only religious Zen culture, but also, through many years of presence, the secular cultural philosophy, and is evident both in the traditional architecture such as the Shokin Tei tearoom or the contemporary interior spaces created by Hiroshi Sugimoto for his *Colors of Shadow* series.

24 Engel, 373.

25 Ibid., 374.

99. Tearoom, *Shokin Tei*



Tea ceremony and tearoom: *Shokin Tei*

The tea ceremony emerged as one of the forms of Zen meditation in which a simple ritual, tea preparation and drinking, *cha-no-yu*, deepened corporeal awareness. Its founder Sen no Rikyū stated “that life was a continuum of moments of awareness, and the tea ceremony was a means of intensifying this awareness.”²⁶ The tea ceremony, performed in silence, was intended to achieve harmonious unity with the world and with the fellow drinkers. The concentration on minute actions of drinking tea can “represent the spiritual dimension made concrete in the everyday world.”²⁷ A receptive and thoughtful participation in the ceremony is “ideally, an ontological experience moving the individual to the bedrock of his being.”²⁸ In the intuitively and experientially based philosophy of Zen, tea drinking was a way of embodying Zen without any words: “The drinking of tea became a means of teaching Zen on an experiential level, without words, but in an aesthetic realm where silence can be more freighted with meaning.”²⁹ Introduced long before, but established as an important Zen ritual by Murata Juko (Shukō) in the Fifteenth Century, the tea ceremony gained immense popularity not

26 Covell, 48.

27 Ibid., 56.

28 Ibid., 55.

29 Ibid.

only for its embodiment of a Zen experience but, in the secular world, as an elegantly refined and aesthetic experience that elevated the individual's existence.

The tearoom is the architectural expression of the aims of the tea ceremony. Everything about the design is steeped in the philosophy behind the tea ceremony and Zen Buddhism as it “permeated and spiritualized the physique of the tearoom.”³⁰ Conceived during a time of warriors and wars, the ritual's goal of reflection and humility is reflected in the architecture of the room. The simplicity and sparseness of the tearoom show that “in order to uncover the very basis of man's life, representation and performance of dwelling has to be reduced to the barest essentials: the hut and the drink, the tearoom and the tea.”³¹ The design strived for “the atmosphere of a faraway farmhouse with its remoteness, poverty, humbleness, simplicity and semidarkness” although it rather achieved “an aestheticism of poverty's forms.”³²

The tearoom is reserved for the single function of the tea ceremony - an unusual case in Japanese architecture, where activity defines the function of the space at any given moment. Very few rooms in Japan have a special function except for the service rooms such as kitchens, storage room, toilets and bathrooms. The attribution of purpose to just this one room reinforces its uniqueness. The room distinguishes itself by ‘what it is not’ - a typical room that can accommodate most banal activities. Beyond the different architectonic treatment, the entirely different nature of the room and of its singular inhabitation reinforces its purpose as a retreat from everyday life and its distractions.

Shokin Tei is one of four teahouses within the Katsura Detached Palace, an imperial country villa built in Edo Period/sixteenth century in west Kyoto on the bank of River Katsura. Built after a very successful model of a tearoom originated by the designs of the Sen no Rikyū,³³ one of the vital masters in the development of the Zen tea ceremony, Shokin Tei tearoom has near-duplicates across Japan, such as the Koto-in tearoom in Daitoku-ji. The refined, if stark, shoin style of the palace complex, with its rice-papered screens set in timber frames, is complemented by the rustic nature of the palace's teahouses.

The inner tearoom of Shokin Tei is small and entirely enclosed with rough clay walls - explicitly introverted; “the tea room is a seclusion.”³⁴ It contrasts the open nature of the *shoin* side of the teahouse that faces the



100. Shoin section of *Katsura Palace*



101. Shoin section of *Shokin Tei*

30 Engel, 285.

31 Ibid., 290.

32 Ibid., 285.

33 Akira Naito and Takeshi Nishikawa, *Katsura: A Princely Retreat* (Tokyo: Kodansha International, 1977), 103.

34 Engel, 288.

102. View of *Shokin Tei* and the tearoom entry from the garden path.



Katsura palace; unlike the translucent perimeter of *shoin* half that can open up the spaces to the gardens, the cave-like space of the tearoom is solid with only one small door opening up into the garden. *Nijiriguchi*, the ‘wiggle-through entrance’, is 65 centimeters high and 60 centimeters wide - a size that only allows one to crawl in – leads to the room which measures 2 metres by 3 metres, or 4 and a half tatami. It is quite low at 1.7 meters, which makes it difficult to move while upright, one must do so on one’s knees.

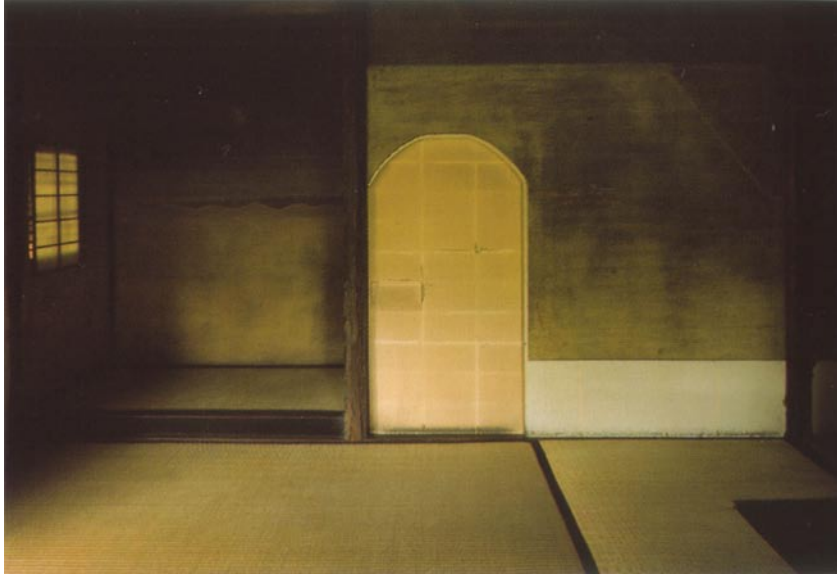
103-104. *Nijiriguchi* and the windows open and closed



The smallness of the room and of the entry forced the guests to enter bent and to spend the ceremony on their knees, humbling them so that all become social equals stripped of any rank they have in the outside world. The size also contrives to bring the guests close together in natural social unity that belies false social divisions, and to achieve an informality and naturalness in behaviour that might not occur in a grander more formal architectural space. To contemplate the vastness of the real infinite world, the smallness of the tearoom forces men to retreat within themselves, the centres of the room and of the ceremony. The vastness of the void is revealed as a negative of the smallness of this enclosed space.



Within the tearoom, two niches augment the space within the room, screening parts of it from one’s view. One is the *tokonoma*, a picture recess that originates in altar alcoves of Zen temples, and the other is a tea-preparation space behind the central post made of a rough tree trunk. These niches provide hidden corners, which layer the space and contain elements of the unknown that generate interest; the hidden areas are the invitations for the mind to participate in contemplating their mystery, completing the incomplete. As the result of this spatial composition, the space is bending and dividing;



105. View of the tokonoma and the door to the kitchen

the spatial composition is analogous to the idea of mutability, which in turn illustrates a Buddhist concept of the transience and changeability of life.

The *shibui* aesthetics of the tearoom are reflected in the natural and tactile materiality. *Sabi* is present in the approach to the materials. Plaster walls are left unfinished and are allowed to weather, exposing the straw and the damage from the floods. The *tokonoma* window is created by not filling in a rectangular shape in the wall and exposing the continuous lath within. The post in the centre is intentionally left unfinished exposing insect damage:

Conspicuous and unnatural form may direct attention to itself rather than to inner truth. The same column may convey the notion of something imperfect that engages the imagination to complete it. The experiencing of the beauty is not passive beholding but active undertaking.³⁵

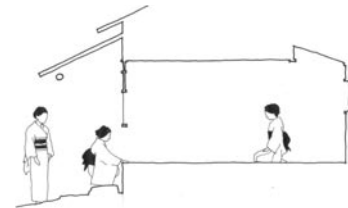
The bending space and irregular arrangement of *tatami*, which exists only in the tearoom, speak of the naturalness of *wabi*. The austerity and simplicity underlie a harmony of materials and proportions, and the richness of spatiality and lighting. The sparseness of the tearoom, the lack any decoration, and its seemingly uncontrived nature provide the freedom “from the continuous enslavement to man’s material wants and comforts and to follow the very basic longing of going back to simple, and true, to be one with the universe.”³⁶

The whole teahouse is often in twilight as the roof overhangs extend far beyond the walls. The *shoin* section of the building receives subdued light when the screens are closed; the luminous *shoji* screens allow a bright glow

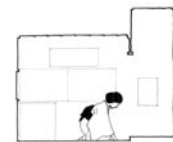
35 Ibid., 289.

36 Ibid., 290.

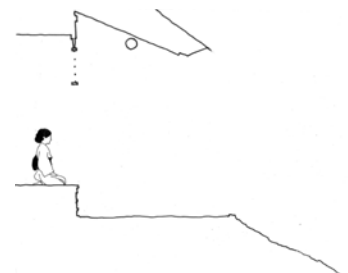
106. Section through nijiriguchi and the tea-preparation niche

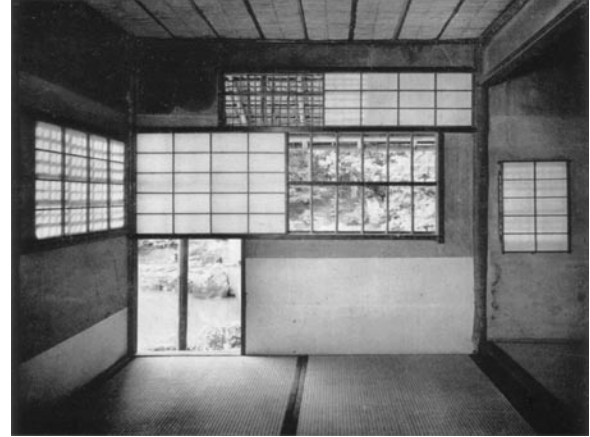
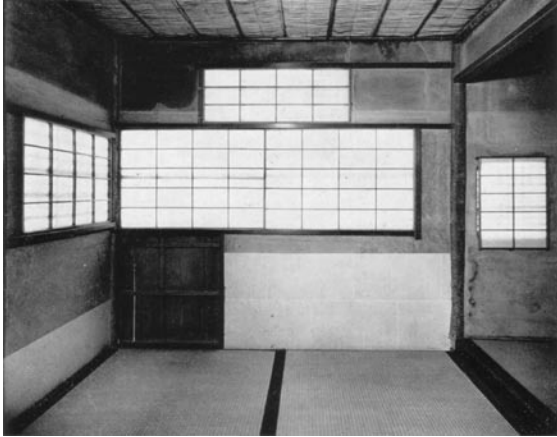


107. Cross section through tokonoma



108. Section through an outer room's perimeter of Shokin Tei contrasting the sense of enclosure





109-110. View from the inside of nijiriguchi and windows open and closed.

rather than strong light. The transom openings with bamboo lattice under the eaves provide only ventilation and a sense of spatial connections, but hardly any light. Although the *shoin* section is somewhat dimly lit; it is bright when contrasted to the darkness of the tearoom. The tearoom is the darkest room in the building, as the “semidarkness of the tearoom may suggest remoteness and refuge.”³⁷ The light in the tearoom itself is dim despite the presence of eight windows, which gives the room its name – the Eight Window Room. More light also enters through the door when it is open. All the windows are screened with rice paper but all are unique; they differ in size, in shape, or in the method of the screening. The variety of window assemblies as well as their placements cause a variety and layered richness of the light admitted. The ‘windowpanes’ vary in number and in type, including rice paper, bamboo frame for the rice paper, external bamboo lattice, and the plasterwork lath.

Two windows, a large and a small one are, placed asymmetrically yet very precisely, on the entry wall, illuminating the host and the tea setting area. On the same wall, off to the side in the *tokonoma*, a small window sheds light on a scroll or a flower arrangement that would be customarily placed there for the tea ceremony. On the sidewall, another window illuminates the faces of the guests and their tea utensils. Two more windows on the wall opposite of the entry in the tea-preparation alcove illuminate the hearth. These windows face onto the lightwell created just to allow light on that side, while the window in the side wall of the tea-preparation niche faces into the closet of the adjoining room, evidently using every opportunity to admit light in varying ways from a variety of directions. The eighth window is an operable skylight in the roof, partially hidden from the guest’s view. The creation of a papered skylight in the sloped tiled roof of the teahouse is a feat accomplished by doubling up the roof layers; the lower slope containing the skylight is sheltered by the upper overhang from the rain and snow. The southwest facing skylight can be opened to admit the breeze, the moonlight, and “the fast

Following Spread:

Left

111. View towards the tea-preparation area and niche

Right

112. View towards the entry with *tokonoma* on the side

37 Ibid.





changing light of the [...] sinking sun.”³⁸ This usually dramatic event for the contemplating eye would be heightened even further by the, otherwise, utter absence of kinetic sunlight. Only two other windows receive daytime sunlight but they admit none directly through their diffusing rice-paper layers. One of the north-east windows, and the door, when open, could potentially admit sunlight on few early summer mornings, but the luscious garden to the north-east would ensure shade, leaving the skylight as the only source of the sun’s rays. Direct sunlight is deemed too strong and too dramatic; glare would be “a distraction of the contemplating mind”;³⁹ overall darkness and subdued light are preferred because of the resulting softness. The innate understanding of working with light exhibited in the design of the apertures that “provides infinite possibilities to adapt the emotional quality of the tearoom either to the weather or to the disposition of house master, making the architecture of the tearoom not only physically but psychologically a true image of man himself.”⁴⁰

This layering and sculpting of pools of light is matched by the layering of shadows. The upper reach of the *tokonoma* and the space behind the partial wall of the tea-preparation niche are unlit and hidden from view, more mysterious and seemingly unbounded. The light and shadow contrive to make the spatial arrangement seem even more irregular and warped beyond the already intricate physical arrangement. Layered with light, this complex enclosed space creates richness out of austerity and simplicity. The subtlety and nuance of a space like this could be fully appreciated through contemplation and active engagement with the space. Such an engagement allows light to become more significant in the shaping of an architectural experience, bringing it to the forefront as a crucial but refined component of the total environment.

The diffused light and usual lack of direct sunlight denies the ability to observe the passing of time. The ceremony participant lacks the ability to judge time’s passage, thereby existing only in the ‘now-moment’, isolated from the world yet conscious of the continuum of time and of permanence in transience:

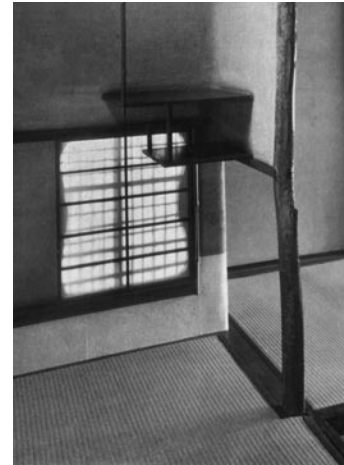
To this day, for example, within the tearoom indicators of passing time such as wristwatches are frowned upon. Here there is no past or future, only the present, to which one is expected to devote oneself entirely. The particular ‘present’ in question, however, was not the ever-changing moment of the phenomenal world, but rather that which transcends time and even existence itself, the eternal.⁴¹

38 Ibid., 286.

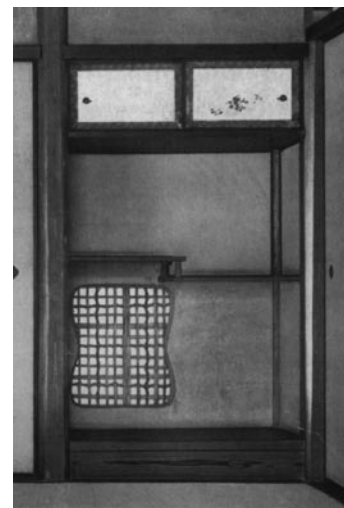
39 Ibid., 290.

40 Ibid., 288.

41 Kevin Nute, *Place, Time, and being in Japanese Architecture* (London; New York: Routledge, 2004), 80.



113. View of the window in the tea-preparation niche



114. View of the same window from the opposite side

If the setting sun's rays were present during tea ceremonies, their accelerated movement emphasizes life's transience and yet infinite continuation, as the sun returns every day and has done so in all of man's consciousness. Although the direct rays rarely penetrate the tearoom, the light in it inevitably changes with the progress of the day, of the seasons, or with the weather. The ability to become conscious of this when the light is always only diffused would be a rarefied and profound experience of delicacy. Through this awareness of the world and an awareness of subtlety of the experience and the nuances of the senses themselves, it would "make us somehow more fully alive,"⁴² enhancing one's ontological immersion.

Much is revealed through contrast in the nuanced light of the tearoom. The soft diffused light makes one aware of its brightness and power outside. One can also appreciate that very little light is necessary for one's eyes and for a task such as tea drinking. The obfuscation that comes along with twilight makes one intentionally lose sight of minutia; the lack of this detail is conducive to relaxation and tranquility while the busy visual scene outside is overwhelming with information and detail by comparison. The twilight of the room allows the eyes to adjust, making one more deeply aware of one's senses and of the active participation, not only the mind, but, also, of the body in this immersion into the experiential contemplation.

42 Ibid.

In Praise of Shadows

It is through his focus on darkness and on shadow that a renowned Japanese novelist, Junichiro Tanizaki, reveals the importance of contemplation of one's surroundings, of light, of shadows, and of darkness. Perhaps influenced by the same spirit and aesthetics that shaped tearooms such as the one in Shokin Tei, Tanizaki's contemplation of shadows and light is articulated in his seminal text, *In Praise of Shadows*. Written in 1933, it is a phenomenological literary piece that laments the possible disappearance of aesthetics of subtlety and a nuanced way of living in the pursuit of progress. Although light, darkness, and shadow comprise only one of Tanizaki's themes used to reveal this loss, the essay has become a touchstone for those who look into the nature of man's relationship with light since it became available to Anglophones in its 1977 translation. Although considered paternalistic and traditionalist by some contemporary readers, hardly any architectural author writing about light omits mention of it since the translation appeared. The essay is fundamental as, by focusing on the nuance of light and shadow, it points out the shortcomings of the Western view, alluding to its accepted poverty of light.

Precipitated by the crisis brought on by the advance of electric light, Tanizaki's meditative musing is a tribute to natural light and shadows, the latter playing a more significant role here than in any other text on the subject. Although "the lonely light of a bulb under an old-fashioned shade, shining dimly from behind the white paper shoji of a thatch-roofed farmhouse, can seem positively elegant,"⁴³ more often than not the electric light flattens not only the objects but our experience as well when it is used injudiciously. Electric light further overwhelms the subtle qualities of traditional design, such as the spatiality and shadows of *tokonoma*, when "the person who would shine a hundred candlepower light upon the picture alcove drives away whatever beauty may reside there."⁴⁴

In the shadowy *tokonoma*, that altar to beauty, the characteristic twilight holds within it the principles of imaginative interpretation and of active partaking in beauty, either that of a scroll or a flower arrangement:

Yet the combination of that blurry old painting and the dark alcove is one of absolute harmony. The lack of clarity, far from disturbing us, seems to rather suite the painting perfectly.⁴⁵

The upper part of *tokonoma* extends beyond its opening's lintel, concealing a space that seems to expand upwards infinitely. Lacking illumination, the concealed space is a place of deep shadows. To Tanizaki there is something sublime and otherworldly in the upper dark hidden space of the *tokonoma*, akin to 'the void':

43 Junichiro Tanizaki, *In Praise of Shadows* (London: Jonathan Cape, 1991), 10.

44 Ibid., 46.

45 Ibid., 33.

...though we know perfectly well it is mere shadow, we are overcome with the feeling that it is in this small corner of the atmosphere there reigns supreme complete and utter silence; that here in the darkness immutable tranquility holds sway. The mysterious “orient” of which westerners speak probably refers to the uncanny silence of these dark places.⁴⁶

Tokonoma, through this darkness and the resulting obscurity is elevated from a mere space to a place of mystery and awe. The deeply evocative effect of the shadow imparts visual ‘silence’ of the object to the mental state of the viewer, unifying man and the physical world through contemplation. The shadows become uncanny and full of sublime beauty through the active engagement of imagination. Consciousness elevates the physical experience of the shadow to a spiritual level. This deliberate move is “the genius of our ancestors, that by cutting off the light from empty space they imparted to the world of shadows that formed there a quality of mystery and depth superior to that of any wall painting or ornament.”⁴⁷ The long-established design of *tokonoma* asserts the nuance of traditional architectural aesthetics accomplished with such ephemera as shadows and darkness. *Tokonoma* is one of the perfect examples that illustrate the concern with shadows in traditional aesthetics, however, this attention to light and shadow, twilight and darkness is obvious in Tanizaki’s other examples, such as the naturally weathering finishes of the house, the ink on rice paper, shoji screens, neutral wall colours, lacquerware, and the folds of women’s clothing among others.

The existential philosophy of Zen Buddhism may be credited for the studied appreciation of shadows and shadow play in Tanizaki’s work. He attributes this subtle enjoyment to learning to seek beauty in the immediate surroundings, to living in concert with and inspired by nature:

The quality we call beauty, however, must always grow from realities of life, and our ancestors, forced to live in dark rooms, presently came to discover beauty in shadows, ultimately to guide shadows toward beauty’s ends.⁴⁸

In man’s creations, the profound influence of nature is acknowledged - an existential philosophy that finds beauty in the totality of the world, of man-made and natural. The deeper appreciation of the natural world and the acceptance of its conditions lead to a more rewarding phenomenal existence, heightened by aesthetic appreciation. ‘Beauty’ is uncovered by one’s consciousness above all else. Beauty, then, is transient depending on the viewer rather than the thing itself, an experience of the object, rather than the

46 Ibid., 33.

47 Ibid., 34.

48 Ibid., 30.

object itself. Comprehension of the world is not abstracted but immersed in its environment; the experience of the totality is paramount rather than that of any one object; the ephemeral character of light and shadows augments the uniqueness of any such moment as “such is our way of thinking – we find beauty not in the thing itself but in the patterns of shadows, the light and the darkness, that one thing against another creates.”⁴⁹

One such experience is when the moving rays of the setting sun are heightened by colour and texture of the plaster walls, traditionally, of subtle colours. The roughness of the surface complements “the soft fragile beauty of the feeble light.”⁵⁰ The neutral colouring and texture are intentional so that one could “delight in mere sight of the delicate glow of fading rays clinging to the surface of a dusky wall, there to live out what little life remains to them.”⁵¹ The unison of the light effects and the walls on which these play out, can become a catalyst of an affecting experience.

Light itself can be a profound agent of meditation. Akin to the diffused light of the tearoom that robs its occupants of a precise moment in time, but instead in the ‘now-moment’, in the even luminescence of the temple hall enclosed with translucent shoji screens, Tanizaki finds timelessness: at once pacifying and frightening. The state of perpetual twilight calms the mind by absence of visual information beyond the glow of *shoji* and of darkness. The inner calm creates openness to immersion in the atmosphere of the space. Yet the constancy and the immutability of light and shadow creates an unsettling awareness of time by the sheer lack of having means to observe it:

Have not you yourselves sensed a difference in the light that
suffuses such a room, a rare tranquility not found in ordinary light?
Have you never felt a sort of fear in the face of the ageless, a fear
that in that room you might lose all consciousness of the passage
of time, that untold years might pass and upon emerging you
should find you had grown old and gray?⁵²

The reliance on natural light as an indicator of time’s passage makes the absence of this movement especially poignant, causing one to face the nature of transience of one’s life and the sublimity of eternity.

Light, shadow and darkness are all important in the haptic worldview that declines to attach abstract meanings and roles. Darkness has its own value and significance. Rather than chased away with abundance of light, it is appreciated in thoughtful and evocative ways. The darkness is potent with fear but also with possibility. The mystery of shadows is experienced not only as a foil to the clarity of daylight, but also in the thick darkness of the night and in the flickering shadows cast by candles:

49 Ibid., 45.

50 Ibid., 31.

51 Ibid.

52 Ibid., 35.

On the far side of the screen, at the edge of the little circle of light, the darkness seemed to fall from the ceiling, lofty, intense, monolithic, the fragile light of the candle unable to pierce its thickness, turned back as from a black wall. I wonder if my readers know the color of that “darkness seen by candlelight”. It was different in quality from darkness on the road at night. It was a repletion, a pregnancy of tiny particles like fine ashes, each particle luminous as a rainbow.⁵³

The flicker and the inconstancy of the flame inspire visions and imaginings hidden in the mutable darkness in the corners of large rooms:

The elegant aristocrat of old was immersed in this suspension of ashen particles, soaked in it, but the man of today, long used to electric light, has forgotten that such a darkness existed. It must have been simple for specters to appear in a “visible darkness”, where always something seemed to be flickering and shimmering, a darkness that on occasion held greater terrors than the darkness out-of-doors.⁵⁴

The ‘pregnancy’ of the flicker is alive with creation, like the fecundity of the primordial dark chaos of many early cosmogonies. The emptiness, or ‘void’, of the shadows is a positive condition of latent creations, yet more terrifying than darkness because of the palpable unknown. The shadow and darkness can evoke the mysterious uncontrollable nature of the world.

The lack of assigned symbolism in Tanizaki’s perception of light and dark allows him freedom of interpretation. Perhaps unaware of connotative nature of light and dark in the Western perception, he questions the nature of Western culture’s attitude to light, acknowledging the fundamentally different attitude between the two cultures on this issue:

Why should this propensity to seek beauty in darkness be so strong only in Orientals? The West too has known a time when there was no electricity, gas, or petroleum, and yet so far as I know the West has never been disposed to delight in shadows.⁵⁵

Rather than interrogating the nature of the Western culture’s dilemma and its symbolic ‘baggage’ of darkness and shadow, he answers only for the existential nature of traditional Japanese culture:

But what produces such differences in taste? In my opinion it is this: we Orientals tend to seek our satisfaction in whatever surroundings we happen to find ourselves, to content ourselves with things as they are; and so darkness causes us no discontent, we resign ourselves to it as inevitable.⁵⁶

53 Ibid., 50.

54 Ibid., 51.

55 Ibid., 46.

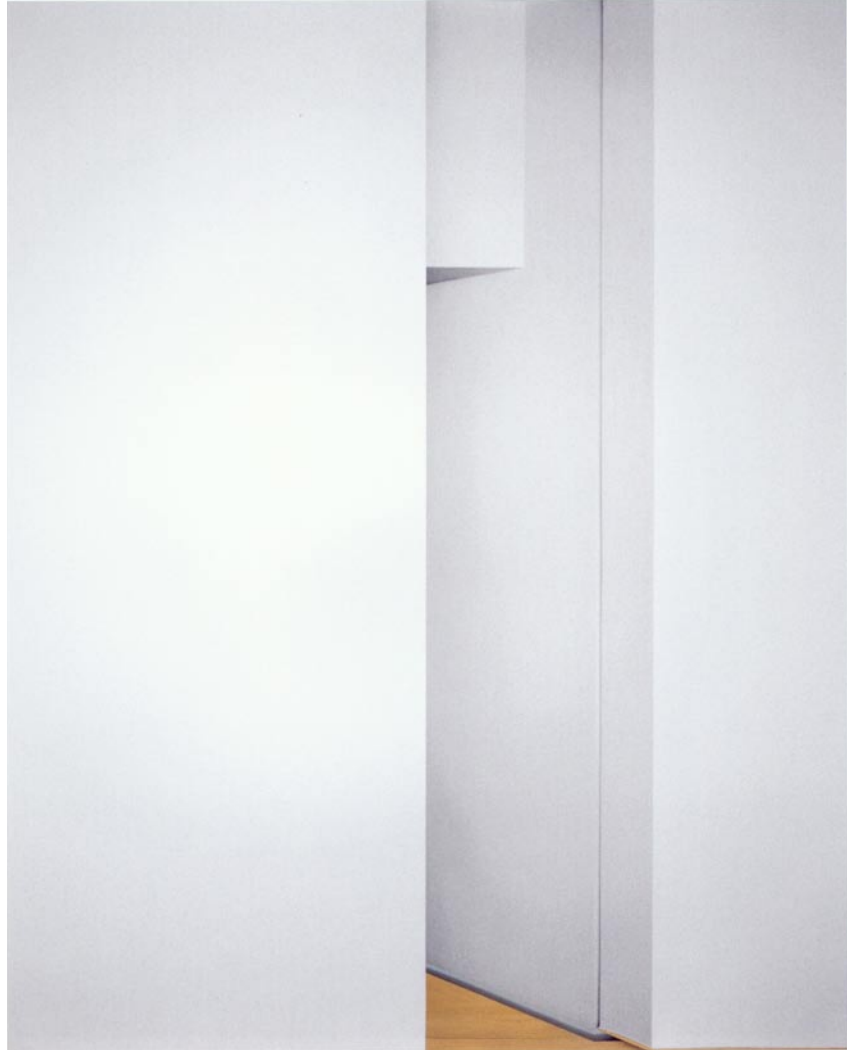
56 Ibid.

Referring to acceptance and contentment with the physical status quo, his answer implicitly implicates Western culture's predominant materialistic insatiability. This 'discontent' with darkness reveals a lack of an ecological way of living and a discordant rather than harmonious relationship to nature and its normal processes. The acceptance of the natural conditions, that is, of the lack of light, could lead to a more harmonious way of living. This instrumental change of attitude could lead to a richer experience of light and dark, making it possible to "immerse ourselves in the darkness and there discover its own particular beauty."⁵⁷

The poetic deliberations of Tanizaki on the nature of light, shadow, and darkness expose, foremost, his lively imagination and the minute engagement in his surroundings. Rather than the architecture of his environments, his mind actively creates significances for what he observes. It is also the sense of immediacy to his physical context that allows him to not only observe, but also to do so with great sensitivity and to be inspired by his experience. As a patient and engaged dweller, perhaps he would have found inspirations outside of architecture, but his essay is a testament to the importance of the environment to allow for nuance and subtlety, as traditional Japanese architecture does. If architecture presents opportunities for such experiences, the contemplation of it can create the ineffable experience, that of Tanizaki's 'beauty'.

57 Ibid., 47.

115. C1007, *Colors of Shadow*, Hiroshi Sugimoto, 2004



Colors of Shadow

Elements of the philosophy that inspired the tearoom designers and the contemplative ruminations of Tanizaki, can be perceived in the work of contemporary American-Japanese artist Hiroshi Sugimoto. Although he has spent most of his mature life outside of Japan, he, nonetheless, found himself immersed in Zen philosophy since 1970.⁵⁸ For him his chosen medium of photography is “a byproduct of natural impulses for capturing memories and stopping time,”⁵⁹ an arrest of one very precise moment. With impeccable technique, he creates hyperrealistic, nearly surreal photographs, in which he explores time, memory, and the role of light. These are central in many of his

58 Kerry Brougher, “Impossible Photography,” in Kerry Brougher, Hiroshi Sugimoto, and David Elliott, *Hiroshi Sugimoto* (Washington, D.C.: Tokyo : Ostfildern-Ruit, Germany: New York: Hirshhorn Museum and Sculpture Garden; Mori Art Museum; In association with Hatje Cantz; D.A.P., 2005), 25.

59 *Ibid.*, 25



Left

116. Lake Superior, Cascade River, *Seascapes*, Hiroshi Sugimoto, 1995

Right Top

117. Celtic Sea, Boscastle, *Seascapes*, Hiroshi Sugimoto, 1994

Right Bottom

118. English Channel, Weston Cliff, *Seascapes*, Hiroshi Sugimoto, 1994

works, notably in series on *Seascapes* (1980-2002) and *Movie Theaters* (1975-2001). However, in his series *Colors of Shadow* (2004-2005) light becomes the primary subject of exploration in his series.

In *Seascapes*, he photographs only the sea and the sky, imagining the original universal image, explaining that: “I just want to put myself back to the supposedly first human, facing the ocean.”⁶⁰ The landscape of the image predates any human life; it is laden with the possible future fertility, the cradle of all life on earth where “living phenomena spontaneously generated from water and air in the presence of light.”⁶¹ Harkening back to early cosmogonies of early cultures, many of which share the same mythological unfolding, he likens the images to “visiting my ancestral home.”⁶² The emptiness is full of the possibility of future life, richness, and complexity. The image is “dislocated from time and history”⁶³; the viewers are able to see the frozen moment of time captured by an exposure of the film and to transcend physical and temporal boundaries to become “bodiless witnesses

60 Hiroshi Sugimoto and Daniel Libeskind, “The Conversation: Hiroshi Sugimoto-Daniel Libeskind,” [interview], moderated by William Thorsell. (Toronto: Presented by the Institute for Contemporary Culture, May 31, 2007), http://www.rom.on.ca/media/podcasts/pdf/sugimoto_lecture.pdf (Accessed on August 15, 2007).

61 Hiroshi Sugimoto, “Seascapes,” (Hiroshi Sugimoto), <http://www.sugimotohiroshi.com/seascape.html> (Accessed on August 16, 2007)

62 Ibid.

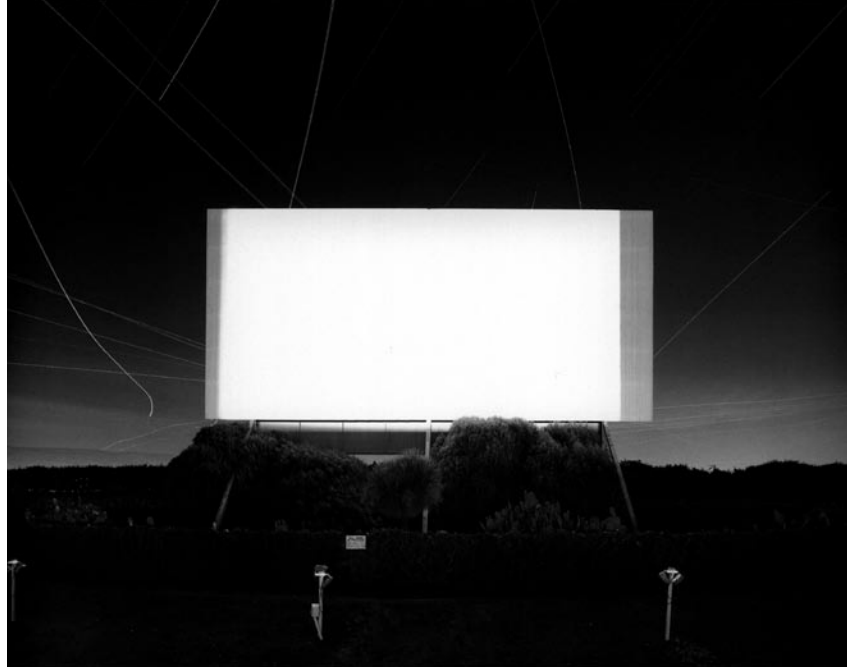
63 John Yau, “Time Halted: The Photographs of Hiroshi Sugimoto: A Column,” *The American Poetry Review* 33, no. 5 (September 2004), http://findarticles.com/p/articles/mi_qa3692/is_200409/ai_n9452303/pg_8 (Accessed August 16, 2007).



119. U.A. Playhouse, New York, *Movie Theaters* series, Hiroshi Sugimoto, 1978

Right

120. Union City Drive-In, Union City, *Movie Theaters*, Hiroshi Sugimoto, 1993



to an elemental world that is utterly calm, a primordial place that is silent and nameless.”⁶⁴ In the moment and in the invoked original image one can discern the transcendence of eternity.

In *Movie Theaters*, long exposure shots compress the duration of a movie into a single image, the film screen glowing as a white rectangle – an hour and a half as a single moment. The experience, the time, and the light are compressed and intensified in a near abstraction in which some see the rectangular box as a Zen void⁶⁵ or as a kind of camera obscura,⁶⁶ or see a birth or rebirth just before entering the world of light.⁶⁷ The images are spare, static, and contemplative. Like Tanizaki in a temple room surrounded by *shoji*, in Sugimoto’s work “the viewer is floating in a world of halted time,”⁶⁸ and like Tanizaki’s rays of the setting sun, the trails of the planes in the night sky make the images more poignant in the drive-in photographs of the series. Sugimoto emphasizes permanence and eternity by capturing a moment of the past that is already frozen, in such unorthodox subjects as the historical tableaux in a natural history museum or wax figures of historical personages in a wax museum, the hyperrealism of which belies their temporal deceit. By freezing the experience in a moment or by intimation of eternity in a single captured moment, Sugimoto’s works achieve permanence through transience, a perspective that is shared with Zen philosophy. A deeper theme

64 Ibid.

65 Brougher, 23.

66 Ibid., 26.

67 Yau.

68 Ibid.

of reckoning with our mortality by contemplating time is suggested by John Yau: “In his photographs, Sugimoto proposes that the desire to attain a state of permanence is what has haunted each of us throughout history.”⁶⁹

While light plays an important supporting role in all of Sugimoto’s photographic series, in most works it is little more than a tool, while in some of his works light is a subject than can reveal other themes such as transience and permanence. Light, or more precisely, the light of a candle flame, has been explored in an inspired tribute to Tanizaki’s *In Praise of Shadows*, in the series of the same name. Having turned off all the lights, Sugimoto allowed a single candle to burn out while keeping the shutter open, night after night resulting in many images of the flame’s tremble, some violent, some tranquil, depending on the breezes entering through a window. The nature of light production turns the material itself into ephemera, the candle disappears in changeable light, yet all the subtle ephemeral flickers of the flame are observed and recorded in the print, making their entire ‘lifespan’ and their ephemerality permanent.

In a recent series of photographs by Sugimoto, the lens is turned on natural light, or rather on the subtle nature of light and shadow play. *Colors of Shadow*, which portray no more than blank white walls and ceiling with only occasional sliver of the floor, reveal the subtlety of light and shadow. In tandem with the series’ title, the sliver of floorboards betrays the colour of the prints in the seemingly monochrome images - a first foray into colour that the artist has taken in over two decades. Otherwise, although the photographs have intentionally been taken at different times of the day and in different weather, the colours are nearly imperceptible, but to Sugimoto there is a veritable profusion of colour: “I’ve only just begun my observations, but already I’ve discovered a sublime variety in shadow hues.”⁷⁰ Both the bright whites and dark shadows, desired in traditionally technically proficient photography, are avoided, the drama is absent in favour of nuance.

The poetry of light and shadow is rediscovered in the familiar through mutedness and unrelenting focus. The attention to the detail is not any less than in his many other photographs, rather, the richness is now found not in the amount of information with but in the degree of subtlety and the poetry that stems from the complexity of the shadows’ penumbras. The shots, taken as one-point perspectives are static and eschew any central point of interest, emphasizing that the light and the shadow are the subject of the work. More than his other works, the prints of this series are possibly even more inscrutable, revealing no meanings and significances, only the invitation to contemplate the subject matter. The artist has disclosed nothing more beyond

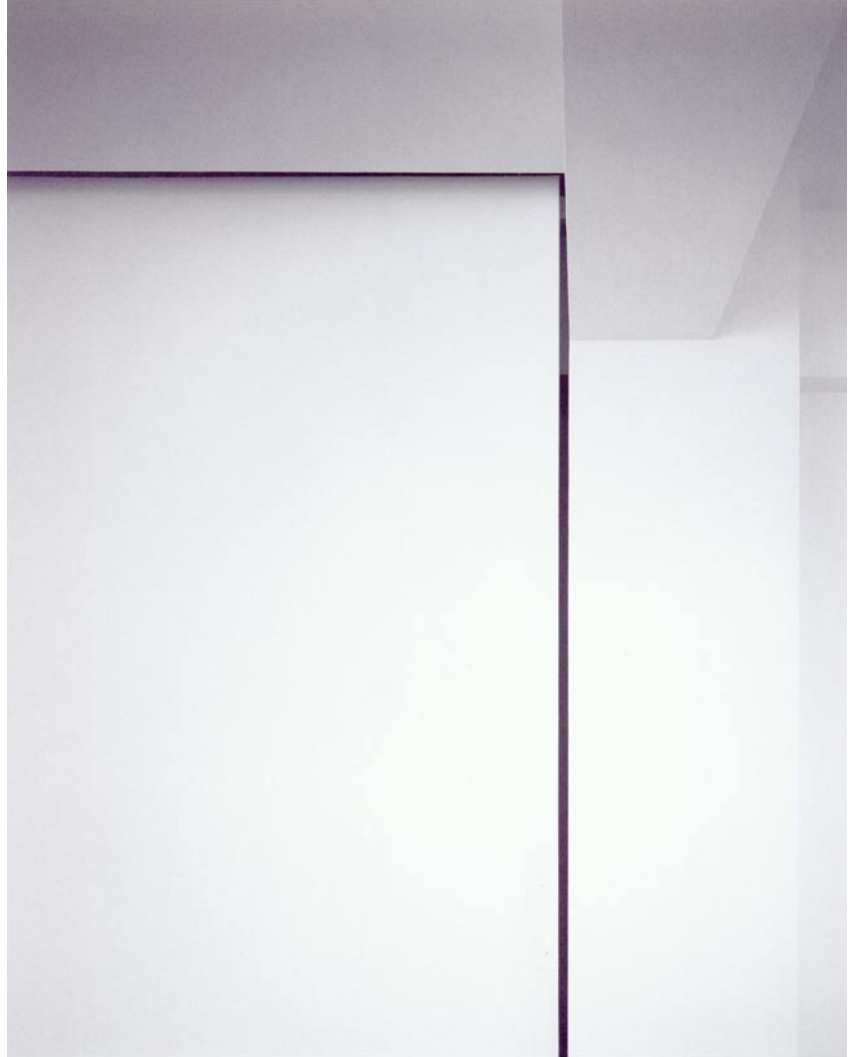


121. 980726, *In Praise of Shadows* series, Hiroshi Sugimoto, 1998

69 Ibid.

70 Hiroshi Sugimoto, “Colors of Shadow,” in Kerry Brougher, Hiroshi Sugimoto, and David Elliott, *Hiroshi Sugimoto* (Washington, D.C.: Tokyo : Ostfildern-Ruit, Germany: New York: Hirshhorn Museum and Sculpture Garden; Mori Art Museum; In association with Hatje Cantz; D.A.P., 2005), 313.

122. C1005, *Colors of Shadow* series, Hiroshi Sugimoto, 2004



the obvious, making the contemplation even more personal. The short time during which the series have been made, contrasts with the decades his other series required. However, the brief period of the photography itself belies the years and the effort he spent creating the perfect environment in which he could capture these ephemeral moments.

The space used by Sugimoto in his photographs looks similar to the drywalled environments of cheap and fast construction; anonymous but commonplace for the contemporary inhabitants of the developed world. By affinity to the ordinary everyday interiors, there is a suggestion of discovering the richness in the seemingly banal by virtue of having the right frame of mind. Unlike the rapidly constructed stud and gypsum board interiors, the simple spaces here took four years to finish as the artist renovated an apartment he purchased for the sole purpose of the series, “to devise a way of observing shadows.”⁷¹ It is like the refined and elegant tearoom that has its

Following Spread:

Left

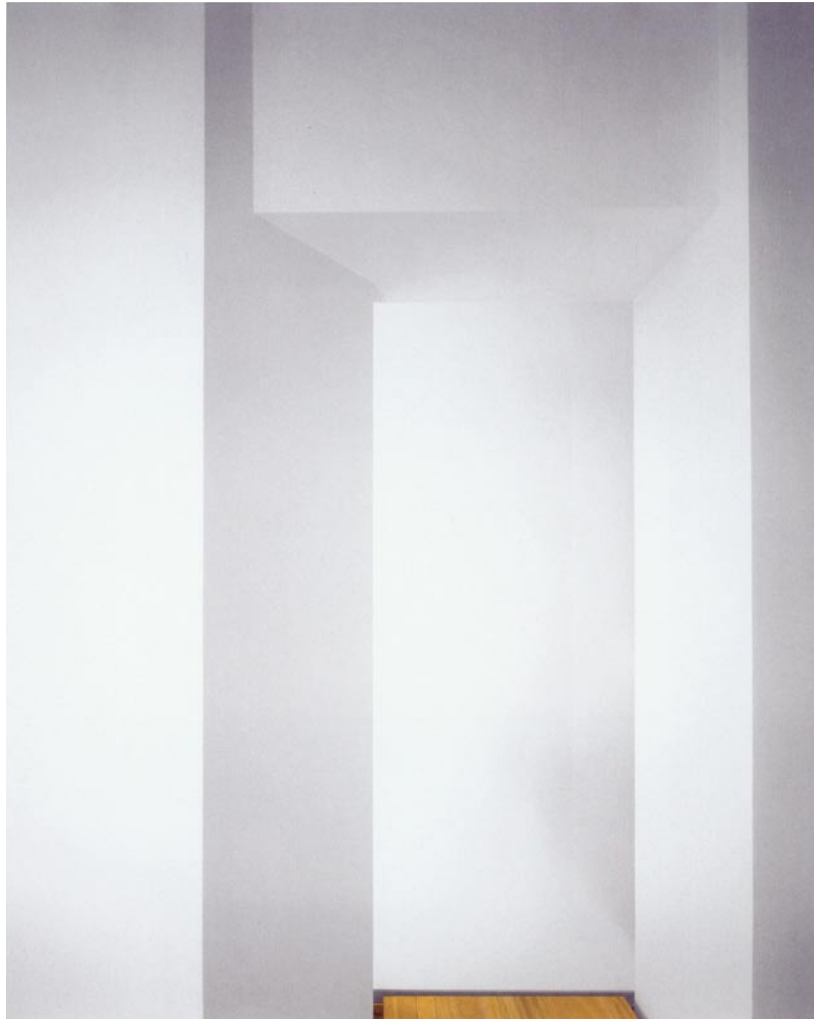
123. C1009, *Colors of Shadow* series, Hiroshi Sugimoto, 2004

Right

124. C1015, *Colors of Shadow* series, Hiroshi Sugimoto, 2004

⁷¹ Ibid.





roots in the simple peasant hut and aspires to its simplicity.

The artist designed the space with particular attention to natural light and shadow, devising angles and features to catch its fine distinctions. The traditional Japanese plaster *shikkui* prized for its evenness, “which gives a particular quality to a shadow when the sun is setting,”⁷² was applied in eight layers by craftsmen. The solid wood floorboards and the 4-inch-thick tabletop came from logs that the artist selected before the careful drying of the wood began. The process and the narrative of the creation of the space adds another dimension to the prints, that connects these flat images profoundly to the physical world and to experience. The act of creating this space is bound together with the subtle nature of observing shadows, evoking a deeper bond between the man and the architecture. The serial nature of the artwork brings one into deeper engagement with the place itself, with the light and with its complexity. Echoing Zen philosophy, the work is meditative and ephemeral, as well as real, immediate, and permanent.

As the apartment is a tool to observe light, and all the design decisions were made for that purpose, light is undoubtedly the theme. It is only fitting that for the last photographic series that Sugimoto appears to have embarked on, he chose the subject that was a supporting player through all his other works. Light is the object of contemplation, free from specific connotations. The experience of observing this liberated light is not unlike what Marilyn Stockstad and Stephen Addiss write of the famed rock garden in the temple of Ryoan-Ji, with the aesthetics of Zen Buddhism in mind:

... the garden has provoked much interest, curiosity, and numerous attempts to “explain” it. Some people see the rocks as land and the gravel as sea. Others imagine animal forms in certain of the rock groupings. However, perhaps it is best to see the rocks and gravel as... rocks and gravel.⁷³

Perhaps, above all, it is not the interpretation of light in the series that matters but the attention to light and to its relationship with the beholder. All of his work is like Tanizaki’s fecund shadows, full of possibility and of meanings. The viewer is the one that completes the image. This creative act of immersion is more important than any one interpretation; the experience is paramount rather than any mental constructs. Sugimoto’s messages are ambiguous and rich, layered with many themes at once. David Elliot likens the lack of any clear symbolism or meaning to intentional emptiness and bareness, producing a comfortable immediacy with reality:

... empty space, the absence of sound, colour, or form, is also

72 Hiroshi Sugimoto in “Hiroshi Sugimoto,” [Interview] by Kazue Kobata, *I.D.* 52, no. 7 (Nov 2005), 26-28, <http://www.idonline.com/features/feature.asp?id=1527> (Accessed on August 16, 2007)

73 Stockstad, 861.

positive. No deathly existential void resides at the heart of Sugimoto's work, although we can see from what he shows us that he finds the idea of it connected with sometimes disquieting, sometimes absurd. In Japanese aesthetics *ma* is a meaningful void, one connected with the rejection of illusion. It is an interval, a space of reflection that creates unexpected relationships.⁷⁴

The immediacy of this engagement melts away constructs, as even the use of language already creates these. There is something ineffable in the work of Sugimoto, a feeling “of an isolated and lonely innocence,” yet, “as soon as we begin to speak we become estranged from innocence.”⁷⁵ Or, like ‘rocks and gravel’, the works in the *Colors of Shadow* can be appreciated for what they actually are: light, as an agent for inducing a particular frame of mind, of contemplation, that either interprets the image or engages with its profound physicality – ‘the here and now’ – in either case deepening man's connection to light, to shadows, and to his environment.

The aesthetics and philosophy that stemmed from Zen Buddhism definitely influenced the character of the three case studies. In this worldview, the lack of light's attached meanings has a twofold benefit: one is free to infer anything he desires from his experiences and one is free to experience the character, or the atmosphere, of the environment free of any abstract constructions. In the three case studies the attentiveness to the simple and obvious, such as light and its effects, results in complex and rich creations. By placing attention on light especially by subduing other aspects of architecture, these works draw attention to how light manages to enrich architectural character. Unlike light in some environments that serves as a tool to illumine other architectural contrivances or only as functional task lighting, here light has a primary role of enriching architectural experience. Through intricacy and sensual handling of light in the environments built, described, or photographed, the one who experiences these works will begin to appreciate light, the complexity of its effects, and its many forms. The experience of the environment itself and of its immediate phenomena fosters haptic engagement with architecture. The contemplative mode of perception allows mind and space to engage deeply, and the potential of architecture to leave an affecting, and maybe lasting mark, increases. Light can reveal not only the environment but the nature of its beholder as well.

74 David Elliott, “Hiroshi Sugimoto: the Faces of Infinity” in Kerry Brougher, Hiroshi Sugimoto, and David Elliott, *Hiroshi Sugimoto* (Washington, D.C.: Tokyo: Ostfildern-Ruit, Germany: New York: Hirshhorn Museum and Sculpture Garden; Mori Art Museum; In association with Hatje Cantz; D.A.P., 2005), 40.

75 *Ibid.*, 39.

Design Projects

Writer's House

The house is an experiment and an opportunity to experience light in many of its manifestations. This house allows one to experience the flood of sunlight, filtered sun, subtly varied twilight shadows, and deep darkness. While there is attention to the functional qualities, the main focus of the design is on the poetic qualities and on integration of these with inhabitation.

As time passes, as the weather changes, and as the seasons pass, no one room remains the same. As the changes within the house occur, one becomes further aware of the light, of its waxing and waning each day, each hour, but also of its constancy and daily rhythms: the eternal constancy of sun rising and setting, of the seasons. The awareness of these changes of light connects the occupants to this immutable world order, and places individual lives in the perspective of a cosmic timeline.

Yet the house is not a sundial – existing only to alert the occupants of the passing of light and time – it is a device to make observation of light more poignant. In reality, each of our daylit spaces undergoes subtle changes throughout the day and the year full of richness and poetry. Aesthetically or philosophically, the house will make these transformations apparent to a patient observer, draw attention to these transformations, and to appreciation of the variety and complexity that light can create.



Site

Just off Queen Street East, in Toronto, on De Grassi Street, a small near-triangular site (185 m²) is just beyond the typical commercial building of Queen. The lot is on the border between the business strip in the south and the well-established residential neighbourhood in the north. The lot is part of the buffer strip of buildings that are opportunistically mixed commercial and residential.

Currently it is a garage and storage yard for a landscaping company. To the east are GO tracks, raised 3.5 metres and buffered on either side with mature trees. To the west is a one-story tall parti-wall, shared with another commercial storage space. The site has abundant sunlight: it is exposed to east, south-east, south, and south-west, and, at higher level, west direct sunlight. The challenges are its prominent position, lack of privacy on three sides of the lot – the fourth is the parti-wall – and its small size.

Above

View of the site from the west

Facing page

Aerial photo with highlighted area of the site

(Base image: City of Toronto 2003 Orthoimagery [computer file].

Toronto, Ontario: City of Toronto. [2003].)





Above
View from the site towards GO
Transit rail tracks



Left
North side of the site and back
alley looking towards the tracks

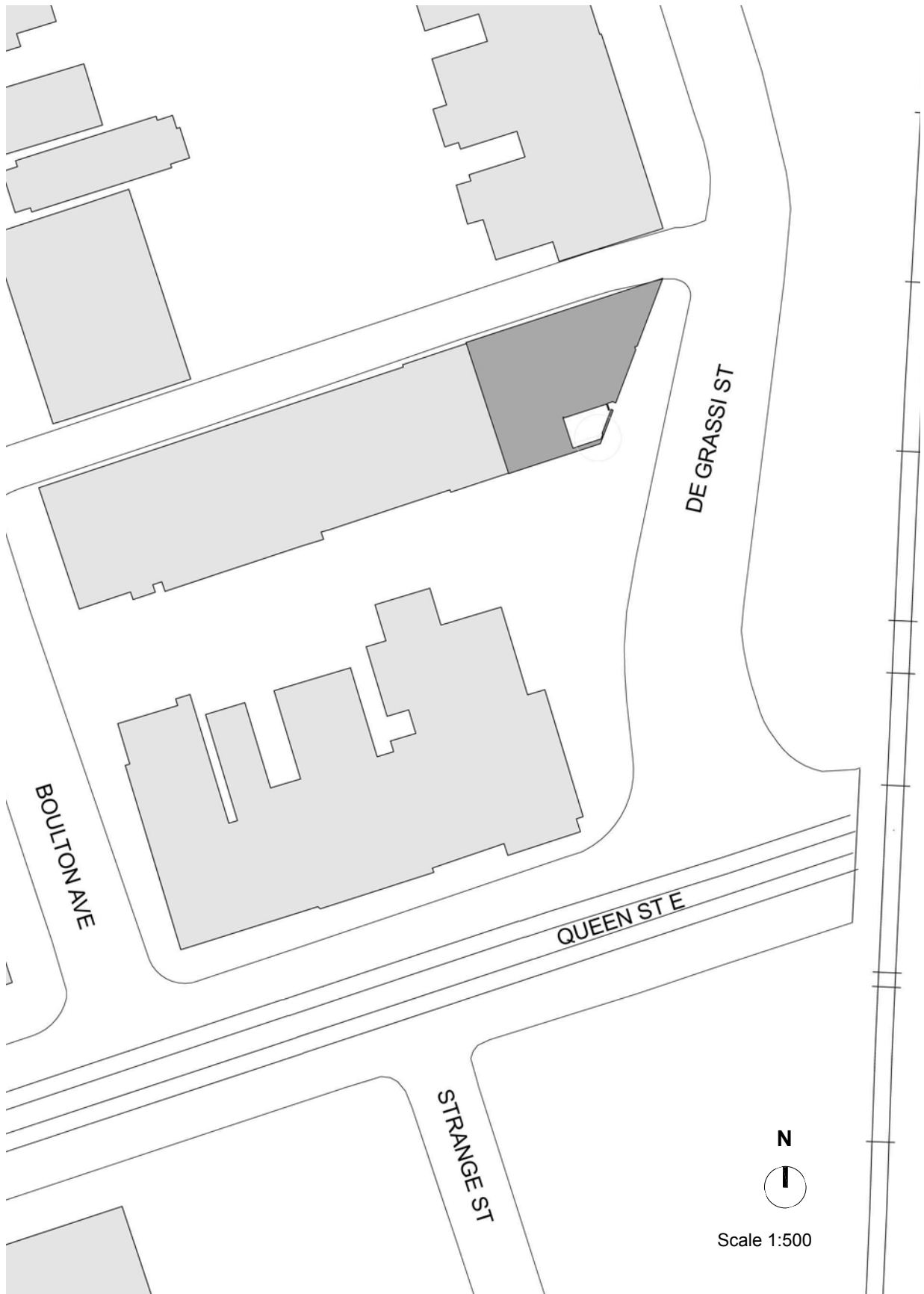


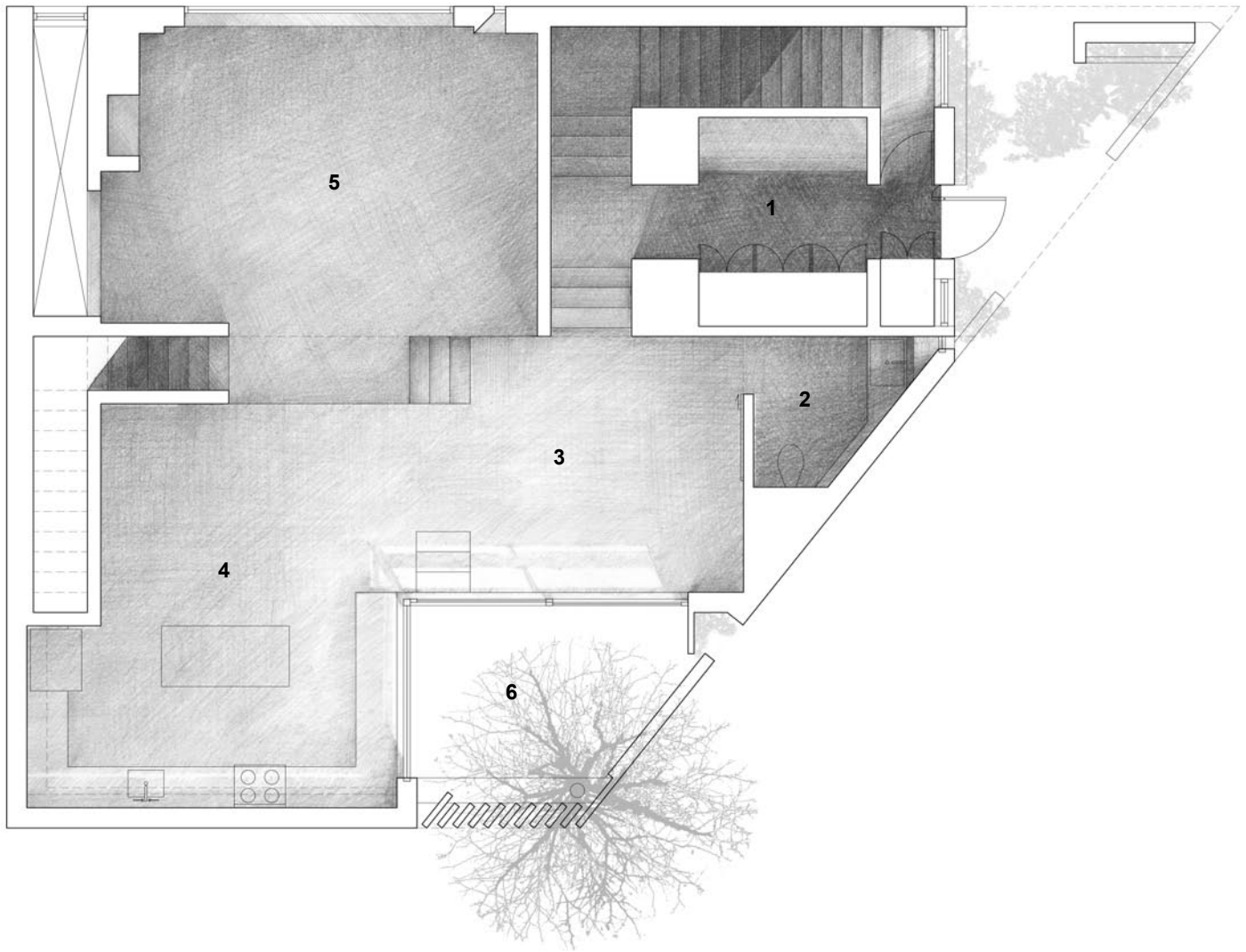
North side of the site and back
alley looking west



South side of the site looking
north

Facing page
Site plan
(Base map: City of Toronto
Municipal Data [computer file].
Toronto, Ontario: City of Toronto,
Survey and Mapping Services.
[2003].)



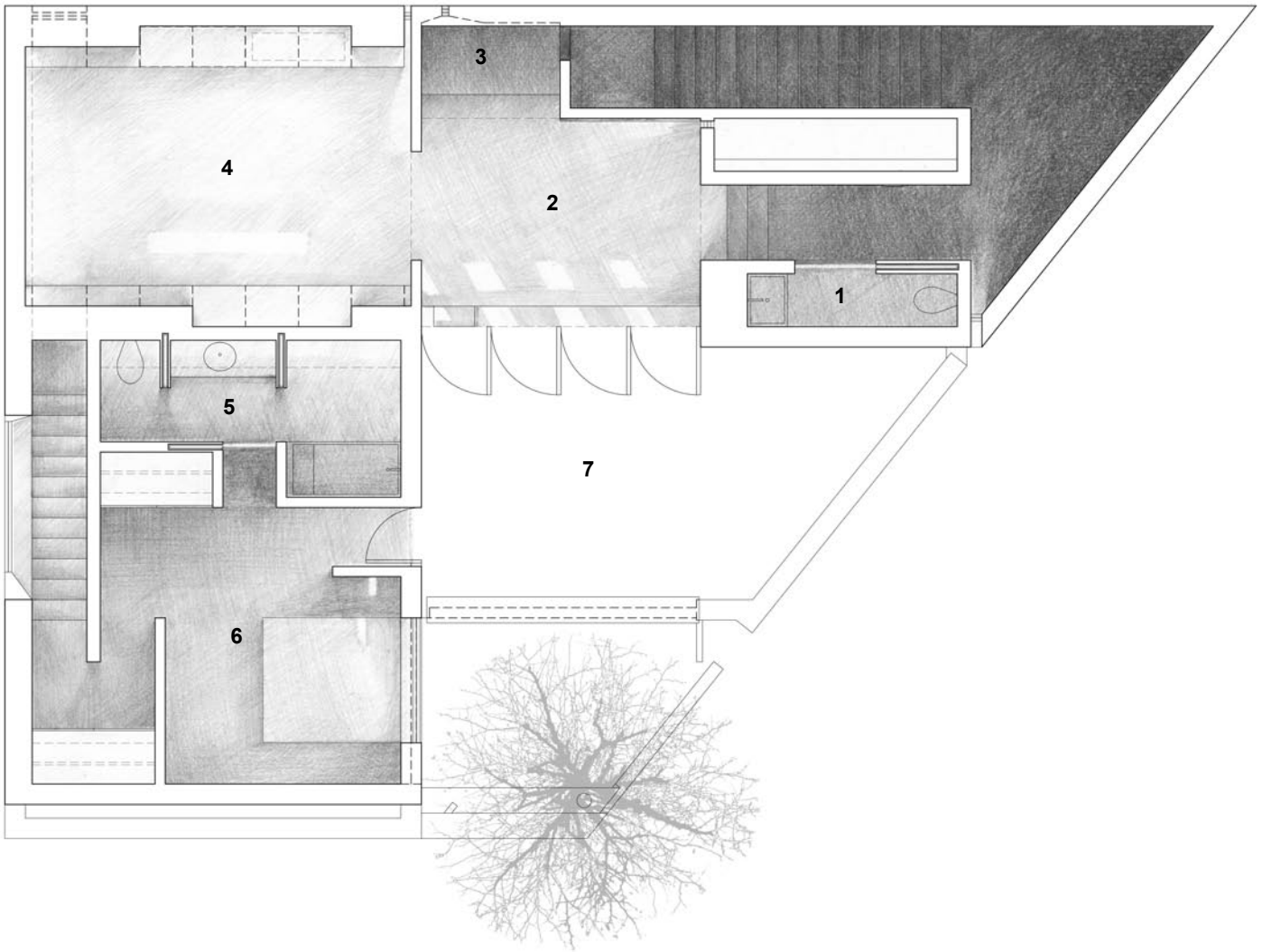


Ground Floor Plan

Scale 1:100



- 1. Entry vestibule
- 2. Powder room
- 3. Dining room
- 4. Kitchen
- 5. Living Room
- 6. Courtyard

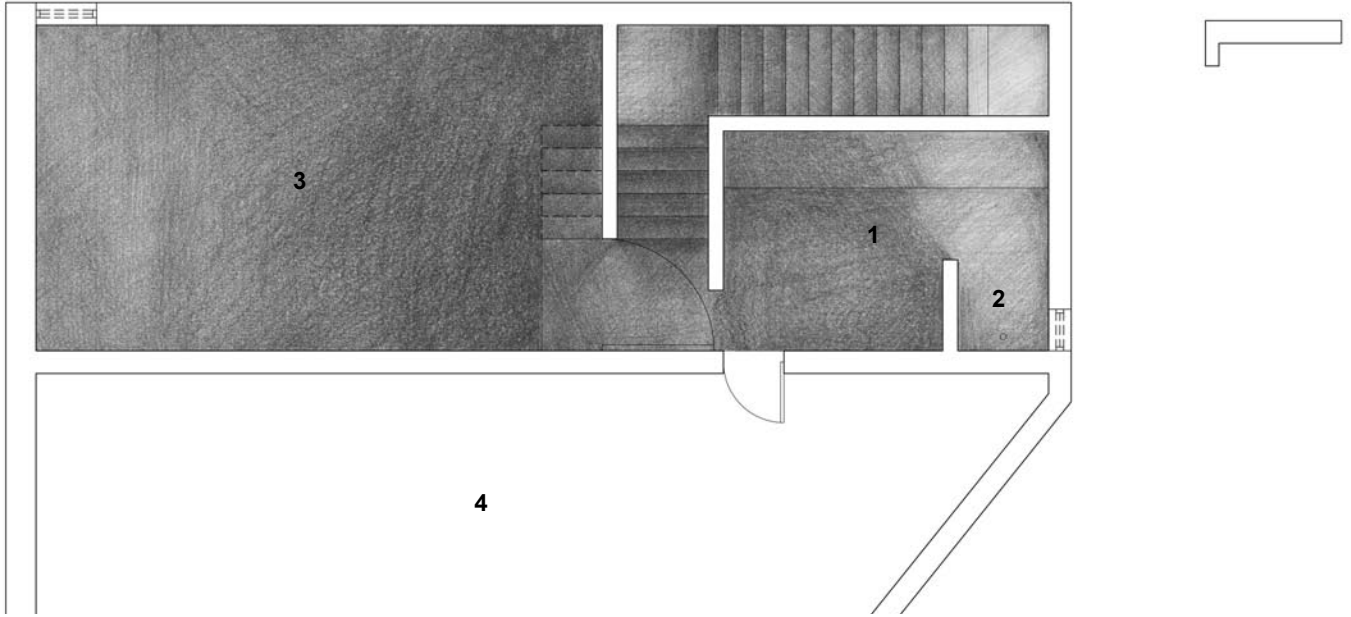


- 1. Powder room
- 2. Ante-chamber
- 3. Seating niche
- 4. Writer's room
- 5. Bathroom
- 6. Bedroom
- 7. Terrace



Scale 1:100

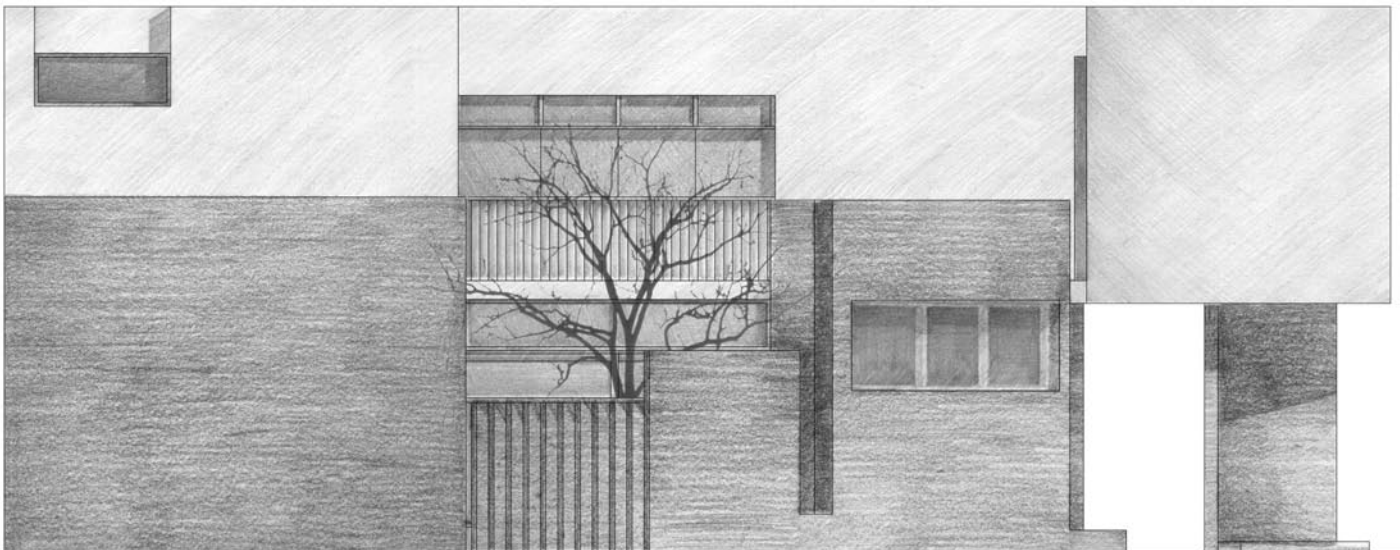
Second Floor Plan

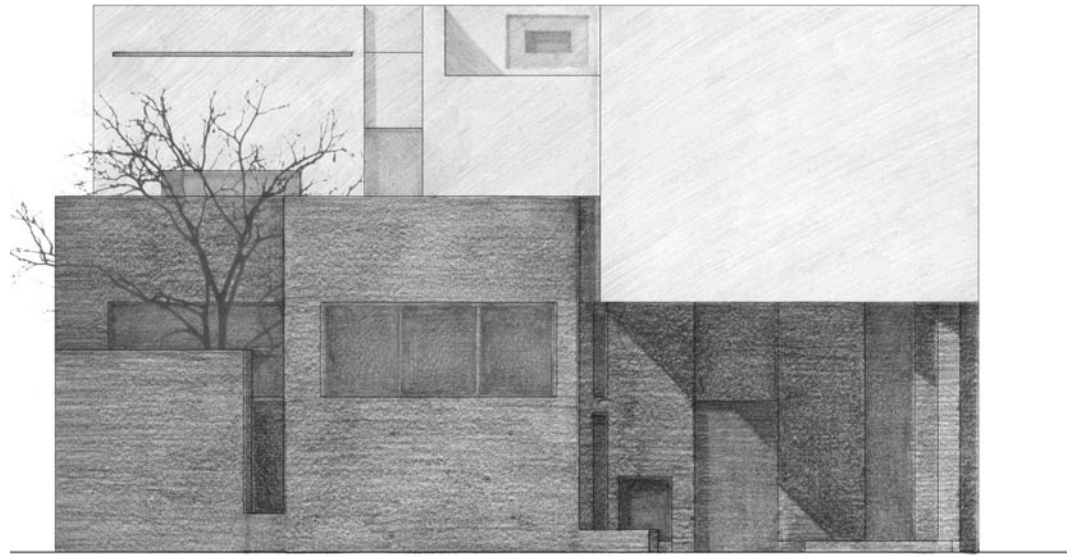


Basement Floor Plan Scale 1:100

- N**
- 1. Changeroom
 - 2. Shower
 - 3. Pool
 - 4. Mechanical Room/Storage

South Elevation Scale 1:100



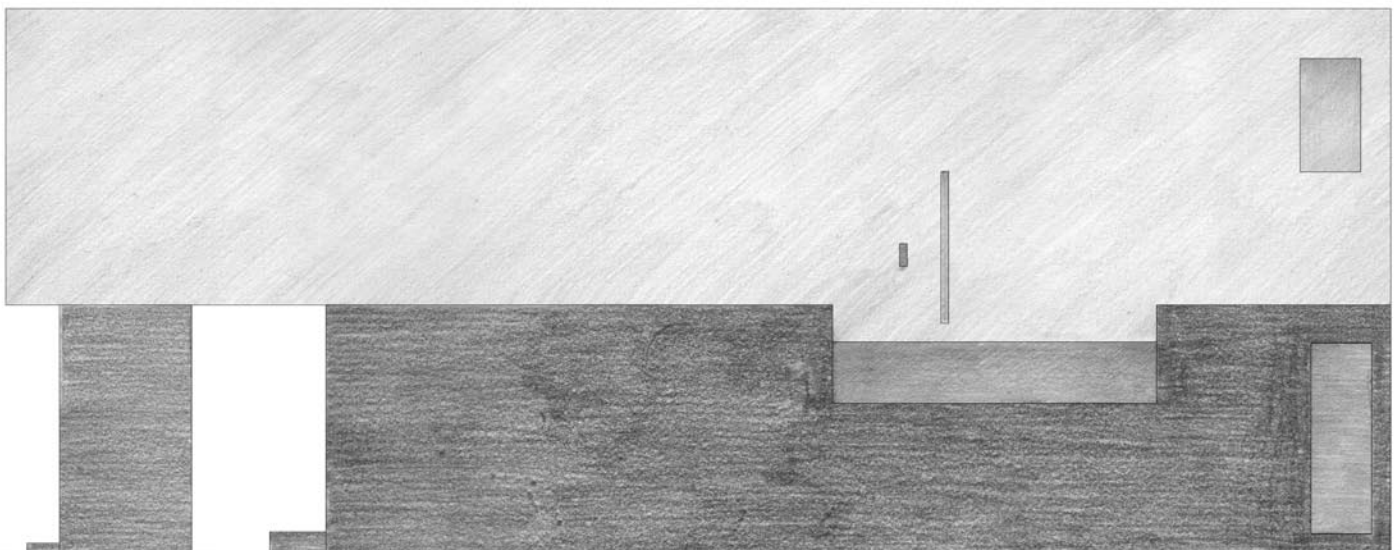


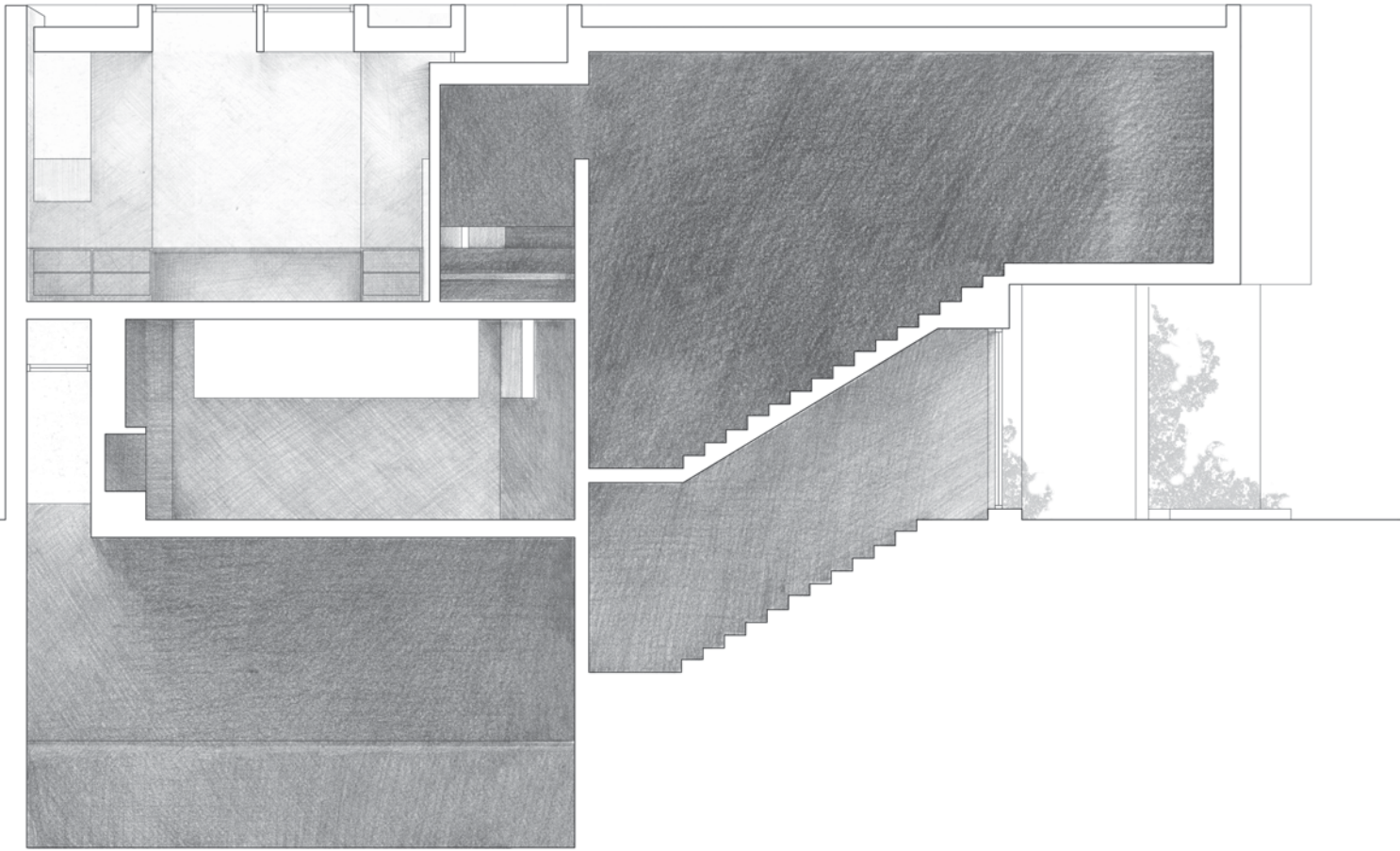
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East Elevation

Scale 1:100

North Elevation

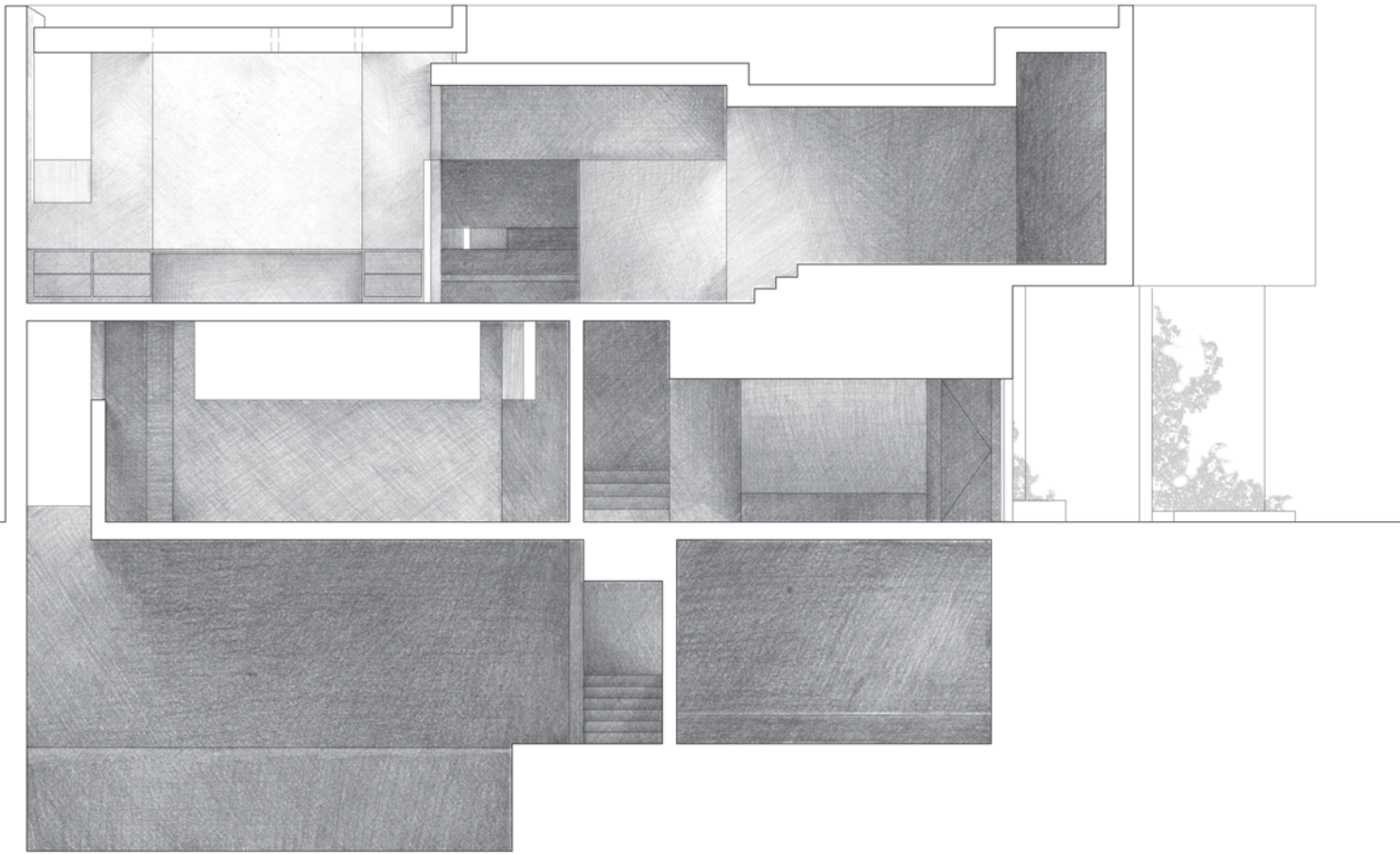




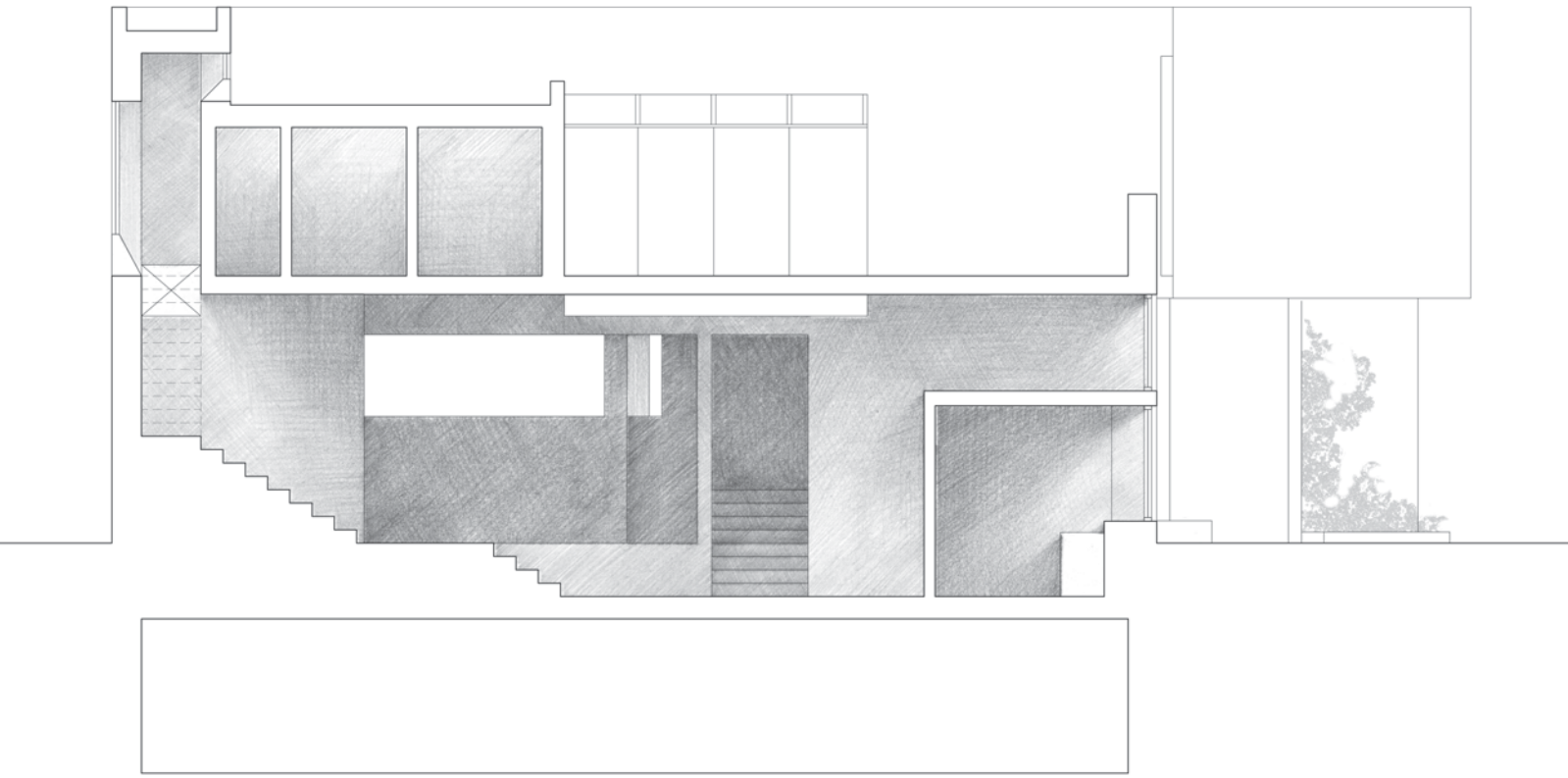
Section through pool and studio stair

Scale 1:100





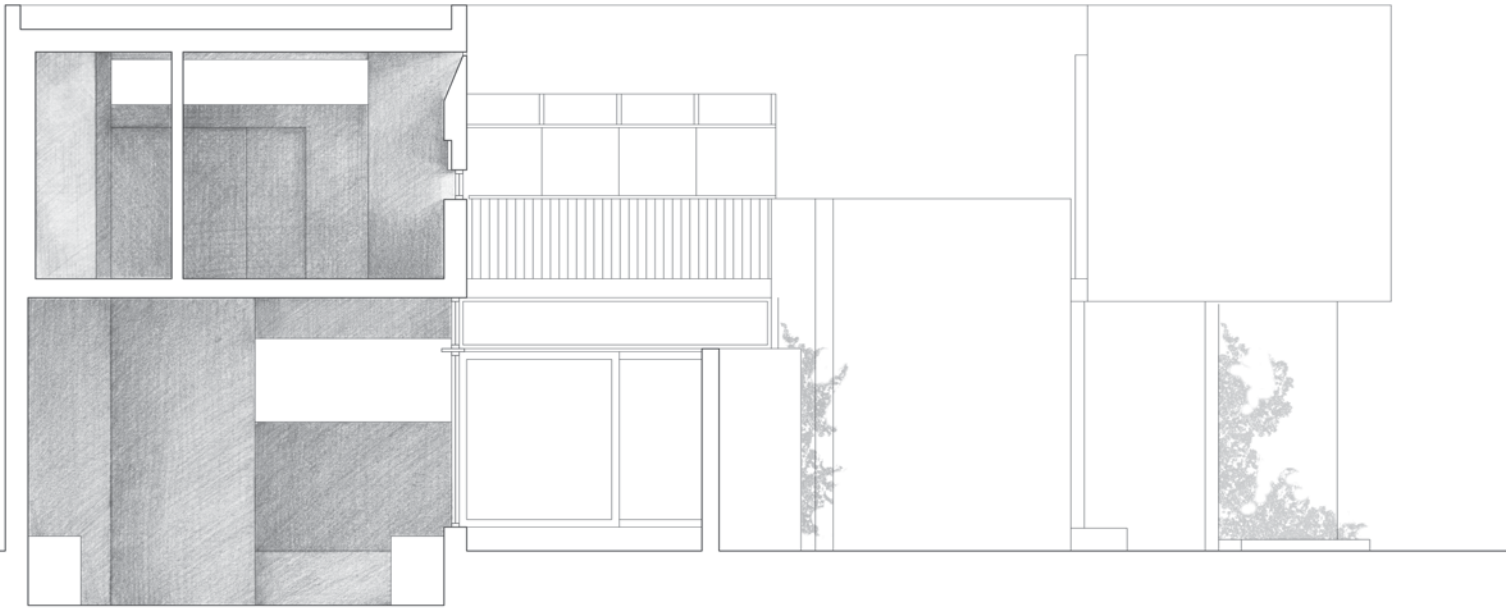
Scale 1:100 Section through pool and entry vestibule



Section through living room and terrace

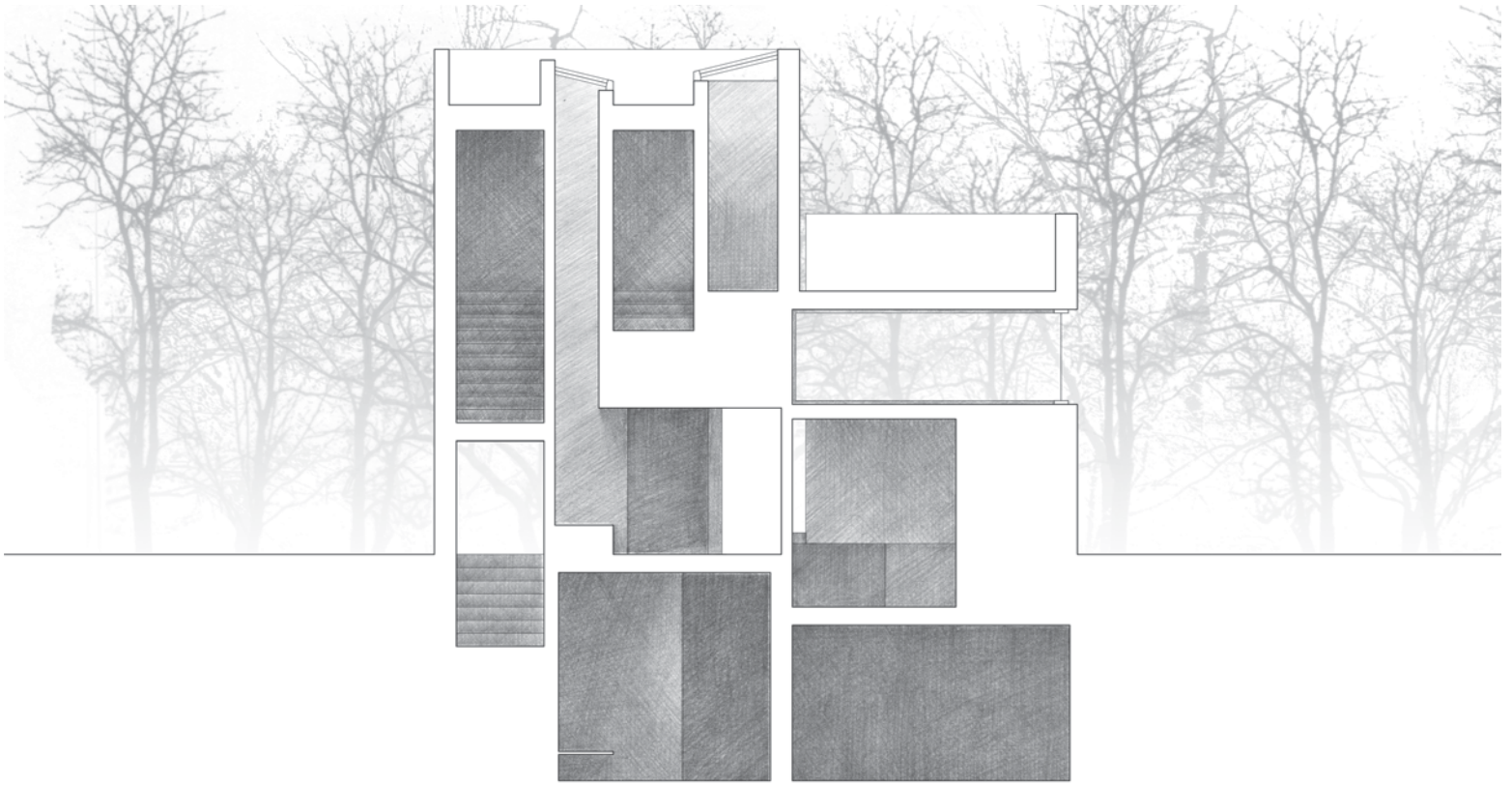
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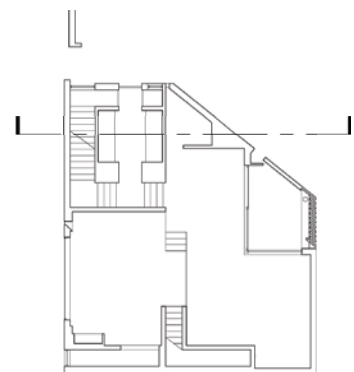
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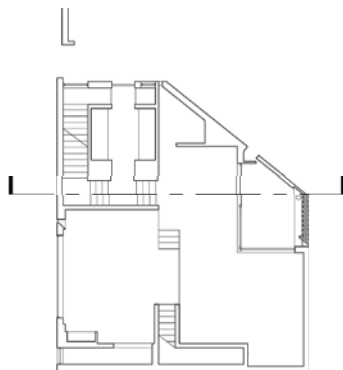
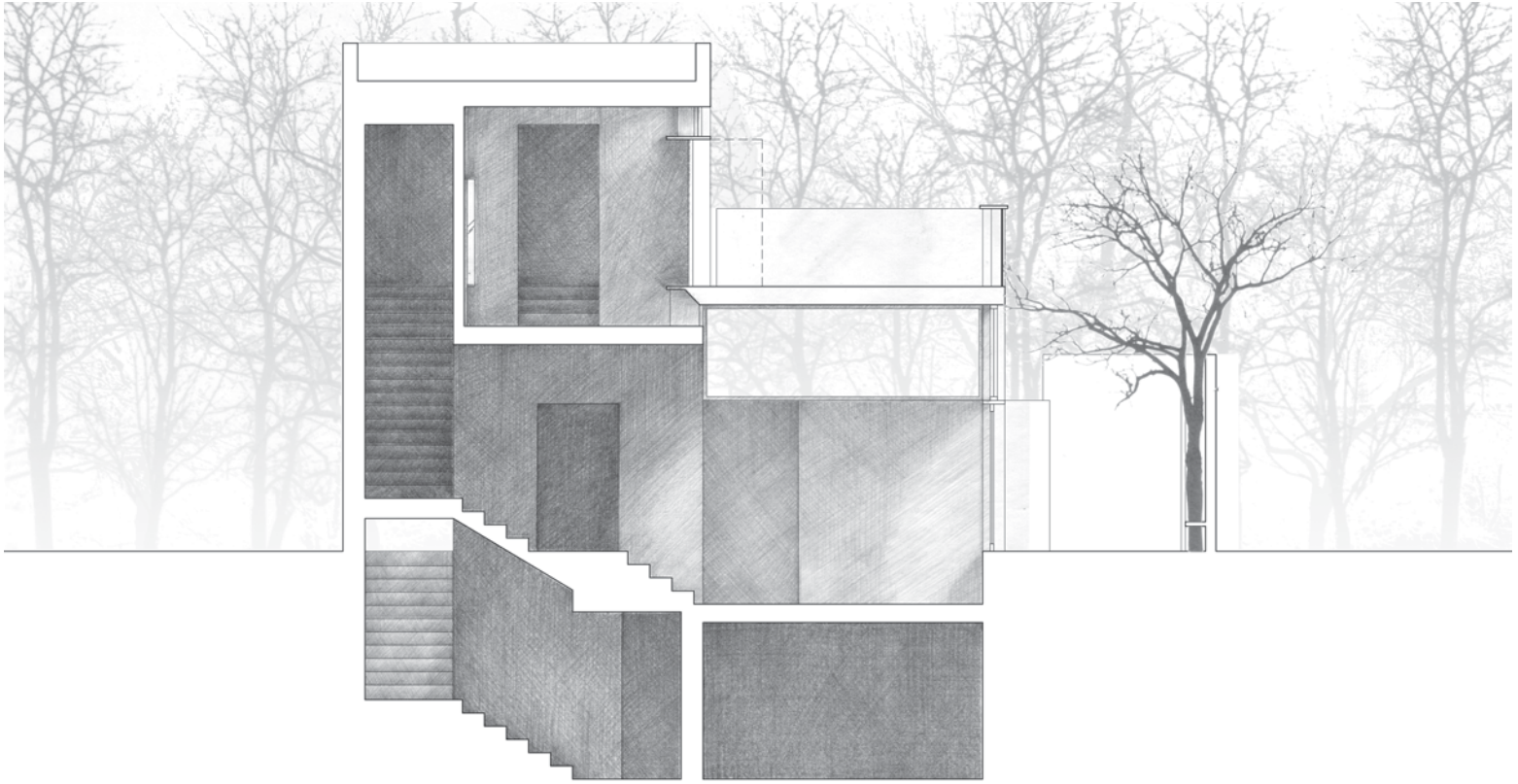
Section through bedroom and kitchen



Section through entry and changeroom

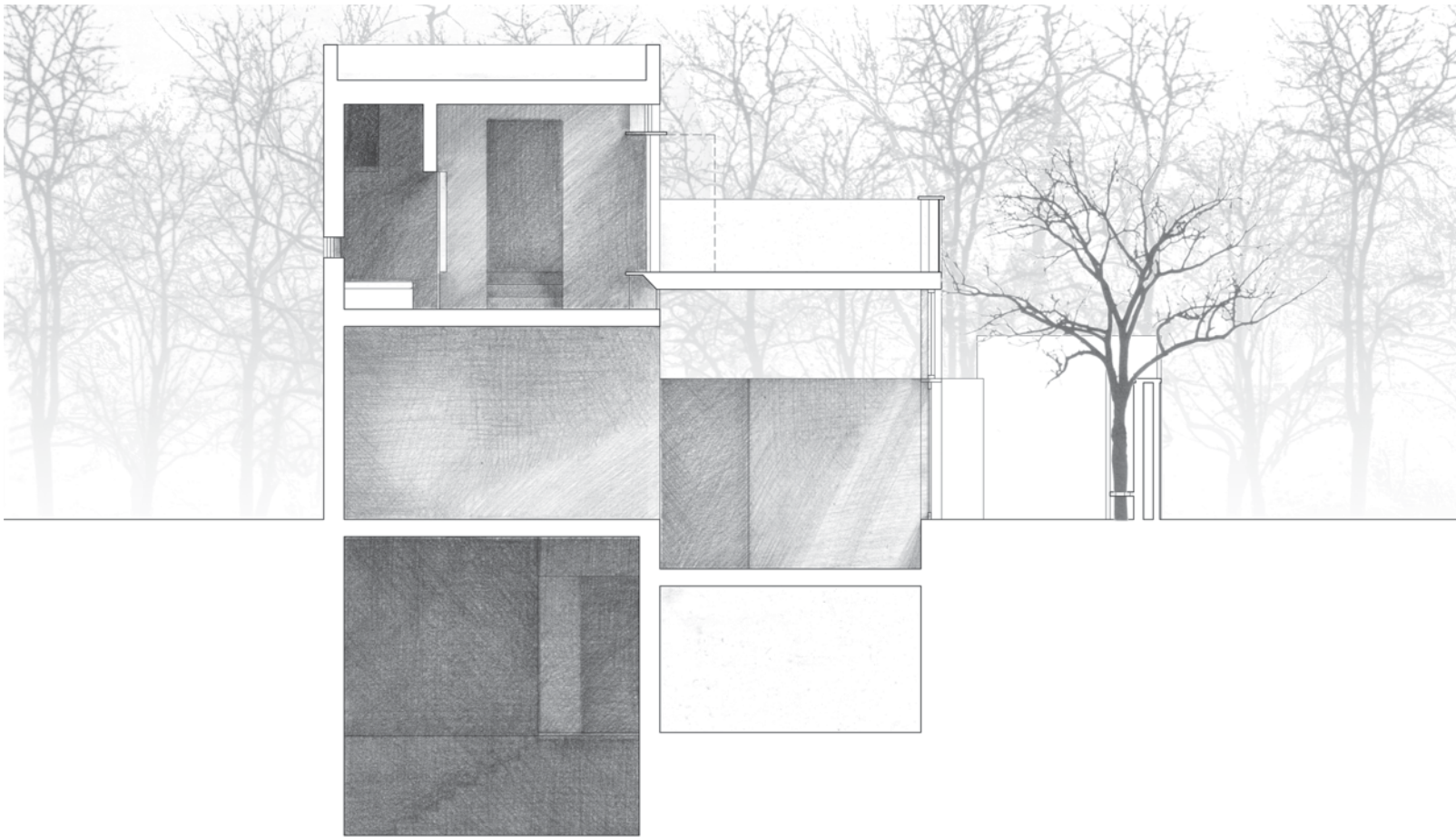
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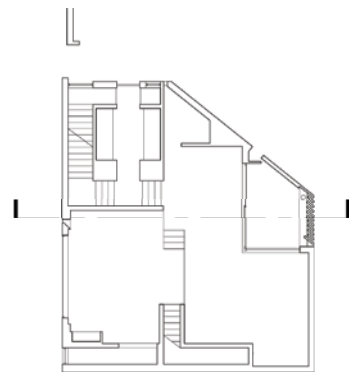
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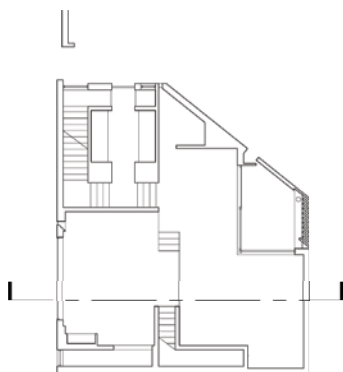
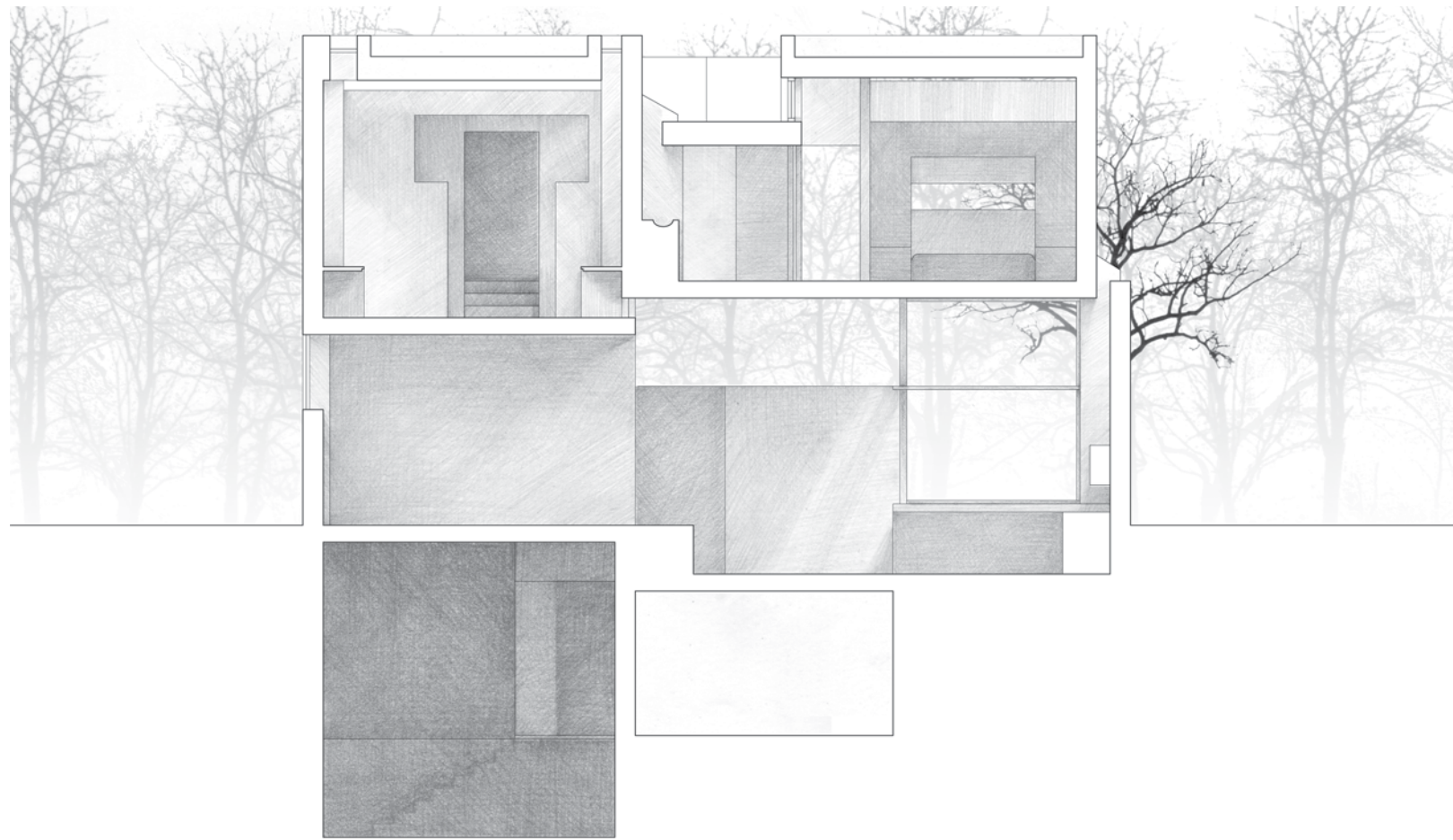
Section through studio and stairs



Section through pool and niche in studio

Scale 1:100





Scale 1:100 Section through living areas, studio, and bedroom



The house is a dwelling and a studio, where the writer might spend most of his or her days. Author June Sprigg described the room she used for writing:

The room is a fine equation: the sum of wood and plaster, plus light, which endlessly alters the look of this place. Mornings here are dim and blue. Shadows curl like cats in the corners. I want to move softly then, as if the room were still asleep. By noon, if the day is fair, the walls have brightened, become crisp and white as starched linen.

As the earth turns toward late afternoon, something special takes place. The room fills with light until it can hold no more, and in this fullness is transfigured. For this moment and a short while longer, there seems to be more than wood and plaster, line and plane. There is harmony, radiance, and a bittersweet glimpse of something like grace. It happens this way everyday as the room turns toward the light.¹

The writer, through the nature of the writing process, becomes sensitive to light and its ephemerality. As such, the house, as the writer, is

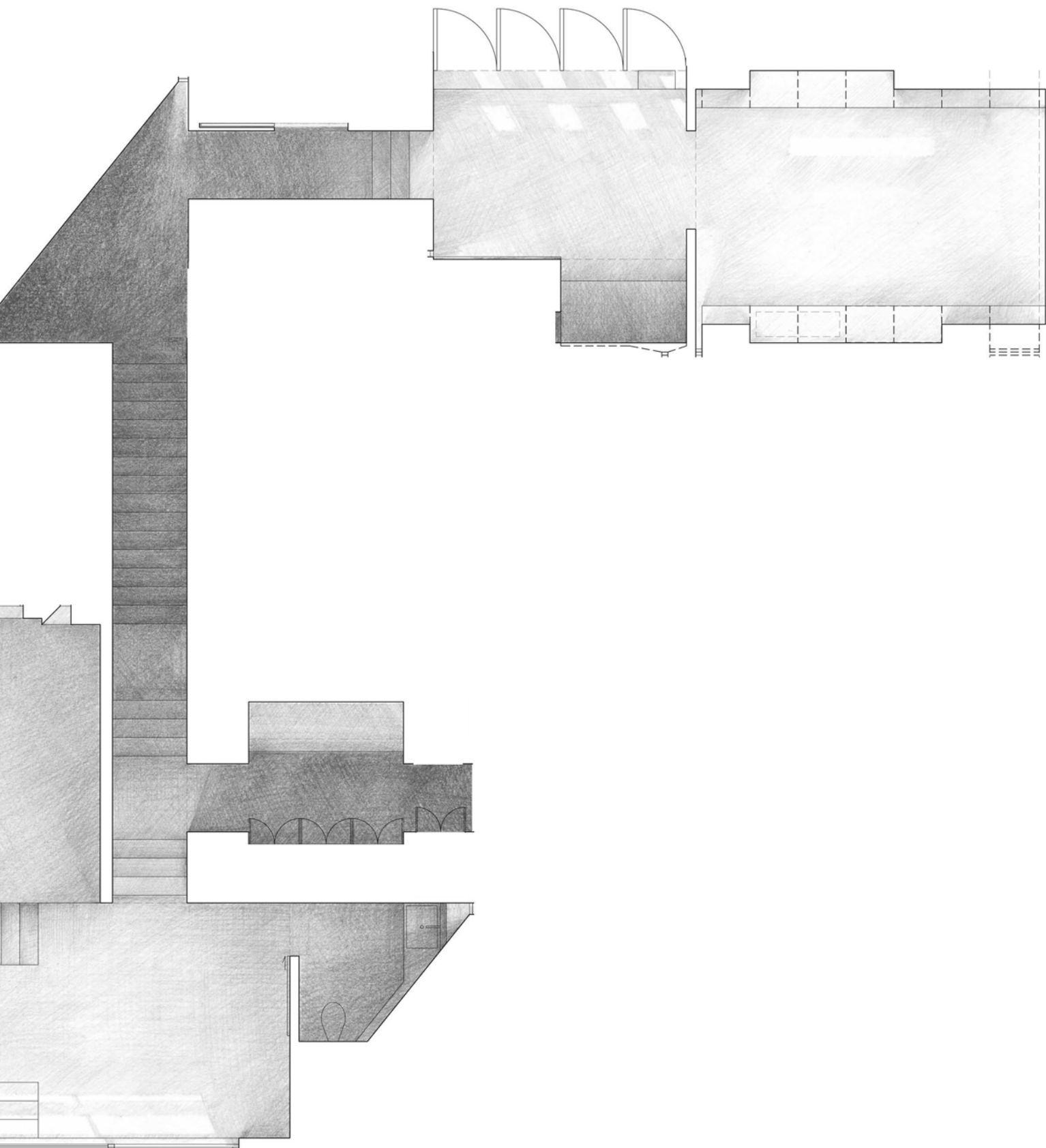
¹ June Sprigg, "Turning Toward the Light," in Linda Butler and June Sprigg, *Inner Light: The Shaker Legacy* (Frankfort: Gnomon Press, 1985), p. 7.

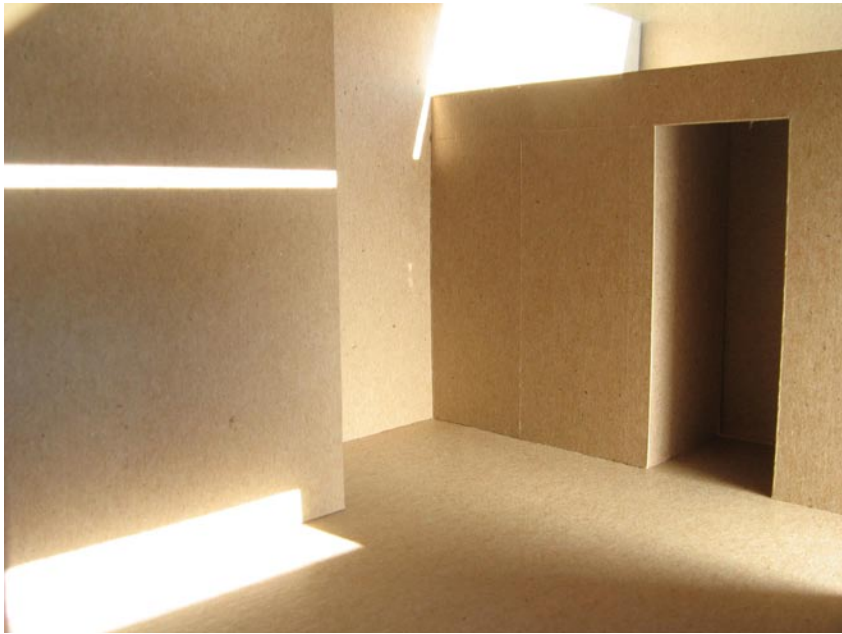


attuned to this engagement and endeavors to provide encounters that offer varying character and behaviour of light. The interior of the house is arranged linearly, so that while the writing room is next to the sleeping quarters, it is actually farthest away if one traveled inside the house without exiting outdoors. This provides a physical separation amplified through the experience of light and shadow.



Unravelled plan illustrating the route from bedroom to writing studio

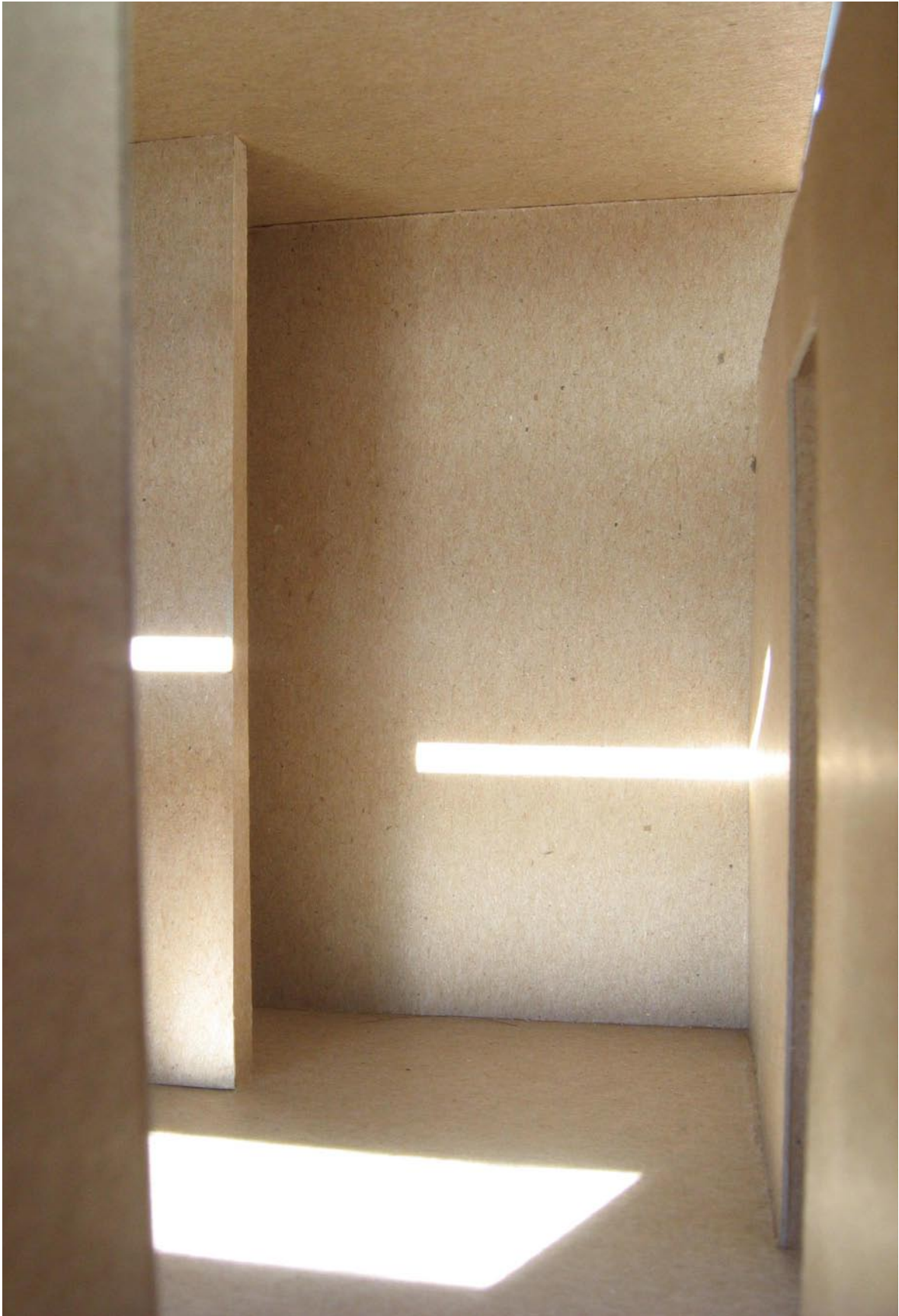


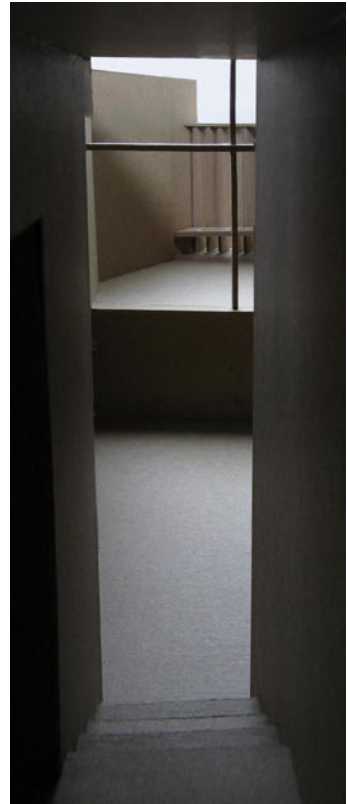




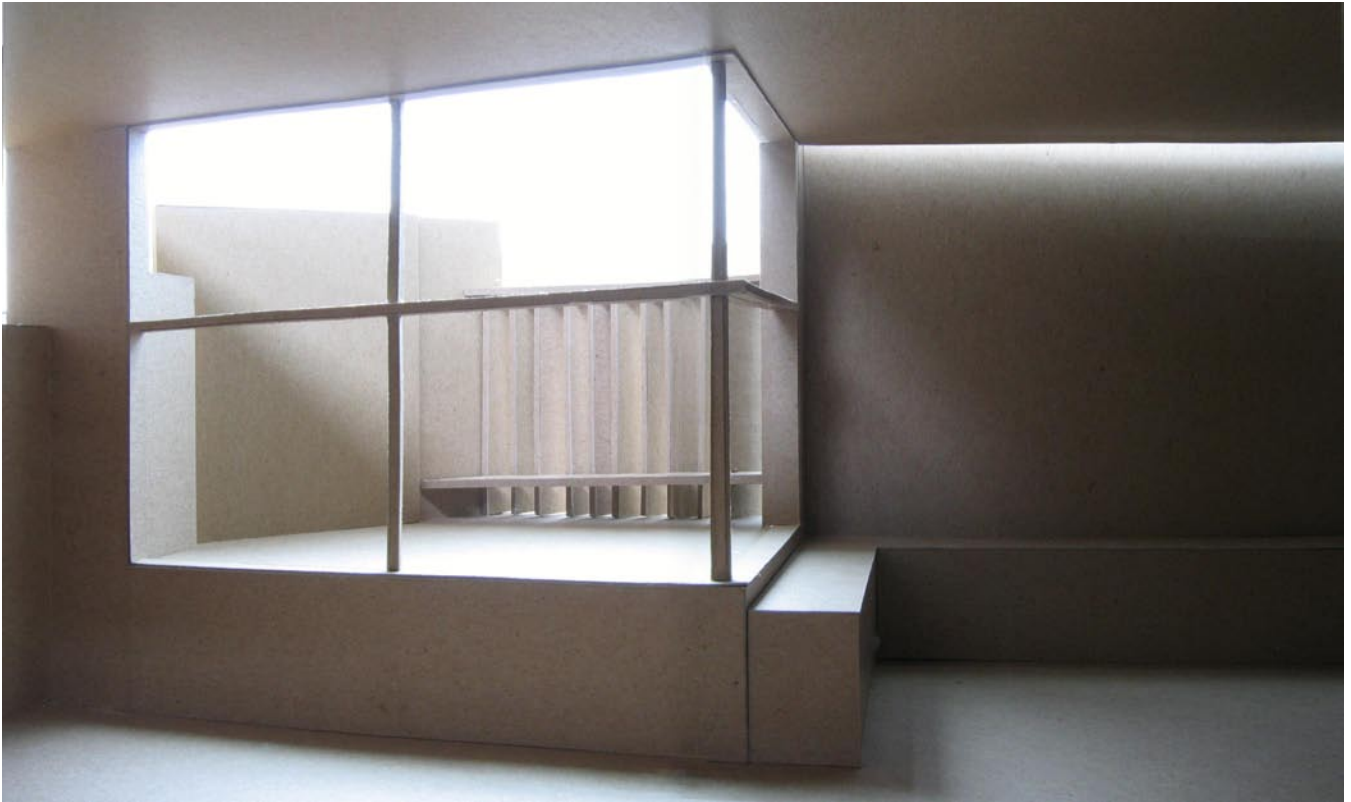
The bedroom catches the rising sun's rays through two slots above the bed: from the upper slot a razor-thin bar of light acts as an arm of the clock on the opposite wall, the lower larger opening provides light if necessary, but can be closed entirely. The bedroom is fairly dark, but the washrooms awaken with abundant light. Yet the bedroom is only twilight before sundown, which like the sunrise is registered in the adjoining stair by two splayed windows. Only the sleeping areas address the exactness of the sun. In the living area, the sunlight is free of any scenarios and constrictions; in the writing area it can be avoided almost entirely if needed.



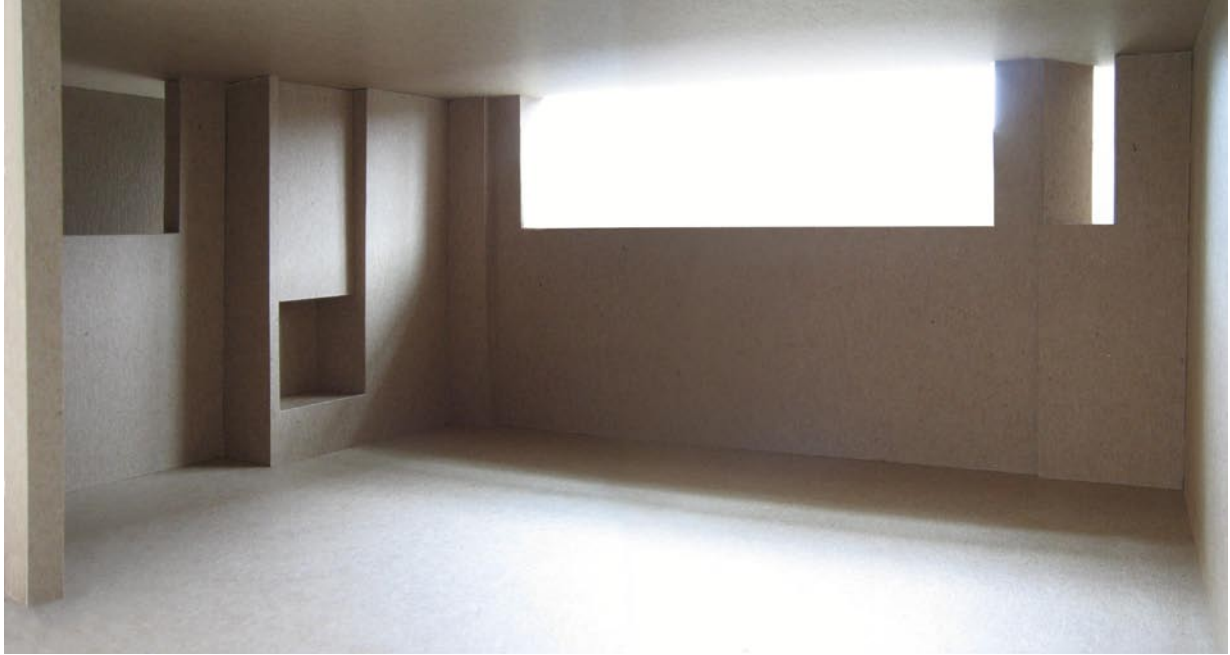




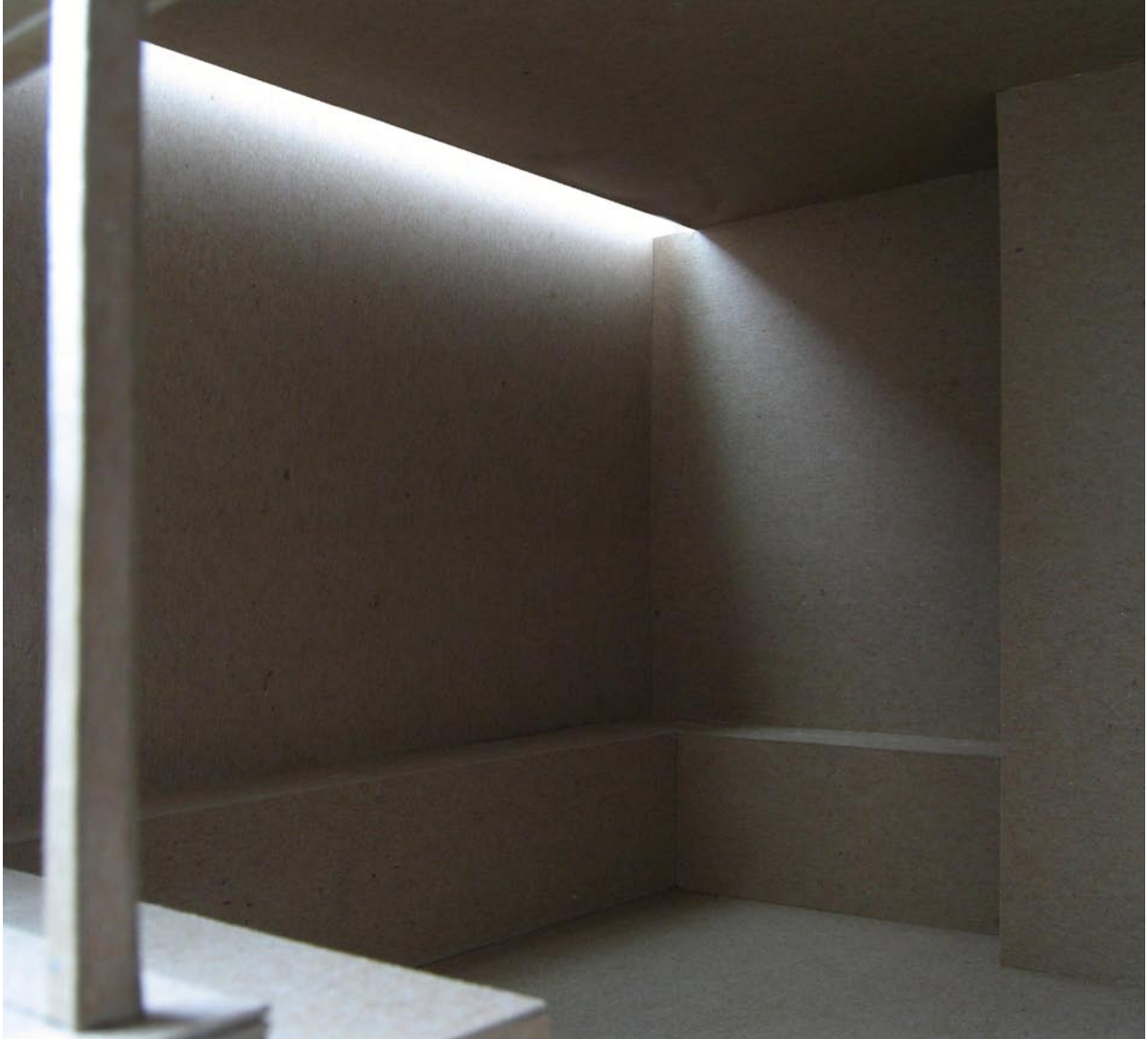
Vestibule
Stair to the living area.



Dining area and kitchen,
looking towards the courtyard

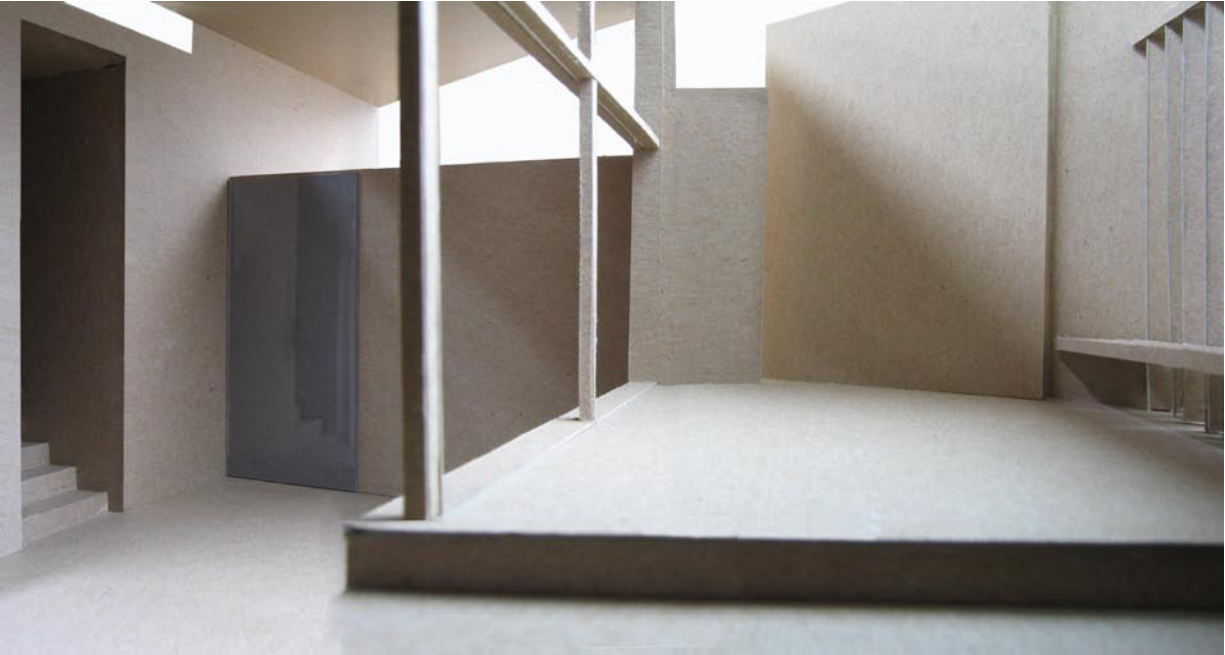


Living room



Kitchen

The living areas provide an abundance of light in the lower portion, with darker more enclosed area in the upper part of this expansive space. Here are sunlight, light washing the walls, darkness, shadows, and hidden light. In the variety of light conditions, the ways one chooses to dwell are easily accommodated. By creating the connection between a character of light in a specific area with certain activities imbues parts of the spatial topography with mental associations, strengthening the sense of inhabitation and a palpable connection to one's environment.



Looking from kitchen to the washroom and the courtyard



Looking towards washroom



Stair to the vestibule and to the writing studio
Stair to the writing studio



Ante-room of the writing studio

A circuitous route removes the writer's room from the rest of the dwelling. A dark stair loops back on itself removing one from daily familial life through distance, height, disorientation, and absence of light. When entering the writing area the ante-chamber buffers one yet still from the writing room. The final destination, although lacking eight windows, is inspired by the richness of the Shokin Tei tearoom. Apertures layer the light, achieving a modeled but calm space. The locations of windows create pools of light and shadow that create place for writing and other activities similar to the living areas below but on a smaller scale. The antechamber too creates opportunities for other kinds of inhabitation. Flung open, the exterior doors allow direct sunlight in. With the sliding door of the niche closed, it becomes a separate darkened space of its own.



Studio and ante-room with doors closed
Niche with sliding door



Studio and ante-room with doors open

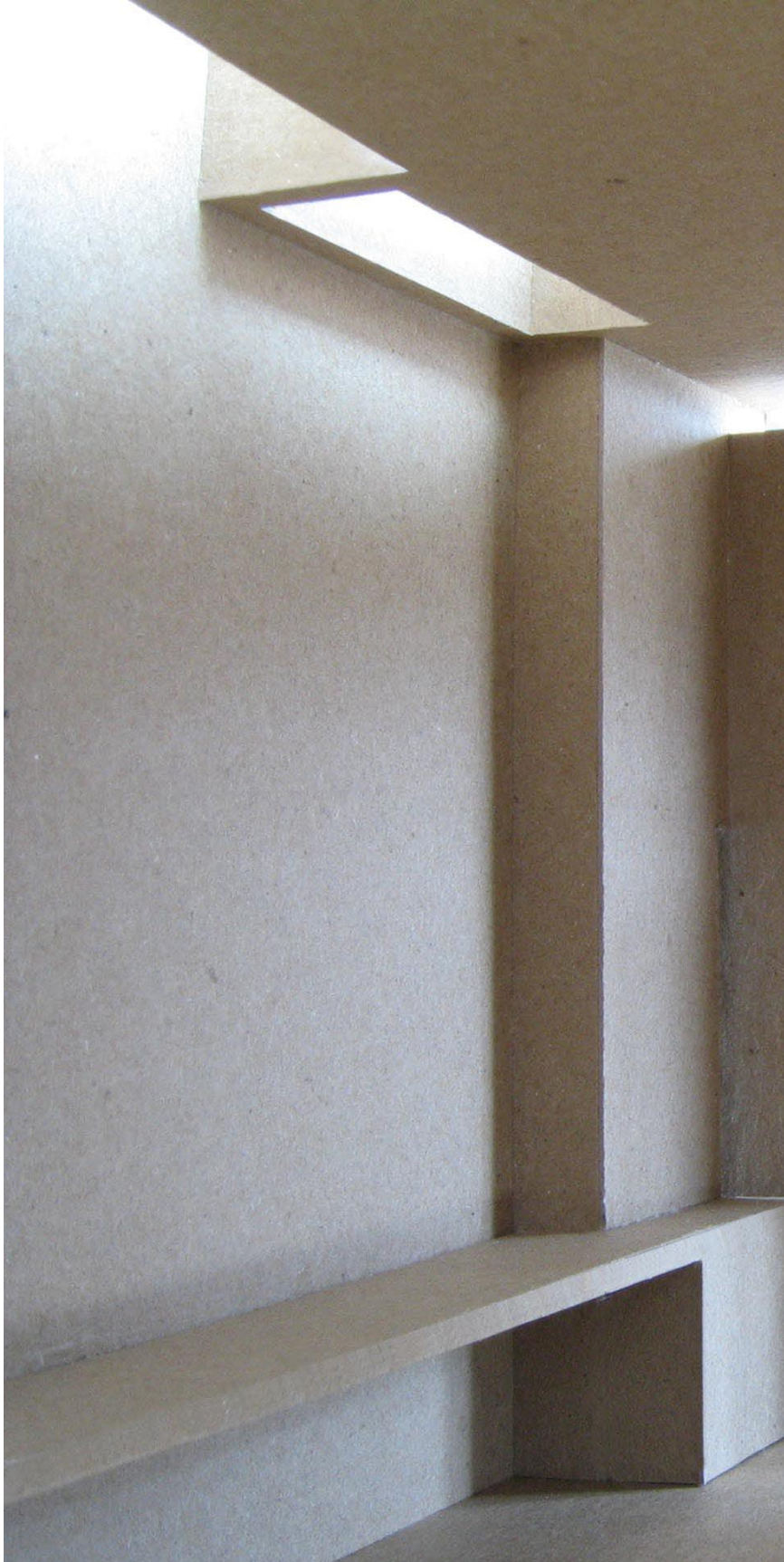




Writing studio











Changeroom



Stair leading into the pool

On the lowest level of the house, a deep dark pool is illuminated from above by a hidden window. The reflection of the water is amplified by the darkness, stripping the space of any knowledge of what lies below, making it seem bottomless. The darkness makes one aware of what little light is there and of light itself. Yet it also places a greater emphasis on the rest of the corporeal experience, especially tactile and auditory in this space, connecting one more intimately to the physical world.





Pool

The Library

There are two buildings within the complex, integrated yet separate: the library itself and the café and gallery building. The two act as a neighbourhood centre, wrapping around a stroll garden planted with birches and flowers. The courtyard acts not only as a focus of the project, but ensures access to light and sunlight to certain programmatic elements in the area where rapid high-rise development often robs neighbors of both of these. It also extends the string of green spaces that follow along the Wellington Street, affirming the character as well as the scale of the nearby residential neighbourhoods.

In terms of design of light, both buildings are approached in the same way. Many spaces allow varied light conditions so that the visitor himself might determine where he wants to be. Other spaces, usually transitional ones such as stairs, offer light scenarios that act to interrupt, to complement or to create a singular experience. Such spaces unite others in a journey where the experience is greatly dependent on light and its effects.

This approach takes advantage of both light and shadow, not modeling forms but modeling experience. By doing so it brings to attention the impact the light has on it and, in turn, places light at the center of attention. The increased awareness of light recaptures connection not only between light and man, but also between nature and man.



The Site

A rectangular site of about 2500 m², faces onto Clarence Square Park in Toronto, only one block east of Spadina Avenue, one block north of Front Street, and one block south of King Street West. In this historically significant King-Spadina area, the site has a further distinction to being a terminus to Victoria Park – Clarence Square axis along Wellington street, an intact piece of urban planning from 1820's. Clarence Square Terraces (1890's) and an old warehouse on the south edge of the square set the framing conditions as well as architectural language as outlined in the city's "King-Spadina Design Guidelines", "King-Spadina Secondary Report", and "King-Spadina Secondary Report Review". The area is also under intense development, after 1996 re-designation of its zoning as 'regenerative area'. Multiple residential towers have since sprung up with number of residents quadrupling since that year. Just to the south of the King-Spadina, Railway Lands are undergoing immense high-rise residential development as part of the master plan jointly developed by the City of Toronto and the developer, Concord Adex. The

Panorama of the site and of the towers beyond



areas are and will be home predominantly to singles or couples, all young professionals who wish to take advantage of the area's cultural amenities. Community amenities, however, are scarce. A branch library has been proposed for Railways Lands, in southwest corner of the new development, but the site on Clarence Square would benefit more communities as it would become central to more neighbourhoods.



Wellington and Clarence
Square corner of the site



Site seen through the park



View of the park from the site

Facing page

Aerial photo with highlighted
area of the site

(Base image: City of Toronto 2003
Orthoimagery [computer file].
Toronto, Ontario: City of Toronto.
[2003].)





View east on Wellington

Left
Soho Hotel north of site



Historic Clarence Square
Terraces to the north of the
park

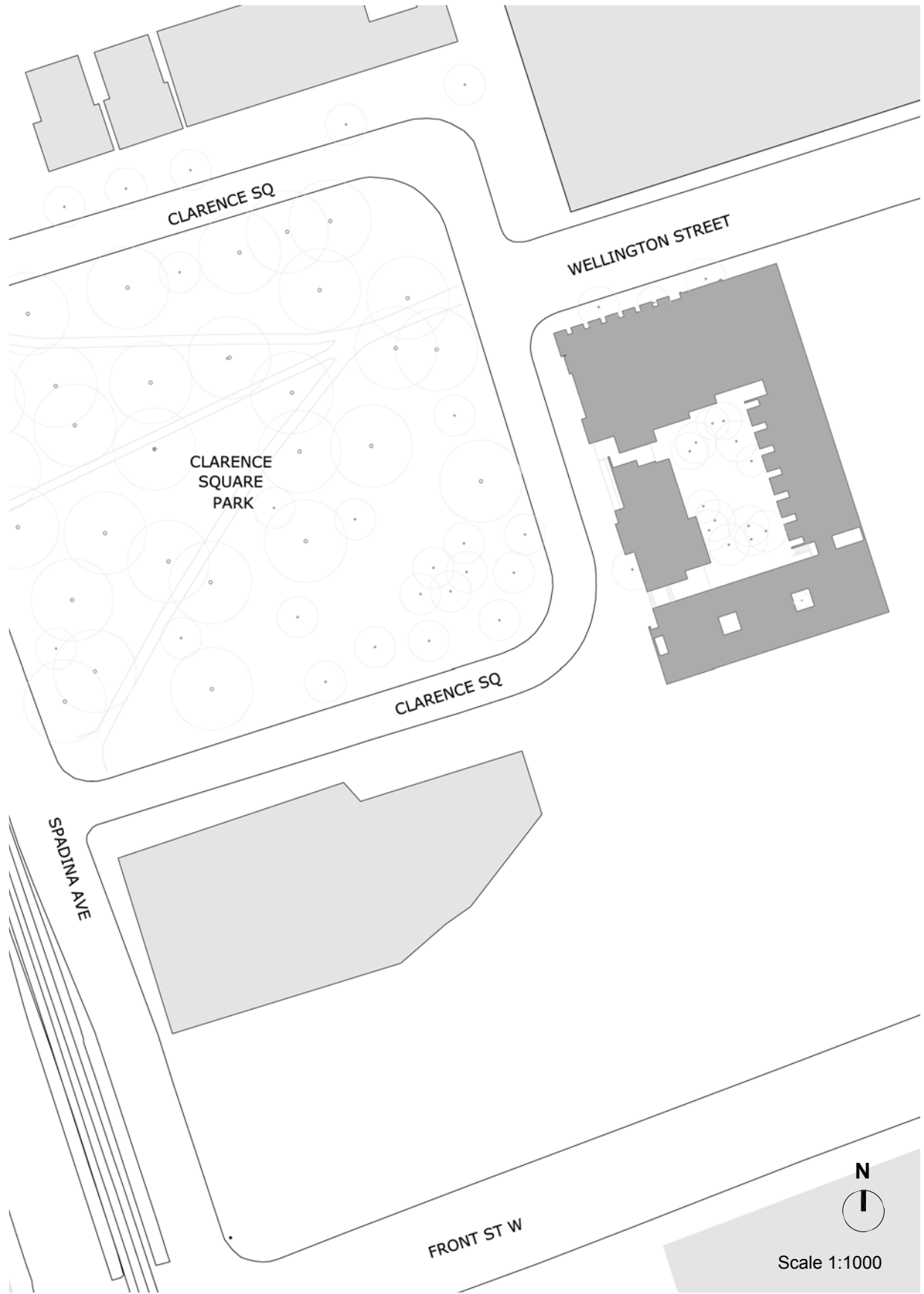


Warehouse and garage to the
south of the park

Facing page

Site plan

(Base map: City of Toronto
Municipal Data [computer file].
Toronto, Ontario: City of Toronto,
Survey and Mapping Services.
[2003].)



- 1. Entry vestibule
- 2. Entry Hall: checkout
- 3. Holds and Self-checkout
- 4. Audio and video
- 5. Multi-purpose room
- 6. Information desk - kids
- 7. Kids' area
- 8. Young adults' area

Main Hall:

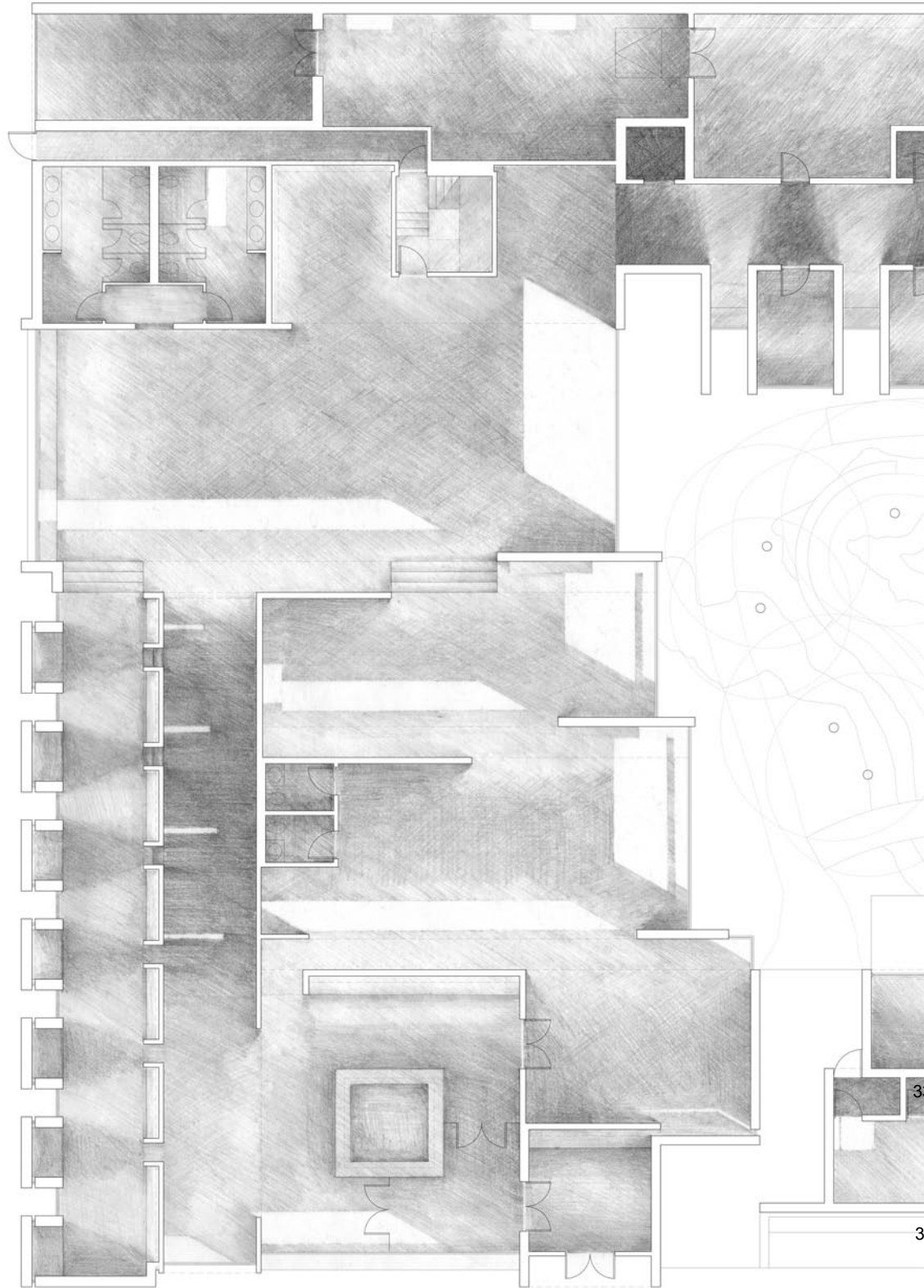
- 9. Periodicals
- 10. Information and adult computers
- 11. Reference
- 12. Washrooms
- 13. Tech services office
- 14. Office
- 15. Loading dock
- 16. Temporary storage
- 17. Elevator
- 18. Janitor closet
- 19. Electrical and IT closet

- 20. Staff washroom
- 21. Workroom
- 22. Staff lounge and kitchenette
- 23. Courtyard
- 24. Information and computers

- 25. Microfiche
- 26. Copier
- 27. Lightwell fountain

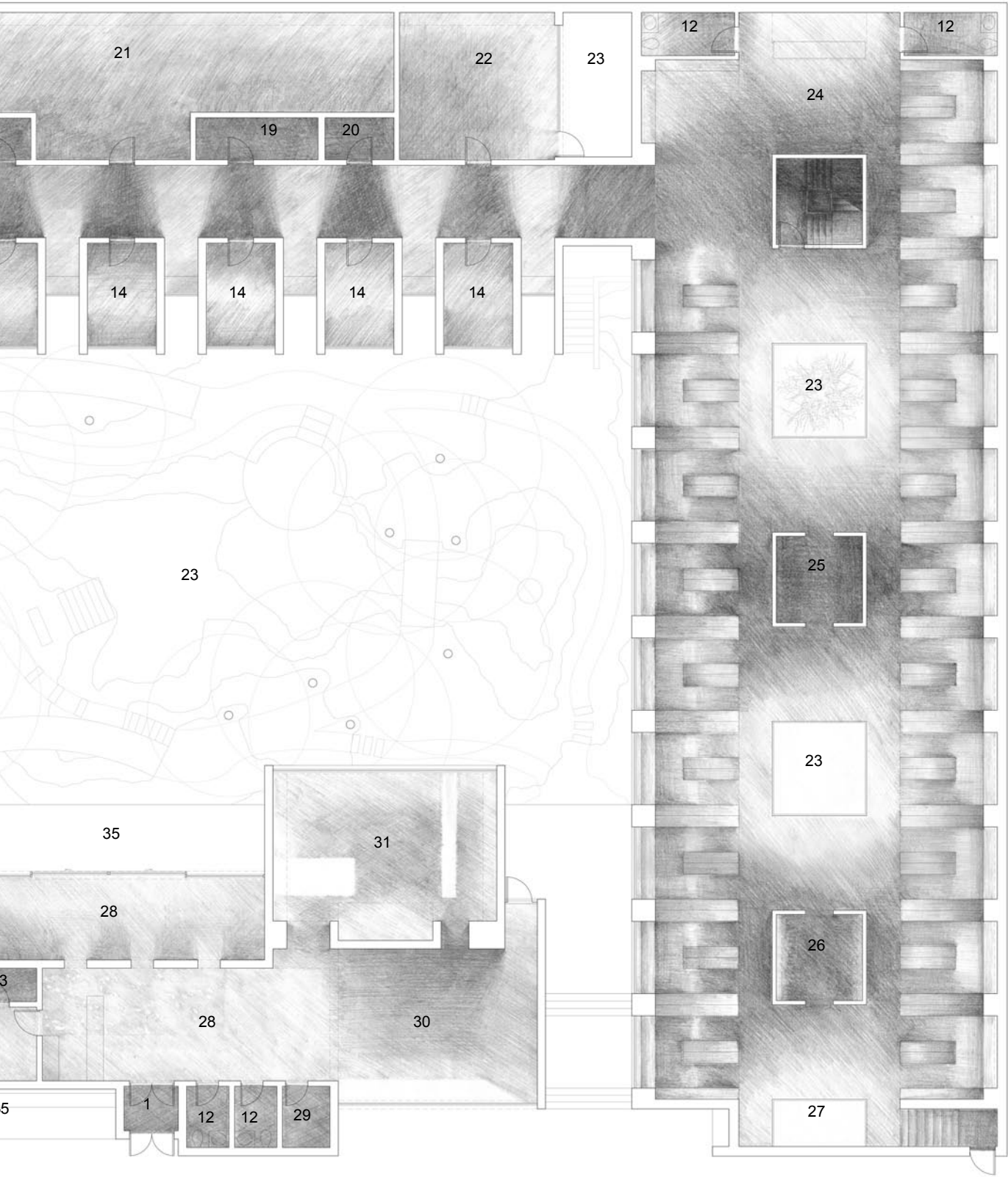
- 28. Cafe
- 30. Events Hall
- 31. Gallery
- 32. Kitchen
- 33. Pantry
- 34. Garbage

- 35. Patio



Ground Floor Plan

Scale 1:200

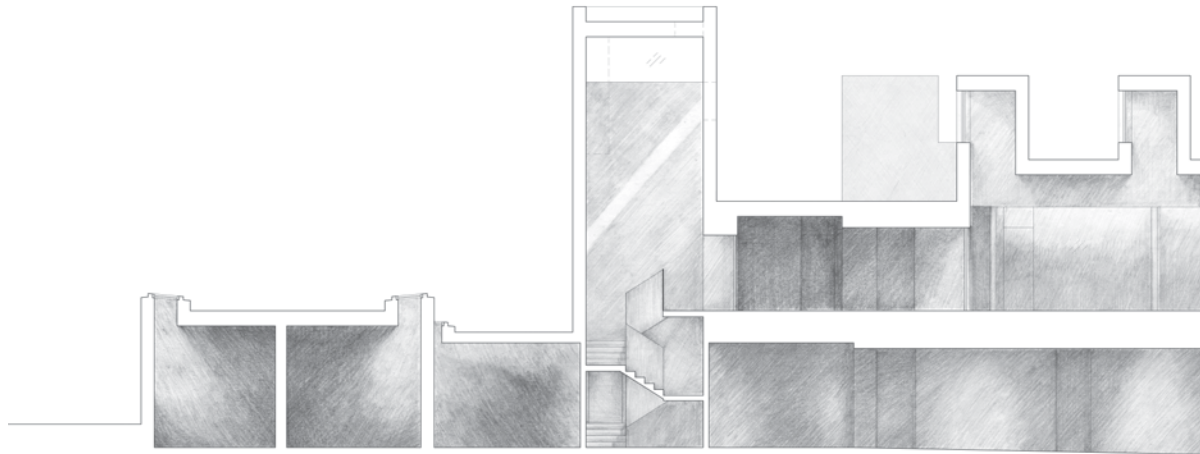
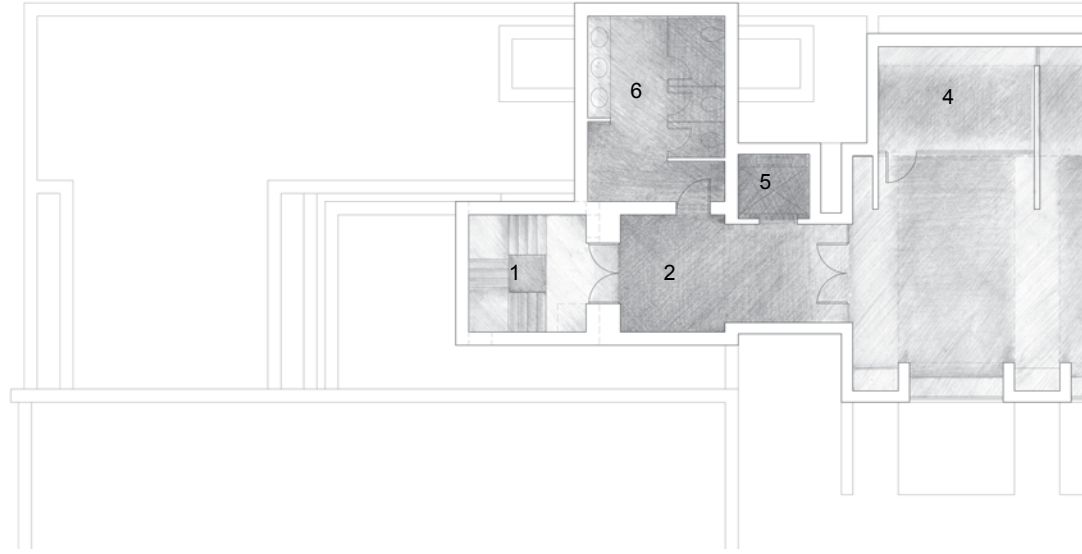


- 1. Light stair
- 2. Ante-room
- 3. Study Hall
- 4. Meeting rooms
- 5. Elevator
- 6. Washrooms
- 7. Dark stair



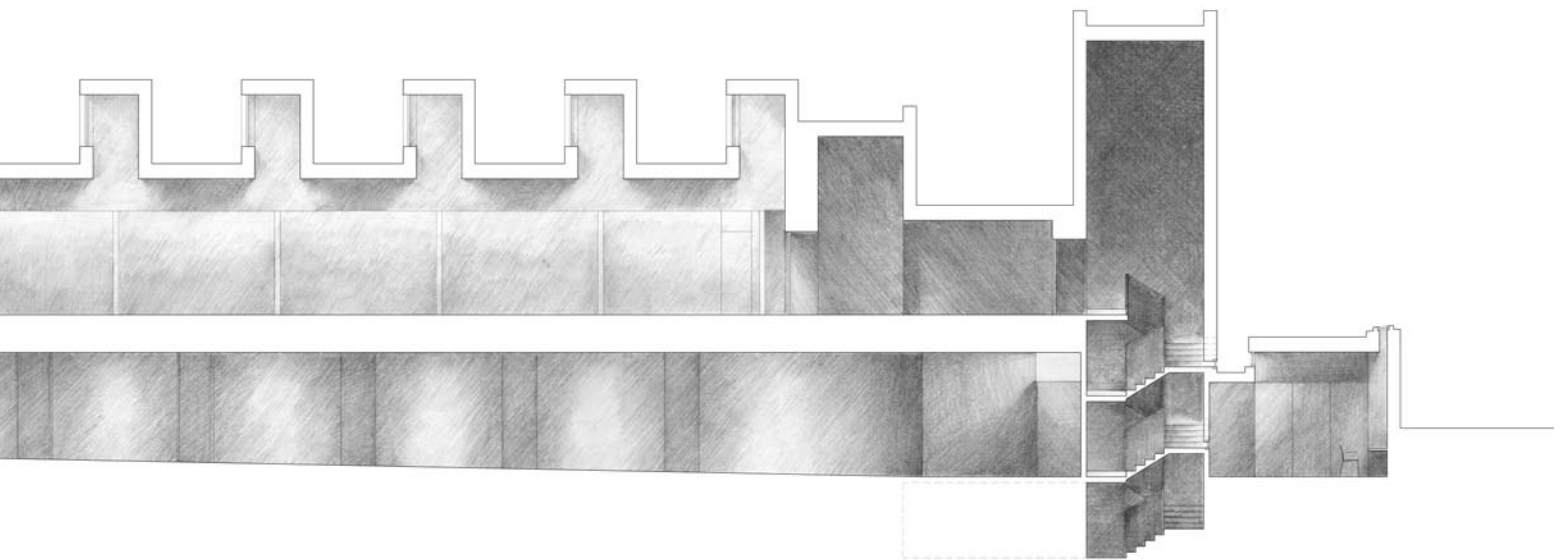
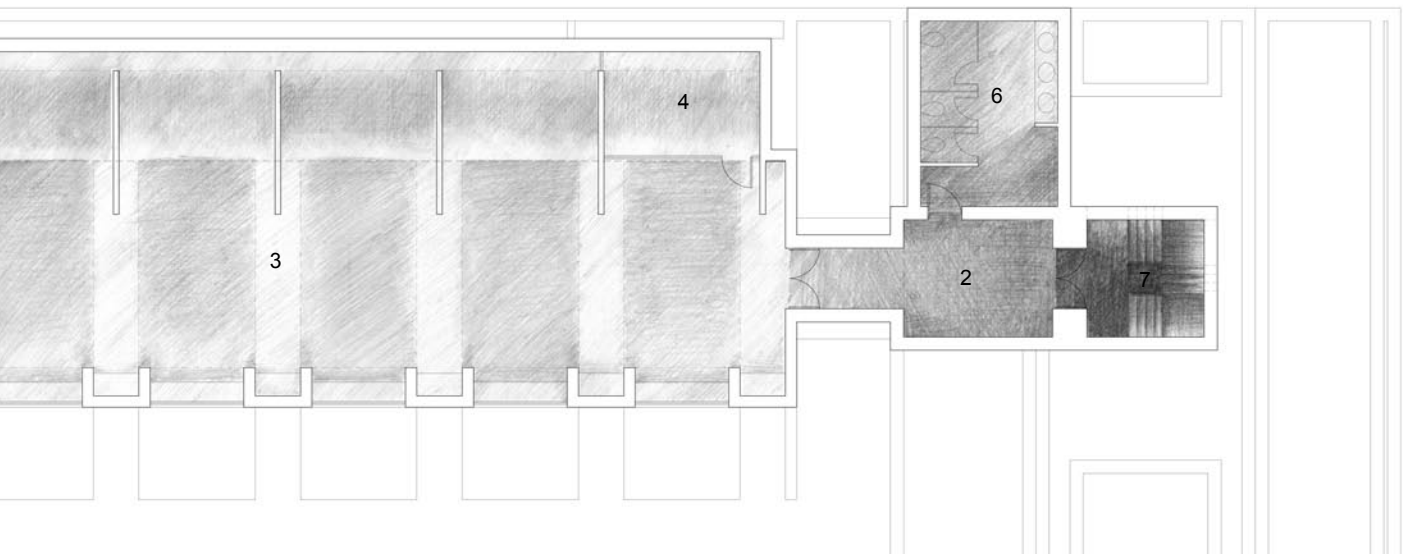
Second Floor Plan

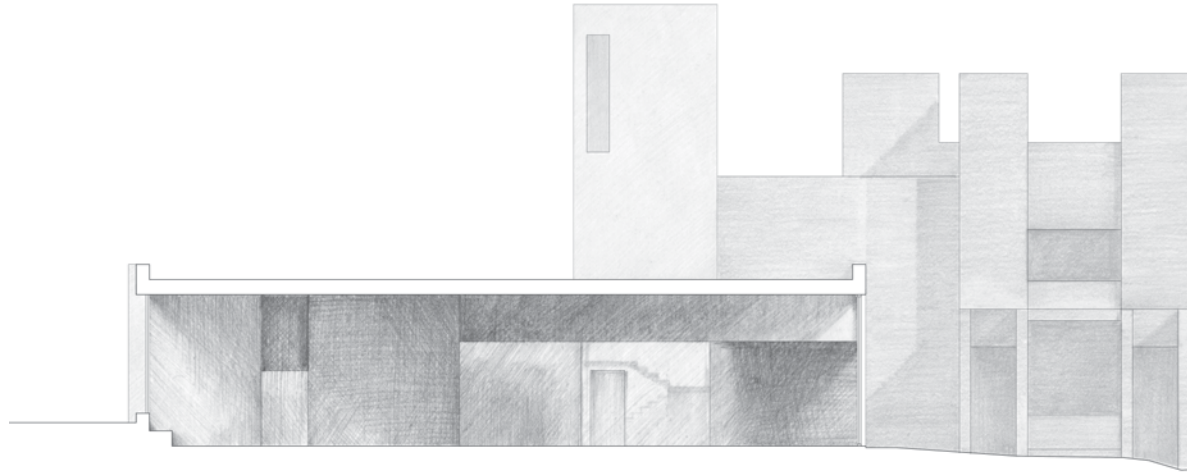
Scale 1:200



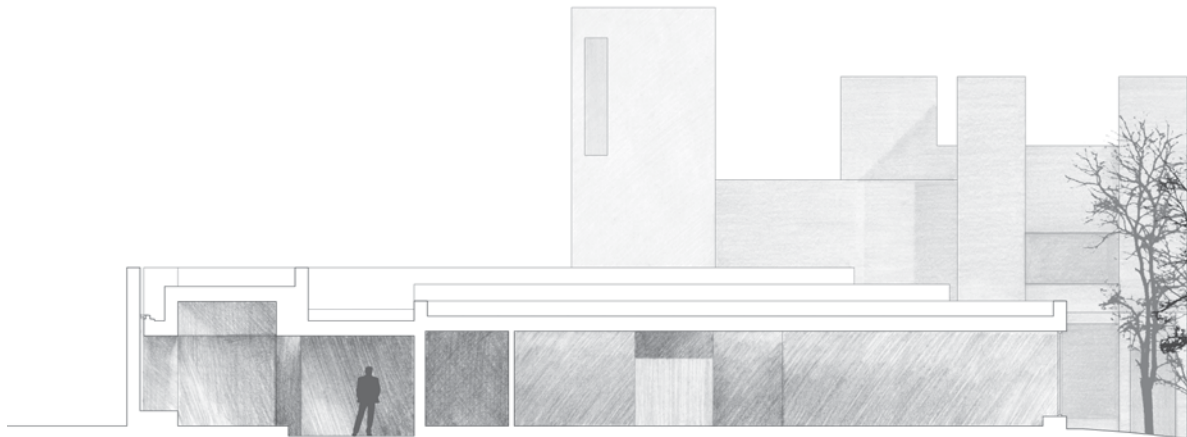
Section through study hall Scale 1:200





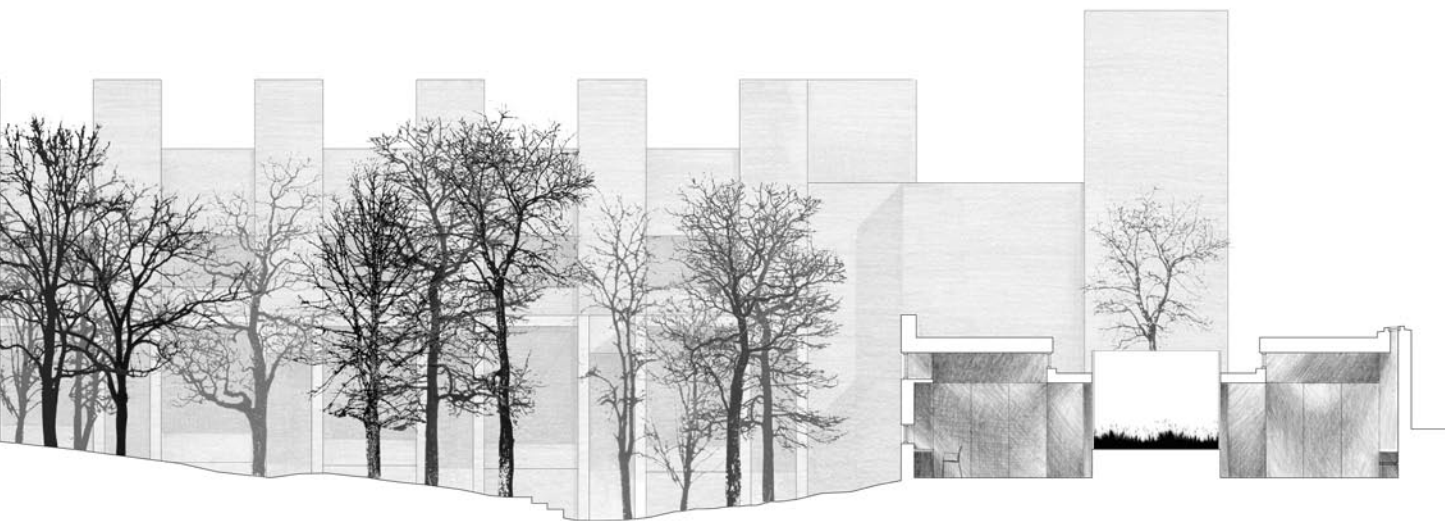
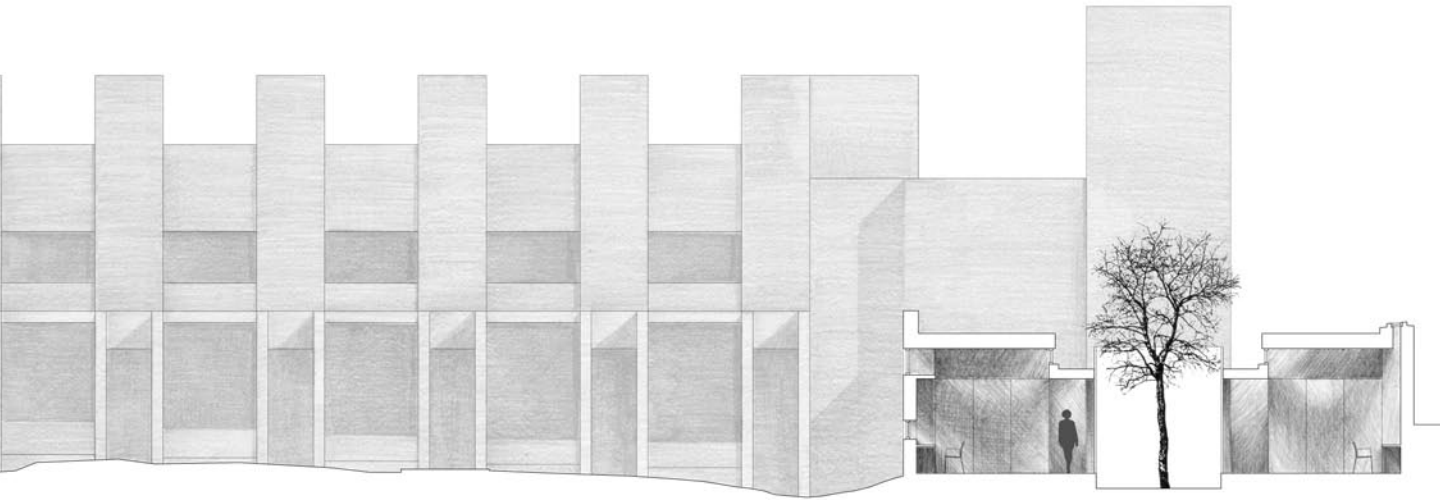


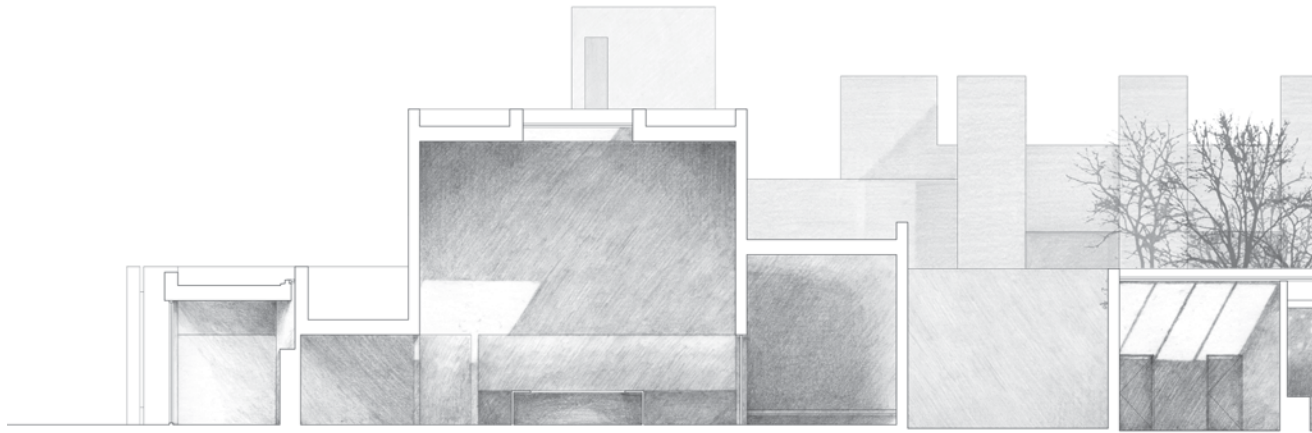
Section through Main Hall and lightwell with tree Scale 1:200



Section through Kids' area and lightwell with grass Scale 1:200



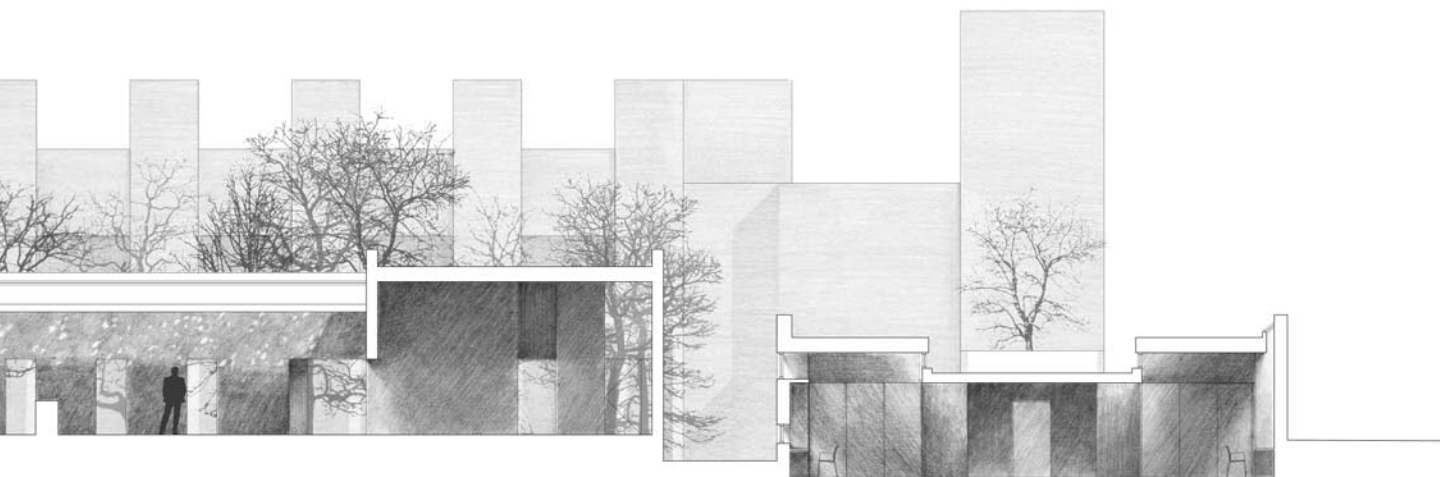


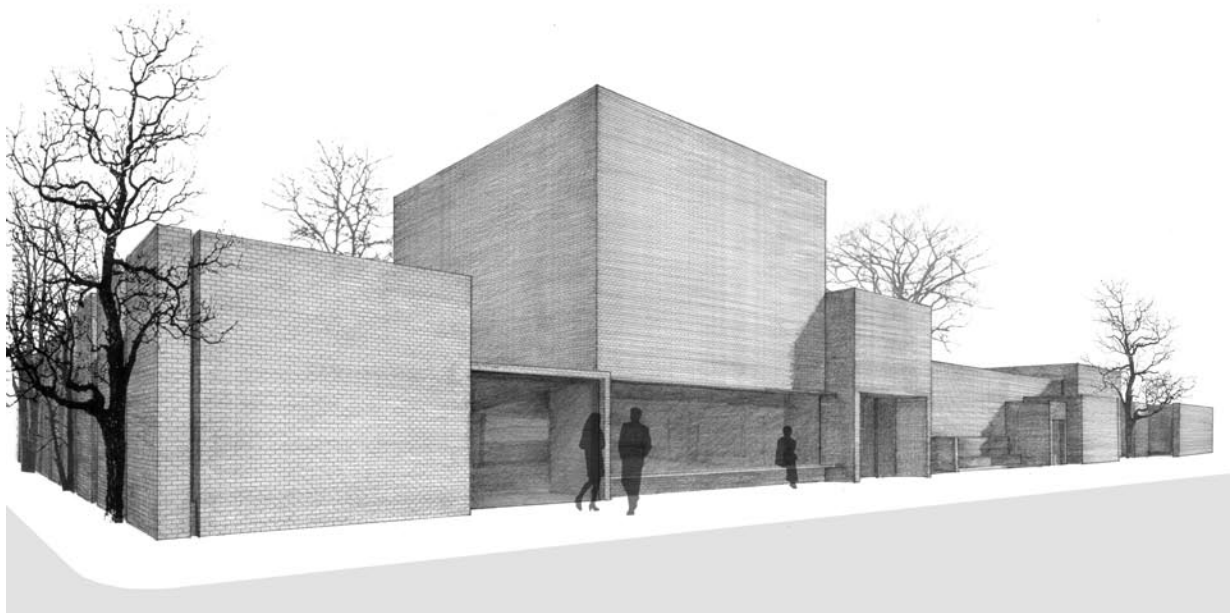


Section through Entry Hall, cafe, and Events Hall

Scale 1:200



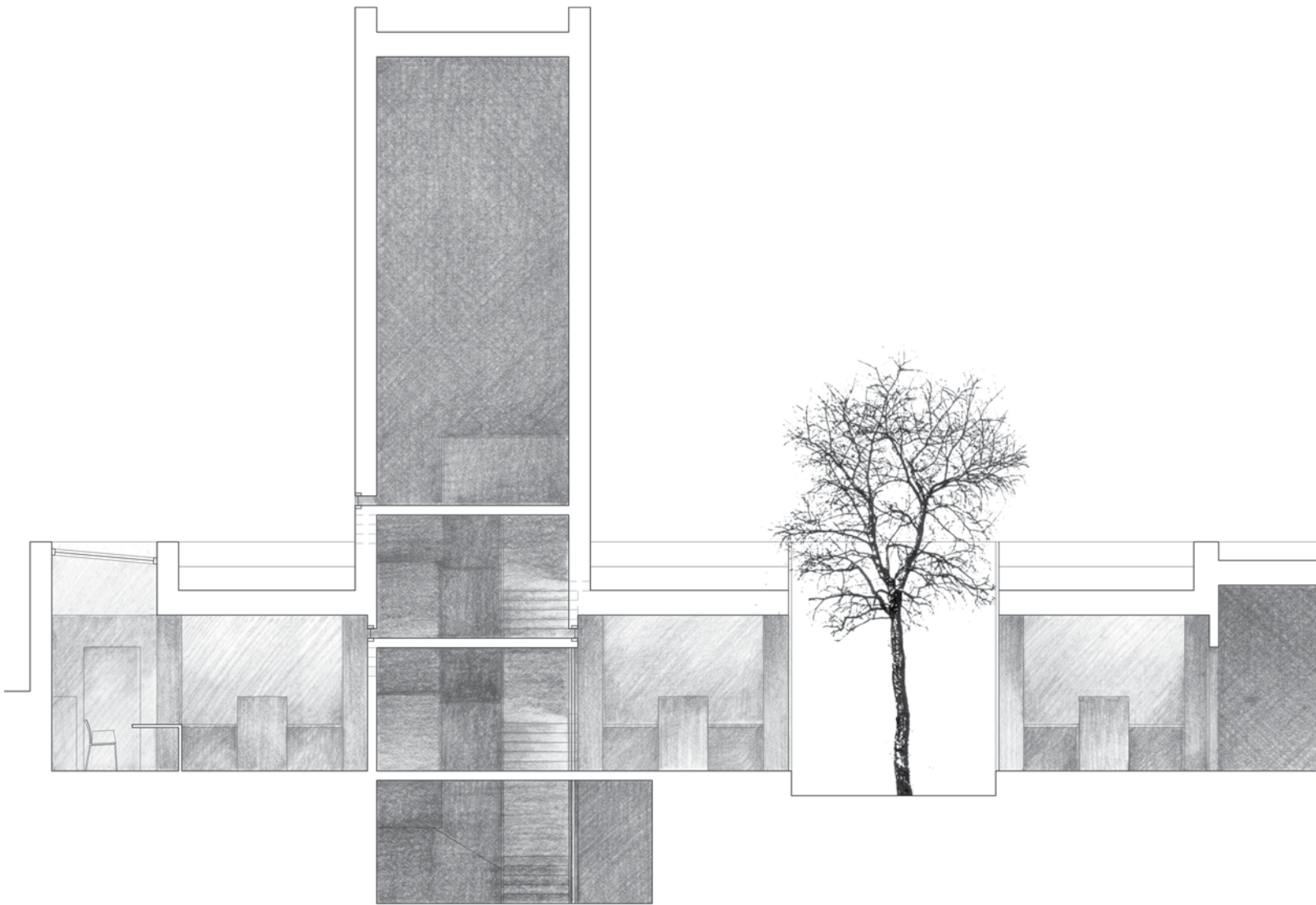




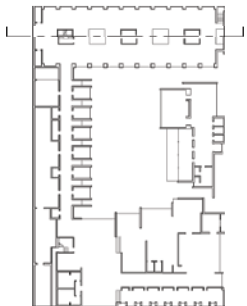
North-west corner
View of the library entry

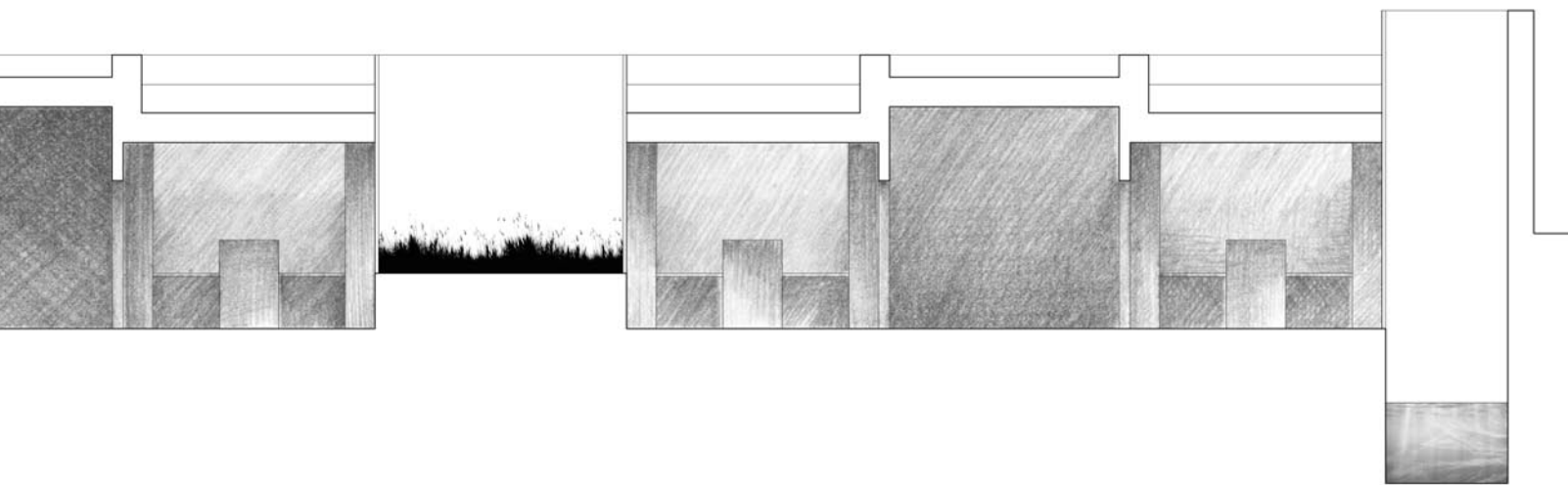


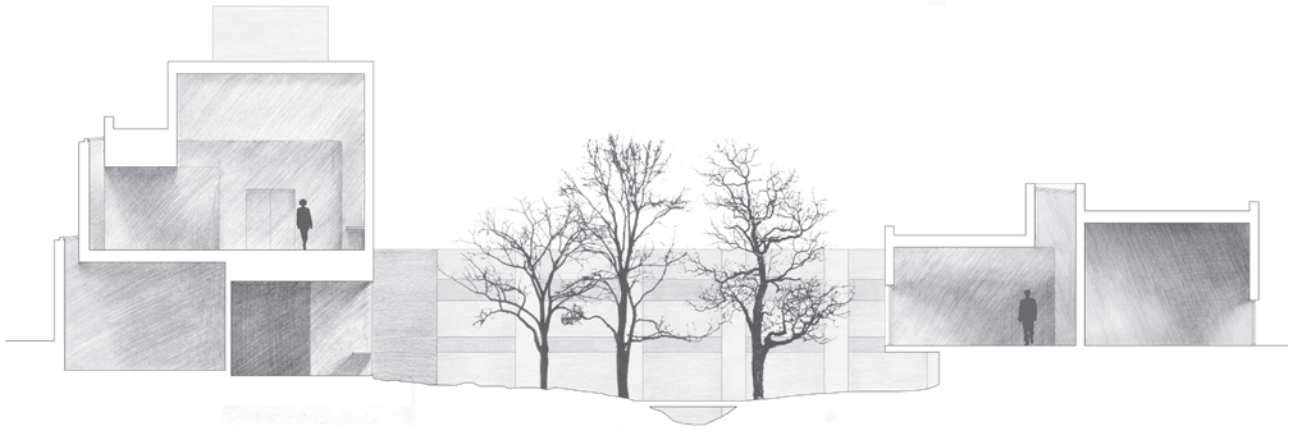
Courtyard
looking north



Section through bookstacks area Scale 1:100

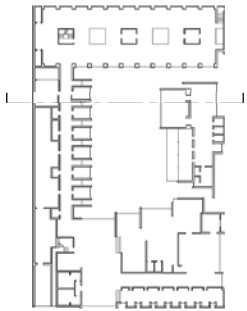






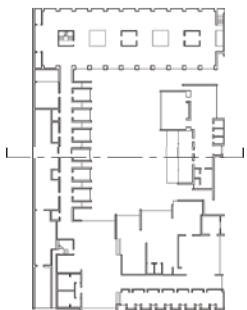
Section through gallery

Scale 1:250



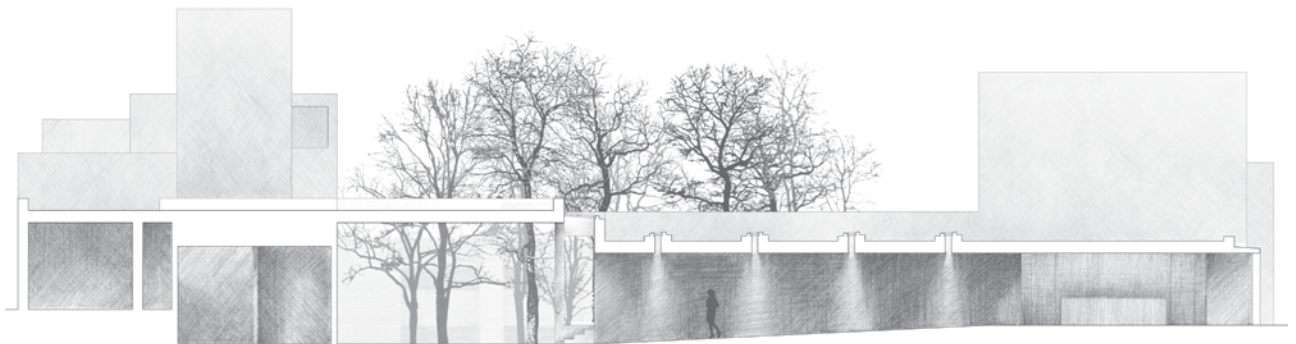
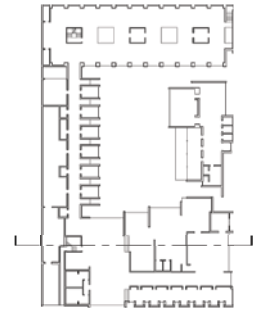
Section through cafe

Scale 1:250

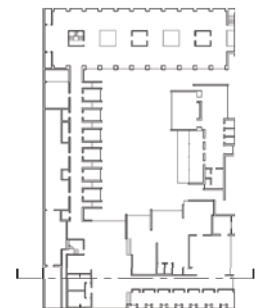




Scale 1:250 Section through main hall, entry hall, and light stair



Scale 1:250 Section through ramp and main hall

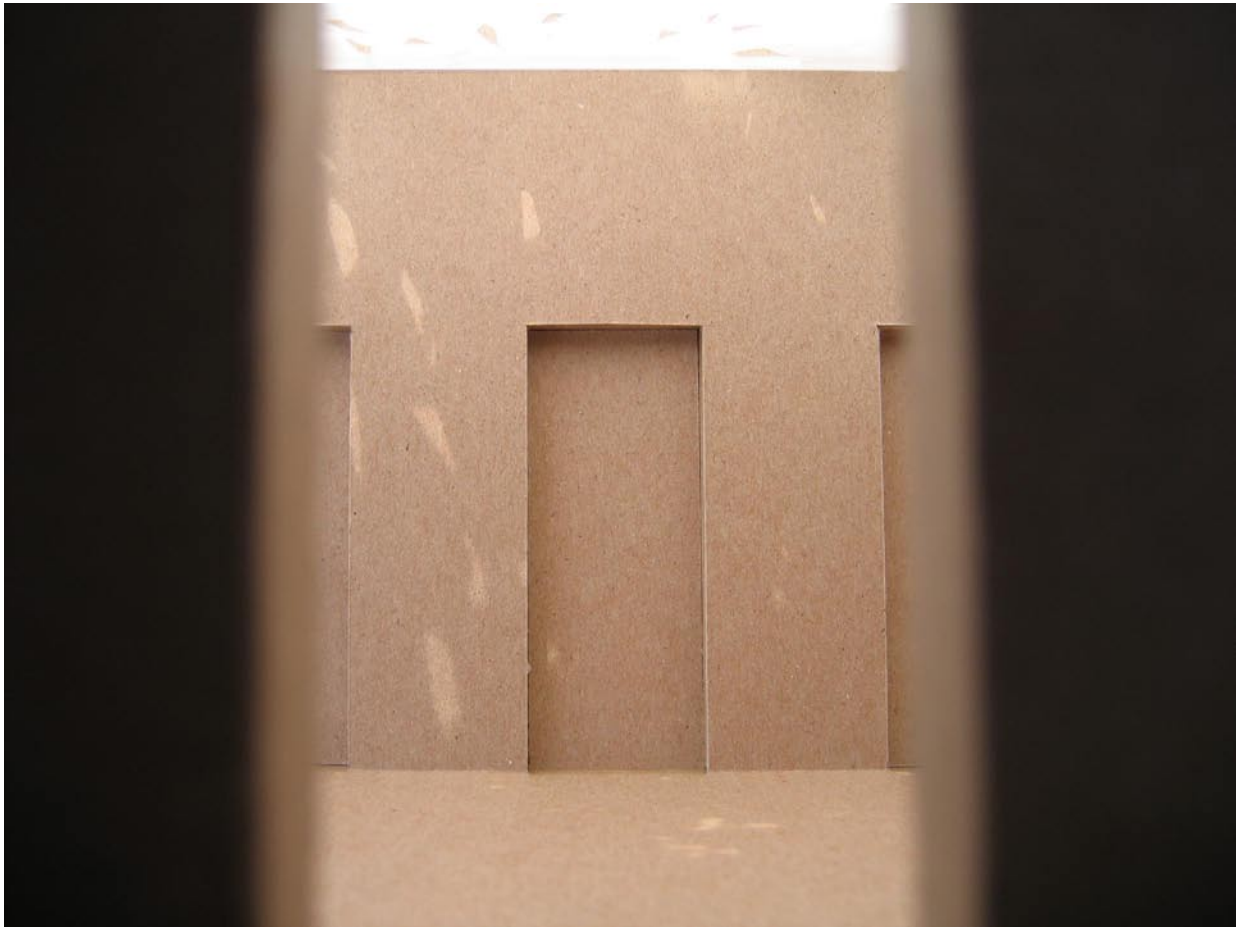




Cafe



Entered off the street-side patio, the café contains a bright main space; the scrim ceiling produces an effect akin to the shadows created by the foliage. Singular in such character for the entire project, this space flows into three others, all varying in the way light is admitted and the atmosphere it creates. Submerged in the semidarkness, parts of these interiors are open to the luscious greenery on either sides of this structure. Meanwhile other openings admit light only, to illuminate perhaps the paintings or other objects of art, but also simply to play on the walls until it slowly dies with the day. Such conditions occur throughout, creating encounters with light itself.





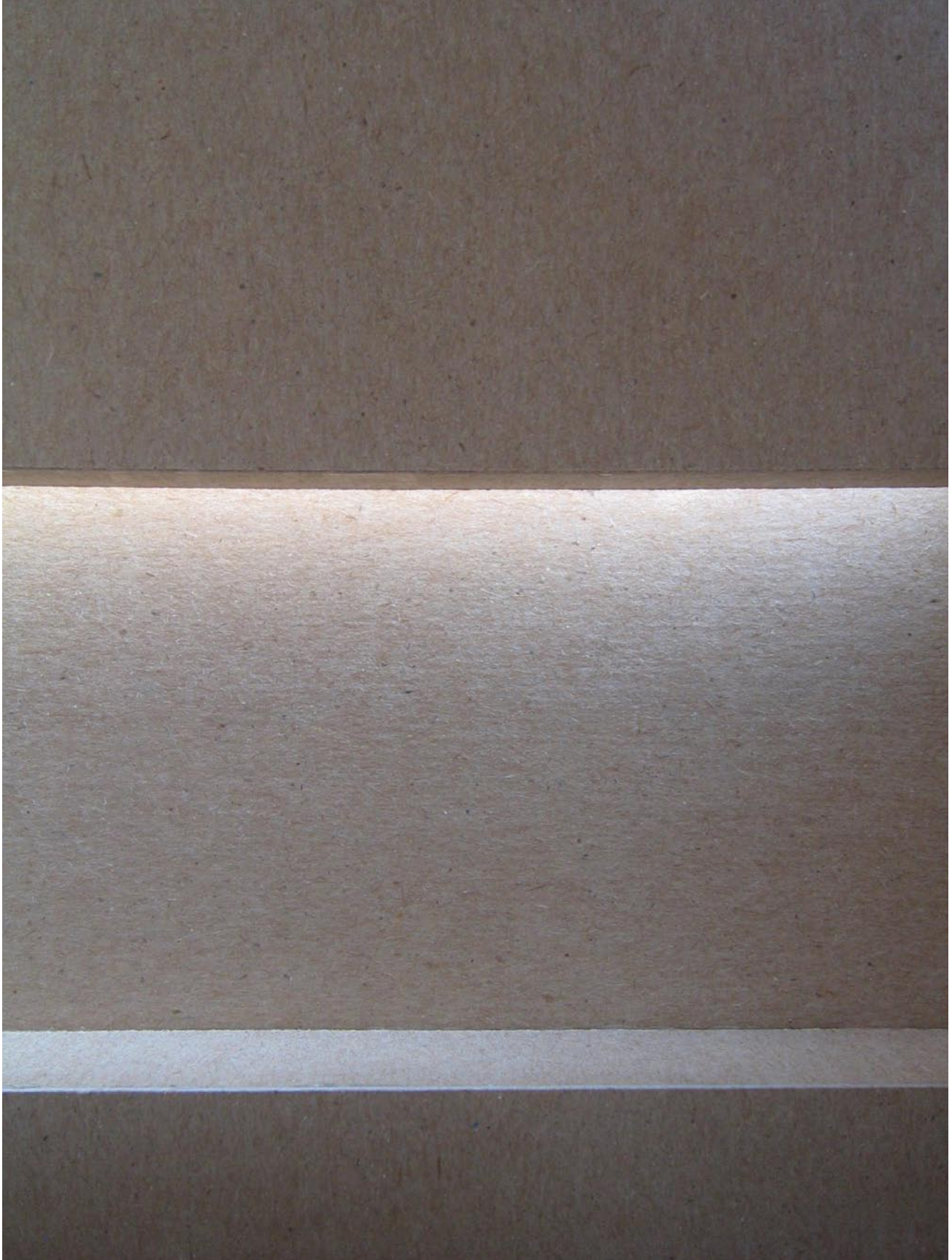


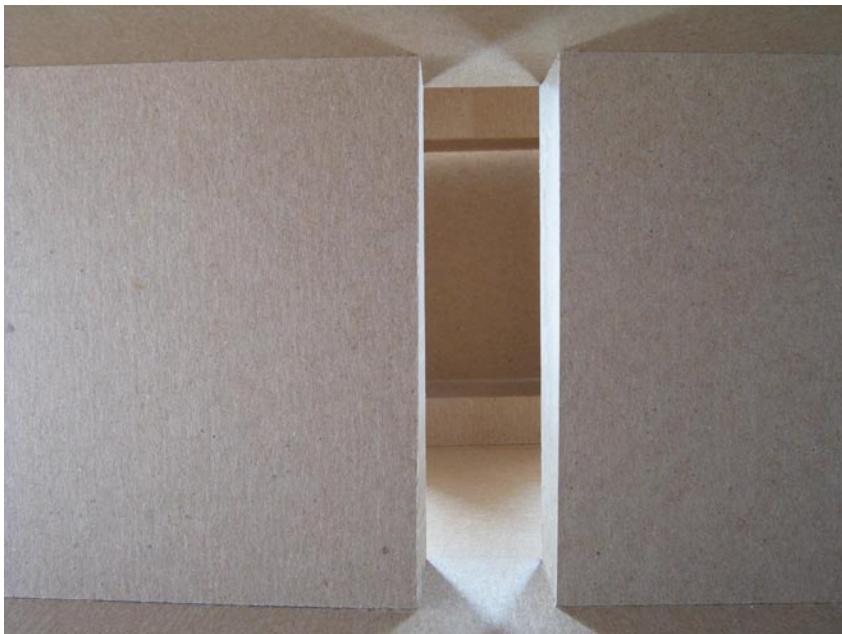


The library itself envelops two kinds of spaces: community spaces that belong to activities aside from reading and more customary spaces of reading and study. The first are almost entirely enclosed in one wing, lit amply but with a variety of conditions from niches of shadow to bright sunlight streaming in, filtered by the trembling leaves of birch trees. The organization creates loops between the Pantheon-like entry hall and the main hall. The connections between these all offer a different experience in terms of light, in one case, between the ramp and the audio-video area, overlapping while adding more layers of light and shadow play to its neighbour. The two halls function as two anchors – as the threshold and the destination.

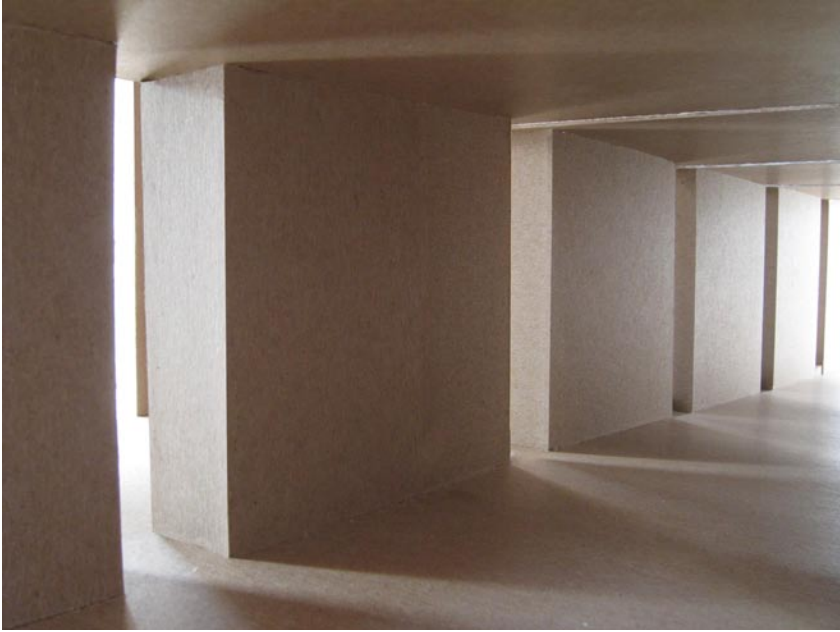


Entry Hall - checkout









Ramp to Main Hall



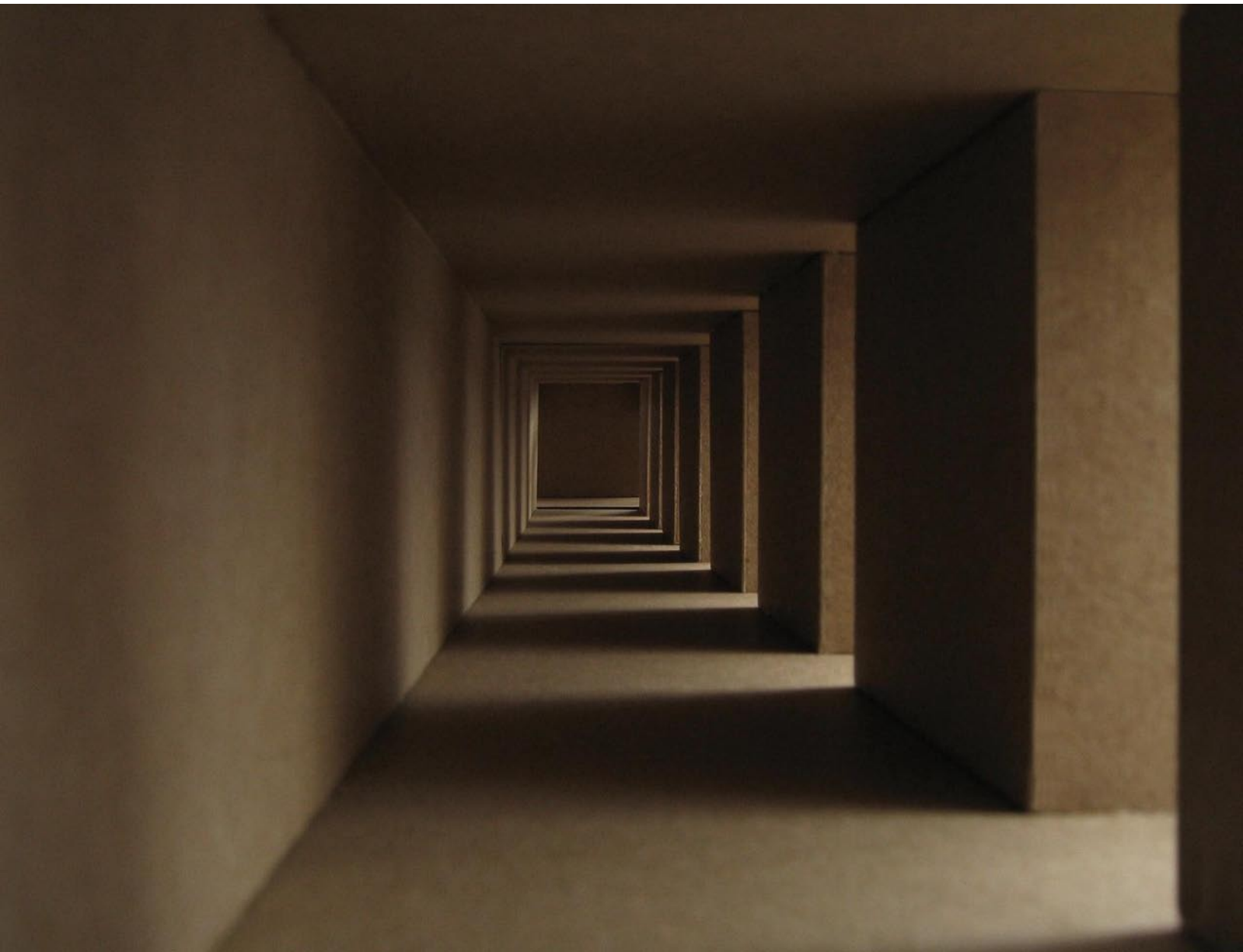


Audio and Video area





Ramp to bookstacks

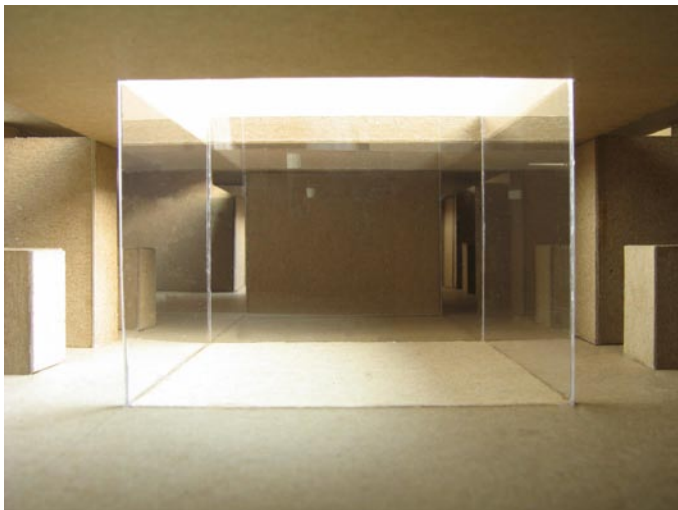


For the reader or the scholar, the journey continues further, and literally, deeper into the building. One leaves the activity of the main hall through a low entry off to the side in the corner. Beyond it, is the ramp inspired by the cave of Sybil. Shafts of light sharply band the long space. The unknown too is present in this case: the only thing visible ahead is a darkened wall. The bookstacks, in this case, hold the mystery and the unknown. Here the darkness and descent combine to invert the metaphors of knowledge - that of illumination and ascent.





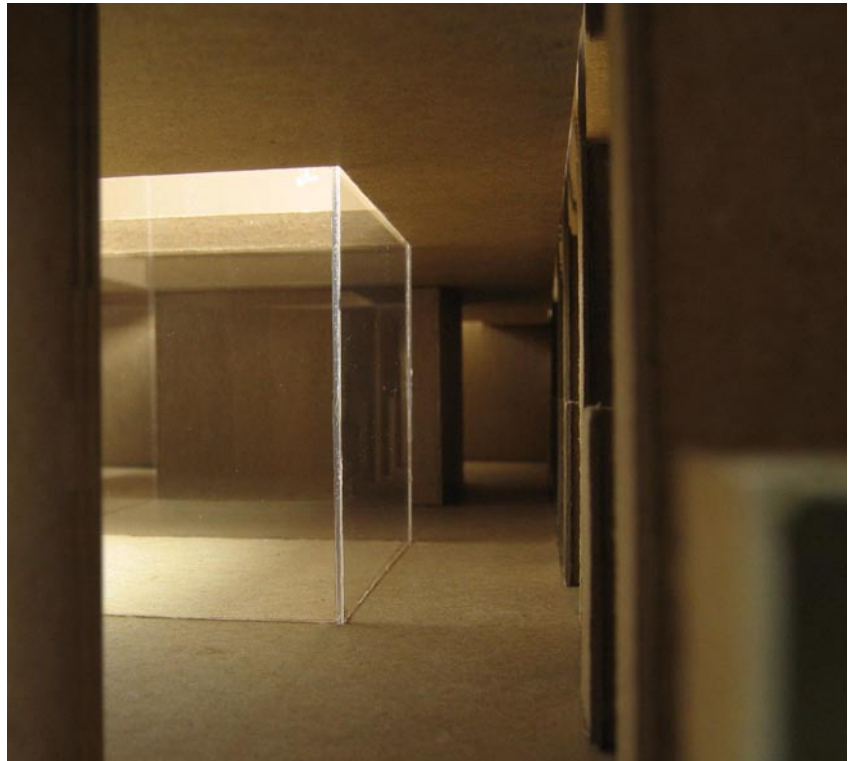
The bookstacks inherently and intentionally break up the space defying a totalizing experience and an encompassing gaze. Instead, the space is broken into many niches containing desks in some and benches in others, all with individual sources of illumination creating pools of light where the relationship of man and the book is mediated and aided by it. Four openings along the central axis create points of focus and encounter with light as well as with other visitors. After picking up a book, one can sit down by the lightwell. These are all similar in form but all offer a view to a different condition, a tree, grass, a waterfall, which in turn modulate light to create different character of light for the spaces around them. Enclosed spaces alternate with lightwells reinforcing the brightness of one kind and the murky shadow of the other.



Axis of lightwells and dark spaces

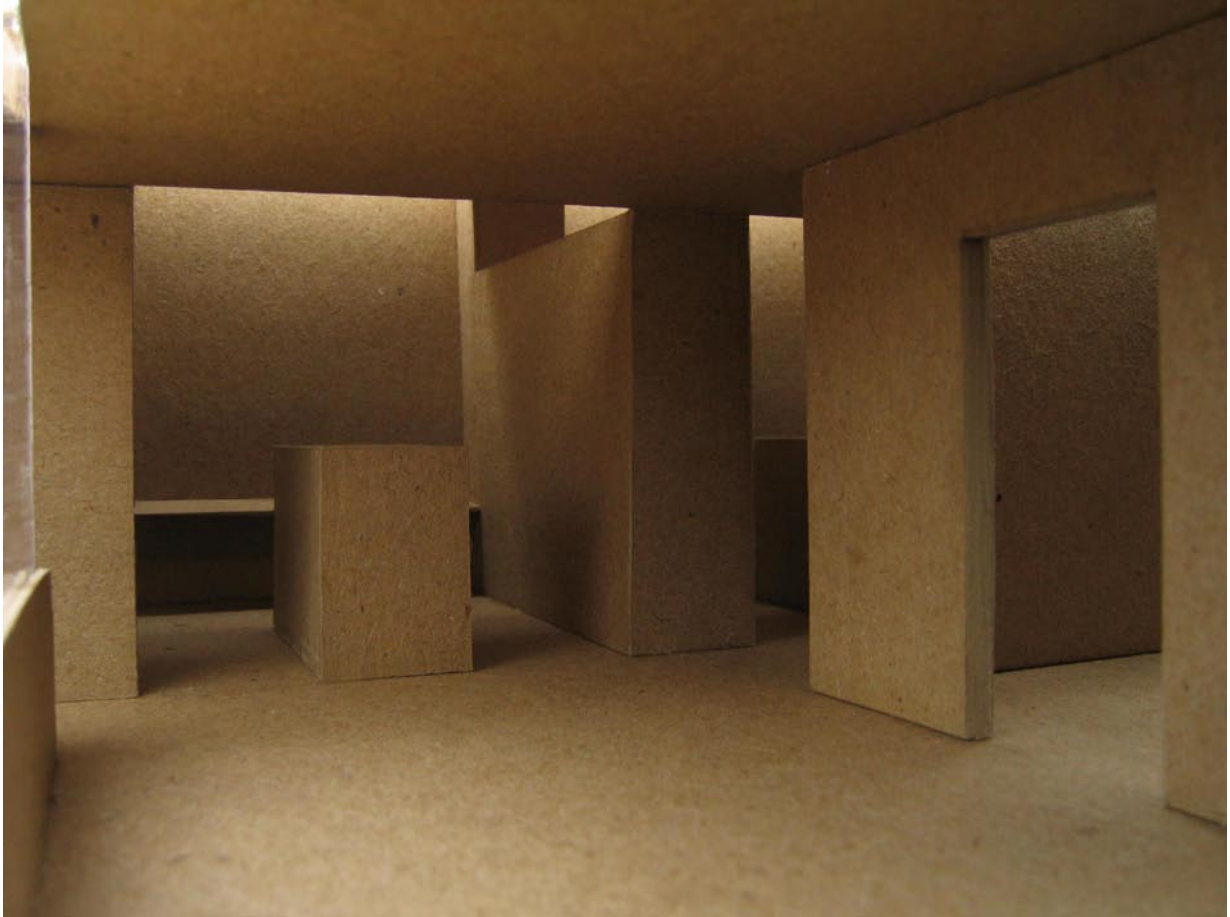


Courtyard lightwell





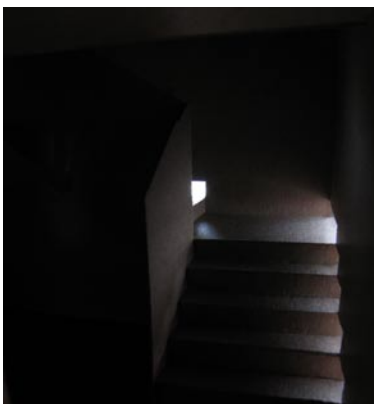
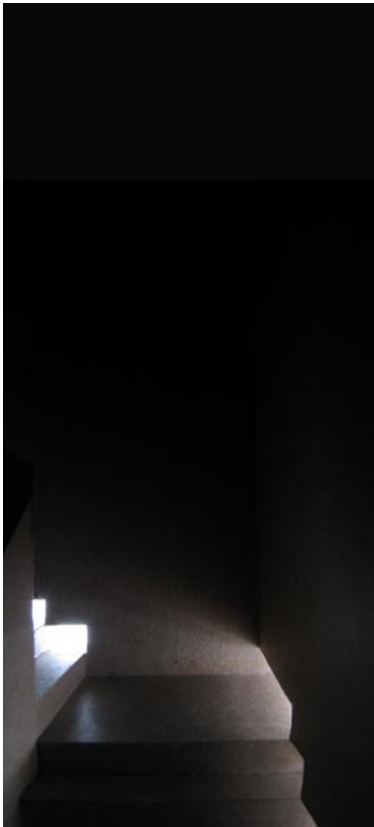
Lightwell with fountain



Stacks next to copy room



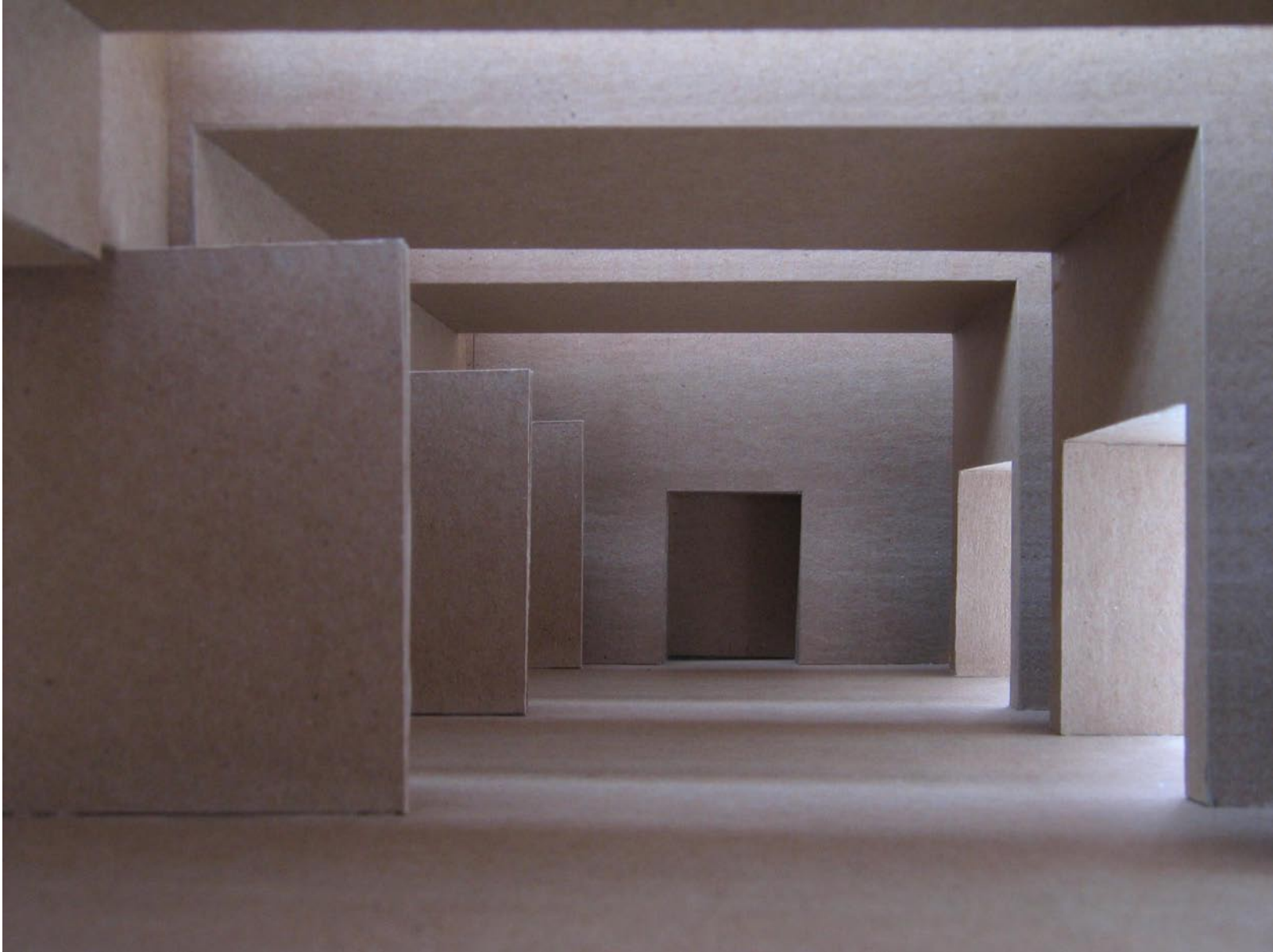
Desk between stacks

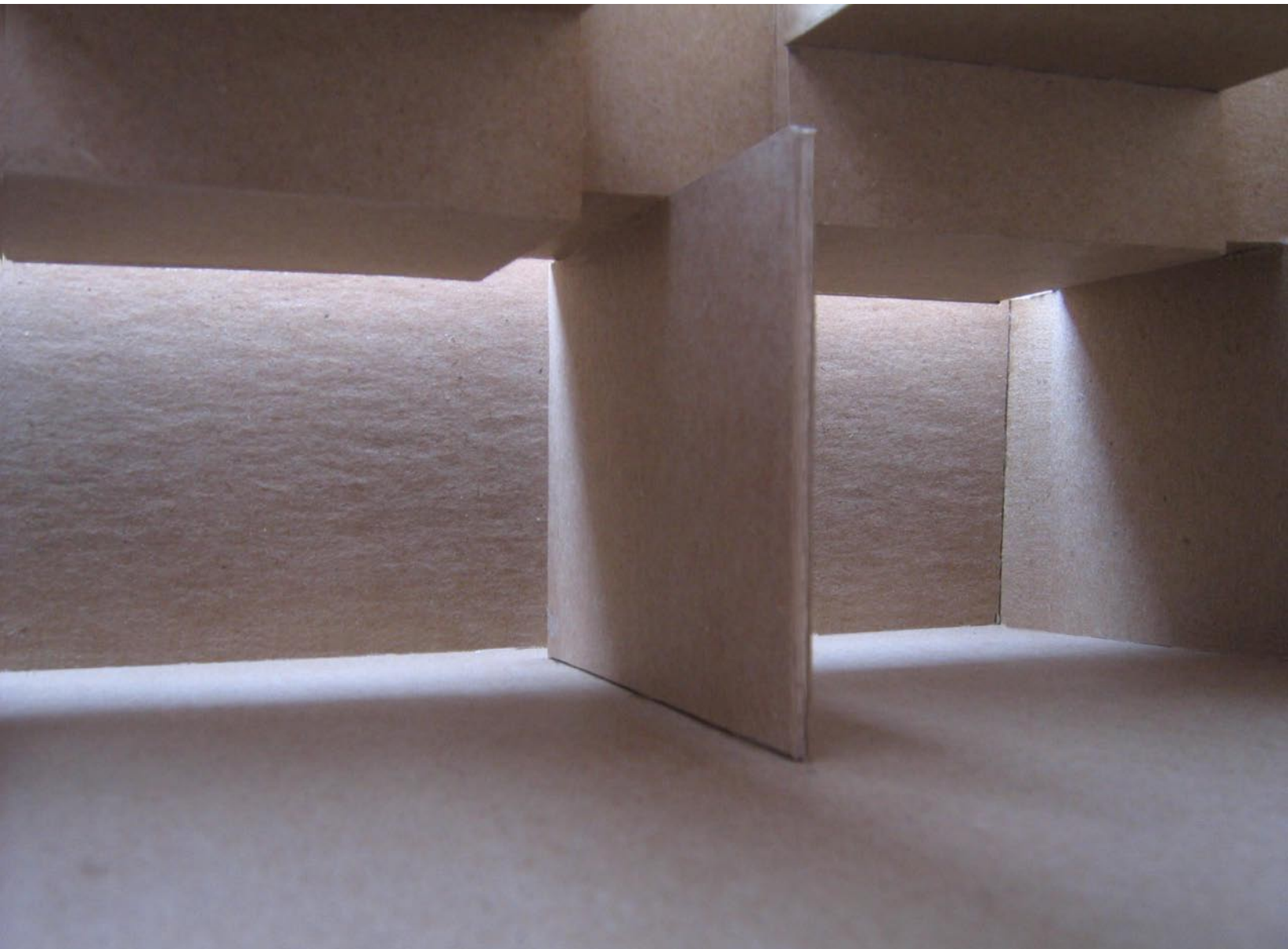


Ascending dark stair

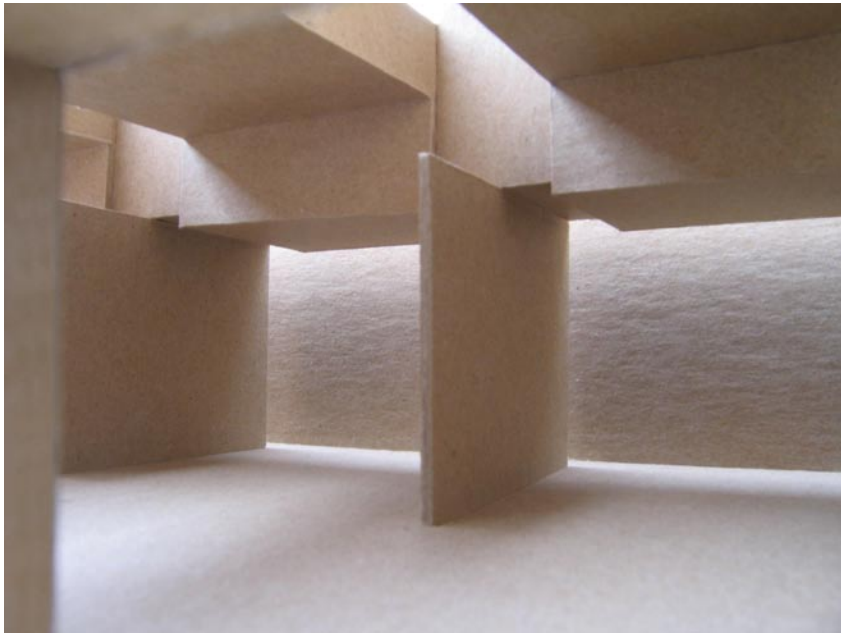
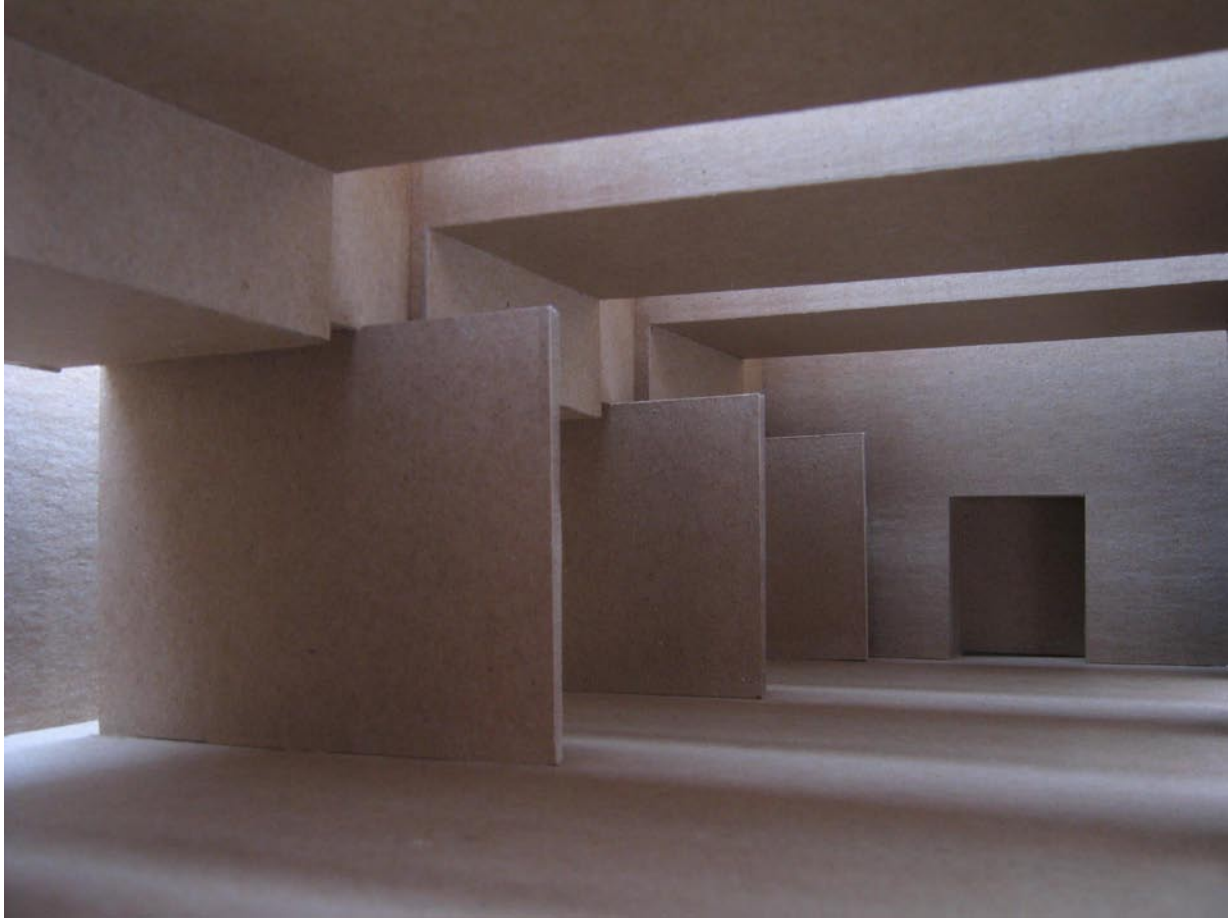


The shadowy interior of bookstacks area is in close proximity to the bright study hall, a place of enlightenment, only a few flights up. The most expedient way to reach it is by the nearby stair, yet the stair delays the arrival. The darkness of the stair is interrupted by openings that illuminate the steps only; the mechanical act of rising thus jogged into consciousness. The darkness extends below and above, the upper reaches of the stairwell lost in blackness.





The study hall is bright by contrast, and is indeed well lit but not bright. The space is modeled with shades and tones, lacking either darkness or bright light, contrast or explicit dramatics. One becomes aware of this particularly when descending the opposite staircase, where the translucent glazed envelope glows with the light of the sky, occasionally streaked with the sun's rays, immersing one in the light. The inverted sequence of travel and, so, of the stairs, too, invigorates one's imagination and consciousness of experiencing light and shadow. Even if one only used the light stair that can be entered as a glowing box in the main hall, the changeability of light would be apparent as the stair assumes not only the colour of the light and the sky and the brightness, but also acts as the sun's keeper through the orientation of its apertures, capturing the sun's travel across the sky.

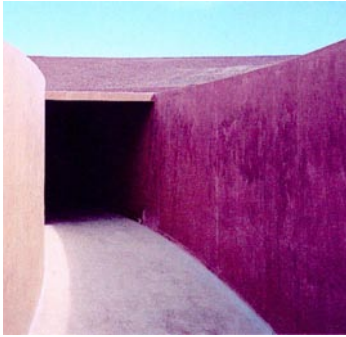






Looking up in light stair





Conclusion

James Turrell's Roden Crater serves to connect man the celestial activity of the sun, moon, and the stars, in the spirit of ancient rock calendars or ziggurats "establishing a tie that modern man has all but forsaken."¹ A massive earthwork and architectural complex is enclosed within an old volcano's crater. Within it a series of spaces serve explicitly for viewing the sky, the heavenly bodies, and the effects of light. Like the viewing of the celestial events, light too, is a way to directly connect to the cosmic vault. The massiveness of the earthwork alone calls to attention the significance Turrell places on comprehension of the greater universe and of man's relationship to it. Its immensity is beyond one's daily experience, placing one squarely in context of the greater natural order: "I did not want the work to be a mark on nature, but I wanted the work to be enfolded in nature in such a way that light from the sun, moon and the stars empowered the spaces."² A life's work for Turrell, it is a culmination of working with light and space, creating a deeper and more immersive experience of light and, in turn, of nature:

Light is a powerful substance. We have a primal connection to it. But, for something so powerful, situations for its felt presence are fragile. I form it as much as the material allows. I like to work with it so that you feel it physically, so you feel the presence of the light inhabiting space. I like the quality of feeling that is felt not only with the eyes. It's always a little bit suspect to look at something really beautiful like an experience in nature and want to make it art. My desire to set up a situation to which I take you and let you see. It becomes your experience. I am doing that at Roden Crater. It's not taking from nature as much as placing you in contact with it.³

It seems appropriate then that Turrell, after decades of engaging with

1 Deborah Menaker Rothshchild, "James Turrell," in James Turrell and Deborah Menaker Rothschild, *James Turrell* (Williamstown, Mass.: Williams College Museum of Art, 1991), 12.

2 James Turrell, *James Turrell: Air Mass* (London: South Bank Centre, 1993), 58.

3 *Ibid.*, 61.

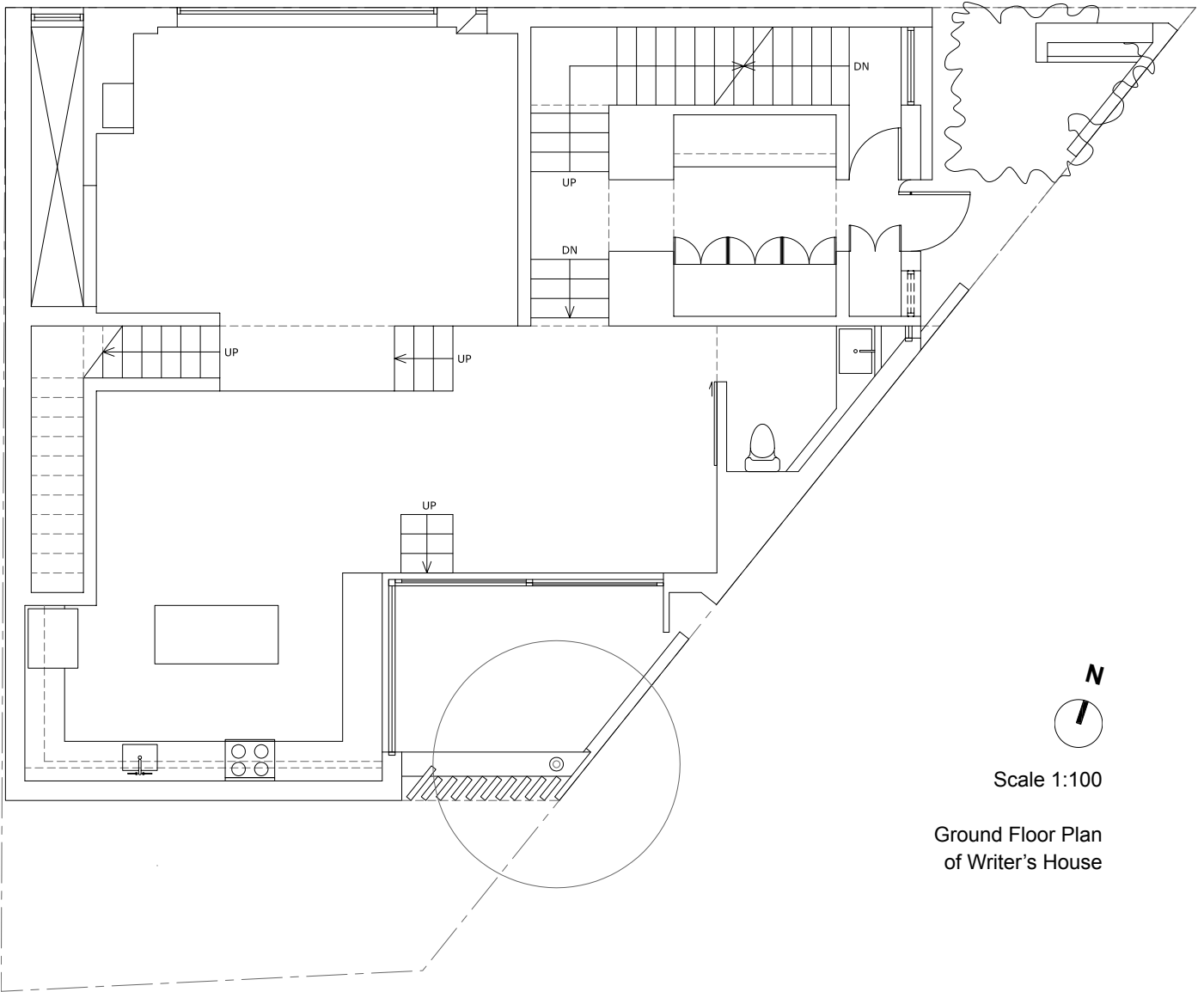
nature of light, perception, and experience in his installations, sees beyond light's physical immediacy to seeing it as an approach to identifying one's place in space as well as in time through built form.

In the two design projects, there is both a fertile emptiness and a sensory richness that lead one to engage closely with the corporeal world, and with one's architectural environment, thereby enriching everyday experience and making one feel more "alive". This kind of deep relationship between light and architecture can develop only if opportunities to do so are consciously designed. Light is admitted to architectural spaces as a matter of course, but few architectural spaces are consciously designed to engage with light. A careful way of handling it is necessary to emphasize its immediate presence and its effects. Making light integral to the space and designing it to become a focus of the space emphasizes all that light has to offer – aesthetically and otherwise. While it can reveal architecture, architecture, in turn, can reveal light: its meanings, significances, and roles. An assessment of light's significance reveals not only the failure to value light in all its forms – from abundant bright light to its absence, darkness, and all the subtle tones in between – but also the ontological identification it can foster. By understanding these implications, as revealed through study of the historic relationship between architecture and light, in turn, one can better understand present relationships and infer a future course by seeing light as a signifier, an agent, and a source of inspiration.

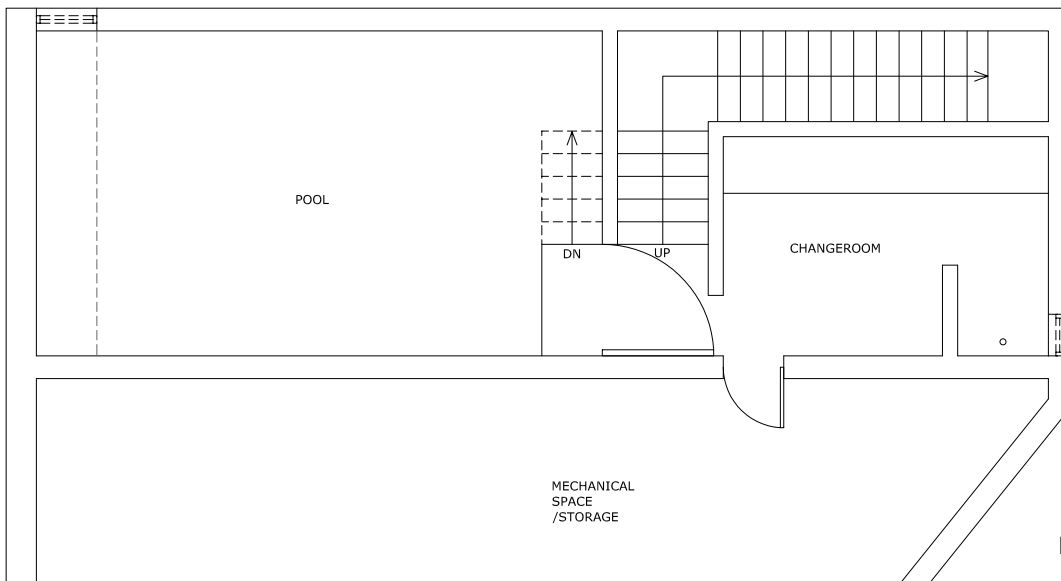
The earlier meanings associated with light were rejected by subsequent generations for their cultural associations, but they were not replaced by equally profound values. Besides revealing light's phenomenal and evocative richness through architecture, light's worth in architecture may be repositioned as an instrument of developing a more intimate relationship between man and the natural environment. Although essentially ecological, this fuller engagement with light would advance beyond current sustainable practices relating to light, into a deeper shared cultural and ethical significance. Light is an agent of this understanding on many scales, from architectural to cosmic. Through its character, presence, and infinite constancy it denotes man's place in relationship to space, his place in the cosmos and in time.

Appendix

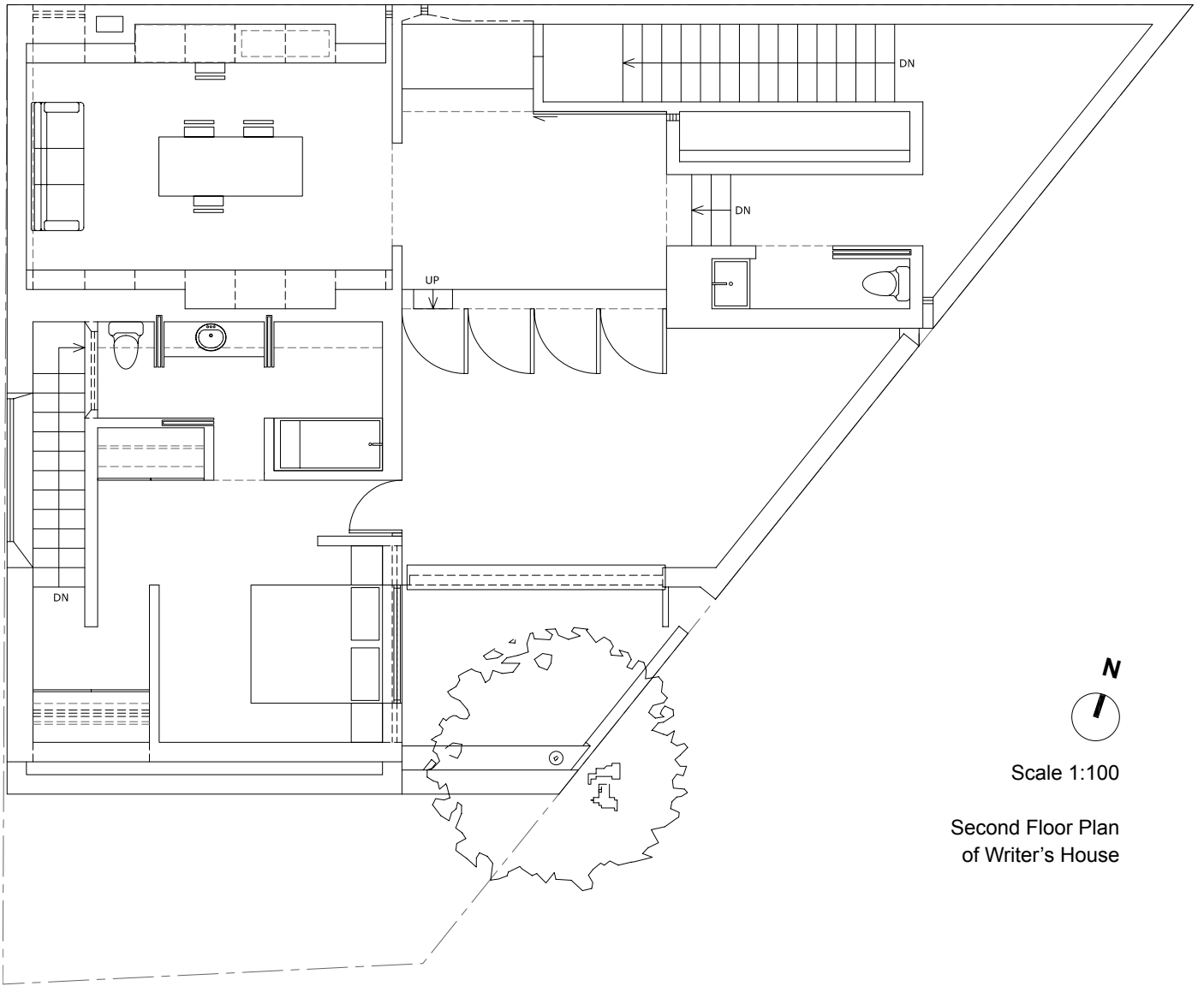
Reference drawings: plans for the house and the library projects.



N
 Scale 1:100
 Ground Floor Plan
 of Writer's House

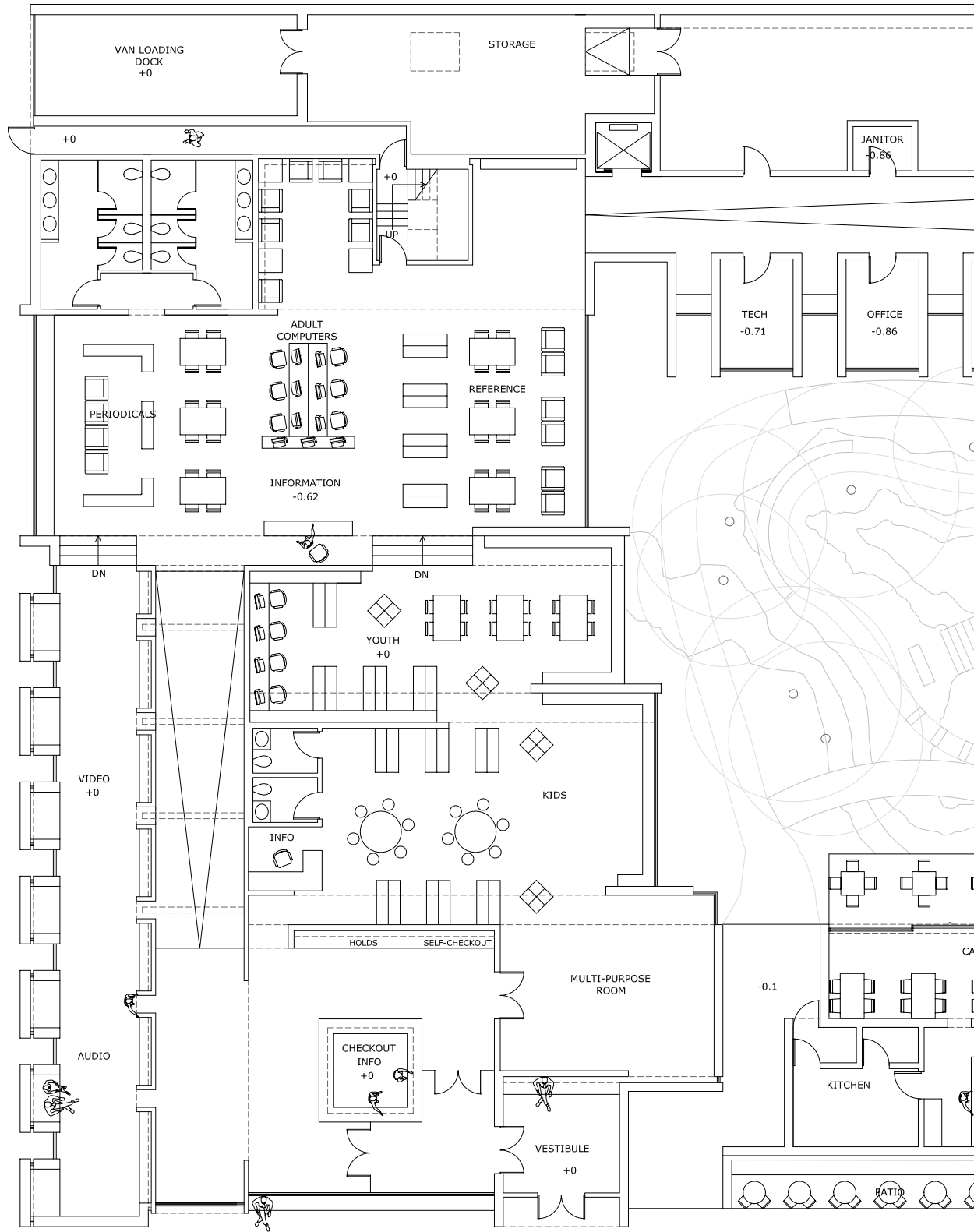


N
 Scale 1:100
 Basement Floor Plan
 of Writer's House



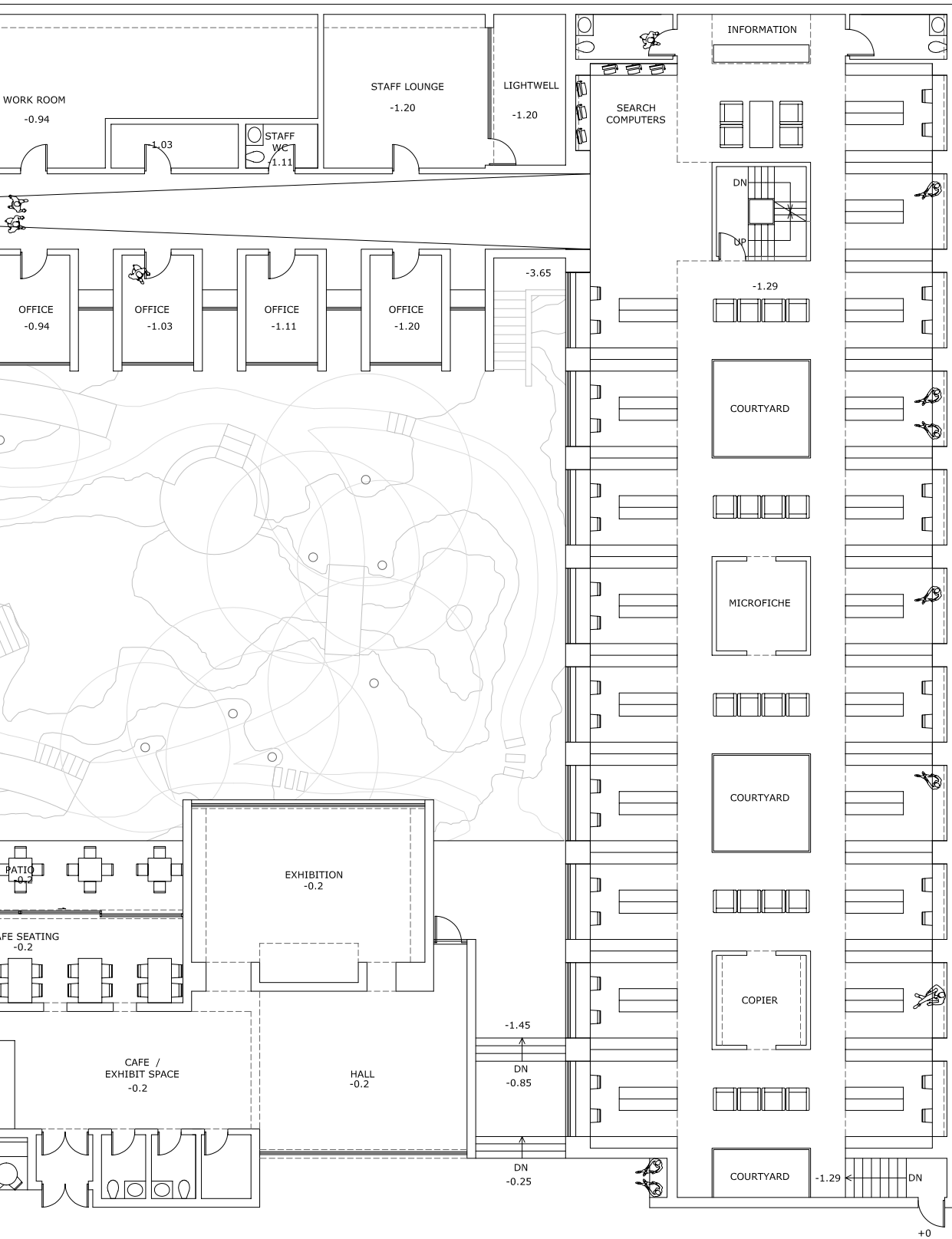
Scale 1:100

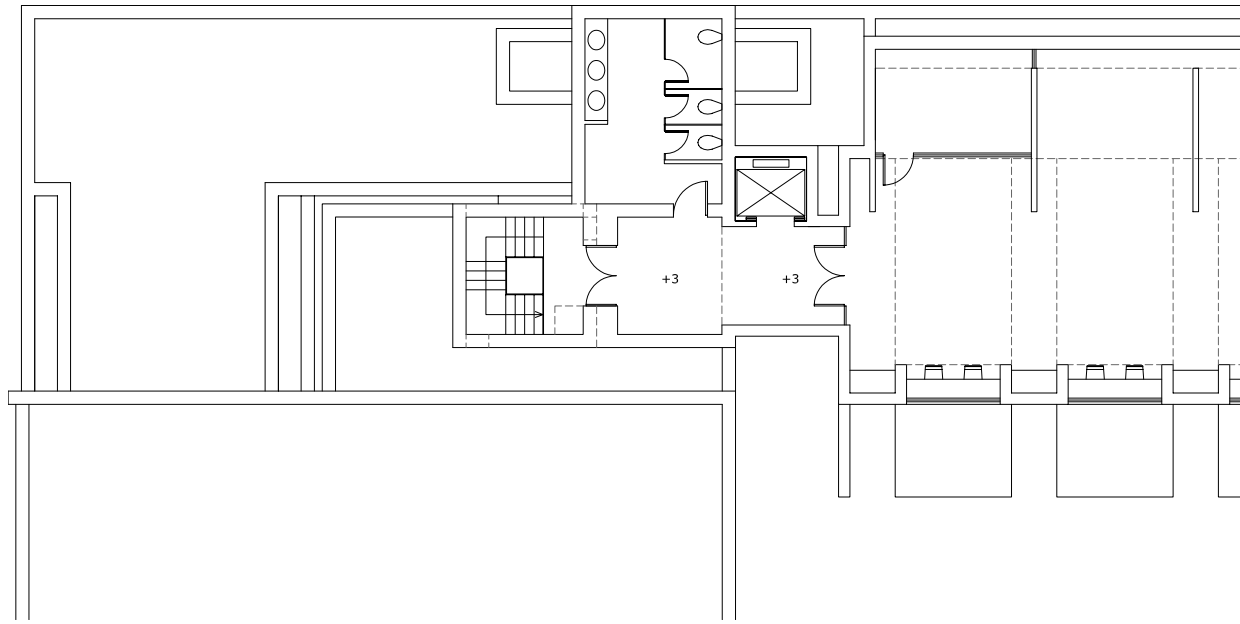
Second Floor Plan
of Writer's House



Scale 1:200

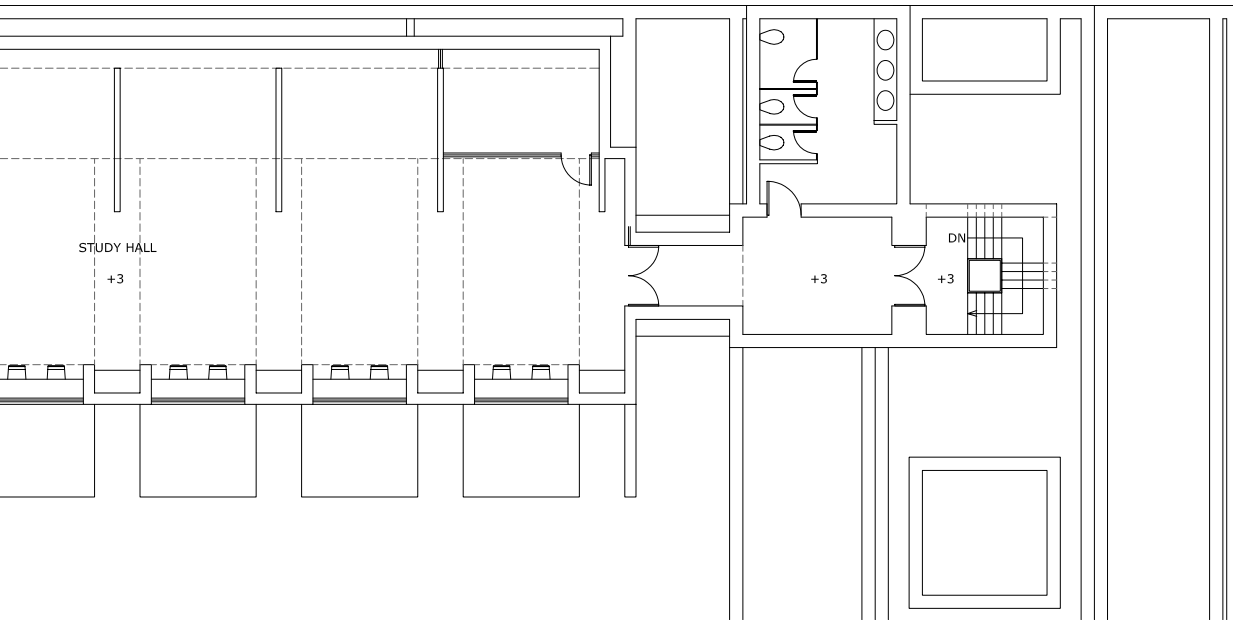
Ground Floor Plan of the Library





Scale 1:200

Second Floor Plan of the Library



Bibliography

For convenience, sources - both cited and consulted - are divided into categories. General reference sections includes applicable works on light as well as on architecture. Following that, the categories parallel the structure of the thesis text. The last category includes other consulted works that sit outside of any preceeding sections.

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