
Philip Steadman is currently Emeritus Professor of Urban and Built Form Studies at *The Bartlett*, the Faculty of the Built Environment of University College London. All along his unbroken research activity during half a century, he could address such various fields as art history and environmental engineering, architectural history and the prevention of catastrophe risks, all of those topics being approached with the same methodological rigour. The focus, systematically put on logically formalizable and quantifiable features like structural similarities, geometrical or topological relationships in space, statistical correlations between dimensional characteristics (for example floor area/built volume), denotes elective affinities with the Structuralist school as well as precocious skills in what has come to be called digital humanities. Since the early 1970s Professor Steadman has been able to anticipate, together with the British mathematician, architect and artist Lionel March, the heuristic potential of computerisation both for the systematic treatment of compositional challenges and the survey of existing built complexes. His early contributions to the morphological study of architectural layouts developed in close continuity with the approach Christopher Alexander had presented in 1964 with his famous *Notes on the Synthesis of Form* (Harvard University Press) and also in intellectual affinity with the circle of Space Syntax around Bill Hillier at UCL. In addition to numerous case studies and very specific explorations, Philip Steadman has authored essays of a more philosophical range, questioning analogies and essential differences between artefacts and living organisms with respect to their behaviour through time or attempting to circumscribe, on quite a metaphysical standpoint, the transient areas between probability, possibility and radical impossibility in architectural design. This last issue, already present in his *Architectural Morphology* of 1983, stays anew, but in refined clarity, at the core of the present book that explains meaning and uses of the concept of ‘morphospace’ through a series of applications.

The most valuable outcome of the present study definitely resides in the clear distinction conceptually made but also translated into chaptering and typography between the narrative reporting of historical facts and events and the attempt to explain those facts and achievements within an explicit theoretical framework. Since the book title, where ‘building types’ is printed in serifed typeface, whereas ‘built forms’ appears without serif, the author takes care of disentangling the institutional definition of buildings as receptacles of activities (‘activity types’ like hospital, theatre, church, station) and the classification of buildings according to intrinsic formal geometrical properties (‘form types’ like pavilion, block with or without courtyard, detached or semidetached house). The author emphasizes that the relationships between building types and built forms, that is between uses or functions and certain spatial arrangements, remain very flexible through time: a built form developed in the context of museology may get further applications in the realm of medical care, penitentiary punishment or retail marketing; conversely a specific function - let's say housing - may be compatible with the broadest range of built forms including the re-use of built forms initially dedicated to other purposes (e. g. residential lofts in former storehouses a. s. o.).

All odd-numbered chapters focus on selected episodes of the building developments triggered by the industrial revolution in the UK and USA: chap. 1 compares four London residential buildings of the later 19th century, chap. 3 relates the fate of Florence Nightingale's pavilion hospital from 1859 on, chap. 5 observes the gradual replacement of ‘central hall plans’ by


‘pavilion plans’ in the elementary school building between 1870 and 1930, chap. 7 compares the rise of tall office buildings in Chicago and New York between 1890 and 1930, paying particular attention to the site, chap. 9 closes this series of case studies recording the genesis and organisational refinements of panoptical prisons since the last decades of 18th century. A common feature of those chapters is found in the emphasis put upon the various individual and collective actors, inventors, commissioners, upon all those people, who seem to be the exclusive bearers of ‘historical agency’ because of their permanent involvement in practical choices.

The even-numbered chapters enlarge the perspective in order to include what the author calls the ‘morphospace’, which is the backdrop of possibilities and structural constraints that underlies practical choices. Chap. 2 displays the dimensional and distributive constraints, which result for residential building from the need to have daylight and independent access to each room. Indeed, if each room has to be day-lit, there are only four possible access patterns. Chap. 4 revisits the figures of David Steingruber's famous Architektonisches Alphabeth and convincingly clarifies why those layouts are not just the pipe dreams of a Baroque imagination, but the systematic display of the possible ways to combine and articulate wings around courts. The demonstration leads to a generative grid or matrix, which the author calls ‘archetypal building’. This matrix unfolds from the orthogonal interweaving around free spaces (courtyards) of three-part strips, each having two day-lit zones on both sides of an artificially lit corridor. This matrix allows not only to catch the basic geometrical and distributive (or topological) features of a major part of the built production, but also to map it in a binary code adapted to further computerized treatments, as exposed in the key chap. 6. In this chapter, Steadman acknowledges his methodological debt towards the American palaeontologist David Raup, who first coined the concept of ‘morphospace’ in the 1960s. Chap. 8 reaches a further grade of complexity in the modelling of the generative rules of built forms as it starts to take urbanistic parameters into account. The formal variations displayed by tall buildings in New York as compared with those in Chicago are set in causal relationship with differences in the geometry and size of the respective street-blocks as well as with differences in the respective plot division systems. Also the ways actual buildings differ from the theoretical envelope allowed by the public ordinance ruling in each city are analysed. Various quantified parameters like density of plot occupancy, volumetric compactness and energy consumption seem to confirm a permanent concern of developers about land use maximisation, balanced by building and operating cost minimisation. Addressing those issues, Philip Steadman falls into line with our colleagues Meta Berghauser Pont and Per Haupt, TU-Delft, from whom he borrows the ‘Spacemat’-tool already presented in this journal. Chap. 10 engages in another scientific dialogue, this time with Architect Michael Benedikt, University of Texas, in order to give a geometrical explanation of the failure of Bentham's panopticon. The ‘Isovist’-tool, that serves to calculate ‘the three-dimensional volume of space that is within sight’ (p. 319), allows to demonstrate that the circular layout of Bentham's multi-storey panopticon did not warrant such complete oversight as the radial-prisons could achieve thirty years later.

The last two chapters, 11 and 12, both step back for concluding summaries still according to the aimed methodological disentanglement between empirical knowledge of the particulars and theoretical explanation of general principles. Chapter 11 restates the need to distinguish between ‘activity types’ and ‘built form types’ in order to grasp their dialectical interplay through time. The author's observations about copying or reproducing ‘form types’ in building practice would be worth deliberating not only against the background of evolutionary theory in the natural sciences but also in the setting of the recent metaphysics of artefacts.
what remains invariant in built forms through time, which unavoidably arises at the core of every contribution committed to the Structuralist approach: ‘(...) there is a key difference between possible configurations and possible dimensions. The first are determined by the laws of geometry and topology, which do not change with time. The result is that the possible configurations mapped by morphospace remain always the same. The limits on possible dimensions on the other hand can be shifted by innovations in technology introduced at different dates’ (p. 396).

This remarkably well organised book, in which the author has succeeded in assembling and at the same time in updating most of the results of his past inquiries, is one of the most inspiring works an urban morphologist could read. It offers at the same time useful methodological tools for the comparative analysis of built forms, illuminating insights in the course of history and precise conceptual distinctions for a deep understanding of the challenges of architectural and urban design at the intersection of science, technology, art and the humanities.

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