MASS–CUSTOMISED CITIES

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Frei Otto, Munich Olympic Stadium, 1972

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There is no doubt that cities around the world are at a crisis point, as they fail to keep up with the demand for housing. Globally, the official figure for the number of people who live in slums is 863 million, but this is more likely to be 1.3 billion and, if current trends continue, by 2050 the world’s slum population will reach well over 2 billion.1 This is a problem no longer confined to the poorer sections of society; as global cities such as London and New York become investment magnets for the internationally wealthy, the full force of the impact of the shortage of affordable housing is being experienced by middle-income earners whose salaries have not kept up with property values and rents.2 There is the very real danger that in the endeavour to provide basic provision, which in itself seems to be an increasingly ungraspable challenge, the quality of the built environment – whether individual buildings or urban spaces – will get pushed further and further down the agenda. It seems almost inevitable that by default highly standardised housing is rolled out with mass-production methods at an industrial scale.

Whereas mass-produced standardisation is most commonly associated with postwar public housing, speculative development has also defaulted to a dangerous level of uniformity in its bid to be ever more cost effective and profitable. Michael Bell (pp 40–47) vividly describes how in the US federal decentralisation and the introduction of voucher systems and private-public partnerships since the 1980s and 1990s has led not to the anticipated entrepreneurial emancipation of housing provision, but to an impoverishment in the design and planning qualities of schemes. In Seoul, construction companies have had such a grip on development that it has resulted in profoundly repetitive housing towers; in 2009, the mayor of the city interceded, requiring variation (see p 62). For uniformity is bad not only for the individual and society, but also for the economic and political life of the city.

This issue is a call for arms by Guest-Editor Tom Verebes for architects to embrace the possibilities of engaging new technologies to create differentiation at the urban scale. As Verebes states in his introduction, ‘advances in computational design and fabrication technologies … have largely been limited to the scale of discrete buildings, pavilions, interiors, furniture and products, and remain largely untested in urbanism’. This can be a differentiation that incorporates the required density of rapidly urbanised cities, like those in Southeast Asia, as described in Rocker-Lange Architects’s ingenious Shanghai Lilong Tower Urbanism project (pp 76-9), which uses computational adaptable systems to recreate the urban qualities of the traditional low-rise city of access lanes and workshops in its stepped podium. The possibilities of emerging computer-aided fabrication and robotic techniques are also explored at the end of the issue in a feature on specialist material fabricator E-Grow and an article on the work of Gramazio Kohler Research.

But are formal differentiation and technological innovation sufficient for a city to thrive and ultimately survive? In the Counterpoint to the issue, Colin Fournier puts forward an argument for a different type of variation – as dependent on social and political forces as material input. □

Notes
OCEAN CN Consultancy Network, dotA Architects and the Hong Kong Parametric Design Association

Liantang/Heung Yuen Wai Boundary Control Point Terminal Building

Hong Kong–Shenzhen, China

2011

Proposal for an iconic border-crossing facility between Hong Kong and Shenzhen. The project confronts the dichotomous characteristics of a border and aims to correlate the categories of the artificial and the natural. A singular building straddles the border and channels the vast flows of people, cars and coaches.

OCEAN CN Consultancy Network and SED Landscape Architects

Xiangmi Park

Shenzhen, Guangdong Province, China

2014

Proposal for an urban park, in which the specificities of the site – its topography, hydrological organisation, surrounding urban perimeter and other parameters – help to generate a highly distinctive scheme.

OCEAN CN Consultancy Network and dotA Architects

Yan Jiao Hua Run 4D City Masterplan

Hebei, China

2012

This proposal for a 25-square-kilometre (10-square-mile) masterplan extension aims to create a new heterogeneous form of urbanism through the differentiation of orientation and sizes of plots, blocks and lots, the mixing of uses with coherent identities, and the regulation of heights across the entire area.
Tom Verebes’s extensive and longstanding engagement with urbanism spans an academic career as well as professional experience in Asia, Europe, North America and the Middle East. His sustained research on the implications of computational design and production technologies for urbanism has distinguished his work from a generation of computational designers whose output ranges between smaller-scale experiments and larger iconic architecture. His experimental design approach has been applied to increasingly more complex and larger-scale design issues and endeavours.

He is the Creative Director of OCEAN CN Consultancy Network, a Hong Kong-based specialist design consultancy practice that he established out of OCEAN UK Design Ltd, the London node of OCEAN, which he co-founded in 1995. At the University of Hong Kong, he served as Associate Dean for Teaching & Learning (2011–14), and has been Associate Professor in the Department of Architecture since 2009. He was formerly Co-Director of the post-professional Master’s (Architecture & Urbanism) programme at the Design Research Lab (DRL) at the Architectural Association (AA) in London, where he taught from 1996 to 2009. He has been the Director of the AA Shanghai Visiting School for ten consecutive years, and was previously Director and founder of the AA DLab (2006–7) and an AA Diploma Unit Master. Between 2004 and 2006, he was a Guest Professor at the Staatliche Akademie der Bildenden Künste Stuttgart. He studied architecture at McGill University in Montreal, the Laboratory of Primary Studies in Architecture (LoPSiA) in Paris and Briey in northeastern France, as well as at the AA, and is currently working on his PhD at the Vietnam campus of RMIT University, Melbourne.

His practice-based design research work with OCEAN D and OCEAN CN has been widely published, and exhibited in over 50 venues worldwide, including the Venice, Beijing, Hong Kong, Shenzhen and Seville biennales, the ‘Zoomorphic’ exhibition at the Victoria & Albert Museum, London (2003–4), ‘Latent Utopias’ (Landesmuseum Joanneum, Graz, Austria, 2003), ‘Experimental Architecture’ (FRAC Centre, Orléans, France, 2003) and ‘Sign as Surface’ (Artists Space, New York, 2003).

He has lectured extensively in Europe, North America, Asia, Africa, Australia and the Middle East, and contributed to over 140 publications, including authored books, book chapters, articles and project features. His recent books include Masterplanning the Adaptive City: Computational Urbanism in the Twenty-First Century (Routledge, 2013) and New Computational Paradigms in Architecture (Tsinghua University Press, 2012).
This title of Δ, Mass-Customised Cities, locates two interrelated contemporary problematics at the intersection of the ubiquitous uniformity of cities with the causal legacy of the 20th-century industrial paradigm of standardised mass production. Given the unprecedented speed and seemingly unstoppable pace of city building in the 21st century, a paramount challenge to overcome is the convergence of sameness among cities worldwide. Despite the past five decades of postmodernity, and the disciplinary promiscuity and posturing with architectural complexity and diversity, there is today a critical lack of any substantive theories of difference across the design disciplines of the built environment with which to guide cities towards the greater coherence of heterogeneous and individuated attributes. At the core of this problem lie questions as to the ways in which the qualities of cities can be amplified and differentiated to become identifiable rather than indistinguishable, during the most prolific era of urbanisation ever to occur.

This issue speculates on a research gap in the urban implications of emerging technologies indicative of a significant transition in production paradigms that has revolutionised how architecture is conceived, practised, built and experienced. In the past two decades, advances in computational design and fabrication technologies, the methods and applications of which are well rehearsed in architectural design, practice, teaching and research, have largely been limited to the scale of discrete buildings, pavilions, interiors, furniture and products, and remain largely untested in urbanism. This Δ issue forgoes yet another exposé of a niche thematic area of algorithmic architecture or numerically controlled fabrication, and as such is less concerned with the leading edge of architecture than it is with the future of cities. Through a survey of disciplinary design research approaches, the aim is to hazard timely insights concerning the latent potentials and repercussions of computational design and production processes when ramped up to the vast scale of 21st-century cities.

Standards, Customs and Old Habits

Confronting the apparent problem of urban homogenisation, the issue intentionally provokes the urban equivalent of the ideation of choice and identity for a mass populace in late capitalism. This novel territory is the domain of the consumer, the end user and the hacker, rather than that of political authorities, investors or designers. Perhaps less focused on the personalisation of standardised cars,
Clothes and other mass-produced products, the term 'mass customisation', despite more than a hint of an overtone of crass commercialism, challenges the legacy of uniformity as the hallmark of Fordist standardisation. This questions how new technologies are enabling an important shift away from mass production to increasingly bespoke and custom-designed production. Whereas the introduction of standardisation and mass-production processes in the 20th century saw the industrial city take on repetitious and homogeneous qualities through the replication of architectural components, non-standard bespoke production systems hold out the promise of realising buildings with distinctive attributes through the differentiation of serial production and the variation of simple parts leading to larger and more complex architectural assemblages. In the transition from standardised production, in which universalised, uniform and repetitious spaces are by-products, the consequences of numerically controlled prototypical practices for the scale and complexity of urbanism are addressed.

Throughout the 20th century, mechanised standardisation pervaded nearly all industries, driven by efficiencies of minimising cost and time, and reducing complexity. Evidence of how 20th-century mass production failed to achieve sufficient variation and differentiation to express the world’s diversity and heterogeneity can be found in the pervasive Corbusian architecture of mass housing, or the ubiquity of office towers in central business districts worldwide. At the core of the ambition of non-standard design lies a critique of universality and monotony of the Modernist industrial paradigm. Cities are inextricably tied to a society’s model of production, and the prevalence of generic urbanism comes out of the legacy of globalised, standardised mass production. Capitalism’s perpetual paradox, as both Marxists and Libertarians may agree, lies between unpredictability and, hence, instability, and attenuated eras of productivity. So-called ‘late capitalism’ has spawned innovative trajectories, driven by technologies targeting variation over reproduction.

Searching for Cities with Qualities

The indistinguishable and featureless facsimile is a longstanding quandary in urbanism. Modernism was initiated and sustained by the paradigm of mass production, by easily reproducible architecture and reductive urban planning. The Modernists, as Lewis Mumford lamented, in their will to install mechanical order, ‘confuse mere formalism and regularity with purposefulness, and irregularity with intellectual confusion or technical incompetence’. Functionalism, or the economic law of utility, depended upon the mechanised decomposition of repetitive tasks. Le Corbusier wrote in 1923: ‘Standardisation is imposed by the law of selection and is an economic and social necessity.’ His Ville Radieuse (Radiant City) model for Paris had been reproduced ad infinitum for nearly a century. An even more extreme modernist historical moment is the repetitive unitary spatiality inherent to Ludwig Hilberseimer’s High-Rise City project of 1924. Since the demise of International Modernism, research on the city has given rise to a plethora of post-Fordist neologisms with which to redefine the paradigm of the city more precisely to what it has evolved to become. From the Metropolis of the early 20th century we have taxonomies such as the Megalopolis, the Global City, Greg Lynn FORM

Embryological House
1999

Greg Lynn, an ‘early adopter’ of computational design technologies, designed this prototypical series of houses as a differentiated set of spaces and systems, demonstrating some of the conceptual ideas of customisation in relation to the notion of a repetitive housing configuration.

Archizoom
No-Stop City
1968

In this polemical ‘paper project’ by the Italian Radical Architecture group Archizoom, a typewriter was used to display mechanical inscriptions, indicating the notion of a ‘city without qualities’.
the Network City, the Megacity, the Generic City, the Smart City, the Eco City and the Adaptive City, each suggesting that in order to study the status of urbanity and to be projective towards its future, one must first rename it. This issue of \( D \) aims to locate alternatives to the many early postmodern guiding theorisations of cities rooted in Collage (Colin Rowe and Fred Koetter), Memory (Aldo Rossi) and Events (Bernard Tschumi), or the learnings from Las Vegas, the delirium of New York, or any number of other local models. Even among the other recent \( D \) titles on urbanism, ‘Cities’ are nominated with prefixes such as ‘Digital’, or ‘Typological’, or chart out the ‘New Urban China’. There is ample evidence of a call for postmodern fragmentation to be theorised, again, as a call for the Specificity of Cities in response to the failure of Modernism to universalise. The Futurists declared over 100 years ago how ‘each generation will have to build its own city’. In Archizoom’s No-Stop City project of 1968, the mechanical reproduction of characterless objects and spaces is literally imprinted onto paper by a primitive typewriter, describing ‘a city without qualities’, non-figural and void of substantive design criteria: … a city without qualities for a man (finally) without qualities – that is, without compromise – a freed society (freed even from architecture) similar to the great monochrome surfaces of Mark Rothko; vast velvet, open oceans in which the sweet drowning of man within the immense dimensions of mass society is represented.”
As a result of the inception of the digital into the city, William J Mitchell insisted some 20 years ago how ‘the very idea of the city is challenged and must be reconceived’. The attributes of the taxonomy here announced, a Distinctive Urbanism, stands in opposition to generic and ubiquitous urbanism, biasing the specific and unique over the general and reproducible. This seeks to expose the transformative cultural effects instigated by contemporary industrial change.

**Globalisation, Urbanisation and the Asian Century**

The 21st century is known as the ‘Urban Century’ as well as the ‘Asian Century’, a durational increment at the confluence of the forces of globalisation and the unprecedented extent and rate of urbanisation in Asia. Amid mass urbanisation in China and the declared imperative to house 300 million new urbanites in the coming two decades, there is both an exceptional opportunity and a huge responsibility presented by rapidly urbanising contexts. The sheer volume of construction and quantity of new cities being built, in the middle of nowhere, out of nothing, and in effect without history, begs the questions of how to derail the effacing force of blankness, to install an invigorated sense of contemporary character and identity in the countless new cities being built in Asia. Contemporary Chinese urbanism is not so far off from Branzi’s articulation of the qualities, or rather lack of them, in Archizoom’s No-Stop City, which he brands as a ‘city without architecture’. The by-products of the haste to urbanise include widespread erasure and lateral urban expansion, in Chinese a phenomenon colloquially called ‘tan da bing’, or ‘making a big pancake’. Lewis Mumford lamented the wastefulness of rapid urbanisation, in which he saw cities as becoming consumable and indeed expendable. The themes and arguments presented in this issue are rooted in longstanding yet unresolved problematics, and together with their associated paradigmatic crises will have imminent practical consequences for the rest of the developing and developed world.

**The Legacies of Henry Ford and Frederick Taylor**

Two important historical paradigms emerged as a result of the Industrial Revolution – Taylorism and Fordism – which, in turn, contributed immeasurably to the standardisation and mechanisation of cities. Taylorism arose as the scientific management of rationalised industrial work tasks into discrete, measurable, simpler segmented components, and was coupled with Henry Ford’s appropriation of the assembly line from the food industry towards a new application of routinised and standardised production of the Model T car from 1909 onwards. These enabled repetitive production, routinisation and standardisation to take command. Sigfried Giedion, in *Mechanisation Takes Command: A Contribution to an Anonymouse History* (1948), consolidates his heralding of the industrialisation of a mechanised construction industry, earlier in the century, through demonstrations of mechanised slaughterhouses, bakeries and other industrialised processes. Transiting