URBANISM

PHD RESEARCH 2008 - 2012

URBANISM

PHD RESEARCH 2008 - 2012

Nikki Brand, Leo van den Burg, Olgu Çalışkan,
Joost W. van den Hoek, Ekim Tan, Chiu-Yuan (Vivian) Wang, Jing Zhou

Edited by F.D. van der Hoeven

CONTENTS

MISSION STATEMENT URBANISM

The quality of the urban environment is a determining factor in the social, economic and environmental performance of societies and the quality of life of their citizens. Global forces bring about continuing urbanisation and urban transformation. These changes have increasing impact on the environment and on the liveability of cities and landscapes. The TU Delft Department of Urbanism seeks to intervene in these processes through explicit design and planning interventions. New opportunities arise from the Dutch government's Report on Architecture, 2008 which adopts the policy to strengthen the position of Urbanism in planning practice.

Urbanism is the academic discipline that is concerned with understanding the spatial organisation and dynamics of urban areas; and with comparing, evaluating and inventing new ways to maintain the balance between public and private, the built and the unbuilt, and local and global perspectives. Urbanism underpins practical action to shape the urban environment in a sustainable way.

The research of the Department of Urbanism contributes to academic knowledge of the urban environment and design and planning interventions. It provides education for reflective professional practice. The Department aims to maintain its leading position, both in the Netherlands and abroad.

The strong tradition of urbanism in the urbanised delta of the Netherlands presents special opportunities for contributing to knowledge and education. The multidisciplinary approach in Dutch urbanism integrates urban design and landscape architecture with technical engineering and spatial planning. Further development building on this experience is needed to address the great challenges of sustainable development: the effects of climate change in delta areas, mobility and connectivity in metropolitan regions, transformation of brownfields, revitalising post-war neighbourhoods, and the making of high quality public space.

The Department of Urbanism is committed to an international perspective, sharing expertise, research and education with partners in other countries. Our strong networks at the European and global levels will continue to be an important means for developing and disseminating knowledge.

These are the topics the Department of Urbanism is currently focussing on:

– developing and testing new instruments, methods and principals for urban and landscape analysis and design;
– delta climate adaptation;
– evaluating and formulating strategic projects, accelerating the sustainable development of the Dutch Metropolis;
– developing and comparing planning instruments and strategies;
– design & history.

PH.D. REVIEWS

To ensure the quality of the Ph.D. research the Department introduced a special procedure for periodic evaluation: after a period of nine months the potential Ph.D. candidates areasked to present their research design, theoretical framework and methodological approachto the members of the Department and to an external review, drawn up by the professors of the Department and by external reviewer. Depending on the assessment of the review group, the candidates will have the opportunity to continue their research at the Department.

In the mean time the (public) review sessions developed into an important element for the scientific debate of the Department. The sessions became a meeting point for the whole Department to discuss new research issues and new methodological approaches and todevelop new research collaborations. In this framework the external members of the review group are playing an important role. Their critics form a mirror for the scientific standards of the Department as well as for the scientific (and social) relevancy of the research issues.

With the publication of the series Urban Transformations and Sustainability we want to offerto a broader public the opportunity to deal with this debate. The different contributions arebased on the papers the Ph.D. candidates prepared for the reviews and have been updatedas a result of the remarks of the peer group and the discussion during the review sessions. As a result the contributions are reflecting the ongoing efforts to redefine the discipline ofurbanism under globally changing conditions.

The review sessions of the department started in 2004. This book presents the results of the sessions that took place late 2007 and throughout much of 2008.

On Thursday November 8th 2007 two Ph.D. candidates defended their research proposals and presented their papers: ir. Olgu ÇalıÐkan and ir. Joost W. van den Hoek. External reviewers for this session were: prof.dr. Koos Bosma, (VU Amsterdam), prof.dr.ir. Pieter Uyttenhove (University of Ghent) and ir. Anna Vos (Bouwfonds/MAB).

On Thursday April 10th 2008 three Ph.D. candidates defended their research proposals and presented their papers: ir. Ekim Tan, ir. Vivian Wang and ir. Jing Zhou. External reviewers for this session were: dr. Zef Hemel (deputy director dRO Amsterdam), prof.ir. Arnold Reijndorp (University of Amsterdam) and prof. Juval Portugali, (Tel Aviv University).

On Thursday June 12th 2008 one Ph.D. candidate defended his research proposal and presented his paper: ir. Leo van den Burg. External reviewers for this session were: Dr. Agnes van den Berg, Wageningen University, prof.ir. Arnold Reijndorp (University of Amsterdam) and Prof.dr.arch. Joaquim Sabaté Bel (Politechnical University of Catalonia).

On Thursday September 25th 2008 one Ph.D. candidate defended her research proposal and presented her paper: ir. Nikki Brand. External reviewers for this session were: prof.dr. Koos Bosma (VU Amsterdam), prof.ir. Kees Kaan (Claus en Kaas Architects Rotterdam) and prof. Juval Portugali (Tel Aviv University).

PH.D. PAPERS

Nikki Brand
Towards a political, system-based approach of urban systems
Evaluated 25th September 2008

Leo van den Burg
An analysis of the documents concerning the planning of the Amsterdam city hall,
1639-1648
Evaluated 12th June 2008

Olgu Çalışkan
Typo-Morphological Perspective on Planned Peripheral Urban Formation in a case
in Ankara, Turkey
Evaluated 8th November 2007

Joost W. van den Hoek
Towards a Mixed-use Index (MXI) as a tool for urban planning and analysis
Evaluated 8th November 2007

Ekim Tan
Agency 2.0: Towards Adaptive Environments for Human Habitats
Evaluated 10th April 2008

Chiu-Yuan (Vivian) Wang
The embodiment of a planning culture within Chinese political, societal and cultural contexts
Evaluated 10th April 2008

Jing Zhou
Searching for Good Urban Form, From Utopian Cities to Chinese New Towns
Evaluated 10th April 2008

bebouwd stedelijk gebied tot 1850
built-up urban area till 1850

bebouwd stedelijk gebied van 1850 tot 1910
built-up urban area from 1850 till 1910

bebouwd stedelijk gebied van 1910 tot 1940
built-up urban area from 1910 till 1940

bebouwd stedelijk gebied van 1940 tot 1970
built-up urban area from 1940 till 1970

bebouwd stedelijk gebied van 1970 tot 2000
built-up urban area from 1970 till 2000

Figure 1
Physical urbanization of the randstad in 2000. Source Engel H (2005).

NIKKI BRAND, TU DELFT

TOWARDS A POLITICAL, SYSTEM-BASED APPROACH OF URBAN SYSTEMS

INTRODUCTION

This article serves as a theoretical introduction to PhD research on the origins and transformation of the Randstad urban system between 1200 and 2000. In this study, the 'urban system' will be defined as 'a collection of urban centres that maintain relationships in such a way that a change in the position of one urban centre results in a change in one or more of the other centres' (Lesger 1998). Before proceeding to the issue at hand, an essential question needs to be answered: how should the development and transformation of urban systems be approached in a historical context? This article strives to develop such an approach by giving insights into studies on this topic, resulting in a theoretical outline for conducting system-based research. It consists of two parts. The first part focuses on instruments which can measure and/or illustrate the transformation of the urban system. The second part analyses a measure of descriptive research on urban systems within a historical context. The focus in this part is on the range of explanations used to decipher the development and transformation of urban systems. The combined analysis results in an overview of the available instruments and explanations. The article's conclusion focuses on how system-based urban research can be conducted within a historical context. In the article, I argue that political factors are the missing link in the system-based urban research conducted up to the present.

INSTRUMENTS

Central place theory

Instruments that illustrate transformation in the urban system can be divided into three general types that are closely related: the central-place theory, the network theory and several notions of ranking. The network theory was was developed as a correction of the older central-place theory; hierarchical ranking plays a crucial role in each of them. Both the network theory and the central-place theory are actually system theories, which means that they study cities as a group. Usually, urban system-based research starts with an intro- duction of the well-known spatial model of Walter Christaller (1933) as the oldest approach to intra-urban relations. However, it was Von Thünen (1826) who created the first spatial model based on the range of consumer goods available in the 'hinterland' or service area of towns. One important aspect of Christaller's work is the concept of 'centrality', based on the range of available goods and services in a town. If these commodities are of a 'higher order' (meaning that they are not pursued on a daily basis, available only to selective groups and probably expensive too - for example jewellery), they will serve a correspondingly large ser- vice area, thus adding to the functional rank of a town.

Following Von Thünen, Christaller awarded each type of commodity a maximum distance that consumers would travel to acquire it. This concept provided sufficient material to create a hexagonal model that served as an ideal type of the spatial pattern of towns in a given area. Although quite close to the nature of economic distribution, the large difference between the ideal type of the model and the actual pattern of cities generated a substantial amount of sharp criticism. Christaller's approach was considered monofunctional, since it only applied to the regional market function. Moreover, he applied his theory to an 'isotropic plain' without geo- graphical differences; the assumption was that inhabitants would act rationally, only consider- ing costs and distances in their purchasing behaviour. Christaller argued that transformation in his system could only be caused by either demographic change or by innovations in transport technology. In the first case, demographic growth could lead to a rise in the centrality of towns and/or the creation of additional towns. Secondly, innovations in transport could lead to a wider geographical range of products and services. The same described effects could be expected: change in the centrality and/or the creation/ disappearance of towns. Nevertheless, Christaller's central-place theory made a small come back in the 1980s, being the only spatial approach that was more or less sound enough to serve as a counter-model to the supposed 'death of space'.[1]

Network- or gatewaysystem

Although the central-place theory was not at all a bad theory, it failed to grasp a number of important aspects of urban systems. Not only do large cities inconveniently often emerge on

---

1. The 'death of space' is a term of fashion for the relative unimportance of distance that resulted from the growing mobility and the availability of fast communication technology.

shores and rivers, they also appear to be functionally specialised. Why do some cities produce only a few products while others fail to produce these at all? The notion of functional spe- cialisation, among other things, suggests that these cities penetrate each other's hinterlands with their products. While focusing on cities' occupational and industrial composition, Duncan (1956) found that more 'sophisticated' activities were disproportionally concentrated in larger cities, and that cities' economic structures were similar within, but dissimilar between size classes. Moreover, in the 80s and 90s, scholars were alarmed by the apparent rise of a world- encompassing hierarchy of global cities, specialising in command and control functions (head- quarters, corporate service firms). Christaller's approach appeared to be unable to capture several urban interactions that were becoming increasingly common following the economic shift towards relatively distance-independent activities and the technological compression of distance itself (Neal 2008).

Seeking to relax the central-place model's rigid verticality, geographers made a similar con- ceptual transition by incorporating relationships of interdependence and channels for the dif- fusion of information and money that cut across space and thus across levels of the old hier- archy (Pred 1973). This resulted in Manuel Castells's (1996) well-known concept of a 'space of place' slowly being replaced by a 'space of flows'. Neal (2008) formulated the difference as follows: the mechanisms underlying urban hierarchies have shifted from spatial to relational. The central-place-like spatial hierarchy was replaced by a network-based relational hierarchy in the 1940s as a result of an increase in mobility and information technology. These large differences required another type of system, usually known as the network or gateway system (De Vries 1984, Hohenberg and Lees 1985, Lesger 1990).

Whereas the central-place system focused on a self-contained, closed region, the network sys- tem connects several regions and spans large areas. Christaller's system was highly hierarchi- cal; towns of a comparable size supplied comparable products; the network-system however, is less hierarchical. Cities are considered 'nodes' in flows of people, products and information and they are therefore often complementary. Compared to the central-place system, this sys- tem is highly dynamical and shows no inclination of forming regular, spatial patterns (Lesger 1990). Recent work by the Loughborough group and the fairly well-known scholar Hall (2006) has been focused on finding an approach to measure these flows, generally consisting of pas- senger air traffic, commuting by car or train, locations of corporate service firms, and mostly unsuccessful attempts at measuring email traffic. In general, contemporary research has been 'network-based', as opposed to the more generally currently used space-based approach. [2]

Hierarchy: the rank-size rule
The hierarchical, closed and stabile central-place system and the complementary, open and flexible network system both contained a certain notion of ranking.

---

2   The Loughborough or Globalization and World-Cities (GaWC) group is a research network that operates from geography
    department of Loughborough Unversity. For more information, see: www.lboro.ac.uk/gawc/group.html.

Within the first system, ranking obviously took place according to centrality. Also, a certain degree of centrality corresponded with a certain number of inhabitants. The network system offered multiple options for ranking, mainly according to function. The overall concept of hierarchy however has long been part of the toolkit of geographers, economists and sociologists. It demonstrates either the regularity of population distributions, functional differentiation or integration into the web of globalisation.

Most studies of urban hierarchy take as a starting-point the rank-size relationship, popularly traced back to Zipf [3] (Neal 2008). American scholars use the term 'Zipf's Law' to describe the slope of a graphical presentation of population distribution. Although there has been massive empirical support for the rank-size rule in different disciplines, there is also a lack of consensus on the nature of its underlying mechanisms. The only thing we know for sure is that it is an instrument that clarifies transformation in hierarchy over time, but that it cannot be used for explanationary purposes (De Vries, according to Schmal, 1980). Nonetheless, using the rank-size rule, an important characteristic of urban systems is made visible: systems can be either 'monocentric' when they show a disproportionally large first city, or 'polycentric', when the top consists of a group of demographically comparable cities. Neal (2008) argued that due to their increased flexibility, the gradual change from spatial to network-based hierarchies should result in polycentric hierarchies.

However, ranking according to population provides us with a problem if we compare transformation into modern times. Population size may have represented economic activity in the past, but since the introduction of personal transport and concomitant commuting, a correlation is not necessarily evident. As mentioned above, this conclusion has led scholars to search for alternatives. Duncan and Pred employed ranking according to economic functions or the spread of innovations. Hall & Pain (2007), and also Ritsema van Eck (2006) have focused on commuting, international air traffic and the presence of international headquarters.

A combined perspective

Lesger (2001) has combined aspects of the central-place and network theories, and added clues from other approaches. His work provides us with a good example of the results that the appliance of existing approaches might create. Lesger's approach is more subtle than earlier approaches, as he considers the differences in the origins of systems and transformation over time. To create his approach, he drew on studies of urbanisation carried out in Australia, East-Africa, and America. [4] Scholars often deem specialisation to be a phenome-

---

3   Zipf (1941) observed that New York was first in size of population, and that the second largest city had half as many inhabitants as the first city. The same regularity could be witnessed throughout the entire hierarchy. To conclude that an urban hierarchy exists, investigations of this empirical regularity generally seek to test the fit of, and closeness of the β parameter to unity in, the simple linear regression: $\ln (rank_i) = \alpha - \beta \ln (size)_i$

4   Vance (1970) shaped the mercantile model, based on the urban system of America. Johnson (1970) created the dendritic market system and Rimmer (1967) developed the concept of hinterland piracy, a process of concentration in urban systems.

non linked to industrialisation or the near past, but Lesger (1990) showed that cities in Holland have been specialised since the 14th century. Because Dutch peat soils where unable to provide sufficient grain, trade was the only option to serve the hinterland (Bavel & Luiten van de Zanden 2004). Thus, he discovered that the creation of urban systems does not always commence with the creation of a surplus-generating hinterland. In newly discovered colonies, large harbours were created to supply the motherland. Smaller, supporting towns inland only arose after some time when a second hinterland was created. Lesger stated (after Vance, 1970) that the network function could therefore also initiate the development of a city system; not all systems originate from the creation of agrarian surplus. Lesger argued that since cities penetrated each others hinterlands, it became increasingly difficult to distinguish the original motherland from the newly created hinterland. The afore mentioned models assumed that all systems are monocentric in nature. Lesger argued that since transport costs over water were relatively low in medieval times and travel was therefore flexible, cities connected by water had a tendency to become polycentric systems - monocentric systems are more likely to be found in continental areas. The fourth mechanism discovered by Lesger was the evolution of coastal systems, which show more or less the same transformation over time, namely concentration. In the past, innovations in transport technology brought hinterlands within reach of other cities, resulting in advantaged or disadvantaged positions. Incorporated harbours lost their independent intermediary function for their exclusive hinterlands and were forced to specialise in their network functions. The system became hierarchical, as a slow process of centralisation took place. Incorporated cities became agents of the primate city, for which they produced exclusively. This process, referred to as 'hinterland piracy' by Rimmer (1967), was also kick-started by other factors besides transport; in Holland, it was instigated by the impact of the Black Death and civil unrest. Lastly, Lesger was able to show that these incorporated cities found themselves in very awkward positions under deteriorating economic circumstances. Economic degradation led to the decay of smaller towns. Summarising, Lesger was not only able to differentiate the existing theories, but also put them in a historical, generative perspective.

With regard to the instruments and applications described above, the main characteristics of city systems are based on the sum of the relationships that cities maintain with their hinterlands and among themselves. Ultimately, the task of a city is to provide for its hinterland (consisting of the urban population itself and those living in the service area), whether by an internal exchange of production within the area itself or by a cross-border exchange with hinterlands elsewhere. With the compression of space over time, exclusive hinterlands probably became smaller or more diffuse; specialised cities reached deeply into other cities' hinterlands. We can assume that the network or gateway function became increasingly important over time as globalisation and specialisation gathered momentum. One reason for this was that it became impossible to isolate the hinterland, and the development of the gateway function (often combined with specialised production) was therefore the only avail-

able alternative. Specialisation and globalisation however gave rise to kindred processes of increasing (inter)dependency and concentration. The growth or shrinkage of the urban population depended on the ability of the city to provide for its own hinterland as well as for those of other cities. With regard hereto, there are only two relationships that are actually relevant to research on urban systems: the relationship between a city and its hinterland, and the relationship between cities.

DESCRIPTIVE RESEARCH

A demographical approach

Apart from empirical research provided by the application of the rank-size rule, most studies on urbanisation and urban systems have been descriptive.

In his well-known study of European urbanisation between 1500 and 1800, De Vries (1984) applied the rank-size rule and was thus able to distinguish three phases of system forma-tion. After the medieval expansion between 1300 and 1500 which provided a framework for urban growth, Europe entered the so-called long 16th century. This first phase (1500-1650) was characterised by demographic and economic recovery after the Black Death. Urban growth was distributed unequally; the selective growth favoured centres of political power and Atlantic harbour cities with imperial ambitions. Trade grew, not only between con-necting points but also in terms of distance. Cathedral towns gradually lost importance to administrative centres, where the first steps towards bureaucratic government were being taken. A number of harbours also lost their independence to these new governments. In this first phase, a stratified hierarchy arose with the growing dominance of bureaucratic and Atlantic cities. De Vries suggested that political factors were at work here, but also that the stratified hierarchy was the result of economic integration. Economic integration however could be the result of a larger population with an increased demand which consequently forced cities to expand their trade connections. At the same time, political unrest in Europe stimulated the demand for war, which in turn stimulated trade.

The second phase (1650-1750) was characterised by stagnating demographic growth which undermined the centrality of lower order cities. Inland trade centres lost importance and once again, political centres benefited. Atlantic harbour cities also grew. De Vries argued that the same factors were operative here as during the first phase, but that the results were more conspicuous due to an absence of other impulses for growth. The stagnation of smaller cities often resulted in a decline of the population. The system began to show monocentric characteristics; it was a phase that favoured large cities to smaller ones. De Vries termed the third phase (1750-1850) 'the new urbanisation'; overall demographic growth augmented the centrality of smaller cities, also giving rise to new coal-based indus-trial towns. De Vries argued that institutional and technological factors gave rise to early industrialisation in small, rural towns where labour-intensive proto-industry was traditionally

located. Only after 1850 did the larger towns come to profit from this new mode of produc-
tion. In this regard, De Vries disagreed with Weber (1899), who stressed that industrialisa-
tion essentially favoured large cities and heightened differences between cities.
Additionally, drawing on the work of Rozman (1976), De Vries assumed that political factors
influenced the transformation of urban systems. Rozman compared the rank-size distribu-
tion of different continents, showing that Europe's slope was far flatter than that of China.
Since China was known for its political uniformity, he argued that political fragmentation
was at the basis of the dichotomy. In his studies on the Russian city system, Rozman also
discovered that hierarchies can develop bottom-up as well as top-down: the bottom-up path
was usually taken by commercial developments, while the top-down path was always the re-
sult of administrative motives arising from within a strong, centrally organised government.

An economic approach
Hohenberg and Lees (1985) wrote an extensive testimony on European urbanisation be-
tween 1000 and 1994, taking the concept of a globalising world economy from Wallerstein
(1974, 1980, 1989) and Braudel (1949) as their starting point. In their approach, globalisa-
tion, growing inequality, specialisation and the economic mode of production are key fac-
tors. Using the instruments of the central-place system and the network system as descrip-
tive tools, they divided urbanisation into a pre-industrial age (11th-14th C), a proto-industrial
age (14th-18th C) and an industrial age (18th-20th C). They assumed that demography, tech-
nology and markets determined the growth of cities due to their influence on the relation-
ships that cities maintain among themselves and their hinterlands.
However, political factors soon became an additional key factor in their studies. Hohenberg
and Lees argued that the relationship between the city and the larger socio-political units it
interacted with influenced their economies, and thus mattered. Moreover, cities were able
to accumulate capital, and for a long time were political units in their own right. Eventu-
ally, cities were incorporated into the larger nation states. The combination of political and
economic functions enabled cities to grow disproportionally large, resulting in monocentric
urban systems. Monocentric systems were the result of absolutist regimes, they argued.
However, detailed research has failed to bear this argument out. Engel (2005) showed that
the urban system in Holland was monocentric between the 15th and the 18th centuries and
gradually developed into a polycentric system after 1800. During the dominion of the Dutch
Republic, the political system was considered decentralised and fragmented, and only after
1800 did centralised government take over.
Moreover, according to Hohenberg and Lees, the early rise of influential towns also obstruct-
ed the development of strong, centralist governments. They argued that industrialisation
fashioned a new urban hierarchy from the old one, with the new mode of production freeing
structural urbanisation from its limitations. It started in the proto-industrial areas, but new
technology created the early, coal-based form. In the last phase of industrialisation, urbani-
sation was more or less 'free': the railroads enabled industries to pursue labour instead of

coal, thus making large cities the main focus.

A political approach?

Nonetheless, economic, technological and demographic factors continued to prevail in the approaches of De Vries and Hohenberg & Lees. Rutte (2002) made political factors the main focus of his study on the emergence of towns in the 12th and 13th C. This study formulated the idea of urbanisation politics and town-planning as instruments for the political organisation of space. Rutte argued that lords sometimes created new towns as a strategy to limit the power of older towns, thus increasing their own sovereignty. Through these new towns, a lord could control trade on his shores: the strategy was founded on financial motives. However, sometimes the same strategy was adopted for territorial reasons. New towns could be created in order to expand a lord's sphere of influence in contested border regions. To be successful, towns had to have the opportunity to grow economically. In his study, Rutte clearly demonstrated how politics influenced cities. [5]

Rutte was not the only Dutch scholar to request attention for politics. Hints of the political influence in the Low Countries were also made by Lesger (1990, 2001, 2003). While studying the trade relations of Dutch cities in the 16th and 17th C, Lesger discovered that the blockade of Antwerp had resulted in the severance of ties between the northern and the southern part of the urban system of the Low Countries. Trade relations were reoriented towards Amsterdam, adding to its economic vigour, while prolonged war activities in Flanders prevented the recovery of former competitors. Moreover, political factors have been used to explain the economic downfall of the Dutch Republic and the demographic decline suffered by cities as a result (Stuurman 1995). Political stability in Europe combined with the protection of national markets rendered the export-oriented economy of Holland superfluous (Blockmans 1989, Tilly 1992). Last but no least, Wagenaar and Van Engelsdorp-Gastelaars (1993) argued that the polycentric nature of the Randstad can partly be explained by the fact that the 'neutral' city of The Hague was chosen as the seat of government in the 19th C, instead of economically dominant Amsterdam.

Considering the ideas of De Vries, Hohenberg & Lees, Lesger and Rutte, it seems that all possible explanations can be divided into three main categories: demographic, technological and economic influences.

However, all three writers also mention a certain amount of political influence on urban systems. De Vries marvelled at the growth of the administrative cities, while Hohenberg and Lees assumed that the relationship between cities and central government mattered. Nevertheless, only Rutte managed to create a more than merely leisurely approach to the influence of political motives. It would therefore seem that political factors are the missing

---

5   The opposite concept - the impact of cities on politics - has been studied by Tilly (1992). Tilly argued that cities, especially those located on favorable economic locations, influenced state-formation. While cities represented the capital-intensive path, resulting in nation-states with representative politics, countries without strong cities walked a coercion-intensive path towards centrally organized nation-states.

link in system-based urban research. Moreover, if politics are taken into account at all, they seem to be used to explain the pattern and structure of the system of cities rather than the degree of urbanisation itself. Rutte focused on how politics influenced the pattern of cities, creating new towns to diminish the power of existing cities and neighbouring lords. Hohenberg and Lees suggested that monocentrism could be the result of centralist, absolutist regimes. Lesger in turn showed how war severed the urban system of the Low Countries into two loose halves. All these arguments concern the form of the urban system. Regarding the degree of urbanisation, economic arguments prevail. For example, problems with wet peat soils forced farmers in medieval Holland to go into trade, thus creating cities. Additionally, the new mode of production in industrialisation stimulated urbanisation.

In addition, a closer look at the influence of technological and demographic factors shows that they always culminate in an economic influence. Technological innovations led to industrialisation, while population growth increases demand. We can thus limit our scope to the influence of economic and political factors. This suggests that economic factors are responsible for the degree and partly the pattern of urbanisation, but that politics often direct the shape of the system both by throwing up additional obstacles to and stimulating the competitive structure. In order to enable us to gain new insights into the development and transformation of urban systems, the missing link between political and economic influence therefore needs to be filled in.

CONCLUSION:
HOW SHOULD SYSTEM-BASED URBAN RESEARCH BE CONDUCTED?

To describe the development and transformation of an urban system over time, the demography-based rank-size rule is still our best shot as it gives a relatively objective view of the shifts in positions and the integration of the cities. It does not however capture the actual hierarchy after 1930, since commuting has made it difficult to impossible to use demographic figures to measure urban success. An inelegant alternative, based on economic growth, the share of the NBP, functional diversity, commuting and the presence of international service firms will have to suffice to cover this period. Fortunately, a great deal of data is available for the 20th century. The transformation taking place within the urban hierarchy will also enable us to distinguish periods in the development of the urban system. Describing the hierarchy however is not enough, as the initial goal was to identify the origins of the urban system. To illustrate the change in urban circumstances over a prolonged stretch of time, I use a combination of the central-place theory and the network system, anticipating the gradual dominance of the latter over the first over time. To illustrate this assumed shifting in underlying mechanisms without getting lost, the possible impact will have to be confined to the two relation types identified in part I: city-hinterland and city-city. Due to the absence of political factors identified above, I add the relationship between city and

central administration as a third variable. What kind of factors will influence these three relationships? To this end, we use the four identified 'dimensions': (demographic, techno-logical), economic and political influence.

Demographic and technological developments influence the economic dimension of ur-banisation. Population growth, for example, can lead to increased demand and therefore raise the centrality of towns – a decreasing population, on the other hand, can result in a restructured demand, leading to the local shrinkage of specialised towns. The wide-spread introduction of the steam engine increased the economic scope of towns, while information-technology reduced the need for close-ranged locations for production, and so on. In effect therefore, these demographic and technological developments turned out to be economic
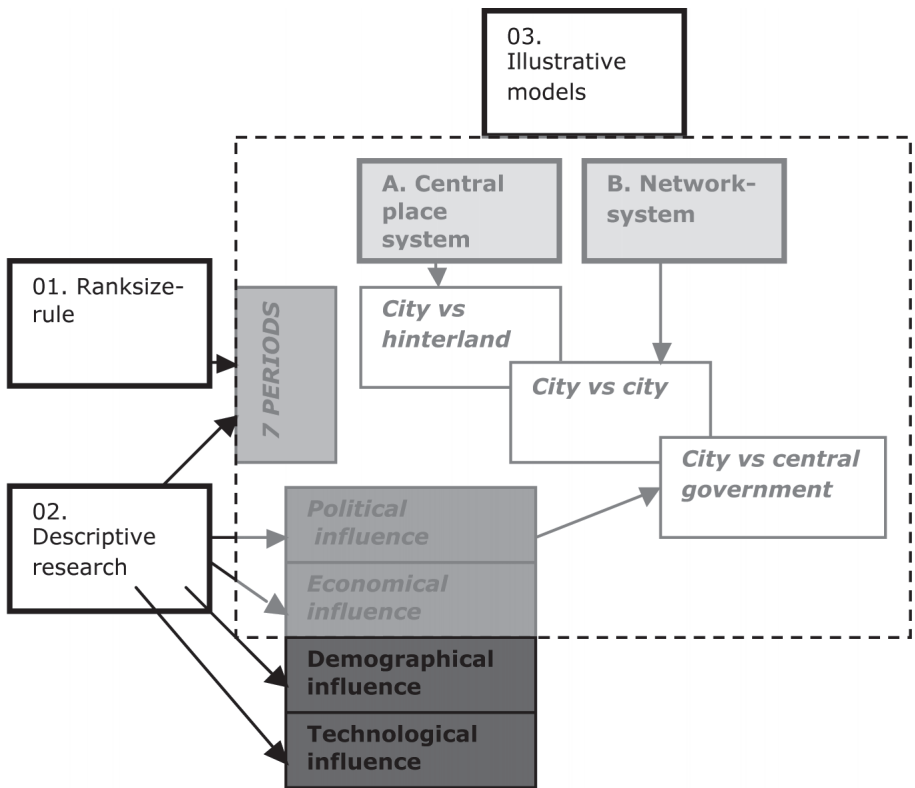

Figure 2

Graphical illustration of the approach. The numbers 01, 02 and 03 represent existing instruments, approaches and illustrative models. The grey boxes contain the models that will be used in the approach. The arrows show where the different dimensions/influences (green), periods (orange) and relations (white) originate from. Since the demographical and technological factors eventually become an economical influence, these dimensions have been excluded (surrounded by a red line). The down lighted part of the illustration contains the parts of the definitive approach.

influences on the way in which urban systems are shaped. The economic 'mode of production' - for example the industrial mode - resulted in increased urbanisation and the addition of towns to the existing urban system. The political dimension is characterised by its style of government; town planning (for example) by local dukes led to the creation of new towns, structural warfare could destroy the economic potential of towns but was able to add to the growth of managing governmental cities at the same time. Basically, what is required is the identification of crucial economic and governmental influences on urbanisation.

This also implies that we should not only search for differences in economic relationships on the three levels of the afore-mentioned relationships but for political differences as well. The long stretch of time, plus the above-mentioned shift towards network-based systems over time makes a different operationalisation of economic and political relationships per period unavoidable. Operationalisation depends on the 'compression of space' over time and the available data.

Additionally, Lesger has provided us with important processes and characteristics of urban systems such as concentration and hinterland piracy.

What have we therefore discovered with regard to how to conduct system-based urban research within a historical context? The approach should consist of four dimensions and three relationships, thus describing the development and transformation of the service-function and the gateway function of cities. The sum of these identifies the city-system. The systematic analysis of these characteristics should be used additionally to the traditional rank-size method, giving us some clarity with regard to their development and transformation over time. Hohenberg and Lees and De Vries have also suggested different periods in the transformation of urban systems, composed of economic and demographic elements. Their work can assist us in comparing the development and transformation of the urban system of the Randstad with European standards.

LITERATURE

- Andersson Å E (1992) Infrastructure and the transformation of the C-society. In: R. Thord (eds.), The future of transportation and communication, p. 17-31. Stockholm.
- Blockmans W (1989) Economische systemen en staatsvorming in pre-industrieel Europa. In: NEHA-Bulletin, Orgaan ten behoeve van de economische geschiedenis in Nederland, jaargang 3 (1989), no.1. p. 7-19.
- Bavel B J P & Luiten van Zanden J (2004) The jumpstart of the Holland economy during the late medieval crisis, c.1350-c.1500. In: Economic History Review, LVII, 3, pp.503-532. Oxford.
- Braudel F (1949) The Mediterranean and the Mediterranean World in the Age of Philip II. Paris.
- Castells M (1996) The Rise of the Network Society. Malden.
- Christaller W (1933) Die Zentralen Orte in Süddeutschland. Jena.
- Duncan O D & Reiss A J (1956) Social Characteristics of the Urban and Rural Communities. New York.
- Engel H (2005) Randstad Holland in kaart. In: Overholland 2, p. 23-44. Nijmegen.
- Hall P (1966) Zeven Wereldsteden. London.
- Hall P & Pain K (2006) The Polycentric Metropolis - learning from the megacity regions in Europe. London.

- Hohenberg P M & Lees L H (1985) The making of urban Europe 1000-1950. Cambridge.
- Johnson E A J (1970) The organization of space in developing countries. Cambridge.
- Lesger C M (1990) Hoorn als stedelijk knooppunt - stedensystemen tijdens de late middeleeuwen en vroegmoderne tijd. Hilversum.
- Lesger C (1998) De dynamiek van het Europese stedensysteem. In: Taverne, E. & E. Visser. Stedebouw - De geschiedenis van de stad in de Nederlanden van 1500 tot heden, p. 104-111. Nijmegen.
- Lesger C (2001) Handel in Amsterdam ten tijde van de Opstand. Hilversum.
- Neal Z P (2008) From Central Places to Network Bases: The Emergence of a New Urban Hierarchy, 1900-2000. www.lboro.ac.uk/gawc/rb/rb267.html, consulted on August 12th, 2008.
- Pred A R (1973) Urban Growth and the Circulation of Information: The United States System of Cities, 1790 – 1840. Cambridge.
- Rimmer P J (1967) The search for spatial regularities in the development of Australian seaports, 1861-1961/62. B.S. Hoyle, Transport and development, p.63-86. London.
- Ritsema van Eck J e.a. (2006) Vele steden maken nog geen Randstad. Rotterdam.
- Rokkan S & Urwin D W (1983) Economy Territory Identity - Politics of West-European Peripheries. London/Beverly Hills/New Delhi.
- Rozman G (1976) Urban networks in Russia, 1750-1800, and Pre-modern Periodization. Princeton.
- Rutte R (2002) Stedenpolitiek en stadsplanning in de Lage Landen (12de-13de eeuw). Zutphen.
- Rutte R & Hoekveld G (2003) Stadswording en machtspolitiek - vergelijkend onderzoek met een modelmatige benadering. In: HGT, 21ste jaargang, p.77-92. Utrecht.
- Schuppen S van (2006) Historische atlas van Den Haag. Van Hofvijver tot Hoftoren. Amsterdam.
- Stuurman S (1995) I. van de vroege middeleeuwen tot de 17de eeuw. In: Stuurman, S. Staatsvorming en politieke theorie – drie essays over politieke en staatkundige ontwikkelingen in Europa vanaf de Vroege Middeleeuwen tot en heden en over het feminisme. P.13-87. Amsterdam.
- Tilly C (1990) Coercion, capital, and European States AD 900-1900. Cambridge/Oxford.
- Von Thünen J H (1826) Der isolierte Staat in Beziehung, auf Landwirtshaft und Nationalökonomie.
- Van Engelsdorp-Gastelaars R. & Wagenaar M (1981) The rise of the Randstad, 1815-1930. In: Patterns of urbanization since 1500, H. Schmal e.a. p. 229-246. London.
- Van Engelsdorp Gastelaars R. & Wagenaar M (1986) Het ontstaan van de Randstad 1815-1930. In: KNAG Geografisch Tijdschrift XX, 1986, nr.1. p. 14 - 29.
- Vance J E (1970) The Merchant's World: the Geography of Wholesaling. Englewood Cliffs.
- Vries, J de (1981) Patters of urbanization in pre-industrial Europe, 1500-1800. In: Schmal H (eds.) Patterns of urbanization since 1500, p.77-109. London.
- Vries J de (1984) European urbanization 1500-1800. London.
- Wallerstein I M (1974) The Modern World-System, vol. I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century. New York/Londen.
- Wallerstein I M (1980) The Modern World-System, vol. II: Mercantilism and the Consolidation of the European World-Economy, 1600-1750. New York.
- Wallerstein I M (1989) The Modern World-System, vol. III: The Second Great Expansion of the Capitalist World-Economy, 1730-1840's. San Diego.
- Weber A F (1899, reprinted 1963) The growth of cities in the 19th century. Ithaca.
- Zipf G K (1941) National Unity and Disunity. Bloomington.

Amsterdam,
a view on the
City Hall from the
Eggertstraat.
Photo: Ino Roëll,
Stadsarchief
Amsterdam, 1986.

LEO VAN DEN BURG, TU DELFT

AN ANALYSIS OF THE DOCUMENTS CONCERNING THE PLANNING OF THE AMSTERDAM CITY HALL, 1639-1648

INTRODUCTION

The seventeenth century was an important period for the development of cities in Holland. The appearance of many cities as we know them today is the result of seventeenth century transformations of medieval inner cities, and in some cases of city extensions. In the last decades, research on the form and layout of 17th century cities in Holland has mainly focused on these extensions - from Ed Taverne's 'In 't land van belofte' in 1978 to the unpublished doctoral thesis of Jaap Evert Abrahamse. Much less research has been conducted on inner city transformations and in the research that there is, the emphasis is usually on individual projects or buildings, not on the inner city as a whole or the relationship between projects and/or buildings. Since inner city transformations occurred in most of the cities in Holland in the seventeenth century, knowledge of these transformations is important for a better understanding of the fundamental principles of urban planning and the present day spatial configuration of Dutch cities. The goal of this research is to add to this understanding by studying the way in which new and often large-scale buildings were inserted into the existing tissue and whether or not spatial of functional considerations on an urban scale played a role in this process, in this case: the Amsterdam city hall.

AMSTERDAM CITY HALL

In the research of seventeenth century inner city transformations in Holland, the Amsterdam city hall is an obvious case, being the most important spatial transformation of the most important inner city in Holland. It is also a puzzling case. The city hall and the neighbouring Dam square do not form a natural spatial unity. This is related to differences in scale, style, materials, monumentality, in short, the contrast which was the result of the fitting in of an enormous, classicist building into a medieval inner city. The differences are so substantial that the question arises whether anybody in the seventeenth century made any attempt at all to properly fit this building into its context.

The secondary literature on the city hall does not answer this question. Its emphasis is mostly on the building itself, for instance the iconography of its paintings and sculptures.[1] In the scarce literature in which the placing of the building is an issue, an impression is left of the Amsterdam city council as an ignorant and insecure client that wanted a beautiful building on one hand, but were at a loss as to how to place it in the city on the other.[2] Although this seems to correspond with the present situation, the impression is still unsatisfactory, for why should a client with such great architectural ambitions be so careless about how its project was presented to the city. The question remains whether the placing of the city hall within the urban context was a design issue in the planning process or not.

If we turn to the primary sources for an answer, we have to reconcile three categories of documents that are incomplete and often difficult to interpret. In the first place, there are the nine resolutions that the Amsterdam city council adopted on the planning of the new city hall between 1639 and 1648.[3] The most important information in these short texts concerns the sizes of the future building. These are regularly subject to change. Apart from this, the resolutions contain a number of rather vague descriptions about the number of houses to be evicted or the placing of the building. In some cases, the texts refer to drawings, but these have been lost. The resolutions give little information about the underlying motives of the city council, let alone about its aesthetic or spatial intentions.

The second category comprises a number of surveys by Cornelis Danckerts de Rij. He was the land-surveyor appointed by the city. We know of two drawings by him made in 1639 (figure 1), one in 1643 (figure 2) and another in 1648 (figure 3). The latter was not signed by him, but the drawing, or the original of the drawing, can be ascribed to him.[4] It is clear

---

1   See for instance: Fremantle K (1959) The Baroque Town Hall of Amsterdam, Utrecht; or Vlaardingerbroek P (2004) Het Stadhuis van Amsterdam: de verbouwing tot Koninklijk Paleis en de restauratie. Unpublished phd.research.

2   See especially: Boeken A (1948) Een stadhuisontwerp van 1643. Jaarboek Amstelodamum 42, pp.47 ev. and Kuyper W (1977) Wat een mooi Stadhuis. Jaarboek Amstelodamum 69, p.73-88.

3   These are published in Boeken A (1919) Over de voorgeschiedenis van den bouw van het voormalige Amsterdamsche Stadhuis. Jaarboek Amstelodamum 17, pp.1-30.

4   The drawing matches Danckerts' drawing from 1643 almost exactly. The drawing is unsigned. Instead, we read the word 'copy'. Gemeentearchief Amsterdam.

that each of these drawings is related to the planning of the city hall, although they are not the drawings mentioned in the resolutions.

The third category is a group of six designs of buildings - five projects, plus the built design by Jacob van Campen. The resolutions often refer to designs, but these are probably not the ones we know of. Not one of the designs, for instance, complies with the sizes mentioned in the resolutions. In some cases, it is unknown or unclear who the architect was. On top of this, none of the designs can be accurately dated, not even the one made by Van Campen.

**Figure 1
The survey
of Cornelis
Danckerts de Rij
from 1639.**

These three groups of documents seem to be unconnected, which makes it difficult to place them in a coherent framework. Some of the sources even seem to exclude each other. This makes a reconstruction of the complete planning process of the city hall extremely difficult. At first sight, the detailed question of whether or not the design of the building was seen in relation to its urban context seems almost impossible to answer. A closer look at the resolutions of the city council however, shows that in some cases, these texts offer very precise information about how the plot for the new city hall had to be positioned between Dam square, Nieuwezijds Voorburgwal and the New Church. On the basis of this information, a coherent reconstruction of all nine resolutions is possible, presenting us with a natural framework for the other sources.

To explain this, we will start with an analysis of the conventional approach to the planning of the city hall. This shows the premises of this approach, the mistakes that were made in interpreting the data and the inconsistencies this resulted in. The next step is an explanation of an alternative reading of the resolutions and how this leads to a new and coherent picture of the planning of the city hall. The article thus sheds new light on the intentions of the Amsterdam city council. The reconstruction shows that with respect to the placing of the building in the city, the council was able to combine aesthetic and functional goals. Its ambitions with respect to the architectural and the urban design were not mutually exclusive but complementary.
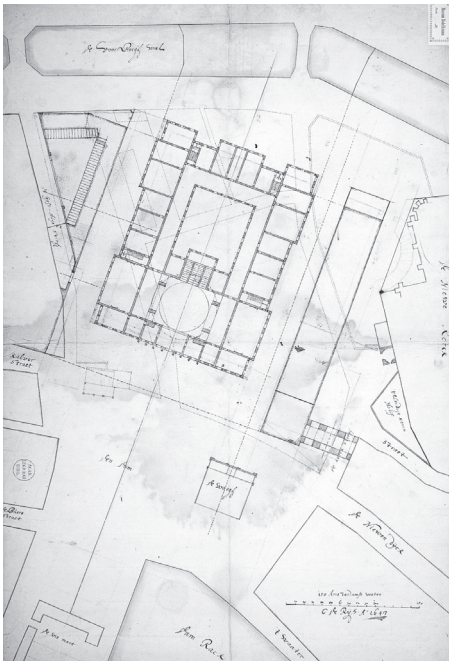

Figure 2 (left)
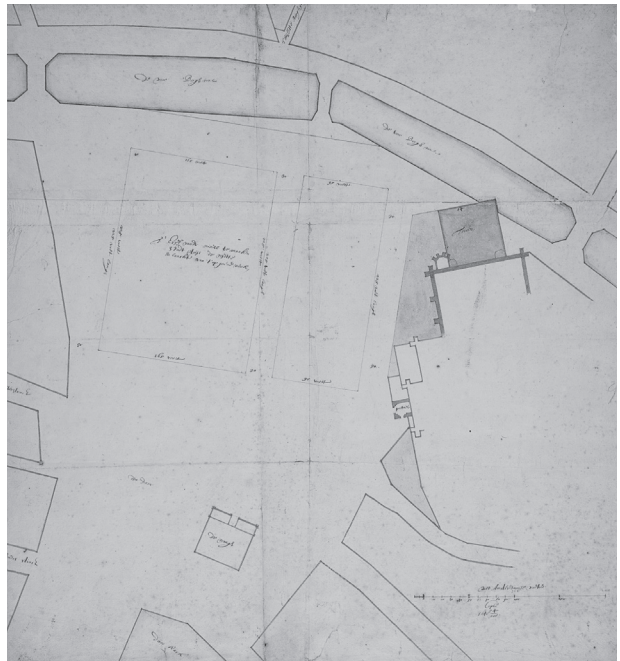**The drawing signed by Cornelis Danckerts de Rij from 1643.**

Figure 3 (right)
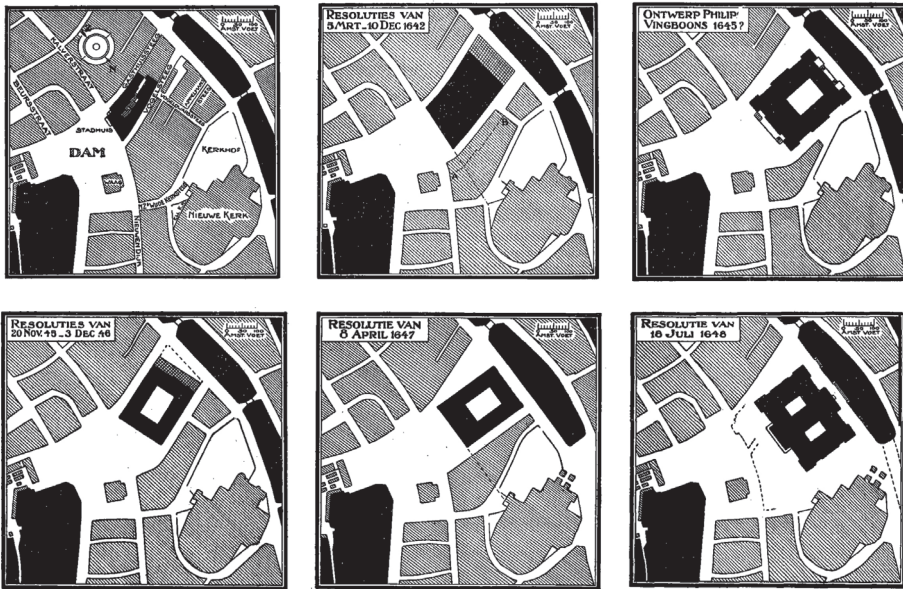**The drawing that might be ascribed to Cornelis Danckerts de Rij from 1648.**

THE RECONSTRUCTION OF BOEKEN FROM 1919.

In 1919, A. Boeken was the first researcher who tried to bring all the available sources together in a coherent reconstruction of the planning history of the city hall.[5] He proposed a
chronology in the building designs known at that time and translated the spatial information
contained in the resolutions into a series of six simple maps (figure 4). The questions that
Boeken tried to answer in these maps were concerned with the shape of the plot and how
this plot had to be placed inside the available area. The shape of the plot was irregular until
1642 and difficult to reconstruct. Later on, its shape was clear, but its position is only hinted
at in the resolutions, never clearly described.

Boeken's drawings give the impression that the city council was faced with a choice between two potential positions for the building; in some drawings, the building faces the
same direction as the old city hall (figures 4a,b), while in others, it faces the same direction
as the present-day palace (figures 4e,f). When we combine the drawings with Boeken's text
however, it becomes clear that he assumed that the city council would want the building to
have a similar placing to the old town hall between 1639 and 1646, and a similar placing to
the present situation from 1647 on.

This interpretation contains a number of inconsistencies that until the present remained
unresolved. The first relates to the uncomfortable position of the building on the Dam
square up to 1647. The oblique position of the plot results in such a poor spatial relation-

---

5   Cf. note 3.

ship between the two, that we are forced to conclude that the city council was obviously not concerned with a proper placing of the building in relation to the square and the surrounding buildings. This is strange, because all known building designs at the time were classicist and monumental. Boeken's interpretation leaves us with the fundamental problem of how to reconcile the architectural and urban ambitions of the city council.

Secondly, in his set of drawings Boeken suggested how a design of Philips Vingboons, dated around 1643, might be placed within the context (figure 4c). The design is so large that it cannot be fitted into the area if facing in the same direction as the old city hall, but must be rotated and separated from the Gasthuissteeg to the south of the plot. Boeken cannot give an explanation for this interruption to his reconstruction.[6]

A third question mark can be placed concerning the decision made in 1642 to rotate the front of the plot in the direction of the cemetery known as the 'Ellendige Kerkhof', south of the New Church (figure 4b). Boeken's explanation for this rotation is that the council wanted a larger square, offering a better view of the city hall. This is an unsatisfactory suggestion as in other respects, the relationship between building and square is thus weakened.[7]

In 1647, the council decided to rotate the building a second time, this time in the direction of the southern entrance of the New Church (figure 4e). Suddenly, the building was placed in a very different, but still not an ideal position with regard to the Dam. Although the text of the resolution does not focus a great deal of attention on this rotation, its effect in the drawing is drastic. This discrepancy cannot be explained from the sources.

The most important reason for challenging Boeken's reconstruction is given by Boeken himself.[8] In 1948, he discovered a drawing from 1643, signed by the Amsterdam land-surveyor Cornelis Danckerts de Rij (figure 2). The drawing shows a proposal for a building in a detailed urban design for the Dam square. The position of the building is very different to that considered possible by Boeken in his 1919 reconstruction. Here, the city hall and the Dam form a monumental spatial unity. How can we explain the contrast between this drawing and Boeken's earlier interpretation? Possibly, Boeken's reconstruction was correct, which means that the designer from 1643 consciously contradicted the wishes of the city council. It is also possible that the drawing was made in accordance with the council's wishes. In this case, Boeken's interpretation was wrong.

From an urban design point of view, this is a very important issue. It concerns the difference between a city council that had no idea how to place its dazzling new building and a council with very clear ideas about the relationship between a building and the public space. Boeken himself made no attempt to explain this hiatus. Later authors have studied Danck-

---

6   See for this drawing: Ottenheym K (1989) Philip Vingboons (1607-1678) Architect. Zutphen.

7   For example the interruption of the street façade near the Weigh House or the less regular shape of the Dam square.

8   Cf. note 2.

erts' drawing in more detail, but have primarily focused on the issue of the authorship of the design and not or only slightly on the question of whether the drawing necessitated a new interpretation of the city council resolutions.[9] As far as the resolutions themselves are concerned, later research prioritised finding the correct chronology of the building designs. Despite all these questions, Boeken's interpretation of the positioning of the Amsterdam city hall in its context is still the convention today.[10]

BOEKEN'S INTERPRETATION EXPLAINED.

To establish whether or not Boeken made a mistake in his reconstruction, it is important to understand what his interpretation was based on. The oblique positioning of the plot in relation to the Dam is the biggest problem. This awkward setting is not mentioned in the resolutions and bears no relation either to Danckerts' drawing of 1643 or to the situation as we know it today. Where did Boeken get his idea from? A second drawing by Cornelis Danckerts de Rij gives a number of hints (figure 1). In 1639, Danckerts drew a survey of the old city hall within its immediate context. Boeken said about this drawing: '(…) surely, it is not daring to consider this drawing as a first laying down of the form and measurements of the plan for the new city hall'. [11] Even though the drawing is not mentioned in the resolutions, there are a number of indications which support Boeken's assumption: the drawing is from 1639, the year in which the city council decided to think about building a new city hall; the author is the city land-surveyor, which implies a connection with a then current planning issue; the drawing shows a very limited area around the old city hall, which does not allow for the placement of a very big building or a building facing in a very different direction; the drawing shows no plot boundaries, except one, parallel to the Gasthuissteeg, at a distance roughly similar to the proposed width of the new building as mentioned in the resolution. When this drawing is taken as a starting point, one could easily obtain the impression that the city council originally wanted a new building in the same position and facing the same direction as the old city hall.

The first resolution in which the council stipulated specific demands for the new city hall dates back to 28 January 1640. When we compare the plot dimensions mentioned in this text with Danckerts' survey, it is not difficult to recognise the picture sketched by Boeken

9   For instance: Terwen J J (1979) Het Amsterdams Stadhuisplan van 1643: Analyse van een teruggevonden tekening. Bulletin KNOB, 3, pp 109-122, but also: Kuyper W (1989) 'Wat een mooi Stadhuis'; and: Ottenheym K (1989) Philips Vingboons.

10 See for instance: Stichting Koninklijk Paleis (1982) Het achtste wereldwonder, de bouw van het stadhuis, Nu het paleis op de dam, Amsterdam.

11 Boeken A (1919) Over de voorgeschiedenis van den bouw van het voormalige Amsterdamsche Stadhuis. Jaarboek Amstelodamum 17.

(figure 5). The council allowed the burgomasters to expropriate all housing necessary in an area of 150 times 280 feet, running from the Dam towards the Nieuwezijds Voorburgwal, not counting two adjoining streets of 25 or 30 feet in width. [12]

The length of the Gasthuissteeg in Danckerts' drawing is 288 feet. It is true that this is not exactly the same size as mentioned in the resolution, but the phrasing of the text does not imply great accuracy. The resolution contains global dimensions and presents a choice in the width of the streets and the number of houses to be expropriated. With Danckerts' survey in mind it is natural to assume that the south side of the new city hall should be positioned along the Gasthuissteeg. In combination with the demand for a front elevation along the Dam, this results in a plot that is as irregular as the existing one, only bigger.

Boeken concluded that the city council apparently did not have a classicist, right-angled building in mind at that time. Such a building would simply not have fitted onto the plot. In his text, Boeken introduced a drawing of an elevation with measurements similar to those mentioned in the resolution of 1640. He ascribed this design to the Amsterdam architect Philips Vingboons, partly on stylistic grounds.[13] About this design he said: 'It is remarkable that the city council was apparently unable to identify with the building line at right angles to the length of the building. (...) an austere, monumental plan with a grand symmetrical layout in the spirit of the ancients was not possible'.[14] By this remark, Boeken suggested that Vingboons' design went too far for the council with regard to this point: 'For sure, the burgomasters dreamed of a greater city hall, of course in the new spirit of the Renaissance, but they could not free themselves from the former situation and its surroundings'.[15]

The next resolution concerning the city hall is dated 5 March 1642. This is the first resolution that Boeken made a reconstruction drawing of (figure 4b). The text gives much more detailed information than the resolution issued two years earlier. The council had decided to give the new city hall a width of 162 feet along the Dam, or six to eight feet wider if necessary, measured from the corner of the Kalverstraat and the Gasthuissteeg and running in

---

12 (...) om, bij provisie, op de breedte, van 150 voeten voor aen den Dam, behalven twee mael 25 oft 30 voeten tot twee straeten, ende op de diepte van 280 voeten, strekkende van den Dam aff tot op de Nieuwezijds voorburghwal toe, tot taxatie vanden heeren Schepenen, aen te neemen de gronden ende huijsen, op die diepte ende breedte gelegen, die tot de grondt van 't voorschr. Stadhuijs noodigh zouden mogen wezen.' All quotes from: Boeken, 'Over de voorgeschiedenis van den bouw van het voormalige Amsterdamsche Stadhuis', cf. note 3. pagenumbers will follow, literature lost in fire.

13   See for this drawing: K. Ottenheym, Philips Vingboons. pp. 115-116.

14   'Opmerkelijk is het, dat de Vroedschap zich blijkbaar niet vereenigen kon met de voorgevelrooilijn, die loodrecht op de diepterichting van het gebouw stond. (...) een strak monumentaal plan met een grootschen symmetrischen opbouw in den geest der klassieke idealen was niet mogelijk'.

15   'Wel droomden de burgemeesters van een grooter stadhuis, natuurlijk in den nieuwen geest der Renaissance, maar zij konden zich nog niet losmaken van de oude situatie en omgeving.'

the direction of the Ellendige Kerkhof. The dimensions of the plot vary on the long sides: the depth was 292 feet on the south side and 328 feet on the north side. The adjoining streets measure 26 feet (figure 6).[16] In this case, the south side was only four feet longer than the Gasthuissteeg. Also, the building line along the Dam ran exactly in the direction of the cemetery when the measurements were laid down in the drawing. Boeken must have seen clear evidence with regard to these points that the building should indeed be facing toward the length the Gasthuissteeg.

The resolution of 10 December 1642 offers the next lead for our reconstruction (figures 4b, 7a). It was decided to give the new city hall a width of 155 feet 'at a right angle'. The length of the plot on the north side was to be 266 feet and on the south side 233 feet. The adjoining streets were to be 30 feet wide, instead of the earlier 26 feet.[17] The figures demonstrate

Figure 5
January 28th, 1640.

Figure 6
March 5th, 1642.

---

16 '(...) dat men de grondt vant selve nieuw te maeke Stadthuijs zal neemen op de breedte van 162 voeten langes den Dam, oft zes, zeven, acht oft tien voeten breeder, indien 't werk zulx vereyscht; rooyende van 't hoekhuys staende in de Kalverstraet op den hoek van de Gasthuys steegh, aff, tot op het ellendighe kerkhoff aen, Streckende van den Dam af tot opde Nieuwezijds voorburghwal toe, laetende ten wederzyde leggen een straet van 26 voeten breedte, lang ofte diep dezelve grondt aen de zuydtzyde 292 ende aen de noordtzyde 328 voeten gelijck de caerte, daer van by den Schets geteekent, uytwijst.'

17 '(...) het Stadthuijs aen te leggen op der grootte van breedte ende langte op de Caerte aenghewezen, naemelijck ter breedte in de winckelhaeck van 155 voeten en ter langte aen de Noordtzyde van 266, ende aen de Zuydtzyde van 233 voeten, ende de voorschr. straet in plaets van XXVI, dertigh voeten wijdt te maecken.'

the same precision as in the previous resolution. The most important remark concerns the right angle. This can be read in several ways. It is clear that there must be a right angle somewhere in the plot, but where? Boeken's interpretation is that the width of the plot should be read at right angles with the length instead of parallel to the Dam square. From this, it follows that the long sides of the plot run parallel to each other at a distance of 155 feet. The right angle does not refer either to the front or the back side of the plot. These remain oblique. This does not seem strange as the long sides have different dimensions.

A rectangular plot cannot be realised in this way. With the positioning of the building along the Gasthuissteeg in mind, the option with the right angle in the middle is the only one possible. If the right angle were at the front side of the plot, the orientation of the principal elevation towards the cemetery would be lost. If it would be at the back side and the plot could no longer be related to its context at all. Boeken concluded that the right angle does not refer to either the front or the back of the plot and sees no further reason to change his view on the position of the new building. This remained the case until the resolution of 1647 in which the council decided to rotate the building and the relationship to the position of the old city hall was entirely lost.

We have seen that Boeken's reconstruction up to 1647 was based on the assumption that the new city hall should run parallel to the Gasthuissteeg, i.e. have the same orientation as the old city hall. He based this assumption on Cornelis Danckerts' survey of 1639. Several features in this drawing suggest a positioning of the building along the Gasthuissteeg. A comparison of the dimensions mentioned in the survey and those in the resolutions seems to confirm this assumption.
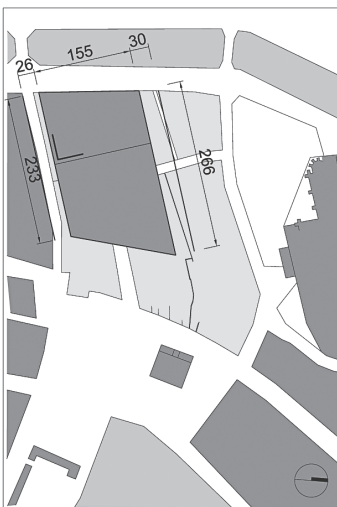

Figure 7a
December 10th, 1642.

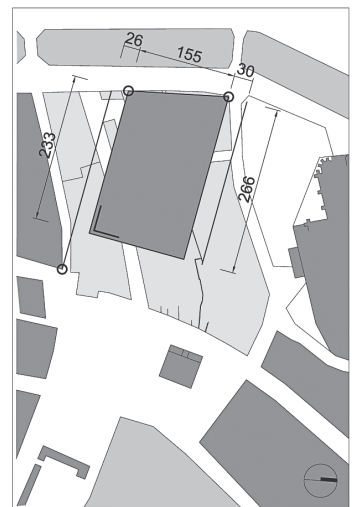**Figure 7b**
Alternative position of plot.

Figure 7c
Alternative position of plot.

AN ALTERNATIVE RECONSTRUCTION

One weakness in Boeken's reconstruction is that the resolutions can only be explained with
the help of a drawing that is not mentioned in the texts. It does however turn out to be very
possible to draw up a reconstruction solely based on the information in the resolutions. Let
us look once more at the resolution of 10 December 1642. We have seen that the remark
about the width 'at right angles' can be read in several ways. Depending on where one puts
this right angle, three principal plot forms are possible (figures 7a, b, c). The first one was
used by Boeken and is the only option if the Gasthuissteeg is the reference for the direction
that the plot is facing in. To fit the other plots into this context, it is however necessary to
let go of this orientation. As mentioned before, this was only suggested by Danckerts' draw-
ing of 1639. The city council resolutions do not mention it at all. The first alternative results
in an incoherent layout of the area (figure 7b). The last drawing, however, attracts our at-
tention because we recognise in it the highly-organised proposal that would turn up a year
later in Cornelis Danckerts' third drawing.
When we now look back at the resolution of 5 March 1642, a similar reconstruction is pos-
sible (figure 8). The two drawings share a number of striking characteristics. First of all,
seen from the Dam, the building would have been framed, as it were, by the buildings on
the south side of the Dam and by the Weigh House. In the second place, the new city hall
would have formed an ensemble around a square, together with the Weigh House and the
'Huis onder Zeil' opposite the city hall. Three of the four sides of this square would have
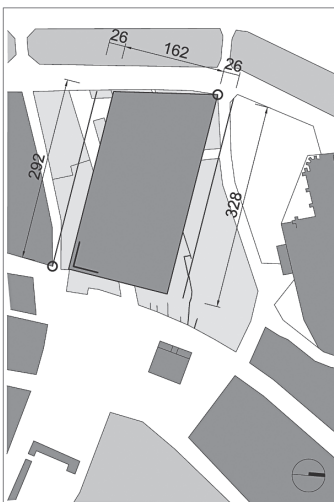been lined with important public buildings. These aspects can also be found in Boeken's

Figure 8
Alternative to March 5th, 1642.

reconstruction. Every building with its front elevation on the Dam would have had these characteristics. Some aspects of the new drawings, however, do not fit in with Boeken's interpretation. For the first time, we see here the possibility of placing a rectangular building on the plot. Moreover, a direct connection between the bridge over the Nieuwezijds Voorburgwal and the Dam is hereby made.

The accuracy of the plot sizes in the two resolutions of 1642 is an important argument in favour of this new reconstruction. In the drawing belonging to the resolution of 5 March (figure 8), we see that the plot can be fitted in almost perfectly between the bridge over the Nieuwezijds Voorburgwal and the corner of the Kalverstraat. The oblique back side of the plot runs exactly parallel to the Voorburgwal. The front side of the plot veers away from the Dam in the direction of the cemetery, exactly as prescribed in the resolution.

Let us look one last time at the resolution of 1640. In this text, only a width along the Dam is mentioned, together with a plot depth. How exactly this length should run in the direction of the Voorburgwal is not indicated. It is very well possible that this resolution also assumed the plot to be rectangular. In a way, this is what we expect when no further indications for a more complex form are given. It is striking that the rotation of a rectangle measuring 280 times 150 feet allows a monumental placement of the plot along the Dam, while at the same time connecting the Dam and the Nieuwe Kerksteeg (figure 9).

No clear indications for a direction of the plot can be found in the resolutions issued between 1642 and 1647. This might mean that the position of the building was not an issue in these years and that it remained the same as in 1642, but it might also mean that other

Figure 9
Alternative to January 28th, 1640.

positions were considered on which our sources give no information. The question remains therefore whether it is possible to also make a reconstruction of the position of the building for the period between 1642 and 1647.

When we take the direction that the plot faced in 1642 as a starting point, it is possible to make a logical connection between this positioning of the building and its position after the rotation of 1647. The resolution of 1645 mentions that the new city hall would measure 160 times 200 feet and that a distance of 58 feet should be observed between the building and the Nieuwzijds Voorburgwal. Taking the same direction as in 1642, this leads to the following drawing (figure 10). On 3 December 1646, the council decided to increase the length of the plot by 30 feet. It is unclear whether this extension applied to the front or the back of the plot. If we adhere to the 58 feet distance to the Voorburgwal, we have the situation in figure 11 This would have been the state of affairs before the decision to rotate the building in the direction of the church. If we take the form that is visible in the 1648 drawing made by Danckerts as a reference point, it must be concluded that the rotation was around the southeast corner of the plot. In this case, the two plots almost coincide (figure 12).

Nothing can be said with certainty about the position of the building in 1640 and between 1642 and 1647, but in combination with Danckerts' drawing of 1643 and the design made by Vingboons in the same year, the analysis above justifies the assumption that the position of the building in these years was the same as in 1642. With this last step, it is possible to connect all the resolutions of the city in a logical way. Not only do the resolutions give ac-

Figure 10
November 20th, 1645.

Figure 11
December 6th, 1646.

Figure 12
April 8th, 1647.

curate information about the sizes of the plot, but indirectly also about it's the direction it faced. The fact that we read so little about the position of the building in the resolutions is not because the city council did not care, but because the direction that the building faced was never an item of discussion. Where this was the case, in 1647 for instance, the changes can be satisfactorily traced back to previous decisions.

CONCLUSION

A number of weaknesses in Boeken's reconstruction have now been resolved; it is possible to place a rectangular building on the plot, the 1643 drawing by Danckerts is no longer out of tune with the resolutions, and the large design by Philips Vingboons can be fitted into the appropriate context without any problems. Moreover, the rotation of the building in the direction of the church in 1647 is no longer seen as the drastic and mysterious event it was before. Within the context of the complete reconstruction, the rotation barely attracts attention, in a similar way to how it was described in the resolutions. In addition, we are no longer dependent on Danckerts' survey of 1639. All the necessary information is available in the texts of the resolutions. Unlike before, the resulting monumentality of the relation between the new building and its surrounding public space is in line with the architectural ambitions for the city hall.

The impression we thus obtain of the Amsterdam city council is that of an institute that from the beginning of the planning process in 1639 on, consciously looked for ways to properly insert a new, monumental and rectangular building into its specific context. The information in the resolutions indicates a discussion in the city council guided by building designs that regularly necessitated changes to the dimensions of the plot. The direction and placement of the building were not part of this discussion. This does not mean, however, that the intentions of the city council in this respect were absolute and inflexible. Both the slightly different direction which is visible in Dankerts' drawing of 1643 as well as the rotation of the building in 1647 made use of an available leeway that left fundamental spatial principles untouched.

These spatial principles can be summarised in modern terms as the monumental placement of a building between the adjoining built walls of a square, the creation of a spatial ensemble of public buildings around a square, a preference for rectangular and axial spatial relationships and improvements in the street network.

The reconstruction opens the way for a revaluation of the Amsterdam city council as a patron with an interest in the spatial qualities of the inner city and the way in which these could be improved. In this process, it was able to reconcile aesthetic and functional goals. Besides the question whether the council was able to achieve similar goals at other locations in the inner city, it also poses the question of how other cities in Holland dealt with these issues. Amsterdam was not the only city with a rapidly growing population, a flower-

ing economy and a need for representative public buildings. Comparative research might offer the opportunity to corroborate the above-mentioned spatial terms or even to expand them.[18]

---

18   This article is part of a phd research carried out at TU Delft, entitled 'Urbanistic aspects of inner city transformations in Holland: 16th to 18th century.'
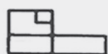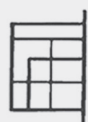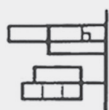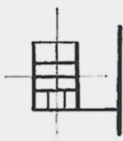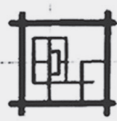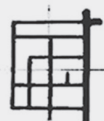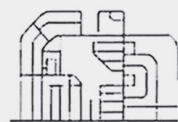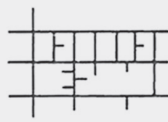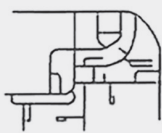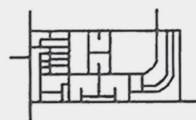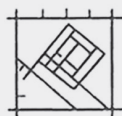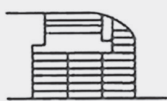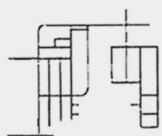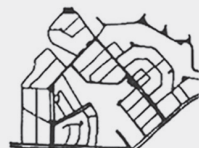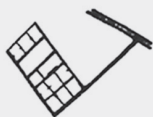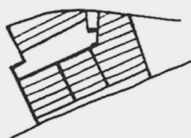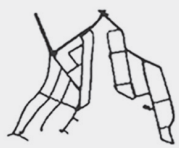
OLGU ÇALIŞKAN, TU DELFT

PATTERN FORMATION IN PLANNED URBAN PERIPHERIES: A TYPOMORPHOLOGICAL APPROACH FOR DESIGN

INTRODUCTION

By analysing the peripheral urban formation of Ankara, the research attempts to clarify the reason why a typo-morphological design-based planning approach is needed for new development zones in Turkey. The definition of the problem with regard to the formation of planned extensions in urban peripheries is intended to be tested by a model of typo-morphological analysis in research. To elaborate on the model, a planned urban extension zone in Ankara was selected as the case study area. As the second largest city of Turkey, Ankara is one of the newly designed capitals in the 20th century. With a population of 4 million, the city is still one of the most rapidly developing and transforming cities in Turkey.

TYPE AND TYPOLOGY: THE ORIGINAL DEFINITION AND THE USES

In order to transcend the existing limits of the typo-morphological approach to create a design-based planning approach, it is necessary to rethink the original understanding of type and typology.

To Colquhoun (1969), typology serves as a backing of the previous examples of solutions to new problems, referred to as typological solutions. It is basically due to the impossibility of the construction of a system of representation a priori (Colquhoun, 1969: 267, 276). In providing evidence for such a claim, it is first advisable to define the different kinds of typology. Bandini (1984) characterises three different attitudes in typology:

– typology as an instrument used to read the city , e.g. the Venetian and French schools of
   typo-morphology
– typology as a way of discussing stylistic and cultural methods of 'high' architecture, e.g.
   G.C. Argan (1965)
– typology as a conceptual tool for architectural production, e.g. the works of Kriers, Rossi
   and Bandini (1984: 74-75)

In terms of our discussion, what is lacking here is basically the place of typology in urban design. On the other hand, what is important for us is the operational use of type in design, represented in the third approach.

The term type originates from the Greek word 'typos', referring to a general acceptance that is applicable to varieties (De Quincy, 1977 -1778-: 148). Its first definition was given as a rational classification in the late 18th century. In the definition coined by Diderot in L'Encyclopédie, type is a symbol, a sign or a figure yet to be included in an idealised scholastic point of view. The secularisation of type was mainly realised by Quatremére de Quincy (1778) in this period. (Lavin, 1992: 90-91) Since he defines type with reference to human invention, he also gives the concept an operational essence. The modern definition of type coined by de Quincy is based on its conceptual difference from the notion of 'model'. For de Quincy, type does not give an obligatory condition to be replicated like model, but is a rule for the model.

> 'The word "type" is less the presentation of the image of a thing to copy or imitate than
> the idea of en element. ... The model as understood in the practical execution of the art
> is an object that should be repeated as it is. All is precise in the model; all is more or
> less vague in the" type".' (De Quincy, 1977 -1778-: 148).

Type in architecture is frequently mentioned by the French architect J. N. L. Durand who recognises its constitutional character and attempts to answer the question of how to develop new forms of new types (Vidler, 1977, 107). Using abstract typological diagrams, he typifies the basic architectural elements as irreducible forms to be combined on the basis of a programmatic inner structure as another typological constriction.(Ibid: 108). In this sense, the idea of type is first utilised in the original definition of De Quincy in a generative way.[1]

In the functionalist perspective of modernism, the idea of type evolved to become the notion of 'standard'. As a solution to the standard problems, 'prototypes' are produced in the process of mass-production, free from the context of any definition (Leupen et. al., 1993: 137). The concept of a prototype is 'a primary type of anything which another is a copy, imitation or derivative of it' (Oxford Dictionary, 2007), a part of an industrial paradigm in standardised design and mass production (Kelbaugh, 1997: 99). The reformulation of type as the notion of prototype is one of the main factors behind the standard homogenisation of modern urban developments, which in most cases is still a problematic condition.

In terms of the idea of type, the oppositional positioning is mainly found in the rationalist standpoint of C. Aymonino and A. Rossi in Italy in the 1970s. Aymonino and Rossi emphasised the relationship between urban morphology and building typology instead of an unrelated existence; the concept of type was hereby first positioned within an urban context. (Bandini, 1984: 77). For Rossi, type represents an historical constant in urban architecture. In The Architecture of the City, he defines type as 'the very idea of architecture, that which is closest to its essence. In spite of changes, it has always imposed itself on the 'feelings and reason' as the principle of architecture and of the city' (Rossi, 1982: 41). Apart from the historic-culturalist point of view, he also defines type in a way that is very much parallel to that of De Quincy: 'a logical principle that is prior to form and that constitutes it.' (ibid: 40).

The moment that type enters the domain of architectural typology, De Quincy's basic concern is Argan's definition of type as an instrument of analogous classification by means of a series of abstractions within reductive processes. In this way, for the first time in architecture, type gains its original abstract notion, as in the definition of De Quincy, which reflects the principle of the internal structure of architectural artefacts. Due to the inherent fuzziness of the concept, Argan brings the concept into a domain of creative activity of design. He basically presents typological thinking as producing form by morphological configurations (Bandini, 1984: 75). Using the expression of 'basic form' by abstract typological diagrams, Argan posits the potential of further variations in type for new structural modifications. After

1   On the other hand the use of those architectural templates in practice was completely opposite from the original definition of type. The types produced by Durand were copied exactly as they are as the models of the design (Leupen et. al., 1993: 137).

the process of type formation by reduction, the moment of typology, the second phase then emerges as form specification by type - moment of form - invention (Leupen, 1997: 138, 140).

Argan's conception of typology contains three basic levels of abstraction: the concept, the schematic and reduced type and the concrete design (Leupen, 1997: 140). These run reasonably parallel to Unger's concept regarding the different levels of comprehending a physical phenomenon: the actual reality - the object, the perceptual reality - the analogy, and the conceptual reality - the idea (Ungers, 1976: 8, 15). The type itself is represented at the perceptual level by an analogy. This is due to the fact that the notion of type is produced by the process of typology based on analogical reasoning. This is actually a very basic process of classificatory analogy for building types in biology, the basic science utilising typology. The fundamental method of the analogical reasoning of classification starts from a complete description of all features of a species within a repeated process and ends by marking differences not repeating any similarities. Resemblances and distinctions can thus be determined according to certain categories (Steadman, 1979: 24). The basic method depicted here has an essential feature shared by all categorisation processes in different areas, which is the similarity as an organising principle of analogical reasoning of categorisation (Rips, 1989). In categorisation, the level of abstraction is a key concept in the definition of hierarchal components of categories (Medin et. al., 1999: 104). Therefore, to ensure consistency in categorisation, all items should be defined at the same level of abstraction.

A compositional definition of type and typology was presented by Moneo (1978). To Moneo, 'type is neither a spatial diagram nor the average of a serial list. It is fundamentally the possibility of grouping objects by certain inherent structural similarities'. In this way, typology becomes an 'act of thinking in groups' (Moneo, 1978: 23).

The most systemic use of categorisation and taxonomy is in the field of linguistics. Morphological typology in linguistics is employed as a classification tool grouping languages according to their common morphological structures defined by the grammar of morphemes. Nevertheless, typology is more than taxonomy in linguistics. Here, the main function of typology is to reveal the 'typical' nature of the language in itself and with reference to others. The classification of languages by typology takes place on the basis of shared formal characteristics of language, and involves cross-linguistic comparisons (Whaley, 1996: 3-17). In this sense, typological urban research has much to learn from linguistics in terms of concepts and techniques, highly regarded in urban theory.

Referring to architectural typology, Moudon basically categorises typological process of urban space in three steps: at the first level the scale at which the analysis is conducted is chosen: the building, the parcels, the city block or the group of blocks. Secondly, the main criteria of typological frame are selected: volume, function, density, architectural

style etc. In the final step, one type is related to the others to generate a typology (Moudon, 1994: 305).

The relevance of type in contemporary design must yet be fully established. For Moneo (1978), the interest and value of the concept of type is completely denied by the domination of the idea of viewing typology as a 'frozen mechanism' as the sole repetition of history in a nostalgic world view (Moneo, 1978: 24, 43-44). However, according to Tice, the typological method still provides an alternative design strategy and a conceptual framework to be used to generate form (Tice, 1993).

From the basic definitions of the concept of type above, another possibility to use typology in design emerges. Since type has a generalisable character by the definition of categorisation, it can be utilised as a control tool for rapidly developing urban contexts. Since each fragment has certain typical morphological features, by means of typification, the common characters of those areas can be determined easily and the shared typological tactics can be designed according to those typical characterisations. In this way, there is no need to produce site-specific design solutions for each and every part of the whole urban fabric.

Since one of the serious problems in rapidly growing new developments is the lack of unity in architectural and morphological language, typological urban design is addressed by Kelbaugh (1997) as a solution to reduce visual chaos by ensuring coherent creativity in architectural design in each urban area. In this way, a degree of contiguity in architecture is sustained by the link between architecture and urbanism (Kelbaugh, 1997: 103).

A CASE IN ANKARA, TURKEY

Homogeneity in urban space formation is very characteristic of Turkey, both in the urban core and in the periphery. The major factor behind this condition is the phenomenon of standardisation. Especially for the land (re)developed in the core, there is a real tendency for Turkish planners to avoid inequality between small-scale property owners. This is why in order to ensure equality within fragmented property structures, uniform standard forms are created following land readjustment processes (BaÐ, 2003: 70). While the above-mentioned is common in the urban core, the main dynamic behind the homogenous standardisation of urban form in the periphery is both economic and professional.

Although the unified land to be developed in the periphery is large enough in relative terms to play with alternative settlement forms and patterns, this is not common in Turkey. Since the dominant mode of residential production in the periphery is mass housing, the housing sector mainly depends on standard building types with the same construction techniques.

This means a decrease in the possibility of developing a high variety of building patterns. In addition, contractors are hesitant to increase the cost of their projects by developing alternative and experimental types of building and layouts, in order to minimise project costs. On the other hand, in addition to socio-economic externalities, planning practice in Turkey is one of the main factors behind such standardisation in urban space. The lack of professional interest in searching for alternative development forms and patterns produces a low system capacity of pattern production in new developments. Since it is possible to create diversified and complex forms and patterns with standard elements, the partial source of the problem is the revision of the domain of design thinking.

Standardisation in space production in the planned development zones in Turkey also standardises the problematic physical characteristics of the built environment. By the concentrated analysis of typical segments of the peri-urban fabric in Ankara, it can be seen that the most common spatial problems that have arisen through the planning system were generally caused by the issue of coherence with reference to connectivity, complexity and variable unity. The coherence concept here is taken as the condition of morphological unity, in which all constitutional elements interact with each other and are coupled to form modules at a higher level. Here, the complexity of the coherent formation highly depends on the diversity of the elements within the morphological unit (Salingaros, 2000; Salingaros, 2005: 115-137).

Figure 1
Location, settlement pattern
and road network in the case
study area, the planned urban
periphery of Ankara.
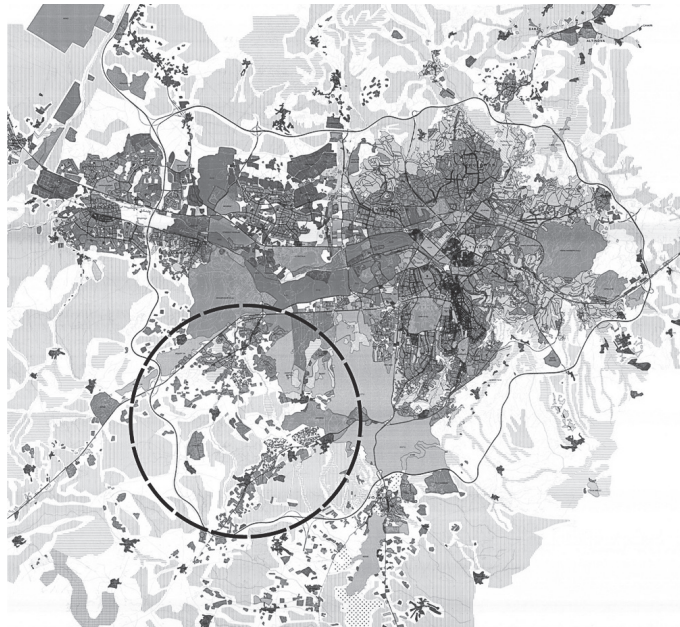
The case area selected for the in-depth study is the south-eastern development corridor of the city. After the planned extension of the city's corridor through the north-west in the 1970s, from the mid 1990s on, the main development trend was directed to this open area. Within the area, there are large amounts of developable land without serious, natural, rural and topographical thresholds. The total development area is approximately 15,000 hectares in size. While the population of the site was 40,000 in 2000, today it is reported to be 130,000. In the year 2010, an estimated 200,000 people will be living in the area. In urbanistic terms, the control of such a rapid developmental trend has encountered certain problems. Without having an approved master plan, the development process has been directed by a series of fragmentary implementation plans. All these plans were mainly prepared at the initiative of private housing investors, namely mass housing firms and housing cooperatives.

Because of the limited spending power of the Turkish middle class, the area does not only include housing sites composed of single family housing units. It is not therefore a classical suburban extension as are its western counterparts. The residential layouts are high-rise mid-density and low-rise low-density and a hybrid type of urban ensembles. The sampling sites for the analysis on an intermediate scale were therefore chosen on the basis of t his sort of differentiation. Although they have different compositional features, the selected sampling areas basically show the common morphological characteristics of the fragments.
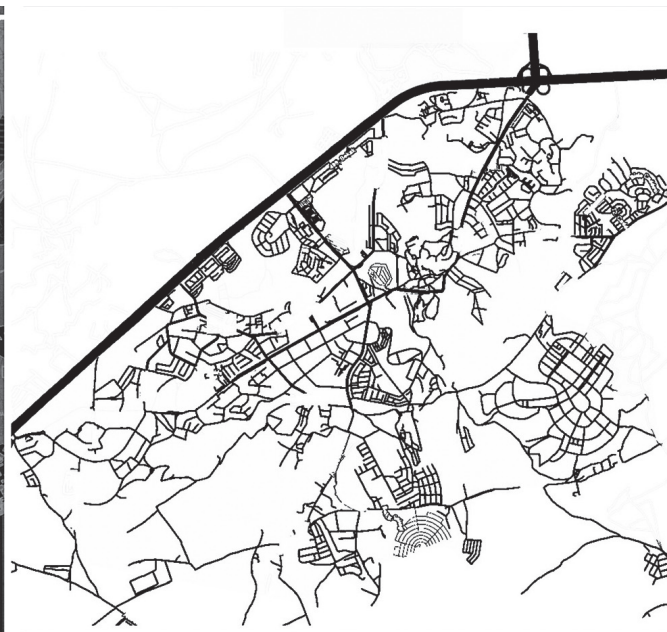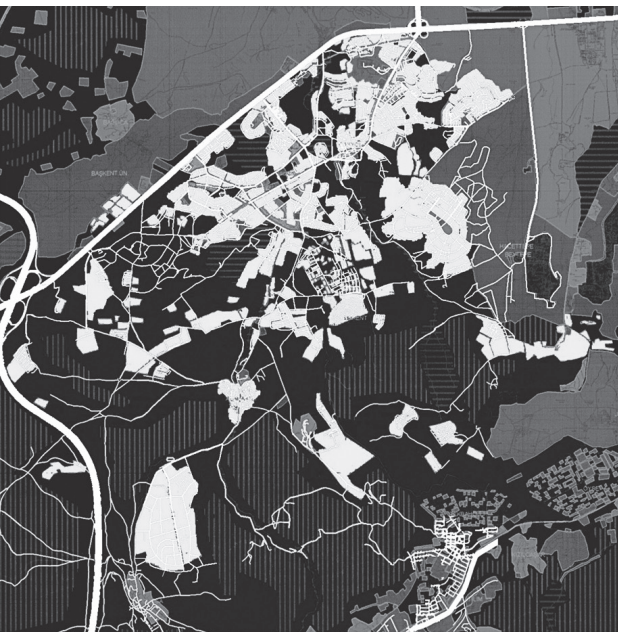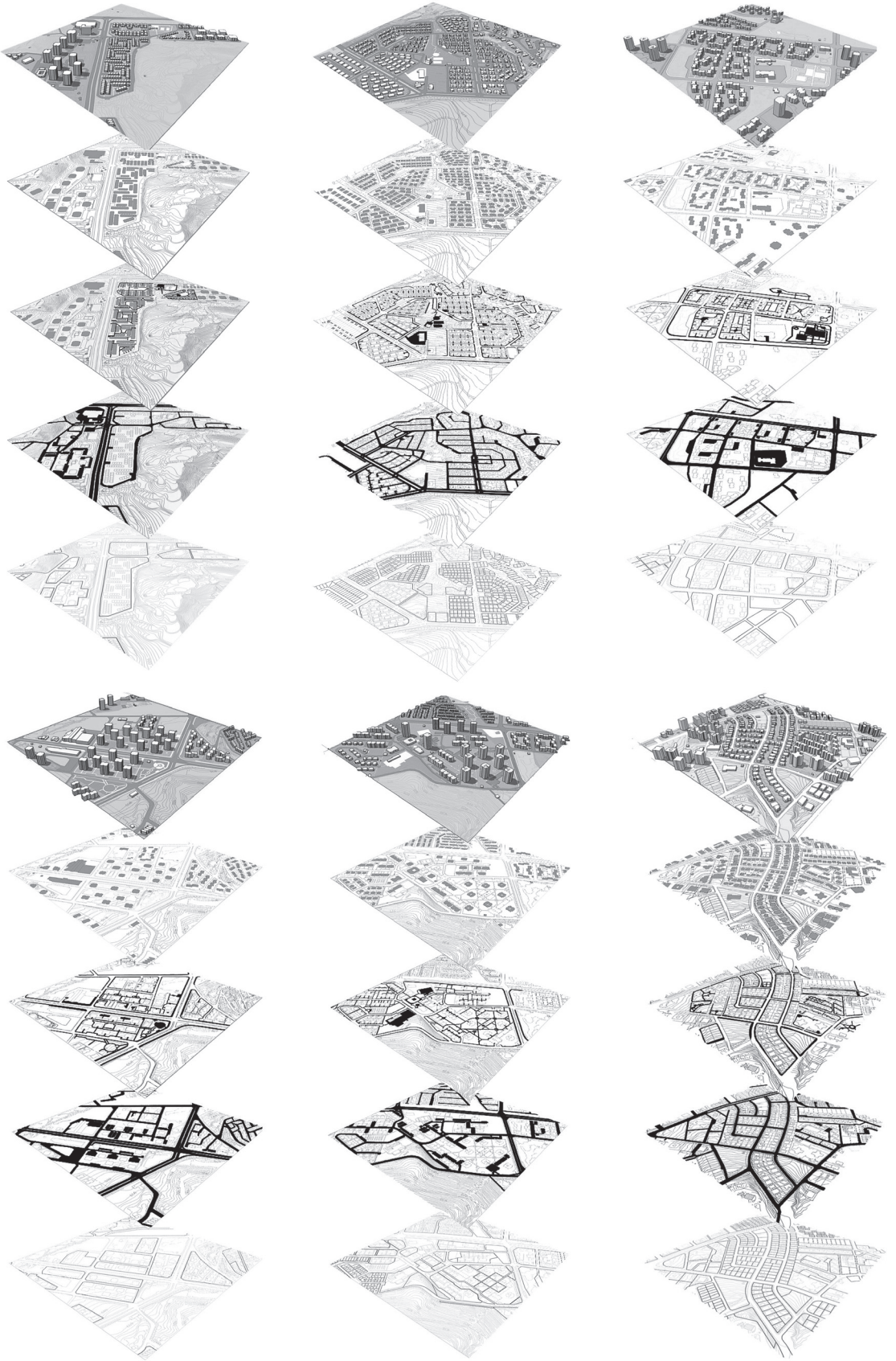
The sites were analysed at five morphological levels: plot layout, street pattern, pedestrian network, figure-ground relationship and massing (see figure 2.).

By means of the parallel reading of the layers, we see the 'standardised' problematic conditions of coherence and unity at an intermediate scale, the level of an urban ensemble. At the bottom, even though the plot layout should act as the coherence instrument for the inner definition of urban blocks, it generally has a coarse grain composition. The small parcellation does not alter the dual adjacency of strip formation in an incoherent way as a repetition of the same similar units - the source of weak coherence (Salingaros, 2000: 292). Cellular fragmentation within urban ensembles is supported by the road system. Since all blocks are defined by a close loops of roads, the street system operates as a boundary preventing a possible coupling effect between the building complexes. The pedestrian network above does not therefore compose a system that is free from the road surface; instead, it dominantly overlaps with the borders of building blocks as sidewalks. The basic element for the inner formation of ensembles is not therefore the pedestrian spatial structure but the road surface. On this fragmented basis, the ground plan pattern of the buildings has little influence on the formation of a coherent unity for the whole. In a figure-ground relationship, building setting is mainly organised in three ways: dense arrangements of small units, loose configurations of large units and hybrids. In all cases, the main problem with coherence conditions is that they do not provide the kind of interior spaces as the interface of integration between building units. In the layer of massing, the top morphological stratum, the other conditions of weak coherence can be observed, namely the lack of diversity in building units within one ensemble and the loose connections between large and smaller units (ibid). While half of the sampling sites are composed of the same reparative type of building units, the lack of variety in types does not allow sufficient complexity for coherent wholeness. On the other hand, although a hybrid type of ensembles consists of a variety of building types in themselves, they cannot organise the units in an interconnected way but only as a coarse segmentation. In this sense, a new type of zoning on building types to ensure morphological coherence provides an alternative approach to such a formation: typological zoning (Kropf, 1995).

One of the reasons for the lack of variety in the conditions of urban patterns in the periphery is the design method itself. As stated as a general problem in the Turkish planning system, morphological sectors in the development area are mainly determined by road systems. As a kind of closed shells, the structure and border definition of roads is the major binding factor from the beginning in the search for alternative forms of development sites.

Figure 2
Morphological layering of sampling sites from below: plot layout, street pattern, pedestrain paths, figure-ground relationship and massing.

Even though phasing is very basic to any planning process, it is not realised in practice as part of the planning policy in Turkey. The main shortcoming in this regard is that especially in peripheral areas, huge amounts of land are transformed by upper scale plans and in implementation, stage numbers of distinct sites are developed separately. Especially in the phase of site planning, there is sometimes no outer reference to the site morphologically within an urban context.

Although the internal logic of the area is based on a fragmentary spatial structure and a developmental pattern formed by piecemeal growth, it does not have to be regarded as a handicap in terms of coherence on an intermediate scale. Basically, such a growth pattern defines 'partial totalities' (Pinzon, 2005: 3), to be further defined within themselves. In this sense, the quote made by C. Alexander (1987) on piecemeal growth legitimises the basis of the search for a typo-morphological approach to the design of partial totalities in the peripheries:

> '..to be piecemeal in the bad sense, incoherent, scattered, fragmented. It tends to produce aggregations and assemblies... instead of coherent wholes. To solve the problem, it may be necessary to use still more powerful methods of generating large wholes, and linking them to the piecemeal process.' **Alexander, 1987: 50**

As the staring point of the definition of the problem was the standardisation of space production at the beginning, with reference to the issue of the proposed new planning approach to typo-morphological design, we can draw a positive conclusion. Since the notion of typo-morphology refers as much to the idea of type as to morphology, the standardised types in planned urban development can also be based on a typo-morphological approach. By grasping the generative potentiality of the concept of type, typological design can be a flexible tool to generate spatial diversity and achieve well-performing urban fabrics. For this reason, it is necessary to understand the analytical logic of typo-morphology to be able to transform it into a design domain.

A MODEL PROPOSAL FOR IMPROVING PATTERN-MAKING CAPACITY: DESIGN BY TYPE

In order to reveal the need for improving a spatial planning system by providing the design tools of the typo-morphological approach, it is wiser to define the typification process of an urban pattern produced by a specific system. In this context, in the first step of the process,

the sampling production, what is important is that the sampling patterns to be typified must cover the whole diversity at the compositional level in the case study area. [2]

In the typification phase, the second step of the process represents the core of the study. With reference to the common conceptualisation of typo-morphological analyses, the typification of each pattern is conducted at three morphological levels: street pattern, plot layout and building setting. These are the basic strata characterising any urban formation. Each sampling pattern basically represents specific characteristics with a different combination of

---

2   In Ankara case, number of the sampling areas is specified as thirty six -see Appendix: Figure: 3. Distribution of the
     sampling areas. The areas to be examined are in the level of urban ensemble which are composed of a number of
     urban blocks within an average of 400-450 meters radius-circle.

layers. The process of typification is carried out for each morphological element in the following three categories: composition, configuration and constitution. The original conceptualisation of typification based on these three categories was carried out by Marshall (2005) by examining different street patterns. The research thus aims to improve this approach by means of distinct layers of urban morphology within a wider context of urban patterns.

In the case of street patterns, Marshall basically defines the analytical levels as follows:
Composition: Geometrical definition of the pattern in terms of area, length, width and angle / orientation and by means of real numbers, e.g. 5 metres long or a 100 angle. The types that it deals with are classified as rectangular, triangular or circular.
Configuration: Topological feature of the pattern with reference to the measures of continuity and connectivity by integers and ratios such as the number of links and nodes. It examines a pattern to establish whether it is a grid, a radial mesh or tree-like in the case of a street network.
Constitution: Revealing formational aspects of the pattern, the constitution deals with the hierarchy and hierarchical relations of the elements. The type and rank of the elements and their accessibility are the main motives for the constitutional structure of a pattern. Ordinal numbers such as I, II, II are employed to structuralise the constitutional characteristics of patterns (Marshall, 2005: 167).
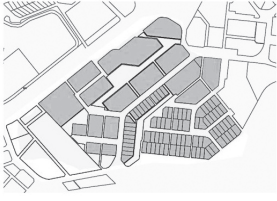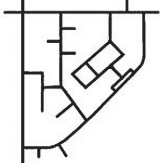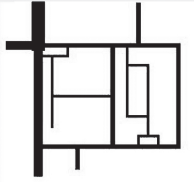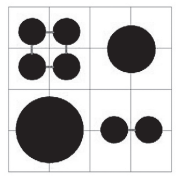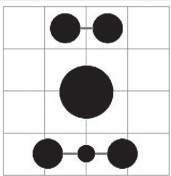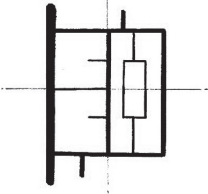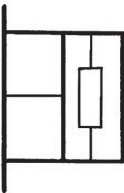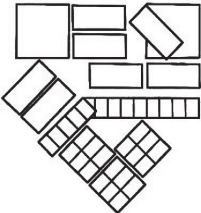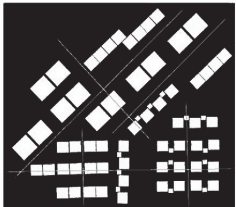
Based on this conceptual framework, the determination of types by a series of processes aimed at abstraction is referred to as typification. Through abstraction, what we do is simply find the internal structure of a given combination and the fixed disposition of the form in Ungers' definition of model-making (Ungers, 1976: 11). The challenge of the typification process through abstraction is to comprehend the relational structure of chaotic, sometimes irrational patterns by the simplification of the spatial logic and by taking them from a factual to a conceptual level.

In this sense, these three categories of Marshall can be partially regarded as the phases of the abstraction process. From a compositional to a constitutional level, the language of representation becomes a great deal more pure and abstract. While in composition, real properties of the pattern are given in length, width and size, the factual reality of the physical object is represented in the pattern. By configuring the pattern, knowledge on the topology of the pattern is represented by pure geometrical elements such as lines, dots or squares. It is basically the dimensionless representation of the composition, without a dimensional hierarchy among the elements (Steadman, 1983: 7-19). For this reason, configuration can be taken as the first step toward abstraction within typology. On the other hand, constitution is not a part of the series of abstractions in the typological process. Since it gives information about the constitutional elements in a hierarchal relationship, it is used as the informative base to the next step of abstraction. However, configuration does not provide enough ab-

Table 1

Typo-morphological analysis template for a sampling area.

	MORPHOLOGICAL LAYERS		
	STREET PATTERN	PLOT LAYOUT	BUILDING SETTING
sampling (n)			
COMPOSITION	• Size, shape and orientation	• Shape, depth, dimension and orientation	• Grain, density, enclosure and space-mass relationship
CONFIGURATION	• Continuity, connectivity and frequency	• Continuity, symmetry, regularity and permeability	• Continuity, contiguity and permeability
CONSTITUTION	• Differentiation, ordered ranking and allowable connections	• Hierarchical ranking, surface relation, fragmentation and unity	• Variability, connection, referentiality
Parti-I Structural organization and relationship: symmetry, balance, closeness vs. openness			
Parti-II Structural organization and relationship: concentricity, linearity, radiality, clustering, grid			

TYPOLOGICAL LAYERS

PARTI

straction to comprehend the spatial logic of the pattern. To do this, another level of abstraction is required, referred to as parti: the basic general scheme of an architectural design,[3] the dominant underlying idea (Güney, 2007; Clark, et. al., 2005). The use of parti in architectural design is as a description of the general floor plan of a building to describe massing, entrance, spatial hierarchy, site relationship, core location, interior circulation, public/private zoning or solidity/transparency. (Frederick, 2007: 16). Each aspect given by parti represents the core idea, the concept of design which gives essence to designed building. According to Frederick, 'the design process is the struggle to create a uniquely appropriate parti for a project' (ibid: 18). Here, parti is a transcendental concept. It is derived from the non-architectural process and must be cultivated before architectural form (ibid). This is why in typo-morphology, parti is the most elaborated form of abstraction to become 'type of morpheme'.

The dominant idea given by the parti in our analytical framework is the rule of spatial organisation to be followed in order to manipulate it in further steps. To achieve the ultimate level of abstraction with parti, it is necessary to represent the basic structure by eliminating recursive elements and elements that do not characterise the overall structure at a configurational level. At both levels of parti, knowledge on constitutional ranking is considered (see Table 1).

The definition of the type of the pattern is carried out by characterising the spatial relationship and the organisation as well as the correlation between them (see table 3). The conceptual framework of this definition was drawn up by Ching (1979). While the term relationship refers to the spaces to be related to one another and organised into coherent patterns of form and space; organisation mainly denotes the accommodation of spaces and their exterior forms (Ching; 194- 243).

In applying the typological framework of Marshall (2005), both the representation technique and the terminology for each section of analysis has to be redefined in terms of complex characteristics of urban morphology. For a plot layout analysis for example, the main compositional elements of its block are its size and depth, like the length and width of a street. Configurationally, continuity and symmetry are the main factors which define not only the plot layout itself but also the in-between spaces defined by the plot configuration, especially the street formation. In a constitutional analysis of plot layout, whether a block is formed by a number of small-size plots or not is one of the prominent questions. Such formational information in itself contains concrete clues about the grain of the property pattern and that of the building setting. This is the reason why not only the relations within different typological layers of each morphological layer, but also the cross-relations among three different morphological layers have to be taken into account to obtain a complete definition of any urban pattern.

3   Merriam Webster, 2002, cited in Güney, 2007.

In the context of a building pattern, composition items are the grain and the density of the buildings and their relationship with the open space structure. On this basis, the configurational aspects are produced by first-order abstraction, namely contiguity, contiguity and permeability. These are the factors that give the space its urban character. At a constitutional level, it is possible to obtain basic information on the formation of the building setting; the attachment or detachment of different types of buildings within the same sampling framework. Then again, all these relational rules are reflected in the last schematic of parti as the type, the representation of the spatial logic of the pattern. For each sampling area, there are three correlation modes among the different sections of the analysis template: horizontal (1), vertical (2) and cross-relational (3). By horizontal relations, interrelations between different morphological sections can be examined within the same typological section, for example, the effect of the composition of the street pattern on the composition of the plot layout. By vertical relations, relational conditions among typological layers are detected, for example, the way in which the constitution of street patterns effects the overall composition of the network. Finally, the cross-relations between different sort of sections answer the question of the semantic relationships among different morphological and typological layers. It is quite difficult to comprehend such multi-layered relationships without an analytical framework in design evaluation. In this way, the handicap of the typological studies which disregards the complex relation between the basic elements of the form, the morphemes, is intended to be transcended.

In the light of the prevailing statement on the need for a new design coding terminology/ language for the development of planned urban peripheries, the proposed typo-morphological approach to urban design has to have a dynamic framework reflecting the complex nature of urban form. In this context, the model proposal is constructed on two basic assumptions:

– a relational framework on both the morphological and typological layers of the patterns - interaction between different structural levels of morphemes.
– performance-based pattern analysis and design.

By the characterisation of types, the element(s) that is/are the main organiser(s) of the pattern is/are determined and the problematic features based on its/their spatial performance is/are clarified. In this framework, the design-oriented performance-based analysis is conducted on each of the three morphological layers of each pattern type. At this point, the cognitive structure of the analytical and syntactical (design) process for architectural morphology, defined by Tzonis (1990), provides the conceptual framework for the model proposal for 'design by type`.
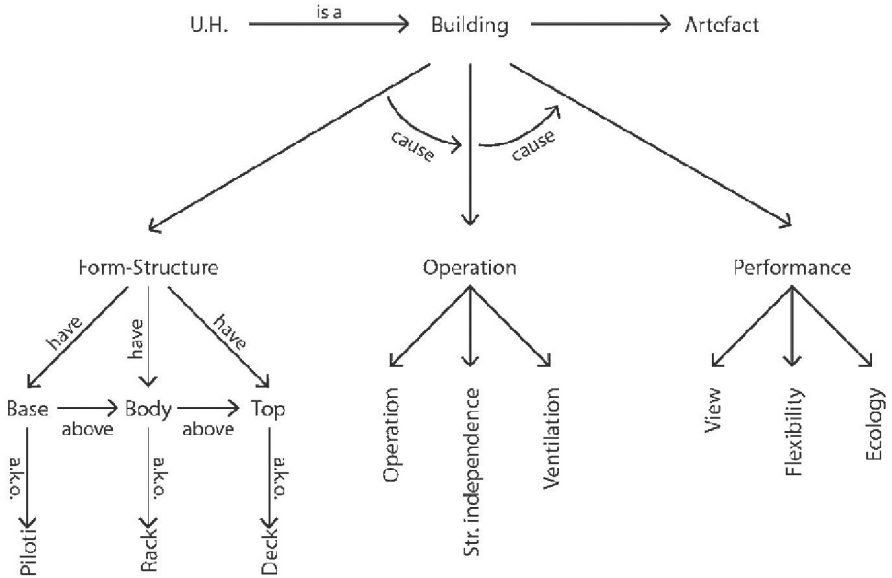
With his framework of a precedent analysis, Tzonis introduces three fundamental concepts to describe and evaluate any architectural artefact: form, operation and performance. While form is defined as the spatial composition together with configurational properties, from a morphological viewpoint, performance denotes the realisation of its function according to formal attributes. Performance is thus equal to the actual working qualities of the operation. These concepts constitute a semantic network containing meaningful links and nodes to be formulated as the representation of design knowledge. The relation between three items is casual by definition. Here, any examined form-structure gives rise to a specific set consisting of an operation and a performance (Tzonis, 1990: 7-8). According to Tzonis, since 'presupposed syntactic principles about form specifying how design objects can be decomposed and recomposed into parts', such as a framework based on a casual and topological design domain, knowledge representation acts as the key point of a creative design process. (ibid: 13). This is basically the reason why the research concerned takes the precedent analysis approach of Tzonis into consideration in developing a typo-morphological design approach to urban pattern formation.

Re-evaluation of the concepts of operation and performance based on an architectural precedent analysis were carried out by Guney (2007) with a view to developing a cognitive structure of design process. In this context, Guney called for a new design point of view linking performance-related demands to operation, and operation-form with an interrelated, non-linear, recursive and iterative process (Guney, 2007: 17). In contrast to Tzonis' proposal
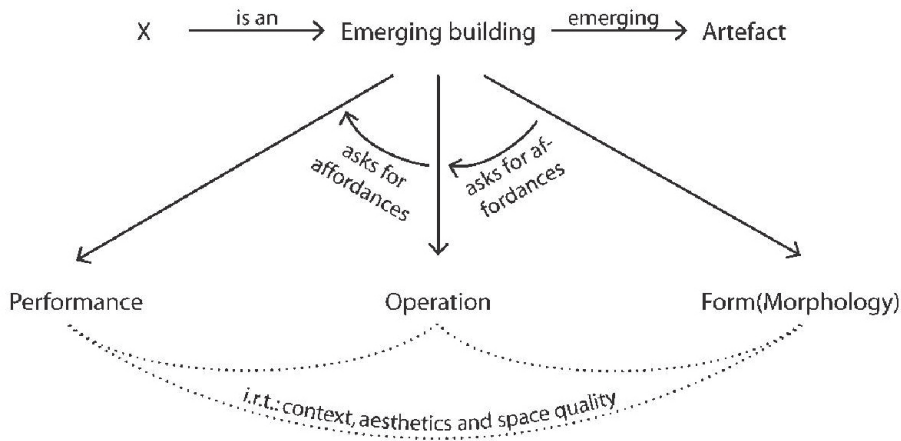
based on the causality between the aspects, the new conceptualisation is based on the concept of affordance[4] mainly in an opposite, design-oriented direction of the process. The analytical structure of the model to be integrated into the design process is formulated upon the idea of morphology, which provides a certain set of operations as a working function as well as performance requisites in relation to the context and the programme of requirements.

Even though the conceptual framework of F-O-P and P-O-F has been developed within the domain of architectural design,[5] the generic nature of this kind of knowledge representation takes the technique from within the limits of architectural artefacts and locates it within the context of any conceptual object (Stolk, 2007). For this reason, it is quite possible to apply the idea in the field of urban design. Since the cognitive structure enables the designer to conceive any morphological system with reference to its interacted components, the application of the framework in the morphological analysis and the design of urban patterns can

4   Affordance in the meaning of 'an action that an individual can potentially perform in their environment'. http://en.wikipedia.org, entry: October 2007. For instance; 'the empty space within an open doorway affords movement across that threshold. A couch affords the possibility of sitting down on it.' (Wikipedia, October 2006 cited in Güney, 2007).

5   The conceptual framework of F-O-P and P-O-F is currently being reproduced in urban context by two PhD researches at TU Delft the Department of Urbanism: A cognitive approach to precedent analysis & design by analogy. As case study: Adapazarı Architectural Master Plan by A. Güney and Spatial quality in the policy of the province of North-Holland: some recommendations for a better implementation with regard to design review and design process by E. Stolk

INSTANCE_n

transformation

TYPE_n

Street Pattern

Composition   Configuration   Constitution

F   O   P   F   O   P   F   O   P

Plot Layout

Composition   Configuration   Constitution

F   O   P   F   O   P   F   O   P

Building Setting

Composition   Configuration   Constitution

F   O   P   F   O   P   F   O   P

P   O   F   P   O   F   P   O   F   P   O   F   P   O   F   P   O   F   P   O   F   P   O   F   P   O   F

TYPE_n'

New development

INSTANCE_n'   INSTANCE_n"   INSTANCE_n'''
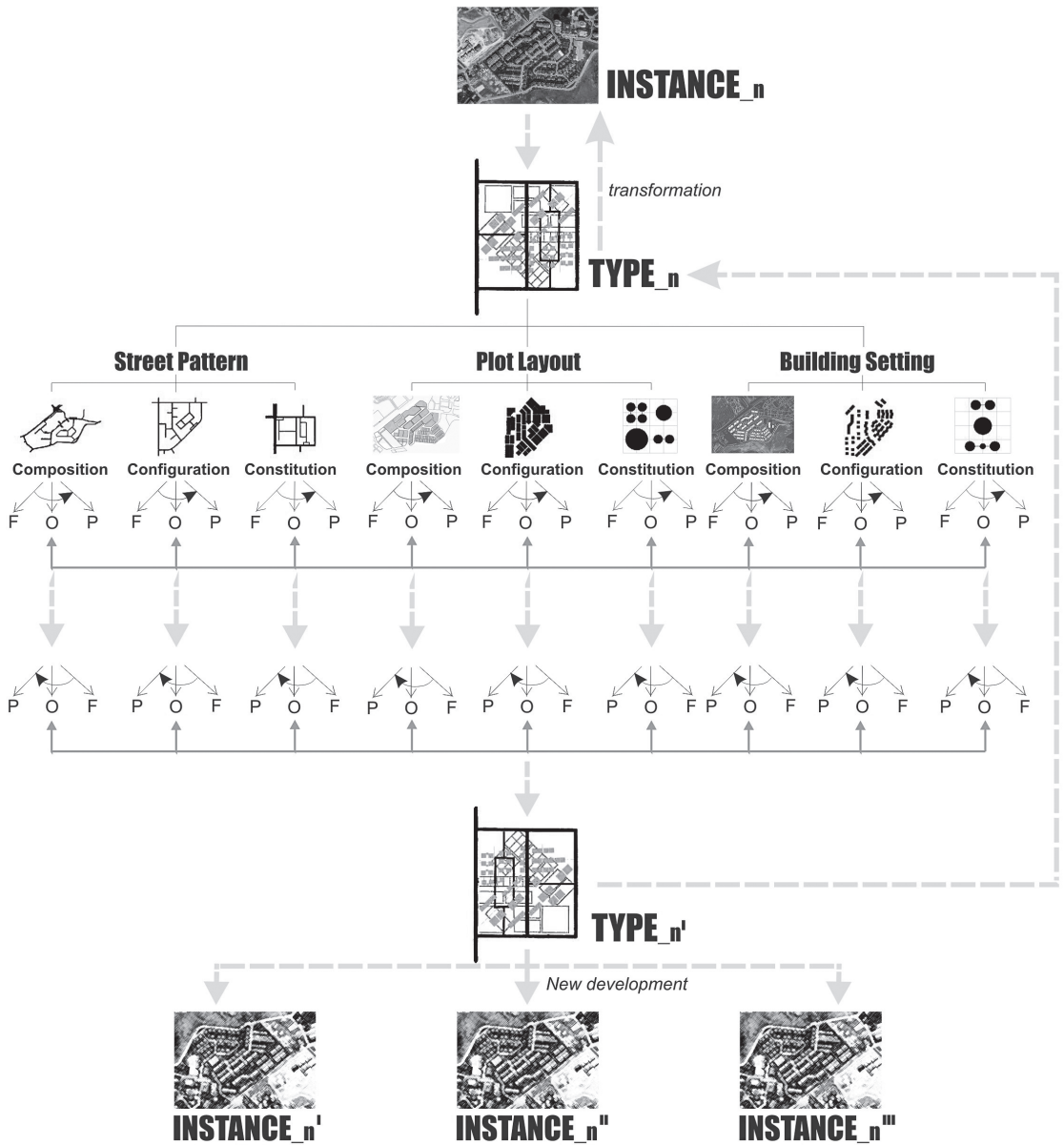
Table 2
A possible cognitive structure for urban pattern design based on a typo-morphological approach: design by type.

be figured out in a more systematic way. The multi-layered complex structure of any urban pattern can thus be more comprehensible and controlled.

By applying the theory of architectural precedent analysis in an urban context, a typo-morphological approach to urban form can be operationalised in a design domain. From this point of view, the proposal of the pattern of formation processes called design by type has two fundamental stages: the performance assessment of each morphological layer (FOP) and the transformation of these layers according to certain performance criteria (POF), see Table 2. What is important here is that all precedent analyses within the system are related

to each other accordingly. Not only the design process itself, but also the analytical structure of conventional typo-morphological approaches is consequently enriched by means of this semantic network relating to all elements of morphology in different layers of formation. The process scheme should not be perceived as linear, as an iterative application going back to the first stage and elaborating on the design scheme again by means of diagrammatic representations, or typological diagrams in Argan's terms. The process is supposed to be run until the optimal condition is achieved in a specific context definition. Nevertheless, F-O-P and P-O-F processes are not realised for each morphological layer in each and every case, but are applied to the relevant typo-morphological layers according to the initial problem definition drawn up the designer. Therefore, the major role of the designer is to determine the key problematic aspect of the pattern type and designate the most relevant layers to apply FOP and POF processes to in order to improve the performance of a certain type of pattern. In this way, instead of creating completely different types of patterns which may not fit into the existing context, a high level of performance improvements are aimed for by a limited number of incremental modifications on existing types.

To understand the process of the design of pattern by type, see table 3, we will examine one of the sections of the 'design by type' processes, focusing on the layout at a compositional level. Within this framework, using the FOP analysis, a set of affordance conditions are determined at a performance and an operational level. Each step gives rise to the following step. A coarse segmentation of distinct size of plot types in form causes the low level performance of the layout by acting in separate entities within one body or ensemble. Operating distinctively within the ensemble limits, the segregation of the plot types results in incoherence and low inter-connectivity during its performance. In accordance with the problem definition given in the first step (FOP), the modification of the pattern by design is initiated in the second phase of the typological design (POF). The second step represents the intervention phase, starting from the desired performance criteria of the newly designed pattern type by modification. This is the reason why order to achieve a new mode of performance of the pattern, which can be formulated as well-balanced coherence in diversity, a close-knit relation and a more intricate surface relation in plot formation is required at an operational level. This provides the right composition to provide these performance criteria and operations at the level of form. To test the designed pattern (form), it should be asked whether it provides the desired set of an operation and a performance.[6] The factor that complicates the simple design process is that each step has specific connotations at different morphological levels of the pattern. In order to create a unified, well-performing pattern after the modification of a specific typo-morphological element within a street, plot or build-

6   In this stage of the research requires the comprehensive definition of design criteria based on the operation and performance conditions of urban pattern. This point also represents one of the concentration areas of the research in near future.

F-O-P

Type_n —is a→ block layout in compsitional level —is an→ artifact

Affords   Affords

Form

* Composition of small (25 m) and large (50 m) plots in depth.
* Compartmentalised plot layout: concentration of small units in a specific part of the site.
* Coarse-grain layout

Operation

* Designating a clear segregation in the subdivision of land (zoning)
* Sub-clustering (in)density patterns within seperate areas of the fabric of urban ensemble

Performance

* Incoherency in plot and settlement configuration
* Loose inter-connection in building setting.

P-O-F

Type_n' —is a→ emerging block layout in compsitional level —is an→ emerging artifact

Ask for affordances   Ask for affordances

Performance

* Coherency in the fabric.
* A balanced wholeness within a positive diversity in land subdivision.

Operation

* Enabling different types of plot layouts locating together.
* Differentiating and increasing interaction (coupling) possibility of different elements -mass and space-

Form

* Fine-grain composition of plot-layout:
    * Diversity in size
    * Diversity in position
Instead of enclaved entities -> penetrating surfaces of small-sized plots and building.

Affecting & Affected External Layers

Settlement pattern configuration

Settlement pattern constitution

Block layout configuration

Settlement pattern composition

ing setting, the possible triggering effects of the modification have to be properly defined at the levels of other relevant layers. Unless we do it,to a certain degree, the consistency of the morphological layers of existing types can be disturbed by design. In our case, any change in operation and form has an indirect influence on all morphological layers at different typological levels.

CONCLUSION

By means of the integration of the cognitive structure of F-O-P and P-O-F, a common handicap in the design of urban form could be transcended. Since most of the design schematics in urban design are only constructed on the basis of an incomplete consideration of the complex relation between form and operation or form and performance or in some cases only form, the threefold conceptualisation of the pattern can potentially improve the design method in urban pattern formation. The critical factor here is that such an outlook must be supported by the proper conceptualisation of urban pattern by means of stratification. Reducing urban form into a simple juxtaposition of street, block and building layout and disregarding their dynamic cross-relations is to risk missing the complex nature of settlement systems. In this way, the reproduction of urban form by design would inevitably be based on oversimplification. Nevertheless, what we need is not to simplify the form of patterns, but to simplify their complex formation, turning it into an applicable performance-based design method.

In this framework, the main presumptions of the model definition[7] can be summarised as follows:

– Since a typo-morphological design process is aimed to be ended with a number of alternatives of types, it can act as a generative tool to improve the design capacity of any weak spatial planning system.
– The abstraction level provided by type can lead to a flexible and dynamic design template for the negotiation of different actors in planning processes: the planning authority, the design control part, the designers, the design process part, the developers, the implementation part and the users.
– Because of the type-oriented nature of the model, the problem definition of real cases, precedents, are not unique cases in themselves, but are generalisable for other similar types of formations. By typo-tactics, the design solutions can thus become general design principles to be reproduced for other similar cases.
– Regarding fragmentation, the typo-morphological design can be employed as a coherent tactic for fragmented urban ensembles and building complexes to ensure a holistic form and structure with a high level of interaction between morphemes.

---

7   This section of the research is an early set-up of the model to be elaborated with set of performance and design criteria on a real case.

LITERATURE

- Alexander C, Ishikawa S, Silverstein M (1977) A Pattern Language: Towns, Buildings, Construction, Oxford University Press: the U.S.
- Alexander C (1987) A New Theory of Urban Design, Oxford University Press: N.Y. & Oxford.
- Alexander C (2004)The Phenomenon of Life: The Nature of Order - Book 1 An Essay of the Art of Building and the Nature of the Universe, Center for Environmental Structure.
- BaÐ Y (2003) Designing Urban Space with the Tools Of The Development Legislation, MsC Thesis, Department of City and Regional Planning, METU.
- Colquhoun A (1969) Typology and Design Method Perspecta, Vol. 12, pp. 71-74.
- Cortes-Pinzon C (2005) Urban Form in the Metapolis, short paper, 5th International Space Syntax Symposium, http://www.spacesyntax.tudelft.nl/
- De Quincy Q (1977-1978) Type with an introduction by A. Vidler, Oppositions, Spring 8, pp. 148-150.
- Frederick M (2007) 101 Things I Learned in Architecture School, The MIT Press: Cambridge, London.
- Günay B (2006) Ðehircilik-Planlama-Tasarlama-Mimarlık-Peyzaj, Planlama (38), pp. 19-22.
- Guney A (2007) Archıtectural Precedent Analysıs: A Cognitive Approach to Morphological Analysis of Buildings in Relation to Design Process, forthcoming.
- Hall,A C (1997) Dealing With Incremental Change: An Application of Urban Morphology to Design Control, Journal of Urban Design, vol. 2, no. 3, pp. 221-239.
- Hedman R & Jaszewski A (1985) Fundamentals of Urban Design, American Planning Association: Washington D. C.
- Kelbaugh D (1997) Common place; toward neighborhood and regional design, University of Washington Press: Seattle.
- Kropf K S (1995) Typological Zoning, in (ed. A. Petruccioli) Typological Process and Design Theory, Aga Khan Program for Islamic Architecture: Cambridge, Massachusetts, pp. 127-140.
- Whaley L J (1996) Introduction to Typology: The Unity and Diversity of Language, Sage Publications, Inc: London.
- Larkham P J (1998) Urban Morphology and Typology in the United Kingdom. In Typological Process and Design Theory. Attilio Petruccioli (ed). Cambridge, Massachusetts: Aga Khan Program for Islamic Architecture.
- Lavin S (1992) Quatremère De Quincy And The Invention Of A Modern Language Of Architecture, Cambridge, Mass. : MIT Press.
- Leupen B, Grafe C, Körnig N, Lampe M, Zeeuw P de (1997) Design and Analysis, OIO: Rotterdam
- Bandini M(1984) Typology as a form of convention AA Files 6, pp. 73-81.
- Marshall S (2005) Streets and Patterns, Spon Press: London.
- Medin D L & Aguilar C (1999) Categorization, in (ed. R. A. Wilson and F. C. Keil) The MIT Encyclopedia of the Cognitive Sciences, The MIT Press: Cambridge, Massachusetts.
- Meyer H (2005) Plan Analysis, in (ed. T. M. De Jong and D. J. M. Van Der Voortdt) Ways to Study and Research: Urban, Architectural and Technical Design, DUP Science, pp. 125-135.
- Moneo R (1978) On typology, Oppositions, Oppositions, Summe1978, pp. 23-45.
- Moudon A V (1986) Built for Change: Neighborhood Architecture in San Francisco, The MIT Press: Cambridge.
- Moudon A V (1992) The Evolution of Twentieth Century Residential Forms: An American Case Study, in Urban Landscapes: International Perspectives (ed. J. W. R. Whitehand and P. J. Larkham), Routledge: NY, pp. 170-206.
- Moudon A V (1994) Getting to Know the Built Landscape: Typo-morphology, in Ordering Space: Types in Architecture and Design (ed. K. A. Frank and L. H. Scheekloth), Van Nostrand Reinhold: NY, pp. 289-311.
- Moudon A V (1998) The Changing Morphology of Suburban Neighborhoods. In Typological Process and Design Theory. Attilio Petruccioli (ed). Cambridge, Massachusetts: Aga Khan Program for Islamic Architecture.
- Rips L J (1989) Similarity, Typicality and Categorization, in (ed. S. Vosniadou, A. Ortony) Similarity and Analogical Reasoning, Cambridge University Press: Cambridge.
- Cortes-Pinzon C (2005) Urban Form in the Metapolis, short paper, 5th International Space Syntax Symposium, http://www.spacesyntax.tudelft.nl/
- Rossi A (1984) The Architecture of the City, The MIT Press: Cambridge, Massacchusets.
- Salingaros N A (2000) Complexity and Urban Coherence, Journal of Urban Design, Volume 5, Number 3, pp. 291-316.
- Salingaros N A (2005) Principles of Urban Structure, Techne Press.

- Southworth M & Owens P M (1993) The Evolving Metropolis: Studies of Community, Neighborhood, and Street Form at the Urban Edge, Journal of American Planning Association, 59, pp. 271-87.
- Steadman J P (1979) The Evolution of Designs: Biological Analogy in Architecture and the Applied Arts, Cambridge University Press: London.
- Steadman J P (1983) Architectural Morphology: An Introduction to the Geometry of Building Plans, Pion Limited: London.
- Stolk EH (2007) Spatial quality in the policy of the province of North-Holland: some recommendations for a better implementation with regard to design review and design process', PHD proceedings Urbanism 2006-2007 F.D. van der Hoeven (Delft) IOS press.
- Tice J (1993) Theme and Variations: A Typological Approach to Housing Design, Teaching, and Research, Journal of Architectural Education, Vol. 46, No. 3 , pp. 162-175.
- Tzonis A (1990) Huts, ships and bottleracks: Design by analogy for architects and/or machines in (ed. N. Cross, K. Dorst, N. Roosenburg) Research in Design Thinking, Delft University of Technology: Delft, the Netherlands.
- Ungers O M (1976) Morphologie: City Metaphors, Verlag der Buchhandlung Walter Köning: Köln.
- Van den Burg L (2004) Dutch Morphological Analysis in a European Context, in (ed. F. Claessens, L. Van Duin) The European City: Architectural Interventions and Transformations, Delft University Press: Delft the Netherlands.
- Vidler A (1977) The Idea of Type: The Transformation of the Academic Ideal, 1750-1830, Oppositions, Spring 8, pp. 95-115.
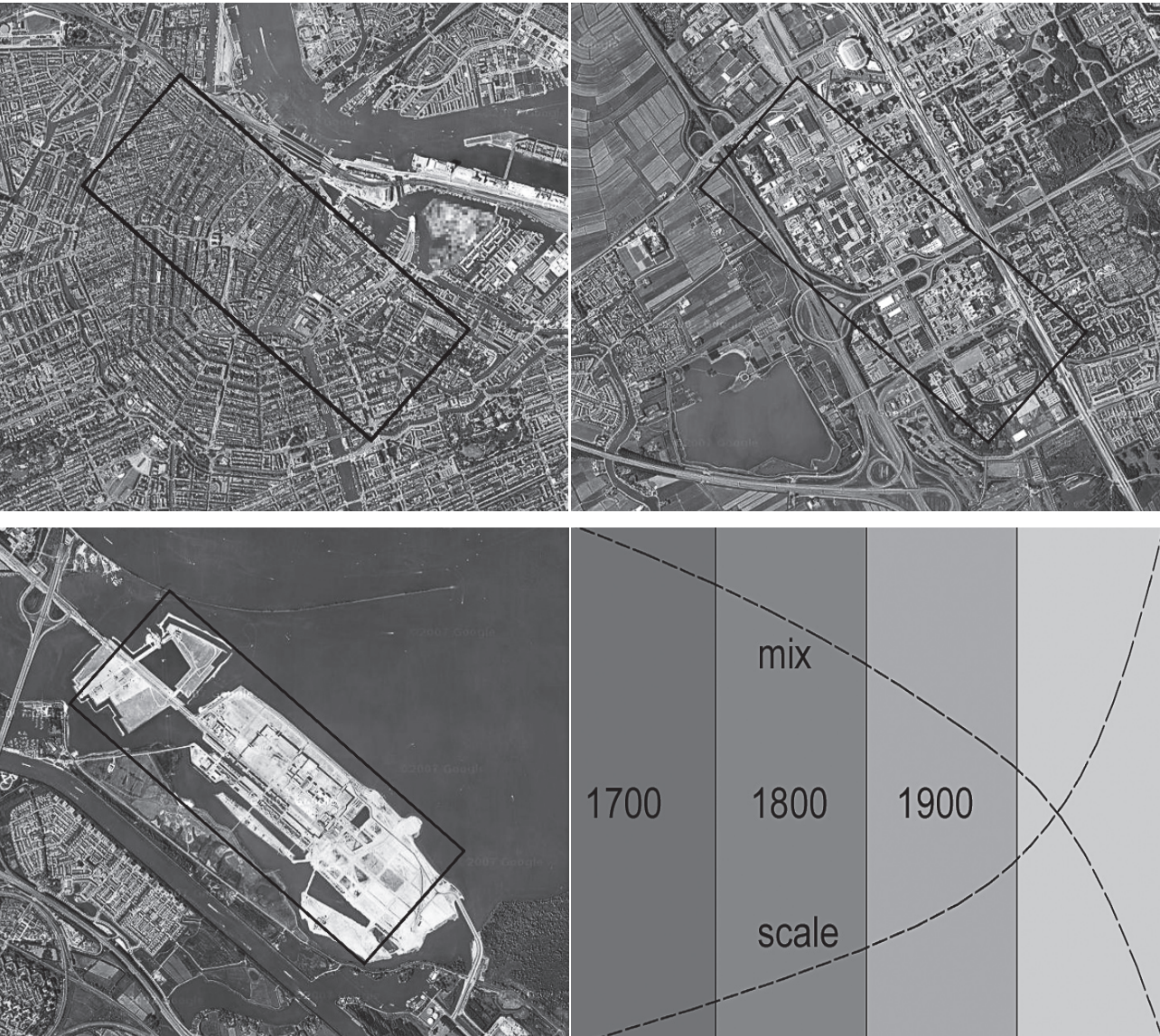
Figure 1
Functional segregation and scale enlargement in urban history.
Upper left: Amsterdam Center, 15.000 jobs15.000 beds
Upper right: Amsterdam Amstel 3, 30.000 jobs
Lower left: Amsterdam IJburg, 30.000 beds
Lower right: Functional segregation and scale enlargement

JOOST W. VAN DEN HOEK, TU DELFT

TOWARDS A MIXED-USE INDEX (MXI) AS A TOOL FOR URBAN PLANNING AND ANALYSIS

INTRODUCTION

Societal change is often claimed to be one the driving forces behind urban development and the definition of urban projects. In the 20th century, the economy changed from industrial production and distribution to knowledge-based service and creation. The rapid development in modern times of the economy and technology have expanded the operating scale from local to global. During this 'process of modernisation', the physical presence of our urban configurations and networks has become both a product of and a witness to these historical forces of change. This is exemplified in urban development by aspects such as scale-enlargement and functional specialisation. Take for instance a European city like Amsterdam and analyse a square mile of historic texture. It will be seen that within this historic texture, there as many jobs as there are beds. Take the same square mile of 20th century texture and you will most likely end up counting only jobs or only beds, as is shown in figure 1.

On observing the deindustrialisation of Western cities, the process of spatial and functional segregation in the Netherlands can be seen to be proceeding at an ever-increasing speed. (Louw 2005). This is often explained along the lines of rudimentary 'modernist' planning principals which are in fact products of the industrial revolution. At the same time, new types of urban projects are emerging in the peripheries of 20th century cities where the mono-functional territories of industrial areas, fit for either housing, production or recreation, are transformed into territories of a new kind. Examples of such projects in Amsterdam are the IJoever, the Eastern Harbour islands, the Metropolitan South-axis, Amstel Two and so on. All these urban transformations have in common the fact that they aim to create attractive urban environments reminiscent of the classical European city with equal amounts of housing, residential amenities, employment and public space within a walkable territory with a view to creating liveliness, urbanity and dynamic diversity. The working facilities in these new urban projects target the knowledge-based economic sector and examples of the new emphasis on the 'creative class'. The housing programme is no longer aimed at emancipating the blue-collar worker, but seeks to provide an attractive, communicative environment for the knowledge workers and creative professionals of the 21st century. As Richard Florida puts it in his new book 'Who is your city', professionals of the creative class are drawn to the mixed districts he calls 'design digs' and 'urban mosaics' (Florida 2008).

Among the quintessential dynamics of European cities is the simultaneous transformation of many centrally located low-density mono-functional industrial territories into high-density mixed-use urban districts. It could be said that regardless of the number of ways in which these interventions can be designed or can appear, this type of urban project is the product of a societal change from an industrial to a knowledge-based economy. The main actors in this transformation are no longer the omnipotent, post-war city governments, but to an increasing degree, public-private partnerships and even privately owned companies engaged in city development (Meyer 2005). The role played by residents or 'consumers' today is more emancipated than in the past. The modernist perspective on residents as victims in need of care in the form of increased hygiene and daylight has dramatically evolved into a perspective on residents as spoilt, highly-individualised consumers in pursuit of an 'all inclusive' metropolitan lifestyle. Seen from a global perspective, the keywords of the new urban European dynamics could be formulated as quality, wealth, individuality and sustainability. These are quite different characteristics than those of the post-war period or for instance the contemporary Asian urban dynamics which are to some extent defined by quantity rather than quality and improvement rather than emancipation.

As pointed out by the French urban theorist Francois Ascher (Ascher 2005), our current processes of urbanisation are determined by deindustrialisation and a reflexive modernisation. These are accompanied by the reappreciation of the mixing of uses in order to create

the right conditions for urbanity, economy and consumerism and a striving for compact-
ness contributing to sustainability. The problem however is that the theoretical framework
on mixed use from a perspective on planning and development is ambiguous, fragmented
(Louw 2004), and fails to provide answers to questions as to how to define mixed use, what
is a good mix, the nature of the scales of relevance and especially how mixed-use develop-
ment can be made instrumental by planning policies. On regarding current planning policies
and talking to planning officials, urban designers and other developmental actors, it could
be concluded that the reappreciation and implementation of mixed use is largely an empiri-
cal and practical matter and by no means positioned within the academic or theoretical
debate. One of the standard works on the history of the European City, ' The rational City'
(Castex 1990), notes solely that starting at the late 19th century, the mix of uses on the
level of the block has gradually disappeared, failing to analyse what this has meant for the
functioning of the urban realm. A framework integrating the history, the definition and the
instrumentality of mixed-use development would contribute greatly to a better understand-
ing and a more appropriate modification of our urban environments.

The starting point for this paper is the spatial and programmatic organisation of our projects
and cities as can be seen in the historically evolved environments of cities such as Amster-
dam. The central focus will be the physical disposition and proportioning of different func-
tions within built substance in building blocks and districts. The definition of mixed use and
urban development by the distribution of different functions within the built mass creates a
platform for an interdisciplinary discussion and comparison, ultimately resulting in a better
understanding of urbanity, opening a gateway to new operational approaches. This paper
advocates the conception of an index for mixed-use development that is comparable to oth-
er generic indexes for urban development such as FSI, OSR and GSI. These are commonly
implemented around the globe to define the outlines of urban planning dynamics. In order
to arrive at this indexation, this paper takes a few necessary steps with a view to conceiv-
ing a mixed-use framework: an historical overview (3) an analysis of actors and factors (4),
a description of the physical and spatial aspects (5.6) the definition of an index (7) and the
testing of this index in the city of Amsterdam (8.9).

PROBLEM DEFINITION

Taking physical reality and the way it is used and appears as a point of departure for re-
search and analysis is a commonly used technique (Boomkens 2005). In the same way as
studying the city to arrive at conclusions about societal transformations, this paper takes
a mixed-use perspective on urban development with a view to drawing conclusions on the
urban transformations of our time. In order to render these transformations visible and mea-
surable, an index is created to analyse the distribution of housing and work within our build-

ings, districts, cities and projects, assessed by the physical space they occupy. This paper is structured on the basis of the following questions:

– How has the mix of uses evolved from a historical perspective?
– What actors are involved in the creation of mixed-use environments?
– How can mixed use be defined in terms of function and space?
– How can the mix of uses be reduced to elementary terms?
– Can the mixed-use character of districts be expressed by an generic index?
– Is there a relationship between the mixed-use index, the positioning, the working and the
   developmental history of urban districts?
– How can a mixed-use index be used in urban planning and analysis?

MIXED USE FROM THE PERSPECTIVE OF THE 20TH CENTURY

In the classical city of Amsterdam, the diversity of the urban mix in terms of programming and social-economic categories was a natural given (Wagenaar 1991). Descriptions of mercantile Amsterdam in the 18th century present a picture of a city where production and consumption, rich and poor , administration and commerce were neatly interwoven. The transformation of a mercantile economy into an industrial economy led to scale enlarge- ment and specialization also in terms of urban space and functions. A rudimentary system of zoning and the separation of functions has existed in Dutch cities since medieval times, especially with regard to patient care for contagious diseases, the storage of explosives and activities requiring large amounts of space or the proximity of open water for instance in connection with windmills and shipyards. An early example of the concentration of produc- tion dates back to the 15th century where a whole district within the city walls of Leiden was appointed for the production of textiles (Taverne 1978). The phenomena of mixed-use urban tissue was self evident and did not in fact become a theme until the introduction of modern- ist city planning.

In most reviews on mixed-use planning, the separation of functions is proclaimed as a prod- uct of the ideology of Le Corbusier and the CIAM charter of Athens (Van der Woud 1983). The Charter of Athens does indeed argue strongly for the separation of functions of liv- ing, working and recreation into appropriate specialised districts. However, as it has been disputed by planning historians, by arguing for separation, in retrospect, the modernist movement embraced a development that had already proved itself to be irreversible and had its origins in the late 18th century (Sieverts 1998). The distinctive characteristic of the modernist movement was that it made the implacable separation of functions an aesthetical goal with a view to creating urban projects that at least appeared to be clean, efficient and well-organised, in contrast to the dirty and messy cities of the late 19th century. The first

person to criticise on a global scale the results of the separation of urban functions gone awry, destroying civilised city life, was the much acclaimed Jane Jacobs (Jacobs 1961). Looking back at 'the life and death of great American cities', we can conclude that the argument for mixing primary and secondary uses was her focal message. It was in the 1950's that the concept of mixed use, which before modernity had been self evident, was officially introduced and became a relevant issue.

The introduction of the mix of uses in modernist city planning can be pinpointed as a critical moment. The second critical moment in the life of mixed use was after the oil crisis in the 1970s, when the concept of the 'compact city' entered the stage (DRO 1984). The preconception of the compact city had its origin in the notion that a concentration of people and activities could contribute to lowering energy consumption by reducing the amount of commuter traffic, thus enhancing densities and bringing workplaces and the city into relative proximity. One of the fundaments underlying this relatively naive idea was that before the notion of the 'network city' was introduced, it was assumed that most people lived in neighbourhoods close to their workplaces. The striving for a mix of uses generally resulted in a better provision of amenities required in housing areas on the basis of a social perspective, such as shopping centres and community centres. At the same time, in the 70s, many corporate offices and urban amenities withdrew from the city centres. A substantial mix of work and housing in new developments was out of the question. In Amsterdam for instance, the rising demand for office buildings as the production platform for the service economy was met by the construction of mono-functional office parks (DRO 1980) in a manner analogous to the positioning of factory complexes next to newly built ring roads, without reflecting on how mixing these offices with residential areas could contribute to the urban quality or the urban lifestyle.

The mixed-use ideology reappeared in yet a third form in the late 90s. Creating vibrant new urban concentrations in the global competition for the information economy was inspired by the belief that to stand a chance on the global stage as an urban area, a concentrated mix of as many urban activities as conceivable was required. This belief was expressed in projects such as the Docklands in London or Potzdammerplatz in Berlin. In response to the master-plan for the Amsterdam South Axis (DRO 1998), the concept of a mixed-use environments on both a district and a city block level re-emerged as an issue in the Netherlands. The notion of attractive urban environments with an intense mix of different attractions in close proximity to each other had been set out by Richard Florida in his book 'The rise of the creative class' (Florida 2002). The writer argues that positioning in an attractive urban conglomeration where economy, leisure, entertainment and living are interactively organised has become one of the key elements for economic success in the information age. In the information age, the key capital is comprised of intellect and talent and only companies located in top class urban environments can attract the best minds and people to work for them. A mediocre highway office park without amenities will simply not do anymore,

as professionals of the information age wish to bike to their offices, go to lunch in designer restaurants and end the day at a gallery, a museum or a concert.

It can ultimately also be argued that urban diversity is always a product of a process of cyclical transformation, since almost no quarter or district displays rich diversity immediately after being built. Considered from this perspective, mixed-use urbanity can be seen as the urban patina after numerous steps of transformation and redevelopment, resulting in richness and diversity. One could debate whether the creation of mixed-use high-density urban districts in compliance with the requirements of the information age and the information economy is unique to our era or rather a historical phenomena that is bound to take place in the long run. It could be that a return to a more mixed classical urban tissue in the 21st century is a correction of the modernity of the 20th century. Nowadays, classical urban environments and inner cities are more popular than ever (NRC 2008). The mixed-use character of city districts will be the subject of analysis in paragraph 8 and 9 following a more investigative approach to the theoretical framework of mixed-use development.

MIXED-USE ACCORDING TO PROFESSIONAL ACTORS

The traditional problem in urbanism is that urban development is a product of multi-actor processes and the refined interaction between the reflexes of politics, administration, law, economy, culture and technology (Boelens 2006). Within this broad spectrum, the theme of mixed use can be approached along the lines of many actors and factors, all imposing constraints of a conflicting nature. Something that often occurs in the debate on mixed-use planning is that by focusing on an individual actor or factor, the complete picture is lost. In figure 2, the realisation of mixed-use environments is represented as a cyclical process where many aspects of mixed-use are identified and classified in the realms in which they belong, namely factors, actors, programmes, designs and effects. The interaction between these realms gives rise to the context within which the mixed-use environment originates.

The author's professional experience as well as conversations with a number of different actors involved in mixed-use development in the Amsterdam region in the fields of public policy, project development and urban design have been translated into both arguments in favour of mixed-use development and obstacles to achieving it. One of the main sources is urban planner Pi de Bruijn, who acted as the supervisor of large scale Amsterdam planning projects for many years. According to him, in terms of the final result, it is design that is instrumental, but the willingness and ability of non-design actors is decisive in achieving attractive mixed-use projects. The pros and cons can be divided into multiple categories referring to different time and space perspectives. In figure 3, the most frequently heard arguments put forward by professionals actors relating to mixed use are organised and classified around common denominators.
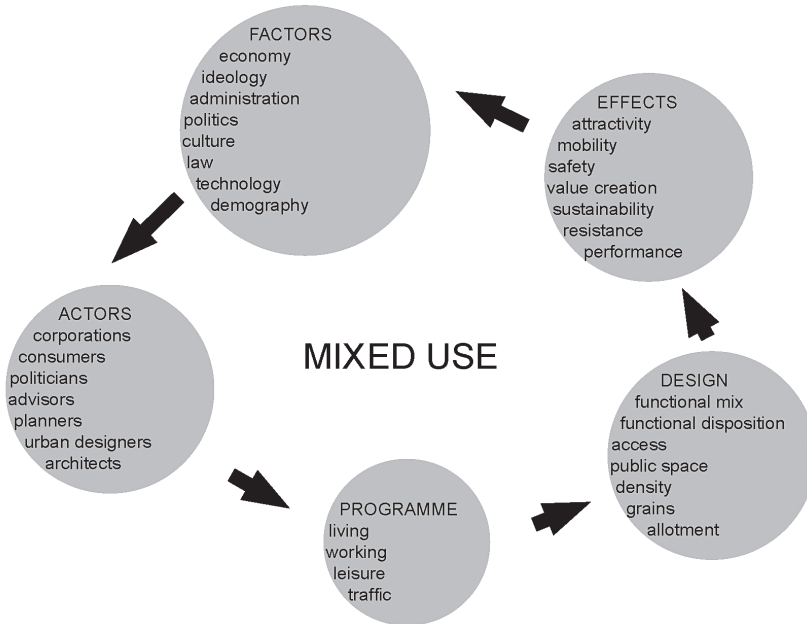
Figure 2
Actors, factors,
programmes,
designs and
effects in mixed-
use urban
developments.

Arguments in favour	Obstacles against
1. Functionally diverse environments create liveliness and conveniently accommodate the spectrum of daily human activities.	1. Due to economic performance, different approaches for working areas and housing development are required, resulting in a geographical separation.
2. Mixing housing and wok gives rise to increased around the clock human activity, resulting in more controlled, efficient and safe environments.	2. A single person or commercial or corporate entity rarely has developmental knowledge with regard to different functions and programmes. .
3. Mixing work and housing can greatly raise the potential for amenities from both the perspectives of consumers and entrepreneurs.	3. Developers, consumers and end-users always fear in advance that other activities will harm the real- estate values of their property. Mixed use is seen as a risk.
4. Different functions lead to different building types resulting in greater spatial differentiation, diversity and richness.	4. Policy-makers are afraid to introduce mixed use as a principle as it is harder to control and manage its development.
5. Mixed use leads to the optimisation of land use by using roads, public space and parking for both working and living during the day and in the evening.	5. Modernist remnants of the functional city which lead to separation prevail in developmental processes.
6. Mixed use in high density environments potentially reduces commuter traffic and increases the potential for public transport, thus contributing to sustainability.	6. Legal planning documents are not able to deal properly with mixing categories. An instrumentation description is lacking.
7. Mixed-use environments are more sustainable since they can change incrementally by transforming functions in individual buildings over time.	7. The perspective on mixed use is actor- related, as when making plans, the different actors involved discuss different things on different scales.
8. Mixed-use developments provide flexibility in developmental strategies as housing and offices can be exchanged within a single development due to market demands.	

Figure 3
Arguments
and obstacles
concerning mixed-
use development.

After examining the pros and the cons, it is evident that from an ideological point of view, the goals of mixed-use development are very clear. At the level of practical implementation however, there are many obstacles to be overcome. Points of attention hereby are risk avoidance, scale enlargement, the rationalisation of developing corporations and the segmentation of public policy. Many reflections on mixed use are lost in a single-aspect analysis. A good overview is required to understand the complexity of mixed-use development.

Conversations conducted with professional actors have made it clear that a generic definition of mixed use related to scale and programme is lacking and that increased control and the development of mutual understanding is required. It has also become clear that for the definition of a theoretical framework for mixed-use development, an analysis of the spatial and programmatic content of our physically built substance is a good start. Taking the built substance as a point of departure, this analysis of mixed use should include a clear understanding of physical aspects like scale, functions, development and grains.

DEFINITIONS AND SCALES OF MIXED-USE DEVELOPMENT

With the cyclical reoccurrence of the mixed-use theme, many definitions and descriptions have been introduced by, for instance, Jane Jacobs and the Urban Land Institute (ULI) and more empirically in the practical documents of DRO Amsterdam city planning. As was concluded by Rowley (Rowley 1996), none of these are very precise or conclusive. It could be said that although all these definitions touch upon the same subject from an urban planning and design point of view, there are still a number of definition problems.

The following gives an idea of source book definitions put forward:

Jane Jacobs (Jacobs 1961) argues that mixed-use urbanity within the public realm is produced through a fine-grained mix of uses. This mix consists of primary uses and secondary uses, whereby the primary use creates the potential for the existence of the secondary use. Main activities considered are for instance working or living, while the purpose of the secondary use is to service the primary use. Examples of secondary uses are shops in a living district or repro-services in an office park. A mixed-use area is an area with a mix of primary and secondary uses, and a living district with only shops is therefore not considered 'mixed'. The same applies to a cafeteria in an office park which is also not considered mixed use.
The definition of mixed use put forward by the ULI (ULI 1987) determines a mixed-use project as having at least three different revenue-producing uses physically and functionally integrated into its design. The definition clearly focuses on mixed use within an architectural project. The planning council of Amsterdam defines mixed use ('functiemenging') as the simultaneous presence of for instance working and housing, or a strong differentiation of economic

categories within the domain of working or housing. The council recognises three aspects of mixed use, namely concentration, dispersal and a diversity of uses (DRO 2007).

It is noticeable that especially a definition of scale is absent in the discussion on mixed use. For Jane Jacobs, the relevant scale level is the neighbourhood. For the ULI, it is obviously the level of the building which is relevant, while the Amsterdam planning office mainly focuses on the disposition of uses within a district. The serial progression of scale levels is thus: building/ block/ neighbourhood/ district / city/ region. The afore-mentioned definitions each refer to another scale. If a mix is achieved on the district level, this does not mean that there is also a mix on the block level and vice versa. One could say that the level of 'mixedness' depends on the scale of perceiving. From a societal point of view, there has always been a mix of human activities in the areas of working and living in the city, but over time, as a product of mobility, the distance between these complementary activities has grown dramatically. At the same time, the scale level of the physical mix and the grain size of working and living activities has also increased. Simply put, one can say that during the period of industrial modernization, the scale level and grain size of mixed use expanded from a mix on a building level to a mix on the level of the district. In the densely occupied 19th century city, in apartment-buildings, each floor was occupied by housing combined with small businesses. In the late 20th century, whole city districts were gradually occupied by a single type of housing or a single type of production facility. In the course of time, the mix evolved from the scale of a building to the level of the city itself. It may well appear to be the case that in the network city, the most prominent mix of activities can be found at the grain size of the region, the nation or the continent.

One of the essential results of mixing uses within the framework of the walkable scale of the block and the neighbourhood is the generation of a public realm. The flow of people, all with a different destination, moving through the built substance within a limited amount of public space gives rise to a feeling of urbanity. The dynamics of seeing the unexpected or the surprising is the decisive quality of mixed urban environments. The spontaneous social and commercial potential of the city and city life is a product of a specific mix of activities and their appropriate grain sizes that converge within a limited spatial boundary. This is the scale level to be considered in this paper.

It has become important to identify the relevant uses (functions) and the way their combi-nations result in mixes and mix-typologies. When regarding a return of mixed-use develop-ment as a planning principle, it is essential to define the main functions and the functions that can be mixed to result in certain effects. In most discussions on mixed use, the diver-sity of functions is limited to housing and amenities, but this view is too narrow. As statedin the Charter of Athens (Van der Woud 1983), the four basic urban functions are housing, working, recreation and infrastructure. Obviously not all functions are mixable; a significant

amount of all land use is designated for the purposes of production or storage that bring with them the potential danger of explosions or injuries or that simply produce polluted air and a great deal of noise. These functions cannot be integrated within an urban function from a safety point of view. In most countries, the zoning law prohibits the proximity of such functions to living or working areas.

Besides the specific risks attached to certain uses, another decisive denominator is the difference between use for private and use for business activities and between working and living. One could say that these are the cutting edges between uses as they relate to different space-time perspectives. In the same way that living territory is returned to after work, work is what one goes out to for a specific period and for a specific purpose. The difference in the appearance of buildings for working and housing and the specific flows of goods and people these activities induce, districts specialised in either use look totally different in appearance and atmosphere. Although we are aware of the difficulties of creating mixed environments, from an ideological perspective, there is no reason why offices and housing should be kept within their designated territories. The preeminent argument for increasing the urban mix on a block and neighbourhood level in the information age is the fact that the production in this age is relatively clean and sustainable as most people work in offices. Offices mix easily with surrounding housing functions and vice versa. Combining them adds to more liveliness and social safety. Figure 4 makes an exemplary division between unmixable and mixable urban programmes.

Figure 4. 'Mixable' and 'Unmixable' urban functions.	1. Non-housing	Energy production Waste management Industrial plant production Harbour Airport Distribution Oil refinery Etc.	'Unmixable'
	2. Non-housing	Offices Arts and Crafts Retail Restaurants Bars Hotel Leisure Care Culture Media Religion Education Sports Etc.	'Mixable'
	3. Housing	Apartments Row houses Detached houses Villas Flats Etc.	

URBAN MIX-TYPOLOGIES

As in the last ten years Amsterdam flagship projects have shown to an increasing degree, urban projects can be considered 'mixed', while the grain sizes of housing, offices and amenities within these projects are diminishing, resulting in lively urban environments. One of the essential questions however is what a good mix should entail with a view to creating the benefits of mixed use on district scale. Take for instance the IJburg project, an artificial island east of Amsterdam with over 20,000 houses, a relatively high-density project with a very small proportion of non-housing functions. Based on what facts did the planners choose this mix proportion? How is a mix generally defined within new urban projects? Is it solely based on market expectations or demographic extrapolations or can a mix be proportioned according to values that result in beneficial effects based on experience and reference districts?

In order to get a grip on mix proportions, two examples of urban mixes are analysed, the poor mix of office parks and the rich mix of metropolitan downtowns. On considering the land use of our cities, one can see that many offices are still located in mono-functional areas. Not surprisingly, rent levels for the relatively low amount of office space located in mixed areas are usually substantially higher than elsewhere (Van den Hoek 2007). In the Netherlands where massive office vacancies are prevalent on the office market, vacancies are concentrated within mono-functional office parks, whereas all offices at mixed locations have vacancies representing less than 5% of the total floor space, which is considered to be a healthy rate. On asking office end-users, it becomes clear that it is not the buildings itself that are the problem, but that they simply prefer to be accommodated at a location providing civic quality and a public realm. It is obviously the mix or better put the lack of a mix in these areas that make them unattractive. Judging by these facts, one could assume that there is a great potential for the further integration of office space within mixed urban districts and developmental projects, especially when one realises that 85% of all working locations are still in mono-functional territory.

The second example can be seen when we shift our attention to metropolitan centres. The common-sense approach in these areas dictates that the proportion of residential and non-residential use should be 50/50 with a view to creating urbanity. In the Amsterdam canal zone, the residential /non-residential ratio has been50/50 for a long time. Non-residential floor space is occupied by a heterogeneous mixture of institutions, amenities, offices, shops, restaurants, etc. To quickly check the validity of this 50/50 division in the Amsterdam city centre, literature on other metropolitan city centres, for instance Barcelona, is studied. It does not come as a surprise that inside the city ring of Barcelona, the ratio of residential to that of non-residential use has been around 50/50 since the beginning of the 19th century (Busquets 2005). The metropolitan urbanity of Barcelona within the ring and the canal zone

of Amsterdam provide experience-based proof that in order to create a lively and vibrant city centre, the 50/50 ratio works. After citing these two examples, the question arises as to how this mix proportions should be defined for other city districts in order to create an apt mixed use giving rise to an urbanity fit for the location.

The central assumption in this paper is that the contrast in uses of a working and a residential nature organised in a city district on a walkable scale creates an atmosphere of urbanity. Hence, the character of an urban district is highly defined by the ration of housing to non-residential use in a district, and the way these opposites are mixed in terms of grain size. The residential part represents the heterogeneous mix of housing programmes, ranging from canal houses to high-rise apartments. The non-residential part covers the whole spectrum of amenities, retail trade, shops, offices, production, administration and so on. Could it be that from a historical perspective, all types of urban districts have their own mix-typology defined by the division between housing and non-housing, which to some extent is a product of the historical period in which they were conceived? In order to get a grip on the differentiation of mix-typologies, a number of districts in the Amsterdam context will be analysed regarding their mix in terms of housing versus non-housing.

CONCEPTION OF A MIXED-USE INDEX (MXI)

Generally, urban projects are defined in qualitative terms that are strongly related to their urban design, their architecture and their intended allure and identity. When discussing urbanity with design and planning professionals, urbanity is seen rather as a product of design than as the result of programmatic ingredients. A quantitative approach to urban planning and the definition of urban projects is still underdeveloped in the Netherlands, especially when it comes to mixed use. Well-known indexes such as FSI OSR and GSI are commonly used around the globe (Berghauser Pont 2004). They refer to the physical aspects of planning projects such as the site area the floor size of buildings, the footprints of buildings, the size of the public space and the number of floors. However, these indexations do not describe the distribution of different uses within an urban project. What the indexes do is predict and indicate the volume or the massiveness of a project. On discussing residential projects, the afore-mentioned indexes can indicate the housing typology (Berghauser Pont 2004). When it comes to describing the urbanity or functional diversity of a project, indexes such as FSI, OSR and GSI do not really have a predictive value.

In order to render urban mixes and mix-typologies suitable subjects of debate, comparable and ultimately instrumental, it is vital that the mix and mix-typologies are made measurable and can be easily indexed. The question is the way in which the complexity of the functional mix of an urban district can be reduced to a simple index. This requires a reduction of all

aspects of a mix to the simplest of terms. In this paper, the urban mix will be reduced to the proportion of residential and that of non-residential use. This has proven to be instrumental for at least a number of city centres where the balance between residential and non-residential use is 50/50, so that they thus retain a certain urbanity. This proportion can be described in terms of people, by the number of workers versus the number of residents as assessed by the city government of Amsterdam (DRO 2007). Such a ratio can also be explained by counting desks versus sleeping places, which says something about the intensity of the use. In this paper however, in order to contribute to the series of indexes of FSI GSI and OSR, the proportion of housing versus that of non-housing is expressed in terms of floor space. The physical entity of floor space is very precisely measurable in any planning project and is less dependent on temporary fluctuations of actual use when counting numbers of people. As an indirect consequence of use over a prolonged period of time, it is a relevant indication.

The index is referred to as MXI, standing for mixed-use index. In this index, the floor space with a residential use is expressed as a percentage of the total amount of floor space within a specific area. This results in a dimensionless quantity that expresses a proportion analogous to density, a building percentage and an open space ratio using physical parameters such as floor space and plot size in the same manner. In a project in which MXI = 100, there is only residential use and subsequently, a project with an MXI = 0 has no residential use. Hence, the MXI of mono-functional areas will either be 0 or 100 and the MXI of a city centre in Amsterdam or Barcelona will be around 50 since it has equal parts of housing and non-housing (figure 5).

MXI value	0	50	100
Meaning	No housing present	50/50 balance housing non-housing	100 % residential use
District type	Single use.	Mixed use	Single use
Examples	Office park Factory Complex Harbour district Airport Shopping centre	City Centre Semi Central	Newtown The projects Suburbia

Figure 5
Meaning of the MXI.

When the MXI is defined in this abstract way as a proportional figure and relates to known reference environments, the instrumental and organisational value of the index can be compared with the FSI. On one hand it is a fundamental index when it comes to dimensioning, yet is does not describe the actual reality. Obviously when it comes to describe an actual mix, one would also like to know the exact composition of the mix in terms of different uses, the grain size of these uses and the way the different elements of the mix are physically

positioned. This refinement of the mix index via a sub-index will be the subject of further research. Any comment that can be made on the limitations of the descriptive power of the FSI can also be applied to the MXI. Yet the FSI is a global standard.

INDEXING MIXED USE IN AMSTERDAM BY THE MXI

To establish the relationship between the MXI and the character of a district, a variety of urban districts of Amsterdam were taken as study objects. Following west/east lines of historical growth, Amsterdam districts were analysed using the MXI. Since Amsterdam developed as a typical compact European city in a concentric manner according to the model of the 'Lobbenstad', (De Hoog 2005), this east/west section organises districts in a historical order. The oldest districts are in the centre and the greater the distance from the historic city centre, the newer the districts.

Figure 6
Dissection of
Amsterdam in 12
historic relevant
district types.

Twelve districts were selected along the east/west section which are representative for a specific era of city development. The boundaries of the selected areas were chosen in such a way that the development of the district can be described as a product of a specific plan or a condition. The selected districts can each be described as products of a specific mo-

ment in the developmental history of Amsterdam, ranging from the late 15th century to the late 20th century. The section line stretches from the garden cities in the west to the garden cities in the east as is shown by the diagram. The chosen districts were analysed on two scale levels, the level of the district itself and the level of a typical building block within the district. The building blocks were analysed concerning residential versus non-residential use on the ground floor level of the different individual buildings within the block. The data required for the analysis of the floor space in m2 to generate the MXI was provided by Klaas Bindert de Haan of the Amsterdam DRO.

Nr.	Name	Period	Developmental grain	Style	Position	MXI
1	Westelijke tuinsteden	1950	5000 m^2	Open blocks, slab development	Peripheral	94
2	Admiralen Buurt	1900	2000 m^2	Classical blocks, large grains	Semi peripheral	87
3	Oud west	1850	1000 m^2	Classical block, incremental grain	Semi central	74
4	Jordaan	1750	250 m^2	Traditional block, incremental grain	Semi central	79
5	Grachtengordel	1700	250 m^2	Traditional block, incremental grain	Central	53
6	Dam	1550	250 m^2	Traditional block, incremental grain	Central	7
7	Wallen	1600	250 m^2	Traditional block, incremental grain	Central	48
8	Rapenburg	1650	250 m^2	Traditional block, incremental grain	Semi central	32
9	Plantage	1750	500 m^2	Traditional block, incremental grain	Semi central	34
10	Dapperbuurt	1875	1000 m^2	Classical blocks, large grain	Semi peripheral	75
11	Watergraafsmeer	1925	1000 m^2	Classical blocks, large grain	Semi peripheral	80
12	Nieuwe Meer	2000	5000 m^2	Open blocks, slab development	Peripheral	96

The assumption to be tested was that as the result of a specific time and a specific distance to the city centre, each district has its own typical MXI. In order to understand the way the MXI develops throughout the city, the next diagram was created. This diagram can be understood as a functional section of the city whereby the ratio of housing to non-housing becomes visible by moving from one district to another. The area in red shows the percentage of housing, comprising both apartments and houses. In different grayscales, the subdivision into different types of non-housing are represented, e.g. office, retail trade, administrative, care, public transport etc. A more detailed explanation of the division of different uses with the domains of housing and non-housing is beyond the scope of this paper.

Figure 8
Development of the MXI sliding through Amsterdam from west to east via the city centre.

1.   2.   3.   4.   5.   6.   7.   8.   9.   10.   11.   12.
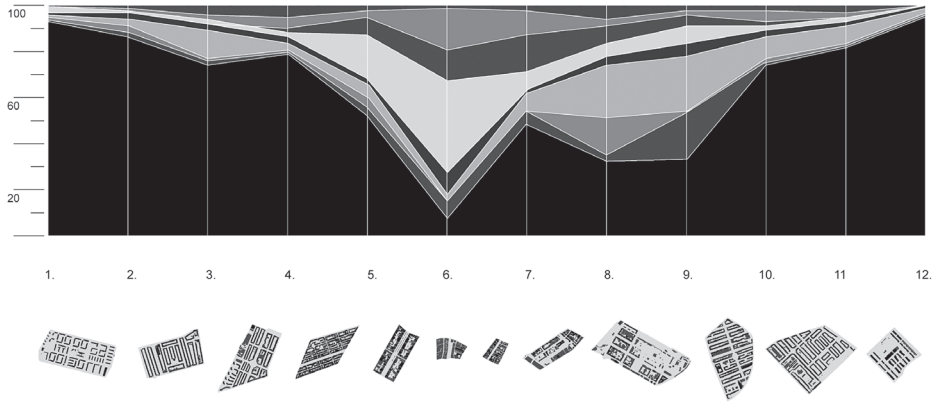
Figure 9
Housing versus non-housing in selected districts with their respective MXI values.

Westelijke tuinsteden
MXI =94

Amiralenbuurt
MXI =87

Oud West
MXI=74

Jordaan
MXI=79

Grachtengordel
MXI=53

Dam
MXI=7

Wallen
MXI=48

Rapenburg
MXI=32

Plantage
MXI=34

Dapperbuurt
MXI=75

Watergraafsmeer
MXI=80

Nieuwe Meer
MXI=96

■ Housing
■ Non Housing
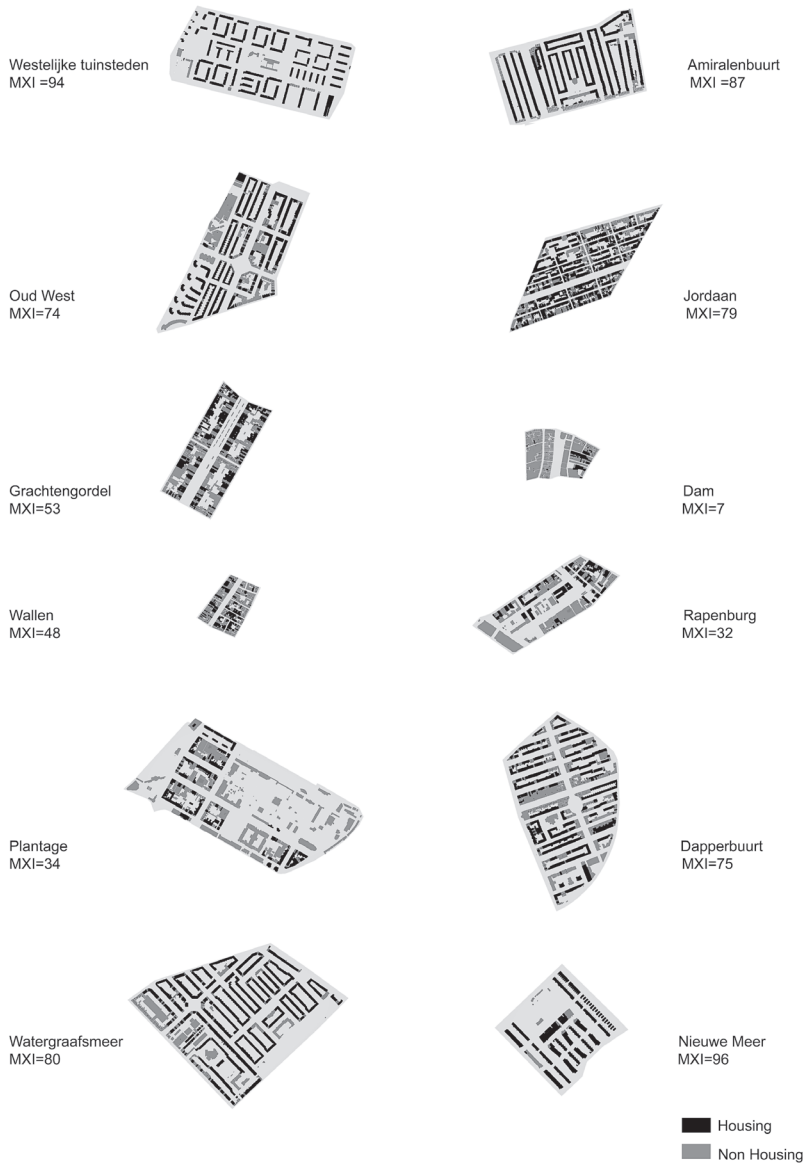
THE INSTRUMENTAL VALUE OF THE MXI ?

Looking at figure 8, which describes the relationship between the MXI and the geographical disposition of the analysed samples, it is evident that there is a relationship between the centrality of the district, the character of the district and the MXI. In the city centre, the analysed samples have an average MXI of around 50. The most centrally located one at the Dam even has a value of 7 due to its limited perimeter which mostly includes retail trade and offices. Close to the city centre, the MXI fluctuates between 40 and 60. In the plantage area for instance, where the ZOO defines a large part of the district, the MXI reaches 40. Moving away from the (historical) city centre, the MXI gradually increases in steps. When entering the 19th century areas, the MXI starts to reach around 70-80. The typical late 19th century Neighbourhoods have an MXI of around 85. When entering the more peripheral samples in the modernist garden cities, the MXI climbs to 90-95.

Assuming that there is a relationship between the MXI and the character and position of the district, districts could be organised according to value categories of the MXI. Based on experience with the first MXI analysis, it is possible to conceive of distinguishing five typologies of districts as is shown in the next table. The method would have to be repeated in many cross-sections throughout the city in order to establish absolute insight into the development of the MXI in relation to centrality and district character. It would be interesting in future research to see whether the MXI only behaves according to the pattern established in Amsterdam or whether it is a pattern that also applies to other European cities.

MXI	0-20	20-40	40-60	60-80	80-100
District character	Factory complexes Office parks	Central business & leisure districts	City centre metropolitan downtown	19th century city extensions	Suburbia Modernist town extensions

Figure 10
A provisional categorisation of urban districts according to the MXI.

The conception of the mix-use index is currently in its initial stages. It would be interesting and it is moreover necessary to reformulate the index in the next phase using a more precise definition. It is conceivable for instance that the mixed-use index not only refers to the percentage of housing, but can be defined as the percentage of working/housing and service floors. The index will be conceived of in this way in 3 figures. Furthermore, a recombination of the MXI and FSI will be required to define correlations between densities and the mix.

CONCLUSIONS

In this paper, urban development is analysed from a mixed-use perspective. Starting with a short historical overview and an actor analysis, different meanings and implications of the mixed use concept are analysed. This analysis results in a reduction of the urban mix to the ratio of housing to non-housing in terms of floor space. This ratio is translated into an index referred to as the MXI. Analysing Amsterdam districts in east/west sections using the MXI shows that there is a strong relation between the MXI and the centrality and character of the districts. The following conclusions can be put forward:

1. After the functional segregation of the city as a product of the industrial economy, the theme of mixed use in urban planning is once again becoming relevant as the economy is becoming information based and service based.

2. The emphasis on mixed use at the beginning of 21st century has another significance and requires another implementation than emphasis on mixed use in the 50s and the 80s of the 20th century.

3. Different actors in urban development use conflicting definitions of mixed use; a neutral definition could start with the division of different uses within the built mass of urban districts.

4. The relevant scale of mixed use is the walkable scale of urban blocks within an urban district.

5. The mix of uses can ultimately be reduced to the ratio of housing to non-housing floor space within an urban district and result in the mixed-use index MXI.

6. The MXI of typical urban districts is related to the historic period of the conception and the centrality of the district.

7. Combining FSI and MXI potentially ensures a strong determining of district characters.

8. Although further research is required to provide an apt categorisation of urban district in-dexation by the MXI, one can predict the future instrumentality of this index in the fields of urban design, planning policy, urban analysis and real-estate development.

The goals to be achieved with the introduction of
the mixed-use index MXI are fourfold:

1. On an ideological level, the MXI combines different uses within one index, making the discussion and categorisation of mixed-use environments more natural. This is a subtle but important step in terms of urban planning since mostly developments are described in terms of single uses instead of mixes. This is especially the case in the Netherlands where the modernist legacy of mono-functionality is still dominant in connection with ideas with regard to urban planning.

2. On the level of design, the MXI provides a new frame of reference within the scope of the conception of urban environments, since different MXIs represent different types of urbanities.

3. On a policy level, the MXI can become instrumental for the government in defining the conditions within which real-estate corporations can develop plots of land. In Amsterdam for instance, for projects such as the IJoevers or the SouthAxis, the MXI would make it clear to all parties involved how to use the land and what is expected from a policy point of view.

4 On an urban analysis level, the combination of MXI and FSI makes it possible to conceive numerous typologies of urban environments in just two single figures.

LITERATURE

- Ascher F (2005) La Société Hypermoderne, editions de l'Aube.
- Berghauserpont M (2004) Spacemate, the spatial logic of urban density, TU Delft 2004.
- Boomkens R (2006) De nieuwe Wanorde, Globalisering en het einde van de Maakbare samenleving, Van Gennep.
- Boelens L (2006) Planning zonder overheid een toekomst voor planning? Uitgeverij 010.
- Busquets J (2005) Barcelona, the urban evolution of a compact city, Nicolodi.
- Castex J e.a. (1990) De Rationele Stad, van bouwblok tot wooneenheid, SUN 1990.
- De Hoog M (2005) 4 keer Amsterdam, ontwerpen aan de Stad, Thoth.
- DRO (1980) Structuurplan Amsterdam, DRO Amsterdam, 1980.
- DRO (1984) De stad centraal, DRO Amsterdam, 1984.
- DRO (1998) Masterplan Zuidas, DRO Amsterdam, 1998.
- DRO (2007) Functiemenging in de Binnenstad, DRO Amsterdam, 2007.
- Florida R (2002) The rise of the creative class, Basic Books.
- Florida R (2008) Who is your city, Basic Books.
- Jacobs J (1961) The death and life of great American cities, Random house.
- Louw E & Hoppenbrouw E (2004) Mixed-use development: Theory and practice in Amsterdam's Eastern Docklands, European planning studies Vol 13 Oct 2005.
- Louw E (2005) Stedelijke functionele segregatie is onvermijdelijk, Rooilijn oktober 2005.

- Meyer H (2005) Working for the City, 25 years of Work from the Urban Design Departments of Amsterdam, The Hague, Rotterdam, SUN.
- NRC (2008) Vrije stadslucht word wat minder vrij, Hoofdcommentaar, 12-04-2008, NRC.
- Rowley A (1996) Mixed-use development: Concept en realities, University of Reading 1996.
- Sieverts T (2001) Cities without Cities, an interpretation of die Zwischenstadt, Thomas Sieverts.
- Taverne E (1978) In 't land van belofte, de stadsuitleg in de republiek, Gary Schwartz uitgeverij.
- Van der Woud A (1983) Het Nieuwe bouwen, Delft University press.
- ULI (1987) Mixed-Use Development Handbook, Washington D.C. Urban Land Institute.
- Van den Hoek J (2007) Office vacancy as urban phenomenon, 4th ISUU conference, the European tradition in urbanism 2007, TU Delft.
- Wagenaar M (1991) Amsterdam 1876-1914, economisch herstel, ruimtelijke expansie en veranderend stedelijk grondgebruik, dissertatie.

a15 [arnold]

a14 [tayfun]

a1 [nick]

a13 [ahmetcan]

a2 [fatih]

a12 [ore]

a3 [arun]

a11 [arda]

a4 [ekim]

a10 [artan]

a5 [gizem]

a9 [ozlem]

a8 [geoff]

a6 [gurkan]

a7 [korhan]

Display of the 'responsive design game' in Almere Haven, Sportpark de Wierden.

EKIM TAN, TU DELFT

AGENCY 2.0: TOWARDS ADAPTIVE ENVIRONMENTS FOR HUMAN HABITATS

INTRODUCTION

This study aims to build a design interface involving players referred to as 'agency 2.0'. Agency 2.0 works on the scale of human habitat environments. It supports a responsive and adaptive design process operating on an interactive digital platform. 'Responsiveness' entails the involvement of various players, both bottom-up and top-down, at every stage. 'Adaptivity' secures the self-learning of the design process. A natural extension of this responsive and adaptive design interface monitors a design process and product, also after their realisation. As by then unselfconscious designers will be in action under existing rules and regulations. Visionary, negotiative, and adaptive subsystems form three main subsystems of Agency 2.0.

SEVENTIES

From recognising the value of the everyday in design, to redefining the role of design as advocacy and proclaiming the user as the designer, the seventies witnessed the birth of a range of ideas concerning the democratisation of the design profession. Controversial political discussions of the day were definitely influential on the emergence of these ideas.

As early as 1949, Gordon Cullen wrote an article criticising designers for bypassing street advertising as a source of inspiration (Cullen, 1949). Twenty years passed before the underlying idea was put into action. In 1969, Denise Scott Brown and Robert Venturi visited Las Vegas with their students. Their mission was the revaluation of the previously disdained 'commercial vernacular' as a visual order created by people. A revolutionary task at a time when the dominant design discourse refused to consider everyday reality.

This statement was reflected in the design of buildings as 'open architecture'. Among others, team X defined the structure and service framework as the domain of the designer, while the user was set free to organise his own living space and even the general circulation and access to supplies (Tzonis, 1978). It was finally John Habraken who, through SAR, succeeded in having the new ideas put into practice in various countries in Europe such as the Netherlands, Austria, England, as well as in North America. In contrast to 'mass housing', the 'support/infill' schemes made tenants responsible for designing their own interiors (Wasserman, 1984). However, the concept was not just a matter of design but also a reformulation of the roles of all parties in housing production. Builders, material suppliers, developers, planners and consulting engineers joined SAR teams to bridge the gap between different professionals (Habraken, 1973).

Once again in the Netherlands, 'building for the neighbourhood' flourished as a large renewal project of 19th century working-class neighbourhoods. Although this whole state-run operation was rather top-down, the ideal was humanistic: the renewal of neighbourhoods as 'social condensers' where even tenants would have a say about their surroundings (Vanstiphout, 1997). Designers and planners thus left their desks to form project groups in the neighbourhoods, their work becoming the mediation of talks with tenants, sociologists, and social workers.

It was around the same time in North America that 'advocacy planning' started. Referring to themselves 'counter-professionals', advocacy planners expressed the user's view. They pointed out the lack of expertise in poor urban communities and often 'unjustly planned' interventions. To them however, the root of the problem was not only the lack of expertise but also the political, economic and cultural context of the country. (Goodman, 1972)

While designers were looking for ways to encourage user involvement, a British architect, John Turner, took an extreme position: the user should be the designer, not the professional. Turner introduced a new quality criterion; 'the freedom to shape' one's own environment was an existential value (Turner, 1972). The source of inspiration came from the 'barriadas' in Lima Peru, a form of urban squatter settlements. As opposed to academic formal practices, these were the settlements offering a 'good fit' or 'response' to user needs, regardless of how poor they were and how much of a 'health threat' they entailed.

Students studying commercial advertising in Vegas, new design and construction techniques diminishing the role of designers, advocated planners taking on the role of counter-professionals and for informal settlements offering better spatial qualities. The ensuing politically-coloured discussions were followed by heavy criticism both from within and outside the movement. In his 'Scope of Social Architecture', Turner expressed harsh disapproval of the practical work of SAR (Turner, 1984). His criticism mainly concerned the dependency on industry and technical interpretations. The practice was the problem, not the ideas. Like Habraken, he saw mass production and mass housing as the main obstacles to be dealt with. Turner himself was heavily criticised for undermining the real problems of the poor and romanticising squatter settlements. Moreover, participation as a concept was challenged. Doubts were also raised with regard to aspects like the unequal distribution of information amongst different interest groups, the overrepresentation of particular bargaining groups and the degree of willingness of all parties involved.

NEW DYNAMICS

After the eighties when compared to the seventies, the world entered a distinct political atmosphere, most of the hot controversies of the previous period petered out. Today, similar tendencies in planning and design disciplines calling for more democratisation in practice are on the rise again. However, before drawing up an inventory of these new trends, it is best to examine developments in society, production and consumption methods, information technologies and the scientific paradigm.

The Strength of Weak Ties

Progress as seen in society today is driven by industrialisation and the information technologies. However, these processes are also in conflict with progress due to unavoidable environmental costs and unintended consequences. As the manifestation of this paradox is accelerated and its territory expands, society's certainties are increasingly wiped out and knowledge is made invalid until 'further notice'. Judgment becomes temporary and uncertain. Consequently, reliance on social institutions is diminished, resulting in increased individualisation (Beck, 1990). However, reading today's network society as a collection of at-

omised and autarkic individuals would be a misconception. Individualisation does not mean people's increased independence, but being part of multiple networks. (Lootsma, 2001).

Recognising this helps to define the new collectivity patterns of the twenty-first century. The progress of the network society depends on the effective information exchange between multiple networks which rely on 'weak ties' (such as one's acquaintances) rather than strong ties (such as one's close friends). In 'the Strength of Weak Ties', Mark Granovetter argues that social systems lacking in weak ties will be fragmented and incoherent. New ideas will spread slowly, scientific endeavours will be handicapped, and subgroups separated by race, ethnicity, geography, or other characteristics will have difficulty reaching a modus vivendi (Granovetter, 1983).

A higher, looser and faster interdependence between members of a social system should be differentiated from traditional concepts of collectivity whereby collective action, social learning, and cognitive change stand for slow processes. New information technologies based on the exchange of knowledge do not require long meetings of large groups of people as in the seventies. On the contrary, today, individual action supported by interactive communication techniques may have a collective upshot as long as it appears to be approved by larger groups of individuals. Relating to new forms of collectivity instead of being fixated on a one-sided view of individualisation forms one of the pillars of this work.

'Mass Customization'

In his book 'Mass Customization', Joseph Pine argues that the input of instabilities, , changing demographics, changing needs and wants, saturated markets, economic cycles and shocks and uncertainties have a great impact on the means of production (Pine,1993). Consequently, mass production has serious limits and perils. As in the last twenty years these factors have been influential in many industries, they have caused a breakdown of the otherwise smooth-running system. Moreover, efficiency, stability, and control have deviated from their traditional definitions. Pine forecasts a new paradigm in production and illustrates newly emerging systems of customised production, such as the car industry in Japan in the 90s (Pine, 1993).

Given the ongoing fragmentation and uncertainty in consumer target groups, even large internationals such as Nike or Philips are changing their design strategies and marketing mechanisms. Nowadays, Nike operates a website allowing its clients to customise and create their own dream clothing (http://nikeid.nike.com/). Philips, known for its cutting-edge technologies and its remote and cold-looking products in the eighties, is also adapting its strategies. It has started a whole new department for 'user centric design'. The unit works by involving users in the very early phases of product design. Moreover, Philips has started campaigns like 'Sense and Simplicity' using concepts that seem soft and unusual in the tradition of this high-tech company.

New production and consumption patterns are also influencing the new generation in city production. The development of the Homeruskwartier, the current extension of the new town of Almere in the Netherlands, can be followed and even influenced online by future inhabitants of the neighbourhood (www.ikbouwmijnhuisinalmere.nl).

Participatory Design

New practices are emerging not just in social and economic systems but also in the field of technology. Enabled by computer-based systems, there is a growing interdisciplinary field operated in by system engineers, designers, and human interface designers. Developing ways of involving users in design is their main concern. User involvement is seen as a critical factor as it is ultimately the users who will create new practices in response to new technologies. This interest has been sparked by the appreciation of an approach to systems design pioneered in Scandinavia. Frequently referred to as Participatory Design, it advocates the active involvement of users throughout the design process. (Blomberg, 1990) The occurrence of these fields still needs to be explored in city design. This is a noteworthy factor differentiating today's discussions from that of the seventies.

Self-organisation

No doubt, as social mechanisms, modes of production and consumption and technologies evolve, so will approaches in science. Exploring today's world requires handling concepts such as unpredictability, complexity and non-linearity.

The theory of self organization has led to a change of scientific paradigms: from the Newtonian paradigm to the approaches of complexity. There is a shift from predictability to non-predictability; from order and stability to instability, chaos, and dynamics; from certainty and determination to risk, ambiguity, and uncertainty; from the control and steering to the self organization of systems; from linearity to complexity and multidimensional causality; from reductionism to emergentism; from being to becoming; and from fragmentation to interdisciplinarity' (Fuchs, 2003).

Self-organisation is a process by which the internal organisation of a system, normally an open system, increases in complexity without being guided or managed by an outside source. Since the fifties, the self-organisation theory has been applied in different disciplines, from physics (Ilya Prigogine and Hermann Haken) to human sciences (Niklas Luhmann, Anthony Giddens) to regional sciences (Portugali). A connecting line in all these fields is the emergence of order from chaos. Open systems reach a moment of order not through external forces but as a result of self-organisation. However, this does not mean that open systems are totally independent of external factors.
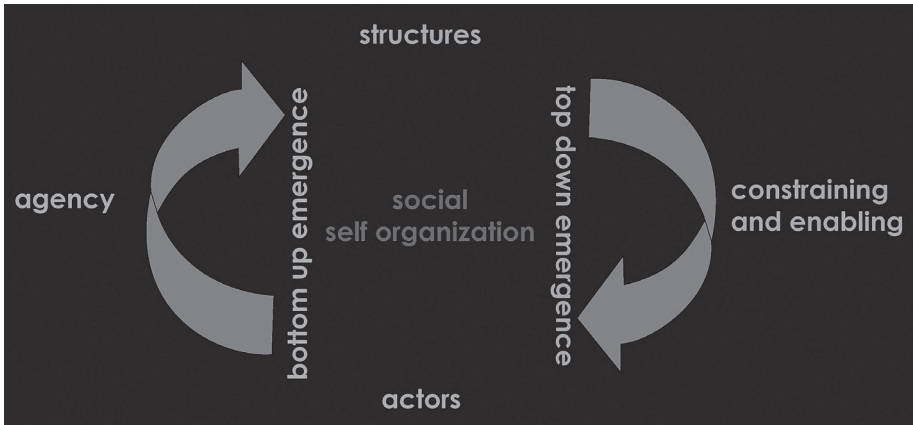
The introduction of the concept of self-organisation to social theory is relevant in this study, as the goal is to unfold the potential of individuals and social groups in design processes. Niklas Luhmann, who introduced the self-organisation theory to the social sciences, viewed society as a sum of self-producing communications. For him, communication produces further communications and hence a social system can reproduce itself as long as there is dynamic communication (Luhmann, 1995). However, Anthony Giddens criticises Luhmann and argues that communication is produced not by communication, but by human beings - or knowledgeable agents (Giddens, 1984). Therefore, communication by itself cannot be self-productive. It is moreover not possible to isolate human beings while referring to society within the boundaries of the self-organisation theory. This conclusion also has consequences for the way that this study forms its basis on the involvement of knowledgeable agents in design processes.

Structures and agents

According to Giddens, the recreation of a self-organising system takes place through the cycle of 'agency' and 'structures' (see figure 1). In this dialectical process, basically arising from the interaction of the individual with society, structures influence individual actions and thinking (Mingers, 2004) and constrain and enable actions. This is a process of top-down emergence, whereby new individual and group properties can emerge. On one hand, human beings are reasonable and knowledgeable agents (Fuchs, 2003). Through their communication and interactions, new qualities may emerge that irreversibly effect structures or cause new ones to emerge. This process is bottom-up emergence, also referred to as agency.

Strategies and tactics

This binary negotiation of top-down and bottom-up agency is complementary and not necessarily contradictory. Likewise, in 'The Theory of Everyday Life', Michel de Certeau thoroughly elaborates on interactions between top-down and bottom-up forces. This is done through

a number of non-oppositional binaries such as 'strategies' and 'tactics', production and consumption, representation and behaviour, writing and reading, the spoken word and the written word (De Certeau, 1984). His work basically theorises everyday activities such as walking, cooking and speaking within the vast frameworks of the system. For example, he exemplifies the survival tactics of workers in creating their individual reality within the capitalist system with its predetermined working rules and conditions.

In view of the fact that the new scientific paradigm continues to deal with unpredictable complexities, de Certeau's work on theorising the everyday appears valid. Indeed, he defines scientific activity as a collage of 'strategies' and 'tactics'. The theoretical goals of the discourse need to be juxtaposed against 'tricks' in the everyday work of agents. In many research laboratories, one finds an increasing distance between top-down scenarios punctuated by utopian images and actual everyday practices. According to de Certeau, a rethinking of all tactics is essential, a task long neglected by the epistemology of science (De Certeau, 1984).

'Rather than remaining within the field of a discourse that upholds its privilege by inverting its content (speaking of catastrophe and no longer of progress) one can try another path: one can analyze microbe-like singular and plural practices which an urbanistic system was supposed to administer or suppress, but which have outlined its decay; one can follow the swarming activity of these procedures that, far from being regulated or eliminated by panoptic administration, have reinforced themselves into the networks of surveillance, and combined in accord with unreadable but stable tactics to the point of constituting everyday regulations.' (De Certeau, 1984)

Selfconscious and unselfconscious

De Certeau argues that tactical deviations are inventive and creative actions. Smart adaptations and appropriations are tactics used by agents to survive in their own way (Highmore, 2002). A parallel can be found within the field of design; as Alexander defined in the early sixties, 'unselfconscious' design is design without designers. It responds to misfits (Alexander, 1964). It is direct. The designer takes immediate materials and responds to immediate problems. Under the guidance of tradition, the unselfconscious designers 'adapt' their surroundings for a better fit.

As society grew in size, 'selfconscious' design emerged. Tradition broke down. More designs were needed. Design was separated from direct manufacture and was professionalised, institutionalised. The selfconscious designer cannot depend on the knowledge of the tradition. He/she has to formulate unique solutions and a set of materials. And today's designer has to deal with an increased complexity of problems (economic, sociological, and technological) on his/her own.

Thus, unselfconscious designers build their individual lives under different design regula-tions. This is tactical behaviour and may range from actively joining the design process to modifying the physical space or deciding to depart from a given physical environment. It is important to note that not only unselfconscious but also selfconscious designers could utilise tactics as a response to regulations or dominating design assumptions

Relinking the top-down scenarios with bottom-up realities and tactics is the essence of contemporary scientific activity, as de Certeau claims. This argument has consequences for the way that selfconscious and unselfconscious design relate to each other today, which is the main argument of this work. Once divided from each other, the unification of these processes promises better fitting solutions within a complex and unpredictable society. Cooperation between unselfconscious and selfconscious designers means bringing top-down structures and bottom-up agents together. The interaction between unselfcon-scious and selfconscious design means the fine-tuning of strategies with everyday tactics. Linking selfconsciousness and unselfconsciousness means having visionary ideas filtered through bottom-up realities.

Adaptation and time
Self-organisation is about structures organising themselves into new states of order. Thus, systems constantly adapt to changing conditions. They thereby become fit and continue to exist, to reproduce. In evolutionary biology, these mechanisms depend on replicators such as genetic material that can be passed on from generation to generation (Iyer-Raniga and Treloar, 2000). However, the city is a designed artefact. Therefore, adaptations for a better fit depend on the communication between agents and processes of learning. They can only be influential if the information produced will be communicated and passed on to other agents. Therefore, city design too can have the capacity to prepare and adapt itself to changing dynamic conditions.

Adaptations or the self-learning capacity of design are closely linked to the interactions taking place amongst its unselfconscious designers, namely agents. The self- organisation theory supports this idea by stating that the complexity level of an open system depends on the number of connections made amongst its agents (Fuchs, 2003). How far design allows its end users to negotiate also give clues as to its capacity to stimulate and synchronise the complexity of micro-level realities.

No designer or group of designers can predict in advance the micro-level realities and their interactions. As the designer leaves the scene, he or she is unable to respond to the chang-es either in his or her environment or in the user's. This statement puts forward the depen-dency of the evolution of an artefact on the creativity of unselfconscious designers. In fact, the conclusion drawn with regard to design agents and creativity via adaptations brings one

more dimension into consideration, namely time. Design products continue to evolve after the influence of the selfconscious designer diminishes. They are thus faced with physical, programmatic or symbolic modifications. Consequently, misfits occur after the professional designer is responded to by agents. This factor influences the way in which the 'agency 2.0' handles the time dimension in design.

AGENCY 2.0

As a comprehensive approach, this study aims to actively combine unselfconscious design in a responsive design environment while utilising interactive information technologies (see figure 2).

It is a design interface. Within the framework of the self-organisation theory, it embraces a design process which is an open system. Here, the end product is multiple and not pre-dictable. It is highly dependant on the behaviour of individual and collective agents. It re-searches and collects everyday bottom-up design tactics. In this way, as de Certeau states, the creativity of unselfconscious designers is rendered valid. However it also considers the advantages of top-down strategies. It validates visionary narratives as long as they are po-rous enough to filter complex bottom-up realities.

It is a responsive design interface. It depends on interactive processes, both between its strategies and tactics and amongst its agents. Design develops as strategies and tactics are

Figure 2
Comprehensive
diagram for the
research process
of Agency 2.0.

time

individual
collective
negotiative
bottom up
top down
responsive
institutional

coor-perat.
agents
nuno portas
municipal
alvaro siza
nuno lopez
SAAL

.2007.
cooperatives still active on site
agents in action

.2002.
change in political power
municipality withdraws

.1988.
selling out units to individuals

.1981.
cooperatives formed, associations abolished

santa maria
[informal settlement]

.1978.
first quarter ready for st. sebastião residents

piea de cruz

.1974.
carnation revolution

space   players

Figure 3
An exemplary
mapping for
mapping diverse
agent influential
on the evolution
of a settlement.

confronted. And it becomes more complex as agents interact, form collectivities and negoti-
ate based on 'weak ties', forming new collectivities.

It is a responsive and adaptive design interface. It works within a different time span: it
keeps running after the traditional design process has come to an end. It registers and
monitors design adaptations practiced by unselfconscious designers. These are used as
feedback for the interface. In this way, the design keeps learning and adapting. The more
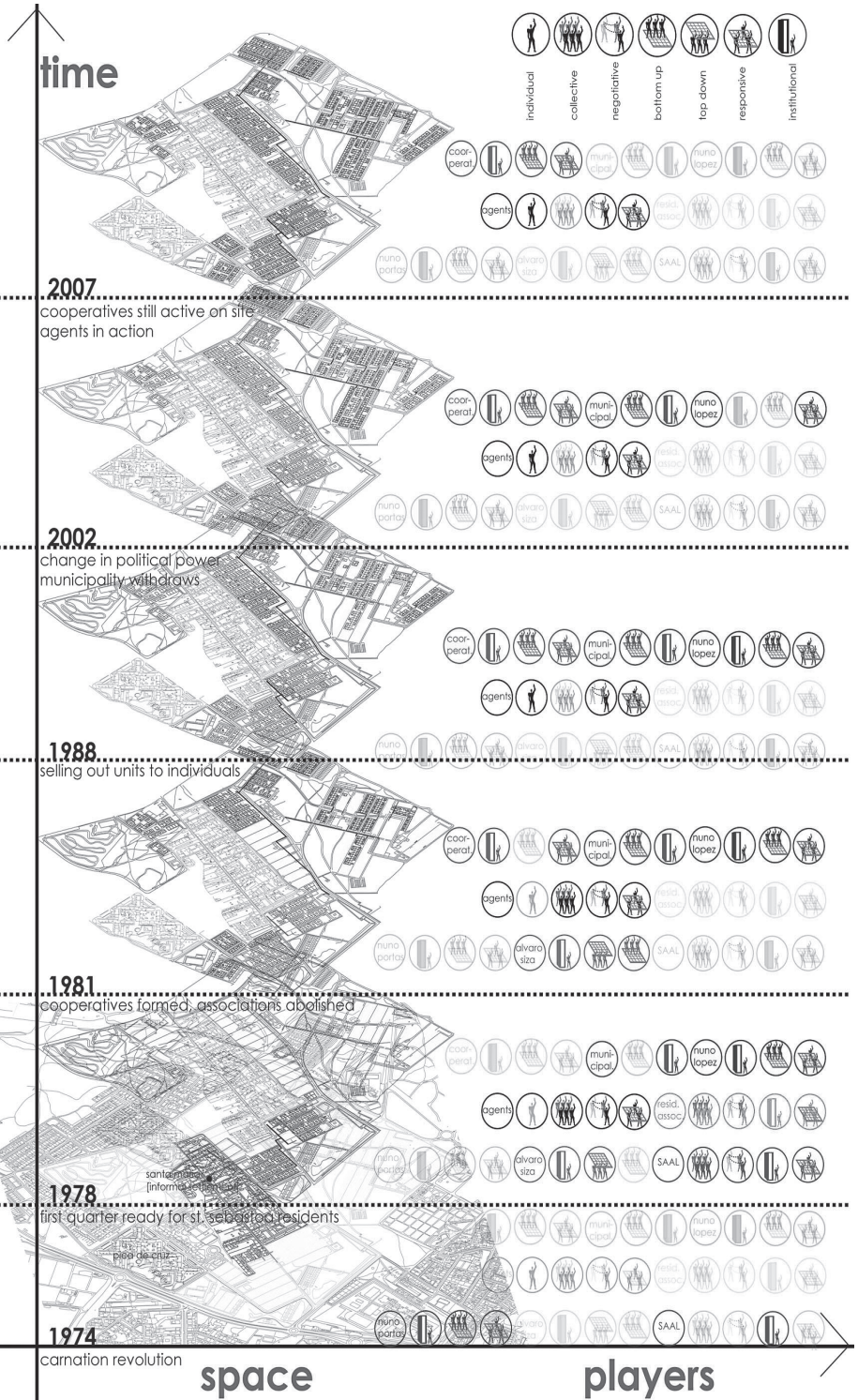interaction the interface participates in, the more it learns. The more it learns, the more it
adapts. The more adaptation takes places, the more fit the design becomes.

It is a responsive and adaptive design interface operating on an interactive digital platform.
This allows the agents to effectively interact and form collectivities. It supports the system
in the calculation of multiple possibilities, as design is not pre-defined. FACS Free Agents on
a Cellular System could be a model to be adopted in this regard.

Scale

In this work, settlement design is the main focus. In this study, the term Human Habitat
Environment will also be used as it refers to all spaces where human beings live, work, and
play rather than just dwell. Design on this level can still effectively profit from the contribu-
tions of the unselfconscious designer. Informal settlements are evidence that they can even
be produced by unselfconscious designers. Furthermore, design on this level not only allows
a responsive and adaptive process within the private domain, such as the home or housing
design, but also challenges decision-making for semi-private, semi-public and public do-
mains to become evolutionary (see figure 3).

LITERATURE

Design Thinking

- Alexander C (1964) Notes on the Synthesis of Form, Harvard University Press, Cambridge.
- Alexander C e.a. (1977) A Pattern Language: Towns, Buildings, Construction, Oxford University Press, New York.
- Thompson D'Arcy W (1942) On Growth and Form, Cambridge University Press.
- Duarte J P (2001) Customizing Mass Housing: A Discursive Grammar for Siza's Malagueira Houses, Ph.D. Dissertation, MIT.
- Gausa M (1998) Housing: New Alternatives, New Systems, Actar, Barcelona.
- Friedman A (1997) Design for Change: Flexible Planning Strategies for the 1990s and Beyond, Journal of Urban Design. 2, 3.
- Frazer J (1995) An Evolutionary Architecture, Architectural Association.
- Habraken J (1972) Supports; An Alternative to Mass-Housing, Architectural Press, Great Britain.
- Kaspori D & Oosterling H (2003) Bewoning Interventies: Een Prospectus voor Alternatieve Woningbouw, Den Haag.
- Luhmann N (1995) Social Systems, Stanford University Press, Stanford, CA.
- Lukez P (2007) Suburban Transformations, Princeton Architectural Press, New York.
- Lynn G & Rashid H (2002) Architectural Laboratories, NAI Publishers, Rotterdam.

- Moudon A (1986) Built for Change, Neighbourhood Architecture in San Francisco, MIT.
- Pumain D (2000) Settlement Systems in the Evolution, Geografiska Annaler, Series B, Human Geography, Vol. 82, No. 2, Development of Settlements.
- RAMTV (2002) Negotiate My Boundary: Mass Customization and Responsive Environments, AA, London, 2002.
- Rowe P G (1993) Modernity and Housing, MIT.
- Shane D G (2007) Recombinant Urbanism: Conceptual Modeling in Architecture, Urban Design, and City Theory, London.
- www.ikbouwmijnhuisinalmere.nl
- www.kaisersrot.com

Systems Thinking and the Theory of Self Organization

- Batty M (2005) Cities and Complexity; Understanding Cities with Cellular Automata, Agent-based Models, and Fractals, MIT.
- Banathy H B (1996) Designing Social Systems in a Changing World, New York, 1996.
- Fuchs C (2003) Structuration Theory and Self Organization, Systemic Practice and Action Research, vol.16 no2.
- Louridas P (1999) Design as Bricolage: Anthropology Meets Design Thinking, Design Studies.
- Mingers J (2004) Can Social Systems be Autopoietic? Bhaskar's and Giddens' Social Theories, Journal for the Theory of Social Behaviour, Volume 34 Issue 4.
- Portugali J (1997) Self-organizing Cities, Futures, Vol. 29. No. 4/5, 1997.
- Portugali J (2000) Self-organization and the City, Springer Verlag, Berlin.

Changing Society

- Beck U (1993) Risk Society; Towards a New Modernity, London: Sage.
- Giddens A (1984) The Constitution of Society. Outline of the Theory of Structuration, Polity Press,
- Cambridge.
- Granovetter M (1983) The Strength of Weak Ties: A Network Theory Revisited, Sociological Theory, Volume 1.
- Harvey D (2000) Spaces of Hope, Cromwell Press, UK.
- Lootsma B (2001) Individualization, Hunch, Berlage Institute, Rotterdam.
- Pine J (1993) Mass-customization: The New Frontier in Business Competition, Harvard Business School Press.

Participation

- Blomberg J (1990) Reflections on Participatory Design, Computer-Human Interaction, 1990.
- Cullen G (1949) Architectural Review, May.
- Goodman R (1972) After the Planners, Penguin Books, USA.
- Iyer-Raniga U & Treloar G A (2000) Context for Participation, Sustainable Development, Environmental Management, Vol 26, No 4, Springer-Verlag, New York.
- Tzonis A (2004) Participatory Design: Needs, System, and Paradox, Participate, Taiwan.
- Tzonis Alexander C & LeFaivre L (1978) Development Of The Populist Movement In Architecture, Graduate School of Design Harvard University.
- Vanstiphout W (1997), Consensus Terrorism The Dutch 70s, Harvard Design Magazine, Number 2.

Everyday Life

- De Certeau M (1984) The Practice of Everyday Life, Los Angeles.
- Foucoult M (1967) Of Other Spaces, Heteretopias, Paris.
- Highmore B (2002) Everyday Life and Cultural Theory, Routlegde, New York.

Informal City

- Brillembourg A, Feireiss K, Klumpner H (2005) Informal city: Caracas Case, Prestel Verlag, Munich.

- Turner J (1972) Freedom to Build, Dweller Control of the Housing Process, New York.
- Turner J (1986) The Scope of Social Architecture, (ed. By Hatch, R.,) New Jersey Institute of Technology, New York.
- Wasserman J (1986) The Scope of Social Architecture, (ed. By Hatch, R.,), New Jersey Institute of Technology, New York.
- www.elementalchile.cl

Methodology

- Vestbro D U & Hurol Y (2005) Methodologies in Housing Research The Urban International Press.
- Yin R K (1989) Case Study Research: Design and Methods, Sage Publications, Newbury Park, London, New Delhi.

CHIU-YUAN WANG, TU DELFT

THE EMBODIMENT OF A PLANNING CULTURE WITHIN CHINESE POLITICAL, SOCIETAL AND CULTURAL CONTEXTS

INTRODUCTION

It is obviously well recognised that China is currently undergoing a dramatic process of urban growth and transformation. It is however much less recognised that this process is confronting Chinese planning institutions with new and unexpected demands. In view of the increasing importance of private investments and developments in Chinese urbanisation, the top-down approach of urban planning in the Maoist period had to be modified and complemented by an approach that on one hand gives space to private initiatives, and on the other hand gives skills to public planning in order to guide private initiatives and adapt them to comply with the general goals of urban development. A new balance between public planning and private development, between top-down and bottom-up approaches is required that is able to generate a reliable and sound framework for long-term urban development and a flexible system of implementation that meets new requirements and demands brought about by changing conditions.

Although the extent of contemporary urbanisation and transformation is a unique phenomenon in Chinese history, from a historical point of view, it is not the first time that Chinese society has undergone such vast urban transformation. A relatively adaptive planning approach comparable to that employed today was also introduced to urban practices in the long gone past. The age-old character of current developments allows a better understanding of contemporary demands which can be seen as being generally based on Chinese traditions. This paper therefore aims to outline urban planning experiences in Chinese history before entering the debate on contemporary urban developments.

Considering ancient Chinese urban planning within the context of contemporary urban developments

In the late 10th century during the transition from the Tang dynasty (618-906 A.D.) to the Song dynasty (960-1125 A.D.), China experienced a comparable shift from a dominant top-down approach in urban planning to a more flexible system allowing space for citizen's initiatives.

Cities of Aristocrats and Cities of Bureaucrats

In his book 'Cities of Aristocrats and Bureaucrats' (1999), Heng Chye Kiang presents two cases that are representative for this transition: the city of Chan'an, the capital of the Tang, an example of the imperial top-down planning order (figure 1), and the city of Kaifeng, the capital of the Northern Song, an example of a city that developed within a free-trade context (figure 2). The Tang and the Song capitals represent two stages in the development of the Chinese medieval city. Chan'an was a city built from scratch, tailored to the needs of a new dynasty. Kaifeng on the other hand gradually developed into an important entrepot and a prosperous city. The two capital cities, each with their own urban structure and cityscape, reflected the respective periods that produced them. Chan'an was rooted in a powerful aristocratic establishment with a highly hierarchical social structure, while Kaifeng was shaped by a diverse and mercantile society and managed by pragmatic professional bureaucrats. The emergence of this new urban paradigm was introduced against the backdrop of demands for political reforms as well as important social and economic changes in which the transformation of urban institutions and rapid urbanisation were integral. This transformation took place at the time of the collapse of the regulative power over commercial activities within the late Tang Dynasty. It was at this time that a new social order was built, replacing the old ruling aristocracy with a professional bureaucracy that was recruited through open civil examinations. This had a significant impact on the official attitude towards commercial activities and was later followed, in the Song Dynasty, by an increase in agricultural productivity, a rapid growth in population, the development of an extensive communication network and a more efficient method of transporting goods for the rapidly growing urban consumer population.

A new urban paradigm and the open city

It was in this age that a new urban paradigm and the concept of an open city were introduced. The open city meant among other things a change in the urban form, layout and skyline as well as a change in governance. The way in which the city became less controlled and more open to public involvement as well as the change in urban scale and urban density is described by Heng:

'Physically, the open city was significantly different from its predecessors. Driven by increasing congestion and economic considerations, there was a tendency, slight thought it may have been, to vertical expansion...rapid urban population growth also led to the emergence

Figure 1 — Plan of Chang'an:

N

Xuanwu Gate
Daming Gong

Guanhua Gate Jingyao Gate Fanglin Gate Xuanwu Gate   Xing'an Gate Jianfu Gate Danfeng Gate

Kaiyuan Gate

Palace City

Tonghua Gate

Imperial City

Buzheng

Xingqing Palace

Zhuque Gate

Jinguang Gate

Taiping   Wuben University   East Market

West Market

Kaihua
Dajianfu si

Chunming Gate

Fengle   Anren
Fajie nisi Small Wild Goose Pagoda

Yanping Gate

Chongye Jingshan
Xinchang Daxingshan si
Yongda Lanling

Jingzhang
Big Wild Goose Pagoda

Yanxing Gate

Baoning
Haotian guan
Yanzuo   Anyi

Furong Garden

Anhua Gate   Mingde Gate   Qixia Gate

0   1000   2000m

Qujiang Lake

Figure 1
Plan of Chang'an.
Source: Heng,
1999. For details,
see Heng, 1999,
pp5.

Figure 2 — Schematic reconstruction of Kaifeng:

N

Weizhou Gate
Xinsuanzao Gate
Xinfengqiu Gate
Chenqiao Gate

Xibeishui Gate

Wuzhang Canal

Outer City

Guzi Gate

Jinshui Canal

Wansheng Gate

Jinfengqin Gate

Inner City
15

Liang Gate

Palace City

26 23 21 22 24
27   25   4
19 20
18 16 13
17
3
7
12 11
2
9 10
8
6
5

Xishui Gate

Xinzheng Gate

Huimin Canal

Bian River
14

Jiucao Gate

Xincao Gate

Xinsong Gate
Water Gate
East Water Gate

Dailou Gate

Nanxun Gate

Chenzhou Gate

0   1000   2000

Figure 2
Schematic
reconstruction of
Kaifeng. Source:
Heng, 1999. For
details, see Heng,
1999, pp118.

of suburbs at strategic locations around the city. Within the walls the gridiron plan eroded to a more subtle network filled with T-junctions, cranked intersections, and oblique streets over a complex urban fabric. Towards the end of the North Song, a new kind of city was born.'

The Tang-Song transition period, important in many aspects for Chinese social, cultural, and economic history, is equally cr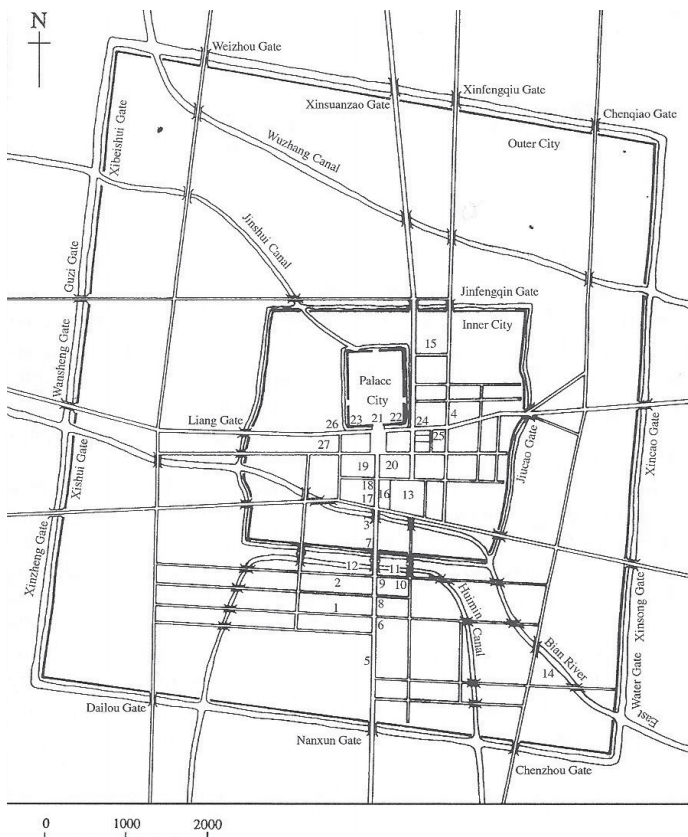itical in the history of Chinese cities. The transformation was long and tortuous. The reasons for the development were equally complex and multifaceted. When disregarding the causes for a change in the social structure, one can conclude that in the spatial and structural dimension in which the transition took place, the city was forced to readapt and reestablish a new urban paradigm; the open city which Heng describes was transformed into an open system in order to enable dynamic and spontaneous multifunctional street activities.

Given that the transition was a long and often non-linear process influenced by many factors, no definite conclusion can be drawn for each individual case regarding the interactive forces causing the adaption of the system to become an open city and the transformation of the spatial structure of the city. However, even today, within research on urban change and urban transformation, demands are being made to explore in-depth the reasons behind formal transformations, the way in which cities were perceived and what they meant to their founders, planners and inhabitants based on an extension of Heng's research.

The demands of reliability and flexibility in the 'City of Bureaucrats'
'Cities of Aristocrats' are based on the methods and approaches employed by the planning system. This operation is dominated by the logical response of strictly top-down regulations and controls while the 'Cities of Bureaucrats' are introduced as adaptive apparatuses capable of responding to diverse bottom-up incidents. In his article, Heng (1999) gave a description of the capital of Chan'an:
'To its founders and administrators, it may serve critical political, military, and economic functions. To its inhabitants, it is the crucible in which they forge their lives, make their living, establish meaningful personal relations, entertain themselves, modify their environment, and eventually mould their own culture. They are also regulated by its laws, restricted by its layout, and affected by it landscape.'

At the same time, the comparative description of the capital of Kaifeng reads as follows:
'The central authorities seem content to be involved only in general zoning, in the transportation network, and in the selection of sites for critical government functions. Installations that were detrimental to health such as cemeteries and kilns were relegated to areas distant from the city...the rest of city building-residential, commercial activities, and non-hazardous industries, and perhaps open space-seems to have been left to the initiative of the common people.'

In other words, the planning system of the city of Kaifeng realised over 1000 years ago established an optimal balance between a top-down and bottom-up approach by integrating a reliable long-term framework for urban development (general zoning, transportation network, locations for public institutions) with a flexible (open) system 'for initiatives of the common people' (residential buildings, commercial activities, non-hazardous industries and open space). The question is the extent to which this balance can be retrieved under the conditions of current urban developments in China and within a society that is once again in transition.

Reflecting on contemporary conditions for the urban development in China

Urbanisation

Although China has an urban tradition of thousands of years, the modern urbanisation of the country commenced rather late. In 1978, only 172 million people (18 percent of the total population) lived in cities (China Statistic Yearbook 2001). However, after the reversal of Chinese policies in 1978 and the opening up of the country to market initiatives and foreign investments, perspectives changed profoundly. Due to market reforms and the opening of the socialist economy, an accelerated urbanisation was initiated that is unprecedented in the history of mankind (Logan 2002). Undeniably, doubts have been growing since the mid 1980s on account of obviously exaggerated official estimates of the size of China's urban population (Wu,1994). However, the last census of 2006 shows evidence that China's urban population has risen to 593.79 million, encompassing 44.9 percent of the entire population (Statistic Communiqué of the People's Republic of China, 2007). The extent to which China's increased urban population should be attributed to such arbitrary factors as administrative changes and the modification of the urban definition remains unclear. Nevertheless, the outcome of the continued economic development in the 21st Century will be the massive economic and spatial transition from the rural to the urban sector if the current trend of market reform and the relaxation of state control continue (Lin, 2002). Such a massive transition from a rural to an urban economy poses great challenges not only to the Chinese decision-makers but also to anyone concerned about the sustainability of global development in general and human habitat in particular.

Market reforms and the relaxation of state control

Up to its end, the Maoist regime was seen to maintain a strong anti-urban stance (Bergère 2000; Lin, 2002). The peculiar system of cities under the Maoist strategy of regional development favoured inland regions over the eastern coast for reasons both of the ideological commitment to spatial equality and national security.(Fan, 1995 and 1997; Wei and Ma, 1996). This strategy has been reversed since institutional changes were initiated in 1978 by Deng Xiaoping and other reformists. The period since 1978 has been characterised by a

rapid surge of the number of designated cities as a result of both the relaxation of state control of city designation and the operation of spontaneous forces of market reforms and globalisation. Rural development from below has provided a tremendous impetus for the upgrading of towns to cities and the expansion of small cities. Lin (2002) concluded that this remarkable reversal has been inseparable from the three powerful forces, namely the state shifting its developmental emphasis from the interior to the eastern coast, the phenomenal growth of rural industries and the relaxed control of the state of the upgrading of towns into cities.[1] This resulted in two major developments: first, existing cities of different sizes have expanded both in terms of population size and land area; second, a large number of newly designated cities have been added to the existing system of cities.[2] It has appeared that structural and spatial changes in Chinese cities over the past two decades have been shaped by the rearticulation of the socialist state the functions of which have shifted from interventional to regulatory. At the same time, the scope and scale of the state sector under central planning have been gradually reduced to make room for the growth of private sectors and the operation of free market forces. The transition of the Chinese political economy from central authoritarianism to local corporatism and from planned to market means that the nature of cities as both administrative and economic entities are undergoing a profound transformation. The driving force for change is currently well underway.

A new urban paradigm: region-based urbanisation
The transition of power from the Maoist plan-based ideology into a post-Mao market-regulatory regime has ushered in a new development strategy that values efficiency over equity, individual creativity over collectivism and regional comparative advantages over defence or ideological considerations (Fan, 1995 and 1997; Lin, 1997). Since institutional changes were initiated in 1978, the trend towards the structural and spatial redistribution of cities has shifted. Notably, large and extra large cities have undergone a significant expansion whereas many small cities suffered from contraction in the Maoist era. At the present, the latter are on their way to becoming the most dynamic urban settlements with the highest annual growth rate (Lin, 2002). Geographically, the eastern region has the highest growth rate. Recognition of the inherent economic comparative advantages of cities, particularly those on the eastern coast, led the government to set up four Special Economic Zones in

1. The designation of cities in China has been handled by the Ministry OF Civil Affairs. In 1984, the Ministry relaxed its criteria for city designation. These relaxed criteria were approved by the State Council and disseminated in a 1986 circular titled 'On Adjustment of Standards for City Designation and Conditions for City to Administer Counties.' For detailed discussion, see Hsu 1994, pp 516.

2   The number of cities drastically rose from 193 in 1978 to 668 in 1998, an increase of 475 new cities in twenty years, far greater than the 61 new cities established over the previous decades. For detailed discussion, see Lin 2002, pp. 106.

1979 and designate 14 coastal open cities in 1984[3] (Teung and Hu, 1992; Wu, 1999). Along with the two coastal provinces of Guangdong and Fujian, these cities were given greater autonomy in order to attract foreign investment. Today, they are pioneers of economic reforms and centres of modernisation. Due to their inherent advantages as agglomeration economies, these large urban settlements have received more than 60 percent of all fixed asset capital invested in cities since the 1990s. This new urban paradigm has polarised the co-existing dual-track system of top-down dominance in the urban hierarchy of large and super-large cities on one hand and a large number of newly emerging small cities and towns subsequent to bottom-up rural transformative development on the other (Lin, 2002).

This phenomenon has been conceptualised as 'urbanisation from above' and 'urbanisation from below', but McGee and Ginsburg have argued that both models have been subjected to urban transition as a city-based process shaped by the forces of agglomerating economies and have witnessed its comparative advantages, although it may not be the only option for Asian urbanisation. It has been observed that a distinct process of region-based urbanisation has been taking place in the extended metropolitan regions as a result of economic restructuring, the influx of foreign capital investment and revolutionary advances in telecommunication and transportation. This process has led to the formation of zones of an intensive urban-rural mixture and interaction located in the areas surrounding and between metropolitan centres (McGee, 1991; Ginsburg, 1990). It shows the establishment of a trend in some areas, originating in a number of regions of the European Union, towards the emergence of polycentric regions and a pattern of multi-layered governance (Yang, 2008).

Obviously, the complex mechanism of China's urban transition has been and will continue to be interpreted from different perspectives. There is a need for a better understanding in a systematic manner as well as courageous efforts to search for paradigms and formulas to guide China's continuing urban transition.

NEW CHALLENGES AND NEW DEMANDS

Not only Chinese cities but planning approaches and methods too are in a process of transition. The rapid changes in Chinese society, the fast processes of urbanisation, the emergence of a market economy and growing foreign direct investments are confronting Chinese planning institutions with new demands and new conditions virtually on a daily basis. The supposed certainty of the planned economy is being replaced by the increasing complexity, uncertainty and unpredictability of recent transformative processes, while new parties

3   The four Special Economic Zones established in 1979 included Shenzhen, Zhuhai, Shantou, and Xiamen. In 1988, Hainan Island, previously part of Guangdong Province, was designated as the fifth and largest Special Economic Zone.

such as private investors and developers are increasingly involved in urban development, bringing with them their own interests and following their own logic, and new user groups are demanding space for their own initiatives. Growing social contradictions are leading to increased segregation and in many cases a concentration of poverty in certain parts of the city. Last but not least, mobility questions and environmental problems have become key issues in the development of Chinese cities. In general, the energy consumption of buildings is far too high and needs to be greatly reduced, and increasing motorisation and in particular the rapidly growing number of private cars not only generate daily traffic jams but are also the main cause of air pollution in most of China's cities. Moreover, the following facts indicate that within any given setting, system planning must continuously reinvent itself as circumstances change.

New challenges reflecting the dimensions of top-down planning approaches

Debates on the changing role of the government and the challenges of planning

In the blue-print era, the government played the roles of planner, operator and investor, thus monopolising national planning including land distribution and land ownership. Master-plans were drawn up as tools to legalise the restructuring of the land. In the post blue-print period however, the government is no longer fully in control and with its limited economic resources, planning decision-making is becoming a process of negotiation and collaboration with other actors. Spatial restructuring depends on the demands of the market and the contributions of different parties (Peng Kuntao, 2007). In the Maoist regime, a top-down planning approach was formulated by the strongly hierarchical administrative bureaucratic system. This system is now challenged by the emergence and divergence of the new collective interests of the different players involved. In other words, it is not just the role of the government that has changed - its planning skills and planning attitudes are also being required to adapt to the new demands of society. Consequently, in the progress of market economy system reform, the problem of government function transformation has been particularly highlighted with a view to clarifying the government's role of 'economic regulation, market supervision, social administration, and public service' (Gao Zhonggang, 2008).

The threats of the GDP- based planning approach

Another change to the planning system due to the changing role of the government is the GDP-based planning approach. In order to realise the outstanding growth of the GDP, the local government collects the farm lands from the farmers for a very low price and hands over development rights to private parties, thus lowing control of environmental effects. Frankly speaking, GDP growth does not compensate the cost of long-term environmental maintenance (Peng Zhenwei, 2007).

Invalidating the master-plan

Furthermore, since the 80s, an increasing number of discussions are focusing on the validity and sufficiency of the master-plan. In the traditional urban planning approach, the definition of the city scale was required based on two criteria: the planned growth of the population and the predicted scale of the built areas related to their population. In order to claim more land for the expansion of future urban use, local governments attempt to increase the expected population in the master-plan to more than the required numbers. The result is the inefficient use of land and huge overhead costs in connection with the investment of public funds in public facilities when the 'expected' result is not realised or the market fails to adhere to expectations (Peng Zhenwei, 2007).

On the other hand, evidence has revealed how invalid the master plan is in another, contrary, dimension. This is generally the case in regions and cities with an unexpected fast development. In most of these cases, in these regions and cities, the prognosis for the population in the master-plan is far too low compared to the growth of population in reality. This means that the master-plan is not able to cope with the speed and demands of actual development. This puts an enormous amount of pressure on the planners who are confronted with a continuous change of circumstances, an experience previously unknown to them in the past period of the Maoist regime.

Multi-level governance

The demand for multi-level governance due to the polycentric development tendency is subsequently gaining in importance (Zheng and Yang, 2008). It suggests building up a reasonable division between authorities based on a vertical structure - the relationships between planning departments on state, provincial and city levels - and at the same time, straightening out the administration system based on a horizontal structure - the relationships between the planning departments at different levels and relevant departments.

All the new confrontations mentioned above are relatively new challenges to the Chinese government and its planners. The dynamic of globalisation and urban transformations in Europe and in North America has been extensively documented and analysed. Compared with this body of knowledge, the number of studies on recent processes of transformation in China is rather limited. Only a few studies place the current changes within the framework of Chinese history in the last centuries. Hou (2003) argues that the modernisation of China is approximately 160 to 200 years behind that of western industrialised countries. Additionally, development has been retarded by political turmoil, (civil) wars, foreign invasions and occupations. As a result, China is confronted with a double challenge: to catch up after the delay of the past and at the same time to deal with the current challenges of globalisation and economic transformation worldwide. The situation is generating a special mode of development: the processes of industrialisation, urbanisation, decolonisation, westernisation

and post-industrialisation are not affecting the country in a linear manner, but on different layers simultaneously. The discourse with regard to the effects of this layered development on the system and spatial planning approaches in China will be better understood in its own cultural context , making it possible for China to enrich and stimulate the public debate and promote a further exchange of knowledge and opinions on relevant issues worldwide.

Understanding the planning discourse within political, societal and cultural contexts

Planning culture

 Planning systems and traditions, planning concepts and decision-making processes are always related to the cultural context and the cultural background of the people and societies involved. Social conditions define decision-making conditions and thus planning conditions. The link between society and planning was emphasised by the German sociologist Karl Mannheim who, in 1936, stated that planning is necessary and inevitable for free and open societies. In his book 'Man and Society in an Age of Reconstruction', published in the English language in 1940, he distinguished between four types of societies resulting from variations in participation and the centralisation of the societal decision-making processes:
Dictatorship is the result of low levels of participation and high levels of centralisation.
Anarchy results from high levels of participation and low levels of centralisation.
Anomie results from low levels of both participation and centralisation.
 - The 'democratically planned society', Mannheim's clearly favoured outcome, is a result of high levels of both participation and centralisation.

Mannheinm's book was a fundamental attack against both the top-down approach of the fascist dictatorship and the 'laissez-faire' approach of the liberalist market economy. It triggered what became known as the 'great debates' on planning and society that also affected the USA and post-war Europe. The main questions were: who are the actors of planning, which (democratic) institutions should be involved in planning decisions and what are the rights of citizens in planning processes. The debate had a strong influence on planning practice and planning legislation in almost all Western countries, resulting in highly formalised procedures for public planning, including the obligation to have people participate or at least to provide them with information.

In the 1990s, the debate on planning and society arose anew, particularly in Europe. An important reason for the return of this particular debate was the process of European unification and the growing demand to harmonise planning procedures and planning legislation and thus understand the divergence and dynamics of planning approaches in different European countries. Additionally, the rapid and fundamental changes of planning approaches and planning paradigms, caused by the political changes in Europe and resulting in new ac-

tors' constellations, attitudes and modes of action, as well as planning instruments, prompt-ed the recognition of the high level of relevance of 'soft' and culturally-driven orientations by planning researchers (Keller, Koch and Selle 1993).

It was into this framework that a new term was introduced, subsuming all perceived and interrelated differences and changes of style and notions of spatial planning: the idea of a 'planning culture' (Brech, 1993). Based on various international studies, John Friedmann defined a planning culture 'as the ways, both formal and informal, that spatial planning in a given multi-national region, country or city is conceived, institutionalised and enacted' (Friedmann 2005). An important factor is the link between planning, political culture and history: 'because planning in this sense continues to be primarily a responsibility of the state even as it draws upon the contributions of other societal actors, it is deeply embedded in the political culture of the country and/or individual cities and, as such, is always histori-cally grounded'. Planning culture here refers to the collective ethos and dominant attitudes of planners regarding the appropriate roles of the state, market forces and civil society in influencing social outcomes (Sanyal, 2005).

Friemann (2005) argued, despite the growing international communication within the profes-sion, that there are major differences in the ways that planning is conceived, institutiona-lised, and carried out. The planning of cultures worldwide can exist only in the plural, even as global restructuring is challenging them in similar ways. If this is true, it is necessary, as Fainstein (2005) emphasised, to avoid a narrow definition of planning theory resulting in a theoretical weakness arising from the isolation of the process from the context and out-come. Planning activities need to be rooted in an understanding of the field in which they operate; the objective of planning should be a conscious creation of the just city, which re-quires a substantive normative framework. She further contends that the object of planning theory should be to formulate answers to the following questions: (1) under what conditions can conscious human activities produce a better city for all citizens? (the planning vision; the planning mission). (2) how do we explain and evaluate the typical outcome of planning as it has existed so far?

By reflecting on the concept of planning culture, it is much easier for us to understand the ongoing changes in Chinese society, especially in the last 20 years. The idea of a planning culture has the advantage of developing from the outset a cultural differentiation, related to specific historical, political and social environments of countries, regions and cities. It allows a more original and specific approach to the recent changes in urban development in China. The theory of planning culture can be converted into an analytical, scientific approach to be used to investigate the recent developments in urban planning in China and interpret them as a 'cultural turn', embedded in the changing political culture of the country and at the same time grounded in the tradition of Chinese town-planning.

Shenzhen as a case study

To aid reflection on the above-mentioned factors, I have chosen to use the city of Shenzhen as a case study. Shenzhen is by no means an average example of the recent processes of urban transformation in China. In fact, the city is a rather extreme example of Chinese urbanisation. Shenzhen is located in the fastest growing region of the country - the Pearl River Delta. The planning approaches of the local authorities to this region represent the most challenging and advanced in China. The experiences and developments of Shenzhen are held in high regard in the urban debate in China. However, no detailed descriptions and analyses of this subject exist so far.

Shenzhen was built according to the market-liberation policies of the early 1980s. It was an experimental base used to implement and test the effects of market-economy principles which had been barely recognised during the planned-economy era of the communist regime. Within the context of these special circumstances, many new strategies and ap-proaches for urban development were introduced that were driven by the dynamics of a free market. The result was the establishment of a new institution for spatial planning in order to meet the new demands of the urban development and to adapt the older existing planning system in the transitional phase. Shenzhen's experience demonstrates that the role of spatial planners, planning institutions as well as approaches and methodologies in spatial planning are in a process of transformation.

Shenzhen can be seen as a highly relevant case on how to tackle the question of transform-ing spatial planning culture in China. In this regard, it is crucial to understand that without the societal changes that resulted from the transition of a planned to a market economy, Shenzhen would not have been built. For various reasons, many other Chinese cities have also recently been designated as experimental bases for new principles in spatial planning. Nevertheless, it mirrors the rise of a new Chinese society in general. A society in which, on one hand, the traditional top-down structure is slowly disappearing, while on the other, a more open society is demanded. Spatial planning must reflect the changes within society, and must therefore promote its continuous redefinition.

THE CASE OF SHENZHEN

One could say the initial success of Deng's strategy, especially after his 'southern tour' in 1992, depended upon the Hong Kong connection and the changes triggered by globalisation which boosted China's successful economy. As a result, a flood of foreign investment poured into China in anticipation of rapid future internal market growth. At the same moment, Shenzhen was birthed, among other things due to its special geographical location within one of the most populous and productive economic regions in the country - the Pearl River Delta (PRD)) (Fig.3). Its geographical proximity to and extensive social connection with the newly industrialising economies of Hong Kong and Taiwan prompted the choice of the region as a first testing site for the post-Mao regime of the development of an open market economy within socialist territory.

The Pearl River Delta has been the most economically dynamic region of China since the launch of China's reform programme in 1979. The region's Gross Domestic Product (GDP) grew from just over US$ 8 billion in 1980 to more than US$ 89 billion in 2000. During this period, the average real rate of GDP growth in the Pearl River Delta Economic Zone exceeded 16 percent, well above China's national figure of under 10 percent. In 1991, almost 50 percent of foreign investment in China was in Guangdong, and 40 percent in the PRD. By 2001, its GDP had risen to just over US$ 100 billion and it was undergoing an annual growth rate of more than three percentage points above the national growth rate. The abundance of employment opportunities created a pool of wealthy, middle-income, professional consumers with an annual per capita income that put them among China's wealthiest. Since the onset of China's reform program, the Pearl River Delta Economic Zone has been the fastest growing part of the fastest growing province in the fastest growing large economy in the world. (Xu, 2008)

In the 1980s, Shenzhen was a municipality just north of the border of Hong Kong. Today, 20 years later, it is aspiring to become a 'world-class' metropolis that by the turn of the millennium, already boasted a residential population of over 4 million. (Shenzhen's actual population, established in the 2000 census). The latest data show the residential population at over 8 million, a figure which is expected to increase, given the annual growth rate of 9 -10 percent. (Shenzhen statistics in 2006). This figure does not include the unknown 'floating' population. Their presence in the city is not acknowledged, and master-plans typically exclude them from calculations. ('Floaters' have no 'right to the city') (Friedmann, 2005).

When Friedmann defined Shenzhen as 'the best planning practice' in China, he meant that Shenzhen was built as an 'instant' city, transformed from its beginnings as a fish village in the open economic practice laboratory after 1979 when the market-reform policy was first

introduced in China. Two of China's Special Economic Zones were established in the Pearl River Delta region, and the entire delta was subsequently designated a Special Economic Region (SER) where local government, individual enterprises and farm households enjoy autonomy in economic decisions. From a political economy perspective, the region has served not only as a testing-site to develop an open market economy within a socialist territory, but also as a valuable laboratory for investigating how local and global forces have interacted within the Chinese context. (Lin. 2005)

In 1993, the Shenzhen master-plan (SMP) (1996-2010) was proposed and followed by the regional plan for the Pearl River Delta in 1995. After seven years, it was approved by the state council in 2000. During this period, a new monitoring system was introduced and the public's general opinion integrated.[4] Furthermore, the Shenzhen Urban Planning Committee was set up, including both city officials and - for the very first time in China - stakeholders representing local business interests. The role assigned to the committee was the conciliation of district-level plans with the municipal master-plan. Ordinary residents and the floating population continued to be virtually invisible and inaudible. Unfortunately, many Shenzhen planners considered the Urban Planning Committee a nuisance, labelling the attempt to enlist the participation even of a limited number of private stakeholders in the planning process 'too advanced' for China. Nevertheless, the planning process slowly became more transparent (Friedmann, 2005).

Other factors showed that there was a problem concerning an unpredictable result in the few years of practice. One of the most extreme examples is the invalidation of the population prognosis of the master-plan based on the control of the city scale. According to the last census disclosed in 2006, Shenzhen's residential population is approximately slightly above 8.9 million, twice as large as that predicted in the master-plan of 1996-2010, which was about 4.3 million. The question which arises is how a city can be 'planned' in a sustainable way when the emergent forces permanently intervene in the blue-print planning. Many debates have been focused on the issue of implementation of the master-plan among Chinese scholars (Peng K, Peng Z, 2007). This is crucial in regards to the increasing importance of private investments and private developments in Chinese urbanisation. These processes will continually challenge the Chinese planning institutions with new and unexpected demands.

The challenges at hand come together with many unanswered questions. This article aims to provoke further discussions, debates and more research with a view to exploring the possibilities afforded both by the explanations and strategies with a view to fully understanding these questions before searching for the answers.

---

4   The draft Third Master-plan was scrutinized for a 30-day period by the general public. Cadres and scholars from neighboring cities were invited to comment on the draft. Friedmann, 2005. pp189.

CONCLUSION

As may be deceptively obvious, we are now at the beginning of a long journey in search of enlightenment with regard to a better discourse with a view to understanding and facing the wave of urbanisation in China. A certain amount of contemporary research has revealed that the Chinese experience of urbanisation has provided a significant real case to illustrate the heterogeneity and irregularity of the post-modern world, a world which the neo-classical economic school has been unable to grasp with logical reasoning and deduction (Lin, 2001). As Friedmann (2005) emphasised, China's current system of physical planning is still 'under construction'. Many assumptions with regard to the Chinese economic and political reforms are still unclear, which does not bode well for the future. In these circumstances, it is vital to investigate the strategies to be gauged from planning practices by means of in-depth research based on analyses of the changes to planning made by political economies. However, these conditions have to be taken into account in this context, too. It would appear that the ultimate debate on planning practices in China on an international level is still to take place.

Nevertheless, despite the worldwide influential impact of globalisation in general and urbanisation in particular, in comparison to Western societies, China is still a highly state-controlled country with regards to urban planning. Planning is potentially a powerful instrument which can be used to call a better vision for a country's future into being, although it is important to be aware that faults and mistakes caused by its inherent political and societal limitations may remain.

The arguments above demonstrate the importance of establishing the context of an individual case. They indicate that planning is more than an instrument which merely serves to meet certain demands with regard to the functioning of society, intervening in that society with a view to alter the current course of events. The role of planners is often challenged by society's new demands and new conditions; within the goal of providing security for the functioning of society in planning operations, the question often asked is why and in which situations planners should intervene.

Friedmann suggests five values related to planning characteristics in contemporary society: planning should be normative, innovative, political, transactive and based on social learning (Friedmann, 1996, 2003).

The recent changes in the Chinese society are demanding a fundamental change in the planning culture, based on the societal rules and values of an open society, integrating the specific perception and meaning of space into China as well as into Chinese planning traditions and philosophies. The new planning culture has to redefine the role of state, market

and civil society in the planning process and generate a new balance between centralisation and participation (Mannheim), and between top-down and bottom-up approaches.

By replacing the top-down approach of the Maoist period, the new planning culture has to meet contradictory demands and needs to:

Generate a reliable framework for sustainable long-term development.
Guide the initiatives of different public and private actors.
Employ flexibility in connection with new and unexpected developments.
Give space to private initiatives and civil participation.

Within this framework, planning strategies have to be developed that do not only consider how to reduce the uncertainty and unpredictability of future developments, but that also increase the flexibility and reliability of planning systems able to work with the complexity and uncertainty of a society, a characteristic which is becoming increasingly necessary and demanded.

LITERATURE

- Beck U (1992) Risk Society: Towards a New Modernity. SAGE Publications.
- Beck, U (2000) What is Globalization, Cambridge: Polity Press.
- Bergère M C (2000) Civil Society and Urban change in Republican China Reappraising, Republican China, p 55-74. Oxford: Oxford University Press.
- Bloch E (1980) Abschied von der Utopie, Frankfurt/Main.
- Brech J (1993) Neue Wege der Planungskultur: Orientierungen in der Zeit des Umbruchs, Darmstadt: Verlag für Wissenschaftliche Publikationen.
- Campbell S & Fainstein S (eds.) (2002) Reading in Planning Theory, UK: Blackwell Publishing.
- Castells M (1989) The informational City. Information Technology, Economic Restructuring, and the Urban-Regional Process, Oxford.
- China Academy of Urban Planning & Design (2002) Chengshi Guihua Ziliaoji, Vol. 1-4. Beijing: China Architecture & Building Press.
- Chinese State Statistic Bureau (CSSB) (2001) Zhongguo chengshi tongji nianjiang (China Urban Statistic Yearbook (2001)), Beijing: China Statistic Press.
- Chinese State Statistic Bureau (CSSB) (2007) Statistic Communique of the (2007), Beijing: China Statistic Press. http://www.stats.gov.cn
- Cullingworth J B (1993) The Political Culture of Planning. American Land Use Planning in Comparative Perspective New York: Routledge.
- Fainstein S (2005) Planning Theory and the City, Journal of Planning Education and Research. 25: 121-130.
- Fan C (1995) Of belts and ladders: state policy and uneven regional development in post-Mao China, Annuals of the Association of American Geographers 85(3): p 421-449.
- Fan C (1997) Uneven development and beyond: Regional development theory in Post-Mao China, International Journal of Urban and Regional Research, 21(4): p 620-639.
- Faludi A & Valk A J van der (1994) Rule and Order: Dutch Planning Doctrine in the Twentieth Century, Dordrecht:

Kluwer Academic Publishers.

- Faludi A & Waterhout B (2002) The making of the European Spatial Development Perspective: No Master-plan, London: Routledge.
- Friedmann J (2005) Globalization and the emerging culture of planning, Elsevier Ltd.
- Friedmann J (2005) China's Urban Transition, Minneapolis: University of Minnesota Press.
- Giddens A (1990) The consequences of modernity, Stanford, CA: Stanford University Press.
- Ginsburg N (1990) The urban transition: Reflections on the American and Asian experiences, Hong Kong: The Chinese University Press.
- Hall P (1966) The World Cities, London: Weidenfeld and Nicolson. French, German, Italian, Spanish, and Swedish translations published.
- Harvey D (1990) The Condition of Postmodernity, Oxford.
- Harvey D (2005) A Brief history of Neoliberalism, New York: Oxford University Press.
- Healey P (1993) Planning through debate: The communicative turn in planning theory, In The argumentative turn in policy analysis and planning, ed. Frank Fischer and John Forester, 233-53. Durham, NC: Duck University Press.
- Healey P 1997 Collaborative Planning: Shaping Places in Fragmented Societies, London: Macmillan.
- Heng C K (1999) Cities of Aristocrats and Bureaucrat: The development of Medieval Chinese Cityscapes, Singapore: Singapore University Press.
- KESUN. (eds.) 2006. Urban Planning and Design Annual. Vol. 1-2, Wuhan: Huazhong University of Science & Technology Press.
- Hou Y B (2003) Retrospect and Prospect: Speech at the International Symposium for the Research on China's Modern Architectural Academia in the 20th Century, Research on China' Modern Architectural Academia, p23-25. Beijing China Architecture & Building Press.
- Keller D A, Koch M and Selle K (eds.) (1993), Planungskulturen in Europa. Erkundungen in Deutschland, Frankreich, Italien und der Schweiz, Darmstadt, Zürich.
- Keller D, Koch M and Selle K (1996) 'Either/or' and 'and': first impressions of a journey into the planning cultures of four countries, Planning perspectives 11, p41-54.
- Keller D, Koch M and Selle K (eds.) (2005) Verständigungsversuche zum Wandel der Stadtplanung, Wien.
- Lin G C S (1997) The China Quarterly-Transformation of rural economy in the Zhujiang delta, China, NO. 149 p 56-80. New York: Cambridge University Press.
- Lin G C S (1997) Urbanization and the Changing System of Cites in Socialist China: A History and Geographic Assessment, NO. 24, P 89-139.
- Lin G C S (2005) Metropolitan Development in a Transition Socialist Economy: Spatial Restructuring in the Pearl River Delta, China, SAGE Journal Online.
- Logan J (ed.) (2002) The new Chinese city: Globalization and Market Reform, London: Blackwell.
- Mannheim, K (1935,1940) Man and society in an age of reconstruction, New York: Harcourt, Brace & World.
- Mannheim K (1936) The sociology of knowledge. In Ideology and utopia, 264-311. New York: Harcourt, Brace & World.
- McGee T G (1991) The emergence of Desakota Regions in Asia: Expanding a hypothesis. In The Extended Metropolis: Settlement Transition in Asia, Ginsburg, Norton; Koppel, Bruce and McGee, Terry G. (eds.) p 3-26. Honolulu: University of Hawaii Press.
- Peng K (2007) Research on the Implementation of Master-plan, Urban Planning International, p 11-13. Shanghai: Tongji University Press.
- Peng Z (2007) Making Urban Master-plan under the Guidance of the Scientific Concept of Development, Urban Planning International, p 6-8. Shanghai: Tongji University Press.
- Portugali J (2000) Self-organization and the city, Berlin; New York: Springer.
- Campbell S & Fainstein S (eds.) (1996, 2003) Reading in Planning Theory, Blackwell Publishing Ltd.
- Sassen S (2001) The Gobal City. New York, London, Tokyo, Second edition. New Jersey.
- Soja E (1989) Postmodern Geographies. The Reassertation of Space in Critical Social Theory, London, New York.
- UNFPA (eds.) (2007) State of the world population 2007. Unlashing the Potential of Urban Growth.
- Wei D Y H & Ma L J C (1996) Changing patterns of spatial inequality in China, 1952-1990, Third World Planning Review, 18(2): 177-191.
- Wu H X Y (1994) The China Quarterly-Rural to Urban Migration in the People's Republic of China. No. 139, New York:

Cambridge University Press.

- Wu W (1999) Pioneering economic reform in China's special economic zones, UK: Aldershot, Ashgate Publishing.
- Xu J (2008) Changing Spatial Relationship Between Hong Kong and the Pearl River Delta, Urban Planning International No.101 p70-78. Beijing: Urban Planning International Editorial Department.
- Wouden H C van der (eds.) (1999) The City Street, The Hague: SCP.
- Yang C (2008) Multi-level Governance of the Polycentric Cross-border City-region: the Case of the Great Pearl River Delta, China, Urban Planning International, No.101 p79-84. Beijing: Urban Planning International Editorial Department.
- Yeung Y M & Hu X (eds.) (1992) China's coastal cities, Honolulu: University of Hawaii Press.
- Zhuang L D & Zhang J X (2002) Chinese Urban Development and Construction History, Nanjing: Southeast University Press.
- Zheng Y (eds.) (2000) Urban Planning and Design Manual. Beijing: China Architecture & Building Press.

WEBSITES

- Shenzhen online: http://www.sz.gov.cn/
- Shenzhen Planning: http://www.szplan.gov.cn/main/csgh/ztgh/plan/plan.htm
- Shenzhen Statistic: http://www.sztj.com/pub/sztjpublic/
- National Bureau of Statistic of China: http://www.stats.gov.cn/
- Statistics Bureau of GuangDong Province: http://www.gdstats.gov.cn/tjsj/default.htm
- Ministry of Construction of the People's Republic of China: http://www.cin.gov.cn

The urban network in the North of China. Illustration: Jing Zhou

JING ZHOU, TU DELFT

SEARCHING FOR GOOD URBAN FORM
FROM UTOPIAN CITIES TO CHINESE NEW TOWNS

INTRODUCTION: NEW TOWN DEVELOPMENT IN CONTEMPORARY CHINA

The industrial revolution that started in the mid 18th century in Europe triggered unprecedented changes to the urban landscape. Accompanying the fast urbanisation, urban problems such as overcongestion, disorder, inefficiency of land use, the deterioration of the environment, poor working and living conditions, etc. became increasingly acute. In searching for solutions for these and other urban problems, several ideal city models and concepts were proposed and experimented with. Among these, the Garden City model was so influential that its adaptive form, the new town, has been developed worldwide.

**Figure 1
New towns in
China since
1990s.**

China started the dramatic process of reforms moving from a planned economy to a socialist-market economy in 1978. Land that was formerly exclusively owned by the state was privatised in the late 1980s, and housing was made a legitimate market commodity from the beginning of 1990s on. Since then, cities have been experiencing rapid growth. The rate of urbanisation in the country increased from approximately 13 percent in 1978 to 36 percent in 2006, and is planned to reach 70 percent by 2050, which means that 12,000 people per year are expected to migrate from the countryside to the city.[1] As asserted by economist Joseph Stiglitz, Nobel prize-winner in 2001, urbanisation will be China's biggest challenge in the 21st century. Besides its role in accommodating and stimulating economic growth, other important tasks for China's urban development are balancing urban and rural segregation, regional differentiation and providing a modern quality of life to all urban dwellers. Meanwhile, as cities are expanding and condensing rapidly, similar problems such as the degradation of the environment and the quality of life formerly afflicting western industrial cities are severely confronting large Chinese cities. In order to tackle these urgent issues in transitional urban China (J. Friedmann 2005), developing new towns has become a widely adopted urban policy.

1   Data was derived from Chinese newspaper-People's Daily, 2006

Since the early 1990s, over a hundred 'new towns' have emerged throughout China (see figure 1). It is not difficult to see that the implementation of the urban policy behind this development will strongly influence the success of many other aspects of society, including its political stability, social integration, economic prosperity and environmental sustainability. It is therefore crucial to have a critical analysis of both the theoretical underpinning and the empirical experience of western new town practices, and to be able to identify the specific challenges faced by Chinese society.

THE ORIGIN OF THE GARDEN CITY CONCEPT AND ITS CONTRIBUTION

Early Utopian ideals and experiments

One of the earliest pieces of literature on the ideal city is the Englishman Thomas More's Utopia (1516) which was influenced by Plato's Republic. The author depicted 'a very attractive ideal of towns of limited size and open internal layout spaced out at considered distances over the countryside' (Osborn 1977). American urban theorist Lewis Mumford concluded in his book The Story of Utopias (1922),[2] that the common dream of the Utopian cities is to bring the richness of the country to cities and to and bring the vitality of cities to the country.

Utopian ideals were further elaborated on and experimented with in the 19th century by a number of great Utopian socialist reformers, including Robert Owen (1771-1858) and his French contemporary F.M.C. Fourier (1772-1837). They believed that better working and living conditions and better education for factory workers and their families could encourage work motivation and thus improve productivity. Owen successfully carried out his reform principles in the New Lanark factory in Glasgow and formalised the model of a good 'working community' - a small township offering every variety of employment and as far as possible self-contained (Owen 1817). However, his further investment in building the 'Village New Harmony' (1825) in America failed due to the mechanism triggered by radical socialist equalitarianism. Besides the experiments of social reformers, 'industrial villages' or 'company towns' emerged in the suburbs of large industrial cities, created by private industrialists who were not keen on changing property ownership but who wished to provide workers with better conditions. The 'Port Sunlight Village' (1887)[3] near Liverpool in England was a successful project of such a kind, where the townscape was very beautifully designed; the architectural styles were diverse, influenced by the Arts and Crafts Movement and public facilities were of a high quality.

2   See more from http://www.sacred-texts.com/utopia/sou/index.htm

3   See more from http://www.portsunlight.org.uk/

Such developments have a significant social meaning for capitalist industrial society at the present. time. These early individual spontaneous experiments by social reformers and industrialists gradually created a paradigm for planned communities or townships providing a high-quality and collectivistic lifestyle that allowed people to work, live and play in healthy and pleasant conditions. Planning and design were used as tools to realise physical and social improvement. The new 'industrial villages' in suburbs can also be seen as the early decentralisation of economic activities from the centre to the periphery by private initiatives.

**Figure 2
Regional Model
(Howard).**
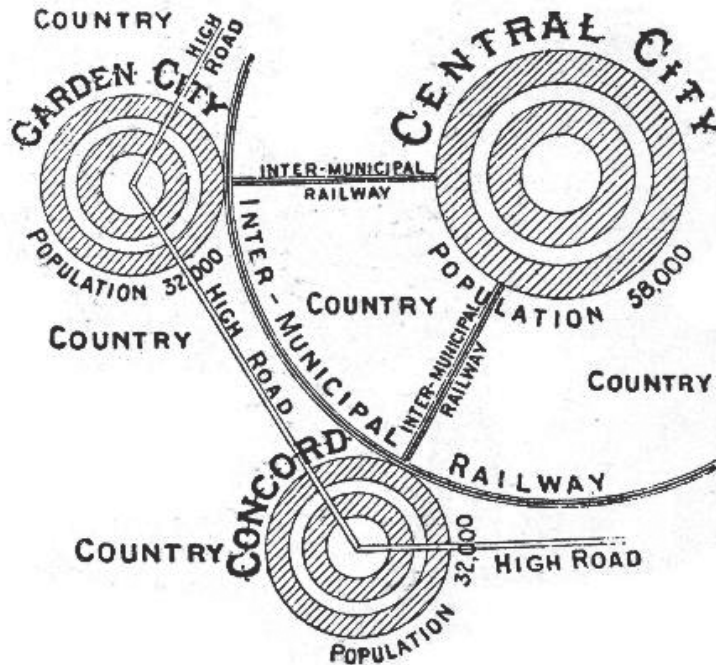
The Garden City concept and its influence

The second half of 19th century is characterised by great scientific discoveries, technological inventions and philosophical and social development. Influenced by Utopian ideas, Sir Ebenezer Howard systematically demonstrated the concept of the 'Garden City' in his book Tomorrow: A Peaceful Path to Real Reform in 1898, 1902. Seeing the enormous urban and social problems brought upon society by the Industrial Revolution, Howard's solution was to decentralise the overcongested large industrial cities by building planned and well-balanced small towns (30,000-50,000 people) in the suburbs, a plan which he defined as being 'designed for healthy living and industry; of a size that makes possible a full measure of social

life but not larger; surrounded by a rural belt; the whole of the land being in public owner-ship or held in trust for the community' (see figure2) (Howard, 1919).[4]

Howard's Garden City had several important meanings. It is firstly believed to be the start-ing point for the modern town planning movement. Unlike the Utopian thinkers or capital-ist industrialists, Howard conceived of new urban growth pattern from the point of view of the city. As Lewis Mumford put it, Howard 'attempted to improve the city as a whole, to alter the very method of its growth, based on well-defined wholes'.[5] Howard believed rational planning intervention was a means to ameliorate the urban problems in industrial cities. Although his enthusiasm with regard to small towns can be regarded as nostalgia for pre-industrial human settlements, his idea of limiting size can be seen as an opposition to uncontrolled growth, and his idea of integrating green into the city is by all means valid. Secondly, Howard was among the first to consider urban development in a regional perspec-tive. His idea of 'concentrated decentralisation' was original. His proposal for a regional unit consisted of a group of satellite towns bound together by a rapid transport system and was widely considered as an appealing rational alternative to the unconstrained continuous urban sprawl. It is a modest in-between of the highly compact urban model and the highly dispersed 'anti-urban' model. Last but not least, he cared about the social aspects of the new city. He anticipated that the cities would have a 'full measure of social life' and that as far as possible, they would be 'self-contained'. The later western new towns from 1940s to 1970s proved that social and cultural life is one of the most crucial issues, especially for new towns out of the immediate sphere of influence of a metropolis. This idea still requires further exploration.

In contrast to the Garden City model which combines a country-like urban quality with a better society, a number of other city models speculated on possible urban forms shaped by modern technology. For example, Linear City by Spanish Engineer Mata (1882) proposed continuous urban ribbons along-side rapid transport (especially the train). The Contempo-rary City model and the Radiant City model conceived by modernist architect Le Corbusier (1922, 1931) featured clusters of modern residential and office towers, with large scale open spaces in-between. The Broadacre City concept by American architect Frank Lloyd Wright (1934) proposed an American dream of individual houses in a dispersed low-density urban layout, with private cars used at will. Although different urban patterns were derived from within different contexts, it is clear that corresponding to the fast scientific and techno-logical developments, there was a consensus that the city should be understood and regu-lated in a rational way in the new age.

4   Cited from New Towns- their origin, achievements and progress, Osborn, 1977, p4.

5   Cited from New Towns- their origin, achievements and progress, Osborn, 1977, xiv.

To put his theory into practice, Howard launched two experimental projects: Letchworth Garden City (56 km north of London) in 1903-4 and Welwyn Garden City (30 km north of London) in 1919-20, both financed by private investments. After a certain amount of struggling in the initial phase, they successfully became self-contained industrial towns. As Sir Frederic J. Osborn commented, 'the planning and developing of Welwyn Garden City (see
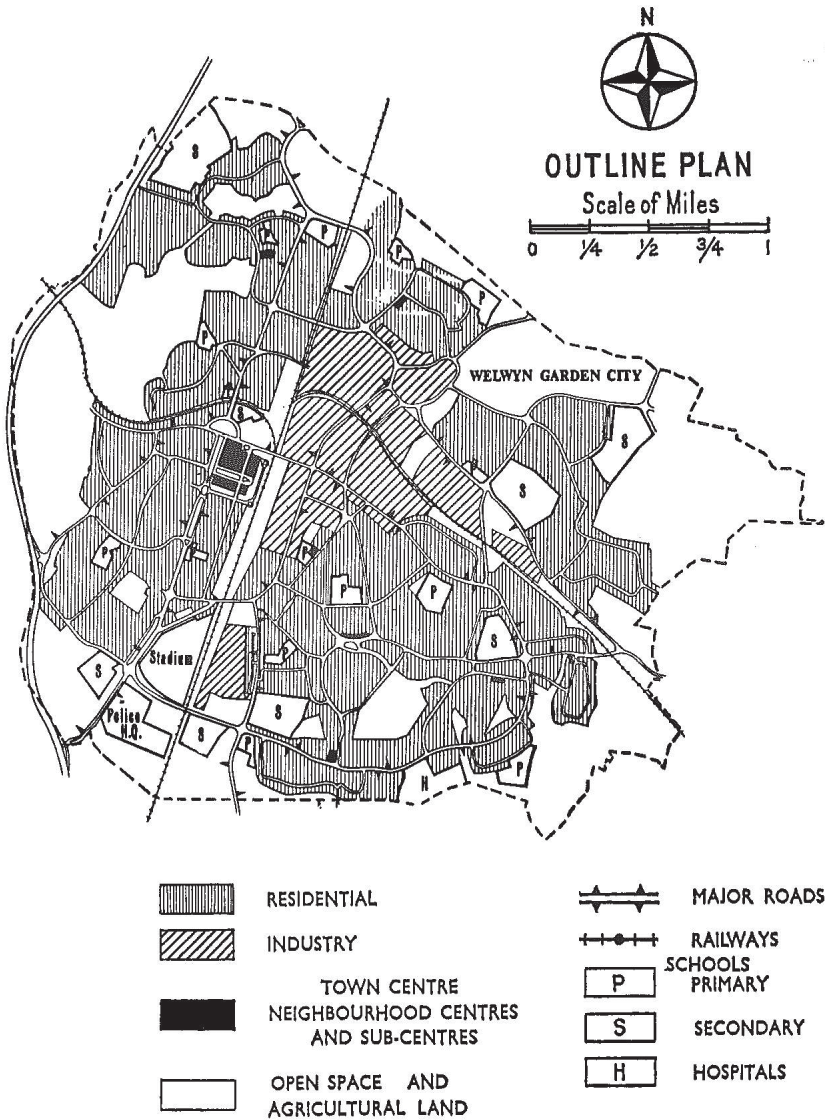
N

OUTLINE PLAN
Scale of Miles

| 0 | ¼ | ½ | ¾ | 1 |

WELWYN GARDEN CITY

	RESIDENTIAL		MAJOR ROADS
	INDUSTRY		RAILWAYS
	TOWN CENTRE	SCHOOLS	
	NEIGHBOURHOOD CENTRES AND SUB-CENTRES	P	PRIMARY
		S	SECONDARY
	OPEN SPACE AND AGRICULTURAL LAND	H	HOSPITALS

Figure 3
Welwyn Site Plan.

figures 3 and 4) became famous as the best example of whole-town design'[6] at that time. They are not only visually beautiful and human in scale, but economically viable. With his two successful projects, Howard demonstrated that his theory was feasible and able to be more widely reproduced.

**Figure 4
Welwyn Garden
City.**

Howard's idea of rationally decentralising the population and economic activities from a large congested city into suburban self-contained new towns was of highly influential and received wide recognition. In fact, his idea was reflected in many well-known plans of western metropolises from the early till the mid 20th century. Examples are the Greater Helsinki Plan of 1918, the Moscow Master Plan of 1935, the Finger Plan of Copenhagen of 1948 and the Greater Paris Plan of 1965. In the case of London, following the green belt and satellite towns proposal by Raymond Unwin in the report of the Greater London Regional Planning Committee of 1933, the Greater London Plan of 1944 by Patrick Abercrombie (see figure 5) made a further historical advance by converting the concept of 'metropolitan redevelopment on human standards, and decentralisation, green belts, new towns and country-town expansions into a clear and concrete practical proposition'.[7] The significance of these master-plans

6   Cited from New Towns - their origin, achievements and progress, Osborn, 1977, p30.

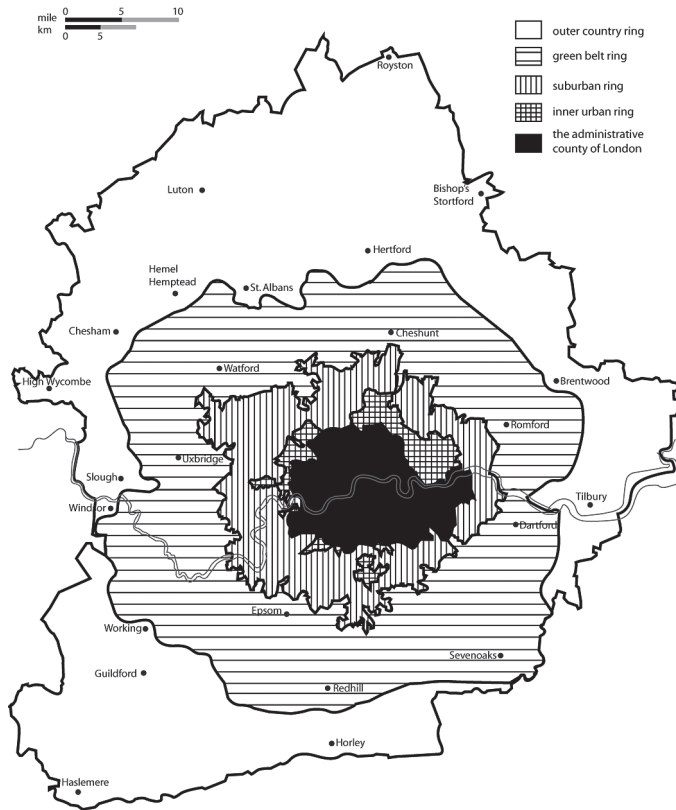7   Cited from New Towns- their origin, achievements and progress, Osborn, 1977, p50.

**Figure 5
Greater London
Plan 1944.**

are significant. They symbolised the beginning of metropolitan regeneration and structural adjustment by top-down intervention. For the first time, new town strategy was legitimatised as government policy, enabling concerted efforts to implement such large scale projects.

RELEVANT URBAN THEORIES AND THE VALIDATION OF NEW TOWN MODEL

Besides planners' prescriptions for urban regional development, scholars from different disciplines such as geography, economics, anthropology, ecology, physics, sociology also attempted to scientifically explain the underlying mechanism of the formation and transformation of the city in the second half of 20th century. Economic geographic theories and urban ecological theories were particularly prominent. From these theories, a number of important indications can be derived for the validation of Howard's Garden City and new town concept.

Many geographic economists (Weber, Isard, Perroux, Friedmann) had observed and explained the agglomeration and deglomeration of economic activities in a city.[8] The cluster-

8   Reference from Regional Development and Planning-a reader, J. Friedmann, 1964.

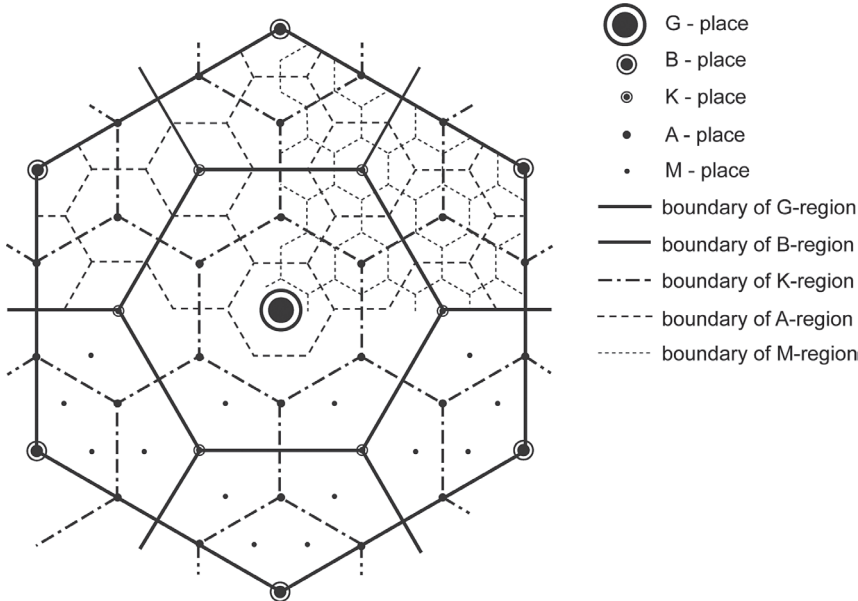The marketing principle, k = 3, the G-system. (Top right sector shown in full detial)

ing of industries and services allows individual firms to enjoy the benefit of the (large) scale of economy. The agglomeration of services stimulates a concentration of the market, further leading to the enlargement of business clusters. The dynamic process continues until the negative effects of agglomeration such as congestion, excessive taxes or competition outweigh the advantages. Then, moving-out occurs. Much empirical evidence reveals that the large metropolis as a whole has continuously strong agglomeration forces, while the deglomeration movement is more subtle and often intra-metropolitan. Moreover, evidence shows that the decentralisation of individual agents often appears to take place in a dispersed and unrelated pattern, resulting in the inefficient organisation of land use and the infrastructure. The conclusion can be drawn that if the city is left to develop entirely according to the free market, overcongestion and dissipated land use is inevitable. This verifies the necessity of top-down coordination, which is the essence of new town movement.

The central-place theory (Walter Christaller 1933, and August Losch 1945) similarly explained the effect of an agglomeration of services, and proceeded to formulate a system of central places (see figure 6) in hierarchical patterns. The basic assumption was that higher and lower level services are differentiated by the threshold of potential clientele. As we can see from the diagram, there are a number of major prominent centres in urban regions, where most of the high-level services and activities such as headquarters or museums that
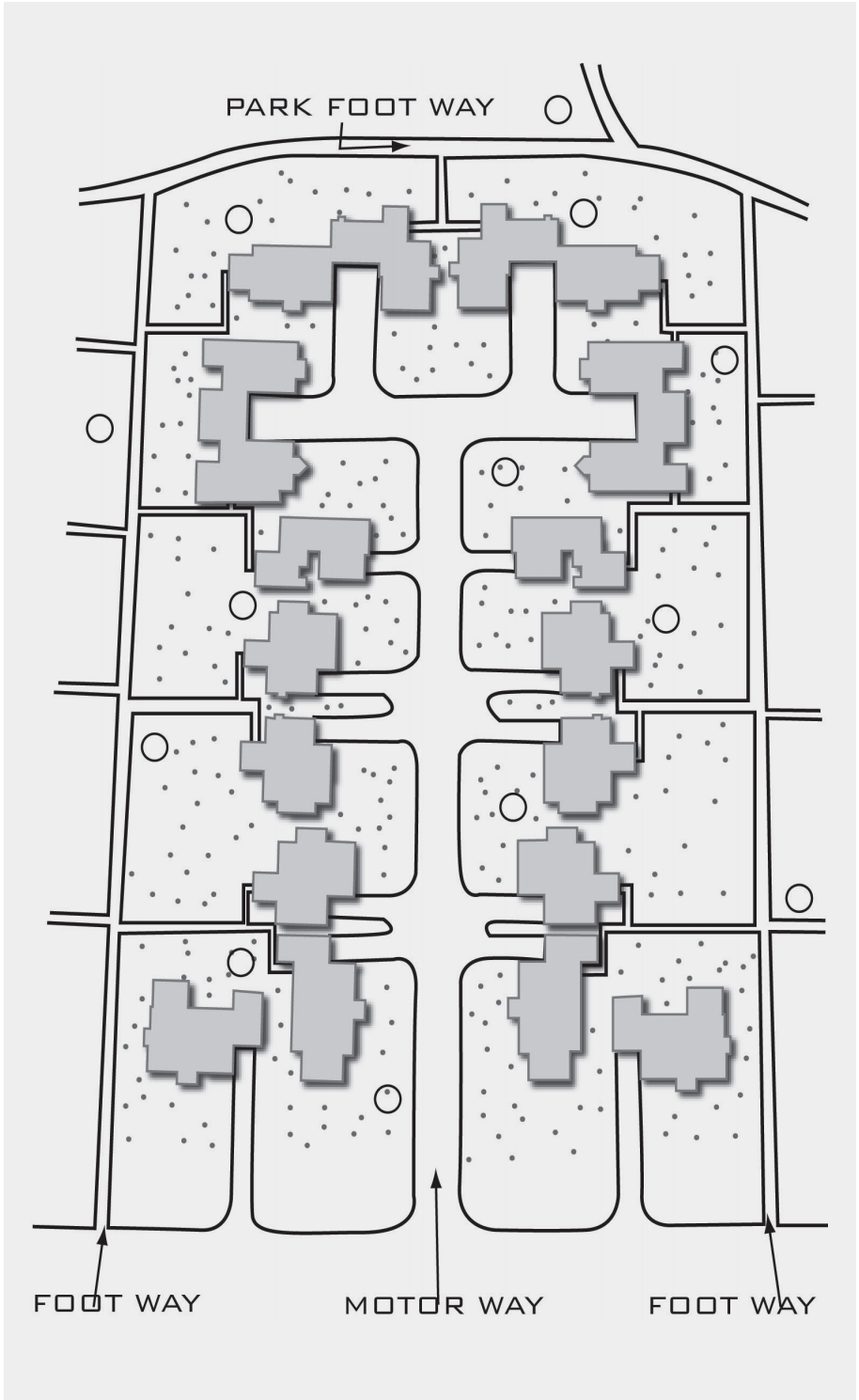
Figure 7
Cul-de-sac model.

rely on a potentially large groups of people are concentrated. Small centres mainly con-
sisting of daily supplies on the other hand are ubiquitous. Thus for a new town, there is a
dynamic positive relation between its level of activities and its population scale. Howard and
other new town advocates did in fact realise that 'no small city could be wholly self-con-
tained'. It indicates that the relationship between new towns and central cities should not be
one of separation but one of many connects. Similar opinions can be found in the Organic
Regions theory by Patrick Geddes (1904, 1915), the theory of Organic Decentralization by
Saarinen (1918, 1942) and the General System Theory by Bertalanffy (1968). The general
conclusion of these theories was that the idea of a very small size and the overseparation of
certain garden cities and new towns could be obstacles to their vitality.

However, the central-place theory mainly deals with the distribution of services. Studies and
observations of the behaviour of not-for-profit and special urban land use show that functions
such as universities, high-tech companies, exclusive medical care and entertainment facilities,
tourist resorts etc. are much more foot-loose in location. Once established, they tend to form
their own independent centralities. Examples are the Disneyland theme park, high-tech parks
and campus towns. These provide references for possible businesses in new towns.

In short, the scientific studies cited above may well be able to provide a theoretical under-
pinning for planning strategies, and planning intervention should comply with fundamental
economic and ecological principles.

NEW TOWN MOVEMENT, ACHIEVEMENTS AND DOWNSIDES

Pre-war Garden City development

Before WWII, many garden cities were built in cities around the world influenced by How-
ard's Garden City model. Some of them were independent or semi-independent industrial
towns; some were not strictly garden cities but satellite sleeping towns or suburban com-
munities. The residents of the satellite towns were greatly dependent on the central city for
employment and social-cultural activities, the former resulting in a certain amount of incon-
venience and sometimes long-distance commuting. At the same time, a number of design
innovations were made in connection with community planning, for example the concept of
the 'Neighbourhood Unit' and the 'Radburn' model. Clarence Perry (1929) defined the size
of a neighbourhood unit based on the radius of a five-minute walk from the centre where
major public facilities are located. Clarence Stein expanded the model by connecting several
neighbourhoods to form a town. The Radburn model was characterised by its curvilinear
street layout, its segregation of pedestrians and vehicles and its cul-de-sacs (see figure 7).
Well-known examples are Sunnyside Garden City (1924) and Radburn Garden City (1928) in
the United States, which were highly influential on later new town designs.

Post-war new town development and achievements

From 1946 up to the end of 1970s, new towns were widely adopted government policies of many growing metropolises around the world, and important accomplishments had been achieved.

In Britain, 28 new towns were built between 1946 and 1977. The construction of the first 14 new towns started just after WWII. The eight second-generation towns were started in the early 1960s, and the six third-generation ones in the period between 1967 and 1970. Eight of these new towns are situated around London. By the end of the 20th century, approximately 2.5 million people were living in new towns. In terms of their achievements,[9] first of all, consistent government policy support and the efficiency of Development Corporation were successfully maintained. Secondly, new towns effectively absorbed the overspill population as well as the rapid growth of new industries, facilitating the renewal of the worn-out inner city districts. As they themselves were financially sound, they helped keep economic growth in the city region. Most new towns were reasonably balanced in social terms, with work and leisure close to home. Acceptable amounts of public housing were provided. Thirdly, some new towns contributed significantly to balancing regional differences by forming new growth poles in relatively poorer regions. Also, many design innovations were generated, including various land-use/transport models, pedestrian-friendly town centres and interesting community designs.

French new towns were another example of strong centralist planning based on government initiatives.[10] A total of nine new towns originated in the 1960s, five of these in the region of Paris according to the strategy of the Greater Paris Plan of 1965, which proposed channelling the growth generated into two growth axes at a distance of about 25 km from the city of Paris. The new towns were defined as complementary but not satellite or autonomous towns. Employment was largely derived from public sector development (education and welfare). Some notable features in terms of design include various sorts of master-plans (linear, centripetal, grid, dispersed), strong town centres, interesting neighbourhood plans and architectural design by means of international competition, the integration of public art and quality landscape into the public open space and the innovative rapid transit system.

Problems and drawbacks of modernist new towns

Despite their considerable achievements, the new towns also exhibited a number of major common problems with regard to aspects of governance, socio-economic development, physical design, etc. To give a concise overview: 1. the new towns required strong consistent leadership; the balance of decision-making powers between the central government on

---

9   The information is summarized from New Towns World-Wide, p98-105.

10   The information is summarized from New Towns World-Wide, p107-129.

one hand and the local authority and the public on the other was clearly a problem. Partici-
pation and negotiation were in many cases inadequate. 2. the social group attracted to new
towns was often monotonic, mainly families with young children. On one hand, new towns
were accused of 'creaming off' the creative class from the central city. On the other, if the
towns were not able to absorb new population influx, they would face the problem of aging
and shrinking. 3. in some cases, there were problems caused by the insufficient use of pub-
lic transport and social-cultural and even commercial facilities, while in other cases, there
was a deficiency in such provisions. 4. in terms of economic development, a number of new
towns inevitably winded up being sleeping towns, while an overprovision of office space
sometimes occurred. 5. spatial problems can be found in the early modernist new towns
(before the mid 1960s) including a lack of diversity and individuality in design, unattractive
city centres and streetscapes, safety hazards in public spaces, and an overseparation of
functional zones.[11]

Generally, the challenges can be summarised in three major categories: strategy, design
and management. With regard to the afore-mentioned problems; 1. some of them stemmed
from the concept of the Garden City in itself. The notions of small size and segregated loca-
tion were in fact hindrances to its economic and social development. Others stemmed from
the fundamental feasibility of the social-economic strategies of a planned new city, including
important issues such as the timing of the building, regional positions and characters, demo-
graphic composition and social needs, etc. 2. another type of problem lay in the capability
of governance and process management, including issues of leadership and partnership, the
sequence of implementation, land management, monitoring and evaluation, and so forth.
3. a number of other problems related to the skills of spatial planning and design. Plans are
meant to provide physical frameworks for social cultural and economic development. The
designs of some new towns failed to create a distinct urban identity that could be publicly
recognised, high-quality public space for social interaction and freedom for individual ini-
tiatives. The co-functioning of these three factors determines the extent to which a high
quality of life can be realised in a new urban area. In fact, the methodology of design and
management can largely be influenced and limited by the cultural spirit, social philosophy
and technological development available in a specific historical phase.

Modernism versus postmodern urbanism
From the early 20th century till the early 1960s, modernism was a dominant social cultural
spirit (Ellin 1996). Brought about by the industrial revolution, the notion of ever-greater
mastery over the environment and an absolute belief in science and rationality held sway.
Various kinds of scientific instruments utilising mathematical equations and models were

---

11 See more details in the Parliament review of British new towns and the article of J.N.Tuppen, 1983, 'the development
    of French new towns: an assessment and progress', urban studies, No.20 p11-13.

applied in urban studies, including location theories, the central-place theory, human ecology, gravity theories, and so forth. The symbolic Athens Charter of 1933 (written by Le Corbusier) proclaimed doctrines of modern urbanism and called for the separation of functions by zoning regulations, new typologies and a better ways of life made possible by an industrial mode of production, modern building techniques and new materials. 'Form follows function' (Louise Sullivan) was the succinct expression of the ideology of functionalism. Machine metaphors were often used to describe the modernist pursuit of explicit order and operational perfection. They further believed that industrialisation would eventually yield a monolithic mass society with widely shared aspirations and tastes.[12]

However, the ideal of social reform fueled by science and technology proved to be utopian, among other things due to the fear of the abuse of technological power demonstrated in the deconstructive wars. In the real urban world, the beautiful scientifico-mathematical models were barely able to scratch the surface of the complexity of the urban scenario (Portugali 1999, 32), and were accused of being 'incapable of saying anything of depth and profundity about the real problems of society' (David Harvey 1973, 129).[13] The promise made by modern urbanism to control the urban monster by its rationalism failed to deliver. Faster privatisation, social segregation and polarisation and the decline of the central city and the quality of the public space (Ellin 1996, 290) shattered people's faith in planning. In response, postmodern urbanism called for the merging of separated disciplines and the reconsideration of the meaning and method of planning.

Much of the criticism levelled at modernism pointed out that excessive rational thought and behaviour was detrimental. In his article 'A City is not a Tree' (1965),[14] Christopher Alexander argued that the oversegregation of pedestrian/vehicles, work/housing and other functions of new urban areas prohibited the possibility of an overlap of activities, thus reducing the richness of human interaction (see figure 8). Recognising that the intuitive desire to simplify complexity by categorisation and grouping was 'among the most primitive psychological processes' of the human brain, Alexander's advice can be seen as a call not to overplan. Similar opinions were shared by many. Lucien Kroll contended that design should be regarded as a process that should 'not want to master everything' and that 'to allow things to happen by themselves is much more efficacious than prescribing everything' (Kroll 1984c).[15] Other studies contributed to revealing the complexity of the city and its apparently irrational but reasonable underlying mechanism, including the chaos theory (Sennett, Vidler), the complex system theories (Bertalanffy, Batty), and the newly emerging self-organisation theory (Portugali, Haken).

12 Declared by participants in the 8th CIAM (congress of modern architecture), held in London in 1945.

13 Cited from Self-Organization and the City, Portugali, 1999, p32.

14 More information can be found in http://www.patternlanguage.com/index.htm

15 Cited from Postmodern Urbanism, Ellin, 1996, p280.
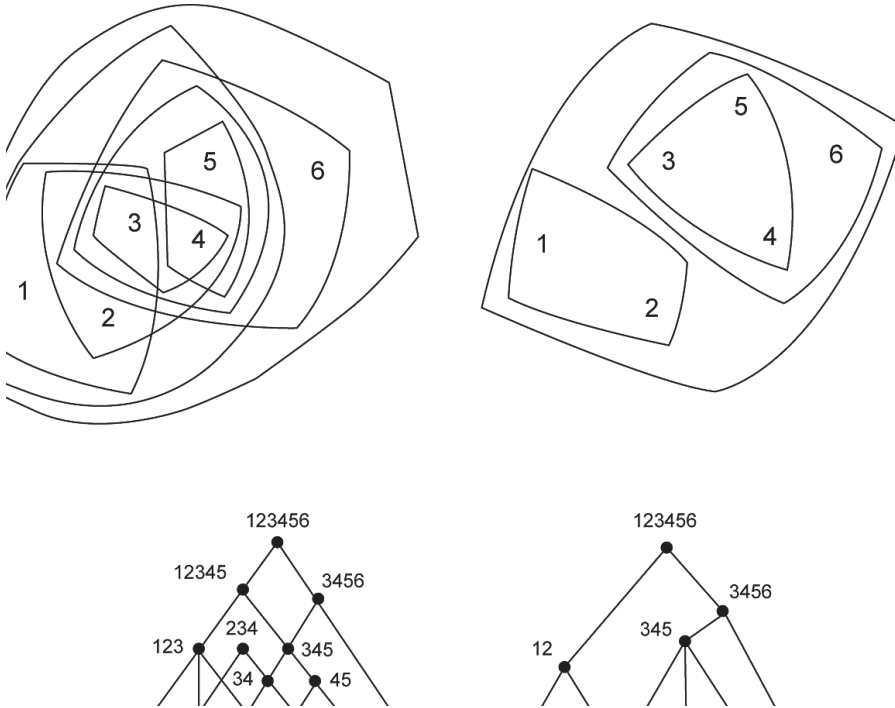
Modernism was also accused of lacking attention for human needs and a historical local context. The general aesthetic value of post-war housing construction in the US and Western Europe was disappointing and described as being 'repressive, ugly, sterile, antisocial, and generally disliked' (Relph 1987, 221).[16] The modern urban morphology - the vehicular pattern and the 'placeless' urban space (Relph, Tuan) reduced the possibility of social interaction. The differentiation of human tastes and values was replaced by a universal style and form; the variety of genius loci and historical cultural traditions was abruptly wiped out. Postmodernism called for more humanistic research and design methods: from subjective and qualitative to objective and quantitative; individual self-realisation, diversity and identity instead of collective uniformity; contextualism rather than isolation. Studies of this type deal among other things with social theories (Harvey), city of daily routines and time-geography (Hagerstrand), cognitive behaviour (Lynch), traditional neighbourhood development (TND) (Duany & Plater-Zyberk) and transit-oriented development (TOD) (Calthorpe).

---

16 Cited from Postmodern Urbanism, Ellin, 1996, p211.

Postmodern urbanism stresses that not only the design results but the processes too should be 'humanistic and expressive, open to dialogue and negotiation' (C.Mills 1986, 2).[17] As western society has gradually become more socially and culturally pluralistic and complex, more economically privatised and uncertain, the mastery narrative, prescriptive way of planning employed in former modernist times has been required to become flexible and democratic enough to allow room for different opinions, individual demands, multi-agent participation and possible changes. Theories supporting this view include the self-organisation theory (Portugali), the post-Fordism network city (Castells), the game theory and computer-aided simulations applied in project management.

In conclusion, there is no doubt that public planning intervention, conceived in order to cope with 'market failure' in the market economy, is still necessary in the postmodern age. However, positive evolution should be pursued: a balance between the planned and the unplanned (Portugali 1999, 229), between the fixed and flexible should be achieved; a better quality of life needs to be explored by more humanistic and ecologically-friendly designs; historical cultural tradition should be preserved while new identities and spatial characters need to be searched for. These new adaptations could serve as useful sources of guidance for contemporary new town/urban developments. Other innovations and creative localised practices derived from these principles are worthy of further exploration.

KEY CHALLENGES FOR CHINESE NEW TOWN DEVELOPMENT

The new towns planned up to the present mainly fall into four categories:

1. Satellite new towns associated with parent cities, with or without a balanced employment provision.

2. Specialised new towns, often the satellite type, with certain dominant economic activities, such as an airport, a harbour, a science and technology park, a university park, tourism, a conference centre or a medical care centre.

3. New regional growth poles - independent new cities aiming to boost the economy of the less developed region.

4. New urban centres - these are created in cities in which the historic centre needs to be entirely preserved, thus forming a new economic centrality. There are also certain kinds of 'self-organised' new towns, including industrial towns founded by private entrepreneurs

17 Cited from Postmodern Urbanism, Ellin, 1996, p277.

and large residential towns spawned by private real estates. In the vein of the Garden City, over a hundred satellite new towns are being planned for or will be built by the turning of 21st century.

The logic behind this wide-spread, large-scale new town movement in contemporary China is very similar to that of western cities from the 1940s to the 1970s. An increasing number of megacities with multi-million populations are emerging in China today. Their sheer size and overcrowding lead to serious problems of traffic congestion, long journeys to work, environmental pollution and a deterioration of the historic city, jeopardising the quality of life. Rational decentralisation and the application of the multinuclear model on a regional scale, demonstrated by western theory and practices has become an obvious choice for Chinese cities.

However, several major challenges lie ahead for Chinese new towns. Most importantly, the overall aim of new towns is to create a new regional centrality in order to decentralise existing urban pressure. This means that contrary to suburban sleeping towns, new towns should be self-sustained in socio-economic terms and a certain degree of urbanity and vitality created. From this starting point, a list of challenges can be identified concerning many different aspects. Firstly, as society becomes increasingly market-oriented, the segregation of the urban rich and poor is exacerbated. New town development should therefore contribute to achieving social balance and diversity. Secondly, as large cities in China are transitioning from industrial to post-industrial, the types of economic activities and their location behaviour have largely changed. The economic viability of a new town is increasingly dependent on its competition and complementation with a large parent city. Thirdly, modern urban China is currently suffering from an identity crisis. The country has a very long tradition of constructing planned cities. However, there have been insufficient attempts made at integrating valuable historical planning ideas and design elements into modern city-making, nor are there enough endeavours aimed at creating new urban characteristics, which is important for new towns. In addition, in terms of design, a common problem of the city-making process is the emphasis on the rapid increase of quantity rather than attention for urban quality. Coinciding with western postmodern opinion, Chinese planners hold the view that urban design should be more humanist in its process and production. Last but not least, the development of a large-scale long-span project such as a new town requires consistent policy support and effective governance. As Chinese society is in a transitional phase from a centralist to a liberal and market-oriented economy, the manner of collaboration between public and private stakeholders is playing an increasingly important role in determining the viability and vitality of a new town.

New town development in China has just started. It is both promising and challenging. While valuable western experience is available, new planning and design requirements arising

from changing social cultural conditions need to be met; Chinese local and traditional cultural and social values need to be creatively integrated into modern city-making. How these questions should be answered is worthy of closer examination.

CONCLUSIONS

The new town strategy originated in order to tackle the urban problems caused by the overcongestion of fast-growing cities. The concentrated decentralisation model proved to be theoretically valid and to have important ecological, economic and social meanings such as the integration with nature, the efficient distribution of resources and the formation of economic and cultural centrality. However, problems especially arose in realising urban social vitality. To this end, spatial planning and design methods as well as urban managerial tools are required to meet the new demands. Chinese new town development both challenges us and presents us with an opportunity to explore innovations connected to these issues.

LITERATURE

- Friedmann J & Alonso W (1964) Regional Development and Planning-a reader, MIT Press, Cambridge.
- Galantay E Y (ed.) (1985) New Towns World-Wide, IFHP, The Hague.
- Constandse A K (ed.) (1989) New Towns World-Wide 2, IFHP, The Hague.
- Osborn F J (1977) New Towns - Their Origin, Achievements and Progress, Lenard Hill, London.
- Zhang J & Zhao M (2004) Theory and Practice of New Towns Planning - a century movement of Garden City Concept, China Architecture & Building Press, Beijing.
- Xie S H (2004) Spatial Organization of Metropolitan Region, Science Press, Beijing.
- Portugali J & Haken H (1999) Self-Organization and the City, Springer, Berlin.
- Alexander C (1965) A City is not a Tree, Architectural Forum, Vol. 122, No 1, No 2.
- Ellin N (1996) Postmodern Urbanism, Blackwell, Cambridge.
- Friedmann J (2005) China's Urban Transition, University of Minnesota, Minneapolis.
- Knox P L (1994) Urbanization - an introduction to urban geography, Prentice-Hall, Englewood Cliffs.
- Stanback T M (1979) Understanding the Service Economy-employment, productivity, location, John Hopkins University Press, Baltimore.
- Frieling D H (ed.) (2006) Research on New Towns-First International Seminar 2006, INTI, Almere.
- Meyer H (1999) City and Port, international books, Utrecht.
- Aberscrombie P (1944) Greater London Plan, HMSO, London.
- Landry C (2006) The Art of City Making, Earthscan, UK.

PROFESSORS DEPARTMENT OF URBANISM

These are the nine chairs of the Department of Urbanism of the Faculty of Architecture at Delft University of Technology during 2008:

Urban Compositions
Chair holder: Prof.dr.ir. V.J. Meyer
Education: MSc TU Delft; PhD TU Delft
Focus: Fundaments of urban design as scientific discipline; urban compositions; design and planning of public works; the urban block
mail to: V.J.Meyer@tudelft.nl

Urban Design
Chair holder: Prof.ir. H.C. Bekkering
Education: MSc TU Eindhoven
Focus: Urban design, tradition and meaning, multifunctional and intensive land use, public space
email: H.C.Bekkering@tudelft.nl

Metropolitan & Regional Design
Chair holder: Prof.ir. C.M. de Hoog
Education: MSc TU Delft
Focus: Renewal of the Dutch metropolis, Design research into the Amsterdam-Brussels-Cologne (ABC) conurbation
email: C.M.deHoog@tudelft.nl

Spatial Planning & Strategy
Chair holder: Prof. V. Nadin
Education: MSc Coventry (Lanchester) Polytechnic
Focus: European spatial development and planning, cross-national comparative spatial planning systems, environmental sustainability
email: V.Nadin@tudelft.nl

Environmental Design

Chair holder: Prof.ir. C.A.J. Duijvestein

Education: MSc TU Delft

Focus: Sustainable Building; Spatial-, Ecological-, Social- and Economic Quality

email: C.A.J.Duijvestein@tudelft.nl

Belvedere

Chair holder: Prof.ir. E.A.J. Luiten

Education: MSc LU Wageningen

Focus: Cultural history, landscape architecture

email: E.A.J.Luiten@tudelft.nl

Technical Ecology and Methodology

Chair holder: Prof.dr.ir. T.M. de Jong

Education: MSc TU Delft, PhD TU Delft

Focus: Regional Physics

email: T.M.deJong@tudelft.nl

web: team.bk.tudelft.nl/

Urban Renewal and Management

Chair: Prof.dipl.-ing. H.J. Rosemann

Education: Architecture and Urban Planning, TU Hanover, Germany

Focus: Strategies of urban renewal and transformation, globalisation and worldwide urbanisation processes, urban management, urban theories, research by design

email: H.J.Rosemann@tudelft.nl

Landscape Architecture

Chair holder: Prof.dr.ir. C.M. Steenbergen

Education: MSc LU Wageningen, PhD TU Delft

Focus: Landscape architecture
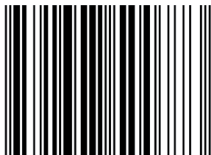
email: C.M.Steenbergen@tudelft.nl