Chapter 5

System: Urban Sociology

Urban sociology is a field of growing importance for the design and redesign of urban systems. While some fundamental observations are consistently true for all cities around the globe, each city displays considerable specialties.

Section 1

Urban sociology

URBAN SOCIOLOGY

Urban sociology describes the study of human life and interaction with urban systems from a sociological standpoint. Urban sociology is sometimes used to provide input for city planning and urban design. While the analytical findings of urban sociology are necessary to understand the functioning of urban systems, the inverse use of these findings as drivers of design are rarely possible.

While urban sociology is an active research field in Europe, the United States and the Anglo-Saxon language space, it has started later as a locally grounded and locally driven science in those countries were most of the cities are emerging in the 21st-century. It is almost non-existent in the poorest countries of the world.

The history of urban sociology goes back to the early 20th century and to the Chicago School of Sociology. More recent research areas are gentrification, globalisation and global cities.

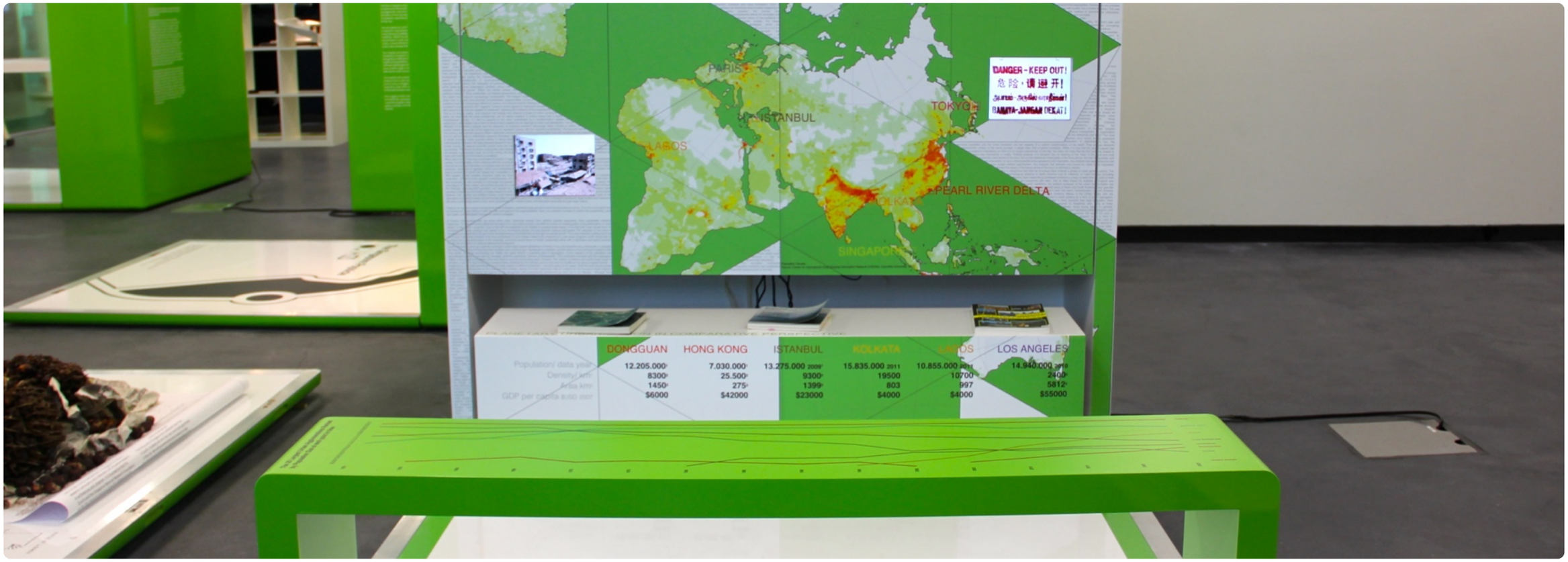
At the ETH Future Cities Laboratory, Professor Christian Schmid and his group lead the research on sociology and comparative urban studies. They describe the topic of their research as „global urbanisation in a comparative perspective“:

„Building a comparative typology of global urbanisation processes, analysing the mechanisms that generate urban uniformity and difference, and proposing appropriate urban development model

The last two decades have seen a sharp increase in the speed, scale and scope of urbanisation that has fundamentally changed the character of urban areas. Transcending physical borders, political jurisdictions and social spheres, urbanisation has become a truly planetary phenomenon. While it is often assumed that this phenomenon leads inexorably to uniform and undifferentiated cities, evidence shows that it also gives rise to surprising forms of difference, diversity and variation within and between urban areas. This simultaneous proliferation and diversification of urban forms has important implications for urban planning and design. In the first instance, it demands a more supple conceptual framework that can both hold the processes of planetary urbanisation and remain sensitive to the diversifying local manifestations. While many urban studies have examined particular cases in this emerging situation, a comparative and synoptic approach that captures both global and local dimensions is still lacking.

This module aims to redress this lack. It not only analyses the emergence of new urban forms, but elaborates the processes of urbanisation to explain how general tendencies are materialised in specific places. Methodologically, the module is structured around comparative analyses of patterns and pathways of urbanization. Nine metropolitan areas are examined as case studies: Tokyo, Hong Kong / Pearl River Delta, Singapore, Kolkata, Istanbul, Lagos, Paris, Mexico City, and Los Angeles. It will do so by: first, developing a methodological framework for comparative analysis; second, analysing the mechanisms and differences of planetary urbanisation and establishing a typology of contemporary urbanisation processes; and, third, examining the range of possible urban development models and exploring their practical implications. Special attention will be given to the analysis of urban potentials and the framing of possible strategies for a sustainable urban development.“ http://www.futurecities.ethz.ch/research-modules/urban-sociology/

Gallery 5.1 Urban sociology



The display booth of the Urban Sociology research module at the Future Systems Laboratory on February 8, 2013. Photo: Gerhard Schmitt

Extraction and inequality

While this book is about designing, planning, and managing cities, it is nevertheless important to be clear about the most destructive influences on the development of cities. Independent from the time or geography, from the culture or the country, societal inequality and extractive institutions have been identified of two of the most dangerous developments.

Inequality, especially social inequality means that large portions of the population are treated differently from those who are in charge of running the country, the economy, the city, or the social systems. In a wider sense, it also means that minorities are not part of the political and social systems, that they have no voice, and cannot express their opinion for fear of repression of personal safety.

Extraction describes the situation that a ruling party or a portion of the population render such power over the rest of the population that they can force them to work for them at very low cost. History is full of such examples: South America before and after the arrival of the Spanish, Africa before and after the advent of the Europeans, parts of Asia before the advent of the colonial powers. Extraction occurred in the process of colonisation, but could also be observed in the Republic of Venice, which changed from an inclusive society towards an extractive society. As observed before in the Roman Empire, this change started the final decline.

Inclusion and equality

While extraction and inequality are the situations to avoid under all circumstances in a country and in a city, inclusiveness and equality are qualities necessary for long-term success. They are no guarantee for the sustainability or for the longevity of an urban system, they might even cause misunderstandings, complaints about inefficiency, and prolonged discussions about seemingly unimportant details.

Social equality describes the situation, when the difference in income and political influence between the richest and the poorest sections of the urban population are small. A low **Gini coefficient** is a positive measurement and its rise signifies that inequalities in society are increasing.

Inclusion is perhaps the most important factor to guarantee the longevity, sustainability and resilience of urban systems and cities. It implies that all members of the population, including minorities, migrants, and those who might be unwilling to participate in the normal democratic process are invited, respected and encouraged to participate in the definition of urban life and development.

Urban systems and countries which are built on inclusion and equality have consistently shown a higher quality of life, income, and resilience. Good examples today are Denmark, Norway, inor Switzerland.

Growth in extractive systems

Acemoglu and Robinson claim that growth can occur both in inclusive and in extractive systems, and just by observing the effects, it is not easy to detect the underlying system and motivation. As the example of the Roman Empire after the end of the Roman Republic demonstrates, the gradual shift from an inclusive to an extractive system led to a loss of political influence of the majority of the population, the forming of the elite, but also in the beginning to an unprecedented expansion of the Roman Empire and and Brussels and lousyits economic power.

However, Acemoglu and Robinson, among many others, claim that there was, is, and will be no sustainable growth based on extractive systems. They use the example of the Soviet Union, which after the death of Lenin in 1924 established an extremely extractive system, accompanied by an impressive industrial growth until the 1970s - from which observers drew the conclusion that the Soviet Union would surpass the United States before the end of the 20th century. Yet it collapsed in 1991.

The city state of Venice was at one point the richest city in the world, supposedly as a result of an inclusive political system that switched to an extractive system that for a few years could reap the results of the previously positive inclusive system. Yet after the characteristics of the extractive system took root, the decline was inevitable. „La Serrata“ of February 28, 1297 is seen as the decisive switch from an inclusive to an extractive system.

Growth in inclusive systems

We often hear that inclusive systems are boring and cannot lead to advancement because too many people need to be listened to and decisions cannot be taken in due time to get ahead of the competition. Yet looking at historical evidence, this judgement is incorrect. Swiss cities, Vienna, Munich, Vancouver, or Copenhagen are consistently rated as those cities with the highest quality of life. All of those cities show a high level of inclusiveness in making decisions. Not a single city that does not have a decision making and planning process based on an inclusive system appears in the top 10 of the most liveable cities worldwide. No business hub, no gigantic tax generator, no top-down planned cities in dictatorships have ever won the title as the most liveable city.

It is therefore a fact, that inclusive systems can lead to growing, prosperous, and liveable cities. This also means, that cities with inclusive systems are potentially sustainable and resilient, that all of them have survived and prospered for many years. It can therefore be argued that inclusiveness is perhaps the most important ingredient when planning a new city or redeveloping an existing city, if sustainability and resilience of the long-term plans. It is therefore important to focus on how inclusiveness and equality can be guaranteed already in the design and implementation of new cities. The chapter on Urban System Design provides practical hints.

Name	City	Country	Reason	World Bank Gini	Criteria
Abigail Stoner	Berlin	Germany	Connectivity	28,3	Safety, transport, activity, commerce, culture
	Florence	Italy	Simplicity	36	
	Burlington, VT	USA	Comfort	45	
Elena Haddad	Zürich	Switzerland	Clean and beautiful	33,7	Infrastructure, culture, sustainability, internationality, climate
	Amsterdam	Netherlands	No cars	30,9	
	Boston	USA	Good education	45	
	Copenhagen	Denmark	Innovative designs	24	
	London	Great Britain	Public transport	34	
Erasmo Valeria	Barcelona	Spain		34,7	Climate/environment, cost of living, recreation/cultural, safety, transportation
	Zürich	Switzerland		33,7	
	Cagliari	Italy		36	
	New York	USA		45	
	Rio de Janeiro	Brazil		54,7	
Haitao Pang	Kyoto	Japan		38,1	Humanity, culture, comfort and health, economy, information
	Zürich	Switzerland		33,7	
	Vienna	Austria		26	
	Singapore	Singapore		48,1	
	Munich	Germany		28,3	
Hubert Holewik					History/identity, points of growth/ transformation, spaces of cultural exchange/art, access/integration, way of perception
Jan Alvfors	Stockholm	Sweden		25	Private physical conditions, social life, inclusion, ethics, of the physical conditions, congruence
	Zürich	Switzerland		33,7	

Name	City	Country	Reason	World Bank Gini	Criteria
Merchant Mehek	Zürich	Switzerland		33,7	Safety, quality of life, healthcare, infrastructure, education
	New York	USA		45	
	Dubai	UAE		???	
Pablo Acebillo	Barcelona	Spain		34,7	Infrastructure, culture, sustainability, internationality, climate
	Manhattan	USA		45	
	Zürich	Switzerland		33,7	
	Copenhagen	Denmark		24	
	Lugano	Switzerland		33,7	
Shoichiro Hashimoto	Zürich	Switzerland		33,7	Business condition, recreation space, urban design, access to nature, balance of the before
	Helsinki	Finland		26,9	
	Copenhagen	Denmark		24	
	Vienna	Austria		26	
	Munich	Germany		28,3	
Nishta Banker	Zürich	Switzerland		33,7	Safety and stability, people and environment, living costs versus earnings, infrastructure, resources
	Vienna	Austria		26	
	Stockholm	Sweden		25	
	Auckland	New Zealand		36,2	
	Bern	Switzerland		33,7	
Pietro Del Vecchio	Berlin	Germany		28,3	Political and social organisation, infrastructure, public transportation, medical and health services as well as culture, schools and higher Institutes of education
	Zürich	Switzerland		33,7	
	Copenhagen	Denmark		24	
	Hamburg	Germany		28,3	
	Rome	Italy		36	
Tom Doan	Copenhagen	Denmark		24	People, information and culture, economic and capital, food, climate and energy
	New York	USA		45	
	Kyoto	Japan		38,1	
	Hong Kong	Hong Kong		53,3	
	Sevilla	Spain		34,7	
Nikol Marincic	Bangkok	Thailand		40	Heterotopia, cost of living, quality of infrastructure‘s, diversity of cultures in relation to services, diversity of built environment
	Hong Kong	Hong Kong		53,3	
	Berlin	Germany		28,3	
	London	United Kingdom		34	
	Belgrade	Serbia		27,8	

Chapter 8

Urban System Design

The ultimate goal of modelling, simulation, and projection is design. Design is situated outside of science and art, but building on discoveries in both areas. Open system design this special in that it connects architectural design and territorial design. Informed and responsible parent system design builds on information and knowledge derived from modelling, simulation and projection.

Section 1

Urban System Design

DESCRIPTION

Urban system design is a new discipline. Situated between naturally and slowly growing cities, between geometrically predefined cities, and between arbitrary growth, it is a challenging, responsible and proactive design activity.

Its foundations should be threefold: the first pillar is the ability to understand, to abstract and to model the urban system. The second pillar is the careful simulation of design ideas, based on data and information to be placed in and to interact with the urban system model. The third step is the projection of various possibilities and the creation of design scenarios to be discussed with the stakeholders and decision-makers. The design of the final artefact then results in executable plans and multidimensional models based on which the city can be built or re-built.

Urban systems are large and complex, yet most of them work because of the adaptive capabilities of humans. From the original idea through planning, competitions, commissioning, construction to management, it takes years or decades. This reduces the probability that a a single idea will be followed through the entire process and will significantly influence the final result. Yet exceptions are possible and stay in the mind of the public. Examples are Brasilia in Brazil, Chandigarh in India, or Shenzhen in China.

Chandigarh, designed by the Swiss architect Le Corbusier in the 1950s, was a social experiment in system design. Le Corbusier was a foreigner to India and the city has developed in the very different direction since then.

Brasilia, inaugurated in 1960, is directly connected to the work and memory of Oscar Niemeyer, and to the then Brazilian president Kubitschek. It could be described as one of the first system design attempts, as it tried to integrate the human, architectural, political, planning, and infrastructure needs of a then future city. Oscar Niemeyer was a native of Brazil, but still the city developed differently from what he originally intended.

Shenzhen is the newest of the three examples and there was no grand architectural urban system design scheme at the beginning. This makes it interesting, because the city of today more than 15 million people grew organically.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Urban systems design

Systems design describes the process to define the structure, the model, the components and the necessary data for a system to perform in a desired way. In analogy, urban systems design then is the process to define the underlying structure, the desired model, the necessary components and the data and information for an urban system to function in a sustainable way. In an abstract way, it is an extension of architectural design. Rather than buildings interacting with the urban system, the urban system will interact with the territorial system.

Specifications

High-level specifications for an urban system could be sustainability, value creation, happiness of the population, affordability for all income classes, positive environmental impact, and contribution to the functioning of the territorial system surrounding the urban system. The process of defining the specifications is most challenging and important.

Processes

In a top-down process, a process owner, for example a city mayor a city planner, assembles a transdisciplinary team of experts to address the specifications. In a bottom-up process, a community or a group of stakeholders organises itself to address the same set of specifications after formulating, ranking, expnading and discussing them carefully.

Results

The results of the process to fulfil the specifications is normally a master plan, or a master rule plan. With increasing computational capabilities, crowdsourcing and design oriented social media, the design results will be visible immediately and lead to an interactive process of improving the design and performance.

Implementation

The implementation of the design results will last for years and will continue until a equilibrium is reached, or until the urban system ceases to exist. Traces of the original design can be found today in cities that are more than 2000 years old, and this strength of the original design is a phenomenon that will persist. The **memes** of the urban system design appear like the analogy to genes in biology.

Data collection and feedback

As soon as the first buildings and infrastructures are completed, data collection must start. Data and their prudent monitoring and use are crucial for the functioning of all systems. The extensive application of data in the urban design process is a new phenomenon that was not possible only a few years ago. The data and information feedback loop helps urban systems designers to adjust their designs based on the observed performance and on the degree of fulfilment of the original specifications. This opportunity is specific to the urban systems design of the 21st-century.

Why urban systems may fail

Acemoglu and Robinson convincingly argue in their book „ Why Nations Fail“ that the most prominent reason for the failure of nations is the extractive nature of national government, in stark contrast to the inclusive nature which fosters growth and makes nations sustainable. The authors mention numerous cities and city states to which this observation also applies.

They argue that it is not geography, or culture, or ignorance which decides if a nation will be successful or will fail, but that it is the simple difference between being extractive or inclusive. They give powerful examples under the title „How Venice Became A Museum“ and described how Venice, after the decline of the Roman Empire became most likely the richest and most powerful city in the world during the Middle Ages, with several times the size of London at its time.

The description of the rise and fall of Venice, which the authors connect directly with the switch from an inclusive type of economic and political development towards an extractive type development, caused by the always inherent wish of the leadership and the elite to concentrate power in their own hands, rather than letting it go to new persons that constantly enrich the economic development. The authors claim that Venice today is a museum and only lives on tourists that come to visit the results of the time when inclusive governmental structures defined the city.

In view of the discussion of the three examples of Chandigarh, Brasilia and Chenzhen, inclusiveness and extraction also play an important role. Chandigarh, after many years of British extractive policies, was founded based on a top-down decision where the next capital should be built. A similar development could be claimed for Brasilia. Also here, the extractive nature of this part of South America is well argued by the authors of „Why Cities Fail“. In fact, the relative economic underperformance of Brazil as compared to North American countries could be one result, stemming from the extractive policies of the previous governments.

In this light, the rapid development of Chenzhen comes as no surprise, because it could be seen as an island off inclusive policies, enabled by economic development zone. The rapid growth off the city within the last 30 years, which by far surpasses the growth of Chandigarh or Brasilia in more extractive contexts could be a powerful point to support this theory. In all three cases, it seems indeed a fact that neither culture, not climate, nor geography or ignorance led to the development of the cities as they are today. The example of Shenzhen shows clearly, as does the example of the neighbouring Hong Kong, that inclusive institutions and local governance are dominating factors in the development of cities. They will also eventually decide on their long-term success or failure, and on their long-term sustainability and resilience.