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## The history of urban morphology

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**Abstract.** *The use of town plans as a source for history and geography and as data for urban planning led, from the end of the nineteenth century, to major developments in the theoretical and analytical aspects of urban morphology. The contributions of the Italian 'school', first Muratori and then Caniggia, principally on architectural typology, are well known today, as are the contributions of the English 'school' initiated by Conzen. But knowledge of previous work is generally poor, especially of the German 'school', which played a major role between the 1890s and the 1950s. This article is a history of the ideas of urban morphology, based upon an examination of the German, English, French and Italian contributions. Its aim is to identify the most relevant scholars in this field and the way in which ideas passed from one discipline to another and across state frontiers. After examining the present-day situation, a new approach is proposed that achieves a better integration of morphological analysis and the use of written sources.*

*Key Words:* urban morphology, historiography, urban-form theory, Europe, history

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Over the past 20 years or so, several studies have sought to enrich the analysis of urban form by means of a historiographical approach.<sup>1</sup> Such studies, to which we may add various other publications offering more general views of the subject or kindred ones,<sup>2</sup> provide striking contrasts. As architects, planners, geographers, historians, or even archaeologists or social anthropologists, the authors write from different viewpoints, and their ways of addressing the subject vary according to their discipline. This is probably one of the main reasons for the diversity to be found in the bibliographies they present and for the fact that there is little common ground in

texts written in different languages. The time-scales envisaged in these publications are also short ones, generally only covering the last few decades. With the notable exception of Whitehand's in-depth study, the bibliographies rarely cite works dating from before the Second World War.

There are some fairly simple explanations for this situation: the difficulty of mastering sources written in different languages;<sup>3</sup> the paucity of communication between the disciplines to which the different researchers belong; and the specific histories of how these disciplines were constituted, more or less independently of each other. But an investi-

gation into writings of an earlier period allows for a slightly different interpretation. It would seem that the difficulties of communication between different academic disciplines has not always been an obstacle, at least not to the extent that it is today. Some of the older texts often had a decisive impact on the study of urban form, an impact which may well be forgotten today but which was influential at the time across the board in the realms of history, geography and town planning studies.

The present essay sets out to explore this history of ideas and to identify some of the key moments in its development. It is still sketchy and addresses only the most salient aspects. Indeed, at this stage, the mere identification of significant texts can still be the result of fortuitous finds.<sup>4</sup> Nor should one underestimate the difficulties resulting from the fact that the history with which we are concerned is written in different languages as well as in different disciplines. The bridges between these disciplines are not always easy to identify; authors tend to cite only the works produced in their own discipline, historians quoting other historians, geographers other geographers.<sup>5</sup> I shall probably not fully escape this difficulty, being myself French, architect, planner and historian.

Furthermore, concepts that are close to one another, or even identical, appear in very different words or expressions from one language to another. We shall see how Conzen's 'plan unit' and 'morphological region', notions close to Keyser's *Stadtteil* and not that far removed from Kretzschmar's *Anlage*, are in fact very close to Piccinato's *zona* or even Caniggia's *tessuto urbano*, or to the *entité homogène* as used by Arnaud.<sup>6</sup> The reader will not be surprised to discover that this essay leaves aside the literature of certain geographical areas – the United States, South America, Japan – which would have made the whole enterprise too vast. Similarly, the detailed history of different English, Italian and French 'schools', dealt with in some recent publications,<sup>7</sup> will not be broached here. Nor will the history of British geographical urban morphology be examined in detail.<sup>8</sup>

### The emergence of physical space as a subject for study

The scientific study of urban forms could not have developed without the elaboration and diffusion of reliable topographical maps and plans from the eighteenth century onward. Such plans sometimes indicate the position of town walls no longer in existence, already suggestive of the evolving forms of the town. These plans were concerned first and foremost with the contemporary shape of the town and questions to do with its governance, even if, on occasion, the glorification of a particular urban identity or of the political authority running the town were also essential aspects. The precise mapping of towns also began to take account of archaeological sites. The publication of the scientific findings of Bonaparte's expedition to Egypt offers one of the earliest examples of plans of towns which had completely disappeared.<sup>9</sup> During the nineteenth century the interest in surveying medieval towns also became apparent, primarily from the point of view of the history of art.<sup>10</sup>

Based on plans of this sort, Antoine Quatremère de Quincy, in 1832, identified the usefulness of the study of the plan of a town for a better understanding of its history: the plan of the groups of buildings, the squares and the streets allows us to appreciate a town's spatial structure, shows us whether the constructions were ordered from the outset in a regular and symmetrical fashion or whether, on the contrary, resulting from fortuitous causes and accidental relations, they gave rise to an ordering and layout of the town to be seen as the outcome of a multitude of isolated, individual arrangements.<sup>11</sup> Quatremère de Quincy goes on to offer us an idea of what at the time town planning, as opposed to an aggregate of individual decisions, was understood to mean. He adds that in some towns it is possible to follow several centuries of historical progress and change, observing the growth of populations and prosperity in the enlargement of different neighbourhoods, the extension of land occupied and the changes in taste visible in public and private buildings. The plans he was thinking of to support this assertion were the plan of the archaeological

excavations at Pompeii, drawn up by Bibent in 1825 and shown at the Paris salon of 1827, and probably those of Paris drawn up by Verniquet between 1785 and 1791.<sup>12</sup> For Quatremère, urban regularity is a sure sign of an active town planning authority, particularly where conditions are appropriate, as for example in the setting up of colonial settlements. This interpretation is followed by many subsequent authors, such as Lenoir and Landry in 1854, Kretzschmar in 1907 and, more recently, Lilley in 1997.<sup>13</sup>

At an early date, the perusal of historical plans led certain authors to try to construct models, based on the reconstruction of successive historical states of a town. The plans of Rouen, drawn up by Rondeaux de Sétry in 1781,<sup>14</sup> or, even more strikingly, the plans of Strasbourg drawn up by Striedbeck in about 1761 and featuring under the title *incrementa urbis* alongside a view of the town, bear witness to some serious research work.<sup>15</sup> This is the tradition in which Viollet-le-Duc was working with his *Histoire d'une forteresse*, the history of a castle and the associated settlement, presenting a succession of imaginary plans of the site since Gallic times.<sup>16</sup>

### Town plans as a source for history

In the German-speaking world, the study of town plans followed other directions. Eitelberger, in 1858, for example, was interested in questions of aesthetics.<sup>17</sup> Subsequently, important developments took place after 1870, associated with the dynamic growth of German towns at the time. Amongst several town planning treatises published during this period, Stübgen's work introduced new insights into the understanding of urban spaces, particularly in the emphasis he placed on typological analysis of buildings and on the importance of transport networks.<sup>18</sup> He also underlined the details of different phenomena to be seen in the way towns were transformed: territorial extension, the opening up of new thoroughfares, speculative developments and housing estates.<sup>19</sup> In a similar vein, in 1902, Baumeister drew attention to the way in which certain urban ring roads could be understood as traces of earlier fortified walls, or how the irregular line of

certain country roads could still be deciphered in the town's built-up space.<sup>20</sup> This approach too is part of the tradition of the history of town planning as it had developed during the nineteenth century.

A major step forward was made by Fritz, a teacher at the Lycée of Strassburg, in 1894.<sup>21</sup> Fritz started out from the observation that though towns had generated a considerable amount of historical literature, particularly in the field of law, there was practically nothing on the physical body of the town itself, its forms and the characteristics of its plan. At that time, indeed, the recent German publications on urban history were often devoid of reproductions of plans.<sup>22</sup> Fritz set out then to study the plans themselves, although finding them proved difficult. He mainly used military maps and the plans produced in the Baedeker guide books. He suggested that 'books of plans' should be compiled, much as there were collections of municipal bye-laws. He then offered an analysis of his findings. More than 300 of the towns studied had grid-type layouts, which were increasingly regular from the right bank of the Elbe and the Saale, heading east. These orthogonal plans raised questions to do with the timing and geography of the emergence of the towns, and their links with the legislative aspects of settlement, and the chronology of planning laws and the development of planning processes in Germany, in relation to pre-existing Slav settlements, the *Rundlingen*,<sup>23</sup> he claimed to identify traces of these settlements in the rounded forms of the walls of the new towns with orthogonal plans. Finally, he offered a classification of towns according to their plan type.

Fritz's ideas had considerable influence in Germany. In 1907, Kretzschmar, giving an overview of work carried out to that date, paid homage to the work of the Strassburg historian:

The historian J. Fritz was the first to demonstrate the value of town plans as a source for historical research. In his 1894 text *Deutsche Stadtanlagen*, he gives evidence for the fact that the general design of the built-up parts of our towns is an astonishingly precise and reliable source. It is a source material, in his eyes, which is 'coagulated history' so to speak, providing a

document which written texts validate and support in a remarkable way. Fritz's work has had many repercussions and much research has been carried out since his time using the topographical method, directly or indirectly inspired by his ideas and using the town plan, in particular, as a source for history.<sup>24</sup>

In 1926, Lavedan also wrote that it is to Fritz that we owe our recognition of the presence in central and eastern Germany of many towns with orthogonal plans. 'In his study of German towns, Fritz played a pioneering role. His modest publication of 1894 is one of the key moments in the history of urban architecture: the beginning of a long series of studies'.<sup>25</sup>

Fritz's ideas were built upon over the following decades, not only in Germany but also, though to a lesser extent, in France and Italy. In Germany, the spread and development of his ideas can be followed throughout the twentieth century, both amongst historians and geographers. Kretzschmar himself brought certain nuances to Fritz's original perceptions, to be seen already in the title of his article which may be translated into English as 'The plan of the town as a source for history'. He insists on the fact that the information to be found in the town's plan must be brought into line with the information taken from written sources:

The study of the town's plan will say what it has to say, and if by chance it says something other than what is to be found in the written sources, the greater reliability of the town plan should be accepted ... Old written information cannot be in contradiction with what the form of the town itself tells us, once this information has been correctly interpreted. The written sources will always confirm what the plan of the town tells us.<sup>26</sup>

Kretzschmar often uses the concept of *Anlage*, a term previously used by Fritz, but clarifying its meaning as planimetric unit.<sup>27</sup> He mentions a large body of work carried out in the spirit of Fritz's ideas, work that was to be multiplied in the following decades, particularly in the form of atlases of town plans and

regional monographs, such as those of Oberhammer, Meier, Klaiber, Leixner, Gantner, Gerlach, Sauerteig and, later, Bobek and Lichtenberger,<sup>28</sup> and other texts on the history of town planning.<sup>29</sup>

These authors pay special attention to certain aspects of the analysis of town plans, looking closely for example at the points of contact, the 'seams', between different homogeneous sectors,<sup>30</sup> or undertaking measured observations, such as those initiated by Strahm. For Strahm, 'in the absence of written sources, the plan of the town itself is a monument to law, a document in stone so to speak'.<sup>31</sup> He was concerned with rediscovering the original trace of landed properties given to the first inhabitants of the new town of Bern, founded at the end of the twelfth century.<sup>32</sup> His contribution was probably a decisive one for the detailed study of property distribution from the moment of its partitioning into lots, often in speculative developments. In a book published in 1958, Keyser gives a clear analysis of how the form of a town can be separated into morphologically homogeneous parts, which he calls *Stadtteile*, defined by the massing of constructions, the property patterns, the streets and the open public spaces. His study covered several dozen different towns and was accompanied by an atlas of analytical plans. For Keyser, the *Stadtteile* were to be explained historically. Public buildings could also play a significant part when they were located in a particular way in the town's space.<sup>33</sup> A further example of this kind of analysis is to be found in the work of another Swiss author, Bernoulli, who hypothesized the concept of property cycles: an initial lot of landed property is gradually filled in, the buildings subsequently being replaced when their life cycle is over.<sup>34</sup> By the middle of the twentieth century, the town plan seems to be considered as a 'familiar' type of source in the German-speaking world, one that is often used, although the methods employed for its study have not evolved significantly in recent years, despite a renewal of the questions raised.<sup>35</sup>

Fritz's ideas also had a profound influence in the realm of geography. Schlüter, taking his inspiration directly from him, made the same observation as to the absence of understanding



of form in the study of towns and proposed a new science of 'anthropo-geography', which, like physics, would be founded on concrete phenomena.<sup>36</sup> He examined the different types of building, in terms of their materials and their forms, as well as the form of the town itself, which he divided into zones (*Zonen*) or 'town parts' (*Stadtteile*). However, he did not take this division any further than the simple distinction between the town centre inside the walls and the outer neighbourhoods or suburbs. His remarks on the material consequences of urban stagnation or recession are inspired by observations taken from geology, with its 'gaps' sometimes visible between different strata.<sup>37</sup> Whitehand has given a detailed account of the way ideas and work on the form of the town developed within German geography, starting from Schlüter,<sup>38</sup> who played a major role as intermediary between Fritz and geographers. Whitehand cites in particular the works of Geisler and Martiny, and several others concerned with building types and the processes at work in the development of urban agglomerations.<sup>39</sup>

In France, the echo of Fritz's methodological advances is clearly to be seen in the work of Lavedan. Lavedan took up the lines of enquiry initiated by Fritz in 1894: the distinction between 'founded' towns and 'created' towns; the importance of questions of colonial authority in the form of town plans; and the difficulties of establishing parallels between plan forms and municipal legislation. He also drew up a systematic collection of town plans. Although Lavedan warned against over-hasty explanations, his formal reading of types of plans is itself a relatively simple one, which does not distinguish between parts of the town and leads to a straightforward classification according to chronological periods (classical plans, rural towns of the early Middle Ages still influenced by classical forms, radial-concentric plans regularized during the twelfth century, grid-type plans from the thirteenth century, and so on). Subsequently, he never abandoned this classification, leading to some analytical difficulties on account of its oversimplification.<sup>40</sup>

In the 1930s, the study of the form of towns seems to have been in decline in France. Poète, who worked with Lavedan at the Paris Institut

d'Urbanisme and who shared many of his ideas, had nonetheless adopted a very different position in 1933, one in which the prime factor in the generation of form was the function of spaces:

In the final analysis, requirements and needs are what have to be considered. The nature and multiplication of these requirements, their hierarchy at different periods, are the factors which explain the town and its plan. Differentiating between these needs, classifying them and following their evolution and development in accordance with human improvement are the elements which can underpin our understanding of urban evolution.<sup>41</sup>

In this view, space is nothing but the expression of men's lives and their needs, even if Poète recognizes that there can be gaps between the space as it exists, the factors that explain its creation and the uses it accommodates subsequently. Poète also made virulent criticism of the close examination of plans: 'faced with a town plan, it is vital not to look at it with the eyes of a surgeon, ready to dissect the corpse as if the earth and mankind did not exist'.<sup>42</sup> The functionalist point of view expressed here could go some way to explaining the decline of town-plan studies in France, little of interest on urban form being produced up to the 1960s. The effects of this decline are clearly perceptible in Lavedan and Huguency's 1974 work on medieval town planning. In fact, in 1974, Lavedan and Huguency pay attention only to purely functional criteria in the origins of towns. Despite its importance for Lavedan in 1926, the work of Fritz is now relegated to the status of a footnote concerning a 'modest programme at the Strasbourg lycée'.<sup>43</sup>

The research carried out by Sauvaget, based on other German publications,<sup>44</sup> into the form of ancient Syrian towns, mainly Aleppo and Damascus, is noteworthy. In the contemporary plans of these towns, he thought that he could identify the classical pattern of streets, surviving up to the present.<sup>45</sup> His interpretation was based largely on the similarities between street patterns and what was then known from archaeological excavations of classical Greek

sites. During the twentieth century, the kind of approach adopted by Sauvaget and Strahm enjoyed considerable influence. It is in the tradition of Sauvaget's work, for example, that it is possible to place the studies by Pinon and others on Roman towns in France and on amphitheatres, the work by Sommella in Italy, and the analytical processes of property patterns developed by Chouquer and Favory. Many recent studies which seek to identify classical centuriations in the present-day forms of the rural landscape are in a similar vein.<sup>46</sup> Research into the identification of models in land-holding patterns has also been pursued by English geographers such as Slater.<sup>47</sup> In both cases, the method is to take the characteristics of present-day space and, after selecting the primary plot boundaries, to identify forms surviving from the past. The aim is often to compare the measurements recorded in the field with those given in the texts dating from the period under study.<sup>48</sup> More recently, Lanos and Jumel developed a mathematical method to relate those measures to their planned antecedents.<sup>49</sup>

A similar tendency developed in Italian research during the same period. Above all, it was the work of geographers, architects and planners that was in the forefront, as for example in the 1921 atlas of geographical types, several works by Giovannoni and, in 1943, Piccinato's text on medieval town planning, a book which contains reproductions of many plans.<sup>50</sup> The inter-war period was also one of much study, although it is not always possible to situate these initiatives in precise schools of thought, partly because of the wide influence of Fritz's ideas in various milieus.

### **The post-war renewal of theory**

The post-war years saw both a continuation of work in the productive German tradition and also the simultaneous development of two new schools of thought, both bringing new theoretical advances, quite independently of each other, in Italy and in England.

### *Italy*

In Italy, the new ideas emerged amongst architects involved in the rehabilitation of historic town centres. The intellectual roots of this movement, which took many forms, are to be found in the ideas developed by Giovannoni, Piccinato and Trincanato.<sup>51</sup> Through his teaching in Naples (1927-50), then in Venice (1950-63) and finally in Rome (1963-74), Piccinato, who was influenced not only by German works such as those of Stübgen, but also by Lavedan and Poëte, seems to have contributed to two different schools of thought corresponding to two distinct approaches. Morini was another member of this movement, although he was extremely circumspect as to the value of town plans as source material: 'It remains very difficult, from a mere examination of plans, to understand whether a town developed spontaneously or according to a pre-established plan'.<sup>52</sup>

The first school, represented by Muratori and his pupil Aymonino, developed around the university teaching of architecture, particularly in Venice. The novelty of this work,<sup>53</sup> based on a rejection of the ideas of the Modern Movement, is to be found essentially in the systemization of a historical approach to architectural types. Muratori was probably Piccinato's student or colleague at Venice. His analysis is founded on the use of types. However, whereas for Piccinato this was a tool for development projects and the characteristics of an urban development project were to be defined by the types of construction, correctly laid out and distributed,<sup>54</sup> for Muratori types were a tool for the historical analysis of urban fabrics.

This approach has two important consequences. The first is that the type is the result of an historical evolution, where one dominant type gives way to another by means of an accumulation of small changes carried out on the first type during a period when investment in new building is slack. A new dominant type can also be imported, bringing a form developed elsewhere and adapting it to a local context. These ideas have been analysed and published in French by Malfroy.<sup>55</sup> This study of types is completely integrated into an

understanding of historical periods, without which it is meaningless. The second consequence is the characterization of urban fabrics by the addition of a number of buildings identified according to a given type or to the contemporary variants which allow this type to adapt itself to physical constraints such as a corner plot, irregular relief or plots. The texts written by Caniggia offer the best developments of the theoretical aspects of this system for the interpretation of urban forms, in particular his *Lettura di Firenze*. Here, Caniggia proposes a diachronic modelling of the formation of the town according to the evolution of the types and urban fabrics that these types generate.<sup>56</sup>

The relevance of such tools of analysis for understanding urban form is readily apparent. Nonetheless, their usefulness was to be somewhat reduced by the context in which they were developed, that is to say the context of the method of *progettazione*, the design of an architectural or planning project. According to the priorities of training in architecture, where the project is the main concern, the analytical tool was seen as something rather less useful for understanding, for understanding's sake alone. This is probably the explanation for the weakness of the links between this approach and research into written and archaeological source material. Caniggia's study of Florence, like his other studies, makes little use of written information. The work of Maffei,<sup>57</sup> who also trained with Muratori, is better informed on this score. But, on the whole, the results of typomorphological research can often be weak and are frequently left aside by historians and archaeologists.

Research in Italy, however, is not only of this type. At the same time as these typological studies were being carried out, other work of a more traditional nature was also being pursued, less conditioned by the practical outcomes of the project. This is the case, for example, with the programmes of research on several small towns of Tuscany carried out during the 1960s, published in 1968 and giving rise to an interesting text by Fanelli on data for urban morphology.<sup>58</sup> In 1981, *Firenze*, by the same author, demonstrates a more historical approach to the formation of the town.<sup>59</sup> Here

the typological analysis was lacking, although it was subsequently provided by Maffei in 1991. Another aspect of the history of Florence was dealt with in the form of the town planning history developed in Italy between the two wars. Guidoni gives a reading of the town essentially in planning terms, based on an attentive scrutiny of the town plan.<sup>60</sup> Guidoni's work, inspired by teachers like Piccinato, Morini and Lavedan, is firmly based on archival research. He is clearly pursuing the lines defined by Piccinato for the study of the installation of major civil and religious buildings in towns, supposing their disposition to be the result of conscious planning decisions,<sup>61</sup> for example in the carefully balanced distribution of mendicant orders within certain towns during the thirteenth century. His idea that the shape of certain public squares in Tuscan towns and in the centre of Italy are learned geometrical constructions, and that the balanced localization of centres of power is the result of complex planning practices, is a systematization of an approach characteristic of German art history.<sup>62</sup> The work carried out by this historian, who trained as an architect, is also at the starting point of another important 'school' in Italy.<sup>63</sup> Meanwhile, Italian geographers were pursuing another research direction in more or less splendid isolation.<sup>64</sup>

### England

The context was very different in England, where it was a geographer, trained in town planning, whose research work led to the elaboration of a theoretical system for the interpretation of urban forms.<sup>65</sup> The first step in Conzen's approach is to map precisely individual plots of land and the block plans of the buildings that stand within them. Subsequently plan units are recognized. These are defined as unitary areas in respect of their ground plan that are distinct from neighbouring areas. These units are explicable in terms of the circumstances of their development. Some of Conzen's ideas came from German town planning and historical traditions, Conzen himself having fled Germany in 1933 while still a student at Berlin University's Institute of

Geography. For example, he uses translations of German words used by Stübgen to categorize the functions of different streets.<sup>66</sup> It is clear that this concept of the plan unit, defined as a recognizable and individualized combination of streets, buildings and plot patterns, is the offspring, in a more explicit form, of the notion of *Anlage* used by Kretschmar at the beginning of the twentieth century, and even more of the notion of *Stadtteil* used (but not defined) by Schlüter. We do not know how far Keyser's work, developing along the same lines,<sup>67</sup> influenced that of Conzen, whose Alnwick study was under way at the same time.<sup>68</sup> Conzen was influenced perhaps by Keyser's concept of relative chronology: 'Rather is the townscape a kind of palimpsest on which the features contributed by any particular period may have been partly or wholly obliterated by those of a later one through the process of site succession or in some other way'.<sup>69</sup>

Conzen acted thus as an intermediary between German and English research, as had Dickinson previously,<sup>70</sup> whilst elaborating a coherent combination of theoretical elements from elsewhere, and completing them: 'plan seam' and plan unit are present in Keyser's writings and those of various earlier authors; 'burgage cycle' is arguably present in Bernoulli's work, if not explicitly; metrology in Strahm's; whilst 'urban fringe belt' was borrowed from Louis, one of Conzen's teachers in Berlin.<sup>71</sup> Giovannoni had been interested in the seams between neighbourhoods of different periods, but from the perspective of the urban project.<sup>72</sup> In reaction against studies which only looked at plans of roads and streets, Conzen insisted on the need to work at the same time on plots and buildings, the two other components of the plan of a town, as Keyser also noted. The notions of *unités de plan* and interest in the points of contact between these units are also present in the work of Roncayolo at this time, but with no legacy in French studies prior to the 1990s.<sup>73</sup>

One of the most important ideas developed by Conzen is that of the burgage cycle. During this cycle, an original land plot formed by the dividing up of an earlier estate is first occupied by a house. The space behind the house is then

filled in by stages until, in some cases, it is covered almost completely by new buildings. This situation leads to redevelopment of the plot, the formation of new plot boundaries and a different typology of new construction. This idea, and the periodization it implies, is clearly not far from Caniggia's notions of characteristic types, even if it is expressed in different terms.<sup>74</sup>

Such concepts, elaborated by Conzen during the 1960s, had a significant impact on English studies. Initially the influence was within geography, and Conzen's notions remained unknown to archaeologists for a long time.<sup>75</sup> During the 1990s, some convergence may be seen with the work of planners.<sup>76</sup> Following on from Conzen, there have been metrological studies, such as those of Slater, the in-depth research of Whitehand on particular aspects of the formation of urban fabrics,<sup>77</sup> and the research of Lilley, who made explicit some of Conzen's methods of analysis.<sup>78</sup> Nonetheless, in England, the picture is not limited to this Birmingham school, as Conzen's followers are sometimes called. There are several other approaches, such as those used in landscape or townscape archaeology,<sup>79</sup> and those in the volumes devoted to the historic towns of each county.<sup>80</sup>

#### *France and Switzerland*

The directions followed by urban morphology in France and Switzerland are numerous, and their antecedents and links are more difficult to pin down, the more so since many works are still not published. The French 'school' of typomorphology, inspired by the Italians and particularly prevalent in France's architectural schools, is known for its historiographical research,<sup>81</sup> but also for a study of Versailles and many other publications.<sup>82</sup>

However, urban form has also been examined, at an earlier date, by art historians and geographers. The first of these works, apart from those of Lavedan, are by the geographers Roncayolo and Rouleau.<sup>83</sup> Plot characteristics also became the object of particular scrutiny.<sup>84</sup> It is probably in this field that French research has made the most striking advances, in parallel



with the international urban historical atlases project. This project was launched by a special committee at the International Historians' Congress of 1955 in order to promote the study of medieval towns. Many atlases have been published in Europe. They are concerned only with topographic representation. The historian Bloch had in 1929 drawn attention to the interest of studying plot patterns and understanding their organization in the past.<sup>85</sup> In 1974, Lavedan published maps of land holdings for the towns he was studying. English researchers have also been concerned with the reconstruction of land ownership patterns, as has Bernoulli in relation to space genesis.<sup>86</sup> The method of using archival sources to plot old land parcels represents one of the major contributions of the study of the Halles quarter in Paris, commenced in the 1960s and published in 1977.<sup>87</sup> This research, 'segmented the urban 'text' into units, then classified these units into formal classes to identify the processes of combination and transformation that these units and models had witnessed'.<sup>88</sup> The individual plot is therefore rather like an architectural type, and the ensemble of these plots, also called 'urbi-texture', can be compared to a built urban fabric.<sup>89</sup> Beyond the analysis of the land units themselves, the analysis of urban forms in France has been slight.<sup>90</sup> But this research project, like the one carried out at Versailles, marks the forceful emergence in French studies of the typological approach, inspired in part by the work of historians and art historians, and in part by the Italian school. The method leads inevitably to a preoccupation with quantifying urban changes, to be found elsewhere for example in the more thoroughgoing work undertaken on Łódź in Poland by Koter.<sup>91</sup> Once the initial enthusiasm had waned, however, these pioneering studies did not have a significant follow-up, although the years 1970 to 1985 saw further interesting studies of plots in other towns.<sup>92</sup> Also noteworthy are some particularly detailed studies carried out on a thematic basis, for example the work of Arnaud and Morgan analysing the traces of a town wall.<sup>93</sup>

In addition to these research programmes, there have been efforts to represent urban change cartographically. An example is the

atlas of Geneva, comparing its present-day form with that at the beginning of the nineteenth century. These maps are detailed representations of urban developments showing the changes to be noted at different periods.<sup>94</sup> Similar efforts to map urban evolutions are to be found for the late-nineteenth century and early-twentieth century although these were not necessarily published.<sup>95</sup> It has also been proposed to produce maps underlining what appeared and what disappeared between two given moments in time.<sup>96</sup>

### A general overview

It would seem, then, that several of the advances made in the analysis of urban form are the result of the introduction of concepts used in the field of town planning into historical and geographical enquiry. A case in point is the influence of the idea of types and associated zones, as described by Piccinato, on the notions of urban fabric and types as used by Muratori and Caniggia in their studies. For Piccinato, the zone is defined as a given assembly of types: 'The urban territory is to be seen as composed of varied sectors or zones. In each built zone must be determined the types of buildings that, precisely proportioned and distributed, give the character of the zone itself';<sup>97</sup> whilst for Conzen: 'streets, plots and buildings integrate in space and time to form individualized combinations of a dynamic rather than a static nature, recognizable in the town plan as distinct plan units'.<sup>98</sup> The association of plots and buildings is in fact another way to describe the types, so that Piccinato's zone may be seen as a sort of plan unit. In the same way, possibly, the concept of burgage cycle could come from Bernoulli, for whom it was a description of the redevelopment of a plot as a planner's tool; but we have no evidence that Conzen knew his work. In a text of 1991, the author bases his study of historic town planning operations on the supposition that it is necessary to recognize in town plans the materialization of projects laid out in a similar way to those undertaken by town planners today.<sup>99</sup> More generally, it is striking to note that many of the advances in this field came from people involved in the practice of



architecture or planning: Quatremère de Quincy, Stübben, Piccinato, Bernoulli, Muratori, Caniggia and Conzen.

To summarize and simplify even further the historical evolution outlined, it is perhaps possible to say that the morphological analysis of towns was born out of questions to do with architectural types, on the one hand, and the analysis of plans, on the other. These two types of investigation advanced in parallel to begin with, coming together from the middle of the twentieth century in a theoretical framework linked with actual planning practice. This is suggested by the proximity of the ideas on *zona* and plan unit, developed respectively by Piccinato and Conzen, to which Caniggia's notion of *tessuto urbano* is also closely related, although these ideas developed separately. It is interesting to read Kropf, proclaiming in 1998 that typology and zoning can be brought together to provide a powerful tool for planners and urban designers, a recommendation put into practice more than half a century earlier.<sup>100</sup> Thinking about types has a long history, in France, beginning with Durand and Quatremère de Quincy, then in German works (Stübben, Geisler, Keyser).<sup>101</sup> It is thanks to another German, Fritz, that the town plan acquired its status as an object for study, and it is thanks to Italian researchers (Muratori, Caniggia) and to a German living in England, Conzen, that the link is finally made between these two aspects of the same reality.

Work on the physical reality of urban space is inspired by different points of view and attaches importance to different facets. Archaeologists, for example, study the form of towns to acquire understanding of their development and of ancient forms that have disappeared. Geographers are seeking explanations for the forms they see today.<sup>102</sup> Planners need understanding in order to inform development projects. Historians, whether they are curious about the history of techniques or the history of art, are interested in the evolution of a place in its chronological dimensions and in terms of the history of towns in general. According to their different objectives, these approaches draw attention to different aspects of the same reality: traces and persistence of the past, plan units, architectural types, urban

change over the centuries, and urban growth or decline. These different interests tend to constitute autonomous fields of interpretation. It is striking here to note the absence of references by Italian typologists to historians and vice versa, and how English archaeologists and historians seem to be ignorant of the work of their geographer colleagues (and vice versa).<sup>103</sup> In general too, there seems to be widespread ignorance of German-language studies, especially in France and Italy.<sup>104</sup>

The diversity of the terminology used in studies of urban form comes from these different viewpoints and from the ignorance of research carried out in other disciplines or other countries. Such mutual ignorance can sometimes lead to dead ends. Some have been so preoccupied with purely 'morphographic' analysis, a term used by Whitehand,<sup>105</sup> that they offer little interpretation and are capable of describing forms that have no links whatsoever with any identifiable social process.<sup>106</sup> Quantification can also end up leading nowhere. Others are victims of received interpretations that are thought to be valid, but which crumble on closer examination. The examples here are numerous. The medieval town was radial-concentric before the thirteenth century, according to Lavedan, and is held to be radial-concentric by many succeeding authors. However, contrary to what Guidioni has asserted, it is not necessarily comprised only of curving streets.<sup>107</sup> In England, some authors have thought they recognized towns planned by King Alfred or one of his successors, on the basis of very flimsy evidence.<sup>107</sup> Likewise, Roman towns do not systematically follow 'programmatic plans' and, as Meckseper demonstrated, the Zähringen towns do not all have the same general plan.<sup>108</sup> Planners can also fall victim to this trap, when, for example, the 'block' is used as a paradigmatic form in planning projects.<sup>109</sup> Finally, as in all historical research, ideological convictions can lead to erroneous assertions, for example Lavedan's claim that 'almost from the outset, in 1140, French planners at Montauban met with a success that was rarely equalled subsequently'. German historians reacted later by pointing to the Zähringen towns, in particular Freiburg-im-Breisgau, founded in 1120.<sup>110</sup>

### Morphological structures and written data

With the help of distance, it is possible to see now how most of the key concepts used in today's urban morphology were forged during the 1940s or before, and made fully explicit during the 1950s and early 1960s. These conceptual tools have been given considerable refinement since. A question that needs to be asked is why, outside German-speaking Europe, the town plan is not widely used in urban history. From this point of view, it is surprising that the history of town planning, generally founded on a somewhat limited analysis of town plans, has had greater success than the methods developed by Keyser, Conzen, Muratori and their followers. The reasons for this are probably to be found in the definition of the objects with which morphological analysis is concerned. The type, for example, is defined as an entity which brings together usage, know-how and form and is consequently an object of some complexity. The reduction of a town plan into plan units or portions of urban space identifiable by their geometric form is also based on a definition of some complexity: street and plot patterns, disposition of buildings, groupings of types. These tools are not always easy to use and require some expertise in their application to the comprehension of the form of a town.

To these obstacles, stemming from the complexities of the definitions of what is being studied, another obstacle may be added, and a major one, implicitly or explicitly stated by 'classic' historians of the town. For these historians, according to the bibliography of urban studies, the main preoccupations are the social, economic, religious and political aspects of a town's history, or the different representations of a town's spaces, including cultural ones. This tendency, as we have seen, was already criticized at the end of the nineteenth century by Fritz. Urban history has developed mainly as a history of what is contained, neglecting the history of the container. Furthermore, many historians are trained only in the analysis of texts, and they have difficulty in apprehending the spatial and physical characteristics of the town as a source. At the same time, where architects and planners are

concerned, there is a comparable tendency to ignore the written word, to fail to confront the physical information the town offers with written or archaeological sources. The history of town planning itself, even though it is based on the close analysis of plans, is often unfamiliar to them. The rarity or even complete absence of the works of historians or archaeologists in recent bibliographies devoted to the analysis of urban form is surprising.<sup>112</sup> This tendency is also to be explained by the propensity of architects and planners working within the Italian and French 'typomorphological' tradition to link their research only with the project in hand. This linkage explains perhaps why studies of urban form are now rare in France, as many of the researchers who were once active in this field and whose works still comprise an important proportion of the French bibliography on the subject, for example Panerai and Devillers, have abandoned research to become wholly involved in architecture or planning, and why recent historiographical essays are increasingly concerned with doctrinal questions. Two recent articles on urban morphology in Italy are a clear illustration of this tendency. Many works carried out by Italian researchers are here simply not mentioned because they were carried out independently of a development project or of project teaching.<sup>113</sup>

Nonetheless, we have at our disposal a theoretical principle, restated by Conzen, according to which a given form is devoid of meaning unless it is placed in a social context. This principle has encouraged the development, at Birmingham, of research into the actors and agents active in urban evolution.<sup>114</sup> The problem with this principle, however, is that it comes up against the complexity of the objects put forward for analysis and the complexity too of the historical sources available for understanding them. But these sources reflect the social phenomena which are at the origins of the forms we can see, or at least a part of them. The formation of space, furthermore, is the work of specific actors who are not necessarily the users of the space: the distinction here between producers of space (and/or investors) and users is an essential one.

This leads on to the idea of segmenting

urban space into objects for which it is possible to find direct correspondents in the written sources, but this remains rather difficult within the theoretical frameworks first outlined. In pursuance of this objective, it is vital to think about the scale levels of the units into which urban fabric and open urban space can be divided. At the most detailed level, urban space can be analysed according to five distinct categories: real estate, construction, investment, use and design.<sup>115</sup> Of these five categories, the only ones that have an authentically morphological expression, visible without ambiguity in the field, are those relating to construction and design. The others are perceptible in the field, or in measured plans, only in so far as they lead to operations that generate visible traces (plots, for example). From a planning point of view, the other categories involve an ordering of streets, of plots and of buildings (although not necessarily a regular, geometric one, and not necessarily in straight lines or circles), that is to say the constituent elements of urban space as defined by Keyser or Conzen. This ordering can affect one or another of these elements, two of them or all three, and here it is doubtless necessary to add yet another category, that of major public or religious buildings, the design and location of which is of another nature but which may also be the consequence of a specific planning process.

This is why Arnaud made a distinction between 'homogeneous spatial entities' and 'planning operations'.<sup>116</sup> Here, the plan unit is to be abandoned as being too vague, in favour of a notion of 'planning unit'. This can mean a project, even an implicit one, a design programme, a use brief and an actual realization, all of these in fact being complex facts. The new unit comprises the phenomena we have just described as individual cases. It is close to those defined by archaeologists and building archaeologists, but the notion is broader and can be applied at different scales.<sup>117</sup> The main question then is one of scale: a door knob, the slight modification to a building (Caniggia's *capillary mutation*), a new building (possibly conceived of in terms of a type), a speculative development, whether it comprises new housing or not, a whole neighbourhood or a whole town, or a regional planning programme fixing

different projects within a given territory (a network of fortifications, for example). Arnaud divides space up in this manner so that the objects identified, 'by revealing the different scales of their formation, will allow for the identification of the sources which are pertinent for the historian or useful for the quest for source material and its understanding'.<sup>118</sup>

For these objects we do indeed have written sources, at least for the modern and contemporary periods, although less frequently for the Middle Ages. Thus, series of building permits which have sometimes been preserved for quite old periods give information on the units of construction. Confronting the physical reality with the permit allows for an understanding of what actually happened and for measuring the concordance between the written source and the built source. From the end of the Middle Ages, the archives of local municipal authorities or religious or state institutions offer information on planning operations that can be related to planimetric information. Thus it is possible to find a more or less direct correspondence between written sources and the physical sources where buildings and plans are concerned. There is appropriate historical documentation for the objects subjected to morphological analysis. Once this correspondence is established, the historicity of the physical evidence is validated and its use for periods or places where the written sources are lacking becomes perfectly legitimate as the unique or at least principal source. In this case, however, historical method, which requires that sources of different provenance should be compared, is no longer fully possible. When the plan is the only source of information, only hypotheses can be put forward, their probability depending on the quantity of data available, their quality and their distance in time from other types of source, or from specific and reliable information elsewhere in the plan. Thus, just as history is often written exclusively on the strength of written and archaeological sources, it can also be written on the exclusive evidence of morphological and physical facts, as Kretzschmar proclaimed long ago, even if these facts remain impossible to date with precision.<sup>119</sup>

Bearing in mind this way of approaching the

sources, plan units, zones or urban fabrics can be perceived as the results of planning operations, of regulations governing new building, or as an accumulation of individual realizations more or less determined by common rules and practices, as Quatremère de Quincy understood them. The type here becomes a morphological model for the interpretation of the forms. Morphographic analysis is the necessary but preliminary stage in the construction of a hypothesis, based on measured observation. Morphological analysis is a second stage, involving human intervention or possibly a natural origin in the understanding of the forms, and implying a given and datable social phenomenon. Form therefore has no meaning *per se*, and should be analysed in terms of explanatory factors, avoiding preconceptions. The field of possible interpretations is gradually honed down with each input of new information, coming from written sources, archaeological data, or the analysis of the buildings and other physical organizations of space.

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## Ville Recherche Diffusion

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- Bowie, K., Texier, S. and Bonnefoy, L. (2003) *Paris et ses chemins de fer*
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- Capillon, N. (2000) *Oulan-Bator: transformations urbaines et architecturales récentes*
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- ples: classer, comprendre, projeter*
- Gauthiez, B. (2003) *Recueil de textes*
- Halgand, M-P. (2000) *Architecture et politique: la construction des bâtiments civils en Vendée au XIX<sup>e</sup> siècle*
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- Lambert-Bresson, M. and Téraide, A. (2002) *Villes Françaises au XIX<sup>e</sup> siècle: aménagement, extension et embellissement*
- Malfroy, S. (2001) *L'approche morphologique de la ville et du territoire*
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