

Clouds and Sky Ceilings: Landscape symbolism and the architectural imagination

John Roberts

University of Newcastle

Vincent Scully said in 1969, 'the first element of architecture is the natural world, and the second element is everything manmade. In that relationship between the manmade and the natural, the metaphysical wholeness of architecture is always seen.' Gottfried Semper, in a footnote in *The Four Elements of Architecture* (1852), proposed that large indoor spaces (theatres, auditoria, cathedrals) are, historically, external spaces—roofed atria, courtyards with ceilings: 'there is actually no significant architectural form that did not arise from the original concept of the court.' Semper's argument triggers speculation on the methodology of architecture, 'the architectural imagination': perhaps the great interior spaces of historical architecture (the Pantheon, Hagia Sofia, Chartres), do not merely suggest the outdoors, but may be understood as exterior spaces, enclosed by symbolic ceilings. At different periods through the twentieth century Erik Gunnar Asplund, Alvar Aalto and Jørn Utzon—all famously aware of landscape—contemplated the problem of the relationship between the manmade and the natural. Their methods are exemplified in the representation and symbolism of clouds and sky in Asplund's *Skandia Cinema* and *Stockholm Public Library*, Aalto's *Viipuri* and *Seinäjoki* libraries, and Utzon's *Bagtsvaerd Church*. The ceiling of the honorific space in a public building is a major programmatic and aesthetic element, an artifice of conceptual, intellectual, technical and perceptual daring; it would seem to merit investigation, as realized in three related periods of twentieth-century architecture. Semper's argument may also be used to reflect that the respect shown by Asplund, Aalto and Utzon for historical models may have its roots in natural, as much as cultural, aesthetics. This paper explores the poetics and aesthetics of the sky ceiling. It discusses sky and clouds as natural phenomena, architecturally represented in ceilings in works by Asplund, Aalto and Utzon. It refers to Colin St John Wilson's ideas of *Natural and Artificial Imagination* to discuss how the aesthetic phenomenon of the sky ceiling, combining landscape and history, demonstrates the scope and authority of the architectural imagination as it mediates between artificial and natural worlds.

Introduction: roofed atria and the natural world

Gottfried Semper suggested in a footnote that large indoor spaces (theatres, auditoria, cathedrals) are, historically, external spaces—roofed atria or courtyards with ceilings: further, he asserted, 'there is actually no significant architectural form that did not arise from the original concept of the court.'¹ Semper's argument triggers speculation on the methodology of architecture; his proposition prompts speculation that outdoor space has had a formative role in the development of aesthetic sensation in architecture, and of its methods in general. Semper continued:

Even the Gothic cathedral was a vaulted basilica, that is, a court with its central open space interiorized by placing a high roof over it. The Gothic architects were fully conscious of this meaning, as shown by the tracery of the triforium and the azure background of the high central vault decorated by golden stars. Even the antique Pantheon and the Byzantine domes are nothing more than vaulted atria.²

Perhaps if great architectural spaces (Chartres, the Pantheon, Hagia Sophia) can be imagined less as 'rooms' and more as enclosed courts or atria, then they may be imagined as outdoor space, defined and enclosed by ceilings, walls and floors. Their aesthetic significance may also be tied to the outdoor spatiality of natural or landscape settings.

This area has been a topic of historical attention: Norberg-Schulz, for one, commented on the landscape-related metaphysics and phenomenology of ancient, historic and Modernist architecture in books and articles from the 1960s to the 1990s.³ Yet it may be valuable to use Semper's argument to think of large interiors in twentieth-century architecture as 'open space interiorized'; twentieth-century architectural spatiality may be better understood if buildings are seen as vaulted outdoor spaces or roofed atria, with roof and ceiling as built correlates of sky and clouds.

Vincent Scully said in his RIBA discourse in 1969, 'the first element of architecture is the natural world, and the second element is everything manmade. In that relationship between the manmade and the natural, the metaphysical wholeness of architecture is always seen.'⁴ The 'manmade' is by definition the topic of architectural history and aesthetics, the 'natural' apparently less so. This paper aims to investigate the sky ceiling as an element in the aesthetic power of selected works by Asplund, Aalto and Utzon. The historical literature cites the value of both nature and architectural tradition in the work of these three Scandinavian architects. Colin St John Wilson, in his 1989 essay 'The Natural Imagination' considered the aesthetic sensations of the experience of architecture. His thoughts on the Natural and the Artificial Imagination, and on the ambiguous aesthetic relation of outside and inside space, illuminate thought on architectural methodology.

The paper observes the interweave of inside and outside space, and of natural and artificial elements as an enduring factor in the conception, construction and experience of architecture. As such, the methodology of architecture, or what might be termed 'the architectural imagination', may be considered to consist, at least partly, and at a fundamental level, of an interwoven imaginative fabric of natural and artificial elements.

The Exterior is always an Interior

Le Corbusier, throughout his manifesto *Towards a New Architecture* (1931), surprisingly celebrates not so much rooms and buildings, but looks to outdoor things (aeroplanes, grain

silos, Greek temples, landscape space), and ancient architecture built on inside-outside relationships (the Green Mosque, Pompeian atrium houses, Hadrian's Villa) to underpin his arguments; he uses architecture as a metaphor for landscape: at the Acropolis, 'The elements of the site rise up . . . like the walls of a room.'⁵ Le Corbusier places aesthetic value in landscape and outdoor space; in a section of his book titled 'The Exterior is always an Interior', he observes building and landscape elements co-composed at the Acropolis: 'the temples are turned towards one another, making an enclosure, as it were, which the eye readily embraces; and the sea which composes with the architrave, etc. This is to compose with the infinite resources of an art full of dangerous riches'.⁶ These aesthetically charged 'dangerous riches', observed during his formative 'voyage to the Orient', are of the Mediterranean Exterior—landscape, horizon, ground surface, sky.⁷ The eminence of outdoor space in Modernism's leading manifesto suggests that inside-outside ambiguity is a major trope of Modernist architecture.

Brave new world

In the nineteenth century, after Boullée's and Ledoux's Enlightenment dreams of vast internal spaces, iron and steel became accepted as architectural materials, supporting glass roofs over the great internal spaces in Brunel's Paddington Station (1852-54), Mengoni's Galleria, Milan (1867), and Wyman's Bradbury Building, Los Angeles (1889-93), amongst others. This basic and recurrent type is described by Curtis as a 'stone or brick casket with a metallic frame let down inside it'.⁸

Thus the early Modernist architects inherited, as a precedent for enclosing major internal spaces, the Industrial Age engineered type of a glass-roofed shed, spanning broad spaces, but ultimately offering an unlined room with no ceiling. Labrouste, in his Bibliothèque Nationale, Paris (1868-69), provided a rare alternative, with a fine panelled ceiling and glazed oculi. Frampton uses an inside-outside trope of natural space to suggest that Labrouste 'adopted this slender structure in order to simulate the sensation of reading out of doors'.⁹

Frampton uses historical metaphor to praise Berlage's glass-roofed Amsterdam Stock Exchange (1898) in similar outside-for-inside terms: 'Treated as though they were internal "agoras", the three main exchange halls are top-lit and flanked by galleried auxiliary accommodation'.¹⁰ It could be said that for twentieth-century Modernism the large ceiling was problematic. While the work of Wright, Loos and the Vienna Secessionists contains exceptions, the work of Asplund revealed a consistent capacity to imagine the enclosure of honorific indoor spaces in new and powerful ways that reflected contemporary realities.

Spiritual superstructure and sky ceilings

Erik Gunnar Asplund (1885-1940), whose work spans landscape projects, civic and religious buildings, exhibitions and houses, appears to have had a clear sense of natural outdoor space as it related to and inspired the composition of major internal spaces. Cornell writes, 'the vault of heaven was the ceiling of the visual world. It was his artistic intuition that decided whether the ceiling should actually be formed by the sky itself, by a picture of the sky or by a more abstractly designed space'.¹¹

Landscape and sky were significant elements in the architectural methods of Asplund and fellow Scandinavians Alvar Aalto and Jørn Utzon. Utzon recalled his Nordic mentors in 1978: 'My family of architects goes back, and Asplund in Sweden and Aalto in Finland have something more than pure functionalism, they

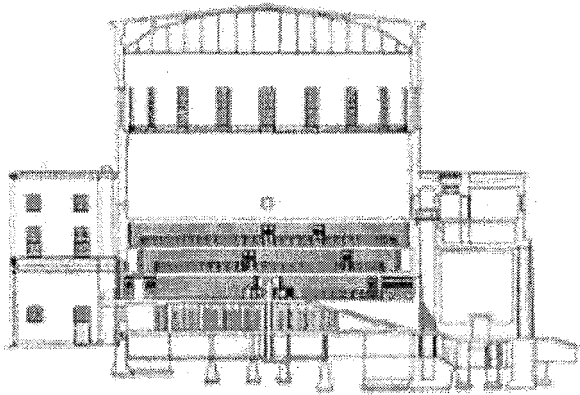


Fig 1. Asplund, Stockholm Public Library (1918-27),

section through stairs and lending room. [Source: Claes Caldenby and Olof Hultin, *Asplund* (New York, Rizzoli, 1985).]

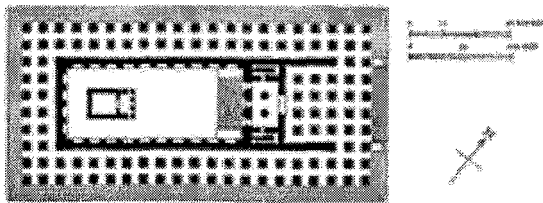


Fig 2. Temple of Apollo at Didyma. [Source: Vincent Scully, *The Earth, the Temple and the Gods: Greek Sacred Architecture* (New Haven: Yale University Press, 1979/1962).]

have sometimes what I would call spiritual superstructure. You call it poetry.¹²

From 1909 to 2009, Asplund, Aalto and Utzon separately drew on history and landscape to generate aesthetically significant ceilings in large indoor spaces. Their work exemplifies the use of landscape elements, even ephemeral sky and clouds, to solve aesthetic and constructional problems. This paper reviews the sky ceiling as an architectural idea in the work of Asplund, Aalto and Utzon and reflects on the outdoors in the creation of indoor space, and the value of natural and artificial elements in the formation of an 'architectural imagination'.

Splendid seriousness: Asplund's sky ceilings

In the Skandia Cinema, Stockholm (1922-23), Asplund chose to turn the ceiling into a sky: an 'unarchitectural' interior, reckoned Asplund, yet, as Cornell points out, 'The architectural solution he had arrived at was in fact an ancient one.'¹³ Asplund recalled the *carneval* at Taormina, Sicily: 'in the evening there were coloured lanterns and funny coloured people and a big band on the square beneath the starry sky up there.'¹⁴ He also noticed Taormina's Greek theatre, 'big in size and effect. The same splendid seriousness as the temples. The arrangement of the open space with the sky above, with all seats focusing on the stage, the plain and the sea.'¹⁵ Asplund in the Mediterranean had found the origins of architecture in the interaction of buildings 'in partnership with what was built on the ground or the ground itself and the sky which is stretched above it – timeless, simple and vast.'¹⁶

Asplund synthesized his design for the Stockholm Public Library (1918-27), from historical sources including the Pantheon.¹⁷ A critic noted the openness of its central lending room: 'the

Pantheon seems to be more of a closed room than the Public Library'.¹⁸ Asplund seems to have drawn aesthetic inspiration from not just the sky vault, but from celestial space. The Library's cylindrical lending room (Fig.1) has a covered ceiling, with tall windows transforming the drum walls into the light source, without the Pantheon's coffering or mouldings, just a 'distantless [sic] space above . . . The room disappears without intermission into the diffuse and infinite.'¹⁹

Asplund created an interior space at the scale of the heavens: he had 'captured the sky once and for all, he understood the whole of its visual import and all of its architectural possibilities. He had expanded the entire contemporary view of architecture, and rediscovered forgotten relationships.'²⁰ Those 'forgotten' relationships were between humankind and the natural world—embodied as the building between the ground and the sky.

Alvar Aalto: an abstract landscape

Alvar Aalto celebrated Asplund's sense of the natural world in his 1940 eulogy for his friend:

We sat in [the Skandia Cinema's] indigo coloured theatre a few days before it was completed. 'While I was building this I thought of autumn evenings and yellow leaves,' said Asplund . . . This contact with nature, man included, was clearly discernible in all of Asplund's projects.²¹

While Aalto shared Asplund's discernible sense of nature, Porphyrios observes that the point of creative departure for Aalto was not directly nature, but nature mediated through the architecture of the past: for Aalto, in architecture, 'the passage from representation to signification had to be harnessed and kept within the realm of a continuing discourse established by history . . . history was to become the sourcebook.'²² Aalto avoided imitation of nature, instead using architecture as intermediary and precedent: Aalto, notes Porphyrios, 'refers to nature by already codified architectural signs.'²³

Aalto also used naïve experimentation in his design method for the Viipuri Library: 'I drew all kinds of fantastic mountain landscapes, with slopes lit by many suns in different positions, which gradually gave birth to the main idea of the library building.'²⁴ Aalto's 1929 neoclassical (first) plan for the Viipuri City Library was a synthesis with nature as its model, while also borrowing from Asplund's library. Weston describes Aalto's scheme as 're-capturing the idea of a space opening out to the sky'; the scheme as built (1933-35) symbolizes further landscape ideas, especially the reading/stack area:

In [Aalto's] mind this was transformed into an abstract landscape, with its 'cliff' walls, and 'plateau' floors . . . The complex stairs and changes of level repeatedly evoke that feeling of promontory and haven, prospect and refuge, which is a basic experience of landscape.²⁵

Weston describes Aalto's reversal of inside and outside qualities: the large public porch was 'a decorated "internal" room outside'; its main library room was a 'roofless' three-storey space, where one is 'surrounded by books, but metaphorically "outside" again.'²⁶

As a precedent for this inside-outside reversal at Viipuri, Weston recalls the Temple of Apollo at Didyma, 'so wide that it was originally roofless and featured a similar flight of stairs at the end of its cella.'²⁷ Inside and outside space are inverted at Didyma. The temple has a complicated entry, through a forest of tall, close-spaced Corinthian columns, then through dark barrel-

vaulted tunnels, into an internal *cella* planted with fruit trees, with a shrine at one end, and blue sky above.

Scully speculates on the presence of the temple in the landscape, and of Apollo in the central open space: 'it would have appeared like a grove of trees against the sky upon the otherwise barren contour line . . . It is in fact the sacred grove of the god. [Its columns] make a true forest around the clifflike walls of the open *cella*.'²⁸ At Viipuri, history and the outdoors combine to give a template for indoor space.

Inside Aalto's Seinäjoki Civic Library (1963-65) the ceiling achieves surprising expressive and technical heights, billowing in three dimensions. The curved concrete ceiling is concave, like the inside of a bright cloud, pouring natural light into book stacks, and dividing spaces and program—upper from lower, adults from children, and prospect (bright light, expansiveness, ascent) from refuge (lamplight, intimate scale, descent). The section restates the books, high windows and broad shining wall of Asplund's library. Weston observes, 'it is difficult not to read this ceiling as a highly abstracted sky. It does not recall the unbroken vault of southern Europe nor the misty veil evoked at Viipuri, but a typical northern sky of shifting clouds and broken sun.'²⁹

The ceiling's fine off-form concrete fabrication, with obvious board marks, intensifies its gravity-defying magic: the cloud-ceiling pushes up between the rectilinear foyer and the fan-shaped south wall. The levels, the light and the changes of scale at Seinäjoki feel like natural landscape, while at the same time having their roots in history.

Utzon: spiritual superstructure

Utzon's Bagsvaerd Church (1967-76) famously contains 'cloud ceilings' within an austere, rectilinear, shedlike form; its plan consists of courtyards and the roofed atrium of the church space. Weston cites Norberg-Schulz's observation that the Danish church is typically 'not only a building but also an exterior space bounded by conspicuous walls that limit the microcosm of the churchyard against the surroundings.'³⁰ Fromonot observes the poetics of the overall scheme: 'the interior was designed to be a luminous and intimate universe; a world of planted courtyards and internal streets, all opening up to the sky and, in the church proper, a cascade of white vaults'. There was also a clear rationale: the geometry of the ceiling 'facilitated construction, amplified the space and controlled the acoustics.'³¹

An Utzon sketch shows a cloud as the church ceiling's key metaphor.³² Norberg-Schulz describes, above the rolling Danish landscape, 'enormous clouds, fairly dark below and with radiant vaults above'; at Bagsvaerd, he observes,

Light was to guide people to the altar without them being blinded by it, and they were to experience the presence of the heavens in Scandinavian fashion. For up here, the sky is rarely a high, light-filled space. It is in fact 'low', and seems to descend, while the light tells us that 'something else' is hidden behind the enormous, undulating banks of clouds.³³

One photograph shows a section of ceiling descending over a narrow sanctuary space—an image of nimbus rather than cumulus, menacingly low and dark.³⁴ This ceiling section is physical and immanent, made not of water vapour but of concrete, offering, as Utzon wrote, 'The reassurance of something above your head which is built, not just designed.'³⁵ So built is the concrete Bagsvaerd ceiling that it in fact supports the metal roof, reversing conventional construction logic.³⁶

Weston notes Utzon's comment that he began by 'seeking a mysterious "space that disappeared upwards"'.³⁷ Celestial materials have been significant in Utzon's imagination, as in that of Western architecture: 'Bagsvaerd was inspired by gazing up at the sky, and reminds us of the link between architecture and nature rehearsed in the metaphoric heavens and Heavens of countless stair-studded Gothic vaults and Classical domes.'³⁸ The Sainte-Chapelle and the Pantheon exemplify sky-gazing architecture; the word *ceiling* has a parallel history, its etymology deriving from French *cell*, canopy; the same word as *ciel*, heaven, from Latin *caelum*, heaven.³⁹

Utzon's church congregates people between a floor platform and a cloud ceiling. Norberg-Schulz points out that Utzon 'in his first sketches . . . posed the question of what it means to be a human being between heaven and earth.'⁴⁰ This would appear to be a sufficient question for any art form; the architectural imagination appears to offer a method to propose significant new realities which can be conceived, drawn, built and experienced by eye and body, and responded to by the emotions.

Natural and Artificial Imagination, and an 'architectural imagination'

The sky-ceilings of master architects ought to be more than self-evidently transcendent; perhaps they may be read as indicators of a deeper aesthetic basis or impulse. Colin St John Wilson discussed architectural aesthetics from a personal point of view in 1989 in the essay 'The Natural Imagination', considering the 'mystery' of feeling 'deeply moved' by certain architectural experiences: 'on the turning of the stair in the portico of the Altes Museum, on the terraces of Garches, in the foyer of the Philharmonie, in the nave of King's Chapel, the impluvium of the House of the Tragic Poet, in the Gallery of the Bradbury Building.'⁴¹

Keen to explain his own visceral reactions to architecture, St John Wilson dismisses 'the abstractions of Vitruvian symmetry' along with learned responses to style, function and structure: 'Quite other responses are at work, a whole array of instinctive reactions triggered by the nervous system and marked above all by the quality of immediacy.'⁴² He cites Geoffrey Scott's notion of an individual's 'physical memory'⁴³ underlying aesthetic sensation, and proceeds to outline a dualistic man/nature framework for architectural aesthetics. Polar concepts of envelopment (by rooms and roofs) and exposure (by façades and open spaces) are resolved into in-between spatial conditions of courtyard, patio, pergola, terrace, loggia, balcony, etc.⁴⁴

St John Wilson proposes the idea of a Natural Imagination—with its 'own lore and imagery [and] its memory, albeit of a more archaic order'; he compares this to an Artificial Imagination: 'the Natural Imagination is the infrastructure of architectural experience. It acts as both initial provocation and sustaining scaffold upon which the intellectual constructs and cultural symbols of the Artificial Imagination are erected.'⁴⁵ He describes a general 'stream of awareness just below the level of day-to-day self-consciousness' that monitors spatial relationships around people.⁴⁶

Conclusion: aesthetics and 'an architectural imagination'

If, following St John Wilson, there may be two primarily formative parts of an 'imagination', it may be viable to describe the aesthetics of 'an architectural imagination', built on the idea of

reciprocity between the natural and the artificial worlds.⁴⁷ Forty argues that Semper's ideas 'made it possible for European architects in the early twentieth century to dispense altogether with the natural model of architecture. Semper was emphatic that the origins of architecture did not lie in nature.'⁴⁸

St John Wilson claims that architecture's aesthetic appeal is linked to 'an order based upon the quality of our experience in occupying real buildings—of being outside or inside or in the in-between-world of the threshold':⁴⁹

We are therefore confronted with the thought that our 'normal' experience of space is shadowed by a parallel narrative spelled out in a body-language that we learnt long before words, and which constantly conditions our sense of feeling safe or threatened, exposed or protected in varying gradations of being inside or outside, or hovering on the threshold in-between.⁵⁰

Architectural elements of courtyard, atrium, impluvium, loggia, terrace, landing and balustrade, as well as vault, ceiling, oculus, etc., appear to demonstrate a deep-seated human desire for measured experience of the outside world, in conditions where people are simultaneously protected and exposed, with options to move between inside and outside.

The aesthetic power of the sky ceiling would seem to testify to a related pleasure of the experience of architectural representation in floor and ceiling of being between natural conditions of earth and sky. St John Wilson recommends that these matters merit serious reflection: 'Architecture, it would seem, is the inescapable condition of our life: we had better know how deep are the roots of that condition.'⁵¹

Yet St John Wilson's argument seems incomplete. He limits contemplation of the Natural Imagination to an anthropocentric idea of the 'body' metaphor,⁵² implying that 'nature' is only *human* nature. Vincent Scully, considering the relationship of architecture to the natural world, regrets 'the blindness of the contemporary world to everything that is not itself, to nature most of all.'⁵³ It seems insufficient for architectural history to continue to regard nature as merely human nature; Aalto implies in his Asplund eulogy that the natural world and human nature are different things, each essential to architecture: 'architecture still has untapped resources and means open to it which draw directly on nature and on reactions of the human psyche that written words are unable to explain.'⁵⁴ The natural world, as the site of human evolution, as a finite resource for human habitation, and as habitat for all living organisms, merits historical awareness and engagement.

The sky ceiling, representing sky, clouds and celestial space in celebrated projects by Asplund, Aalto and Utzon, presents an element of extraordinary aesthetic significance, while also indicating the scope of the architectural imagination, as it mediates between the human and the natural worlds. Further research will investigate the ontology of 'nature', discussed only at an elementary level in the present paper.

Endnotes

¹ Semper, *The Four Elements of Architecture*, 124.

² Semper, *The Four Elements of Architecture*, 124.

³ Christian Norberg-Schulz' works on this topic include: *Meaning in Architecture* (New York: Rizzoli, 1980/1975); *Genius Loci: Towards a Phenomenology of Architecture* (London: Academy Editions, 1980); *The Concept of Dwelling: On the way to figurative Architecture* (New York: Electa/Rizzoli, 1984).

⁴ Scully, 'A Search for Principle between Two Wars', 142-43.

⁵ Le Corbusier, *Towards a New Architecture*, trans. Frederick Etchells (New York: Dover, 1986/1931), 192.

⁶ Le Corbusier, *Towards a New Architecture*, 193.

⁷ Le Corbusier (Charles-Edouard Jeanneret) *Journey to the East [Le Voyage d'Orient]*, ed. and trans. Ivan Zaknic (Cambridge, Massachusetts and London, England: The MIT Press, 1987/1966).

⁸ William J. R. Curtis, *Modern Architecture since 1900*, 3rd edition (London: Phaidon, 1996), 39.

⁹ Kenneth Frampton, *Modern Architecture 1851-1919*, GA Document Special Issue (Tokyo: A.D.A. EDITA, 1981), 28.

¹⁰ Frampton, *Modern Architecture 1851-1919*, 98.

¹¹ Elias Cornell, 'The Sky as a Vault . . . : Gunnar Asplund and the articulation of space', in Claes Caldenby and Olof Hultin, *Asplund* (New York: Rizzoli, 1985), 30.

¹² 'Royal Gold Medallist Jørn Utzon', *RIBAJ*, October 1978, 427.

¹³ Cornell, 'The Sky as a Vault', 27.

¹⁴ Cornell, 'The Sky as a Vault', 27.

¹⁵ Cornell, 'The Sky as a Vault', 27.

¹⁶ Cornell, 'The Sky as a Vault', 28.

¹⁷ Cornell, 'The Sky as a Vault', 28-29.

¹⁸ Cornell, 'The Sky as a Vault', 29.

¹⁹ Cornell, 'The Sky as a Vault', 29.

²⁰ Cornell, 'The Sky as a Vault', 28.

²¹ Alvar Aalto, 'E. G. Asplund in Memoriam' (1940), in *Alvar Aalto: Sketches*, ed. Göran Schildt, trans. Stuart Wrede (Cambridge, Mass., and London: MIT Press, 1978), 66.

²² Demetri Porphyrios, *Sources of Modern Eclecticism: Studies on Alvar Aalto* (London: Academy Editions, 1982), 44.

²³ Porphyrios, *Sources of Modern Eclecticism*, 55.

²⁴ Alvar Aalto, 'The Trout and the Stream' (1947), in *Alvar Aalto in his own words*, ed. Göran Schildt, trans. Timothy Bingham (Helsinki: Ottava, 1997), 108.

²⁵ Richard Weston, *Alvar Aalto* (London: Phaidon, 1996), 64.

²⁶ Weston, *Alvar Aalto*, 35.

²⁷ Simo Paavilainen, 'Viipuri Library—the 1927 Competition Entry', in Weston, *Alvar Aalto*, 35-36.

²⁸ Vincent Scully, *The Earth, the Temple and the Gods: Greek Sacred Architecture* (New Haven: Yale University Press, 1979/1962), 129-30.

²⁹ Weston, *Alvar Aalto*, 184.

³⁰ Richard Weston, *Utzon: Inspiration Vision Architecture* (Hellerup, Denmark: Editions Blondal, 2002), 294; reference is to Christian Norberg-Schulz, *Nightlands: Nordic Building* (Cambridge, Mass.: The MIT Press, 1996), 78.

³¹ Francoise Fromonot, *Jørn Utzon: The Sydney Opera House* (Milan: Electa/Ginkgo, 1998), 210.

³² Fromonot, *Jørn Utzon*, 211.

³³ Christian Norberg-Schulz, 'Jørn Utzon and the "New Tradition"', in *Utzon and the New Tradition*, ed. Martin Kaeding and Kim Dirckinck-Holmfeld (Copenhagen: Danish Architectural Press, 2005), 244.

³⁴ Photograph by Keld Helmer-Pedersen, in *Utzon and the New Tradition*, 245.

³⁵ Jørn Utzon, quoted in caption, in Weston, *Utzon*, 291.

³⁶ Weston, *Utzon*, 288-89.

³⁷ Weston, *Utzon*, 282.

³⁸ Weston, *Utzon*, 298.

³⁹ s.v. cell, ciel, in Walter W. Skeat, *A Concise Etymological Dictionary of the English Language* (New York: Perigee, 1980/1899).

⁴⁰ Christian Norberg-Schulz, 'Jørn Utzon and the "New Tradition"', in *Utzon and the New Tradition*, 246.

⁴¹ Colin St John Wilson, 'The Natural Imagination: An essay on the experience of architecture', *The Architectural Review*, January 1989, 64.

⁴² St John Wilson, 'The Natural Imagination', 65.

⁴³ St John Wilson, 'The Natural Imagination', 65.

⁴⁴ St John Wilson, 'The Natural Imagination', 70.

⁴⁵ St John Wilson, 'The Natural Imagination', 70.

⁴⁶ St John Wilson, 'The Natural Imagination', 70.

⁴⁷ For discussion of inside-outside reciprocity, see Anita Berrizbeitia and Linda Pollak, *Inside Outside: Between Architecture and Landscape* (Gloucester, Mass.: Rockport, 1999).

⁴⁸ Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture* (London: Thames and Hudson, 2000), 231-32.

⁴⁹ St John Wilson, 'The Natural Imagination', 67.

⁵⁰ St John Wilson, 'The Natural Imagination', 68.

⁵¹ St John Wilson, 'The Natural Imagination', 70.

⁵² St John Wilson, 'The Natural Imagination', 65-66.

⁵³ Vincent Scully, *Architecture: The Natural and the Manmade* (New York: St Martin's Press, 1991), xi.

⁵⁴ Alvar Aalto, 'In Memoriam, E.G. Asplund' (1940). In Aarno Ruusuvuori, ed., *Alvar Aalto 1898-1976* (Helsinki: Museum of Finnish Architecture, 1978), 49.