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ENSINAR PELO PROJETO
TEACHING THROUGH DESIGN

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Design through synthesis: the role of sculpture in the design process of Max Bill

The role of making in the architecture design process has been a topic of increased discussion within a contemporary culture that emphasizes the visual, the fast and the virtual, and where the relationship between mind and body has become distanced. Especially in design culture, educators have been failing to recognize the potential that a broad engagement with all senses would bring to the creation of evocative architectural spaces.

Meaning in buildings is built up over time with a broad range of aspects in design tradition which comprises a specific scope of knowledge. Vitruvius stressed in his first book on the education of the architect that this knowledge includes the acquisition of both manual skill and scholarship, and that "those who relied only in theories and scholarship were hunting a shadow, not the substance", while those who attained a complete knowledge of both would sooner accomplish their purpose and influence others with it (Vitruvius, 1960, p.5). One way architects can achieve this is through an interdisciplinary design practice that brings together architecture and artistic sensibility.

Among modern contributors to this idea was Max Bill who was a product of the Bauhaus and its unrealized mission to unify the visual arts, and he successfully established himself both as a modern artist and an architect. His work in both fields reveals inter-relationships of concepts, found especially in its economy and rationality, and these beg a deeper examination. His Concrete art explores the essential in various media through an array of works that defy stylistic categorization.

Bill studied in the Bauhaus from 1927 to 1929, afterwards going to Paris where he discovered Theo van Doesburg's manifesto on Concrete art, which would be fundamental to the definition of his own theory of Concrete design in 1936. His text "Concrete design"[1] indicated a method that could be applicable in several fields, and which was initiated entirely in the imagination and created through the interplay of essential elements such as color, form, space, light and movement. Engaging these principles in his investigative process as an artist and architect, Bill produced paintings, sculptures and graphics that address the intellect, while in his design of utilitarian products and architecture his method generated what he called 'beauty from function and as a function'.[2]

Accordingly, sculptures should be able to overcome their identity as objects and extend their influence spatially through relationships between people and their environment, and between other elements in an environment. These relationships are seen in his sculptures through artworks that embody the concept of rupture and reconnection, such as his long lasting investigation on the transformation of form consisting of one manipulated surface, the *Endless Ribbon* sculptures (1935-95), as well as in works where geometry is cut or unfolds, revealing new surfaces and geometries.[3]

The function of Concrete artworks was extended by Bill to architecture in a way that would allow buildings to advance an intellectual notion of space. If ideas in art were to be made clear through adequate means, he similarly demanded that architecture should be as comprehensible as possible. Artworks and buildings

1. Endless Ribbon from a Ring II. In: Max Bill and James N. Wood, Max Bill, Buffalo, New York: The Buffalo Fine Arts Academy and the Albright-Knox Art Gallery, 1974, 83. © Max Bill, ProLitteris / SPA, 2013

2. Hochschule für Gestaltung (HfG), 1950-55. In: Gimmi, Karin, 2G 29/30 *Max Bill Architect*, 112. © Max Bill, ProLitteris / SPA, 2013

3. Studio-House in Zumikon (1967-68), Entrance façade. Photo taken by the author, 2009.

should unite real space and psychological space, thus producing a deeper human experience. A good and functional form, and perhaps also good space, has the ability to produce relationships within its constituent parts and its surroundings. So one could say that the more an artwork or building is confined in itself the less functional it is, and the more it is connected to its surroundings, both conceptually and practically, the more functional it is.

Connection and disruption in composition

After his definition of Concrete design in the late forties and fifties, Bill's conceptual interests were embodied in a series of *Endless Ribbon* sculptures made with thin and highly reflective planes of metal in the reflections of which moments of surface connection and disruption can be perceived. These sculptures consisted of the twisted single surface of a Möbius strip and expanded upon in many ways. In *Endless Ribbon from a Ring II* (1947-48, *fig.1*), for instance, the inert shape of a ring is altered, becoming a flexible plane. This thin sheet of highly polished gilt brass allows the reflection of incidental light, colors and shadows, transforming it into an interactive object with the illusion of movement. The continuous lines generate space by their turning forms and color contrasts which bear analogies with the serpentine composition of the *Hochschule für Gestaltung* (*HfG*) or Institute of Design (1950-55, *fig.2*), in Ulm.

The *HfG* building demonstrates a concept also addressed in his sculptures: breaks and reconnections. In the *HfG*, simplicity and repetition of surfaces and volumes is contrasted by a shift in geometry at three points where the program changes. The overall serpentine arrangement also contrasts with to the homogeneous façade and ultimately characterizes the assimilation of the topographical surroundings into the building. In the end, through geometry and program, Bill realized a composition characterized by connection and disruption.

Contextualization and purity of form

The *Studio House in Zumikon* (1967-1968, *fig.3*) is Bill's last architectural project and residence. This house can be included among examples of his interest in an architectural functionality that intimately connects architecture to landscape, and combine this with an order that relates parts and the whole, both inside and out.

The house is situated in the green suburban area of Zumikon in Zurich where it looks down a hillside to the West and South. Bill's strategy was once more to design a house to suit the existing topographical contours, employing here an L-shaped plan that faces the rear of the site where it embraces a garden and a view of the sloped surrounding landscape. The topography led him to distribute his design among three levels including a ground floor, an entrance floor above and a lower floor (basement) (*fig.4*). The entrance is set in a low, elongated volume which, approaching from the driveway, is slowly revealed among the trees with a somewhat industrial aesthetic of hard lines and seamed white industrially produced panels. While the three storey structure is almost completely hidden at the entrance, in the terraced garden at the back one is able to comprehend the multi-level arrangement from a lower elevation.

The plan of the house is composed of independent areas organized with reference to the landscape. This living room is at the core of the L-shaped plan and because of its central location serves as a link between spaces including the master bedroom and bathroom, and the kitchen and dining room. Commenting on this project Bill (Peppiatt, 1987, p.48D) noted that in his creative process he often took a central idea and opened it up to several other developments. "This central living room extends on every side into other rooms. All around, the inner space merges logically into the outer space." While this is the only space in the house with multiple free interconnections, this statement also shows Bill's intentions to unify house and land, inside and outside.

In this project, which characterizes his period from late fifties and sixties, Bill operates with the subject of contextualization and purity of form. The allocation and relationship of spaces in the house follows a topographical order which recognizes the natural surroundings as context and responds to them through independent spaces on different levels and facing different views, while arrangements and passageways confer significance on the main rooms.

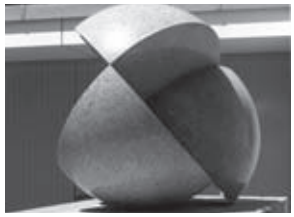
Near the entrance of this house are placed two sculptures, *Twin from a Quarter Sphere* (1968) and *Striving Forces of a Sphere* (1966-67, *fig.5*) which embody the play of forces that reconfigure their forms, much as the way topography shapes the house. These sculptures are fractioned wholes, massive pieces of stone that have clearly been cut and moved, and were arranged as new forms. This is analogous to the concept of this house's design as a set of parts reconnected into a new whole which makes sense as one unity when perceived with topography in mind.

In *Striving Forces of a Sphere* two smooth diagonal cuts divide a sphere into quarters and allow two pairs of sections to slide apart along the axis of the cuts with an inherent sense of gravity. Simplicity of geometry is paired with complexity of implied movement and a sense of stability is paired with instability depending on the observer's angle of view.

This operation can be read as a transformation under the force of gravity, but it nonetheless maintains its parts and integrity. This alludes to the house's design in relation to the land which gives prominence to the ridge and the sloping terrain that are cut to allow the driveway and the house to nestle into the landscape. The primary effect is again the play of forces that change form and matter, and destabilize perceptions while leaving enough of the original whole to remain. If the Studio House in Zumikon does not convey the simple geometrical purity of these sculptures, it expresses a concept of purity that involves more of the collective elevations that reflect grades in the landscape.

Bill's unification of the scientific and the aesthetic in his art and architecture was the secret of his communicative and meaningful art and architecture. In his process of design Bill was concerned with concepts orienting forms, which opened the possibility of bridging ideas between his art and architecture. His continued relevance is due to the choice of a minimal aesthetic which remained consistent in all his works, and allowed for a better comprehension of his ideas and for the translation of these ideas between sometimes disparate works.

4. Studio-House in Zumikon (1967-68), Plan. In: Gimmi, Karin, 2G 29/30 *Max Bill Architect*, 210. © Max Bill, ProLitteris / SPA, 2013.



5. Striving Forces of a Sphere (1966-67). Photo taken by the author, 2009.

His interdisciplinary practice supports the legitimacy of artistic research as an instrument used in combination with the design of architecture, and particularly those which deal fundamentally with the idea that a form is functional only when *in relationship* to its surroundings.

1 → Bill defined Concrete design in his own terms: "is a kind of creation that develops from its own means and laws without having to borrow or derive these from external natural phenomena, visual creation is therefore based on color, form, space, light and movement." Bill, M. et al (2004). Concrete design, 2G Max Bill, Architect 29-30, Barcelona: Gustavo Gilli, 255. This interpretation refers to the text "Concrete design" (1936) originally written by Bill for the exhibition Zeitprobleme in der Schweizer Malerei und Plastik (Current Problems in Swiss Painting and Sculpture, June 1936) at the Kunsthaus Zurich. Also in: Bill, M., et al (2004). 2G Max Bill, Architect 29-30, Barcelona: Gustavo Gilli, 255. This first exhibition gave an initial overview of the various tendencies of non-figurative art in Switzerland. The text was revised by Bill several times, among them, in Bill, Max. "Ein Standpunkt" (A Position), Kunsthalle Basel (18 March-16 April 1944), Basel: Benno Schwabbe & Co., and also for the introduction to the catalog Zurcher Konkrete Kunst (1949). In these two revisions Bill replaced the initial term Concrete 'design' which was connected to a general method of creation, with Concrete 'art', which was more specific to artworks. He also replaced the general expression 'visual creation', which included all the fields of visual creation, with a more specific reference to paintings and sculptures. In subsequent texts Bill would make even clearer his broad view of the Concrete as an 'idea' that spreads to all creative fields. These revised versions are also published in Hüttinger, E. (1978). Max Bill, New York: Rizzoli and Zurich: ABC edition, 61 and also in Bill, M. and Wood, J. N. (1974). Max Bill, Buffalo, New York: The Buffalo Fine Arts Academy and the Albright-Knox Art Gallery, 47. The term was originally created by Theo van Doesburg in 1930 referring to a specific type of non-figurative painting and sculpture. Van Doesburg defined the term in the first and only issue of Art Concret, which appeared in April 1930 with a manifesto entitled The Basis of Concrete Art. The manifesto stated that a Concrete painting should be constructed totally from planes and colors and should avoid natural forms, lyricism and sentiment. However, his death in March of 1931 left the manifesto an untested theory. Max Bill expanded the notion of Concrete design in subsequent texts such as The Mathematical Approach in Contemporary Art (1949), when he compared art to science and explained that art could be a place of resolution for scientific questions regarding space. This way, Bill inserted himself in the current modern discourse which claimed for purity of means in art and for the elimination of the decorative through a return to essentials. He followed by clarifying that he was not defending the sole use of 'pure mathematics' in his Concrete works of art, rather he wanted to use a logical way of thinking in art for the transmission of ideas or mental concepts in the most straightforward way, characterizing the zeitgeist of his own time. See this text in: in Bill, M. et al (2004). 2G Max Bill, Architect 29-30, 256-263 and 264.
2 → Concept defined by Bill in 1948 when he gave a lecture at the plenary session of the Swiss Werkbund yearly meeting in Basel. The original title was Schönheit aus Funktion und als Funktion, and it was first published in Werk, 36, no. 8, (1949): 272-274. Also published in Bill. M. (2010). Architecture Words 5 – Form, Function, Beauty = Gestalt, London: Architectural Association Publications, 32-41.

In this lecture Bill addresses mainly designers and architects, denouncing the appeal of formalism in the contemporary mass-produced and streamlined design, as much in objects as in architecture, and calls for a design education that places equal value on art and technique. He ends by arguing for 'a spirit of beauty which is developed from function'. Later on, in a 1979 text, Bill would state that his concept of function is different from functionalism, and clarifies this with the word relationship: "[…] under the term function we understand the relationship of various factors to each other, applied to the area of our environment this means primarily the relationship between people and their environment and the relationship between these environmental factors to each other." Max Bill, From Functionalism to Function", in: Bill, M. (2004). 2G Max Bill, Architect 29-30, 273. Max Bill's preoccupation with the environment can be seen in the fact that he taught a course on 'Ecologies and environmental stewardship' at his Hochschule für Gestaltung or Institute of Design (HfG) in Ulm. Angela Thomas, Interview by author, Zumikon, Switzerland, July 07 2007.
3 → This is seen in, among other works, Endless Ribbon (1935-1995) (1935-53), Construction of 30 Equal Elements (1938-39), Surface in Space Delimited by One Line (1952), Striving Forces of a Sphere (1966-67), and Surface from an Entire Spiral (1974).

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