Daniel Köhler

The Mereological City

A reading of the works of Ludwig Hilberseimer

Architecture

[transcript]

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1 Prologue: Architecture as a Discipline of Composition

> Forms are no longer superimposed but the result of order which in itself has already to some extent form quality.
> LUDWIG HILBERSEIMER. ARCHITECTURE: STRUCTURE AND FORM

Architecture is about the many, the composition of a collective[1]. Architecture starts when a plurality, more than two, enter into relations with each other, on a longer term basis without an ascertainable horizon. Architecture is the physical constitution, the attempt of a translation, and at best, a projection of a collective. Regimes of content articulate architectural features according to their specific will and Zeitgeist. However, architecture always deals with the arrangement and joining of figures. The basic scheme of the disciplinary being remains the same. But what is the nature of joining and arranging? Which specific methods are used in the discipline of architecture? In order to present my work clearly, I will narrow down the discussed topic to the work of the art critic, architect, urbanist, teacher and curator Karl Ludwig Hilberseimer. I will clarify and discuss my question in the following way: What is Ludwig Hilberseimer's understanding of architectural order? What is the relationship of his architectural elements to each other? And more precisely: What is the relationship between the individual house and its arrangement in a settlement in the work of Ludwig Hilberseimer?

I will mereologically consider the work of Ludwig Hilberseimer's, that is, in the resonance of the determining parts of his project. I will come to the conclusion that Ludwig Hilberseimer developed a design method, which describes the parthood relations of house and settlement circularly rather than hierarchical. The description of a settlement as a *whole as part of the part as a whole* provides a new urban definiti-

on of ground as figurative composition. A settlement as a compositional intervention is designed with specific architectural elements. The design of the house depends on its projection as Many, the settlement. This is the punctualisation as architectural method.

The actuality of my search is based on an already ordinary question of our time, which in my opinion has only just started to be considered seriously : It is the question of the possibility of an ecological architecture. The common sense – in the following the first hits of a simple search of the internet – today gives us a response of exclusively technical artifacts, such as solar panels, heat registers, K-values, U-values, thatched roofs, hemp fiberboards, wood casement windows, mud bricks, rainwater cisterns, geotherms, waste paper insulations. Whether on the house, in the house, or under the house: In any case, the ecological integrity of an architectural object is judged by means of a technical, extra-disciplinary artifact. But not by the articulation of the architecture itself. And so the question arises: Can we show an architectural strategy that is congruent with the essence of ecological thought? Is there a disciplinary knowledge in architecture that can be described as ecological?

The work of Ludwig Hilberseimer and its previous review seems to me to be a good start to look for an answer. In architecture Hilberseimer's drawings take a kind of key position when it comes to show the method of modernity and their failure. It is precisely because the work Hilberseimer is an example of an epoch, which need to be overcome, I want to search for approaches here. If we declare global urbanization, the project of modernity, as complete, external criticism is no longer possible. Everything is interiority[2], based on modernity. Therefore, here I would like to propose a different approach: instead of a negative departure as the project of postmodernism, I recommend the *revaluation of modernist method*[3].

Several times was the work Hilberseimer a fruitful source of friction, the basis of various architectural positions. The list of recipients is long and impressive: Oswald Matthias Unger's *city-archipelago*[4], Christopher Alexander's *anti-tree-city*[5], Andrea Branzi's *weak urbanism*[6], Archizoom's *non-stop-city*[7], Aldo Rossi's *city in the city*[8], Albert Pope's eliptical urban space[9], Rem Koolhaas's *imagine nothingness*[10], Manfredo Tafuri's *critique of the assembly line*[11], Michael Hays's analysis of *mass ornament*[12], Pier Vittorio Aureli's *project of autonomy*[13], Patrik Schumacher's *fluid urbansim*[14], to name just the most influential. All the above mentioned critiques are dealing in a way with the work Hilberseimer, which seems typical to me for the postmodernist discourse: The critique of the content of the formal figure. In the words of Marx these analyzes builds on a direct link between praxis and practicing, ie infrastructure and social fabric[15]. Each approach accepts the direct, but dichotomous combination of content and figure. Each consequential argument remains a further

alteration of the two opposites. Similar to a mathematical equation, an argument on one side leads to a conclusion on the other. In architecture we are familiar with this equation in the framework of typology: On the one hand we comprehend content with its figure, e.g. the patio-house, or on the other hand we comprehend the figure with its program, e.g. the Single-family-house. As postmodernists we learned from Robert Venturi to adress these both sides ironically as the duck or the shed. An illustration: Through the linear coupling of social interaction and the pattern the roads, Christopher Alexander concludes an argument against modernist building assemblies, due to lack of interaction (=intersections) of roads. The monotone facades in Hilberseimer highrise city Hays defines as a mass ornament of a mass society, which as a further conclusion Schumacher draws on for the demand for a variable architecture for a flexible society. None of the analyzes deals satisfactorily with the architectural design of the figure in itself: the study of the composition of parts, as an alternative to a purely opposing coupling between content and form. With the semantical steps of critique and improvement is connected the idea that each crisis keeps inherent an account of criticism as the necessary fruit of progress, growth and wealth. But such rhetorical eloquence as a negative departure from modernism seems to be more and more irrelevant. In this sense, I propose the reorientation of the architectural type that is an historical product of modernism[16]. I propose the reading of the architectural design of the figure in itself: its *mereological composition*.

The search for an alternative is not new and is at the core of our epoch of crises, or more precisely the ecological crisis. We find approaches in other disciplines under the definition of ecological politics[17], within the texts of the theoretican of science, philosopher and sociologist Bruno Latour[18], and the anthropologist Philipe Descola[19]. Ecological politics does not attempt a response to a crisis of nature, but ontologically, to a crisis of objectivity, naturalism and its dichotomy between nature and society. An initial enrichment of society with concerns of nature led to new compositions. The development demanded new ontological schemes, caused by their mixing and equal treatment of human and non-human beings. These schemes are engaged in the common definition of human and non-human beings, their groups, types of relationships and institutions[20]. In a flat ontology, an equal coexistence of people, institutions, creatures, ecosystems, machines, so *objects*, it is on the one hand not the representation, the hierarchization of content: the One, or on the other hand the formal characteristic[21] which is the material expression of the Many, but the negotiation of the One and the Many: the *resonance of parts*[22].

Here, I will mereologically consider the work of Ludwig Hilberseimer's, that is, in the resonance of the determining parts of his project. I will come to the conclusion that Ludwig Hilberseimer, coming from a scale based dialectic, developed a design

method that weaves together the needs and scales of a house and a settlement, so that the figure of a settlement is always in a state of transition between part and whole. One can also say: The ground is in itself a figurative composition. Even more: the operations that are necessary to link the scale of the single house and a settlement accept no scale. In Hilberseimer's settlement-studies, the whole of a city is only negotiable as part of the part, so the house as a whole. The class of a settlement can only be understood by the consistency of its houses. There is no settlement without its elements: its houses and their consolidating negotiation. Sense of scale undergoes a revaluation and becomes the *disposition* of One and the *colocation* of Many. In such a reading the form of the architectural type is the way of composing parts.

Of course, Hilberseimer is rooted in his era. His layout of the world is clearly based on the dichotomous opposition between nature and culture. But by shifting his focus to a dialectic of part and whole, Hilberseimer developed a synthesis of form, which does without the question of content. Content alters form quantitatively. However, form is not determined by content, neither morphologically, typologically or topologically. Alone architectural operations on architectural figures create (more complex) architectural figurative compositions. The architectural object is defined by its simultanity of that in which it is and that which is in[23]. It is therefore also a difference between the One and the Many. Another aspect is crucial here: The architectural object, as poietic object is not created theoretically by its assumption, but poietically: in its design. The operational step which summarizes a figural composition to an object epistemologically, in the philosophy of science is defined by the concept of punctualisation[24]. This work builds transdisciplinary on this definition and translates it into architecture.

If architecture as poietic discipline[25] communicates knowledge through the development and reference of architectural design-objects, a disciplinary scientific work should also use their specific media to communicate. Thus, in addition to a textual description, the work consits of complementary drawings and associative constructions. These representations serve as architectural explanations for poietic examination of the theoretical description. Designed objects are not limited to physical objects, figurations may exists textual as well. The format of the Poietics in this way can articulate the theoretical side of an investigation. This is another point that speaks for Hilberseimer's work as an object of investigation. Hilberseimer's planning was always criticized as unrealistic by its degree of abstraction and hermeneutic coherence. But it is precisely the accusation of the hermeneutic approach that can be used as an advantage here. The planning method in itself is treated by Hilberseimer as poietic object. This process can be divided into three design steps: The theoretical texts

of Hilberseimer first of all, are descriptions of the zeitgeist, the phenomena of the city or region. The analysis is used for abstraction of an era or a territory in their recognizable, historical, cultural, social, economic or technical factors. In the following, the abstracted factors are related to each other. They become a presentation of a territory as figuration. Thus, it is possible for Hilberseimer to provide criticique compositional. The critique becomes a requirement for the fabric of the territory. It is translated in a parthood-relationship to be established within the represented figuration of the region. In his planning Hilberseimer transforms theoretically-abstracted figuration into urban schemata; as compositions of architectural elements and their parthood towards each other. The application of a schema leads to speculation about compositional interventions in the city. Indirectly, through the parthood-relationship the specifity of the city can be sensed. The speculation of the city is expressed in the design of a specific architectural element.

Both sides, theory and design, build the instrument of composition: The theoretical abstraction leads to the idea of figuration. Critique is translated into a parthood relationsship to be designed. The urban scheme generates speculation to the city by proposing specific elements described by the raised parthoods of the schema.

I will divide this study into five chapters. The study begins with an introduction to the work of Ludwig Hilberseimer, his person and the recent scientific review of his work. Because this study is a formal reading, I will also introduce the concept of form and mereology. In the second chapter, I shall cite aspects on why the project of Ludwig Hilberseimer can be read mereologically. This is apparent from an art-historical and philosophical classification Hilberseimer's. The third chapter describes Hilberseimer's low rise building studies. In the fourth chapter, I compare the method of punctualisation with the design method of the low rise building studies and thereby translate the sociological method of punctualisation into the architecture. The method of punctualisation is a key element to analyze the urban structure Hilberseimer's of room, house, settlement and region mereologically. The fifth chapter concludes this study with a categorization of the work and outlook on the value within the field of architecture.

As already mentioned, in the first chapter I will carry out that previous reviews either make conclusions on architectural form with regards to content such as cultural analyzes, or criticize social aspects by means of an analysis of form. An examination of the form of Hilberseimer's work, as the schema of an architectural design in itself, is still pending. In order to assess the schema of Hilberseimer properly, in the following I will give a transdisciplinary overview of the concept of form. I will present approaches to form in the aesthetics to specific definitions of form in architecture.

In this regard, I will point out parallels between the work of Hilberseimer and Leon Battista Alberti. In the comparative study of both works can be seen, that Hilberseimer worked on a classical problem of form in architecture: the relationship of parts to a whole. The relationship between the house and a settlement, Hilberseimer designs as a parthood-relationship. For this reason, this work is a mereological examination. I will extensively introduce philosophical and mathematical definitions of mereology. Based on the geometric example of a line, I want to discuss how mereology can also be applied transdisciplinary on to architecture. In doing so, I am going to transform the line and its possible figuration into a mereological model, analoge to Bodo Rasch's and Frei Otto's wool-threads-model, and discursively position it as an alternative to spline curve. The wool-threads-model serves as a design analogy to the model of the settlement Hilberseimer's. As a model of form-finding, it is closest to the model of the settlement.

Before Hilberseimer became acquainted with urban designs, he was mainly an art-critic. Therefore, I will place, in the second chapter, the project of Hilberseimer art-historical and philosophical based on his early theoretical texts. That is not been done in this detail. Hilberseimer integrated formal methods of art history in his work. To be specific: methods of the art historian Alois Riegl. Analoge into Alois Riegl, Hilberseimer puts the materiality of a time in a tense relationship to artistic expression, the so called *Kunstwollen*. The tension between the material and the artist opposes the real with representation by the method of abstraction. Works of art are not imitations of nature, but compositions of figurations from simple elements. In a similar way Hilberseimer describes the history of architecture as compositions, as increasingly complex arrangements building on each other. The column as a design evolution of a pillar, building typologies as the result of various transformation of architectural elements or even as a composition of different building types. In order to assess works of art as compositions, Riegl used the relation of form to plane. The ratio sets the figure in contrast to their figuration. Riegl's formal relationship between figure and figuration will play a central role in Hilberseimer's design of the mixed development (Mischbebauung) and the subsequent settlement unit. In Riegl's writings, we also find the origin of Hilberseimer's distinction of geometric and organic order. The geometric order is the view of the nomad, a magical and centripetal: a planning from the outside. The organic order is the view of the farmer, a mystical and centrifugal: a planning from the inside. Geometric and Organic are no descriptions of an expression, whether perpendicular or amorphous, but formal descriptions of part-to-whole relationships. Hilberseimer himself uses the organic order. This is evident in the design of the Vertical City. The design is a critique of Le Corbusier's Ville Radieuse as

geometric, horizontal harmonization of the city. In contrast, Hilberseimer describes the Vertical City as a collection of relations between the various parts of the city.

The second major theoretical influence on Hilberseimer's work is the philosophy of Friedrich Nietzsche. This can be verified by direct transfer of text passages Nietzsche's in Hilberseimer's early texts. The tension between Kunstwollen and material also corresponds to Nietzsche's writings struggle between Apollonian and Dionysian. The contrast between the corporeal and sensual, body and idea in its union leads Nietzsche to the *Rausch*: the eternal return of perpetual sameness. Through Nietzsche's Rausch, for the first time the concept of form can be defined in the work of Hilberseimer: As the zone of content. On the example of the design of the Chicago Tribune Tower is noticeable that the facade of the skyscraper is the expression of the addition of ceilings and columns. As a close of an interior the facade is the closure of an autonomous element. The facade is not a hull, no interface to an outside and therefore no information carrier of a society. There is no direct connection between the bare representation of the facades in Hilberseimer's visualizations and a conscious social expression and criticism, as mentioned in earlier reviews of his work[26]. In terms of Alois Riegl's method of abstraction as representation of the real Hilberseimer developed his geometrically rigid high-rise concept from the perception of existing, American skyscrapers. The design of the skyscraper becomes the schema of the American metropolis.

As defined region of form, the sensual-corporeal is distinguished from others by the end of the self. With this form creates duration and continuity. The random properties of a thing become the contrast to form. A recognition is only possible from the corporeal view. The recognition of a corporeal is therefore an interpretation, a perspective on others, participating in the other. For the design this means, that architectural elements as compositions are described by a specific part-hood-in-the-other, thereby mereologically. In subsequent designs Hilberseimer reduces buildings to representations of consciously designed parthood relationships. Buildings become placeholders, the city becomes a schema. The schema character of Hilberseimer's designs is presented on several examples. As schemata, they are no architectural representations and despite their rigid representation they contain an idea of variation. The comparison of plan-schema and perspectives of the Vertical City will show that the punctuated facade shown in the perspectives is not the perforation of a wall with window openings, but an opening signifies a loggia, and thus it is the significant of an apartment. The perspectives show no architectural parts of a structure, but the disposition of residential units into a major figure. As schema, the design of Vertical City includes enough free space to design each unit of the city individually. Especially the reduction of representation embodied the idea of variation. In the Vertical City, a

house is described by limits. So the city block stretches between two metro stations, the house is described as the distance of two staircases. The whole is described as a partial relationship for the part of the whole.

In the third chapter I will show, that the decentralized planning of Flat Housing and Settlement-Units not represent a break with the Vertical City. By the skyscraper as stacking of workshops, offices and housing in one unit, a solution for the dense city is found for Hilberseimer. The model of the Welfare City as concentric representation of urban morphology at different density, shows that high- and low-rise buildings for Hilberseimer coexist. If Hilberseimer begins to develop single storey settlements, the flat is the urban theme of his time. In a textual discussion, I will describe the mereological links in the Flat Housing. I shall suggest that the so-called L-Houses are to be regarded as a schema. As schemata they are representations of parthood-relationships of house and settlement. This is evident in comparison to the atrium houses of Mies van der Rohe. Atrium- and L-house studies both emerged at the same time as student projects in the so-called Bauseminar at the Bauhaus, under the direction of Mies and Hilberseimer. While L-houses represent simple and mostly minimum solutions for family homes, the atrium buildings are architecturally highly differentiated. However, both are mereologically congruent. The questions of Hilberseimer's semester tasks show: The house is designed as an axiom in itself, but always in its simultaneous arrangement of a settlement. The projected settlement is part of the planning of a house. The evaluation of the One through the Many is Hilberseimer's implementation of Riegl's ratio of form to plane. The difference between axiomatic and quantitative evaluation of a design is architecturally the difference between Poché and linear expression. In studies of Flat Housing Hilberseimer changes from the representation of Poché, as a distinction from One and the Other, to representations of the linear, as a distinction from One and the Many. Vertical City and studies of flat housing are described by Hilberseimer as associative models.This makes Hilberseimer a precursor of associative design strategies in the field of urban design.

With reference to the study of Room-Insolation, I will give an example, how external parameters are transformed into specific parts of an architectural element. By transferring human characteristics to the space, the assessment of the figur moves from the external view of a subject in the form of the designed house. The shift is a transfer of Kant's synthetic model. The relationship between subject-object transformes into a relationship between object-object. The architectural scale of modernity always designed with humanistic roles: The form of existence of an object is reflected in its form of effect as part of a subject. The urban operation of the shift of the form of effect in the architectural figure finally allowes a revaluation of modernity, as a contrast between nature and culture. By multiplying the form of effect in the neigh-