

soil, the fluvial dynamics of the former islands, land ownership, and urban planning resulted in different morphogenesis of these districts.

The remaining sections of Chapter 5 deal with the extension of Vienna across the Danube, which started at the beginning of the twentieth century and accelerated after the Second World War. *Transdanubia*, as the Viennese call it colloquially, is where the contemporary and future water city is developing. This extension follows entirely an different morphogenesis, as the whole area lies in the floodplain, unlike the rest of the city that is situated at the edge of the Alps. The development in the floodplain resulted in an assemblage of urban forms that accommodates different kinds of specialised land uses in patches, mainly structured by transport infrastructure. These developed patches range from a modern dense high-rise business district, business and industrial areas, large public housing estates, via medium density thematic area developments like the *Frauenwerkstatt*, housing designed by women, for women, to low-density suburban single-family housing neighbourhoods and transformed former farming villages. Interwoven with the patchwork development, a system of parks and leisure spaces developed around the remaining fragments of the Danube. The latest addition is the Seestadt Aspern, a large new town with an artificial lake at its centre.

The final chapter, by Erich Raith, ensures that the book is more than an excellent history of Vienna's water-related development. He offers a view into the future of the city and the twin-city region Vienna-Bratislava, questioning and speculating about the role of the relationship between urban extension and water under the current climate crisis and what the resulting metropolitan form could be.

Apart from the primary authors, with their rich variety of backgrounds, additional authors have contributed to sections with specialized insight into aspects such as land ownership in a dynamic, constantly changing landscape, and the different ports in the city. An additional social component is added to the book by introducing several water-related personas, which range from the water engineer and the fish vendor to the societal critics celebrating the free body culture in the river forest up to the present.

The book is an excellent and unprecedented collection of the environmental history of the water city of Vienna, not only of interest to the citizens of Vienna but also to visitors who want to follow the many traces of water in the city. Specifically, its

interdisciplinary methodology makes it attractive for scholars investigating the relationship between water and urban form.

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**The design of urban manufacturing** edited by *Robert N. Lane and Nina Rappaport*, Routledge, Abingdon, 2020, 279pp. ISBN 978-1-138-59371-5.

In an era of pervasive de-industrialization in Europe and North America, the emergence of the post-industrial city sometimes appears as a *fait accompli*. For a period that probably reached its apogee in the late 1990s and 2000s, the blueprint for successful urban economies was assumed to involve a decisive transition away from the production of material goods and towards immaterial generators of value: knowledge, services and culture. If manufacturing survived, it was exiled to exurban industrial parks and large-scale, vertically-integrated plants. Where industry had a residual presence in urban centres it was likely to be regarded as a negative attractor and source of blight.

If historical cities could provide thought-provoking examples of how manufacturing once contributed to the mix of urban activities, increasingly these seemed derived from an outmoded paradigm of urbanism. Certainly, new mixed-use developments were more often than not premised on the *absence* of industry. In this context, advocacy of a continuing role for manufacturing in urban centres carried, at best, the taint of sepia-tinted wishful thinking and, at worst, an atavistic enthusiasm for filth, noise and ugliness in the face of urban regulations legitimately concerned to remove such disturbances from residential areas and public spaces. The spatial-morphological de-centring of manufacturing from the city was reflected in a general lack of scholarly interest in urban manufacturing. It seemed as if the relationship between cities and production had been irredeemably sundered.

Yet the tide is turning. Some of the flaws in the 'end of history' arguments advanced by the more

enthusiastic advocates of the weightless economy were exposed by the financial crash of the 2008 and the widespread socio-economic downturn that followed. Services, internet start-ups, and cultural quarters were not in themselves sufficient, it appeared, to sustain vigorous local economies. As far back as 2011 in the *New urban manufacturing*, Van Winden *et al.* made a regional development case for the urban location of research and development facilities in the car industry but offered little of specific interest to the urban morphologist. More recently, though, it has become clear that the nature of manufacturing itself is changing and becoming smaller, cleaner and quieter and therefore more amenable to urban centres, and more able to benefit from the socio-economic externalities they offer. As Nina Rappaport explored in *The vertical urban factory* (2015), the new urban manufacturing revolves around businesses using technologies such as 3D printing, machine learning and digital fabrication to supply bespoke products, taking advantage of local sources of labour and supply.

This, then, is an exciting time for students of the urban morphology of manufacturing as a number of recent publications testify. *The design of urban manufacturing*, edited by Robert N. Lane and Nina Rappaport, was published in the same year – 2020 – as Howard Davis's *Working cities*. Not long before, the pan-European *Cities of making* report (2018) emphasized the importance of new urban manufacturing to creating socio-economically and environmentally sustainable cities. Although there is little cross-referencing between these different texts, they are broadly complementary. While Davis's *Working cities* draws on a wealth of historical and contemporary case studies from all over the world to make the case for manufacturing as intrinsic to the socio-spatial processes through which urban economies re-invent themselves, *The design of urban manufacturing* is more firmly rooted in the North American context and is specifically concerned with contemporary urban design and policy agendas. All three studies share a broad interdisciplinary outlook and a commitment to urban manufacturing as a continuous thread connecting the urban past with the urban future.

*The design of urban manufacturing* contains more than 20 chapters (and a similar number of contributors) divided into an introductory section and four parts. The first three parts are concerned with the design of manufacturing neighbourhoods, factory buildings, and urban policy respectively.

Part Four summarizes general principles of urban design and governance to support urban manufacturing. In each part the four or five traditional academic chapters are followed by one or two graphic essays by practitioners that explore the various challenges for design and policy in relation to urban-based manufacturing. Although it is an edited collection, Rappaport's and Lane's are strongly dominant voices, contributing some eight chapters and essays between them, with Rappaport's interest in factory buildings balanced by Lane's focus on urban landscapes. This assertive editorial presence helps to provide a strong thematic coherence to the collection.

The editors' introductory chapters define urban manufacturing as the 'production of physical products in cities'. This serves to distinguish it from knowledge production (such as software development) and the urban 'ecology' of warehousing and packaging, which are defined as 'industrial uses', rather than manufacturing (p. 13). Unsurprisingly, the focus is on the light industry that benefits most from the labour access, markets and expertise available in cities rather than with heavy industry. An interview with an urban manufacturer based in Watertown, Massachusetts is used to establish the connectedness between many of the book's key themes, from the need to recognize the built-environment elements (for example loading docks and parking) that matter specifically to manufacturers, to the socio-economic and neighbourly relationships of small, non-polluting firms, and the importance of supportive local government.

The collection of essays in Part One is likely to be those of greatest interest to urban morphologists. The tone is set by Robert N. Lane's interesting survey of 'landscapes of urban production', combining area-based research and historical studies to offer a typology of urban-industrial districts. With an eye to an American audience reared on regimes of rigid urban zoning – but very much in the spirit of Jane Jacobs – Lane tells us to 'embrace the messiness' of manufacturing neighbourhoods (pp. 47–8). Alison Conway's exploration of goods movement draws attention to the logistical challenges of integrating manufacturing into urban contexts and the need for flexible responses to the movement, loading and unloading of goods vehicles. Case studies of Milan's historical factory neighbourhoods (Giovanna Fossa) and a comparison of innovation districts in Massachusetts's Kendall Square and Barcelona's 22@ (Janne Corneil) help to develop the scope of the collection beyond the North American context.

Urban factories are Nina Rappaport's particular focus. Her opening chapter of Part Two offers an illuminating compressed history of factory architecture that extends to an exploration of 'neo-cottage' and 'hybrid' developments that promote flexible, collaborative spaces for small manufacturing firms and the possibility of living and working in close proximity. Subsequent chapters explore recent developments in factory design (Frank Barkow) and sustainable urban factories (Naomi Darling). Jonathan Bach and Stefan Al's study of informal production in Chinese urban villages shows how built environments can self-organize manufacturing production. Rappaport closes the section with a useful survey of emerging trends in 'Industry 4.0' technologies associated with digital fabrication and AI, and considers how these can catalyse new forms of collaborative working spaces.

For a long time, planning policy in North America and beyond has been promoting the removal of manufacturing from urban areas through restrictive and inflexible zoning regimes. Rappaport's opening chapter of Part Three, 'Industry as Infrastructure', advocates policies aimed at encouraging manufacturing back into the city, challenging policy makers to fundamentally reconsider the contribution manufacturing can make to the prosperity and sustainability of local urban economies. Subsequent chapters examine land-use regulation (Beth Bingham and John Shapiro), the challenges of accommodating manufacturing in mixed-use schemes (Jenifer Becker and Adam Friedman), federal government policy contexts (Laura Wolf-Powers) and the need for flexible and dynamic policy making that is responsive to the ongoing changes in manufacturing (Andrew Kimball).

Part Four by Robert N. Lane is titled 'Atlas' and serves as an extended summary of the collection's themes and case-studies. Urban morphologists will appreciate the comparison of figure-ground diagrams of industrial areas in eighteen cities and the sequences of maps showing land-use, block structure and street networks. Typological distinctions are made between industrial districts characterized as 'loft districts', 'manufacturing neighbourhoods' and 'urban industrial park', and between the 'hard', 'soft' and 'mixed' edges that separate industrial from non-industrial uses. The resulting design and governance recommendations, focused on integrating urban manufacturing into the life of the city, are clearly presented and grounded in the research presented in this volume.

*The design of urban manufacturing* is richly illustrated and, as the chapters are short, this gives it the feeling of a 'reader' for research students, academic teachers and interested professionals alike. Although its clarity of purpose is admirable for an edited collection, it does not have the same theoretical depth as Davis's *Working cities* in establishing the role of manufacturing in resilient urban ecologies. While the literature and methods of academic urban morphology and space syntax are not directly invoked, many of the design and policy challenges posed by Rappaport and Lane are clearly morphological and configurational in nature – not least the challenge of sharing public space with manufacturing industry. A new research agenda looks set to emerge in this area where much groundwork has now been laid, not least by this volume and that by Davis. Put together they effectively dismiss the millennial assumption that manufacturing activity sited in and around urban centres must necessarily detract from the vitality of the public realm, and that it signifies the urban past rather than the urban future.

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**Urbanism – fundamentals and prospects**  
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The concept of urbanism and its implications in the disciplinary and professional fields have been in focus for many publications since the word