

Light from All Around: Asplund's Stockholm Library

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Abstract

Traditionally, buildings responded directly to local daylight in order to control illumination. In regions where there are extreme daylight conditions, architects continue to generate insightful daylighting strategies, approaches that lead to eloquent spatial and formal ideas, and which are widely relevant. Gunnar Asplund's Stockholm Public Library is an example of careful thinking about how a building is daylighted and how meaningful space is organized around it. Asplund's understanding of daylight and the Nordic sky resulted in his substitution of a flat ceilinged cylinder for his first, glazed dome proposal. Observers have generally favored an economic and functional explanation for this change. However, Asplund specifically cited a desire for better, clear daylight as the motive for this refinement. The flat ceiling and the tall windows in the drum's walls control daylight better than the glazed dome but not solely because much glazing was eliminated or because of the use of clear glass. The white, plastered drum walls provide substantially more diffusing surface, which better distributes low-angle sun and skylight, and even simulates Nordic light.

Introduction

Until recently, builders had to accommodate local daylight and climate conditions with correct construction, properly sized and placed openings, good solar orientation, shading devices, and courtyards. But with the introduction of mechanical and electrical means of making interior climate and illumination, architects were able, at least temporarily, to suspend the natural cycles of light and heat. In regions where they are compelled to respond, architects continue to generate daylighting strategies that lead to the development of ideas that are widely relevant. The art of managing Nordic daylight is crucial to understanding the works of Lewerentz, Aalto, Utzon, and Gunnar Asplund, among others. Of these projects, Asplund's Stockholm Public Library (1924-1927) is particularly compelling because the architect's knowledge of the sky helped him organize the building on its site, shape space, select materials, and incorporate the character of the Nordic sky into the building such that daylight helps to generate its design and meaning.

The history of architecture is stocked with interior spaces meant to capture daylight or to represent the sky; some do both. That Asplund had an interest in developing space with daylight and the sky in mind is well established. Elias Cornell made the case for the use of ceilings as skies in his essay, "The Sky as a Vault; Gunnar Asplund and the articulation of space." More recently, Peter Blundell Jones referred to Asplund's first, glazed-dome scheme for his library in Stockholm, as "another interpretation of the sky-ceiling." It was this tradition that Asplund evoked in projects that preceded and followed the library, including the Skandia Cinema (1922-23), a representation of a festive public square under a night sky. The Lister County Courthouse (1917-1921) is daylighted by a central oculus, fed by skylights in its gabled roof. Asplund's extension to the Gothenburg Law Courts (1934-1937) links itself to its predecessor as much by formal devices as it does by sharing its courtyard-captured light to illuminate the new entry hall, "the gentle northern [Nordic] sunlight from both glass wall and south-facing roof light taking on a warm glow..."

In his first independent commission, the small and much admired Woodland Chapel (1918-1920) Asplund employed the character of the Scandinavian sky to establish architectural space. At the Chapel, daylight is diffused into the chapel in several stages. Sun is scattered by the sky, filtered by "spruce and pines (that) rise above the roofs to twice the height of the building," admitted by skylights in the roof, diffused in a white-painted skylight well, and diffused by translucent oculus glazing. When this daylight enters the chapel, it is re-reflected by the smooth, white surface of the room's white dome. Beneath the dome, the chapel walls are painted gray so that the dome and its captured light appear to float above the floor. The overall effect is one of daylight deprived of its warmth and activity: its life. Light and time are slowed, even halted, in a breathtaking but fitting setting for a cemetery chapel, fitting in the sense that death is a part of life, but a suspension of time, unmovable and minimal variation. However, this is not the quality of light that Asplund needed for his library. Stilled light would not have been fitting for a place dedicated to the transmission of human knowledge, a living, progressive activity. Nor would it be suitable to have people reading, studying, or working in a room where the light is static. The result would be visual monotony and visual fatigue.

The Stockholm Public Library

Asplund's first library scheme proposed a dome over a nearly spherical space in the middle of a cubic block. To illuminate the room, the dome was coffered, much like the Roman Pantheon, but with each coffer glazed. This glass constituted about one-third of the dome's surface. Observers have written that the change from dome to flat-ceilinged drum evolved for structural, economical, and formal reasons, and that the exterior of the dome would not have been visible, depriving the city of a sense of the spatial content and civic significance of the library. But Asplund, writing soon after the library was completed, specifically attributed the change to his desire for a certain quality of daylight. Asplund described his problem with the glazed dome in his straightforward article on the library:

The lending hall was initially designed to be illuminated by skylights. But our typical skylight assembly with secondary matt glass panes produces a dull, gray light, with no direct sun. And as it was practically impossible to receive direct, clear light through clear windows, this approach was abandoned and instead, windows were arranged in the exterior cylinder walls.

According to Asplund, with the skylight assemblies available, the daylight in the lending room would have been tedious or dull, and perhaps too "still," a result Asplund would have known from his Woodland Chapel. Even if Asplund had been able to build his dome with clear glass, under clear skies he likely would have encountered the dilemma of too much sun. An examination of the seasonal patterns of direct sun admitted by the dome reveals that while sun might have been welcome in the winter, for warmth and illumination, sun angles later in the year, during summer in particular, would have posed a threat of glare, excessive solar radiation on the book collection, and possibly, overheating.

The Sun, the Dome, and the Drum

Under the dome, low sun admitted on December 21 through clear glazing would have barely reached the top bookshelves. But on September 21 and March 21, the sun would have spent more than 10 hours in vulnerable interior locations. On June 21 the sun would have appeared on the bookshelves or the floor for about 16 hours.

Asplund's built scheme employs a drum, a windowed cylinder with a flat roof and ceiling, and provides better sun control. Its twenty windows are large enough to admit a good amount of daylight, but their location in the vertical plane and well above the library floor keep direct sun out of range of the bookshelves and patrons for greater periods of time. On December 21, when the sun appears in the sky for less than six hours, the sun strikes and remains on the white walls above the bookshelves for about five hours. On the September 21 and March 21, the sun enters the drum at about 5:45 a.m., falling on its white walls until about 8:45 a.m. when it reaches the top rank of bookshelves. It remains on the shelves until about 3:00 p.m.; the sun strikes the shelving areas for about six hours. On June 21, the sun appears on the bookshelves or the floor for about 12 hours, four hours less than would have occurred in the dome.

Realizing Nordic Light

The key to understanding daylight in high latitudes is grasping the great seasonal variations characterized by days of very little or too much sun and year-round low angle sunlight. This low-angle sun comes across the horizon more nearly perpendicular to the face of a building. It tends to minimize the production of shadow: it erases texture, undermines detail, and flattens relief. Low angle sun travels across the horizon and through more atmosphere than the high sun of lower latitudes. Scattered by the particulates in the atmosphere, it is usually warmer in color, as may be seen near sunrise and sunset at all latitudes

Openings high in a space and light-colored wall surfaces that diffuse sun are very effective daylighting strategies. At Asplund's library, the daylighting performance of the drum is not simply a function of the location or size of its openings. Performance is enhanced by the extent and character of its white plaster walls that diffuse daylight into the room. The loss of detail and texture that make distance and material legible and the scattered daylight of an overcast sky may produce a question as to distance and dimension. Of the light in the Stockholm library, Cornell writes that, "The distantless space above...is intended to give the impression of being absolutely indeterminate." However, the plaster here is not the smooth, finely finished surface of the Woodland Chapel. There are irregular undulations in the surface. These bumps lend texture and a degree of scale to the space, although size and distance are still somewhat ambiguous. The bumps are uplighted by electric lighting concealed above the bookshelves. We are left with the impression of small clouds in a distant sky, a portrayal also noted by Nicolas Adams, who again invokes the notion of the ceiling-as-sky.

With the dome eliminated, it became necessary for Asplund to extend the lending room cylinder well above the library base so that the windows could be exposed to the sky. As a result, and even with three levels of bookshelves around the room, the space is left with a substantial amount of high wall space. This white wall, well over half the height of the room, provides a significant reflecting and diffusing surface for both daylight and electric light. The cylinder has no corners to create shadow. And, although much of the light in the room is uplighting from electrical fixtures, its combination with daylight, as seen on the drum walls, brightens the room giving the impression of an open, expansive space, and a room that functions much like the Nordic sky. The “cylindrical centre of the library,” as Kirstin Nielsson writes, “does not seem to have a roof other than that of the sky.”

The mix of daylight and electric light illuminate the drum and give the space its lift, its visibility, and merge the indeterminate with the tangible. The diffusing surfaces of the drum, much more extensive than in the early, domed proposal, may receive less illumination than they would have from the glazed dome, but the drum configuration with its generous surface area and continuous curve shares the available light more effectively. Finally, although the library hours do not extend into the midnight and early morning, the fact that windows ring the space is a recognition that, at some times of the year, the sunlight comes from almost all around the horizon in the Nordic sky.

Conclusions

The Stockholm Public Library is located at a prominent intersection in the city. Its monumental presence, the centrally located rotunda (a center in a center), which surrounds its patrons with books, and the introduction of daylight into the center are part of a coherent and studied architectural and urban strategy which incorporates the character of the local sky and light. The resulting association of books and daylight, of knowledge and enlightenment, is natural and time-honored; these things are neither accident nor afterthought. Asplund’s decisions are pragmatic and symbolically appropriate, such that the library develops its powerful, concurrent sense of security and exposure from linked formal and daylighting devices. The library balances the desire to gather and protect with the need to be open to the world such that monumentality is not just a function of scale or mass but a response to needs and aspirations, a concentration of competing urges. The library represents the commitment of the community to learning. The library patron proceeds from the outside world, right through to the protected center, and finds himself again in daylight, but surrounded by books—the world’s knowledge—which this institution, the first open shelf lending library in Sweden, makes accessible.

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References

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3. Peter Blundell Jones, *Gunnar Asplund*, New York: Phaidon Press, Inc., 2006, page 113.
4. Gunnar Asplund, “Scandia Cinema,” *Byggmastaren*, 1934, reprinted in *International Architect*, number 8, volume 1, issue 8, 1982, page 18
5. Blundell Jones, *Gunnar Asplund*, page 109
6. Blundell Jones, *Gunnar Asplund*, pages 102-105
7. Blundell Jones, *Gunnar Asplund*, page 182
8. Cornell, “The Sky as Vault...” page 86
9. The tedium of rooms lighted entirely by unchanging (electrical) fixtures, for example, is benumbing.
10. It has been suggested that the library scheme was influenced by the work of Claude Nicholas Ledoux and other neo-classicist architects, but Blundell Jones, in his very complete monograph on Asplund, finds no evidence for this. Blundell Jones, page 117.
11. Blundell Jones, *Gunnar Asplund*, page 113. “The space was to be generously day-lit by arched openings in the dome, glazed both inside and out—another interpretation of the sky-ceiling.”
12. The author’s calculations

13. Stuart Wrede, *The Architecture of Erik Gunnar Asplund*, Cambridge: The MIT Press, 1980, page 112
14. Gunnar Asplund, "Några Uppgifter Om Biblioteksbygget," page 100.
15. Asplund, "Några Uppgifter Om Biblioteksbygget" page 16. The translation of this excerpt was amended by the author of this paper.
16. The Swedish word, "trakig," used in the text by Asplund, may also imply "sad."
17. The author's calculations
18. The author's calculations
19. Cornell, Cornell, "The Sky as Vault..." page 93
20. Nicolas Adams, *Gunnar Asplund's Gothenburg: The Transformation of Public Architecture in Interwar Europe*, Penn University Park, PA: State University Press, 2014, page 112
21. Nielson, "The Stockholm Library," page 52