

The matter of form: reason of form in structural components

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What role does the ground connection has in the relationship between form and structure?
Can this be the tangible element for the creation of new forms in contemporary design?

(INCIPIT) The thesis aims to investigate form in its generative relationship with structure, within the contemporary Swiss cultural context (21st century), focusing attention on the relationship with the soil. It investigates how structure can be the founding element of the project in its aesthetic aspect and material concreteness, capable through variations, alterations, to become generative text of form. The matter is intercepted in the structural, load-bearing, and therefore founding components of architecture. This is the search for an imperative, where instead of choosing a new style, or following a fashion, it is sought through the fundamentals, such as structure.

(TOPIC) The connection on the ground in fact, becomes the element of synthesis, on which to focus attention within the research. How the loads from the top arrive at the crucial point of relationship with the soil and how the soil relates to the project.

According to Deplazes the contact between the building and the ground not only determines the transfer of the loads, but also the interface with the topography of the place, in a compositional as well as structural relationship with it. The translation of an idea into a built architecture, structurally stable and adequate in its spatial location, finds a decisive moment in the way the building touches the ground - focusing attention on the tectonic choices from time to time designed.

(Outcome) Through a targeted analysis, six authors from the Swiss contemporary panorama are selected who interpret the theme through their projects. In the work of architects such as E2A, Christian Kerez, Scheddeger Keller, Pascal Flammer, Raphael Zuber, Baserga Mozzetti we try to identify common criteria that place the relationship between form and structure in the ground attack, at the center of the project. The goal is not only to analyze these projects as ends in themselves, but through common interferences to identify design invariants.

(THEORY) To clarify the concept, it is necessary to define what is meant by shape.

"Form is a totality, whose parts are not linked by a simple relationship of juxtaposition and contiguity, but obey an intrinsic law, which is the only one able to determine their meaning in totality"(Forty, 2004)
Form therefore as totality, a unicum, which identifies itself with the constitutive essence of an object, and alludes to the disposition and general order of its parts, identifying itself in the concept of structure. This idea of logical and physical unity between different components, can be connected to the idea of tectonics. Bottincher, in fact, interprets the term tectonics giving it the meaning of a complete system that binds each part into a unique whole, endowed with meaning.

In Frampton, tectonics becomes the poetics of construction and thus becomes art. In this way, the connection on the ground is not only a technical element, but a formal/poetic expression of the project. Through the reading of this component (ground connection) we analyze the relationships that are established within the projects, reconstructing the intrinsic general order.

(components) Deplazes, describes and catalogues architecture as a material vocabulary (modules), a constructive grammar (elements) and a structural syntax (structures). This type of procedure focuses on the individual components, which we could define "assembly requirements" to identify the relationships that are established between them and then the principles of composition that govern them. As P. Zumthor states, to construct means to give a whole endowed with meaning, which starts from a multiplicity of individual parts.

These are fundamental prerequisites, a sort of "mechanics of architecture". Only in conjunction with a concept follows a strong design process in which technical and structural fragments, initially isolated, are at the same time willing to define a consolidated architectural form. It is therefore evident how the physical components are related to the conceptual elements underlying the project.

The investigation intends to isolate one of these components in order to read, analyze and interpret it as a component through which to reconstruct the meaning of the project.

Tomà Berlanda, within his research "Architectural topographies", in the chapter Elemental forms, highlights how the different forms of architecture can be traced back to common principles of

relationship with the soil and (more important) highlights how through the reading of the relationship with the soil it is possible to describe the entire building. Wim Eckert, of E2A Architekten, states that when an object is placed on the ground, it is not simply placed on the ground, but relates to it, creating a contact. This type of contact can identify images and metaphors that describe buildings that are anchored, rooted, seated, in flight, floating. This outlines the intention to understand the ways of meeting and bring the materialization back to some basic situations such as: adherence, detachment, interlocking.

From the entire panorama mapped out, it is evident that in the relationship between form and structure, the ground connection plays a crucial role, starting from the abstract idea, up to the definition of a technological detail.

But why the Swiss cultural context? In this place there is an approach to the project based on concrete material aspects, an attention to detail in the definition of the overall aspect of the project.

Many of these projects are characterized by the concreteness of raw materials, (such as concrete, stone, wood) trying to pursue a "correct construction"; the almost artisan attention to details; the design importance given to common elements, such as roads, viaducts, tunnels, bridges, which then become real built works; the idea of always creating something that straddles tradition and innovation; a strong link to the ideal as well as the real aspect of the project; the constant search for dialogue between technique and aesthetics in a territory characterized by difficult orography that imposes an important reasoning in the relationship with the soil. In fact the alpine topographic nature, poses an always new challenge in the projects, that imposes to the architects to think in three dimensions since the beginning. All this makes the Swiss context the cultural context where to investigate the relationship between form and structure in contemporary design.

The concept of the project in a unified way between the formal and structural components not only gives the projects strong aesthetic characteristics, but allows a greater coordination between the figure of the architect and that of the engineer.

An approach of this type also guarantees greater efficiency in the use of materials; a strong material presence, which outlines a long duration over time; a development of the technological components; the creation of spaces adaptable for future variations.

The theme of the relationship between architecture and soil has rarely been addressed with reference to specific geographical areas/schools and regional groups, such as Switzerland, whose architectural production is recognized a certain degree of homogeneity. Usually these themes are addressed in the work of a single architect, marking differences or constants in his approach to the theme; or a specific character is defined that is analyzed in the work of different authors. The intention here is to take a geographical/cultural framework as a basis for this type of investigation.

Bibliography

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Design Driven Research

(METHODOLOGY) This theme is linked to both theoretical and real elements (form/structure) which can also be found in the meaning of these terms. For this reason the thesis intends to structure itself through a theoretical investigation, alongside the analysis of real case studies, in the idea of a research by design.

To do this, tools are identified, tools that link the theoretical component with that of analysis and reading of projects. Through the use of the ground plan, sections, structural models and details, projects are studied.

The ground plan, together with the section, allows to study how the whole project relates to the soil, defining how this crucial point is solved. By comparing the different authors, common solutions and differences in the selected case studies are identified.

Through structural models we analyze the relationship and consistency between the ground connection and the overall structure. The intention is to "eradicate" the case studies and show them in their intimate relationship with the soil on which they arise also showing the project foundations.

Finally, the technological aspect is studied in construction details, reading, analyzing, identifying design coherence, aesthetic qualities and technological innovation. It is verified how conceptual choices are confirmed in the technological component of detail. As P. Zumthor expresses, details have the duty to express what the basic design idea requires, in that specific point of the object.

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Bio

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2014 - Bachelor's Degree in Sciences of Architecture by Politecnico of Milan.

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2017 - 2019 collaboration in different offices of architecture between Milan and Venice.

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