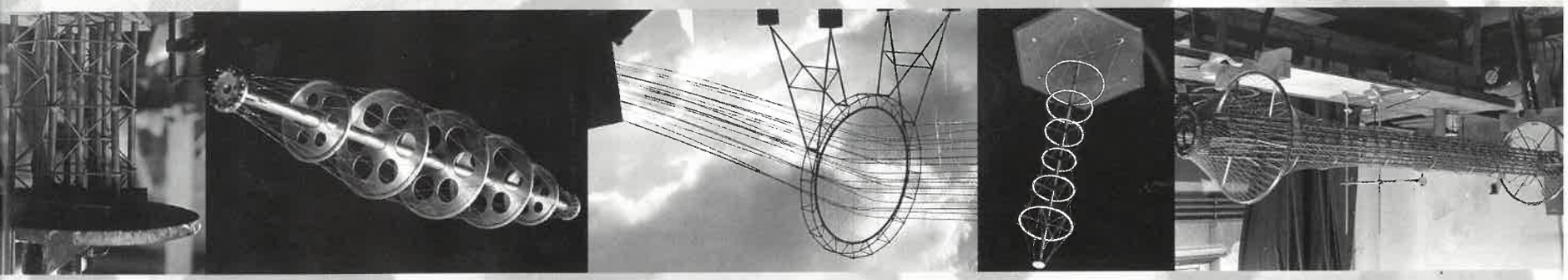
Lotus 99

Siza, Expo '98 Lisboa
Forma e struttura/Form and Structure
Robert Le Ricolais

Lotus 99 Roberto Collovà-Álvaro Siza/Kenneth Frampton/Alessandro Rocca-Renzo Piano
Sandro Marpillero-Juan Navarro Baldeweg-Steven Holl
Paulo Martins Barata-Santiago Calatrava/Toyo Ito/Peter McCleary-Robert Le Ricolais

Electa

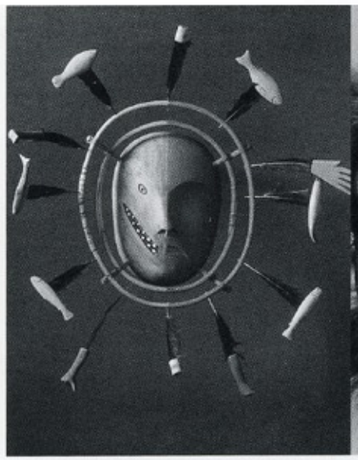


Lotus International 99
Rivista trimestrale
di architettura

Sandro Marpillero

Maschere tettoniche

Tectonic Masks



Eskimo Mask of Spirit of the Bubbles, in *"Primitivism" in 20th c. Art*, MoMa, 1984.

Kwakiutl Family Mask-Transformation, in *Masks of the N-W Indians*, 1994.

■ Juan Navarro Baldeweg's recent Addition to the Woolworth Conservatory in Princeton (1994–97) provides an opportunity to consider the problematic survival of tectonic ideals, in light of the limits of contemporary North American ways of building. As Kenneth Frampton has pointed out in the closing chapter of his recent book on tectonics, the current economy controlling the processes of a building's construction has diminished the possibility for a meaningful technologically-driven relationship between the engineering of a building's structure and its formal expression. According to Frampton, "with the transition from load-bearing wall to skeleton-frame construction, the amount [of budget] devoted to the basic structure has dropped from around 80 percent in former times to some 20 percent today. Conversely, the amount allocated to lightweight partitioning has risen from 3 to 20 percent, thereby leaving around 12.5 percent to be devoted to the building envelope."[1] Frampton thus regretfully acknowledges that the role of structurally-bearing members is, if anything, less relevant to the architectural whole than it was in the mid-nineteenth century, when the debate about tectonics began.

Starting from this conceptual impasse, I maintain that Navarro Baldeweg's approach to contemporary conditions of transatlantic practice indicates a way to redefine tectonics as a place of productive crisis and potential transformation of architectural conventions. With this text, I suggest reconsidering the rhetorical ideology of modernization that, in Sigfried Giedion's terms, granted to technology the role of architecture's "constructive subconscious" whereby "industry completes the transition from handicraft to machine production."[2] I will develop my thesis by referring to contemporary built works of architecture by Juan Navarro Baldeweg and Steven Holl, and, at the same time, revisiting some aspects of the tectonic legacy through a layering of epistemological filters introduced by ethnography and surrealism, in terms of their cross-fertilization.

When Navarro's building in Princeton was under construction in the fall of 1996, reaching the crucial moment when it would receive its exterior cladding, I was teaching a design studio next door, at the university's School of Architecture. The condition of spatial proximity between these buildings and the timing of emergence of the figural identity of Navarro's new building suggested that it would be worthwhile to explore "The Enigma of a Building Next Door." I will thus begin from this enigma, that focuses on relationships between design, construction, and representation, directing attention to that which, in Navarro's own words "circumscribes things, surrounds them, sustains them or establishes them."[3] The Princeton students built a scale model representing the information contained in the set of the building's structural working drawings. This model of the steel framing, devoid of any interior or exterior partitions, made evident the difference in tectonic paradigms between Navarro's addition and the two adjacent concrete frames of the existing Woolworth Conservatory and the School of Architecture (both by Moore & Hutchkins, 1962), whose brick and glazing infills faithfully portray the conceptual poverty of a reductive application of modernist vocabulary. Both buildings exhibit a linear and hierarchical mode of tectonic representation, by which their form results from the direct expression of a trabeated construction.

As opposed to the stereometric homeomorphism displayed by these two existing late modern structures, the students' model shows how the exuberant steel mesh of Navarro's addition results from assembling an array of members of varying sizes, that respond to contingent needs of vertical and horizontal support, or diagonal bracing. The exterior cladding that gradually enveloped these members over the course of the three-month fall semester is a mixture of tight brick textures, horizontally-stretched pre-cast panels, and continuous glazing. The structural system in its variable dimensions disappeared in a thin voided gap, that integrated exterior enclosure and lightweight interior partitioning, in a fine continuous grain of bearing members, secondary supports, and lightweight framings. This project's financial data shows that the final construction costs have pushed Frampton's historical assessment about the decreasing role of structural technology further along, towards the primacy of lightweight supports and cladding. Only 13 percent of the budget was spent for steel and concrete structures, against 22 percent required by lightweight partitioning and 15 percent destined to the building's exterior envelope.[4]

The studio investigation into the difference between the tectonic paradigm of the existing buildings and of Navarro's addition gradually confirmed that the latter's mode of construction conceptually matches, in architectural terms, Man Ray's photograph of his assemblage entitled *The Enigma of Isidore Ducasse* (1920). Man Ray's enigma is a literal illustration of the formula by Isidore Ducasse, Comte de Lautremont, by which poetry is "as beautiful as the chance encounter upon a dissecting table of a sewing machine with an umbrella."[5] The photograph engages the viewer in a work of deciphering the outlines of two objects concealed behind the tightly roped sack-cloth that wraps them. In this work, Man Ray did not make literal use of elements of reality for their formal or expressive potential as objects, but used them only indirectly, referring to a multiplicity of possible presences. Similarly, Navarro's deployment of cladding produces the tectonics of a building's spatial enigmas, thus shifting attention to the perception of their architectural manifestations, rather than offering an encoded revelation of constructive "truths." In other words, the disassociative play between the logic of this building's structure, the displacement of its enclosure, and that of its spatial experience, all counter a purely material or formalistic interest in its geometrical properties as object.

There is an obvious affinity between Dadaist strategies and Navarro's early conceptual pieces of the 1970s, in which he explored architecture's non-visible properties of gravity, light, and horizon. Works such as *Gravity Piece* and *Column and Weight* (both of 1973) were built upon a constructive tension similar to that which can be detected not only in the work of Man Ray but also in Marcel Duchamp's pursuit of a "non retinal art."

Duchamp's "radical Cartesianism" put a procedure similar to engineering to the service of constructive an-exactitude. The critical aspect of his acts is that they re-define artistic work by positing their own laws and conventions, dismissing the relevance of producing things as such, in favor of an open process leading to the formation of apparatuses. Duchamp's notion of apparatus corresponds to a radical re-consideration of the concept of mechanism, not as subset of technology, but as the very prerequisite for technology's use. Through this re-consideration, it is possible to undermine technology's role as foundation of architectural sense.

Luis Rojo de Castro has noticed that "Duchamp referred to these mechanisms as hinges, transformation operations that shift figures, modify spaces, and build worlds from others"[6] in a way that is conceptually similar to Navarro's pursuit of architecture as a rearrangement of available environmental forces, in its distribution of them through spatial and temporal devices. According to Rojo, Navarro's projects operate by means of subtle subversions of material conventions, relating these conventions to larger flows of energies, thus intermingling architectural objects with their generating laws, and making new worlds out of a texture of phenomena. Navarro has himself defined his interest for a "complementary geometry" as "aimed at investigating the way in which these enfolding, constitutive, and unlimited substances make an appearance, in an attempt, perhaps, to modify the notion of the object as something limited, to put it back into a geometry of intersections."[7]

As Rojo has also noted, with specific reference to the Addition to the Woolworth Conservatory, "the control of perception does not surrender to the surfaces that enclose spaces, but rather to the surfaces that roam through spaces. The walls are enveloping, outlined and outlining surfaces which, definitively freed of their bearer status, become something like cloth... an enveloping cloth, whose physical qualities refer to surface, texture, color, warp, and its laws of formation."[8]

This building thus recalls a Semperian interrogation about tectonics in textile terms, in which architecture is interpreted as an assemblage of stretched fabrics that regulates effects of light and space. Semper's theory stressed the tectonic affinity between weaving and building enclosures, in which both were understood as clothing and also as masks. According to this affinity, "the dressing and the mask are as old as human civilization, and the joy in both is identical with the joy in those things that drove men to be sculptors, painters, architects, poets, musicians, dramatists, in short, artists."[9] Yet, how is it possible to refer to terms that permeated architectural culture in the latter half of the nineteenth century, when the technologies that qualify material assemblages are so different today?

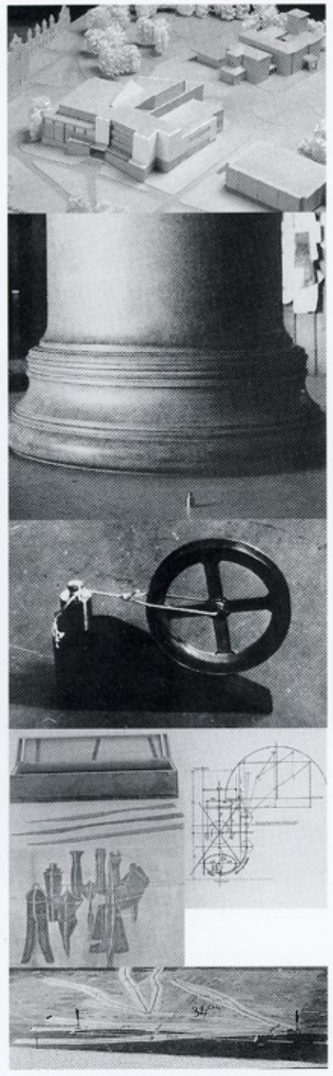
Before engaging this debate, it may be thus useful to stress a conceptual threshold of twentieth century culture, in order to distinguish two opposing modes of art making. In the course of the symposium during which Duchamp read his famous statement "Apropos of Ready-made," Lawrence Alloway established a crucial conceptual difference between a Cubist and a Dadaist-Surrealist production of assemblages. In the first case, fragments extracted from the environment are used as quotations or indexes of reality "but the overall formal organization of the work of art assimilates the foreign body, and this slips into place in a traditionally organized work."[10] In the second case, "out on the edge is where the assemblage artist works, fouling up, mixing up, raising problems," aiming conventions of representation and modes of composition against the conception of the work as an island of aesthetic purity and formal unity. A Dadaist-Surrealist approach to the notion of assemblage uses a work's material and technological givens to organize a field in tension, by which "there is no il-

1. Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, MIT Press, Cambridge 1995, p. 381. For a critical reframing of tectonic issues, through a presentation of Walter Benjamin's notions of technical forms, optical instruments, and magical similarities, see Detlef Mertins "W. Benjamin's Tectonic Unconscious," *ANY*, no. 14, 1996 [issue devoted to "Tectonics Unbound"].
2. Sigfried Giedion, *Building in France, Building in Iron, Building in Ferro-Concrete*, Klinkhardt & Biermann, Leipzig 1928; re-published by The Getty Center for the History of Art and the Humanities, Santa Monica 1995, p. 88.
3. Juan Navarro Baldeweg "La Geometria Complementaria," *Lotus International*, no. 73, 1992, p. 111.
4. The full set of construction contract documents was prepared in New York by the engineering firm Wank Hank Slavin Associates, architects of record and construction managers. My gratitude to George Gianakopoulos for his assistance during the Princeton studio, and prompt attention in providing the data for this text.
5. Isidore Ducasse, Comte de Lautremont, *Chants of Maldoror* (1874). This celebrated quotation of the symbolist poet became a trademark of the Surrealists' "systematic putting out of place" of reality, in both literary and visual works. For a redefinition of this formula, as it applies to collage techniques and objects, see Max Ernst, "Beyond Painting" (1936), *Cahiers d'Art*, no. 6-7, 1937.
6. Luis Rojo de Castro, "Weft and Warp," *El Croquis* no. 73, 1995, p. 30.
7. J. Navarro-Baldeweg, op. cit., p. 111.
8. L. Rojo, op. cit., p. 31.
9. Gottfried Semper, "Style in the Technical and Tectonic Arts, or Practical Aesthetics" (1860), in H.F. Mallgrave and W. Herrmann (eds.), *Gottfried Semper. The Four Elements of Architecture and Other Writings*, Cambridge University Press, Cambridge 1989, p. 257.
10. Lawrence Alloway in "The Art of Assemblage: a Symposium," *Studies in Modern Art 2*, MoMA, New York 1992, p. 140. This symposium was held on October 19, 1961.
11. L. Alloway, Ibidem.
12. G. Semper, op. cit.
13. Any interest for masks skirts the territory of a formalist reductions of "primitivism," that has treated them as plastic and stylistic ciphers, while legitimizing resemblance between modern art and tribal objects. These reductions have resulted in the commodification of both, as in the case of the 1984 "Primitivism and Modern Art" MoMA show. For a critical review of these issues, see Sally Price, *Primitive Art in Civilized Places*, The University of Chicago Press, Chicago 1989.
14. Franz Boas, "Introduction," in *Primitive Art* (1927), Dover, New York 1955, p. 13.
15. Steven Holl, "A Conversation with A. Zaera Polo," *El Croquis*, no. 78, 1996, p. 28.
16. In an entire chapter of *Space, Time, and Architecture* on "American Developments" Giedion posited the teleological relationship between balloon frame and architecture's industrialization: "the balloon frame is closely connected with the level of industrialization which has been reached in America. Its invention practically converted building in wood from a complicated craft, practiced by skilled labor, into an industry." Sigfried Giedion, *Space, Time and Architecture. The Growth of a New Tradition*, Harvard University Press, Cambridge 1941 (5th Ed. 1966), p. 347.
17. I. Gill, in *Sunset*, December 1915, quoted in Esther McCoy, *Five California Architects*, Praeger Publishers, New York 1975 (1960), p. 85.
18. Esther McCoy, ibid., p. 15. The last phrase in quotation marks was part of Schindler's technical description of the house's structural scheme, as submitted in order to obtain the construction permit from the local Building Department.

■ On Navarro Baldeweg's Building

In Moore & Hutchkins's buildings, a regular grid of steel columns and beams of constant sizes is embedded in concrete fireproofing casts, and clad in limestone with exterior bays of the same width in plan and two-story height elevations all around the perimeter. The typical wall sections show a limestone sill and cornice, emphasizing a trabeated "giant order," that conceals the 2nd floor slab beam behind bent cavity brick walls, which are framed by fixed glazing, and crowned by a continuous horizontal fascia of windows with projecting aluminum frames.

In Navarro Baldeweg's building, each floor of the structural framing plans shows steel members with more than fifteen different sizes, due to varying spans and oblique geometries. A vertical wall section near the entrance shows the integration between structural bearing and bracing, cladding support, framing for secondary assemblies (set-back roofing, glazing, soffits, etc.) and lightweight partitions. Columns of the same size along the perimeter are embedded in assemblies of different materials and edge glazing, with concave and convex corners and sectional set backs. For example, in a horizontal detail of a second floor corner, a column is partially fireproofed with foam in a convex assembly of precast concrete panels, backed by rigid insulation and concrete blocks; this first column is next to another column that is instead completely fireproofed with foam and embedded in lightweight interior partitions of different size framing, which are connected to a concave assembly of cladding materials consisting of a continuous aluminum and glass window system.



J. Navarro Baldeweg, Ampliamento/Addition of Woolworth Music Center, Princeton 1994-1997.

J. Navarro Baldeweg, *Column and Weight*, 1973.

J. Navarro Baldeweg, *Gravity Piece*, 1973.

Marcel Duchamp, *3 Stoppages étalon*, 1913, MoMA, New York.

Marcel Duchamp, *Bachelor Apparatus-Plan*, 1913.

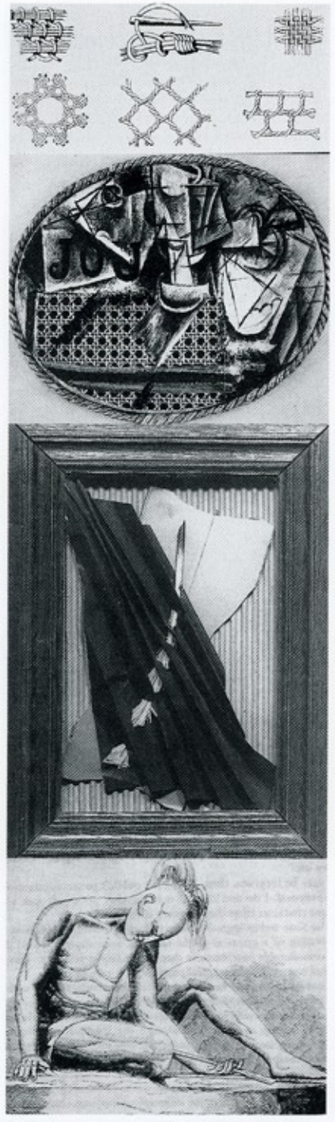
Marcel Duchamp, *Network of Stoppages*, 1914, in *The Box Valise* (1942).

Marcel Duchamp, *Neuf moules malic*, 1913-1914.

On Duchamp's Apparatuses

Duchamp's *Three Standard Stoppages* (1913) indicates an approach to fabrication that could provoke a radical rethinking of architectural conceptions about tectonics. This artifact was obtained by dropping from the height of one meter three strings of rope each one meter long, and fabricating three wooden rulers by following the outlines of their shapes on the floor.

Duchamp used these rulers to draft a veritable architectonic *Bachelor Apparatus* (Plan) in which "Capillary Tubes" feed the "Nine Malic Molds," thus constituting the "Cemetery of Uniforms and Liveries." These figural elements establish the processes that transfer pictorial meanings to an assemblage of part-objects, "putting to work" the *Bachelor Apparatus* in the lower portion of his *Large Glass* (1913–23). Since he had already used these rulers to paint a *Network of Stoppages* (1914), he also took a photograph of this painting from an angle that was supposed to "put the lines [drafted in plan] into the perspective required for the *Large Glass*—a means of overcoming the difficulty of transferring their amorphous curves through normal perspective projection." "Canned chance, canned meter" was Duchamp's definition of this creative process of measurement, design, and fabrication, whose rigorous yet imprecise physics shook the universal standards of Cartesian rationalism, as it had been set by the one-meter platinum bar on display at the Academy of Sciences in Paris.

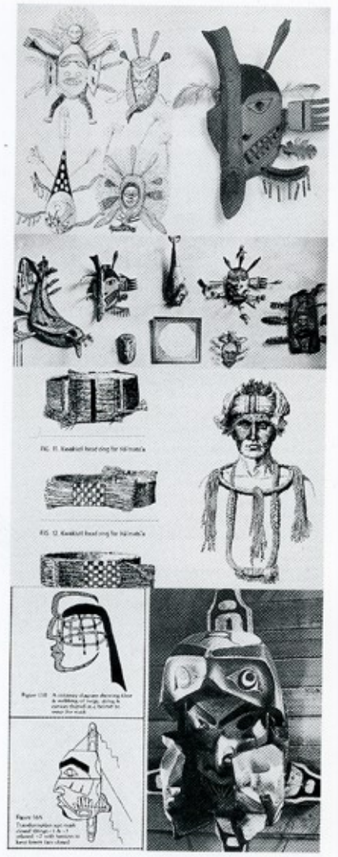


Gottfried Semper, *Laceworks, Guipure, Bobbin Lace*, in *Style in the Technical and Tectonics Arts or Practical Aesthetics*, 1861-1863.

Pablo Picasso, *Still Life with Chair Caning*, 1912.

Man Ray, *With what to write a Poem?*, 1923.

P. Stephenson, *Wounded American Indian* (1851), in Gottfried Semper, *Science, Industry and Art*, 1852.



Alaskan Eskimo Masks, in *"Alaskan Eskimo Art"*, Fairbanks 1988.

Eskimo Mask of Seal and its Spirit, in *"Primitivism" in 20th c. Art*, MoMA, 1984.

"Eskimo Mask Collection", André Breton Collection, Paris, ca. 1955.

Franz Boas, *Kwakiutl Head Rings and Attire*, in *"The Use of Masks..."*, 1890.

Masks of The N-W Indians, in *"How the Masks were Made and Used"*, 1978.

Kwakiutl Family Mask-Transformation, in *Masks of the N-W Indians*, 1994.

On Eskimo and Kwakiutl Masks

Alaskan Eskimos used masks in ceremonies of preparation for hunting and for the appeasement of spirits inhabiting all living things, in order to assure both protection and success when out in the wilderness. These masks are marked by the shamanistic logics of introjection and projection, whose purpose is to charm the cosmic forces of a larger environmental order. From a figural point of view, these masks represent mythical conflicts that are constantly reactivated as situational apparatuses within highly mobile social formations. For example, one mask that was a symbolic protector for hunting dynamically juxtaposes conflicting colors within a split image, that combines clearly recognizable animal and *inua* (human-like spirit) facial features. This mask is a simple oval surrounded by cosmic hoops of painted bentwood, fitted with protruding added-on shapes: miniature harpoons, flippers, carved fishes, and feathers, belonging and/or representing the edible inhabitants of the tundra environment. Another Eskimo mask that functions in a similar way shows "an elongated seal figure... sticking out at a slight diagonal to the vertical plane of the mask, while added-on elements and feathers are directly stuck on the somewhat smiling half-face of the seal's own *inua*." It is worth noting that this mask belonged to Andre Breton's extensive collection of "primitive artifacts," mostly from North-West America and Oceania.

The Kwakiutl people of British Columbia used masks within a system of clan emblems, privileges, and gift-giving "characterized by headdresses and certain styles of [body] painting... when members of these societies are performing their dances at a great festival." These masks are marked by the totemic logics of identity and change, and were worn to modify the character of an actor during the course of a ceremonial dance, by revealing one figure inside another. From a figural and sociological point of view, these masks represent mythical ancestors in order to act them out as apparatuses of cultural transformation, within highly structured social groups. For example, a family crest mask that consists of the fiber and webbing of twigs, string, and canvas shaped as a helmet for wearing it, uses a system of leveraged strings to open an outer face that breaks into three separate parts, revealing a second face with a prominent beak. Another Kwakiutl mask reveals the human-like face of an ancestor behind the larger-than-life fearsome spirit of plenitude, that splits right in the middle.

lusion, no purity of media... there is no space in the sense that one is accustomed to see it in a painting; there is no surface preserved."[11] Alloway's distinction between two kinds of assemblages suggests criteria with which to differentiate attitudes towards architecture's materiality, the technological means required to implement it, and their mutual influence on the spatial experience of the resulting building.

Ethnography of Masks

In light of this clarification, let me submit Semper's assertion that "[an] untainted feeling led primitive man to the denial of primitive reality [through the mask] in all early artistic endeavors; the great, true masters of art in every field returned to it [the masking of reality]—only these men in times of high artistic development also masked the material of the mask."[12] How do we, as architects aware that western civilized culture still denies cultural currency to the psychological engagement and symbolic porosity of masks, return to and heed Semper's observations, by accomplishing a productive reconnection with primitive man's "untainted feeling?" Can we look at masks for their diacritical role, in a way that progresses beyond their literal form, and at the same time keeps us from being intimidated by their auratic powers?

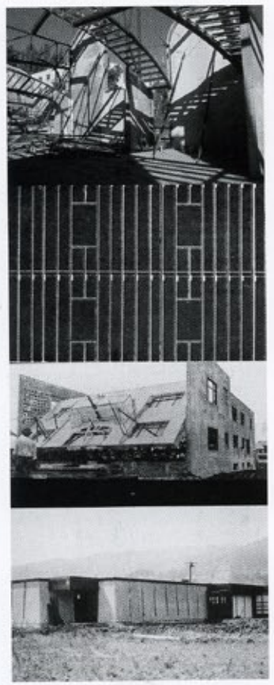
Semper's own challenge to the morphological taxonomies of the natural sciences makes it possible to examine masks through an ethnographic filter. He was able to interpret primitive objects as resulting from processes of material figuration, and to excavate below the superficiality of their shapes, searching for similarities in the performative properties of their elements. I believe that, by expanding on this epistemological stance, it becomes possible to interpret these artifacts away from the cultural constrictions of Semper's nineteenth-century context.[13]

The ethnographer Franz Boas explicitly referred to the work of Semper as a key to re-framing the problem of form in primitive artifacts, by directing attention towards the processes of their fabrication. As he articulated, "Gottfried Semper emphasizes the importance of the form as determined by the manner of use. He also stresses the influence of designs developed in weaving and of their transfer upon other forms of technique, particularly upon architectural form."[14] Boas's concept of the "formal element" in art focused on the ways in which weaving was performed, knots tied, basketry constructed, fabric woven, and buildings erected. His insistence on the performative function of the objects resulting from these constructive activities challenged the persistent juxtaposition between the art of building and its ornamentation, by eschewing an exclusive attention for appearance, often reduced to geometrical patterns and decorative motives.

The approach outlined by Boas can help to shift architectural discussions about tectonics towards a more precise analogy, that I want to suggest, between the figural operations of certain masks and the way in which buildings perform a representation of their materiality. He delineated two paradigmatic groupings of masks by distinguishing between two kinds of use: first, as apparatuses of connection with environmental forces, and second, in relation with rituals of individual transformation. These two paradigms of masking result, respectively, from his studies about the Alaskan Eskimos and the Kwakiutl peoples at the turn of the century, both inhabiting the American Northwest. He pointed out that, as opposed to Western hierarchical thinking, the masks of these Native Americans articulate non-binary assemblages of opposites. The relative centers of their resulting material traits can be understood as knots, outlining constellations with variable units of measure that surprisingly become mutually transferrable.

My insistence on the performative qualities of these masks, either as apparatuses of engagement with processes of mediation of the environment, or as agents in the ritualistic transformation of subject/object relationships, establishes a direct connection between them and the Dadaist/Surrealist notion of material assemblage, as discussed above. This connection suggests an interpretation of the masks' figural characteristics as an overlay of apparatuses, with each constellation of elements intelligible from the point of view of its dynamic functioning, yet without a unitary function. What kind of architectural tectonic strategies could the figural workings of these two paradigms of mask then outline?

I would suggest that the process by which distant or apparently incompatible things share the same space, as in the case of the Eskimo masks, is analogous to the co-presence of conceptual logics referring to conditions of experiences usually remote to each other, in the Woolworth Addition. Navarro describes and produces figural mechanisms not as objects in isolation, but as material and spatial apparatuses that engage and transform fluxes of dynamic forces that are present on campus. Like the ones represented in an Eskimo mask, these forces (social, cognitive, and affective) belong to material sets of heterogeneous fields of experience, that are external to the building's perimeter, and yet associated with the conditions suggested by the material and spatial assemblages themselves. How can a harpoon wielded by a human hit a wild animal or fish to transform it from a natural presence into a tool and/or food? An Eskimo mask establishes the co-presence of identities and things which, from the point of view of its belonging to places of action or modes of manifestation, seem to be logically incompatible and distant, both in terms of movement (to/from), and scale (large/small). As an architectural analog, this paradigm of mask shifts the conception of a building away from any modernist obsession with totalizing productivism, by allowing enigmatic figures to emerge from the action of localized forces that co-exist in a texture of material relationships.



Steven Holl, Chapel of St. Ignatius, Seattle University, 1994-1997.

"Balloon Frame" in W.E. Bell, "Carpentry Made Easy" (1859), Sigfried Giedion, *Space, Time and Architecture*, Cambridge, 1941.

Irving Gill, "Aiken System", Banning Residence, Santa Monica, 1913.

Rudolf Schindler, King's Road House, Los Angeles, 1921-1922.

Warps of Light

Different is the case of artifacts that, as in a Kwakiutl mask, strive to re-establish a positive connection between material and spiritual orders, in terms of their reciprocal transformation. According to this paradigm, an apparently stable mode of being becomes something else, in the course of a ritualized experience. How is it possible that a human becomes an animal/spirit (or vice-versa)? A Kwakiutl mask suggests the discovery of that which, from the point of view of its essence or substance, seems to be logically incompatible with something that appears to be stable, both in terms of form (inside/outside), and material (heavy/light). As an architectural analog, this paradigm of masking suggests the transformation of perceptual characteristics of a building, in terms of the consistency of its linguistic parameters.

I propose to read Steven Holl's recently completed Chapel of St. Ignatius at the University of Washington, Seattle (1995–97) through the lens offered by this second paradigm of masking. Holl's chapel first presents itself like a simple box, a rigidly planar form that defines a new campus quadrangle. Passage through its large wooden door, whose tactile richness and oblique perforations resonate with cosmic intensity, transforms the tectonic expectations suggested by the heavy concrete slabs of the exterior into a sequence of curvilinear volumes.

A changing play of colored light moves, along with the sun, through the surfaces of the plastered skin that is evenly stretched across both walls and ceilings.

Let us focus on the role performed by this threshold, or conceptual gap, between outside and inside. Holl's chapel brings at first attention to the structural support offered by exterior cladding, and its independence from the spaces it delimits, without reverting to an image of circumstantial skeleton and suspended skin. The mute geometrical rigidity of the exterior enclosure contrasts with the subsequently unexpected power of engagement of the interior spaces, heightened by double-layered openings of indirect light, defining ritualized microcosms, rich of perceptual experiences. The resulting tension, between the tightness of the exterior planes and the softly-voided spaces they enclose, results from the way in which the cladding's logic of frontality gives way to a flow of shifting geometrical forms. As a material and spatial apparatus, this project makes problematic the consistency of its own perspectival apprehension, dissolving it into a great variety of interrelated physical perceptions.

The box is built with flat-bed, site cast concrete panels that were assembled with a process of tilt-up construction analogous to a wood balloon-frame system. According to Holl, this process took on "an enormous scale… erected with a crane in one day. One of these slabs weighs seventy-seven tons; [for them] to be picked up by crane we needed to insert pick-up hook points in the slabs that will remain in the walls as a trace of the construction method... the tectonic, material realization is crucial in our process."[15] And yet, there is a substantial difference between Holl's approach to tectonics and the modernist invocation of the balloon-frame as a metaphor for the rationalization of American construction industry.[16] Nor does this building just pursue a monolithic "honestly simple" method for the construction of frankly cubic buildings, devoid of ornaments and with flat roofs, as in the massively scaled "Aiken System" used by Irving Gill in California during the 1910s. Rather, Holl limits his translation of the principle of stone into concrete to the surface application of a patina effect, that paradoxically echoes Gill's recommendation to mix color with cement "to overcome the popular prejudice against concrete."[17]

Rather than Gill's method, the slab-tilt system of Rudolf Schindler's King's Road House (1921–22) better indicates the incidental role of technology in Holl's building, if compared with the greater relevance for both architects of the interface between panel joinery and window placement. Holl positioned all glass at the geometrical interlocks between concrete slabs, thus sharing Schindler's spatial concern for "movement and depth rather than mass, treating masonry as a unit through which space could flow...in 'a simple weave of few structural materials.'" Schindler's early affiliation in Vienna with Adolf Loos's "Bauschule" further qualifies the distance of his work from both an architecture of abstract functional enclosure, that could be associated with modernism, and also from Otto Wagner's reduction of the potentially inspirational role of construction technique to a decoravtist fetishization of its methods of assemblage. Schindler's acknowledgment of the difference between architecture and engineering increases the freedom of maneuver by which his architecture strived to build "a source [of spaces] emitting a subtle unconscious influence,"[18] using technology to emphasize spatial perceptions, and to support a subject's identity in relation to a particular time and place.

The strategic role of Holl's concrete box also lies in its perceptual detachment from the outlines of the seven colored "bottles of light" that constitute the building's interior. In these "bottles" space results from the complex assembly of curved metal trusses, completely concealed by the continuous surfaces of lightweight walls and ceilings. The effects of light on these interior surfaces are dissociated from the tectonic logic of the heavy concrete box, emphasizing instead their own plastic properties. Light thus becomes both the chapel's privileged mode of perceptual engagement, and its tectonic material: "light is shaped in different volumes emerging from the roof, whose irregularities aim at different qualities of light." Deep wall cuts expose glows of reflected color fields that each have a stained glass lens of the complimentary color of the one hidden behind the second wall layer, enhancing the role of skylights oriented in relation to different hours of the day and qualities of atmospheric light.[19]

Yet, to which degree does Holl's approach question traditional religious metaphors of a disembodied light, defined as the invisible medium through which knowledge is accessed, and truth made present to consciousness?[20] In *Textures of Light*, Cathryn Vasseleu has challenged Western philosophical/theological tradition, in which light's lack of materiality and corporeality, its nonsensory (divine) origin, are conditions that induce the movement of a mind towards "enlightenment." As opposed to this tradition, the author suggests that "it is not appropriate to think of light as a texture either perspectivally as a thing, or as a medium that is separable from things. In its weft and warp—Vasseleu insists—light is fabrication, a surface of a depth that also spills over and passes through the interstices of the fabric."[22] Only when light

19. Rudolf Schindler, "Furniture and the Modern House," in *The Architect & Engineer*, December 1935, p. 34.

20. Steven Holl, "Chapel of St. Ignatius, Seattle University, Seattle, Washington," in *Anchoring*, Princeton Architectural Press, New York 1996, p. 158.

21. On the one hand, Holl's project description seem to literally assume the Jesuit Catholic Worship as its own programmatic narrative, through a direct correspondence between different lights and the ritualistic part of Procession, Narthex, Nave, Blessed Sacrament, Choir, Reconciliation Chapel, Bell Tower and Pond (or "Thinking Field"). On the other, he ambiguously stresses that, in Jesuit spiritual exercises, "no single method is prescribed—'different methods helped different people...'" thus re-asserting the poetic instrumentality of these metaphors in the construction of the project's experience.

22. Cathryn Vasseleu, *Textures of Light. Vision and Touch in Irigaray, Levinas and Merleau-Ponty*, Routledge, New York 1997, p. 12.

23. C. Levi-Strauss, *The Way of the Masks*, University of Washington Press, Seattle 1982. According to Levi-Strauss, the presumed existence of "deeper structures" linking Salish Swaihwe masks and those made by other unrelated tribes in the American Northwest, demonstrates the existence of mythical affinities below their formal similarities: this generalizing thrust in the name of structuralism has produced yet another layer of conceptual closure about a figural reading of the masks themselves.

24. Ethnography and surrealism are relevant here not only as separate spheres of cultural endeavor, but in terms of their cross-fertilization. As James Clifford writes: "ethnographic surrealism and surrealist ethnography are utopian constructs; they mock and remix institutional definitions of art and science.... Ethnography cut with surrealism emerges as the theory and practice of juxtaposition. It studies, and is part of, the invention and interruption of meaningful wholes in works of cultural import-export." James Clifford, *The Predicament of Culture: XXth Century Ethnography, Literature, and Art*, University of California Press, Berkeley 1977.

25. See Rosalind E. Krauss, *The Optical Unconscious*, MIT Press, Cambridge 1993. In particular, Chapter 2 and its appendix "2 bis" establish a fundamental connection between Max Ernst's overpaints and collages, Freud's notion of "Mystic Writing Pad," and Lacan's extension of Freud's libidinal analysis of psychic apparatuses towards a linguistic dimension.

26. The misreading of a 1930 Freudian diagram of a subject's psychic apparatus, produced by Rudolf Arnheim at the end of his *The Dynamics of Architectural Form* (1977), is in this regard symptomatic. The Gestaltist urge towards unification of form and content into the "good form" of an innocent eye resorts to assigning the principal role in a project's development to the Super-Ego, further consolidating the power of engineering logics over the attributes of its architectonic agency. See Sigmund Freud, *New Introductory Lectures on Psychoanalysis* (1930) Norton, New York 1966.

27. Fredric Jameson, "Imaginary and Symbolic in Lacan" (1978), in *The Ideologies of Theory. Essays 1971–1986*, University of Minnesota Press, Minneapolis 1988, vol. 1, p. 94.

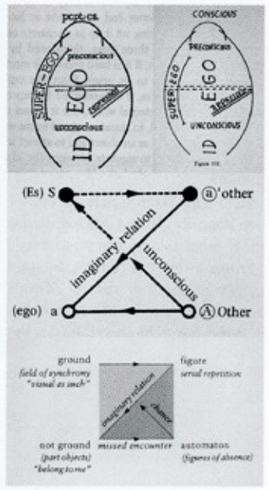
28. See, in particular, Chapter Seven of Sigmund Freud, *The Interpretation of Dreams* (1899), Random House, New York 1950.

29. See Jacques Lacan, "The Imaginary Function of the Ego and the Discourse of the Unconscious" (1955), in J-A. Miller (ed.), *The Seminar of Jacques Lacan. Book II: the Ego in Freud's Theory and in the Technique of Psychoanalysis, 1954–55*, Norton, New York 1988, pp. 93–171.

challenges its own status as transparency or background setting for things can it address qualitative aspects of vision, characterized by reflection, refraction, and color, and therefore contribute to positioning a body within a perceptual texture, that includes dimensions of touch, sound, and smell.

In Holl's chapel, the tectonic role of light establishes a domain of spatial experiences in which colors become enmeshed with the complex layers of shaped and painted screens, diffusing their halos or beams onto the variable forms/shapes of the walls' geometrical materiality. He reinvests light with a corporeal sense, making it discernible as a material, and stressing the coexistence of its reality alongside the necessity of enclosure. In other words, light does not operate inside this building according to purely optical parameters, but becomes itself an object of tectonic perception, yet one that is freed from laws of gravity. The building thus generates a reversible hinge between conventional definitions of both a church's institutional organization and a building box's structural hierarchies, oscillating within a perceptual split that challenges their own stable identities.

This approach to tectonics thus acquires the role of a mask's diacritical structure, by positing an equivalence between the gravity of a box and the materiality of light. As in a transformational Kwakiutl mask, the crossing of a ceremonial threshold promotes an oscillation between a cosmic scale and the minute properties of individual details: in this case, the intensely carved wood door marks the perimeter of concrete slabs, beyond which tactility and light take control of the architectonic narrative of the chapel's spatial organization. Like in a Kwakiutl mask, the interior's experience of an embodied subjectivity challenges a notion of its own stable identity, as confirmed by ritual. This chapel's embodied light brings the physical attributes conventionally associated with the institutional typology of a chapel to encounter the temporal, spatial physicality of their experience.



Sigmund Freud, "Diagram of Psychic Apparatus," in *New Introductory Lectures on Psychoanalysis*, New York 1930.

Rudolf Arnheim, "How Ideas Reach Form," in *The Dynamics of Architectural Form*, Berkeley 1977.

Jacques Lacan, "Imaginary Function of the Ego and the Discourse of the Unconscious" (1954-55).

Rosalind Krauss, "The Visual is an Effect of What is Repressed," *Optical Unconscious*, Cambridge 1993.

Paradigms without Foundations

My reference to the Eskimo and Kwakiutl paradigms of masking, respectively mediating environmental relations and transforming subject/object relations, has informed an analogical reading of two contemporary projects by Juan Navarro Baldeweg and Steven Holl. By suggesting that the performance of both masks and architectures takes place in terms of multiple and overlapping figural assemblages, I have proposed to interpret both the paradigms of masking of "primitive" artifacts, and the tectonics of "contemporary" buildings, as processes that reveal representational modes which would not be perceivable in exclusively formal and/or technological terms. Yet my descriptions of the two pairs of masks and buildings are not intended to be anthropological interpretations nor do they constitute typological classifications. While acknowledging the structural affinity between figural paradigms of different masks and their relation to specific rituals, I have not followed Levi-Strauss's generalization of plastic/formal typologies of masks, and his establishment of homologies between transformational relations of their myths.[25] Also, my re-visitation of some aspects of the tectonic legacy in architecture, through the epistemological filters introduced by ethnography and surrealism, should not be understood as an attempt of looking for new extra-disciplinary foundations, nor of legitimizing yet another stylistic manifesto.[26]

In fact, I could also have read how Baldeweg's and Holl's buildings bring forward tectonic aspects that are not immediately perceivable, by transcoding in architectural terms the art-historical framework of an "optical unconscious."[25] I will limit myself instead to briefly assess how the constructive configurations of both buildings disturb the plane of imaginary relations that are traditionally associated with the imperative logics of construction.[26] Both these buildings put forth a spatiality which constructively rearticulates the conventional architectonic polarity between inside and outside, by adopting design strategies that explore tensions within the notions of proximity/distance on the one hand, and content/container on the other. These tensions engage users through deeper symbolic investments in part-objects, thus eschewing the complementary strictures imposed by the modernist paradigms of transparency and pure visibility.

The dynamic relationships between part-objects activated by these buildings suggest that their tectonic logics can be looked at as apparatuses, engaging subjects through an indefinite production of figural substitutes instead of predictable constructive elements.[27] The resulting architectural figures offer alternatives to the hierarchical ordering of a building's programmatic and technological content, by stressing the "property of language that allows the same word to be used in several senses." I wonder: is it possible to approach the relationship between these buildings' existence and their tectonic logics as a kind of "formation of compromise" (Freud) that supports the contingency of "that which is there" in both optical and corporeal terms? I think it is, since their symbolic strategies seem to productively deploy Freud's notion of "dream-work," according to which the distinction between the "latent content" and the "manifest content" of a dream results from a complex work of substitution and transformation, done by dream itself through techniques of figural condensation and displacement.[28]

Following the interpretative framework of an "optical unconscious,"[29] a material assemblage of architectonic elements would thus produce formal manifestations and exclusions through the representation of privileged narrative threads, induced by the repetitive lack of coincidence between various figural attributes and productive agencies. And the determination of these architectonic textures would in turn be affected by deeper configurations, belonging to that which is not immediately visible in the building, nor required by its structural support.

A building's tectonic apparatus could thus be conceived as a symbolic layering through the opacity of a rhetorical approach to its constructive technology, rather than the transparency of its causal representation.

Juan Navarro Baldeweg
Ampliamento e biblioteca
Addition and Library
Woolworth Center of Music
Princeton University, 1994-1997

Con/With: Enrique Pujana Bambó, Leslie Dowling
Strutture/Structures: Severud Associates, J. de la Torre

Foto di/Photos by **Duccio Malagamba**

Il progetto di trasformazione e ampliamento del Woolworth Center può essere compreso solo all'interno di un'attenta lettura del contesto.
Nella struttura formale del campus di Princeton si distingue infatti una sovrapposizione di trame figurative la cui complessità conferisce un carattere particolare a molti luoghi dell'impianto universitario. Da un lato, la trama degli edifici, che spesso si estendono in maniera lineare, dà luogo a situazioni di carattere avvolgente negli spazi aperti. Da questo ha origine un secondo livello formale creato dalla composizione dei vuoti e degli spazi aperti incorniciati dagli edifici, delimitati da facciate ben strutturate, articolate nel consueto stile di "collage gotico".
Un terzo livello è costituito dalle strade e dai percorsi pedonali che, a volte, seguono una linea geometrica parallela agli edifici, e in altre attraversano diagonalmente gli spazi. Così la geometria di questa maglia di percorsi rafforza in alcuni casi la disposizione ortogonale e parallela agli edifici, in altri il gioco delle diagonali che attraversano gli spazi aperti. Legata a questi percorsi pedonali è la caratteristica presenza dei passaggi coperti che attraversano gli edifici.
Nell'area del nuovo edificio questi tre livelli formali si sovrappongono in modo caratteristico. Il Green su cui affaccia il nuovo edificio è uno spazio aperto attraversato da percorsi pedonali, differente da quello che si trova dalla parte opposta al Woolworth Center, che presenta caratteristiche molto diverse. Il Green può essere considerato una piazza o una strada animata dal passaggio degli studenti, mentre il giardino intorno a Prospect House ha un carattere più stanziale. Le sue proporzioni sono impregnate di uno spirito più domestico; si tratta di un luogo tranquillo e legato allo stile, al modo di essere e socializzare di un club o di un ristorante.
Tutto ciò si doveva necessariamente riflettere nella proposta di ampliamento del Woolworth Center. Il rivestimento che avvolge il nuovo edificio rivela un impulso che nasce dall'interno e si formalizza lungo il perimetro, secondo una disposizione a ventaglio. L'angolo in corrispondenza dell'ingresso acquista così un'importanza particolare – un'immagine singolare che si scopre giungendo dalla penombra, dal passaggio coperto dell'edificio della Hall 1879 – perché rafforza l'idea di questa parte dell'edificio come di una torre in negativo.
L'inflettersi del muro e della pianta costituiscono un invito per il pedone che arriva dal Green e, nello stesso tempo, stabiliscono una relazione con la scuola vicina. La parte occidentale dell'edificio, che ospita le attività creative, contemplative e quelle collegate alla biblioteca, si apre verso lo spazio domestico e protetto del giardino e verso la Prospect House.
Queste considerazioni sembrano obbedire soltanto a un'analisi contestuale, tuttavia il progetto è concepito anche come fatto autonomo. Il nuovo Woolworth Center nasce da una logica interna che produce un'organizzazione degli spazi a partire dall'asse trasversale dell'ingresso. Il vestibolo, di grande altezza, ha le caratteristiche di percorso, via, passaggio coperto, piazza che collega il Green con il giardino della Prospect House, nello stesso tempo si apre a ventaglio man mano che ci si addentra verso il suo centro. Internamente l'edificio viene così suddiviso in due metà: da una parte, il vero e proprio Center of Music dove si trovano le aule, gran parte degli studi e le sale per le esercitazioni. Nella parte opposta di questo "cortile" interno si trovano allineate la sala per i saggi musicali – la cui attività può essere osservata dall'ingresso attraverso la vetrata che si apre sullo spazio a doppia altezza – e la biblioteca, un altro dei nuclei simbolici, anch'essa visibile dall'atrio.
Coerentemente con questa suddivisione, nel vestibolo sono state previste una fonte di luce zenitale sul lato sud e un'altra a nord. La luce da nord illumina gli scaffali della biblioteca, la luce calda da sud illumina invece lo sviluppo in altezza dell'atrio. La scala dell'atrio conferisce unità all'insieme delle attività presenti nel centro e ne rappresenta l'accesso principale.

Vedute del cantiere e dell'edificio completato.

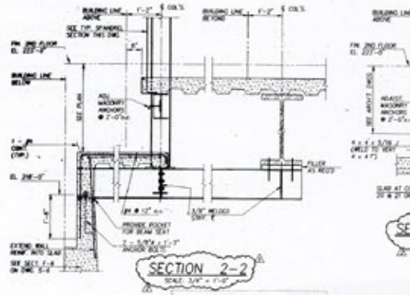
Views of the building site and the completed building.

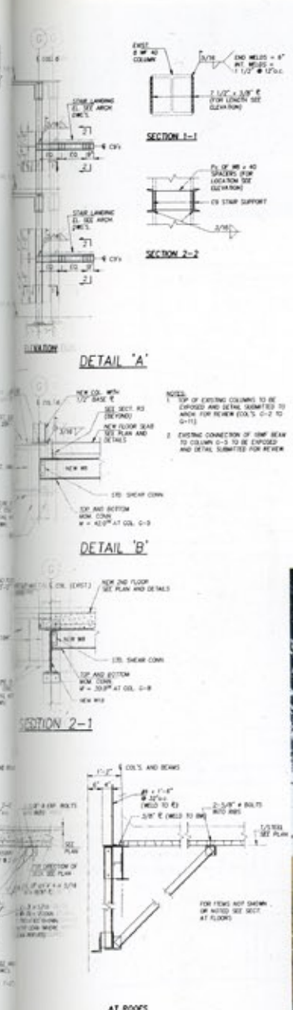
Sandro Marpillero

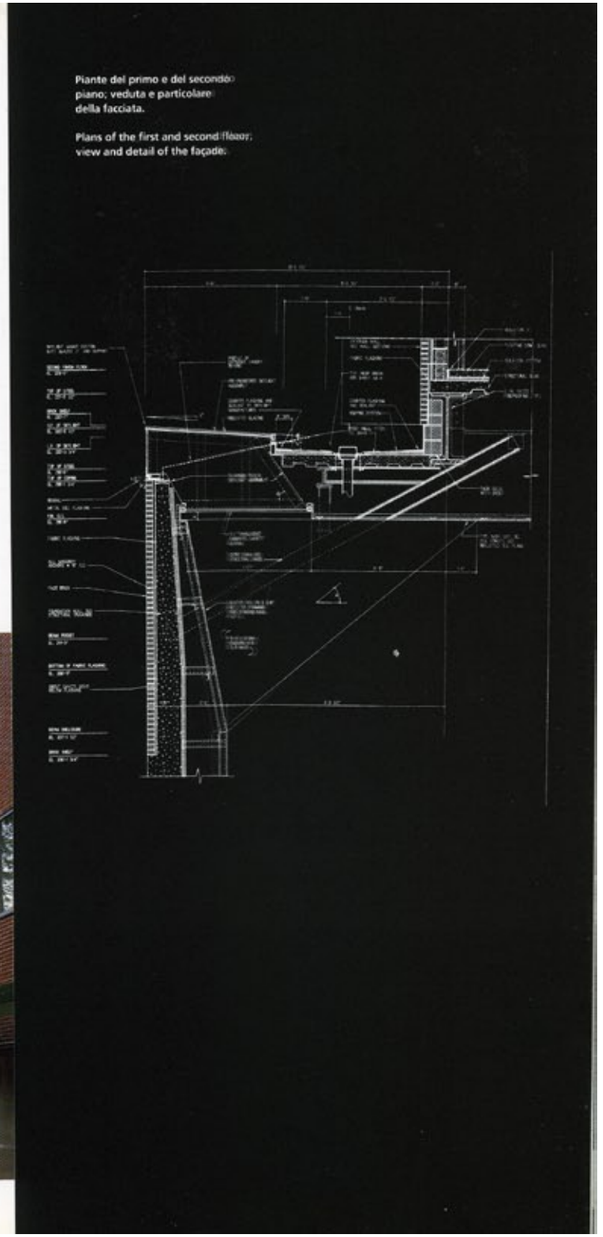
■ The project for the transformation and expansion of the Woolworth Center can only be understood on the basis of a careful examination of the context. In fact a series of overlaid patterns can be distinguished in the formal structure of the Princeton campus and their complexity confers a special character on many of the locations in the university. On the one hand, the pattern of the buildings, which are often laid out in straight lines, gives rise to open spaces that are surrounded by structures. This results in a second formal level created by the pattern of voids and open spaces framed by the buildings, bounded by well-structured façades, articulated in the customary style of the "Gothic collage."
A third level is created by the roads and footpaths, which sometimes run parallel to the buildings and at others cross the spaces diagonally. Thus in some cases the geometry of this grid of routes reinforces the orthogonal and parallel arrangement of the buildings, and in others the pattern of diagonals traversing the open spaces. The characteristic presence of the covered passageways that run through the buildings is linked to these pedestrian routes.
In the area of the new building these three levels of form are superimposed in a characteristic fashion. The Green onto which the new building faces is a beautiful open space crossed by footpaths, while the open space on the other side of the Woolworth Center has very different attributes. The Green can be considered a square or a street animated by the passage of students, while the garden around Prospect House has a more stable character. Its proportions are imbued with a more domestic feel: it is a peaceful place, with an atmosphere linked to the style and manner of socialization typical of clubs and restaurants. All this had to be reflected in the proposal for expansion of the Woolworth Center. The facing of the new building is indicative of an impulse that comes from the inside and is formalized along the perimeter, in a fanlike disposition. Thus the corner corresponding to the entrance acquires a particular importance—an unusual image that is revealed as you emerge from the semidarkness of the covered passageway of the 1879 Hall—as it reinforces the idea of this part of the building as a tower in negative. The bending of the wall and the plan constitutes an invitation for the pedestrian who arrives from the Green and, at the same time, establishes a relationship with the nearby school. The western part of the building, which houses the creative and contemplative activities, as well as those connected with the library, opens onto the domestic and protected space of the garden and offers a view of Prospect House.
These considerations seem to be concerned solely with an analysis of the context, yet the project has also been conceived as an autonomous entity. The new Woolworth Center is born out of an internal logic that results in an organization of the spaces around the transverse axis of the entrance. The extremely high entrance hall has the characteristics of a route, street, covered passage or square that connects the Green and the garden of Prospect House. At the same time it opens out like a fan as you move toward the center. Thus the building is divided into two halves internally: on the one hand, the current Center of Music which contains the lecture rooms, many of the studios and the practice rooms. On the opposite side of this inner "courtyard" are set the hall for music rehearsals—where activities can be observed through the glass wall that opens onto the two-story-high space—and the library, another of the symbolic centers, which is also visible from the entrance hall. Consistently with this subdivision, an overhead source of light has been provided on the south side and another on the north side. The north light illuminates the bookcases of the library, while the warm south light illuminates the upper part of the entrance hall. On this side the route taken by the stairs bestows unity on the different activities of the center, and is proposed as the main entrance.

Piante del primo e del secondo piano; veduta e particolare della facciata.

Plans of the first and second floor; view and detail of the façade.

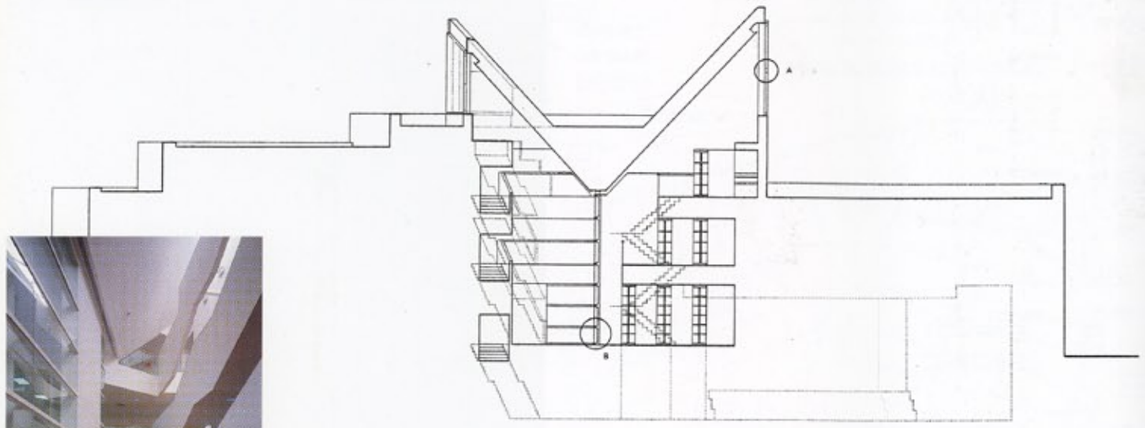


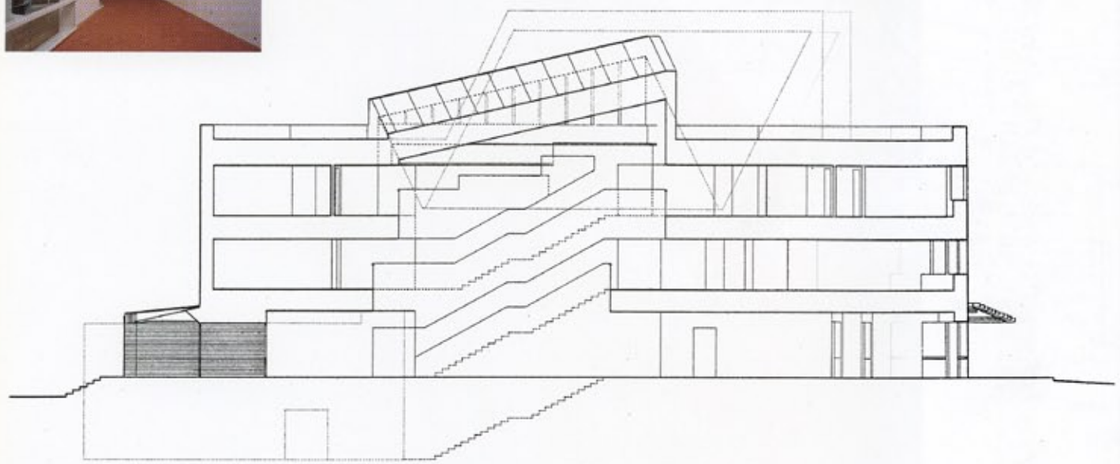


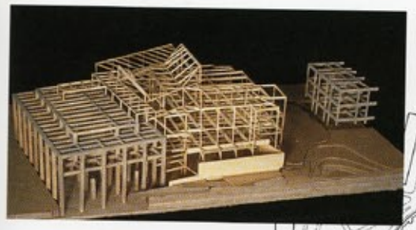


Sezione trasversale e longitudinale
e veduta dell'atrio di ingresso.

Cross section, longitudinal section
and view of the entrance hall.







Planimetria generale; modello
della struttura degli edifici, veduta
della scala e della biblioteca e scorcio
dell'edificio dal Green.

Site plan; model of the buildings'
structure, view of the staircase
and of the library and detail
of the building seen from the Green.

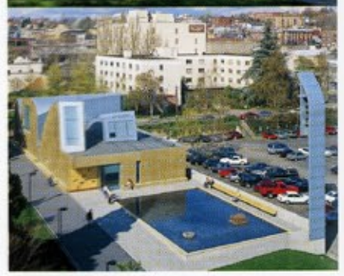
Steven Holl
Chapel of St. Ignatius
Seattle University
Washington, 1994-1997

Con/With: Tim Bade, Justin Korhammer
(Associate Architects: Olson/Sundberg)

Foto di/Photos by **Paul Warchol**

Un'assemblea di luci diverse
La metafora della luce è realizzata attraverso diversi volumi che emergono dal tetto, le cui asimmetrie aspirano a creare differenti qualità di luce: rivolte a est, a sud, a ovest e a nord, come se fossero tutte riunite per una cerimonia comune. Nello stesso modo con cui i Gesuiti non propongono per i loro "esercizi spirituali" un metodo unitario – perché «metodi diversi potrebbero aiutare persone diverse» –, il progetto ricerca un'unità a partire dalle differenze.
Ciascuna quantità di luce corrisponde infatti a una parte del rito cattolico: quella rivolta a sud corrisponde alla processione, elemento fondamentale della liturgia; la luce volta a nord, verso la città, corrisponde invece alla cappella del SS. Sacramento e simbolicamente alla missione della comunità. Lo spazio principale presenta volumi di luce da est e da ovest.
Durante la sera, quando nella cappella dell'università si raccolgono i fedeli per la messa, le masse di luce appaiono come fari che splendono in tutte le direzioni del campus universitario e, a volte, per quanti si trattengono a pregare, le luci continuano a brillare. Nel nartece e nella "processione", dopo l'ingresso, si viene investiti dalla luce naturale e dai suoi giochi d'ombre. Avanzando, la cappella si anima di un bagliore misterioso grazie alla riflessione di campi di colore a cui si aggiungono i rispettivi complementari inseriti in lenti di vetro colorato.
Esternamente, a sud della cappella si trova un laghetto o "luogo di meditazione" che, riflettendo la luce, di sera diventa un silenzioso cortile d'accesso.

Luci
1. Processione: luce naturale
2. Nartece: luce naturale
3. Navata: campo giallo con lente blu (est) campo blu con lente gialla (ovest)
4. SS. Sacramento: campo arancione con lente porpora
5. Coro: campo verde con lente rossa
6. Cappella della riconciliazione: campo porpora con lente arancione
7. Campanile laghetto: illuminazione notturna proiettata e riflessa

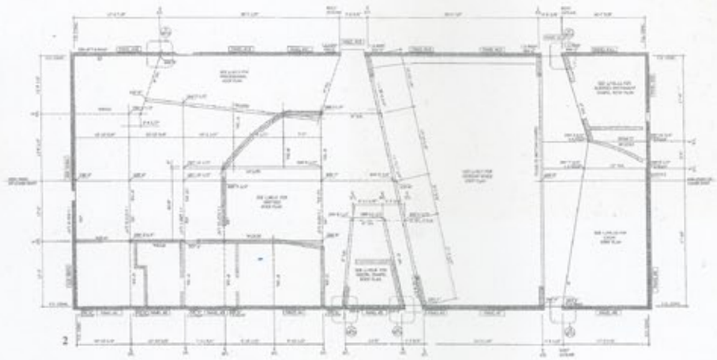


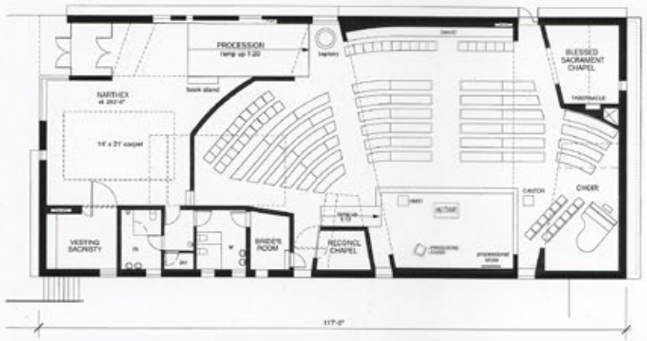
Planimetria generale e vedute della cappella nel campus.

Site plan and views of the campus chapel.

■ **Concept: a Gathering of Differents Lights**
The metaphor of light is shaped in different volumes emerging from the roof whose irregularities aim at different qualities of light: East facing, South facing, West and North facing, all gathered together for one united ceremony.
Just as in the Jesuits "spiritual exercises," no single method is prescribed—"different methods helped different people...," here is a unity of differences gathered into one.
Each of the light volumes corresponds to a part of the program of Jesuit Catholic worship. The south—facing light corresponds to the procession, a fundamental part of the mass. The city—facing north light corresponds to the Chapel of the Blessed Sacrament and to the mission of outreach to the community. The main worship space has a volume of east and west light.
At night, which is the particular time of gatherings for mass in this university chapel, the light volumes are like beacons shining in all directions out across the campus. On many occasions, for someone always praying, these lights shine throughout the night.
In the Narthex and Entry Procession, one experiences the natural light of the sun with its play of shadows. Moving deeper into the chapel the light has a mysterious glow of reflected color fields with the complimentary color of each field set in a stained glass lens.
Directly to the south of the chapel is a reflecting pond or "thinking field." Reflecting at night, it is a silent forecourt for the chapel.

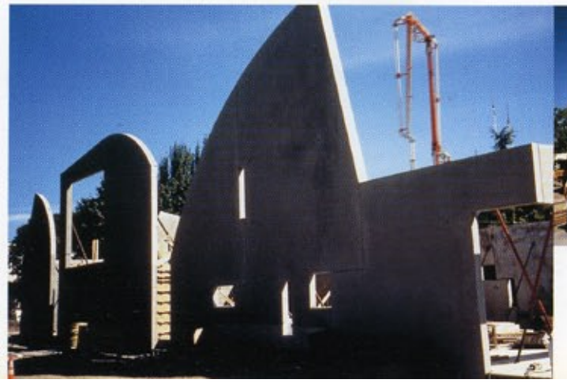
Lights
1. Procession: Natural Sunlight
2. Narthex: Natural Sunlight
3. Nave: Yellow field with blue lens (East)
   Blue field with yellow lens (West)
4. Blessed Sacrament: Orange field with purple lens
5. Choir: Green field with red lens
6. Reconciliation Chapel: Purple field with orange lens
7. Bell Tower and Pond: Projecting, reflecting night light

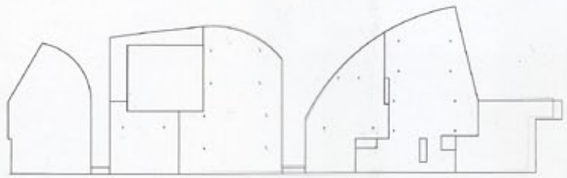




Pianta della copertura, pianta del piano terreno e vedute del cantiere.

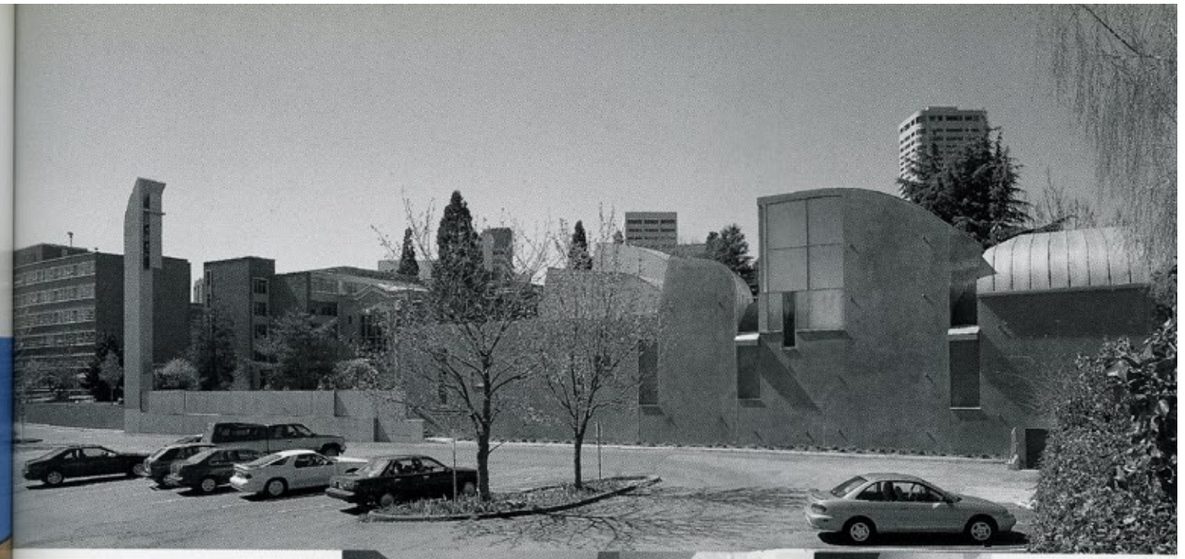
Plan of the roofing, plan of the ground floor and views of the building site.

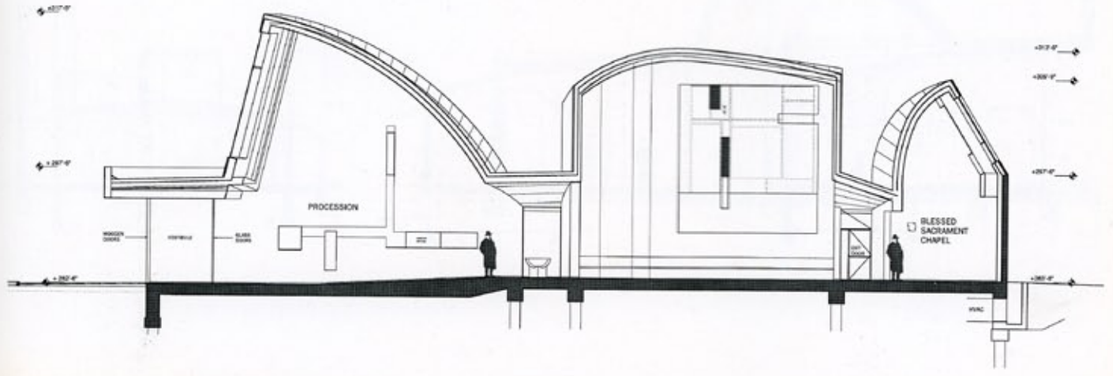




Studio della luce e particolari delle facciate; vedute del fronte est e degli spazi interni; sezione longitudinale.

Light study and details of the façades; views of the east front and of the interior spaces; longitudinal section.





Vedute degli spazi interni;
sezioni trasversali e longitudinali.

Views of the interior spaces;
cross section and longitudinal section.