

The need for descriptive methods in architectural research

Lars Marcus

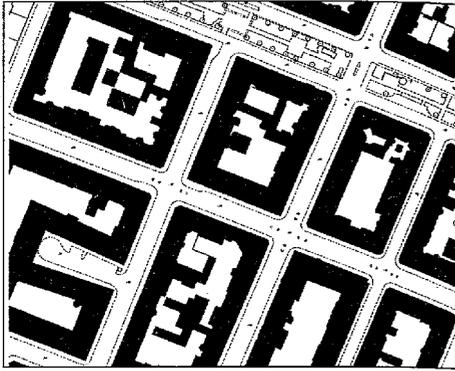
The methodological field of architectural research is one rich in kinds, something more or less inherent in the art of the subject. The built environment plays a fundamental role in many areas of human activity and thus also becomes part of research within these areas. Still, when we turn to the specific study of the built environment per se, one encounters a field surprisingly empty on specific methods of research, especially if we turn to the architectural artefacts themselves. With my own thesis-work as a starting point I want to point to some of the problems this poses. Above all as to point to the need for more powerful descriptive methods in architectural research. In this I am heavily relying on the first three chapters of Bill Hilliers *Space is the machine*.¹

Background to my thesis-work

My thesis work results from questions about the city and its planning and design which I began to formulate during my architectural studies in the 1980s. At the time there was a newly aroused interest in traditional ways of building cities, that is in the type of design we can somewhat simplistically describe as the building of streets and blocks with relatively

well-defined urban space, such as that which preceded the modern movement. The latter we can similarly describe as the construction of a more open urban space with freestanding buildings. This new interest can be said to have arisen as a result of the strong criticism that was directed at modernistic urban design in the late 1960s and early 1970s in Sweden. Subsequently this new direction of interests found expression in urban development projects that clearly differed from substantial parts of modernism and instead evidenced influence from older urban building styles.

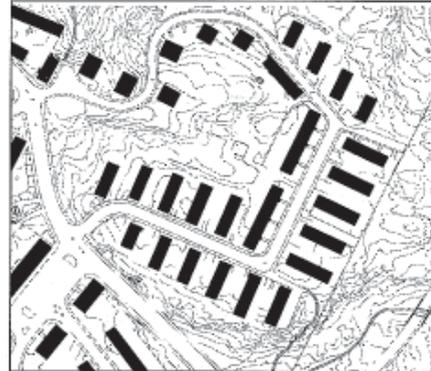
With these changes, we can say that a fairly generally conceptualised picture of urban development during the twentieth century was established. This we can briefly describe as follows: at the beginning of the century a tradition of urban building existed with roots going far back in time. Among other things it was expressed in the building of cities having streets and blocks with clearly defined urban space — even if throughout history one could identify different characteristic styles in this urban space. It was replaced, after a break in the years right before 1930, by modernistic urban building, which among other things was expressed through a dispersed urban space with free-standing buildings



Traditional city: Östermalm, Stockholm
(*Stockholms byggnadsordning, 1997*)

— even these could nevertheless be said to be composed on the basis of the shifting stylistic ideals that reflected the times. Such modernistic urban building was in turn replaced, after a new break right before 1980, by urban building that clearly derives from the traditional, among other things in that it once again sets great value on a clearly defined urban space — though the forms may vary relatively freely depending on the different historical examples used in the individual projects. On the basis of this historical description, it seems as though we are dealing with two types of urban building: a traditional and a modernistic, where the latter spans an interval of about fifty years, after which we again return to traditional urban building, even if in particular ways it then differs from the earlier models.²

It was among other things this picture, here quite sketchily reproduced, of clearly identifiable categories of urban building, which was linked to different qualities and which replaced one another according to this historical account, that raised a number of issues and objections among several of my colleagues on the course and myself — as it did among many others interested in urban building at this time: In which sense did the new urban building projects resemble traditional urban building; were not the differences despite everything greater than the similarities? Thus criticism of this new urban building came to be formulated — which often was called ‘town-like’³ in contrast to the traditional as well as to modernism — but it was a criticism that above all acted as if new urban building was not what it was said to be, namely a revival of the traditional urban building and its qualities, and not so much as if the intention as such



Modernistic city: Traneberg, Stockholm
(*Stockholms byggnadsordning, 1997*)

were at fault. We can thus say that the criticism was not concerned with whether one should strive for the one or the other, but was clearly deeper; as it acted as if there was an obvious lack of knowledge of how to achieve the one or the other. Subsequently one can characterise the criticism as a criticism of knowledge rather than ideological criticism.



‘Town-like’ city: Skarpnäck, Stockholm
(*Stockholms årsringar, 1997*)

The theses of my thesis-work

It is obvious that the above criticism includes a questioning of the categorisation in which the historical account above implicitly divides urban building, namely into traditionalism and modernism; in particular if we add to traditional urban building the concept ‘town-like’, as the latter, according to this criticism, contradicts the former on most points. If we in accordance with this criticism also do not regard

1930 and 1980 as the important breaking points in the development of urban building, it thus seems as though modernistic urban building cannot be in a category of its own, but rather becomes part of a different and larger one. This is a category I further believe replaces traditional urban building around 1900, when urban planning and design became the subject of architectural knowledge to a degree not encountered before.⁴ The point of departure for my thesis-work can thus be said to be an attempt to with a deeper analysis capture this category of urban design that has prevailed through the 20th century.

Obviously such a category must be found on a most fundamental level since it is easy to recognise a great variety in urban form during the last century. My hypothesis is that even so, when analysed in their deep structure they all are very alike. Whether this is true or not is not the subject of this article though, but to point to the procedure for such an investigation, and its general implications for architectural research.

Even though my thesis-work thus springs from a critique of city-planning in the 20th century, the task is not to argue against it but to try to distinguish it as a distinct category of its own. This implies that we need to be absolutely clear about what we mean with such a category. It is not difficult to see that there often is confusion between what we may call spatial phenomena and social phenomena. On the one hand, we refer to the built forms and spatial groupings or the spatial dimension of urban building, and on the other, we refer to the experience of and the impact on behaviour of the same urban building or its social dimensions. If we talk about different categories of urban building in a more serious way, we have to deal with categories which encompass both of these dimensions, that is, categories of spatial forms which produce or form the basis for recognisable social qualities.

Here it is necessary to be more precise. What we called the social dimension appears to encompass a great deal; from personal experiences like the enjoyment of a well-proportioned building on a site, to social patterns like the establishment of certain types of enterprise along a particular street. To limit the extent of this dimension and pose the questions more precisely, we can make a fruitful distinction between two aspects of people, which we may say gives birth to different aspects of the surrounding reality. On the one hand, a

human being is a physical body, which exists and moves in the surrounding reality, which in this case appears as though it is built up of physical objects and spatial qualities. On the other hand, a human being has a mental consciousness that interprets and understands, indeed, the same reality as previously, but which now tends to appear as signals and meaning bearing forms. On the basis of such a distinction, we can say that the first aspect gives birth to functionality in the surrounding reality while the latter gives meaning to it. If we then are above all interested in that part of the surrounding reality that we call the built environment, we have thus established two relationships, partly a relationship between built form and function and partly a relationship between built form and meaning.⁵

With these as points of departure, we can make the questions in my thesis more precise and say that they only, or mainly, encompass relations between built form and function, while, to a great degree, relationships between form and meaning are bypassed. It is nevertheless clear, that both these dimensions in reality are very close to one another, since people of necessity exist in both. Equally, this distinction is fruitful if we want to develop knowledge about the built environment, as it distinguishes between questions that can advantageously be studied from different angles of approach. The reason for this is that weaker links exist in the relationship between form and meaning than in the relationship between form and function, as our bodies create more tangible and observable limitations in relation to the surrounding reality than our consciousness does. In practice, this means that it is necessary to utilise different methods to study the two relationships; the relations between form and meaning are above all open to various hermeneutic approaches, while the relations between form and function can better be studied on the basis of positivism, if we accept these broad divisions for the moment.

What I am looking for then is not only to distinguish urban planning and design in the 20th century as a spatial category of its own, but also to tie certain functional outcomes to this category. My general thesis can thus be divided into two. Thesis I: There is within urban planning and design in the 20th century a category possible to distinguish as architectural urbanism as opposed to traditional urbanity. Thesis II: There are spatial preferences within aforementioned category possible to tie to certain functional performances.

The architectural artefacts as the specific object of architectural research

In my first thesis, dealing with how, urban planning and design during the twentieth century can be seen as being a category of its own, it appears as though there is a need to study the theories and ideas of urban design. As to be able to see whether it is reasonable to maintain that urban design during the twentieth century is characterised by different considerations at a theoretical level. The second thesis, however, deal with whether tangible connections exist between the spatial preferences of this category and specific functional outcomes. Here it appears as though I need to study the architectural artefacts themselves, to be able firstly to differentiate and demonstrate a consistent presence of spatial preferences, and secondly to tie such preferences to characteristic performances.

Taking these questions in turn, I would deal with the two main objects of study in architectural research, firstly, *architectural ideas*, and secondly, *architectural artefacts*. The obvious difference in kind between these phenomena is that in the first case they are made up of language and in the other of things. This makes it clear how a study of them also assumes the adoption of different methods. With regard to the analysis and study of texts, well-developed methods exist among others in the historical sciences, which mean that when the study of these architectural texts is at the centre, it is relatively unproblematic methodologically. If we want to place architectural artefacts in the centre, however, we soon come across difficulties. Methods of studying buildings and urban environments, as the spatial artefacts they basically are, is surprisingly undeveloped. In terms of my own work, this becomes even more problematic as I believe that even in my first thesis I cannot, in principle, use texts, but that here one is again primarily dependent on artefacts from urban building.

For two reasons: Firstly, since the category which I am interested in distinguishing is found at such a deep structural level, there is no reason to believe, not even in a derivative sense, that it is theoretically formulated. Even if this was the case, secondly, it would be problematic to rely on such documents, since the link between the world of ideas and that of things is extremely opaque. Even if we could find many theoretically formulated intentions un-

derlying a given building, this does not entail a binding connection which enables one to identify them in the building as such.

Let me take the well-known example of Le Corbusier's five points for a new approach to architecture: the raising of the building on *pilotis*, the deck borne on pillars, the open plan layout, the band of windows and the roof terrace. This is a very clear generative programme, and it is easy to find examples of its influence in Le Corbusier's production. That is, it is easy to find the above-mentioned form aspects of the programme. However, many functional intentions were tied in to motivate these forms. The reason for raising the building from the ground with the help of pillars for example, was to free the ground for other uses. Yet the areas exposed in this way have seldom been meaningfully utilised. This is but one example of how written intentions are quite far from realised facts.

If we follow a more traditional path within architectural research and try to understand the artefacts via ideas, we thus open ourselves to the clear risk of landing in a self-referring circle, where ideas make us aware of those aspects of artefacts which in turn confirm the ideas. If, however, we take the opposite path and start with the artefacts, in order to try to differentiate the contours of recurring ideas, we can escape such self-referral and indeed discover something new. We can, for example, distinguish between repeated patterns and attitudes in Le Corbusier's *oeuvre*, which reveal something he himself has not already told us, or perhaps even knew. We may, for example, show that there may have been aspects of form other than those he himself preferred to point out, which might have had a decisive influence on the function of his buildings, or that the forms which he chose to emphasise had a different effect than the one he thought or promised us.

This shows how my two theses in principle become one and the same. By distinguishing spatial preferences in urban planning and design during the twentieth century, which in turn can be tied to characteristic functional outcomes that differ from spatial preferences tied to functional outcomes in earlier urban design, it is possible to maintain that there is something which is spatially characteristic in urban design during the twentieth century and thus even to talk as if it forms a category of its own.

Quantitative methods as a scientific approach to the relationship form – function

What I am facing is thus the almost classical set of questions within architectural theory of the relation between form and function, which at the same time is an example of the more all-embracing connection between spatial orders and social orders. What we have here is a relationship of cause and effect where the built form is the cause and the functional outcome is the effect.⁶ Since our objectives are clearly instrumental — we want to explain exactly what causes certain effects, so that we can develop tools possible to implement in future practice — the firmer we can tie effects to causes the better. While the meaning of architectural form will prove most difficult to translate into such rigorous cause-effect systems, something hardly neither desirable, and therefore calls for methods of understanding rather than methods of explanation, the functional performance of architectural form is preferably handled within such an approach.

The course of action here is once again to try to tie the sphere of the tangible world to the sphere of ideas and language. As I argued earlier these are spheres whose relation is most opaque, in that it is most difficult to translate the phenomena in the tangible world into language in a scientifically consistent way. Now, this above all concerns what we call natural languages such as English and Swedish. In the natural sciences with their highly instrumental approach one therefore heavily relies on other languages such as mathematical language, since this is a type of language that is much easier to tie to the tangible world, hence the great achievements of the natural sciences. This is simply so because natural languages focus on individuated descriptions of the world, while mathematical languages focus on abstract descriptions of the world. As Hillier and Hanson points out, the lexicon of a natural language simply is much larger than the lexicon of mathematical language.⁷

Thus, describing the speed of a car mathematically, saying that its speed is 80 km/h for instance, is a very abstract description. On the other hand, because it is so reductive, it is able to capture something of principal importance in the tangible world, rather than of individual importance. Thus, it can form the basis of theory, since theory is concerned with the principles of the tangible world rather than the actual experience of it. For example it can form the basis for

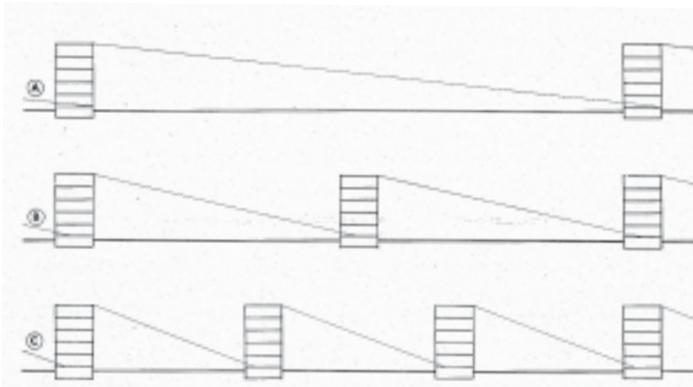
a calculation on when this car will arrive at a certain place. Thus we see the great advantages of phenomena possible to quantify when the purpose is instrumental.

When it comes to the relationship between form and function, what we need to study, to put it a bit simplistic, is basically two parallel quantified descriptions, on the one hand of the spatial form and on the other of the functional outcome, to see if we can discover any meaningful correlation between them. If we do, then there are grounds for maintaining that there is something in the form that leads to the functional outcome, in such a way that a change in the former is likely to entail a change of the latter. Demonstration of such a correlation would quite simply mean that we have discovered a link between form and function.

When it comes to descriptions of the functional outcome, there are large quantities of statistical data available, at the same time as a range of proven methods of observation have been developed within the behavioural and social sciences. The functional side of my investigation is thus methodologically relatively unproblematic. What is difficult, however, is to find methods with which, in a consistent and preferably quantifiable way, I can describe architectural artefacts.

Configuration as a specific paradigm of architectural research

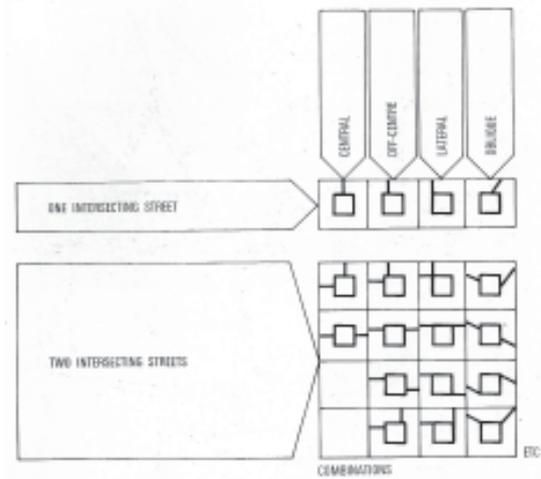
Now it is not so that architectural artefacts were not previously objects of descriptions. On the contrary, there are many examples of such, from modernism's studies of measurements to post-modernism's typologies. The dearth of results which can shed light on the relationship between spatial form and functional outcome, seems to bear witness that these were not sufficiently apposite in this context. One reason for earlier descriptions not achieving constructive results, may be that all such descriptions presuppose that we first have a fruitful paradigmatic understanding of our object of study. This requires an all-embracing theory of the general character of the object we wish to study, so that we do not lose ourselves in empirical reality's riches and possible observations. As Hillier points out we can then see how earlier descriptions of architectural objects have their grounds in paradigms that have been metaphorically borrowed from other disciplines.⁸



Geometric description of sun-angles (L. Hilberseimer, 1944)

A brief history can shed light on this. During functionalism the paradigm through which we understood architecture can be said to be the *machine*, that is a paradigm borrowed from engineering. This paradigm has its points if we keep to general discussions of architecture, but is not fruitful when it comes to actual research on the relationship between form and function, as it quite simply does not succeed in capturing the character of architectural artefacts in this context. Buildings simply do not treat their materials, which here must be understood as people and their activities, in the mechanically direct way that machines do. The closest one can come to a description of such relations with this paradigm, was also through translating people's activities into things, in general in the form of furniture, and to let these be surrounded/or treated by built form — the 'Frankfurter küche' is a good example of an approach following such a paradigm — or to describe relations between built form and nature, as in the often cited case of sun-angles.

Since the post-modern breakthrough, *language* has taken over as the hegemonic paradigm within architecture, that is a paradigm borrowed from linguistics. This has its points in a more general architectural discourse. The problem with using it as a research paradigm concerning the relation form-function, is that only to a very small degree do buildings communicate their functions at a conscious plane comparable to language. The closest one has come to a description of this relationship is thus in the relatively few cases where architectural forms manage to signal specific messages to our consciousness, for example, which opening in a building is



Typological description of urban squares (R. Krier, 1979)

the main entrance or, through resembling a known type, for example revealing that a building is a school. Examples of such descriptions are the urban form typologies of Rob Krier.⁹

We can thus see how both these paradigms only manage to capture the marginal, if not uninteresting, aspects of built artefacts concerning the relation form-function. To develop more precise and generally applicable methods of description, we apparently need a paradigm that does not borrow from other disciplines, but is specifically based on architectural artefacts. What we need is quite simply an *architectural paradigm*. A possible such paradigm is found within the field of study called *configurative studies*, which is a field within architectural research that has developed with the architectural objects and especially their morphology as a starting point. This research tradition, which among other things is characterised by strong mathematical features, originates in England, from where several of its leading figures like Lionel March and Philip Steadman come.¹⁰ Bill Hillier and the methods and theories of Space Syntax is an important part of this 'configurative' tradition.

Space Syntax as a specific method for architectural research

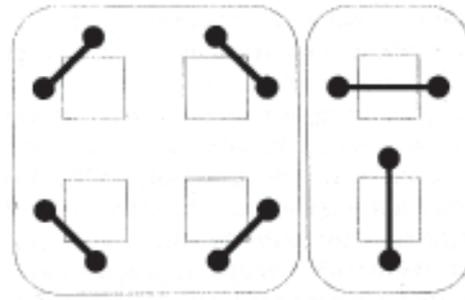
The advantages and differences of a configurative paradigm can be highlighted with an example borrowed from Lionel March.¹¹ We can imagine a simplified study where we on the one hand have a square table with a chair on each side and, on the other, repeatedly observe that groups of two people far

more often place themselves at the corners rather than sitting opposite one another at the table. What conclusions can we draw from this? If we only have access to the methods of behavioural science, we can only seriously analyse the functional outcome, which shows how people often place themselves at the corners of a table. An interpretation of this suggests itself, which for example says that for various cultural reasons people prefer to sit at corners; perhaps sitting across each other for example is found hostile or too formal. This is however unsatisfactory, considering that we have not seriously analysed the form, that is, the table itself. In context, this requires a relevant description of the table.

Based on a configurative description of such a table we can see that the table offers twice as many opportunities of sitting at the corners as opposite one another. This naturally gives us reason to review previous conclusions. We may now consider that what we found is a connection between form and function, that this was decisive for noting that the observation above was not about different culturally based patterns of behaviour, but about the spatial qualities of the table itself. This need naturally not entail that spatial factors exclude the influence of other factors or that there are other important spatial factors than the purely configurative, but clearly that it would be methodologically incorrect to disregard them.

This is an example of how incorrect we can be if we do not have good methods of descriptions of our architectural artefacts, but it also shows how difficult it can be to develop them. The relationship above, with the square table actually offering twice as many opportunities for two people to place themselves at the corners rather than opposite each other, is not something we immediately recognise when we look at the table. Yet it holds, even though the example must be regarded as particularly insular and simplified. We realise that many fundamental qualities of our architectural artefacts are hidden from our immediate knowledge. What the configurative description did was exactly to bring these forth. Where we thought we knew everything necessary to know about the spatial situation of the square table, the configurative description coaxed forth properties unknown to us that possibly proved decisive for its functional performance.

What configurative descriptions do, as opposed to traditional architectural descriptions, is that they focus on the relations of the parts in an architectural system, rather than the parts themselves, and even, as Hillier puts it, on the



Configurative description of a square table (Lionel March, 1998)

relations among relations in such a system. A good example of the performance of configurations is the syntax in language. Syntax tells us in what relation we should put words as to be intelligible, but it does not tell us what words to use. That is that it focuses on the relation of parts in language but not the parts themselves. It is thus obvious that the same words can produce very different meaning depending on their relation; 'I am right' can become 'am I right'.

Language is most useful as an example of configurations also in another respect. When we speak we are not consciously aware of the syntactic level of language. On the contrary, if we make ourselves aware of this level, speech inevitable becomes impossible. It seems then, as Hillier puts it, that the syntactic level of language forms a set of 'ideas to think with', while we speak about something else, that is the 'ideas we think of'. Thus, we do not even need to be able to formulate what the syntactic rules that govern our speech are, to use them. The configurative level of architecture is 'non-discursive' as Hillier says, and this is the reason why it is difficult to capture and talk about. Since this level seems decisive when it comes to the functionality of the built environment, this is also the reason why, according to Hillier, we have seen so little development concerning knowledge of the relation form - function.

What configurative descriptions in architecture captures is exactly this sub-liminal level. By necessity we construct configurative patterns when we build, whether we are aware of it or not. The important thing though, is that it seems to be this configurative level that proves decisive when it comes to the functionality of the built environment. It was not the fact that there was one chair on each side of the square table above that proved important, but the fact that the relation of the four chairs turned out to produce twice as many corner-

relations as across-relations. A fact that was not possible to point out in the tangible world, but needed to be coaxed forth by special descriptions. We then realise the problems we encounter when studying complex architectural objects such as buildings and cities. We see here both the need for better descriptions within architectural research and the promising achievements of configurative studies.

Notes

1. Bill Hillier: *Space is the machine*, Cambridge 1996
2. This historical description, which clearly marginalises modernism, can be said to replace the modernistic historical account, based on the struggle against the miserable urban environments that mushroomed because of industrialisation and urbanisation in traditional cities during the nineteenth century. The various utopian model projects that arose in England and France at the same time form the starting point of a development which step by step led to a breakthrough for modernistic urban building. Here modernistic urban building thus becomes the pinnacle of development rather than a parenthesis.
3. With the term 'town-like' I am hoping to capture what in Swedish is called 'stadsmässig'. That is, a kind of urban building which simplistically can be described as being in the vein of the Krier brothers.
4. The question of architectural knowledge is central in my thesis-work.
5. Of course one can say that also meaning is a function of the built environment. Here I use function in the traditional sense within architectural theory though, meaning the use or the purpose of the built.
6. This obviously is a simplified description, which is discussed at quite some length in my thesis-work.
7. Bill Hillier and Julienne Hanson: *The social logic of space*, Cambridge 1984, p. 49.
8. Hillier 1996, p 373–376
9. Rob Krier: *Urban Space*, London 1979.
10. Examples of this tradition is for example: Lionel March and Philip Steadman: *The Geometry of Environment*, Hertford 1971; Lionel March (ed.): *The Architecture of Form*, Cambridge 1976; Philip Steadman: *Architectural Morphology*, London 1983. See also *Environment and Planning B*, a journal specifically concerned with this field of research.
11. Lionel March: '[8+(6)+II]=25+x', *Environment and Planning B*, 25th anniversary issue 1998.
12. *Nordic Journal of Architectural Research*, vol. 6, no 2 1993; Lars Marcus: 'Stad – kärt barn med många namn', *Nordic Journal of Architectural Research*, vol II, no 3 1998.

Within the tradition of configurative studies Bill Hillier and Space Syntax represents a development of techniques for such descriptions that has proven most powerful and useful when it comes to concrete architectural research. For the more specific art and use of these techniques I want to refer to the thematic issue of this journal on the subject as well as an earlier article of mine also in this journal.¹²

References

- MAGNUS ANDERSSON: *Stockholms årsringar*, Stockholm 1997.
 LUDWIG HILBERSEIMER: *The New City*, Chicago 1944.
 BILL HILLIER: *Space is the machine*, Cambridge 1996.
 BILL HILLIER AND JULIENNE HANSON: *The social logic of space*, Cambridge 1984.
 ROB KRIER: *Urban Space*, London 1979.
 LIONEL MARCH: '[8+(6)+II]=25+x', *Environment and Planning B*, 25th anniversary issue 1998.
 STOCKHOLMS BYGGNADSORDNING, Stockholm 1997.