Spatial Analysis as a Tool for Architectural and Urban Historians

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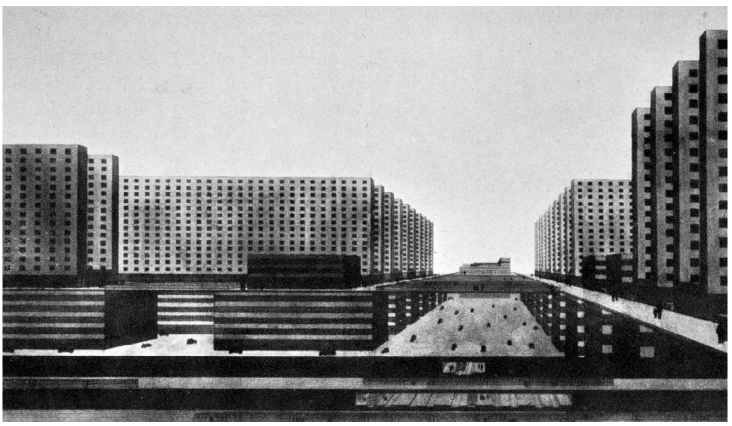
1. Preliminary Remarks

The view that urban spaces are experienced while in motion emerged long before the modernist urban visions of someone like Ludwig Hilberseimer, who in 1927 suggested separating pedestrian from motorized traffic (Hilberseimer 1998, 17).

Fig. 1: Ludwig Hilberseimer, high-rise city, 1927. Source: Hilberseimer 1998, Fig. 24



His proposal to place walkways far above roads (fig. 1) was analogous to calls for cities to be divided into different functional areas. Similarly, movement was considered a key way of experiencing cities long before promenading and hiking became fashionable in the late eighteenth century. In Karl Philipp Moritz's novel *Anton Reiser* (1785–1790), walking through and around the city is a way for the protagonist to consider his own past and future (Moritz 1996, 82–83). At the dawn of the early modern period, the city was already regarded as an entity experienced in motion, an aspect that needed to be reflected in its architecture. In his architectural treatise about the plan-

ning of curved streets in cities, Leon Battista Alberti wrote: "Moreover, this winding of the streets will make the passenger at every step discover a new structure, and the front and door of every house will directly face the middle of the street" (Alberti 1975, 201). Alberti's recommendation that urban streets, instead of being straight, should be "winding about several ways, backwards and forwards, like the course of a river" was based on the experience of the human body in motion: walking along a sinuous street (he explained) was the only way to confirm that the façades continued to follow one after the other.

But how can such idiosyncrasies be included in academic analysis of the city? Below, I attempt to address characteristics of the city that are primarily of interest to architectural and urban historians. The aim is not to provide formulae, but to explore how questions about certain problems of the city can be asked in a meaningful way.

2. *Longue durée* as a Methodological Challenge for Urban Analysis

In my introduction, I mentioned a few key points about the fundamental importance of motion to experiencing the city. In addition, for architectural and urban historians, there is a second, pivotal condition of the city which any analytical study needs to deal with from the outset – the fact that the city is a complex system characterized above all by change. According to urban historian Spiro Kostof, urban development is a process that encompasses the many ways in which the built whole of the city is adapted to changing conditions and requirements (Kostof 1992, 8).

The transformation to which the city is permanently exposed also engenders the challenge of incorporating it methodologically. And it may sound paradoxical at first, but this is particularly necessary when it comes to the 'immovable property' of the city, its real estate. After all, given their materiality and their particular involvement in the processes of life, architectural and immovable artifacts are plainly constituted by temporal relations of 'before' and 'after'. In the case of the city, this means not only buildings, but also especially long-lived spatial structures, such as parcelling, site constancy, and historical watersheds.

This specific *longue durée* of the city is known to art and architecture researchers as a methodological problem (Jöchner 2010). Very often, however, they translate this fundamental condition into chronologies instead of searching for the constitutive 'construction factors' of spatial situations. The combination of chronologies, however, derives from ideal cases of architecture. By contrast, acknowledging – including methodologically – the permanent pressure on the city to change is a far more realistic view. And this means that the continued interpretation of the city's topology and buildings against the background of conversions and new buildings, urban planning schemes and repurposing, is analytically assumed from the outset.

Suitable tools here include morphogenetic methods (cf. the article by Wolfgang Sonne) from both urbanistics (Malfroy/Caniggia 2018) and urban geography (Conzen 1990). Urbanistic approaches with a dual focus on both long-lived structures and historical watersheds are helpful in grasping the development of urban texture in its interrelations with specific buildings (Jöchner 2015). Such an approach is particularly apt

for modern metropolises with specific, highly dense growth structures such as London, Paris and Naples, or even modern metropolitan regions, which often lack clear boundaries.

Accordingly, urban analysis that includes the two fundamental constituents of the city – motion and processuality – clearly operates on the level of space. This latter concept has by no means only been considered by research into architectural and urban history since the spatial turn; on the contrary, it is no exaggeration to say that a spatial approach to architecture and the city was first tried out on the example of the square (Jöchner 2010) and thus contributed to making it useful for art history. *Vice versa*, the concept of space was crucial to the fact that around the turn of the twentieth century, the city was for the first time systematically studied within the history of art and architecture.

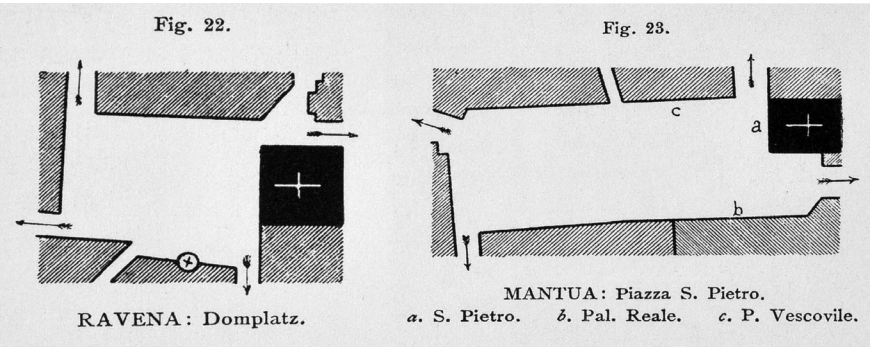
3. The Square as an Object of Research

"This work is devoted to an area that has received little attention from either art history or aesthetics. The manuals of architecture doubtless record the tiniest detail. Urban construction as a whole, which is the culmination of architectural design, has been almost ignored." (Brinckmann 2000, V) This was how Albert Erich Brinckmann introduced his book *Platz und Monument. Untersuchungen zur Geschichte und Ästhetik der Stadtbaukunst in neuerer Zeit* ('Square and monument. Studies on the history and aesthetics of urban architecture in recent times', 1908). When describing the state of art history with regard to the study of the city, Brinckmann negated the preceding, intensive examination of the city by Camillo Sitte, then a teacher at Staatsgewerbeschule in Vienna. *Der Städtebau nach seinen künstlerischen Grundsätzen* ('Urban planning according to its artistic principles') was the title of his book, which was first published in 1889 and republished several times. He developed a new way of studying the city which Brinckmann adopted, whether intentionally or not.

Sitte's 'art-technical' analysis, as he called his approach (Sitte 1983, 2), was prompted by the situation of the city at the time, which was growing beyond its previous borders in response to considerable urban expansion. For Sitte, these expansions were characterized by large unplanned areas. He wrote that people always lived "under the mad delusion of always having to be able to see everything" and that the only acceptable approach was the monotonous spatial emptiness around them. He added that the fact that this intrinsically boring spatial emptiness destroyed any diversity of effect was unheeded (Sitte 1983, 35). Starting from this criticism of contemporary urban design, he developed his analysis of historical cities with particular emphasis on squares and their irregularity. He examined cities' design principles and systematically translated them into simple black-and-white drawings (fig. 2): empty spaces such as squares and streets were left white, religious buildings rendered in black, and other built-up areas hatched in grey.

These plans resembled the figure-ground representations that had become widespread since the mid-eighteenth century. Such illustrations accompanying Sitte's writing were a striking element of his highly successful book: an unswerving

Fig. 2: Ravenna, the cathedral square (left); Mantua, Piazza San Pietro. Source: Sitte 1983, 40



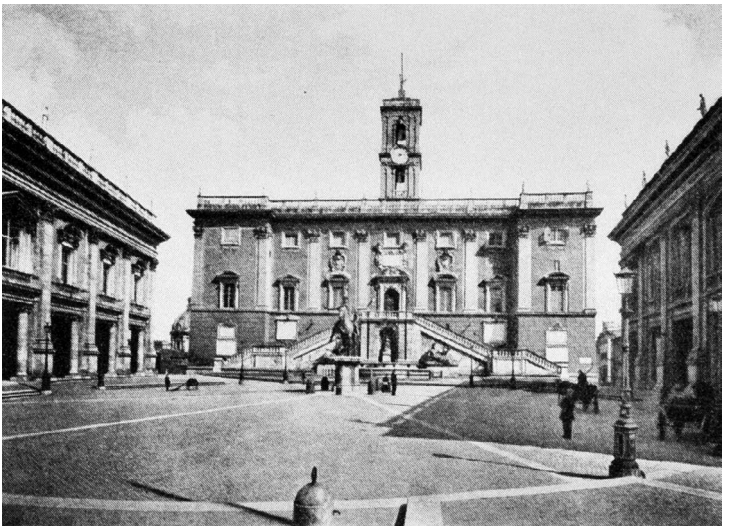
analysis of built structures, especially squares. He was particularly interested in the spatial unity of historical squares. The examples of Piazza Duomo in Ravenna and Piazza San Pietro in Mantua (fig. 2) show that the streets usually led into the square at the corners. The square thus appeared closed like an interior space. The lines of sight that Sitte drew into the plans were intended to emphasize that from the sides of the square, there was always only one view into a street, ensuring the square's spatial unity. Other examples showed groups of squares, the erection of monuments at functionally prominent points, and the wide range of urban planning methods that are effective in squares: from fixed barriers and optical openings to covered passageways.

With his view that the square was like a furnished room, i.e. a more or less enclosed interior space in the city, Sitte took his cue from the theory of architecture developed by Gottfried Semper, who was the first to point out the space-creating role of the wall. In contrast, the above-mentioned Albert Erich Brinckmann was partly influenced by Heinrich Wölfflin and his idea of architecture as a 'plastic mass', yet also by August Schmarsow's idea of the history of architecture as a history of the sense of space (Schmarsow 1894). When it came to analysis of the square, a key innovation by Brinckmann was his recognition of the space-forming significance of the monument, especially for the early modern plazas of Italy and France (Brinckmann 2000).

The constellation of square and monument explored by Brinckmann has also been dealt with by current research. In addition, Brinckmann attributed a more independent role than Sitte to the square (which he also placed in relation to the rest of the city). He wrote of the square as a 'spatial object' (*Raumkörper*), citing the example of Piazza del Campidoglio (Capitoline Hill) in Rome (fig. 3). The equestrian statue of Marcus Aurelius riding out of the centre and the square's loosely placed architecture create spatial depth, giving the square an independent quality (Jöchner 2010).

However, especially in the late eighteenth and early nineteenth centuries, the fact that recently built squares were opened up to nature and the landscape was something that Sitte and Brinckmann failed to see, for they refused to accept 'urban greenery' as a contemporary tool of urban design. Both authors rebuffed such parks and gardens, which were often laid out on the contemporaneous outskirts and acted as new 'gate-

Fig. 3: Michelangelo Buonarotti, Piazza del Campidoglio, Rome. Source: Brinckmann 2000, 45



ways' to the city. Such 'entrance squares' have since been identified as a hybrid spatial type (Jöchner 2014; 2015), which opened up the previously fortified, now more open city in a novel way, yet also connected it to the surrounding political territory, the former 'outside' (fig. 4). With these squares associated with times when the fortified city was opened up, the above-mentioned processuality of the city (i.e. the gradual construction of spatial structures) emerged as an important constituent of new spaces (Jöchner 2015).

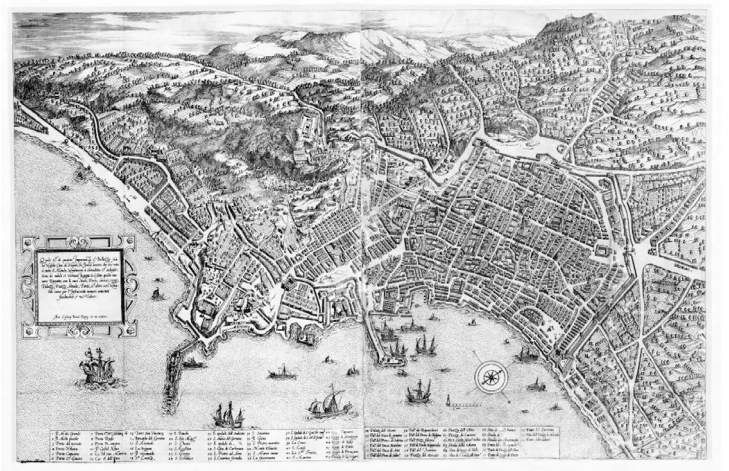
4. The Cityscape and Urban Spaces

The example of the 'entrance square' granting symbolically broad access to a now more open city emphasizes that spatial and architectural arrangements of the city also have inherent illustrative values: they produce 'images'. Traditionally, the city is one of those social spaces known for the high production of images. In the Middle Ages, for example, drawings on walls depicting the legal space of the city (which was usually autonomous at that time) were common. The question of what information these half-pictorial, half-cartographic views of early modern cities contain takes researchers back to the concept of ancient chorography – the arrangement of action-related places in an abstract classification system such as cartographic descriptions or visual maps. The visual classification of such cartographic representations can thus also be understood as a historical image of a city (fig. 5).

The art-historical study of the cityscape began from a different angle: the built city rather than the depicted city. Interest in visual qualities of the built city was particularly

Fig. 4: Giuseppe Frizzi, Piazza Vittorio Emanuele (since renamed Piazza Vittorio Veneto), 1825–30, Turin. © Uwe Rüdenburg, Berlin

Fig. 5: Antonio Lafreri, after Etienne Dupérac: Quale e di quanta, importanza e Bellezza sia la nobile Cita di Napole … Map of Naples and its surroundings, 1566. Source: Michalsky 2008, 269



evident in the 1920s, when the concept of architecture as a structural body became widespread. Most authors regarded architecture as a cubic form and thus supported Wölfflin's idea of architecture as a plastically formed mass. This drew attention to the outdoor area of the city shaped by various buildings, and which came to be regarded as a continuous space.

One such author was Paul Zucker, who in 1929 published his book *Entwicklung des Stadtbildes. Die Stadt als Form* ('Development of the cityscape: The city as form'). Zucker explored the "form of the city", namely the city shaped by a certain topography, which in turn leaves its mark on the topography by means of its buildings (Zucker 1986 (fig. 6). The geographical capacity characterizing Zucker's approach (which is still worth reading) is one of the instruments of heritage conservation today: its range of criteria would be unimaginable without the fact that the external form of a city, the cityscape, is individually shaped by its buildings and topography.

Fig. 6: Tripoli. Source: Zucker 1986, 149

Formalist analyses of urban space, which include the city-related chapters in Herman Sörgel's *Architekturästhetik* (Sörgel 1998), were typical of the 1920s with their object-space thinking. The fact that the spatial formation of architecture takes place both inwardly *and* outwardly was demonstrated by Sörgel and Schumacher in somewhat different ways. While Sörgel formalistically defined the quality of architecture as the concavity of inside and outside, Schumacher understood architecture as a *means* of overarching spatial design:

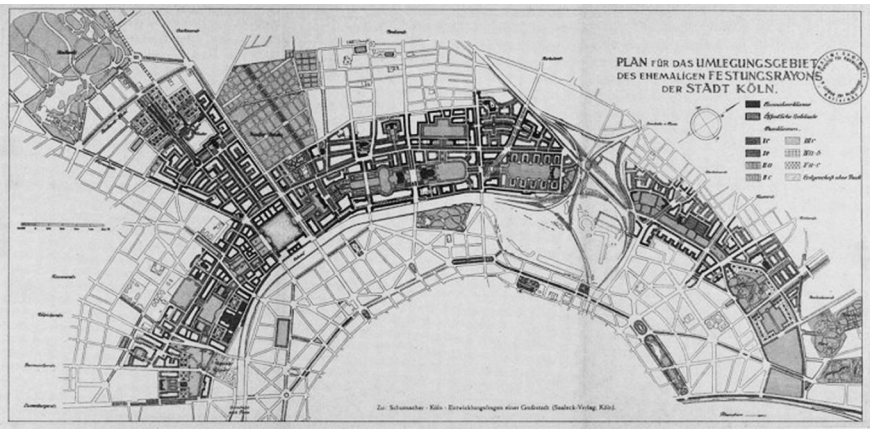
> Only when we see in architecture the art of *spatial design* through *object design* do we bring the two factors into a more suitable relationship. Spatial design is the dominant goal, object design the serving means. […] Architecture is the fulfilment of concave intentions through convex formation. In this sentence, the use of 'intention' in the plural and 'formation' in the singular is no accident; it indicates […] that architectural physicality is a dual spatial generator. This physical appearance acts as a spatially limiting element in two ways, namely in *indoor* space and *outdoor* space. (Schumacher 1991, 36)

Only Fritz Schumacher included the *dual* spatial function of architecture to create a media theory of architecture (Jöchner 2015, 59–60; 2017). If architecture makes use of shielding and opening simultaneously, by means of this special mediality it also forms

'in the same breath' a place and object of social action. By applying Schumacher's media theory of architecture, the analysis of the city can be extrapolated into an analysis of social spaces. It could also help us to see through the current trend towards an image-oriented, market-driven production of the old town. The fact that Schumacher's reflections on the *two* spaces of architecture are not included in today's overview works on outdoor space may be due to their theoretical nature, which requires clarification. On the other hand, historiographical endeavours can easily lose sight of the task of analysing urban phenomena in concrete terms.

In particular, Zucker's book *Entwicklung des Stadtbildes* reveals just how influential the idea of a unity of the city was in the 1920s. Nothing shaped it as much as the previous city walls, which had reinforced the visual depictions of the once autonomous legal space of the city. The fringe belt developments, to which Fritz Schumacher for example contributed in Cologne in 1923 with his modern intertwining of city and country, contain traces of that past unity – traces which were now to be displayed in an expanding city (Jöchner 2017; fig. 7).

Fig. 7: Fritz Schumacher, plan for the redevelopment of the fortified belt once surrounding the city of Cologne, 1923. Source: Schumacher 1923, 258



At the same time, the modern city had provided an approach that understood the city as a social entity. At the first German exhibition dedicated to cities (held in Dresden in 1903), where Fritz Schumacher spoke about the architectural tasks of cities (Schumacher 1903), the sociologist Georg Simmel delivered his famous lecture *The Metropolis and Mental Life* (Simmel 1903). Simmel's topic was the pace and the "multiplicity of economic, occupational and social life" that creates conditions with "each crossing of the street" and which he calls "psychological": the pace, the diversity, the hustle and bustle of the big city. Five years later, he developed from this his sociology of space. Rejecting all formalistic conceptions of space, the focus was instead on social interaction. Every kind of spatial constellation, according to Simmel, came about in the interrelationship between different social carriers, their respective demands determining the way in which space was filled (Simmel 1992, 689). In other words, space is not given, but created.

This made it possible, for example, to determine the much-invoked unity of the city as a historical expression of legal circumstances. Simmel emphasized this using the example of the medieval cities of Flanders. This was probably due in part to his experience of the fragmented modern city, something that was represented by contemporaneous artistic projects. From his structural analysis, it emerged that the medieval city had also consisted of multiple legal spaces with different affiliations that overlapped one another: instead of focusing on the *one* holistic space, Simmel emphasized the plurality of *spaces* of the city.

5. The User's Perspective and the Urban 'In-Between'

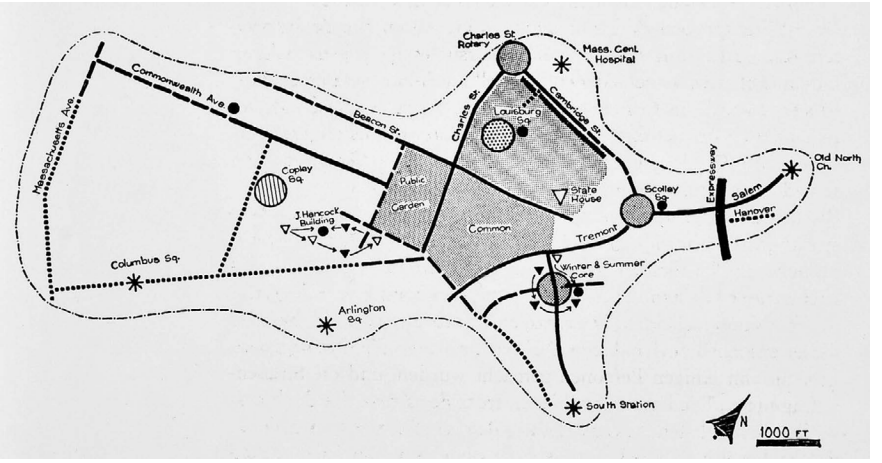
It was precisely this density of the modern city as well as the experience of it that put motion as a mode of reception back on the agenda – with great urgency. Experiencing the city through the movement of one's own body underwent a novel formulation in the literary figure of the flâneur strolling through nineteenth-century Paris apparently aimlessly with the sole purpose of absorbing the diverse visual and also commercial charms of the modern city (Benjamin 1982). The flâneur's urban equivalent was the boulevard and the covered street shops (*passages*), both of which shaped the public space of the time (cf. Barbara Welzel's essay in this volume).

A shared interest in the perception of the city leads to Kevin Lynch's book *The Image of the City* (Lynch 1960). It explores visual depictions of the city, albeit not those discussed above produced by experts. Lynch's starting point is that a user's view of the city looks completely different from that of professional planners. In the studies he developed together with György Kepes, urban inhabitants were asked about their personal observations of the city, their mental images of it. The basis for such images was always five certain fundamental spatial structures of their cities, namely landmark, node, district, edge, path. Translating these very different design elements of each city into simple graphic signets resulted in its users' "mental maps" (fig. 8) (cf. also Wolfgang Sonne's essay in this volume).

Lynch's book marked a turnaround in urban studies by refocusing attention on the user. This participatory approach was one of the reasons why, in the second half of the twentieth century, urban planning no longer necessarily relied on the masterplan. Modern cartographic research raises similar questions about the information content of urban maps on the one hand and the perceptions of the urban spaces they show on the other. This is based on the postmodern notion that although at first sight maps seem to be objective, they are in fact subject to an interest-driven construct of reality.

A more recent field of research is also based on the user's perspective: the question of the 'in-between' in the spatial structure of the city. Structurally, this concerns the historical public buildings of the city, many of which have elements serving as a transition to the interior such as porticoes, staircases, ramps and balconies. In the Middle Ages and the early modern period, building elements that projected into or overlapped with public space were sometimes also legal spaces, one example being the *Gerichtslaube* (a porch adjoining a town hall which was open at the sides and used as a court of law where proceedings could be viewed by the general public), which in the modern period

Fig. 8: The mental map of Boston compiled from surveys conducted among passers-by. Source: Lynch 1960, Fig. 10



sometimes contained a suitably deterrent iconography of punishment or references to the city's legal system. With reference to cultural theory, such transitory elements are understood as 'threshold spaces'. They mark a border which can be crossed in order to enter another space. As in most studies addressing the social spaces of the city, analysis of the form of the city is associated here with social actions (de Certeau 1984). Since the 'in-between' is virtually a characteristic of urban spaces, this current question can be seen as a continuation and application of Simmel's spatial theory. Furthermore, it directs our attention to urban spatial phenomena extending beyond a single, self-contained work. Accordingly, the urban ensemble can now be explored again using additional spatial questions, for instance with respect to social demarcations and how they can be overcome.

Translation: Chris Abbey

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