

## **The Future of Interconnectivity: Laszlo Moholy-Nagy and Siegfried Ebeling**

Dr Sarah Breen Lovett

Monash University

[sarah.breenlovett@monash.edu](mailto:sarah.breenlovett@monash.edu)

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Abstract:

Hungarian artist Laszlo Moholy-Nagy and German architect Siegfried Ebeling were associated with the Bauhaus in different ways, yet both proposed an urgency around realising a greater sense of interconnectivity between ourselves and the environment. Each believed that such bonding could be attained firstly through cultivating awareness of metaphysical phenomena; secondly through a greater connection of architecture to the external environment and; thirdly through advances in architectural design and construction. An examination of the commonalities and differences in Moholy-Nagy's and Ebeling's approaches to architecture begs the question: If their more metaphysically challenging ideas had been foregrounded in architectural history and education, would we have arrived at different, and possibly more advanced, environmental and construction knowledge of architecture than we do now?

Hungarian artist Laszlo Moholy-Nagy and German architect Siegfried Ebeling both proposed an urgency around realising a greater sense of interconnectivity between ourselves and our environment. Each believed that such interconnectivity could be attained through a cyclical relationship between cultivating awareness of metaphysical (beyond the physical) phenomena; increasing engagement with the external environment and; promoting advances in architectural design and construction. An examination of the commonalities and differences in these practitioner's approaches begs the question: If the more metaphysically extreme ideas were foregrounded in architectural history and education, would we have a more advanced environmental and construction knowledge of architecture than we do now?

Moholy-Nagy was Master at the Bauhaus Dessau between 1923 and 1928 and The New Bauhaus Chicago from 1937-1946. His text "New Vision" published firstly in 1928 and then again in 1947 was used, by himself as a reflection on his teaching and also became the text book for the Bauhaus and, as Walter Gropius describes "a standard grammar for modern design" (Gropius 6). Less well known, Siegfried Ebeling was a German architect, painter and architectural theorist. He arrived at the Bauhaus Weimar in 1922, during a time when the change over from Johannes Itten to Moholy-Nagy was taking place. Ebeling continually proclaimed his ideas were at odds with the approach to modern architecture by the Bauhaus (Scheiffele and Papapetros XI – XIII). In 1926 he wrote "Space as Membrane" which was published in Dessau but not by the Bauhaus. This text was also not published in English until 2010 by Architects Association AA in London and in German again in 2016 by Bauhaus Dessau.

This recently re-discovered text by Ebeling, is key to unlocking the potential of the more well-known text by Moholy-Nagy, primarily because of its detailed articulation and increased capacity for environmental and construction articulation. There has been other key architectural thinkers discussing these practitioners, such as : Walter Scheiffele, Spyros Papapetros, Olivar Botar, Detlef Mertins and Jonathan Hill, who point to connections between Moholy-Nagy and Ebeling (Scheiffele 6 and Hill 142), and the potential of Ebeling influencing Walter Gropius, Buckminster Fuller and Mies van der Rohe

(Scheiffele, 7-10 and Papapetros, 13). While these contemporary writers acknowledge the cosmic and spiritual radicalism of Ebeling and Moholy-Nagy, they do not offer a detailed comparison across their works to expose a cyclical relationship between metaphysical thinking and architectural design.

## **METAPHYSICAL**

This paper shines a light on relationships between metaphysical thought and architectural design from the Bauhaus. Metaphysical ideas in the Bauhaus are well known in Johannes Itten's highly visible and influential practices from Mazdaznan philosophies, and celebrated in writings such as Wassily Kandinsky's "On the Spiritual in Art" (1911) which influenced many Bauhaus artists and masters such as Feininger, Van Doesburg, Klee, Mondrian and Malevich. It is often said that there was a seismic shift in the Bauhaus from when Johannes Itten left and Lazlo Moholy-Nagy took over, a shift from the; metaphysical to physical, emotional to functional, expressionism to constructivism, subjective to objective or the esoteric to rational. However, metaphysical ideas are present in the writings of Moholy-Nagy, and in architectural thought of the time as expressed by Ebeling. This paper shall briefly look at notions of the metaphysical in these practitioner's works, before we go on to examine how these ideas influenced environmental and constructional concerns.

Moholy-Nagy explains the need for awareness of a metaphysical relationship between ourselves and the environment for the advancement of evolution. His moving light installation, "Light Space Modulator" (Moholy-Nagy 1928, 14, 52-53) is not just about light effect and use of reflective materials, rather it epitomises Nagy's ideas that would become further evolved the more we were exposed to new environments. He talks of the "the capacity and courage to build up new relations between elements of expression... building up the biological nourishment of man" (Moholy-Nagy 51). Connected to biological advancement, Moholy-Nagy also discusses this in a metaphysical sense, when he says the aim of design is to satisfy "human needs that are spiritual as well as utilitarian" (Moholy-Nagy 11). He promotes the idea of a "Sixth Sense which is

possessed by people living in close proximity to nature, as special sense of orientation or time” (Moholy-Nagy, 23). He even goes as far to propose that telepathy should be considered in experiencing space in new ways that had not been experienced before (Moholy-Nagy, 58). Moholy-Nagy is explicit in interrelating spiritual, biological and scientific terms and ideas, to promote greater awareness of our relationship with our surroundings.

Ebeling develops ideas around the metaphysical even further, and explains the urgency of it when he says, “The greatest task facing us in the next hundred years is evidently the creation of a new type of human where builder and artist meet, where each perceiving being strives for, and radiates a new evaluation of himself and his connections to the mystery of the universe” (Ebeling 1926, 26). As counterpoint to Moholy-Nagy’s approach, Ebeling articulates the non-universal nature of the metaphysical, by pointing out “the conditions of atmospheric radiation are fundamentally different in relation to the human organism that has to confront them on a physiological level” (Ebeling 1926). Another way that Ebeling differs from Moholy-Nagy’s conception of the metaphysical, is he is not promoting that architecture should affect the inhabitant in some way, but rather, quite the opposite, it should be a protective membrane for the human being to exist evolve autonomously, free from external influences. He goes onto articulate architecture should not enforce notions of humanity such as: beauty, religion power or authority on the inhabitant. Instead he states we should be concerned with the “flesh-and-blood human being who is in full possession of a boundlessly expanding sensuality”. (Ebeling 1926, 10). That is, the architecture should be a space where unwanted external forces from the environment are kept out, so that we can evolve into a “Being-for-oneself” (Ebeling 1926, 11).

This is not to suggest that Ebeling is only concerned with the individual and not the whole of society, quite the contrary – expresses metaphysical awareness as collective issue, he goes as far to say: “A psychology based on the principle of symbiosis and the parapsychological relationships of the living environment is aware that the dull lethargy on an Eskimo in winter, for example, may well affect

people living in our environment under particular atmospheric conditions” (Ebeling 1926, 15).

Therefore, Ebeling is not just aware of the interconnection between the environment and architecture, the environment and ourselves, but ourselves with one another what he calls the “parapsychological interconnectedness of all creatures on earth” (Ebeling 15). While Ebeling speaks of these types of interconnections between self and place as scientific he also is explicit about them being”. However he warns against religion, condemning Bruno Taut’s approach of a “representative-cosmic-religion ... Like all ecstasies they failed to go sufficiently deep, or grasp the problem” (Ebeling 25). Ebeling, on the other hand aims to push the boundaries of the unknown in both a scientific and spiritual sense in order to advance architectural design. He says, “I will not flinch at the consequences, even if this means deciding in favour of the intangible mysteries of all becoming, natural and organic, when the limitations of science impose a halt in this field, or the technical solutions lie in the distant future.” (Ebeling 6)

It is precisely the engagement with the un-measurable realms that Moholy-Nagy and Ebeling refer to that is of value. Because it is in the metaphysical realms that the limits of science and human perception are pushed. It is in the consideration of the unknown that we can begin to extend understanding and developing into practical technologies for the built environment. We will now examine how each of these practitioners translate these metaphysical concerns into environmental considerations for the built environment.

## ENVIRONMENTAL

The way that Moholy-Nagy's metaphysical thoughts translate to the environmental is what we will call an architecture of forces. This is most clearly articulated in his following statement: "real space experiences rests on interpenetrations of inside and outside, above and beneath, on the communication of the in and the out, on the often invisible play of forces present in the materials and their relationships in space" (Moholy-Nagy62). He also proposes the idea of lightening architectural material in order to move from "restricted closed spaces to free fluctuation of forces" of the exterior (Moholy-Nagy48).

These ideas start to be proposed in built form and with potential for environmental impact through the *Dynamic Constructive Energy System* Moholy-Nagy developed with Alfred Kemeny in 1922. This is "the activation of space by means of a dynamic constructive system of forces ... instead of static material construction (material form and relations), dynamic construction (vital constructivism and force relations must be evolved where the material is employed as the carrier of forces" (Moholy-Nagy 49). Despite Moholy-Nagy articulating the *Dynamic Constructive Energy System* as a relationship between "man, material, power and space", the potential for these relationships to be further explored in an environmental sense, or electrical power are not explored by Nagy (we have to look toward Ebeling for this).

Advancing the ideas of Moholy-Nagy, Ebeling expresses even more clearly the ideas of interconnectivity for relationship with the environment. This work extends from his criticism of modern architecture's use of materials that do not respond to their environment (Ebeling 2, 12,32, 221). Overall, he promotes that the house should become a machine which increases performance, by harnessing and converting environmental energy sources for use in the home (Ebeling 23). These ideas are communicated in his concept of a "space-cube" that would be responsive to the various forces from the different environmental conditions in which it sits. He specifically is concerned with forces from the surface of the ground (made up of different mineral deposits) combined with

rays of light and atmospheric fluctuations that flow into the building and how these affect the inhabitant of the space. He says, “The degree of harmonious balance between these three components determines the character and the quality of the architecture” (Ebeling, 8). This fragile balance is effected, he says, by the character of the skin or membrane between the exterior space and the interior space. Ebeling also refers of the potential of solar power, to power a home, (Ebeling 14) and he outlines ideas such as black boxes and infra-red absorbing saline glass blocks to insulate architecture from the environment (Ebeling 24, 29-33). These ideas are also expressed in his speculative architectural form, such as his *Spherical House in the Ocean*, which is designed with solar and wave power in mind. (Papapetros 28).

This section has shown how metaphysical ideas have been translated into different environmental propositions. Moholy-Nagy began to hint at relationships between architecture, environment and power (perhaps electrical); but it is not until the work of Ebeling that the full potential of architecture to harness environmental energy for its own use, and control the environmental forces for better thermal performance is articulated. We shall now look at the way each of these practitioners look at ideas of interconnectivity for new techniques in construction.

## **CONSTRUCTIONAL**

Moholy-Nagy conceived of a cyclical relationship between awareness of ourselves, and advances in new technology, materials and industrialised processes. He believed that a heightened understanding of our selves connecting to our surroundings would lead to further constructional advancements, “only when it becomes clear to the individual that he has to function as a productive entity in the community of mankind will he come closer to a true understanding of technical progress.” (Moholy-Nagy 16). For Moholy-Nagy technical progress is related to mass production, and he posits that industrialised processes should be used to make life better for ourselves, so we can all realise a “balanced life through the full use of our liberated energies” (Moholy-Nagy 57-58) independent of class and social status. He says it is “the

right of the individual to have a satisfying occupation, a life work that meets inner needs, a balanced way of life and a real release of energies” (Moholy-Nagy 18). This can be taken to mean that Moholy-Nagy is focused on using technological advancements in architecture and mass production, to release time and labour, for us to have more quality of life through liberated energy, which in turn creates further advances in production. However, he does not articulate how to go about methods of constructional advancement to achieve this.

Ebeling also had an interest in streamlining and homogenising architectural design, such as his ‘energy-autonomous’ metal round house in 1932, that served to illustrate how materials such as metal could be used to conduct electricity for domestic use (Scheiffele 9-10). This idea would appear to be heavily influenced by his time at the Junkers aeroplane factory in Dessau (where he developed ideas for housing, and Gropius proposed factory for mass housing, and Georg Muehe studied methods of metal processing for housing production (Scheiffele 2-5). Ebeling suggests that the future of architectural design should be a continuous system, where all elements such as heating, lighting, ventilation, medical radiation televisions, telephones are all incorporated into the skin of the building, and adjusts automatically to the external environment. This is what he called a “biological architecture” (Ebeling 20). Ebeling suggests that this approach could lead to “rapid techniques of construction in response to mass migration” through a prefabricated architecture.

“[a] standard flat roofed housing type that could be taken to the limits of rationalisation.... The entire load bearing frame is assembled in the factory (floor and ceiling beams have special profiles so they nest in one another) and the structure with all of its parts can be rolled onto two low riding freight train carriages or trucks and transported to the construction site where it is then pushed onto the prepared foundation, pulled open and finished” (Ebeling 23).

Similarly to Moholy-Nagy's notion of liberated energy, the ambition of this type of architecture for Ebeling was to simplify construction so we could focus on our metaphysical self. Such an architecture would create "a space for free rhythmic dancing movement and a Dionysian fervour for life, or for absolute concentration, a site for mystical ceremonies; for a place where star gazers could commune with the night sky in a state of peace." He goes on to say that "If just a single one of these needs were universal, then the architect would have the welcome obligation to regroup the organism of the house around this lifestyle in a spatially dynamic way, and to reassess its constructional relations" (Ebeling 26).

Overall, both Ebeling and Moholy-Nagy promoted the idea of a mass-produced or prefabricated architecture to allow technologies to advance and thus to promote interconnectedness between the environment and building, environment and inhabitant and inhabitants with one another. While the artist Moholy-Nagy only hints at this in "New Vision", the architect Ebeling is specific in construction techniques of rapid construction to achieve the desired interconnectivity.

## **CONCLUSION**

This paper has illustrated, through two different practitioners: Moholy-Nagy, and Ebeling, a clear cyclical connection between metaphysical thinking and advanced conceptualisation in architectural design and construction. It follows that Ebeling, while least involved with the Bauhaus, was more focused on architecture and freely explored these ideas and their potential consequences on environment and construction.

From an architectural history perspective this account therefore poses the following questions: Was it because of the split in the Bauhaus that the functional practical and objective was seen to take precedent over metaphysical ideas, so the potential impact of these for architecture was not seen? What other metaphysical ideas at the Bauhaus, could have been translated into architectural ideas? If metaphysical ideas, touched on in Moholy-Nagy's and explored further in Ebeling's book, had been foregrounded in the Bauhaus

curriculum and subsequent architectural education - would modern architecture be much more environmentally and constructionally advanced than it is now?

From a contemporary architectural design perspective, it poses the questions: How can relationships between ourselves, the metaphysical and the environment be considered to articulate a new built environment interconnectivity? How can these new notions of interconnectivity begin to inform the way we design for greater synthesis with the environment and advanced construction?

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