Theories of Urban Form

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Rossi
Ungers
Maki
Smithson
Cullen
Lynch
Latour
de Solà-Morales

„We shape our buildings; thereafter they shape us.“
Winston Churchill

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Introduction to Theories of Urban Form

This reader takes a journey through different positions concerning form in the urban design discourse of the last half a century, with special regard to the reciprocal relationships between material space and human activities. It discusses early post-modern concepts of form, inspired by the urban texture's figure-ground relations, as well as theories that qualify form through its performance, its social-material relations or operations of its emergence. The aim thereby is to offer a basic grid, which allows for the periodization of different form theories and provides orientation for their discussion, comparison and synthesis.

The Form of a City

At its most basic, a form is a three-dimensional geometrical figure, as opposed to a shape, which is two-dimensional or flat. With regard to the coherent image or the formal structure of any „thing" – be that a simple object, a room, a building, a city or a metropolis – form can be defined as the organization, arrangement or relationship of its basic elements. Urban form, more specifically, is usually taken to be the spatial pattern formed by the objects of a city, such as its buildings, public spaces, topography and waters. In a broader sense, form means the totality of an artifact's perceivable elements and the way those elements are united. This definition also implies that form allows us to mentally capture a structure of reality, to understand it and attempt to analyze it. Proceeding from this aim of mentally capturing an artifact, George Spencer Brown suggests in his magnum opus, *Laws of Form* (1969), that every observation is based on the notion of difference and defines form as the unity of this distinction. This means that form is not a nice shape, a special thing, but the difference – and therefore also the relation – of an object to its surroundings. Combining the above statements leaves us with a definition of urban form as the distinct pattern of a city. Kevin Lynch, however, calls attention

to the fact that the objects constituting this pattern are bestowed with a handful of modifying terms that have to do with their use, quality or ownership.[1] This leads to an understanding of urban form as the totality of relationships between material space and social activities in the city. There are multiple ways of approaching these social-material relations, and these different approaches are omnipresent in the discourse. In his book *Finding Lost Space* (1986) Roger Trancik identifies three major approaches to theories of urban form: the figure-ground, linkage, and place theories.[2] This reader follows his classification and complements it by a fourth approach, which we call *things theory* and base on Bruno Latour's extension of the notion of agency to objects.

1. Figure-Ground Theory and the Autonomy of Architecture

The first, the *figure-ground theory* is rooted in studies of relative land coverage. It discusses the relationship between the built solid mass („figure") and the open voids („ground"), and the patterns formed by these. The figure-ground approach to spatial design, according to Trancik, attempts to manipulate the existing pattern of solids and voids by changing its physical geometry. Analyses of this approach are powerful in identifying textures and the spatial order of the urban fabric but are mostly limited to static and cartesian conceptions of space. A good illustration for this approach is Giambattista Nolli's 1748 map of Rome (Fig. 1) that reveals the city as a clearly defined system of solids and voids. In this reading the open spaces are carved out of the building mass as a continuous flow linking interior and exterior spaces. In his renowned project the *Collage City* (1978), Colin Rowe investigated the question of how the geometry of the city could mediate the adjacency of the modern and traditional city's various conflicting demands. He praised the traditional city for its texture of solids giving energy to the voids, thus creating what he called *specific spaces* (Fig. 2). He argued, accordingly, that buildings should act both as *space occupiers* −maintaining an individual presence− and as *space definers* −providing continuity to the urban texture.[3] In this reader, however, we compiled theories that, while being rooted in the figure-ground discourse, go beyond the simple morphological discussion of the relationship between solid and void.
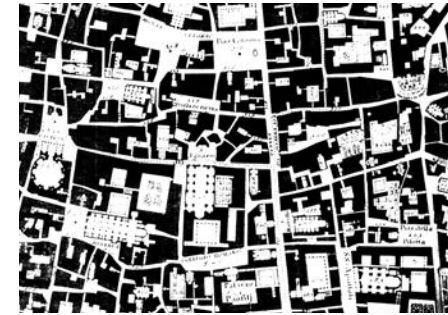
Fig. 1
Nolli's map of Rome (detail)

Fig. 2
Rowe's *specific space*:
Vittoria, Spain, Plaza Mayor

In the late 1960s, the Italian design collective Tendenza brought the autonomous development of architecture into the limelight. According to them, autonomy in architecture meant freedom and independence within a set of rules. These rules are derived from architectural history and are completely separate from any personal characteristics of individual architects. Aldo Rossi, in particular, formulated the typological forms and basic elements that define the 'European city', in order to identify patterns that have proved enduring and can be turned into elements for a new design. In his *Architecture of the City* (1984) he uses the term urban artifact for buildings of memory. According to him, these are not mere physical elements of the city but rather objects with individuality that depend more on their form than their material. They are complex entities that develop over space and time, gain historical richness through the sum of experiences and memories related to them, and can house various functions while maintaining their specific original values. Rossi's ideas were not limited to laying the foundations of a new architectural approach to issues regarding the city but also put forward the notion that architecture could represent itself as an autonomous and independent discipline. Rossi, thus, rehabilitated an essential aspect of the pre-WWII modern tradition, in which architects felt obliged to question the nature of modern civilization, the notion of progress itself and the meaning of history.[4]

As did Rossi, Oswald Mathias Ungers also expressed himself against architecture's treatment as applied art, a trend he accredited to functionalism and the Bauhaus movement more specifically.[5] He argued that architecture that only addresses purpose and practicality is bound to be impoverished and to end up in the dead end of everyday banality. In his architectural manifest, *Die Thematisierung der Architektur* (1983), Ungers establishes parallels between architecture that does not operate with themes from its own domain and images that are restricted to being photographic copies of reality. Consequently, he lined up with the Tendenza group in advocating autonomous architecture and argued that the *Thematisierung* of architecture contributes to transforming the environment from the pragmatic and trivial reality of the everyday into the metaphysical world of ideas and, thus, to the sensitisation of everyday life.[6] He claimed that themes inherent in the architectural and urban design thinking lead to architectural and urban form. This can be exemplified through his themes: *„Assemblage or the collapse of contrast"* and *„Incorporation or the puppet in the puppet"*. In the latter theme, making reference to the Russian Matryoshka dolls (Fig. 3), he reads the city wall, for example, as an envelope that encompasses the city within the larger body of the surrounding landscape. The city encloses other urban elements, such as its neighbourhoods, whereas these encapsulate buildings, and so forth. This reflects a basic form of sequential spatial organisation that also applies to the Matryoskhas. This leads us to the following conclusions: Firstly, Ungers' themes represent fundamental forms of spatial organisation. Secondly, they are based on antetypes, such as the Matryoshka for the „puppet in the puppet" form of spatial organisation. Thirdly, by having identified a multitude of different situations where the same spatial organisation is applied (as in the case of the Medieval walled city and the Matryoshka doll), Ungers comes to the idea that these forms of spatial organisations are not haphazard occurrences but fundamental themes of the architectural and urban sphere. They, therefore, constitute the core of our discipline.

Ungers' search for fundamental forms of spatial organisation also lead him to the idea of the city as Archipel. Analogical to Rossi's monumentalist approach, in their concept for Berlin as green archipelago (Fig. 4), Ungers and his colleagues proposed a sequence of landmarks that were supposed to establish a new order, invisible on the ground – just like individual stops of a metro line. Rem Koolhaas remembers that they devised a strategy to design the city's decay based on raw judgements of aesthetic, political and social values.[7] Based on their realization that European cities were shrinking, they tried anticipating which complexes to maintain, where

the essence of urbanity could be condensed. The rest they abandoned for erosion, turning the city as a whole into an Arcadian landscape, analogous to Karl Friedrich Schinkel's Capricci for *Spree-Athen*[8] and as a colossal enlargement of his *Schloss Glienicke* (Fig. 5). They did so by reading and selecting distinct urban figures of the metropolis and metamorphosing them into an archipelago where each island was designated for more or less utopian projects. The surroundings they envisaged as a territory that offers multiple iterations of all possible exteriors of the metropolis – ranging from highway infrastructure, through suburban housing developments, to farmland, forests and natural reserves.[9] Ungers developed this form of spatial organization and labelled it the „theme of the archipelago". The antetype in this case is the conglomeration of islands surrounded by the sea.

Fig. 3
Puppet in the Puppet:
Russian Easter Eggs

Fig. 5
Map of Schinkel's
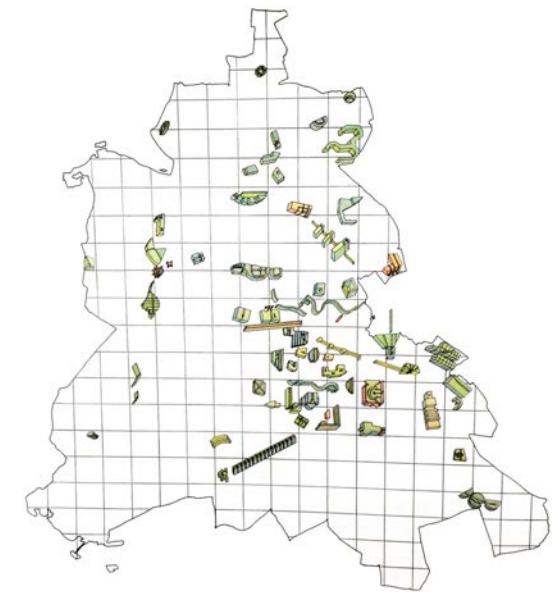Schloss Glienicke Park

Fig. 4
Berlin:
A Green Archipelago

The role of antetypes also became highly relevant in Ungers' *"Theme of Imagination"* wherein he claims that people aim for realities where the objects' meaning is perceived through the image they convey. This thesis is illustrated with his project for the Welfare Island in New York: a miniature of Manhattan, of a well known antetype and image of congestion and condensed urbanity (Fig. 6).


Fig. 6
O. M. Ungers:
Mini-Manhattan
project for the
Welfare Island

2. Linkage Theory and the Collective Form

The second, the *linkage theory* is based on connections between different elements. These connecting lines materialize in the form of streets, pedestrian paths, riverbanks or other linear spaces that connect different parts of a city. Following Trancik, in this approach circulation dynamics becomes the generator of urban form. Movement systems and the efficiency of the infrastructure dominate over patterns of defined space. Trancik explains that when designing based on the linkage approach, the lines of force on a site provide a kind of datum that determines the design.[10] These range from site boundaries, through flows of movement and organizational axes to building edges. Together they constitute a constant system of linkages that should be taken into account when the spatial environment is being manipulated.

Fig. 7

Compositional Form   Megaform   Group Form
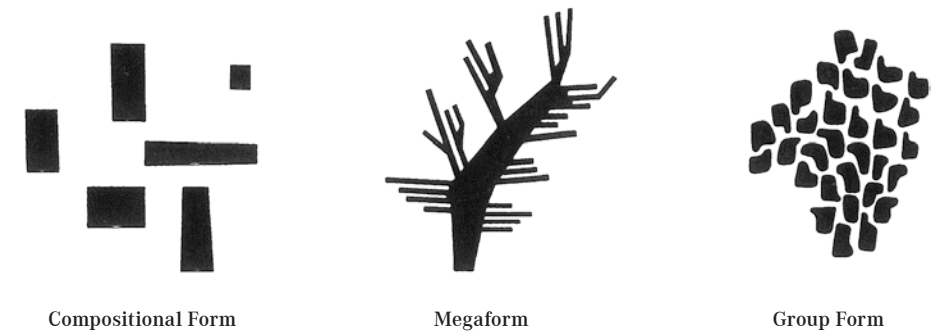
In his influential article, *Investigations in Collective Form* (1964), Fumihiko Maki addresses linkage as the most relevant quality of urban space when stating that „linkage is simply the glue of the city. It is the act by which we unite all the layers of activity and resulting physical form in the city."[11] From this starting point he defines three different approaches to collective form (Fig. 7). The first he calls *compositional form*, which is two dimensional and static, as for example Oscar Niemeyer's design for Brasilia (Fig. 8). The second is the *megaform*. This is a structural approach that provides large frameworks – hierarchical, open-ended and interconnected systems – encompassing different functions and elements, as do metabolist megastructures for example. The third, the *group form* is a result of

incremental accumulation of spatially interconnected elements along an armature, for example a central road or topography lines. In this approach, points out Trancik, the notion of linkage is neither implied nor imposed but evolves together with the settlement in its organic development. Maki also points out that the „sequential [or group] form in historical examples developed over a period of time much longer than that in which contemporary cities are being built and rebuilt." He adds that, consequently, efforts of contemporary urban designers are quite different from those of their historical counterparts, and the forms they consciously evolve in a short time span must also differ. He quotes the historical example of traditional Japanese agrarian villages where the single street is the armature that unifies the community (Fig. 9). Linkage is the controlling idea for ordering buildings and spaces in this case. Trancik argues that the two-story street-front forms a tight, continuous facade that links the individual house to a larger fabric of houses on the one hand, and connects the families' private life to the village's community life on the other.[12] Based on such examples, Maki argues for strong relations between all the layers of activity and the physical form of the city, claiming that their linkage is the act by which one unites the two in a collective form.

Fig. 8
Compositional Form:
Congresso Nacional Brasilia
after its completion

Fig. 9
Group form:
Japanese Agrarian Village

Another investigation of collective form is Alison and Peter Smithson's theory of the *conglomerate ordering* with its central issue being the territory and architecture's role in constructing this territory. It discusses aspects of weaving, connecting and interlacing, as well as the bodily experience of architecture and of moving through space.[13] Their concern with linkage was central to the Smithsons' work. Peter Smithson once claimed that "buildings should be thought of from the beginning as fragments, containing within themselves a capacity to act with other buildings and be themselves links."[14] Urbanization, in their understanding, should be considered as the product of a linking process that leads from a point to a line, from a line to a surface, and then from a surface to space.

In their *Italian Thoughts* (1993) they introduce the Gothic way of thinking as a regime of spatial ordering that follows regularities, proportionalities and spatial rasters, is repetitive and has the appearance of having been constructed out of flat surfaces. When discussing how streets of medieval cities differ from those built after the Renaissance, they characterize the streets of the Renaissance as theater, while claiming the Gothic paths being facts.[15] They are organically grown, respond to topography, to edges determined by water, land-use or other factors, and function as cohesive armatures. In this sense they are similar to Maki's agrarian village. The Smithsons claim that receptiveness for the Gothic mindset was revived in the 1950s, when first experiences with highways in New York, Boston and Los Angeles were made (Fig. 10). According to their argumentation, these road infrastructures were perceived as geographical facts that give ordering to the modern city, similarly as natural givens did in the medieval times. They go on to argue that the gothic mindset shall remain visible in the contemporary city too, for example through the magnetism of the edge − such as in the case of streets or waterfronts (Fig. 11). The *conglomerate ordering* also has to do with our senses and experiences. Being aliens in a place, we might not exactly now where we are but can still establish some sort of orientation by following light, temperature and smells, or through the decoding of other people's spatial behaviours. Alison and Peter Smithson also state that a building of the *conglomerate ordering* is an inextricable part of a larger structure.[16] This approach is affinitive to Ungers' *Puppet in a Puppet* theme that also explains an urban element's spatial ordering through its relation to a larger whole.
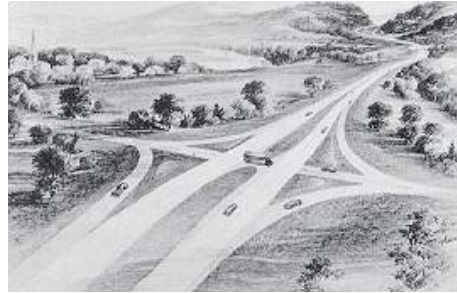
Fig. 10
Revival of the Gothic mindset:
Conception of an interstate highway, 1950s

Fig. 11
Magnetism of the edge: Hafen City, Hamburg

3. Place Theory and the Psychological Dimension of Space

The third, the *place theory* is based on the cultural and human characteristics of physical space, that is, on its psychological dimension. It is grounded in the thesis that physical space gains additional richness through unique details that are rooted in its setting (genius loci) and its use. Place theory embraces the urban realm's complexity by stating that place is created through the synthesis of different elements rather than by simple manipulation of spatial form. According to this approach, whereas *space* is a purposeful void with the potential of physically linking things, *place* is a space with distinct character and with contextual meaning that derives from cultural content. Significant in this respect is Aldo van Eyk's formulation of the shift from 'space and time' to 'place and occasion'. He said in 1962: „Whatever space and time mean, place and occasion mean more. For space in the image of man is place, and time in the image of man is occasion".[17]

Fig. 12
Dramatization of height:
Chäserrugg ski hut (H&deM)

In *The Concise Townscape* (1961) Gordon Cullen discusses the visual impact the city has on its users and their activities, and how this becomes a force of spatial organization. He claims that, in an urban conglomeration, buildings can collectively provide visual pleasure which none could give separately. This is made possible through what he calls the *art of relationship* that takes all elements of the environment – buildings, plants, water, traffic, billboards and so on – and weaves them together in such a way that drama is released.[18] This is illustrated in his book by the experience of climbing up a hill on a winding road to find yourself in a tiny village street at the summit. If you then enter a restaurant where you get served on the veranda, you might find to your exhilaration or horror that this veranda is cantilevered out over a several-hundred-meter drop. „By this device of the containment (street) and the revelation (cantilever) the fact of height is dramatized and made real"[19] – argues Cullen (Fig. 12).

Unlike the Smithsons who argue in *Italian Thoughs* that it is the combination of our different senses that allow our orientation in unknown territories, Cullen says that it is almost entirely through vision that the environment is apprehended. He coins the term *serial vision* to describe the notion of the pedestrian strolling through town at a uniform speed, yet perceiving the scenery as a series of impulses and revelations. In addition to the perception of place and the image of space, Cullen implicitly addresses the relationship between object and movement or, with other words, the city's psychic content. Roger Trancik exemplifies this with Cullen's drawings that explore the event of arriving at or leaving different „city rooms" (Fig. 13) by illuminating contrasts and transitions.[20] The *Concise Townscape* strives to define place and context through the individual's relationship to material space. By means of a sense of identity with the environment, on a street or a square one feels being in *it*, entering or leaving *it*. Cullen argues that the introduction of *here* automatically means that there has to be a *there* and that some of the greatest townscape effects are provided by a charged relationship of these two. These are exemplified in Cullen's *Casebook*[21] with a set of spatial patterns, each comprised by a variety of different architectural aspects – similarly to Christopher Alexander's *Pattern Language* (1978). The aim here is to assist in charting the structure of the subjective world, which can also be understood as the form of the city (Fig. 14).
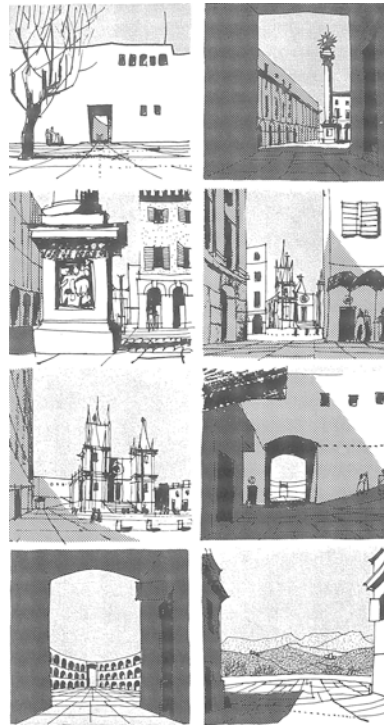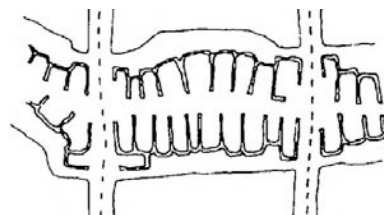

Fig. 13
Arriving at and leaving different *city rooms*
Extract from Cullen's *Casebook*

Fig. 14
The pattern of the shopping street in Alexander's *Pattern Language*

A Theory of Good City Form (1981) by Kevin Lynch is a product of the search for patterns that effectively augment the interrelation of human purpose and city form. Accordingly, it defines the form of a city as the spatial arrangement of people doing different things.[22] This definition comprises both the social activities and the physical features that encompass and modify them. Lynch argues that urban design relies on a well-developed stock of models, which integrate process and form. These models need to be sufficiently independent and abstract to allow for the continuous recasting of aims, analyses, and possibilities. He, however, criticizes the majority of existing models for referring only to a completed form and, thus, taking no account of the process by which that form is achieved. Furthermore, this emphasis on completed form ignores the reality of continuous change, in which no form is a permanent feature. This leads Lynch to think that „the preoccupation with form is the mark of a mind which focuses on things rather than on their consequences for people"[23] and that *process* shall be the key instead. After all, the city does not change or take form on its own as in a "biological organism" – as noted by Lynch. The form of the city is much rather a product of multiple, interacting decisions and actions of agencies and persons, and this process could be labelled with the term *management*.[24] Thus, he continues by discussing the possibility of a model that deals with *form, process, and management* in one whole. He claims that without such models complex, real problems cannot be tackled under the pressure of time.

Lynch also sets out to answer the question of what makes a good city and suggests that the answer to his question lies in the development of a general normative theory, which relates the value of a city to its spatial characteristics. The key to developing this theory is identifying a set of performance dimensions and, to this end, Lynch provides five criteria: vitality, sense, fit, access and control, complemented by two meta-criteria: efficiency and justice. Roger Trancik says that following place theory the goal of urban design should be „to discover the best fit between the physical and cultural context and the needs and aspirations of contemporary users."[25] Kevin Lynch's performance dimensions offer an apparatus for this very purpose.

4. Things Theory and Politicizing Space

In *Things Theory* (2001), his article on human-object interactions, the linguist Bill Brown challenges the apolitical approach that is often taken in the discourse of things by contesting the commonplace notion that *things* should exist outside of social theory.[26] French sociologist Bruno Latour goes even further by arguing that agency, or involvement in social relationships, should not be limited to humans. He claims that objects have agency too and, accordingly, should be appreciated as actors in any course of action that involves them (Fig. 15). His argument is based on the fact that „any thing that does modify a state of affairs by making a difference is an actor—or, if it has no figuration yet, an actant".[27] Thus, according to Latour, the question to ask about any agent is if it makes a difference in the course of some other agent's action or not. Things create social relations through their inherent power to produce both disagreements and attachments to the extent that it is actually things that make us public − goes Latour's argument. „For as Heidegger recognised, a thing is first and foremost a gathering of relations that has an existential bearing upon us."[28] In this way, humans and things always form a social network seamlessly woven together by what Latour famously termed „Ariadne's thread".[29]

Fig. 15
Not only humans have agency:
The Clinton family's cat in the spotlight
as Bill Clinton became president-elect in 1992

Fig. 16
Form defined by the reciprocal relationship
between material space and social activity:
The British Chamber of Commons

Ludwig Wittgenstein heralded the birth of philosophical modernism when asserting in his *Tractatus*[30] that the world is the totality of facts, not things. In contrast, Bruno Latour argues for a philosophical post-modernism where the world is the totality of things, not facts, and where facts are understood as products of the activities of things. According to him, we live in an age of endless innovation where things seem to increasingly take on a life of their own. Therefore we cannot rely on traditional notions and definitions of things as mere *inert objects* that exist in isolation from ourselves as *controlling subjects*. This leads Latour to ask what exactly is a thing in today's context and to suggest examining the thing itself, instead of prioritizing its representation or biased understanding. In his essay on *Dingpolitik*, he claims that „objects − taken as so many issues − bind all of us in ways that map out a public space profoundly different from what is usually recognized under the label of the *political*."[31] This politicized understanding of public space is also a refusal of the idea of the *container space*, which reduces public space to a neutral corpus that simply absorbs material objects. In contrast to the idea of c*ontainer space*, the concept of *relational space* describes the reciprocal impacts of space and social activity in terms of their specification and adaptation. Urban space is established through social activities, and structures these at the same time. Accordingly, it is not possible to isolate its material background from the relevant activities.

Anthony Giddens writes in this respect that the connection between structure and action is fundamental to social theory and coined the term *duality of structure* for this dichotomy of structure and agency. Furthermore, he explains that the causality between the two runs in both directions, that is „social structures are both constituted by human agency, and yet at the same time are the very medium of this construction".[32] This means that it is impossible to determine which is changing which and they should, therefore, be discussed together. In October 1943, following the destruction of the Commons Chamber in London by a German air raid, the Commons debated if the Chamber should be rebuilt to its original form. Winston Churchill insisted that the shape of the old Chamber was responsible for the two-party system that is the essence of British parliamentary democracy, and conceived the mutual relations between space and human agency by saying: „We shape our buildings; thereafter they shape us" (Fig. 16).

Latour's approach has been translated into urban design theory and practice by the Catalan architect and urban planner Manuel de Solà-Morales. He coined the term *urbanity of things* and viewed the social phenomenon of urbanity from the perspective of material, physical objects.[33] He uses the term *skin of the city* to describe the accumulation of all things we can perceive with our senses and through which we experience the city.[34] Besides other, human users of space, this also includes actants of all forms and all dimensions, such as „a pavement, a glass facade, a wall, a ramp or a distant perspective (...), a closed patio (...) [or] unfinished roads half-occupied by provisional pieces of furniture".[35] Consequently, his understanding of urban form can be described as the materialization of the density and diversity of relationships between people, other living creatures and physical things.

De Solà-Morales starts his argument with the observation that the contemporary city is in such rapid transformation that the establishment of a lasting catalogue or typology of its spaces is hardly possible. However, in *A Matter of Things* (2008) he refutes the resulting „worn out mantra" that the city is in retreat and has become a virtual territory without actual place. He claims the contrary, namely that there are more places and more contacts every day. He goes on to suggest the establishment of new perspectives in order to accommodate ourselves to this new multiplicity. De Solà-Morales believes that the contemporary urban territory cannot be understood by applying century-old patterns of clear-cut spaces and cemented relations. Instead, one needs to pay attention to the many *urban things* and decode their kaleidoscopic correlations. All of these, together, determine the form of the ever-changing metropolis.

Notes

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