

Chapter 12

Thinking Out of the Urban Design Toolbox

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Abstract The essay focuses on the criticism of technology-centered urbanism, demanding a new role of the arts in urban design. Unfolding the course of history of the city in the urban age – from Industrial Revolution to Knowledge Society – key vectors dominating the urban development are discussed. The aim is to open up a larger conceptual field for interventions in the urban environment. The essay promotes Art as an ‘Urban Innovator’.

Keywords Urbanization • Urban innovation • Industrial revolution • Knowledge society • City and media • Art and arts-based research

12.1 Urbanizing the World

12.1.1 *The Urban Age*

Cities in general are condensed descriptions of urban space. They are the most successful self-generated environments of mankind to date. Contemporary growing cities are colonizing the world and can no longer be understood as spatial entities. They behave more like living organisms. Like amoebas, today’s cities grow under the conditions of continuous change. The rigidity of form and program has been replaced by an open system in which growth provokes conflict and disorder. Many aspects of Darwin’s theory of evolution are applicable to this understanding of contemporary city development. For example, his description of the process of growth as a continuous struggle between equilibrium and disequilibrium has anticipated the current phenomena of urban development. Cities and living organisms such as amoebas share the capacity to establish an ephemeral physical integrity while remaining unstable in their basic conditions. However, this ‘biological vision’ is unfortunately not the vision that has been guiding our contemporary city planning so far. Urban growth in the twentieth century city planning did not involve models of interaction; it was not at all expected to be evolutionary. Since it

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Fig. 12.1 Informal City/Sao Paolo

was not based on strategies similar to those employed by living organisms, the planned city was unable to operate different activities simultaneously. On the contrary, segregation, fragmentation and exclusion are the precise counter-models of a system where diversity provides the resources for change. The system lacked flexibility, failed to open up the design system and to keep conflicting elements in play. Therefore this model is not based on contemporary conditions. It is not “designed for the real world”. The city has grown beyond its initial definition. Consequently, there is a discrepancy between how the actual city operates and how it is perceived by the official planning authority (Fig. 12.1).

While Asia and the Pacific Region are facing a fast-paced megalopolitan progression, Latin American countries are suffering from the consequences of rapid urbanization. All of a sudden, informal urban structures are appearing in the public and published perception and in the planning documents of city developers. What were originally “white spots” on the maps – especially those of Latin America – are being visualized and officially acknowledged. However, this change is based not on an altered perspective of city planners but the abrupt emergence of a political reality. Informal districts have reached a critical mass and the number of inhabitants has become an electoral factor, which is perceived as such by political calculus.

Over the last decades, urban agglomerations have been extremely successful in absorbing population growth and drawing in rural population. As a result, almost more than half of the world’s population of today lives in cities (United Nations 2012). The ‘*World Urbanization Prospects*’ published by the United Nations in 2012 is expecting that in 2050 the world’s urban population will likely be of the

same size as the world's total population was in 2002. "Urban dwellers will account for 86 % of the population in the more developed regions and for 64 % of that in the less developed countries. Overall, the world population is expected to be 67 % urban in 2050." (United Nations 2012). As a result, cities will increasingly be put under pressure due to densification and concentration of population, economy, capital and media as well as culture and knowledge.

Instead of discussing new qualities of engagement, we export outdated models of urban development. Even in the context of the European city, the planning instruments provided barely still function; in view of informal urban agglomerations, they fail completely. Top-down and bottom-up collide head on, exposing the basic structure common to both strategies. In order to do justice to global processes of change, we should understand this situation as a laboratory in which new instruments can be developed that treat diversity as a resource and that enable transformations. New, unexpected strategies are required in order to synergetically overcome old oppositional situation. The city model of the twentieth century remains a closed model that fails to support an opening-up to contradictory and conflicting elements. Segregation and exclusion are the results, evident to this day.

12.1.2 Industrializing the City

In pre-industrial times, cityscapes changed only gradually by marginal transformations of their constituting elements. They remained practically unchanged up until the city was confronted with the drastic consequences of industrialization (Benevolo 1986). The Industrial Revolution marks a major turning point in history. More or less every aspect of everyday life has been influenced by this development up until the present day. Modern societies as well as modern cities are rooted in this period of radical transformation of work and life.

Fueled by the progression of industrialization, rapid urbanization started to change the concept of urban environment completely. This caused substantial damages to urban space and broke apart pre-industrial societal structures (Kiess 1991). Establishing the production process as a core value empowered the linearity of processing and unraveled complexity into a chronological order. Consequently, linearity was established as a fundamental principle, crucial for all following transformations.

Integrating large-scale technological inventions into the production chain – like steam-powered engines – significantly changed the production routine. As a consequence, spatial concentration of labor established a new type of urban structure: the industrial plant.

Site and location evolved as the essential criteria. Traditional production techniques - defined by spatial coexistence of life and work – dissolved into spatially dissected concentrations of mono-functional activities. Executing this strategy on an urban scale led to a yet unknown and radical segregation of urban life. Thus, isolation and exclusion evolved as core policies of the functionalist city. Organized

alongside linear processes, the city's development followed the path of a solely economical practice. This urban model gave birth to one of the main consequences of the modern world: mobility.

By means of technological inventions it became feasible to increase the velocity of movement: the velocity of machinery replaced the velocity of pre-industrial transportation systems. As a result of industrialization, automobiles appeared on the urban agenda. Gaining the biggest influence on urban planning to date, they became the driving force of city development. Once populated by a variety of activities, streets and public spaces of pre-industrial cities now faced the reduction to traffic only. Depending entirely on car mobility, cities have developed into sprawling urban forms. This development of rapid suburbanization has had a big and long lasting impact on urban as well as societal structures.

During the development of the industrial society, technological progress and innovation amplified the production of wealth. *“For the first time in history, the living standards of the masses of ordinary people have begun to undergo sustained growth.”* (Lucas 2002). An increasing income became a common circumstance of life in Europe as well as the industrialized western world. Other parts of the world, however, remained stagnant. This led to great differences in living standards still virulent today.

As a result of the Industrial Revolution, growth had become an important factor of urban life and the theory of growth the driving force of economy. Moreover, the speed of material processing and the huge turnover of energy and labor led to an unprecedented decrease in natural resources and to unbearable pollution and destruction of the environment. Alongside this development, new parameters were established to define and measure the changing urban landscape: the Ecological Footprint and the Carbon Currency.

12.2 City and Media

12.2.1 *The Information Age*

Throughout history, urban space has been framing activities, defining territories, forming and transforming communities. To be a member of a community meant to reside within its territorial boundaries. This concept of community was directly related to a face-to-face communication structure and to a hand-to-hand distributing arrangement – both clearly operated on a physical level.

The Industrial Age broke apart the pre-industrial social structure. However, less than a century after the advent of the industrial revolution, the world had to face the next wave of a radical transformation of their environment through technological inventions. While the physical abilities of man and animal defined the pace of the pre-industrial world, and the velocity of machinery those of the industrialized world, the speed of electro-magnetic fields is now defining the rhythm of urban

life and questioning the very notion of distance. Boundary-spanning technologies are restructuring social identity and spatial practice. By creating '*technosocial situations*' (Ito; Okabe 2003), aspects of urbanity have been substituted by new media technologies. Especially interactive technologies have been changing our notions of personal and social space, transforming the world we live in into a heterotopian place – actual and virtual at the same time. Thus, the implementation of the World Wide Web as a new means of communication has had a substantial impact on everyday life, on city and society, streets and public spaces.

By entering the information age, a revival of the pre-industrial model has occurred. Up to a certain degree, the model is replacing the consequences of industrialization. A highly individualized time management now substitutes synchronization, which was essential to all industrial production. The industrial plant as a concentration of labor and work partly dissolves back into an independent but technology based type of production. Since interactive technologies are essential for this new-old type of decentralized production, capital is enabled to increase its mobility - ultimately liberating it and transforming it into an autonomous force. To a certain extend, serial production technique is replaced by custom-made just-in-time production. It is replaced by a technology that is based on global real-time communications. As a result of this technological move, the physical presence of a communication space has turned into a specific isolation of the user: every time at every place without changing location (Virilio 1993). Virtual mobility is the antithesis of spatiotemporal mobility.

As a consequence, these high levels of specialization and fragmentation of living conditions are distorting the direct access to the complexity of reality. This ultimately leads to (re)-constructing reality and substituting it with a less complex equivalent. However, approaching reality by means of employing reductionist models involves society into a constant process of 'reality invention'. Based on a corresponding history of civilization and urban development, urban fabric becomes an imprint of these models of reality production. All these paradigmatically influenced 'conceptions of the world' are legible as manifestations of urbanity.

While societal services of public spaces are transferred to media activities, the disappearing visible communication structures are deleting the traces of interaction. Invisible telecommunication networks overlaying the contemporary city have become – in terms of communication and interaction – more important than the built environment. New communication structures are simulating communication services of the city's structure. Streets and public open spaces – the key elements of the European City – are fragments of a visible communication. They are spatial notations of a face-to-face communication behavior (Falkeis 1997). However, extensive and rapid developments in the areas of information, capital and population have led to the emergence of a new social formation: global cities.

12.2.2 *City and the Knowledge Society*

Digital technology and social logics can produce a third condition that is a mix of both. Structured in electronic space, we call it '*Digital Formation*' (Sassen 2012). Digital Formations are co-evolutions of organizational forms and interactive technologies. They are managing the shift from hierarchical, bureaucratic concepts of mass production – as well as mass media – to networked forms of production and communication. This shift from brokering information to facilitating knowledge (Bach; Stark 2005) indicates the transition from an Information Society to a Knowledge Society.

The concept of the Knowledge Society emphasizes immateriality and specific intangible features of products and services in economic progresses, and of innovation in particular (Hochgerner 2013). "Innovation is our best means of successfully tackling major societal challenges, such as climate change, energy and resource scarcity, health and ageing, which are becoming more urgent by the day" (European Commission 2010). Therefore, our future standard of living depends on our ability to drive innovation into sustainable products and services, social processes and models.

Since the basic function of knowledge is to provide the 'capability to act' (Stehr 1994), the knowledge society is asking for new conditions of knowledge production, new channels of knowledge diffusion and new methods of knowledge utilization. Today's societies are facing an urgent need to manage such processes by new and more efficient ways of information processing and knowledge production.

As a consequence, how society perceives the modern world is increasingly defined by theoretical knowledge. Scientists determine which answers to follow, regardless, which questions on the subject of modern life were asked. Knowledge, unlike information, cannot exist independently of a subject. It is primarily represented in science, technology and innovation. It has taken over the place of industry and agriculture as a key factor in economical and urban development. Once again, rapid advances of technologies are restructuring and redefining communities and markets. *'Just as industrialization served to disadvantage rural areas, so too might the global information economy. In the future, cities – which benefit greatly from economies of agglomeration – will have an even greater advantage over nonmetropolitan areas than they have today'* (Sassen 2012).

Communication technology and information technology helps to bypass the long and difficult process of industrialization, entering the information age straight away. Many developing countries are currently looking for this opportunity in order to speed up their development-processes.

The situation in Japan at the end of the nineteenth century was a similar one. The country escaped from its self-imposed 200 years of isolation by joining the industrial age straight away. The city in Japan, at that time a feudal medieval spatial and societal structure, was confronted with the technological inventions of the western world head on. In a very short period of time, the western technology was adapted and implemented into the traditional structure. This transformed the city in Japan

into a fast-escalating-megalopolitan-project, directly reflecting the societal and spatial dynamics of a technology-driven urban change.

12.2.3 Criticism of Technology-Centered Urbanism

Since the ancient Romans started exporting their urban techniques in the course of conquering the world, urban design became synonym for infrastructure-technology and technological solutions – mainly based on innovations initially driven by military and later by economical interests. In the course of the Industrial Revolution, technology driven solutions had become fundamental to laws and regulations on urban development, ultimately determining the forces shaping the urban space. However, the increase of zoning regulations in the twentieth century is unprecedented in the history of urban design. This proliferation of rules and bureaucratic regulations has disabled local innovation and growth. It has frozen the city in time. (Sennet 2006).

12.2.4 Social Design

‘If technology is the answer, what was the question?’ Considering the role of the arts in urban innovation this quote by Cedric Price provokes a series of questions upon modern urbanism and brings a new term into play: *Social Design*.

At least since Richard Buckminster Fuller’s ‘Operating Manual for Spaceship Earth’ (1969) and Viktor Papanek’s ‘Design for the Real World’ (1971) a critical attitude towards design has become visible. Today the term Social Design has a wide range of meanings: from Whole System Design, Regenerative Design, Sustainable Design and Service Design to Green Urbanism and Urban Metabolism – just to mention a few. All of these design concepts are driven by the desire to reduce the human impact on our planet. Whether they are dealing with the reduction of waste production, reducing the ecological footprint or sustaining urban growth by making more efficient use of the resources at hand. Above all, these concepts share the motivation for taking responsibility, as well as taking position.

According to Viktor Papanek’s polemic classification, design ultimately means to destroy (Papanek 2008). Consequently, design in its underlying meaning of creation – *Gestaltung* – might be defined as ‘creative destruction’. In order to make room for the new (Reinert 2006) this process – associated with the name of the Austrian-born economist Schumpeter – is creating wealth by destruction.

The destructive nature of some new technologies and innovative processes has turned Schumpeter’s ‘creative destruction’ into ‘destructive creations’ (Soete 2013).

Planned obsolescence forces the demand for the next generation of products in order to enhance economic growth and expansion opportunities. This type of

‘innovation’ directly leads to ecologically unsustainable consumerism. Innovations, only profitable for innovators, are generating wealth for a particular market and systematic risk for society. This strategy is directly driving financially motivated innovation into systemic failure.

Thus, Social Design will be a means of critical reflection on innovation, observing the impact of new technologies and processes on urban societies. Social Design as an integral element of communal and transcultural interaction within the urban environment works as an instrument of analysis and intervention. It aims at connecting arts-based research and the abstract and theoretic sciences with hands-on practice of spatial and cultural co-production. It challenges the cross-examination of our built environment on a trans disciplinary level, even integrating expertise not yet represented in an academic discipline. Involving not only academia but other stakeholders as well aims at interweaving the discourse into the very fabric of society. More importantly, this practice evaluates the societal relevance of innovation.

12.3 Art as an Urban Innovator

12.3.1 Innovation

Schumpeter – referring to innovations as the main forces of economic development – is describing innovation as ‘*new combinations*’ of already existing ideas. Weitzman (1998), when discussing the ‘*black box of innovation*’, is following the same line of argumentation. He is aiming at building up explicit models of knowledge production based on combinatory logic. Hence, new ideas are not the product of conventional relationships between input and output. They rather arise from existing ideas as a ‘*cumulative interactive process*’ where pairs of existing ideas are combined in order to generate new ‘*hybrid ideas*’. However, the idea that new knowledge consists of (re)combinations of knowledge can be traced back to Adam Smith. He has already discussed in ‘*The Wealth of Nations*’ the idea of “*combining together the powers of the most distant and dissimilar objects*” (Smith 1976).

12.3.2 The Role of the Arts in Urban Design

Arts as urban innovation¹ are following the same combinatory logic of a cumulative interactive process. Transdisciplinary research and project structures are combining

¹ University of Applied Arts Vienna, Master Programme: Social Design_Arts as Urban Innovation.

the powers of distant fields of expertise. While opening up new perspectives onto urban challenges, it allows for unexpected solutions.

Acknowledging the global restructuring phenomenon we are going to face within the next decades, we will have to investigate new strategies operating beyond technology-centered approaches. This is not meant to argue against technology in general, but to question the exclusive character of technological solutions. Solving problems only within highly specialized disciplines means dealing with projections of the problems onto a disciplinary surface – onto its dividing barriers. To overcome this paradigm we will have to make the disciplinary barriers more porous. The distinction between the inside and outside of a discipline has to be replaced by intersecting ‘fields of expertise’. This concept demands for strategies of transdisciplinarily overlapping territories beyond demarcational behavior – as, for example, represented in the arts. Being aware of the complexity of today’s world, it is obvious that multifaceted problems cannot be solved from the perspective of a single (academic) discipline. Therefore we have to focus on collaborative research and cooperative project structures.

Involving the arts into the process of urban design will enhance the overall process of knowledge production, allowing for more inclusive solutions. The role of art within this process will not be defined as a practice of subsequently adding esthetic value to a given result. To the contrary, art will be the driving conceptual force, fueling the process of development from the very first moment of investigation to the final conclusion. Arts-based research has the capacity to create strategies for both the spatial and social fabric of urban agglomerations. It has the ability to formulate new, distinct perspectives on the inherent logic of cities and the corresponding dynamics of societies.

Arts-based research has the capacity to deliver a descriptive model of structural possibilities of society, not by imitating reality but by anticipating the unexpected. Involving the arts in the process of knowledge production would be a means of creating comprehensive solutions as well as flexible concepts of societal change. Art in synergy with project-related scientific methods and knowledge is able to develop new instruments of urban investigation replacing out-dated models of city development. It is able to describe a novel perception of space.²

For example, it visualizes a different notion of mobility, related to a choreographical movement of bodies in space. This approach makes it possible not to describe density in numbers only, but also as the intensity of a physical presence. Moreover, an acoustical phenomenon of a city can be evaluated beyond its physical existence and technological description.³ This approach also allows understanding and interpreting communication independently from technical devices as tools that provoke heterotopian situations – situations of simultaneously virtual and actual communication. Arts-based research has the ability to articulate

² See Appendix A.1- bodyecture.

³ See Appendix A.2- Nanjing Notation Project.

new, distinct perspectives on the inherent logic of cities and the corresponding dynamics of societies. It is creating strategies for both the spatial and societal fabric.

By moving on three-dimensional trajectories across the urban realm it is penetrating all ‘disciplinary surfaces’, making disciplinary boundaries permeable like cellular walls.

According to Richard Sennet, the idea of a cellular wall, which is both resistant and porous, can be extended from single buildings to the zones in which the different communities of a city meet. Allowing cities to operate as open systems – by incorporating principles of porosity of territory, narrative indeterminacy and incomplete form – they become democratic not in a legal sense, but as physical experience.

Appendix

A.1 body_tecture

The project has been developed within the ‘Aspect of Space’ programme, an architectural programme for non-architectural students at the University of Applied Arts in Vienna.

The aim of this programme was to develop tools and strategies to transform architectural demands - to shape the idea of space. Substantiating these demands offers the students the chance to understand arts as an urban innovator and as a means of taking [spatial] position.

body_tecture reconstructs the existing built environment as body language, unfolding their spatial behavior. This unique approach creates descriptions of the external communication structure of the built object as well as its building geometry and its structural performance. Unexpected spatial qualities in terms of tension flow are revealed.

As a design strategy *body_tecture* describes a conceptual tool comparable to ‘blind drawings’ eliminating visual control of the action. Like drawings produced by the unconscious, *body_tecture* produces a ‘speechless’ figure-ground relation (Fig. 12.2).

A.2 City Score_The Nanjing Notation Project

The *Nanjing Notation Project* (Nanjing University of Arts, 2012) was about representing the city’s physical body by its construed perception. It was about re-scripting and transposing the cityscape into a soundscape, focusing on the interrelation of space and sound. Acoustics as a tool to describe an urban situation is not very common in city planning. If ever recognized in this field, acoustical experiences are then classified as noise pollution. In contrast to this general attitude, all acoustical sensations were treated as relevant sources of spatial-descriptions. They had not been approached beyond their solely physical existence and



Fig. 12.2 *body_tecture* by Lisa Mijsbergh

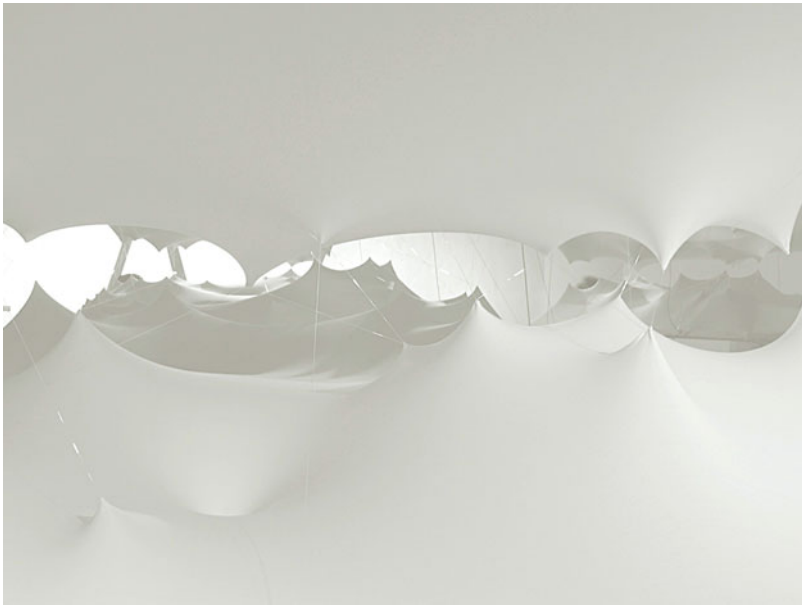


Fig. 12.3 Nanjing Notation Project _ The City Score (physical model)

technological description before. Aiming at identifying elements of communal and cultural interaction, instruments and strategies for urban analysis and intervention were developed. Classical instruments of city planning - like spatial density - were not described in numbers, but by the intensity of physical presence - such as spaces, buildings, sounds or people.

In the *Nanjing Notation Project*, the interaction of all acoustical phenomena produced *in* the space and *by* the space were recorded and transformed into a notation system, unfolding the unique soundscape of a city. The identification and descriptive determination of all different quantities and qualities were transcribed into a 3D-code system: the city score (Figs. 12.3 and 12.4).

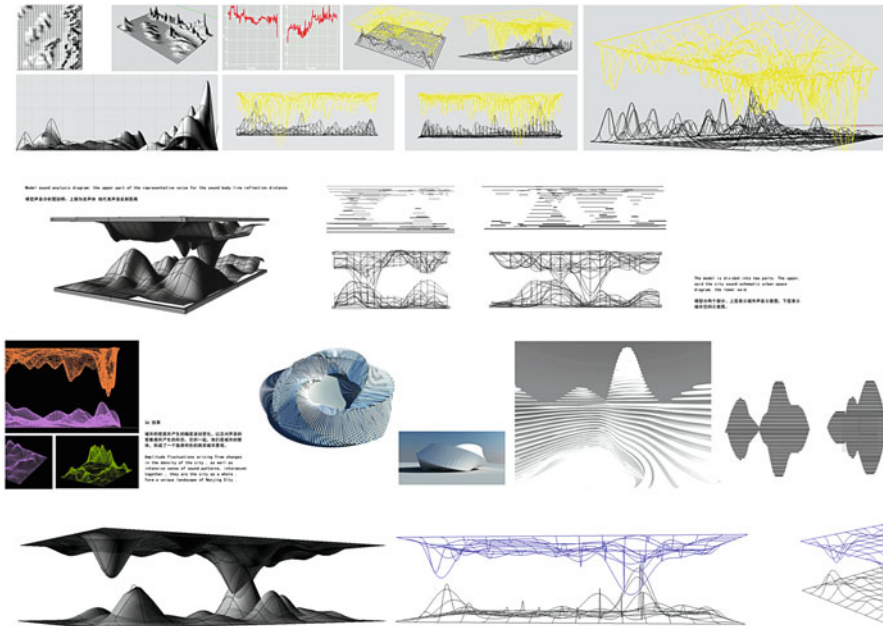


Fig. 12.4 Nanjing Notation Project _ interrelation of space and sound

References

- Benevolo L (1986) *Die Geschichte der Stadt*. Campus Verlag, Frankfurt/New York
- Bach J, Stark D (2005) *Digital formations*. Princeton University Press, Princeton
- Falkeis A (1997) *Featureless City/Stadt ohne Eigenschaften*. In: *Werk Bauen und Wohnen*, Zürich, 36–40
- Falkeis A, Hochgerner J (2013) *Social Design = Social Innovation*. Public discussion on Social Design by Anton Falkeis and Josef Hochgerner moderated by Gerald Bast. University of Applied Arts Vienna, 18 Apr 2013
- Hochgerner J (2012) *New combinations of social practices in the knowledge society*. In: Franz, Hochgerner, Howalt (eds) *Challenge Social Innovation*. Springer, New York
- Ito M, Okabe D (2003) *Technosocial Situations*. www.itofisher.com
- Kiess W (1991) *Urbanismus im Industriezeitalter*. Ernst & Sohn, Berlin
- Lehmann S (2012) *Urban metabolism and the zero-waste city: transforming cities through sustainable design and behavior change*. In: *Green cities*. Asian Development Bank, Manila
- Lucas R (2002) *Lectures on economic growth*. Harvard University Press, Cambridge
- Papanek V (2008) *Design für die reale Welt. Anleitung für eine humane Ökologie und sozialen Wandel*. Springer, Wien
- Reinert H, Reinert E (2006) *Creative destruction in economics: Nietzsche, Sombart, Schumpeter*. Springer, Cambridge
- Sassen S (2012) *Cities in a world economy*. Sage, London
- Smith A (1976) *An inquiry into the nature and causes of the wealth of nations*, 1st edn 1776. University of Chicago Press, Oxford
- Soete L (2013) *Planning innovation*. Public Lecture. Forum Alpac
- Stehr N (1994) *Knowledge societies*. Sage, London
- United Nations (2012) *World urbanization prospects. The 2011 Revision. Highlights*
- Virilio P (1993) *Revolution der Geschwindigkeit*. Merve Verlag, Berlin
- Weitzman (1998) *Recombinant growth*. *Q J Econ* 113:331–360