1. INTRODUCTION

(Richard Stiles & Katrin Hagen)

More than 75 % of Europe's population now lives in urban areas and both the proportion and the absolute numbers of city dwellers continue to grow. The result of the need to accommodate these new urban residents within existing city boundaries is increasing pressure for new development. More building within a finite space must automatically lead to increases in urban density, and in many cities this is stimulating a debate about how to deal with the last remaining reserves of urban land.

At the same time concern with the effects of climate change means that there is a growing awareness of the importance of green and blue infrastructure and its role in providing the urban ecosystem services essential to help mitigate the impacts of climate change.

Urban open space is the key component of green and blue infrastructure in towns and cities, and also fulfils a wide range of other functions. From a social point of view is an essential contributing factor to the quality of life and well-being of the urban population.

As the population of towns and cities continues to grow, how will it be possible to do justice to the increasing importance of urban green and open spaces to the growing urban population and to meet their needs for recreation and health and well-being, despite the need to plan for denser urban development?

Can we resolve this apparent contradiction? Useable urban open space - especially green space - is consistently viewed as a key factor in affecting quality of life and as an influence on people's choice of where to live. High quality open spaces are therefore among the most important factors in the development of new and in the renewal of existing urban areas. The protection of existing open spaces in areas of increasing pressure for higher urban densities is also becoming more difficult, while at the same time climate change is bringing with it new threats to our towns and cities which can be ameliorated by well designed open spaces.

Phenomena such as extended summer heat waves, increased air pollution and extreme rainfall events, are both a challenge and an opportunity for urban open space in the context of the city as a whole. In a rapidly growing city such as Vienna, this pressure on open space can already be clearly felt.

How can new development be accommodated while at the same time promoting the creation of an attractive and liveable urban environment? Numerous other cities in Europe are facing similar challenges and innovative new visions, which aim to combine both aspects: higher built densities with an attractive urban living environment are already being experimented with.

In September 2017 the Department of Landscape Architecture of the Vienna University of Technology (TU Wien) hosted an international conference with the title: “***Urban***

densification – the challenge for open space". The conference brought together international specialists from city administrations, research and practice to report on and exchange experience about current European strategies, as well as presenting examples of specific projects and innovative design solutions.

The conference was divided into four sessions, each of which brought together an administrative view from a city planning department on the strategic approaches being pursued, followed by examples of up-to-date planning and design practice.

Each session focussed on one of the above themes, while expressing them if the form of calls for action:

- the need to tie in with and **update green strategies**,
- the requirement to effectively **deal with density** and the corresponding challenges,
- the importance of honestly **facing up to climate change** and
- the imperative not to get lost in small scale details but also to have the courage to **think big**.

This publication of the conference outcomes includes the papers of all invited speakers and places them into a wider context.

Inputs der Vortragenden in einen größeren Kontext stellen

a) Jeweils im Vorfeld zu den thematischen sessions: allgemeine Rahmenbedingungen, Stand der Dinge, weitere internationale Ansätze recherchieren, Überleitung und Begründung Auswahl Vortragende (Introduction / Research).

b) Zusammenhänge herausarbeiten, diskutieren und einen konkreten Bezug zu Wien herstellen (Gastkommentare - Abschnitte COMMENT / REFLECTION).

c) Gedankenanstoß: Konkrete Gestaltungsansätze in Wien (10. Bezirk) zu dem Thema Verdichtung unter dem Aspekt der Quantitäts- du Qualitätssicherung des Freiraums – zusammenfassend vorstellen und diskutieren anhand der Ergebnisse der LVA „Die grüne dichte Stadt" (gekoppelte LVA mit Studierenden der Architektur und der Raumplanung im Masterstudium)

d) Schlussfolgerungen inkl. Reflektion der Diskussionen

[Wird noch ergänzt und auf 'en' gebracht...]

kommentar friedi: könnt ihr abschätzen wieviel seiten es werden?

2. UPDATING GREEN STRATEGIES

2.1. Updating green strategies

(Annalisa Mauri, Gisa Ruland)

Introduction / Research

The appreciation of green urban elements and their many functions and tasks is an important factor in the preservation and development of livable cities that are becoming ever denser.
Green overall strategies concerning the urban space and the adjacent metropolitan area can only be developed and implemented through subprojects if the people in charge, the city administration and the citizens recognize the importance of urban parks and share this appreciation.

Already in the 70th of the nineteen century the discussion about new ideas for strategic landscape planning started to deliver multiple functions, and enhancing the peri urban environment started with McHarg´s Design with Nature. (MacHarg,1969).
Around this time in Germany planning tools like landscape plans, landscape structure plans or open space concepts deals with the aspects of green infrastructure and strategies in the cities and their rural surrounding. The planning tools includes subjects like soil protection, water management, biodiversity-aspects, climate protection.
Also in the United States the “Green Infrastructure” was identified as a strategic, multiscale approach to land conservation and land use planning, with particular emphasis on ´life support functions` natural processes or ecosystems (cf. Natural England, 2009 p.9).
The debate about the sustainable development of urban and rural areas started around the year 2000, among others, with the EU Natura 2000 network strategy and implementation around Europe. “Building a green infrastructure is one of Europe´s contributions to reversing the trend of biodiversity loss and to linking and strengthening diverse ecosystems in urban and rural areas.” (European Union, 2010, p1)
“Green Infrastructure” is described here as “a network of multi-functional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life or sustainable communities” (Natural England, 2009 p.7).
The massive expansion and the densification of urban zones and transport infrastructure in the last decades has cutting up Europe and minimize the open space and green areas inside the cities. Together with the change of traditional-land-use practices to more intensive use this development has weakened ecosystems, their functions and the biodiversity support.
“Cities are increasingly facing the risk of climate change; among them, coastal erosion, flooding from heavy rainfall, heat extremes, drought, effects on health, higher energy demand for heating and cooling, and reduced availability of water and food” (Wilby 2007, p.31-45 in Hanson, 2017, p.8).
Innovative Strategies to renew the Urban and Rural Green Infrastructure Planning were needed.

In urban areas “Green Infrastructure” refers to a network of green building blocks that connect the green sub-areas (parks, green spots, green streets...) in the city with each other and with the landscape in the area (forests, lakes and other local recreational areas...).

The point is the ecological (conservation of biodiversity, microclimatic improvement etc.), social (space for exchange, recreation, integration etc.) and economic (revaluation and development of former industrial or residual areas, re-qualification of open spaces, creation of identity and organization of public space) additional value that this planning strategy generates on very different levels of scale.

Internationally, there is an intensive technical discussion on the optimization of the "green infrastructure" in cities. There are numerous research projects that discuss the different aspects of the topic, including the importance of the ecosystem benefits[1] of nature in the city (cf. Bartz, R. et al, 2016) or of the urban green infrastructure (cf. Bundesamt für Naturschutz, 2017).

The goals of a holistic planning strategy are discussed: starting with securing land, via the formulation of qualification requirements to the instruments and existing subsidies that can be used to develop the green infrastructure. Numerous notes on importance, strategic development and implementation for municipal planning practice are compiled.

The new green strategies are based on the understanding that urban nature improves living conditions, health and social cohesion, allows direct access to nature and environmental education and makes a significant contribution to the discourse of "self-sufficiency and sustainability". As a result, urban nature in general is an important location indicator for assessing a city and placing it in the international city ranking. The quality of life and attractiveness of cities are strengthened by the potentiation and creation of high-quality green spaces (cf. Bartz, Robert et al, 2016, Ökosystemleistungen von Natur in der Stadt”)

In order to preserve and develop ecosystem benefits and thus to increase the well-being of people in the city, it makes sense to build on proven strategies and planning instruments of urban development. Here among others urban development concepts for various key topics can be helpful, for example the Urban Development Plan Climate in Berlin 2030, with its four fields of action to reduce the CO_2 emission and to reach the climate protection goals of the Paris agreement: bioclimate, green and open spaces, water quality and heavy rain and climate protection (cf. Senatsverwaltung für Stadtentwicklung und Umwelt Berlin 2016), or the thematic concept green and open space in Vienna for the Urban Development Plan 2025, which in addition to the goal of the construction of an open-space network determines parameters and standards for the green- and open-space supply in Vienna (cf. Magistrat der Stadt Wien, Magistratsabteilung 18 – Stadtentwicklung und Stadtplanung, 2015). The strategy of this concept is to preserve, create and realize enough high-quality green space in the growing city.

In many cities, green networks are strategic guiding principles in the context of urban development, among others the "Green Network Graz" (cf. Landeshauptstadt Graz, 2006),

the guiding principle "compact city in the ecological network" in Dresden (cf. Landeshauptstadt Dresden, 2014), the open-space framework in the open-space concept of the Green City of Zurich (cf. Stadt Zürich, Grün Stadt Zürich, 2006) or „The City of London Open Space Strategy“ (cf. City of London, 2015) with the aim to create a green open-space network throughout the city to connect the „hidden gems“ with the squares, gardens, courtyards etc.

With Hamburg and Milan, two specific examples for the development and implementation of green networks were selected and presented in more detail.
Both are growing cities and growing metropolitan regions. Hamburg with a long tradition of green strategies for the city, Milan with a tradition of recultivation former industrial areas into green open space areas with lots of possible uses for the population.

Hamburg (1.8 million inhabitants) was European Green Capital in 2011. 5 million people living in the metropolitan region around the city. This metropolitan region includes 16,5 per cent green space, recreational areas and forest. Inside the urban area nature conservation make up almost 8 per cent plus around 60 km waterways. At the same time, however, Hamburg is also an industrial city with Europe’s third largest port and Germany’s fifth largest airport.
Hamburg's urban development system is based on Fritz Schumacher's visionary 1920 concept of a system of so-called “green feathers“ along important topographic lines throughout the city. In recent decades, Hamburg enhanced this idea of a green town development through a system of “green rings“ around the city center up to what is now called *GreenNet Hamburg.*
Accompanying this general direction to “green“ the city, they develop some special activities, programs and funding ideas, e.g. “more city within the city, more city at new places or the nature cent“ to realize their objectives.

Susanne Metz, Head of the Department of Urban Development and Housing of the City of Hamburg, summarizes these new strategies for open space within the urban densification process of Hamburg.

Milan (1.3 million inhabitant), a typical compact post-industrial Italian city is also a growing metropolitan region. The city made available former industrial areas and fallow agricultural areas as usable green spaces for many user groups (Parco Nord, Boscoincittá) as early as the 70s. The green strategy, which began in 2003 with the idea of the Milan Green Rays, aimed to connect existing and new parks and green spaces from central urban areas to the peripheral green belt with quality thoroughfares suited to soft mobility. In 2007, the project Raggi Verdi was embedded in a strategic green plan for the entire city and in 2012 it was added to the urban development plan as a technical plan. The resulting green network changed the cityscape in both the ecological and the aesthetic sense and increased the quality of life of many citizens who previously suffered from a chronic lack of free space. Signature projects, such as the EXPO 2015, were based on the development of this green infrastructure both spatially and in terms of content.

Andreas O. Kipar, Chairman of LAND, has comprehensive experience in the green development of Milan. He will explain the strategy of this greening process of Milan.

---

[1] Benefits people obtain from ecosystems: These include provisioning services such as food and water; regulating services such as regulation of flood, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other nonmaterial benefits (http://biodiversity-z.org/conten/ecosystem-servoces, 24-03-2018)

List of references

Bartz, Robert, Brenck, Miriam, Kowarik, Ingo (eds.) (2016): Naturkapital Deutschland - TEEB DE (2016): Ökosystemleistungen in der Stadt - Gesundheit schützen und Lebensqualität erhöhen. TEEB DE-Stadtbericht online http://www.naturkapital-teeb.de/publikationen/projekteigene-publikationen/bericht-3.html

Bundesamt für Naturschutz (2017): Urbane Grüne Infrastruktur – Grundlage für attraktive und zukunftsfähige Städte – Hinweise für die kommunale Praxis. Bonn. Leipzig

City of London (ed.) (2015): The City of London Open Space Strategy. London

European Union (2010): LIFE building up Europ´s green infrastructure. Luxembourg

Hansen, R., Rall, E., Chapman, E., Rolf, W., Pauleit, S. (eds., 2017). Urban Green Infrastructure Planning: A Guide for Practitioners. GREEN SURGE. Retrieved from http://greensurge.eu/working-packages/wp5/

Landeshauptstadt Dresden (ed.) (2014) Landschaftsplan der Landeshauptstadt Dresden. Dresden

Landeshauptstadt Graz (ed.) (2006): Das Grüne Netz Graz. Graz

McHarg, I.L. (1969) Design with nature. John Wiley and Sons

Magistrat der Stadt Wien, Magistratsabteilung 18 – Stadtentwicklung und Stadtplanung (ed.) (2015): Fachkonzept Grün- und Freiraum. Wien

Natural England (2009) Green Infrastructure Guidance. Catalogue Code: NE176. www.naturalengland.org.uk

RaumUmwelt Planungs-GmbH (unpublished): Handlungsziele für Stadtgrün und deren empirische Evidenz. Forschungsprojekt für das Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung (ExWoSt). Wien. Berlin

Senatsverwaltung für Stadtentwicklung und Umwelt Berlin (ed.) (2016): Stadtentwicklungsplan Klima – Konkret - Klimaanpassung in der wachsenden Stadt. Berlin

Stadt Zürich, Grün Stadt Zürich (ed.) (2006): Das Grünbuch der Stadt Zürich - integral planen – wirkungsorientiert handeln. Zürich

Urbanizers Büro für städtische Konzepte Berlin, plan zwei Stadtplanung und Architektur, bgmr Landschaftsarchitekten, Institut für Stadtgrün (Arbeitsgemeinschaft) (unpublished): Weißbuchprozess “Grün in der Stadt”. Forschungsprojekt für das Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung (ExWoSt). Berlin

Wilby, R. L., 2007. A review of climate change impacts on the built environment. Built Environment 33, 31–45. In Hansen, R. et.al 2017 p.8

Version 20.03.2018

Kommentare Katrin:
Habe ja einiges schon direkt mit Euch besprochen… es wäre schön, einen Bogen zu spannen von den Anfängen (Intention, Ansätze) der Grünstrategien über neue Herausforderungen (Dichte, Klima, wirtschaftliche Gegenspieler) zu aktuellen Ansätzen bzw. neu eingeführtem “Wording” / Argumentation (Diskussion Grün’o’polis)... somit das Thema “updating” stärker herausarbeiten.
Da einleitendes Kapitel (sozusagen Basis) wäre es gut, etwas ausführlicher die vielfältigen Funktionen von Freiraum… Bedeutung für nachhaltige Stadtentwicklung herauszuarbeiten
Bei Überleitung zu den externen Beiträgen etwas kompakter (keine inhaltlichen Wiederholungen zu 2.2 / 2.3) und Besonderheiten gegenüber anderen existierenden Ansätzen/Strategien
evtl 2-3 Abbildungen?!

The appreciation of green urban elements and their many functions and tasks is an important factor in the preservation and development of livable cities that are becoming ever denser.
Green overall strategies concerning the urban space and the adjacent metropolitan area can only be developed and implemented through subprojects if the people in charge, the city administration and the citizens recognise the importance of urban parks and share this appreciation.

Green infrastructure refers to a network of green building blocks that connect the green sub-areas (parks, green spots, green streets...) in the city with each other and with the landscape in the area (forests, lakes and other local recreational areas...).

The point is the ecological (conservation of biodiversity, microclimatic improvement etc.), social (space for exchange, recreation, integration etc.) and economic (revaluation and development of former industrial or residual areas, re-qualification of open spaces, creation of identity and organisation of public space) additional value that this planning strategy generates on very different levels of scale.

Internationally, there is an intensive technical discussion on the optimisation of the "green infrastructure" in cities. There are numerous research projects that discuss the different aspects of the topic, including the importance of the ecosystem benefits of nature in the city (see Bartz, R. et al, 2016) or of the urban green infrastructure (see Bundesamt für Naturschutz, 2017).

The goals of a holistic planning strategy are discussed: starting with securing land, via the formulation of qualification requirements to the instruments and existing subsidies that can be used to develop the green infrastructure. Numerous notes on importance, strategic development and implementation for municipal planning practice are compiled.

The new green strategies are based on the understanding that urban nature improves living conditions, health and social cohesion, allows direct access to nature and environmental education and makes a significant contribution to the discourse of "self-sufficiency and sustainability". As a result, urban nature in general is an important location indicator for assessing a city and placing it in the international city ranking. The quality of life and attractiveness of cities are strengthened by the potentiation and creation of high-quality green spaces (see Bartz, Robert et al, 2016 Ökosystemleistungen von Natur in der Stadt)

In order to preserve and develop ecosystem benefits and thus to increase the well-being of people in the city, it makes sense to build on proven strategies and planning instruments of urban development. Here among others urban development concepts for various key topics can be helpful, for example the Urban Development Plan Climate in Berlin, with its four fields of action: bioclimate, green and open spaces, water quality and heavy rain and climate protection (see Senatsverwaltung für Stadtentwicklung und Umwelt Berlin 2016), or the technical concept green and open space in Vienna for the Urban Development Plan 2025, which in addition to the goal of the construction of an open-space network determines parameters and standards for the green- and open-space supply in Vienna (see Magistrat der Stadt Wien, Magistratsabteilung 18 – Stadtentwicklung und Stadtplanung, 2015)

In many cities, green networks are strategic guiding principles in the context of urban development, among others the "Green Network Graz" (see Landeshauptstadt Graz, 2006), the guiding principle "compact city in the ecological network" in Dresden (see Landeshauptstadt Dresden, 2014), the open-space framework in the open-space concept of the Green City of Zurich (see Stadt Zürich, Grün Stadt Zürich, 2006) or „The City of London Open Space Strategy“ (see City of London, 2015) with the aim to create a green open-space network throughout the city to connect the „hidden gems“ with the squares, gardens, courtyards etc.

With Hamburg and Milan, two specific examples for the development and implementation of green networks were selected and presented in more detail.

Hamburg's urban development system is based on Fritz Schumacher's visionary 1920 concept of a system of so-called “green feathers“ along important topographic lines throughout the city. In recent decades, Hamburg enhanced this idea of a green town development through a system of “green rings“ around the city centre up to what is now called GreenNet Hamburg.

Accompanying this general direction to “green“ the city, they develop some special activities, programmes and funding ideas, e.g. “more city within the city, more city at new places or the nature cent“ to realise their objectives.

Susanne Metz, Head of the Department of Urban Development and Housing of the City of Hamburg, will summarise these new strategies for open space within the urban densification process of Hamburg.

Milan, a typical compact post-industrial Italian city, made available former industrial areas and fallow agricultural areas as usable green spaces for many user groups (Parco Nord, Boscoincittá) as early as the 70s. The green strategy, which began in 2003 with the idea of the Milan Green Rays, aimed to connect existing and new parks and green spaces from central urban areas to the peripheral green belt with quality thoroughfares suited to soft mobility. In 2007, the project Raggi Verdi was embedded in a strategic green plan for the entire city and in 2012 it was added to the urban development plan as a technical plan. The resulting green network changed the cityscape in both the ecological and the aesthetic sense and increased the quality of life of many citizens who previously suffered from a chronic lack of free space. Signature projects, such as the EXPO 2015, were based on the development of this green infrastructure both spatially and in terms of content.

Andreas O. Kipar, Chairman of LAND, has comprehensive experience in the green development of Milan. He will explain the strategy of this greening process of Milan.

Version 19.02.2018

Die Wertschätzung von Stadtgrün und seinen zahlreichen Funktionen und Aufgaben sind der Ausgangspunkt zur Erhaltung und Entwicklung von lebenswerten, immer dichter werdenden Städten.
Grüne Gesamtstrategien, die den Stadtraum und den angrenzenden Ballungsraum betreffen, können nur entwickelt und mittels Teilprojekten umgesetzt werden, wenn die Verantwortlichen, die Stadtverwaltung und die Bürger_innen die Bedeutung des Stadtgrüns erkennen und diese Wertschätzung teilen.

Grüne Infrastruktur bezieht sich auf ein Netzwerk von grünen Bausteinen, die die grünen Teilräume (Parks, grüne Platzerln, grüne Straßenräume, …) in der Stadt untereinander und mit der Landschaft in der Umgebung (Wälder, Seen und andere Naherholungsgebiete, …) verbinden.

Dabei geht es um den ökologischen (Erhaltung der Biodiversität, mikroklimatische Verbesserung etc.), den sozialen (Platz für Austausch, Erholung, Integration etc.) sowie den ökonomischen (Aufwertung und Erschließung ehemalige Industrie- bzw. Restflächen, Re-Qualifizierung von Freiräumen, Identitätsschaffung und Gliederung des öffentlichen Raumes) Mehrwert, den diese planerische Strategie auf ganz unterschiedlichen Maßstabsebenen hervorruft.

International erfolgt eine intensive, fachliche Diskussion zur Optimierung der „Green Infrastructure“ in den Städten. Es gibt zahlreiche Forschungsprojekte, die die unterschiedlichen Aspekte des Themas diskutieren u.a. die Bedeutung der

Ökosystemleistungen von Natur in der Stadt, (vgl. Bartz, R. et al, 2017 oder der Urbanen Grünen Infrastruktur, vgl. Deutsches Bundesamt für Naturschutz, 2017).
Diskutiert wird über die Ziele einer ganzheitlichen Planungsstrategie: beginnend mit der Flächensicherung, über die Formulierung von Anforderungen an die Qualifizierung bis hin zu den Instrumenten und vorhandenen Förderungen, die zur Entwicklung der grünen Infrastruktur genutzt werden können. Es werden zahlreiche Hinweise zur Bedeutung, strategischen Entwicklung und Implementierung für die kommunale Planungspraxis zusammengestellt.
Die neuen grünen Strategien basieren auf der Erkenntnis, dass Stadtnatur die Lebensbedingungen, die Gesundheit und den sozialen Zusammenhalt fördert, einen direkten Naturzugang und Umweltbildung ermöglicht, und einen wesentlichen Beitrag zum Diskurs „Selbstversorgung und Nachhaltigkeit“ leistet. Stadtnatur ist damit insgesamt ein wichtiger Standortindikator für die Beurteilung einer Stadt und die Einordnung im internationalen Städteranking. Die Lebensqualität und die Attraktivität der Städte werden, durch die Potenzierung und Schaffung von qualitativ hochwertigen Grünräumen gestärkt. (vgl. Ökosystemleistungen von Natur in den Städten vgl. Bartz, Robert et al, 2017)

Zur Erhaltung und Entwicklung der Ökosystemleistungen und damit zu Steigerung des Wohlbefindens der Menschen in der Stadt ist es sinnvoll an bereits bewährten Strategien und Planungsinstrumente der Stadtentwicklung anzuknüpfen. Hier können u.a. Stadtentwicklungskonzepte zu verschiedenen Schwerpunktthemen hilfreich sein, vgl. StEP Klima in Berlin, mit seinen vier Handlungsfeldern: Bioklima, Grün- und Freiflächen, Gewässerqualität und Starkregen, und Klimaschutz oder das Fachkonzept Grün- und Freiraum in Wien zum STEP 2025, welches neben dem Ziel: Aufbau eines Freiraumnetzes, zusammenfassende Kennwerte und Standards für die Grün- und Freiraumversorgung in Wien festlegt.
Grüne Netze gehören in vielen Städten zu strategischen Leitbildern im Zusammenhang mit der Stadtentwicklung u.a. das „Grüne Netz Graz“ (2006), das Leitbild „Kompakte Stadt im ökologischen Netz“ in Dresden (2014), das prägende “Freiraumgerüs”t im Freiraumkonzept der Grün Stadt Zürich (1999) or „The City of London Open Space Strategy“ (2015) with the aim to create a green open space network through the city to connect the „hidden gems“ with the squares, gardens, courtyards eg.

Mit Hamburg und Mailand wurden zwei spezielle Beispiele für die Entwicklung und Umsetzung grüner Netzwerke ausgewählt und vertiefend vorgestellt.

Hamburg’s urban development system based on the visionary concept of Fritz Schumacher from 1920 with a system of the so-called „green feathers“ along important topographic lines through out the city. In the last decades up to now Hamburg enhanced this idea of green town development through out a system of „green rings“ around the city centre up to the now called GreenNet Hamburg.
Accompanying to this big direction to „green“ the city they develop some special activities, programs and funding ideas, eg. „more city within the city, more city at new places or the nature cent“ to realize their objectives.

Susanne Metz, Head of the Department of urban Development and Housing from the City of Hamburg will summarise this new strategies for open space with in the urban densification process from Hamburg.

Milan, a typical post-industrial Italian compact city,
die bereits in den 70. Jahren, ehemalige Industriegebiete bzw. brachliegende Agrarflächen, als nutzbare Grünflächen für vielen Nutzer_innengruppen zur Verfügung stellte (Parco Nord, Boscoincittá). Die Grünstrategie, die im Jahr 2003 mit der Idee Milan Green Rays begann, hatte das Ziel, vorhandene wie neue geschaffene Parks und Grünflächen durch qualitative, für die sanfte Mobilität geeignete Durchwegungen von zentralen Stadtgebieten bis zu dem peripheren Grüngürtel zu verbinden. Im Jahr 2007 wurde das Projekt Raggi Verdi in einen strategischen Grünplan für die gesamte Stadt eingebettet und 2012 als Fachplan dem Stadtentwicklungsplan beigefügt. Das dadurch entstandene grüne Netz veränderte das Stadtbild sowohl im ökologischen als auch im ästhetischen Sinn und erhöhte die Lebensqualität vieler Bürger_innen, die davor unter chronischer Freiraum-Unterversorgung litten. Prestige Projekte, wie die EXPO 2015 fußten sowohl räumlich als auch inhaltlich auf der Entwicklung dieser grünen Infrastruktur.

List of References:

Andreas O. Kipar, Chairman of LAND, has a lot of experiences in the green development of Milan. He will explain the strategy of this greening process of Milan.

List of references:
Bartz, Robert, Brenck, Miriam, Kowarik, Ingo (Hg.) (2016): Ökosystemleistung in der Stadt – Gesundheit schützen und Lebensqualität erhöhen. In: Naturkapital Deutschland – TEEB.DE. Leipzig

Bundesamt für Naturschutz (2017): Urbane Grüne Infrastruktur – Grundlage für attraktive und zukunftsfähige Städte – Hinweise für die kommunale Praxis. Bonn. Leipzig

City of London (editor) (2015): The City of London Open Space Strategy. London

Landeshauptstadt Dresden (Hg.) (2014) Landschaftsplan der Landeshauptstadt Dresden. Dresden

Landeshauptstadt Graz (Hg.) (2006): Das Grüne Netz Graz. Graz

Magistrat der Stadt Wien, Magistratsabteilung 18 – Stadtentwicklung und Stadtplanung (Hg.) (2015): Fachkonzept Grün- und Freiraum. Wien

RaumUmwelt Planungs-GmbH (unveröffentlicht): Handlungsziele für Stadtgrün und deren empirische Evidenz. Forschungsprojekt für das Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung (ExWoSt). Wien. Berlin

Senatsverwaltung für Stadtentwicklung und Umwelt Berlin (Hg.) (2016): Stadtentwicklungsplan Klima – Konkret - Klimaanpassung in der wachsenden Stadt. Berlin

Stadt Zürich, Grün Stadt Zürich (Hg.) (2006): Das Grünbuch der Stadt Zürich - integral planen – wirkungsorientiert handeln. Zürich

Urbanizers Büro für städtische Konzepte Berlin, plan zwei Stadtplanung und Architektur, bgmr Landschaftsarchitekten, Institut für Stadtgrün (Arbeitsgemeinschaft) (unveröffentlicht): Weißbuchprozess “Grün in der Stadt”. Forschungsprojekt für das Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung (ExWoSt). Berlin

2.2. Hamburg: Strategies of open space and urban densification

SUSANNE METZ, City of Hamburg
Department of Urban Development and Housing
Strategies for open space and urban densification

Cities are very popular. Throughout the world they are places where people flock in search of good life and a better future. Hamburg as well acts as a magnet, drawing in new people and becoming home to many of them. So the City of Hamburg decided to increase the number of building permits and housing developments to be aimed at. A strategy of both: *more city within the city*, focusing on densification and inner development in all the districts and: *more city at new places*, developing new quarters in the outer city, going along with a strategy of open space qualities.

GreenNet Hamburg (GrünesNetz Hamburg), green roof program, additional financing via eco cent and tapping funding programs are important means to keep and develop the green and open spaces in this green and growing city by the water.

Talking numbers: in Hamburg, 65.000 building permits have been delivered since 2010. And each year another 10.000 permits will be added.

By now, prognoses of the growing city reach out for about 2 million inhabitants in the year 2030. This means to densify and extend urban development within the built city, as well as carefully extend along main stops of the existing rapid-transit system (S or U-Bahn). Due to the city state consisting of 7 districts with about 230.000 to 450.000 inhabitants each, planning is divers and refers to both local and overall needs.

The city’s policy focuses on two strategic approaches:

more city within the city asks the districts to enforce their planning and building efforts based on their district housing-development programs (Bezirkliche Wohnungsbauprogramme) while

the ministry of urban development and housing surveys the potentials that could be developed in long term perspectives and therefore puts up expertise in visioning, master planning, and design competition for larger areas of town. These areas can be brownfields deriving from former industries, run down amenities, or housing areas that need restoration or should be redone because of changed standards in housing or because of technological or other deficiencies. In some areas, the concept of urban design and open space needs to be overrun and additional housing or social infrastructures like kindergarten, schools i.e. would be needed.

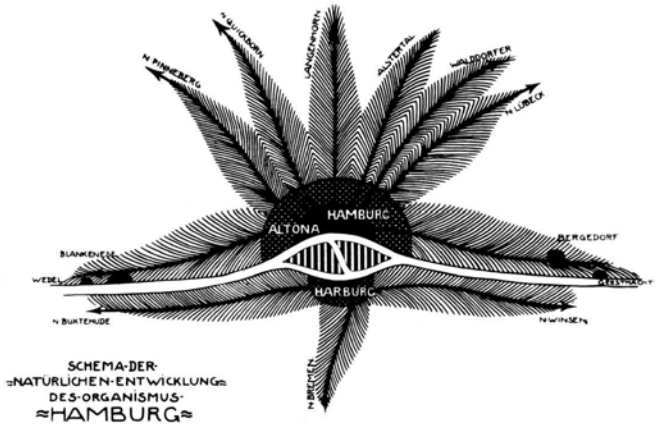
more city at new places reaches out for developing completely new quarters in the outer city. They may as well complete lacking offers of adjacent parts of town – always aiming at a sustainable new part of town, which fits in structurally and socially.
Both strategies are linked closely and generated interdisciplinary, in cooperation with the municipal level and in engaging citizenship.

Following the Leipzig Charta, Hamburg creates new residential and mixed-use areas, like in HafenCity, Kleiner Grasbrook, Wilhelmsburg, around Harburger Binnenhafen, upriver along Elbe und Bille, in Mitte Altona and many other sites.

Offering good schools and child care as well as senior and social care, Hamburg cares for public transport which is enhanced and extended. Underground and light-rail-train-systems, emission free busses und taxis, cycling, inviting boardwalks or footpaths and apps making the smartest way accessible–this smart mobility helps making metropolitan life more livable.

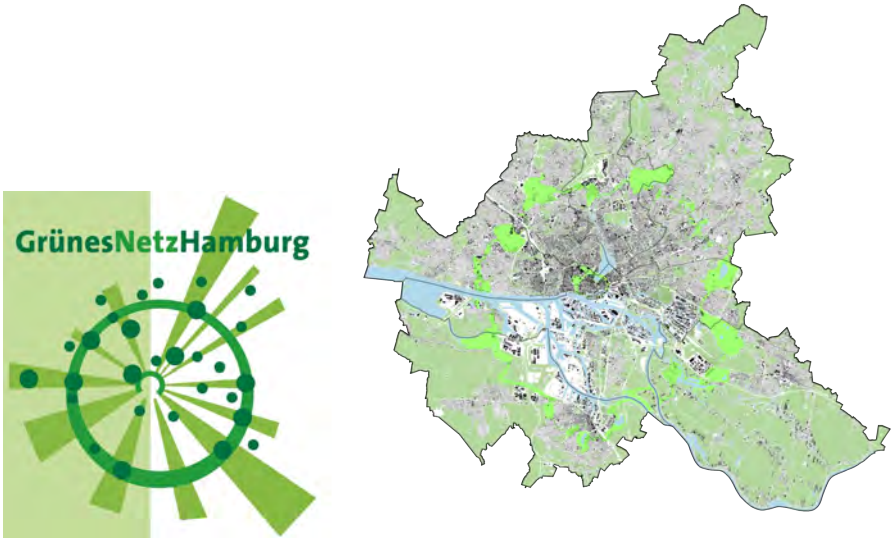
But how about Hamburg's green and open spaces in this densifying process?

Hamburg's backbone to urban development and open space concept is the vision of 1920 when Fritz Schumacher, then chief planning officer of the city, invented the so-called feather plan. Urban developments should follow topographic features critical to the special exposition along the river Elbe and its tributaries from geest and marshes.



Feather Plan by Fritz Schumacher 1920

The GreenNet Hamburg refers to this vision and offers nature like landscapes, recreational areas and public parks along green rings within and around the city, linked to several main green axes and many smaller green ribbons forming the net. Everyone can walk and bike the GreenNet today, but it needs better access and restoration in many sections.



(Strategies of urban development GreenNet Hamburg, Ministry for the Environment and Energy; Free and Hanseatic City of Hamburg)

So there is planning action for the main green axes, like the Horner Geest, leading to bottom up participative projects, which will be realized within the next few years. In 2016 on- and offline supported participation promotion started, asking the neighbors along the …km long stretch for ideas and giving a competition for the ones to be realized. The city funded a 1 Mio € extra money to foster these projects. Special activities took place to get people involved: like joining guided walks or share some time with a shepherd and his flock that was allowed to move and graze along the Hohe Geest.

The next section to be taken up is along the rivulet Wandse, where once designed terraces, outlooks and picnic sites got overgrown or street crossings need to be invented. Always watching for refugees of wildlife within the city too – a good way to get children and adults connected to nature and create curiosity in terms of knowledge and care for their environment.

How about financing qualified green spaces?

Beside running projects and special programmatic funding via the German Federal Ministry for Urban Development and Environment, the City of Hamburg invented an additional source to develop new and enhance or restore public parks and smaller green open spaces.

Looking at the densifying city, there will be more people who want to be in the open: playing children, walking the dog, cycling, hiking or looking for a place to rest and just contemplate, there will be more pressure on some delicate areas as well.

So the idea was born to raise a so called *nature cent,* based on the German tax system. By using open spaces for housing and commercial or productional building activities these spaces will be sealed and drawn away from natural development as biotopes and landscape is impaired. On the other hand, this developed land is subject to a higher property tax.

The profit from this higher property tax will be used to foster a budget financing measures for nature protection and green city spaces. The model refers to spaces indicated on a map, showing areas for new settlement and commercial developments that would be developed on nowadays landscape protection areas or alike.

Today's property tax rate of the undeveloped estate will be compared to the expected property tax rate of the developed estate and updated annually referring to the building and development activities. The total of the additional property tax on the defined area will be transferred into the fund "nature protection and landscape keeping".

These means will be used for measures to keep, care or develop green and recreational spaces or parks. The districts can apply for means out of this fund.

The regulations start backdated to January 1st 2016 and also cover areas for "accommodation for refugees" which were set free from landscape protection areas to meet the severe need of fast housing activities caused by migration in 2015 and 2016.
The regulations are timely unlimited.
To get the program started the Ministry for the Environment and Energy (Behörde für Umwelt und Energie, BUE) can activate up to 3 Mio. Euro in advance.

Most of the planning activities are being discussed in the public. Herefor the City of Hamburg provides a variety of participatory instruments to inform, engage and involve the public, residents and stakeholders by workshops, conferences or as members in competitions and juries. Analogue events are backed by online offers and interne tools (www.stadtwerkstatt.de).

So Hamburg is continuously working to improve in meeting not only today and tomorrow's but future challenges, knowing that good planning needs good communicating.

List of references:

die Quellen der Abbildungen lauten wie folgt:

chart Featherplan: mediaserver.hamburg.de/Wolfgang Huppertz

chart green net: Ministry for the Environment and Energy; Free and Hanseatic City of Hamburg
chart strategies of urban development: Ministry for Urban Development and Housing; Free and Hanseatic City of Hamburg
chart new residential areas: Ministry for Urban Development and Housing; Free and Hanseatic City of Hamburg

Auf die Fotos habe ich keinen Zugriff, deshalb muss es bei den charts bleiben, die ich mit korrigierten Subtiteln in der Fußzeile zusende. Ich hoffe sie funktionieren.

Im Behördenalltag ist es unüblich unter eigenem Namen zu publizieren. Mit inhaltlichem Bezug nenne ich Ihnen unten einige Veröffentlichungen der Behörde in der ich arbeite und für die mein Amt inhaltlich zuständig gearbeitet hat sowie Veröffentlichungen der BUE, die als Grundlage herangezogen wurden:

List of references:

Green, inclusive, growing city by the water: perspectives on urban development in Hamburg; Ministry of Urban Development and the Environment; Free and Hanseatic City of Hamburg; June 2014

Grüne Vielfalt im Wohnquartier; Ministry for the Environment and Energy; Free and Hanseatic City of Hamburg; February 2016

Vertrag für Hamburg – Wohnungsneubau; 8. September 2016;
http://www.hamburg.de/wohnungsbau-hamburg/6872240/vertrag-fuer-hamburg-wohnungsneubau/

Senat beschließt Naturcent-Regelung; 20. Dezember 2016;
http://www.hamburg.de/pressearchiv-fhh/7710286/2016-12-20-bue-naturcent/

Eine Stadt für Alle – Wie wollen wir Wohnen? Wo können wir Bauen? Dokumentation 13. Stadtwerkstatt; Ministry for Urban Development and Housing; Free and Hanseatic City of Hamburg; February 2017

Wohnen in Hamburg 2030, Eine Stadt für Alle – Strategien für Bezahlbares Wohnen; Dokumentation 3.Fachkonferenz; Ministry for Urban Development and Housing; Free and Hanseatic City of Hamburg; July 2017

find out more:
http://www.hamburg.de/stadtplanung/
http://www.hamburg.de/gruenes-netz/
http://www.hamburg.de/stadtwerkstatt/

Die Hinweise auf die Fundstellen der websites halte ich für die Leserinnen für hilfreich, da sie dort alle Informationen und Hintergründe finden können.

2.3. Milan: Greening the city - Green rays Milan

(Andreas O. Kipar)

Europe has been shaping its own peculiar identity and heritage across centuries building a unique system of cities and territorial relationships. Achieving a balance between the high density traditional city and urban sprawl has been one of the main challenges in terms of urban planning and management of public space.
In the last decades we have been observing the industrialization process orienting cities to regenerate their brownfields and neglected spaces in order to respond to the increasing demand for housing, public spaces and parks within short distances. This trend initiated a new phase of urban planning focused on landscape. Landscape is able to unveil unexplored potentials through its technical but also cultural approach. Scarce financial resources and climate change effects force us to find new ways to deal with planning.

Milan, back on the stage of most vibrant European cities after Expo 2015 and thanks also to its almost completed post- industrial reconversion, nowadays is looking for major awareness on its own identity and planning measure to strengthen it. After post-war reconstruction in the 50s-60s, Milan has been experiencing a phase of urban renewal since the late 90s. Wide productive areas which have made Milan a leading city in the economic panorama of the last century, from the early 80's have been gradually dismissed and relocated. Pirelli, Fiat, Maserati, Alfa Romeo left 5 million square meters free for new urban project within the urbanised boundary.
The fast post-industrial regeneration wasn't able to develop an integrated strategy for open spaces, that were designed consequently as mere decorative green areas. Nevertheless, there have been significant best practices such as the urban afforestation of Boscoincittà in the 70s, the step-by-step project of Parco Nord from the '80s and finally the outstanding proposal "Nine Parks for Milan" developed by Pierluigi Nicolin. This academic study proposed an upgrade of the city layout based on the configuration of nine urban parks. This was actually the first time that in Milan the urban park was given the role of attractive public open space and the privileged position in the development process of the city as crucial catalyst for further construction of neighboring blocks. The park was conceived as founding element for new urban settlements as it had already happened in other European cities such as Barcelona and Paris. Landscape architects have been called to work on urbanization "leftovers"; now they set the premise for territorial and urban cooperation mediating among different disciplines and stakeholders.

Milan is a compact city, for this reason is a typical Italian city but at the same time shoes its European attitude in looking for a higher life standard. This standard has been progressively identified with a renewed desire for nature, more precisely for naturalness. Fast growing urbanization requires a wider variety and a better distribution of open spaces as main subjects of public urban life.
Although in the common imaginary Milan isn't perceived as a green city, it has a strong relation with the historical open spaces which characterize the urban fabric of this industrious middle-class city.

Since the fresco “Allegoria del Buon Governo” of Lorenzetti in Siena (1338) and the volume “De Re Aedificatoria” of Leon Battista Alberti (1485)[1], in Italian culture the city had been considered as the place of verticality (characterized by geometrical rules) and location of civic life in tight relation with the countryside, shaped by horizontal soft lines. Modern urban developments have increased this opposition to the point that for decades the city have been considered a place for exploitation wherefrom was recommended to escape as often as possible, at least every weekend. Fortunately recent projects have changed this civic negligence into an opening to international tourism whilst citizens and institutions discover the potential of their own city.
The first concept of the strategy “Raggi Verdi” (*Green Rays*) was created in 2003 as reaction to such urban transformation phenomena from a joint proposal by AIM (Associazione Interessi Metropolitani), a non profit organization, and atelier LAND (Landscape Architecture Nature Development).
Each of the eight Green Rays covers one of the city districts along the radial urban structure creating slow mobility connections from the established urban core to the wide periphery. In the outskirts, this connection join into a 72-km cycle ring. This strategic vision conceives open spaces beyond their urban boundary; they are rather everyday life places increasing their own value if interconnected and experienced by the citizens. Brownfields, gardens, parks as well as fragmented cultural heritage shape a new structure of open spaces to rebuilt the former industrial cityscape.
The Green Rays highlight the embedded potential of neglected open spaces towards the creation of a highly accessible connection system, so much that in 2007 they became the main strategy in the Urban Green Plan and in 2012 they have been integrated among the open space strategies of the Municipal Plan.

The recent institution of Milan Metropolitan City (as well in 2012), the indication of the Municipal Plan and the impulse given by Expo 2015 contributed to enlarge the horizon of urban planning. Milan is nowadays more and more identified with its wide territory, and citizens got aware of this shift during the months of the international exhibition.
The study of Milan’s aptitudes is now focused on the regional scale rather than urban, more and more linked to the essential relationships with its own hinterland. The once industrial city is now venue of cultural festivals and destination for everyday tourism, whilst increasingly faster connections allow new synergies. Within scenario aptitudes require a shift of perception and focus of urban planning towards open spaces as an effective catalyst for a resilient development model.

Milan, as well as other European cities, is called to achieve more “urban permeability” in terms of more accessible green areas. These spaces play a relevant role in the design of new neighbourhoods as they articulate and balance the proportions between urban voids and built blocks. This relation produces more nature, sociality and vitality in urban spaces, as many best practices such as Berlin and Copenhagen have shown.

[1] Argan refers to the definition of “regio” in Leon Battista Alberti’s “De re aedificatoria” : “a territorial extension defined by the system of relations where of community life is composed. It has no fixed dimensions: in terms of modern urban planning it is the territory, the area concerning an entire urban community (…) Regio is soil, water, light”.
G.C. Argan, “La città nel pensiero di Leon Battista Alberti” in G.G. Rizzo “Venticinque anni di riflessioni sull'architettura delle città” in Rassegna di Architettura e urbanistica n. 73/74/75 Gen-Dec 1991, Università La Sapienza, Roma

The task of whom deal with “horizontality”, that is landscape architects, should be based on the concept of fair distance from ordinary management and everyday emergencies in favour of forward-looking visions.
Being aware of our own urban structure, density and specific texture provides us the right dimension to plan cities of tomorrow, where infra-sectorial approaches and multi-benefit strategies are required to face environmental, social and economic challenges.
The research on the most authentic DNA of Milan take inspiration from current challenges to understand the need of new green infrastructures[2] merging ecological and social-economic benefits. The need for landscape is to be set in this framework as landscape is more and more the recipient for unheeded needs and desires, such as socializing, and getting in touch with a new urban nature. Landscape architects should address such challenges by deploying place-based as well as people-based policies through punctual design actions impacting people every life and local identity.

List of References:

AA.VV. (2015), *Grüne Infrastruktur / Green Infrastructure: Deutscher Landschaftsarchitekturpreis 2015*, Basel: Birkhäuser

AA.VV. (2010), *Green Life, costruire città sostenibili*, Bologna: Editrice Compositori

Argan G.C. (1982), *La città nel pensiero di Leon Battista Alberti* in *Rassegna di Architettura e Urbanistica n. 54 – Sept-Dec 1982, pp. 52-59,* Rome: Università La Sapienza

De Finetti G. (2002), *Milano. Costruzione di una città*, Milan: Hoepli

European Commission (2011), *Cities of tomorrow - Challenges, visions, ways forward*, Luxembourg: Publications Office of the European Union

European Commission (2013), *Green Infrastructure (GI) — Enhancing Europe’s Natural Capital*, Brussels

European Commission (2011), *The EU Biodiversity Strategy to 2020*, Luxembourg: Publications Office of the European Union

Forster A., Kurth H. (2013), *The Green City as the Model of the Future*, in Kamel L. (2013), Green Islands in the City, Berlin: Jovis.

Kipar A. (2003), *Architetture del Paesaggio – Ideen und Wettbewerbe*, Milan: Il Verde Editoriale

Kipar A., Pagliaro V. (2011), “Green Rays in Milan”, *Topos,* n. 77, Georg D. W., Munich: Callwey GmbH & Co. KG

[2] European Union in the framework of the Biodiversity Strategy 2020 committed to implementing “a strategically planned network of natural
and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services”. Communication from the European Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions: Green Infrastructure (GI) – Enhancing Europe's Natural Capital, COM (2013) 249 final.

Kipar A., Sala G. (2009), *Raggi Verdi – Green vision for Milan 2015*, Berlin: AedesLand

Mostafavi M., Doherty G. (2010), *Ecological urbanism*, Basel: Lars Muller Publishers

Owen D. (2010*) Green Metropolis: Why Living Smaller, Living Closer, and Driving Less are the Keys to Sustainability*, Milan: Editore Egea

Rauterberg, H. (2013): *Wir sind die Stadt! – Urbanes Leben in der Digitalmoderne*, Berlin: Suhrkamp Verlag

Rifkin J. (2011), *La Terza Rivoluzione Industriale*, Milan: Arnoldo Mondadori Editore

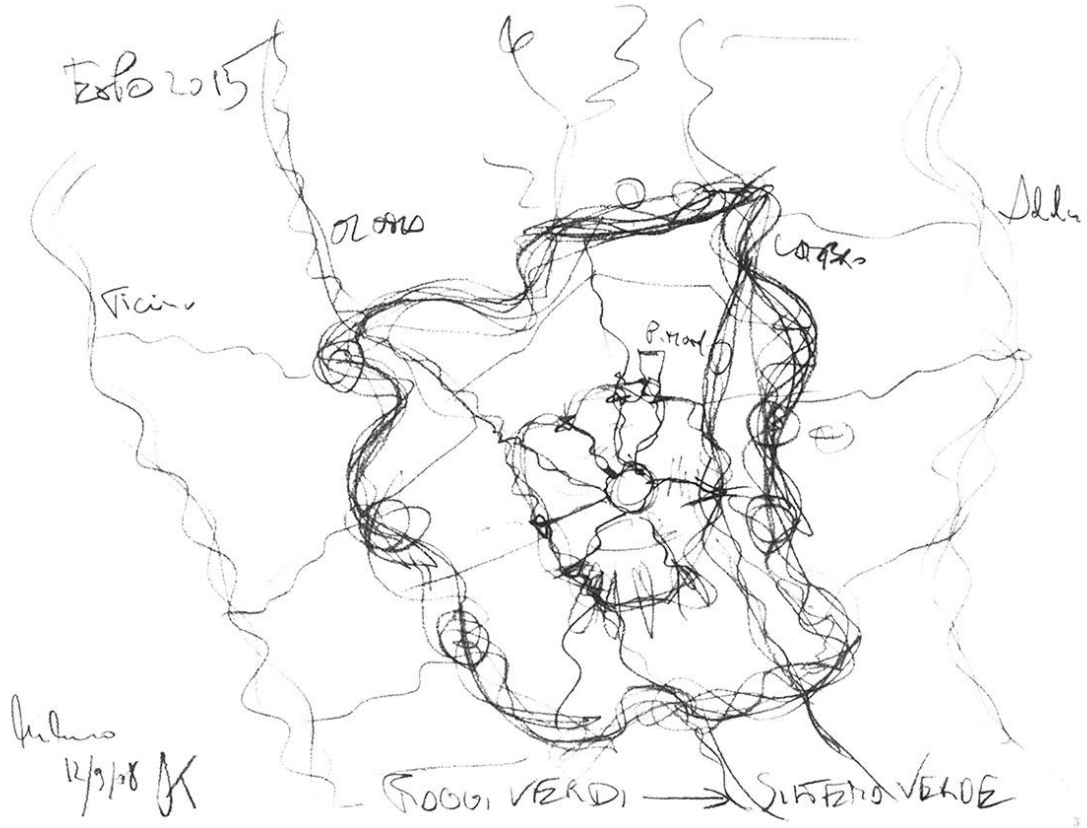


Fig. An urban vision to 2015, LAND

Fig. Krupp Park, Johannes Kassenberg

Fig. Porta Nuova - The permeable city, LAND

Fig. Portello - Former Alfa Romeo plant, LAND

3. DEALING WITH URBAN DENSITY

3.1. Dealing with urban density

(Richard Stiles)

VORLÄUFIGE ENDVERSION - 15.547 Anschläge (inkl. Leerzeile!)

Kommentar Katrin:
etwas kompakter wäre gut
Referenzen ergänzen nicht vergessen...

Two cheers for densification

Densification is inextricably linked with urban growth. The growth in the size of any urban population within existing city boundaries necessarily means an increase in density. With the worldwide growth of cities set to continue, in Europe more than three-quarters of the

population already lives in urban areas. It is not just in Europe, although perhaps here more than anywhere, that urban areas have become 'habitat of choice' for *Homo sapiens.* We are no longer a species of the savannah but of the city, and as such we need strategies to deal with urban density.
But is densification a good or a bad thing, or is it just an inevitable fact of life? Clearly it presents a potential threat to urban open space in a number of ways, yet in the case of Vienna, for example, the focus of the current discourse is firmly on the positive aspects of the city's projected return to a population of two million within little more than a decade, a figure which was previously achieved during the city's heyday before the First World War. The implication is that in a time when 'shrinking cities' are seen as a problem, growing cities are to be viewed as attractive, healthy and dynamic. Density, so the argument goes, brings with it urbanity - the very essence of city life.

More generally the environmental arguments in favour of 'compact cities' are well rehearsed: they use the scarce resource of land efficiently and consume less energy, and so are to be seen as the antithesis of the processes of sub-urbanisation which have led to the growth of urban sprawl (EEA, 2006). Other material benefits include short travel distances, 'walkability', efficient infrastructure provision and opportunities for alternative mobility.

Then there are the, less obvious, immaterial benefits associated with higher densities. What first made cities attractive as places to live, and what continues to cause them to grow are above all the social and economic opportunities resulting from interaction with large numbers of people - as Jane Jacobs wrote: *Great cities are not like towns, only larger. They are not like suburbs, only denser. They differ from towns and suburbs in basic ways, and one of them is that cities are, by definition, full of strangers*. Life and Death in Great American Cities, p. 30

So how can one make the counter arguments more convincing? What about the downsides to densification? Social downsides, such as crime and disease, have been apparent since the industrial revolution and while it seems that the positive social benefits of urban growth are disproportionately high, the same is true for the negative effects such as the rates of crime and disease, which also grow more rapidly than the population (West, 2017, p.275ff). However, perhaps the most obvious negative outcome of the need to accommodate larger populations within existing urban boundaries is the loss of unbuilt land i.e. open space, together with the corresponding increase in the pressures on the remaining open spaces. So where should we draw the line with densification? How much is enough, how much is too much and is there a 'Goldilocks' level that is just right?

Two views of urban density, and their shortcomings

In attempting to answer the question 'how much density is enough' it should be helpful to have some simple way of measuring it. This, one might think, ought not to be too difficult given that density is a straightforward phenomenon - only once one starts to look at it closer, it turns out not to be quite so simple. The clear implication of the above discussion is that urban density primarily relates to the number of people living within the area of the city. If so we can express density simply as the number of residents per square kilometre, and this

straightforward objective measure also allows us - in theory at least - to make comparisons. It soon becomes clear, however, that this measure is only helpful in theory.

City	Density (People/km²)
Vienna	4.197,3
Berlin	3.836,8
Budapest	3.321,5
Munich	4.522,7
Barcelona	16.321,5
London	5.380,3
Paris	21.289,7
Warsaw	3.333,9
Madrid	5.231,9
Brussels	7.286,3
Copenhagen	6.208,2
Hamburg	2.362,3
Köln	2.542,9
Essen	2.706,1
Prague	2.536,7
Bucharest	8.810,8
Rome	2.226,6
Milan	7.282,9
Birmingham	4.091,8
Lyon	2.541,4
Hong Kong	6.544,0

Figure 1: Who would believe that Paris is more than three times as dense as Hong Kong?
(Data for European cities from European Environment Agency, for Hong Kong from Wikipedia)

As Figure 1 shows, at the level of the city as a whole, it is very difficult to gain a reliable idea of whether one city is more or less dense than another on the basis of this objective measure. According to European Environment Agency data, on which Figure 1 is based, Copenhagen with its Nordic reputation for environmental quality is in fact 50 % denser than Vienna, while the population density of Paris is as much as five times as great as Austria's capital. The data also suggest that Milan and Brussels are actually denser than Hong Kong, which is decidedly counter intuitive. These city-wide differences are not readily perceptible at any particular location within any of the cities concerned because the overall density depends not only on the distribution of population across the area of the whole city, but also on the position of the city boundary which is usually little more than an historic accident.

However, there is conveniently an alternative way of measuring urban density in common use which starts from a different assumption. This takes no account whatsoever of the number of people and instead assumes that density is a function of the built volume on any particular site. Floor area ratio - the relationship between the total area of accommodation and the area of the plot of land on which it is located - is the preferred measure of density of urban planners. On this basis, though, the central business districts of most cities have a high built density, but may have almost no residents at all - quite the opposite situation to their density when expressed in terms of population! Floor area ratio is by its nature an extremely local measure and is rarely, if ever, calculated for more than a single site. This makes it of limited use for giving an impression of how dense a whole city actually is. Floor area ratio will vary considerably between different parts of the city and takes no account of the presence of the public realm altogether, not just parks and green spaces, but also roads and other urban spaces.

Dealing with urban density - in theory and practice

So neither population density as measured in persons per square kilometre, nor the floor area ratio, as measured in square metres of floor space per building plot is really much practical use in giving a meaningful indication of how dense a city actually is. Despite being objective measures they are both only of limited practical use in representing the overall situation. In practice a more useful indication of urban density, from a subjective point of view, might be to construct some index which combines both the number of people with the amount of built volume. However as noted above the historical accident which determines the exact location of the city boundary is likely to distort such a measure too.

Maybe a better expression of urban density which corresponds more closely with people's perceptions, could be obtained if the floor area ratio was calculated across the city as a whole (to incorporate all unbuilt public land as well as that on individual building plots) and somehow combining this with the number of people residing in the city (but maybe one should also include tourists and other visitors as well as workers who commute in from outside the city boundaries - from within the so-called 'Functional Urban Area' REF). The problem with the historic accident of the location of city boundaries could be overcome by

using the concept of 'Urban Morphological Zones' REF to define the effective extent of the city rather than just the official administrative area.

Such a composite index would allow a better objective comparison to be made between cities, but subjectively speaking it would still give an unsatisfactory impression of the experienced density, as no individual is able to perceive the city as a whole. Instead everyone is likely to relate their experience of density to their immediate surroundings. As a result, in order to obtain a measure which would also ring true from a subjective perspective, it might make more sense to break down the density index for the city as a whole into smaller 'neighbourhood chunks', for example ones which could be comfortably traversed on foot within about five minutes. In order to allow for comparisons across cities, these smaller areas should be regular and easily reproducible, and might for example take the form of one quarter kilometre squares.

A further problem from a subjective point of view would be that average floor area ratios at a city-wide scale would not take into account the fact that these could either be the result of a largely homogenous floor area ratio across the city as a whole or alternatively be the result of a combination of localised areas of very high floor area ratios (high rise development) with larger areas of unbuilt open space between. These two extremes would result in cities in which the perception of density was very different but which still had similar overall floor area ratios. To address this problem and in order to obtain an clearer indication of the perceived urban density, there is also the need to somehow take account of the amount of open space and its distribution pattern within the index,. This would be all the more important as it is above all this unbuilt land in the form of open space of various types, which must provide the basis for the green infrastructure in order to deliver the nature-based solutions to the challenges of climate change which are currently urgently needed. This is, of course, the very space which is also coming under threat as a result of the need to respond to growing urban densities.

The development of such a theoretical index of urban density which attempts to combine an objective measure of the number of people with the amount of built floorspace, while at the same time taking account of the amount of open space and relating all this to what people can subjectively perceive on density would provide an interesting challenge. However we should not forget that the challenges of urban densification are by no means new, and that there have been other more pragmatic approaches to the alleviating the ills and exploiting the benefits of urban density.

A classic expression of this problem, together with a preferred solution, is contained within the famous 'three magnets' diagram of Ebenezer Howard, with which he accompanied his initial promotion of the idea of the Garden City in 1898 (Howard, 1898).

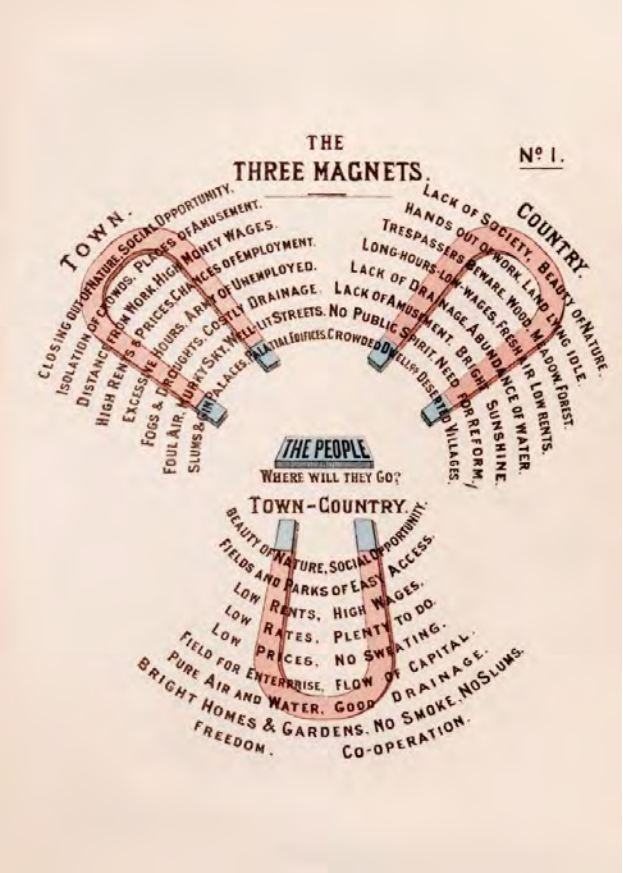


Figure 2: Ebenezer Howard's 'Three Magnets'

The Garden City movement was seen as a potential solution to the many perceived ills of urban densification at the beginning of the 20th century, but given the many positive arguments in favour of higher densities, as outlined above, it can be argued that the Garden City and its successors can no longer be seen as the ideal solution to the problems of urban densification at the start of the 21st century. In fact the Garden City was never a direct attempt to deal with the problems of existing cities, but rather a flight into the rural landscape for the creation of a new kind of 'suburban' settlement. It had nothing to say about solving the contemporary urban problems, except to point out that they were acute and that people should be given a chance to escape from them.

Two contemporary approaches to dealing with densification

At the beginning of the 21st century we need to look for new solutions which deal both with the situations of 'legacy' cities, as it is these which continue to grow and not the handful of Garden Cities which were inspired by Howard. These new solutions also need to address to urgent issue of climate change, which was not yet on the agenda when he was developing his ideas in the late 19th century.

It can be relatively straightforward to plan and design new urban expansion areas on as yet unbuilt land at the edge of existing growing cities at acceptable densities - whatever these

may be - while taking into account of the need for climate sensitive design. The real challenge, however, lies in retrofitting existing urban areas, in which the overwhelming majority of the urban population is to be found, and which are often also still growing as a consequence of densification processes. This calls for new and creative but also realistic solutions to dealing with density, ones that involve working with the existing urban fabric, and which can be implemented sooner rather than later. Any solution aimed at dealing with urban density must be based on adding to the existing open spaces either in quantitative, or in qualitative terms, or both.

The following chapters present two cases from practice of just such examples of retro-fitting urban areas where existing densities are high in order to enhance the existing open space situation. One of them could be described as being primarily in quantitative terms in that more usable open space is being created, and in the other where the existing open space is being re-conceived in qualitative terms although there are naturally overlaps.
In Barcelona, already one of Europe's densest cities in terms of population (see Figure 1), street space is being won back from the car through strategic road closures and the creation of pedestrian spaces. Here the main stress is on strengthening the social functions of open space. The second set of examples, presented by the office of Ramboll Studio Dreiseitl, focus on re-thinking the role of water in dense urban areas by integrating the management of surface water run-off into the design of urban spaces, thereby increasing their quality and attractiveness as well as solving the practical problems associated with climate change of dealing with the increasing frequency and intensity of extreme rainfall events.

Interestingly, in neither case is there any resulting change in the overall objective density, either as measured in terms of population or through the density of built development. Instead it is the subjective perception of density which is modified by the planning and design approaches, whereby in Barcelona there is an increase in the usable open space, whereas the examples from Ramboll Studio Dreiseitl, are about enhancing both the functional and the visual aspects of existing open space. Nevertheless this is not to say that there is not a need to continue the search for a more meaningful way of expressing objective urban densities, so that we can have a way of identifying a clear threshold at which it will become necessary to intervene to start dealing with urban density.

List of References (**zu Ergänzen**):

European Environment Agency, 2006, Urban Sprawl

EEA Interactive Map
http://www.eea.europa.eu/themes/sustainability-transitions/urban-environment/urban-green-infrastructure/urban-green-infrastructure-1

Jane Jacobs, 1960, Death and Life of Great American Cities

Geoffrey West, 2017, Scale

3.2. Barcelona: Let’s fill the streets with life - establishing Superblocks

(Ariadna Miquel Amengual)

The Programme entitled *Let's fill streets with life, the establishment of Superblocks in Barcelona*, came about from the need to rise to the two-fold challenge of improving people's quality of life, by making the city healthier and more habitable, while reducing the impact of human activities and ensuring the environment's short- and long-term integrity. [i]

Barcelona is a dense, compact city, with all the benefits this entails with regard to travel needs and efficiency in the use of natural resources. Of course, at the same time, we need to be aware of certain flaws that urgently have to be made good: air-pollution levels; traffic noise; road-accident rates; lack of greenery; quality of spaces for interacting, etc.

Compactness and mixture of uses favour urban vitality in the city's streets. In fact, the streets in our towns and cities have traditionally been the support for travel, while also the place *par excellence* for children's games, local resident gatherings, strolls, resting, financial exchanges, sport, culture and protests...

By contrast, over the last few decades, the urban functions, particularly relating to meetings and leisure, have been significantly eroded or have even disappeared from our streets, giving way almost exclusively to the function of travel. Such a context has made it important to reclaim the streets and ensure they also function as a means of disseminating and bringing vitality to the urban network complex, creating opportunities for establishing greenery and promoting positive community life between local residents of all ages and origins.

(Source all images: Barcelona City Council)

For all the efforts made over the last few decades, Barcelona remains a city with few green spaces. Urban greenery contributes essential ecological values for the city as well as social and cultural values relating to well-being and health, beauty, culture and possibilities for social relations.

We need to continue with these efforts, to reclaim the streets and fill them with life and, to achieve that end, we have to not only improve the habitability of public spaces but also reclaim them for local residents, by committing, among other things, to a safer and more sustainable mobility and to a reduction in the number of private vehicles.

The large numbers of private vehicles on Barcelona's roads is one of the problems that have to be tackled. Despite the fact that they only represent 25% of the journeys made by Barcelona's residents, cars and mopeds, whether in traffic or parked, take up between 50% and 70% of space in many roads[1].

A COMPACT CITY'S CHALLENGES

The reason for the proposal for establishing the Superblock model in our city stems from the following factors, necessitating a functional change in our environment: climate change; high density; scarcity of green areas; high levels of air and noise pollution; road accident rates; the tendency towards individualisation and sedentarism among young children, teenagers and young adults and the social isolation and lack of independence of elderly people. These are all aspects where there are opportunities for improving the quality of people's lives through action on public spaces.

All these indicators reveal a scenario that has reached its limits, where action is needed. Barcelona is a city with lots of potential as it is founded on a rational structure that can admit various and new interpretations. The Superblock Programme can improve most of these indicators, defining a new panorama and moving towards a healthier, more egalitarian, more sustainable and green city. [ii]

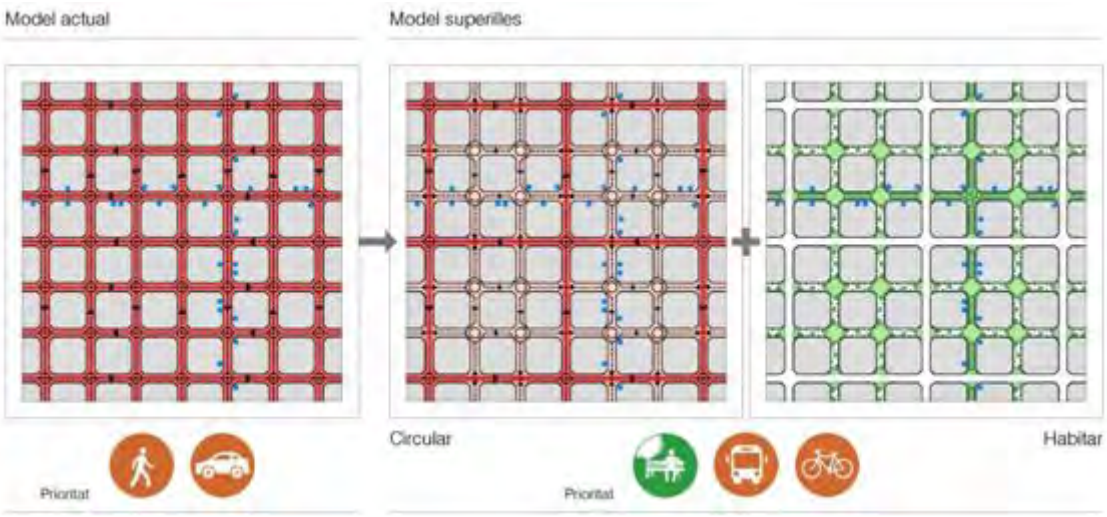
SUPERBLOCKS: A CHANGE IN CITY MODEL

The Superblocks model is a way of organising the city based on reversing the distribution of public space among vehicles and people, giving priority to the citizen, to improve environmental conditions and people's quality of life.

It can now be said that most streets are planned according to traffic needs and to transporting people and goods from one place to another. The Superblock Model highlights the need to make public spaces habitable and plans the city on the basis of this approach.

To achieve these goals it is based on a diversification of streets with regard to their habitability, uses and connective capacity. Superblocks are spread throughout the

urban landscape like a network of "tartan". Green spaces, attraction points and facilities, pedestrian hubs, streets and various mobility networks make up the systems superimposed on each other and which interlink the districts, neighbourhoods and neighbourhood units (housing).



(Source: Barcelona City Council)

Each system and network has its own value and benefits everyone in its range of influence. The integration of all the systems and networks makes up an urban fabric where urban quality is extended and distributed more or less homogeneously.

This is not about delimiting various units, neighbourhoods are a changing social concept that depend on many factors and which are difficult to identity in specific terms. This is not about understanding Superblocks as an isolated cell, bounded by street hubs along their perimeter. This is about a diversification of streets which is based on recognising and boosting their earlier features and adding the various networks to them. There are hubs that are important for their continuity, functionality, spatial hierarchy (section), capacity to link places or buildings or their personal history which define urban systems that cover and connect places and activities.

Some streets are tasked with channelling vehicle traffic, others are pedestrianised and green and connect green spaces, neighbourhoods and points of interest while others are free for public functions, linked to living and neighbourhood life.

In all these streets, it is crucial to improve the habitability of the public space, introduce greenery and put pedestrians and sustainable mobility at the heart of the planning.

This opens up the possibility of public spaces being put to other uses: such as children and teenagers exercising their right to play games, practise sport, engage in cultural or financial exchanges, expressive actions and protests, with streets becoming a meeting space between several generations of people and groups.

The Superblock Model's implementation will have to be accompanied by a 21% reduction in private-vehicle traffic in the city, favouring a change of mode towards more

sustainable means of transport. In this regard, boosting the networks - public transport and cycle and pedestrian lanes - will help to achieve a good degree of accessibility throughout the city.

Approved in 2015, the Urban Mobility Plan lists the initiatives to be carried out to ensure this reduction in private traffic and provides the first organisation of the various mobility networks that will have to intersect with the various existing systems.[2]

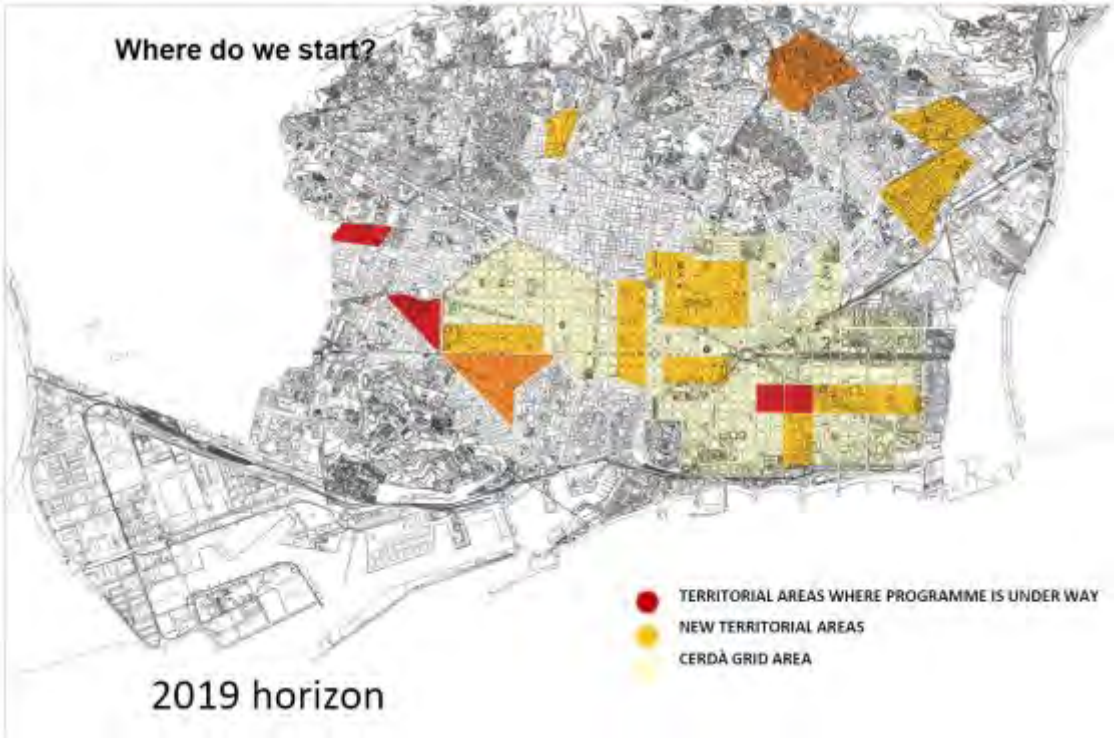
All these networks applied to Barcelona, bearing in mind the historical and pedestrianised hubs, the green corridors and the city's various networks, will provide a sketch of the Superblocks in the city.

LET'S FILL STREETS WITH LIFE

For the purpose of moving on to action and establishing the Superblock Model throughout the city, the City Council is launching the programme entitled *Let's fill streets with life. The establishment of the Superblock Model in Barcelona.*

The *Programme* includes the work carried out in four areas of the city under the Superblock Programme for 2012-2015, giving priority to initiatives where it is more important, in other words, the Cerdà area, and opening the process up to several territorial areas from a district level.

These first initiatives are intended to be carried out under two major lines of work: citizen empowerment and tactical urban planning.



(Source: Barcelona City Council)

A participatory process has been designed that is intended to accompany the entire deployment of the measures to be implemented, seeking at all times the involvement and joint responsibility of the social fabric of each area.

POBLENOU VERSUS SANT ANTONI

Last year the Superilles Programme was implemented in Poblenou. At the beginning, the transformation was done before working with neighbours. This fact generated controversy, and some opposite voices.

(Source: Barcelona City Council)

The proposal was brave, making restrictions in the private traffic, changing the directions to avoid the passing through traffic, and limiting the traffic to one lane only.

After the transformation we work with the neighbours the adaptation of the first proposal to their needs, and the activities that they want to realize in the new public space gained to the private car.

(Source: Barcelona City Council)

In Sant Antoni, we are working with the neighbours since the beginning of the process. As a result, the implementation is being slowly and less radical.

(Source: Barcelona City Council)

The pedestrian grid was drawn with the neighbours, linking all the existing facilities and green spaces. The first action it will take place beside the Sant Antoni market that is being rehabilitated. At the same time that the market will be open, the streets will be reurbanisated, with the Superilles criteria, with the final goal to gain space to the citizens and fill the streets with life and green. In the first phase of the program, more than 26.000 m2 of public space will be won for the pedestrians. [iii]

(Source: Barcelona City Council)

[1] Agència d'Ecologia Urbana. ***Presentation of Urban Mobility Plan 2013 - 2018***. October 2014

[2] Barcelona City Council. ***Urban Mobility Plan*** 2015 – 2019. 2015

---

[i]

- Barcelona City Council. ***Government measure Let's fill the Street with life. Establishing Superblocks in Barcelona***. May 2016

[ii]

- Barcelona City Council. ***Barcelona Green and Biodiversity Plan for*** *2020*. April 2013

- CREAL (Centre for Environmental Epidemiology). ***The public health benefits of reducing atmospheric pollution in the Barcelona Metropolitan Area.*** 2007

- Pujol J, Martinez-Vilavella G, Macia D, Fenoll R,Alvarez-Pedrerol M,Rivas I,Forns J, Blanco-Hinojo L, Capellades J, Querol X, Deus J, Sunyer J. ***Traffic pollution exposure is associated with altered brain connectivity in school children*** NeuroImage 2016 ;129:175-184.

- Barcelona City Council. ***Barcelona, ciutat compromesa amb el medi ambient*** [Barcelona, a city committed to the environment]. 2016

- Tobías A, Recio A, Díaz J. ***Does traffic noise influence respiratory mortality?*** European Respiratory Journal. 2014b. DOI: 10.1183/09031936.00176213

- Barcelona Public Health Agency. ***La salut a Barcelona*** 2014

- Children's Institute. ***Baròmetre de la infància i les famílies de Barcelona*** (2014)

[iii]

- http://ajuntament.barcelona.cat/superilles/ca/superilla/eixample

- http://ajuntament.barcelona.cat/superilles/ca/superilla/sant-marti

3.3. Water in the dense city

(Gerhard Hauber)

How can new development be accommodated while at the same time promoting the creation of an attractive and liveable urban environment?

Urban Densification – Water in the dense city

By Gerhard Hauber, Dimitra Theochari

Without water, there is no life. Global climate change, urbanisation, and increasing demand of limited resources are all magnifying challenges in contemporary societies. In this reality, water is of critical importance - finite, indispensable and under threat. Now as never before, an integrated approach to city design has become a necessity to reconcile the challenges of resource management, environmental protection and life quality for people. Tested and trusted conventional infrastructure systems are no longer dependable, safe or cost-effective solutions.

Therefore, the philosophy behind “water sensitive urban design” constitutes the next generation of urban infrastructure where habitat, city and recreational space merge into one, complete and indispensable strategic resource management task. The connectivity and networking of city public space as interactive, ecological infrastructure - publically visible, technically simple, and always beautiful - is the basis for a future-oriented approach, to guarantee our healthy and sustainable urban future.

Urbanisation and Urban Densification

Cities are incredible places of concentration of human potential. Cities provide to resident’s opportunities for new lifestyle, education, exposure to other cultures and their food, cultural events, anonymity, and sense of freedom; these are only some of the reasons why cities continue to attract people who want to excel, innovate, or develop their own way of life. Consequently, population growth is naturally translated to urbanization expansion of the most attractive cities and urban densification of those cities that are geographically limited. Some cities try to strategically plan for these transitions, however, others do not have the luxury to do so, either due to limited resources, or sudden and unplanned population increases. Landscape architects are uniquely qualified to address such complicated city issues. Starting from the water cycle and the dynamic resilience inherent in the different ecosystems, the design approach of city development from a landscape point of view starts from green connectivity and water-sensitive design.

Water-Sensitive Design in Dense Cities

Every city is unique in its geography, geology, population, culture, and climate, is it not? Some cities have extraordinary riverfronts, while others have lakefronts or ocean

waterfronts. Some cities are in valleys surrounded by hills and mountains, while others are surrounded by extraordinary flat rural areas or desert. Some cities face challenges regarding flooding, while others face desertification. Some cities are comprised by young, entrepreneurial and artistic population, while others are family and children friendly, or inclusive to the elderly. All cities though need to provide clean water, clean air, access to nature, and liveable open spaces in order to attract and maintain their population.

Densification of urban space comes hand in hand with stormwater runoff maximisation. Rainwater falling on hard surfaces, streetscapes, roofs of buildings, plazas and parking areas, cannot be absorbed and naturally directed to the aquifer, but it stays on the surface, acquires great energy and velocity and consequently creates flooding on streets, plazas and in lower levels of adjacent buildings. The most beautiful and precious resource, becomes frightening and dangerous; simply because it has no route to follow for its natural cycle.

Since the seventies, engineers developed series of solutions for stormwater management in cities based on sewer and pipe systems that were functioning well enough for the capacity of rainfall we had in the past. However, climate change has brought change to the rainfall amount in different climatic regions of the planet as well as the pattern of occurrence of extreme events. Opposite to these long-trusted conventional infrastructure systems that focus on engineering solutions of how to get rid of the water from the city level as fast as possible to provide safe living, working and recreation areas for their residents, is the development of blue-green infrastructure solutions that focus on decentralisation of flooding, retention and detention of flood water, recharge of ground water reservoir, and safe integration of all available open spaces in a new safely-floodable city scheme. In the cities of the future, water should be approached as a resource and not a source of fear; same thinking applies for densification.

Where there is water there is life; when allowing water to naturally flow over a green area, what happens automatically is life creation: a variety of plants start to grow, insects and small animals occupy these plants and use them as their own habitat, an ecosystem is created that starts to regulate itself according to the occurrence of flood. Reintroducing the water cycle in a dense city is one of the most important parameters for sustainable and resilient development of cities, due to its' affordable and implementable character. Furthermore, the effect of water-sensitive solution on climate change is measurable and demonstrable. Making space for water should be understood as making space for ecosystem services; space for water is space for landscape, space for biodiversity, space for public activities, and space for edges where water, nature and people come together. Access to a biophilic lifestyle that increases life quality is the big advantage of the implementation of such solutions.

An important example of this approach is the development of the Copenhagen Cloudburst Masterplan; following the 2nd of July 2011, in less than two hours, Copenhagen was hit by an extreme 1000-year storm event – or Cloudburst – where
150 mm of rain left large areas of the city under up to one meter of water. This Cloudburst

caused damage of approximately 1 Billion Euro, and rendered climate change mitigation solutions as an urgent focus for the city of Copenhagen. The flood's consequences transcended jurisdictional boundaries, necessitating a truly collaborative effort are established between planners, engineers, economists, citizens, utility providers, politicians, and investors to integrate Climate Adaptation within regulatory planning. Since existing available city space is of great value, a cost-benefit analysis conducted on the $10km^2$ catchment area, concluded that the potential of implementing a surface-first approach to mitigating Cloudbursts over solely pipe-based systems reduced investment costs by over $200 million; traditional drainage solutions such as underground reservoirs become less viable as utilities occupy more and more underground space; extreme weather events cannot be managed by conventional pipe systems and their occurrence becomes more difficult to predict. A Blue-Green Infrastructure Approach develops a synergetic relationship between the two, integrating climate adaptation solutions within the limited confines of urban space, encouraging a solution utilizing the best of both techniques.

Another interesting implemented project of Water-Sensitive Urban Design is the Scharnhauser Park, the significance of which lies in its unique scale for the region of Baden-Württemberg where the management of all rainwater and flood water is done with absolute safety on the ground level without using conventional underground flood-protection pipe systems. Components of the flood-protection system include strategies to protect the side streams and in a greater scale the watershed of the river Neckar. The design provides microclimate mitigation, biodiversity, and various ecosystem services. In fact, this project is the first implemented project of this kind of water management in the landscape in an area with only clay soils; typically, in a project the designer needs to balance the sealing and earthworks destroying the green spaces, and has to rebuild a natural area to balance the impact of the new development in terms of ecological footprint. Instead of that, in this case, the idea is to overlay landscape design with water functions and have one seamless integrated system, deal with the all the flooding on ground level and bringing landscape performance in the foreground.

One last example is the Bishan Ang Mo Kio Park which is one of Singapore's most popular heartland parks. It was constructed initially in 1988 as a leisure destination and green buffer between the residential new towns of Bishan and Ang Mo Kio; however, by maintaining the engineering infrastructure of the concrete canal that characterised Singaporean urban infrastructure development in the 1960s and 70s which is detaching the park from the drainage canal demarcating a harsh line. This concrete canal was rethought and redesigned based on a floodplain concept, to allow people to come closer to water and enjoy recreational activities along the generous river banks when water level is low. During heavy rain though, the park land that is next to the river doubles up as a conveyance channel, increasing the river's conveyance capacity by approximately 40%. The alignment of the new river channel integrates meanders and varying widths to create diverse flow patterns which are characteristic of natural river systems, creating ecologically valuable, natural and diverse habitats for biodiversity; floodplain design has introduced a new typology and quality of public space in urban Singapore.

City development is complicated as it needs to take into consideration different stakeholder groups including engineers, traffic designers, landscape architects, municipalities and their existing code systems and regulations, private owners and the locals. As a result, big scale solutions can only be implemented if there is a shift in the governance and the way it addresses the design process; the legal frameworks need to be updated to integrate a new philosophy of dealing with water in a city; the administrative agencies need to be trained and educated to understand this type of infrastructure system; the governing authorities should support and promote transparent processes, education and training. Yet, they require a skilful and experienced landscape architect that can artfully integrate blue-green infrastructure solutions with diversely-programmed multifunctional active civic spaces; a designer that sees synergies and opportunities where others see obstacles and restrictions.

List of References:

H. Dreiseitl, D. Grau, Waterscapes Innovation

H. Dreiseitl, D. Grau, Wasserlandschaften: Planen, Bauen und Gestalten mit Wasser (Deutsch) Hardcover – 24. January 2006

J. Hoyer, W. Dickhaut, L. Kronawitter, B. Weber, Water Sensitive Urban Design: Principles and Inspiration for Sustainable Stormwater Management in the City of the Future, March 2011

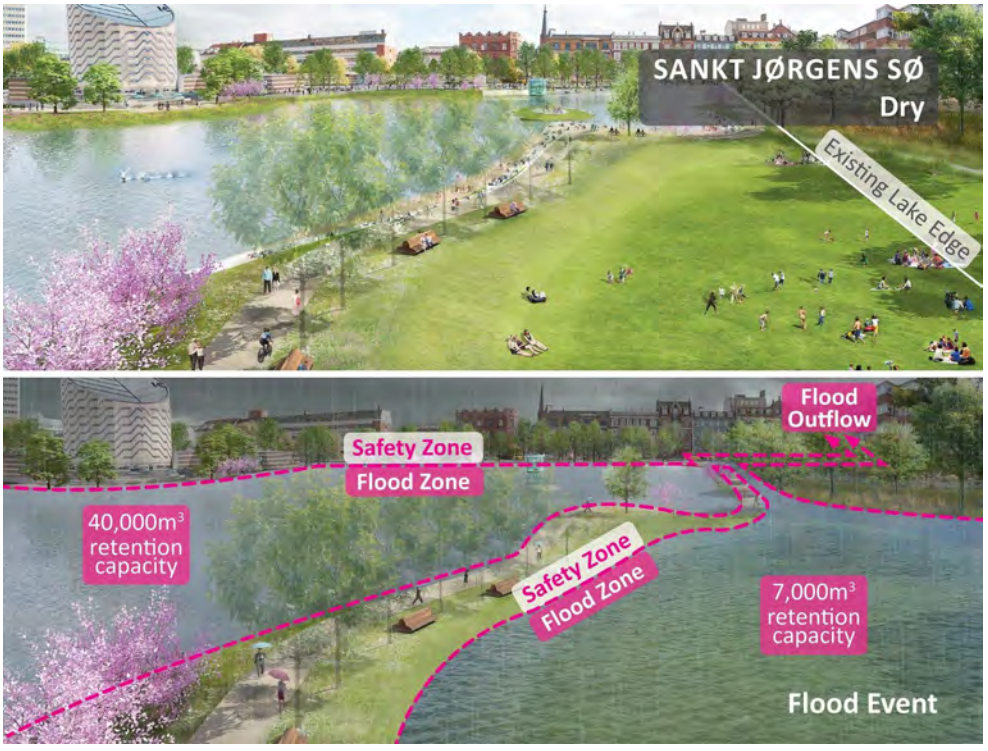
J. Gehl, B. Svarre, How to Study Public Life: Methods in Urban Design, October 2013

Konkretisering af Skybrudsplan | Ladegård-åen og Vesterbro | EKSEMPLER

(Copenhagen_Cloudburst_c Dreiseitl)

(Copenhagen_Cloudburst_c Dreiseitl)

(Singapore_Bishan Park c PUB- Dreiseitl)



(Copenhagen_Cloudburst_c Dreiseitl)

4. COMMENT/REFLECTION

(Andrea Mann, City of Vienna - GB*2/20)

Kommentar Katrin: Habe schon mit Richard besprochen, dass er da als Co-Moderator noch etwas Substanz reinzaubern wird ;-)

Landscape Planning and Urban Densification

Discussion-Session on Sept. 28th of 2017

Summary of Andrea Mann

After very interesting inputs from the speakers a penal-discussion was led under the aspect of quality of urban landscapes and the pressure of densification. We are speaking about big cities all over the world, which are confronted with growth and in that case densifying processes in the inner-city areas. The question is, how can quality of urban landscapes be preserved or raised, when the pressure on urban and public space is increasing by housing and other buildings?

Barcelona went the way that they are capturing back urban spaces for the people. Streets are closed for car traffic and the public space is used for recreation, stopovers and playgrounds for children. Mrs. Amengual from Barcelona tells that the city argues with the health of the inhabitants, which is threatened by the pollution caused by the high amount of traffic. Arguing with health aspects convinces people to transform the cities in the way Barcelona does it with the model of superblocks.

Mr. Kipar from Milano argues that the change from “grey to green” takes time and needs a bottom-up-process. It needs to start a movement and the people have to claim for the change. He is talking about green rays, the question of scale and the informal design, which leads to the goal.

On the other hand, Hamburg chooses the top-down-model, as Mrs. Metz told us. The Nature-Cent, an incentive for urban green development is the new strategy to foster high quality of urban landscapes. Competitions in public and social housing are requesting integrative concepts for high quality of open spaces. Vienna has a very similar model.

Finally, Mr. Hauber agrees that there is a high pressure on open urban spaces even in ecological aspects focusing on flood-risks caused by the climate change. The chance is to design visible flooding systems, which besides high functionality also have recreational functions and are on the long hand cheaper solutions. At least the density-limit should not exceed 15.000 P/km2.

5. FACING UP CLIMATE CHANGE

5.1. Facing up to climate change

(Beatrix Gasienica-Wawrytko, Katrin Hagen)

There is no doubt about the essential role of urban open and especially green space for a sustainable urban development. It fulfils a variety of social, ecological and - in consequence - economic functions underlying the importance of sophisticated green urban strategies (chapter 1). Besides densification (chapter 2) climate change can be seen as a mayor challenge for future urban development. The impacts of climate change are especially prominent and tangible within dense urban areas due to the prevailing urban structure and materials. In urban areas natural land cover has largely been replaced by sealed surfaces and built structures that extend the amount of materials with a high thermal mass into the third dimension. Sealed surfaces and building structure store heat and thereby add up to prolonged warming of their environment. Rainwater is being canalized and thus not available for water storage and evaporation. Natural wind patterns are being raised to the rooftop layer changing the inner-urban wind structures and often leading to unpleasant gusts or impeded ventilation. This results in the so called urban heat island, defined as the difference of air temperature between the dense inner city structure and its rural surrounding (see Fig 5.1). This difference can add up to 15°C (Kuttler 2009). This does not remain without consequences – the World Health Organisation has officially confirmed that 73.000 deaths in Europe occurred as a result of the extensive heatwave of 2003 (WHO 2004). It is to be expected that the amount of heat days (max. temperature ≥ 30°C) and the duration of heatwaves (min. 3 consecutive heat days) will increase (Meehl 2004).

Even within the city structure itself differences up to 7°C can be observed (Eliasson 2000). This depends primarily on local differences in the urban morphology, materiality and vegetation. To this effect the study Urban Fabric (2014) has generated clusters (urban fabric types) reflecting the climate sensitivity of the City of Vienna. The results clearly state Oke illustrating that the dense inner city structures are particularly affected (see Fig 5.2).

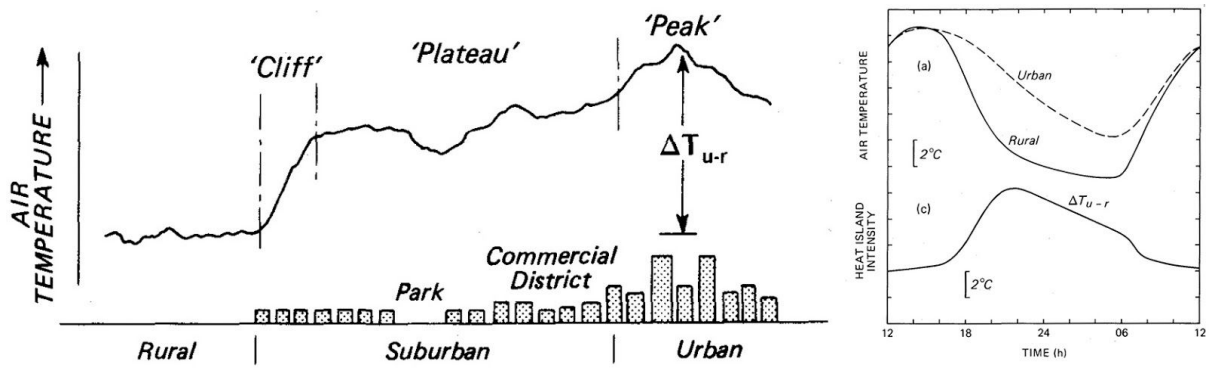


Fig. 5.1.: Section through the urban heat island and the respective difference between urban and rural temperature (Oke 1987)

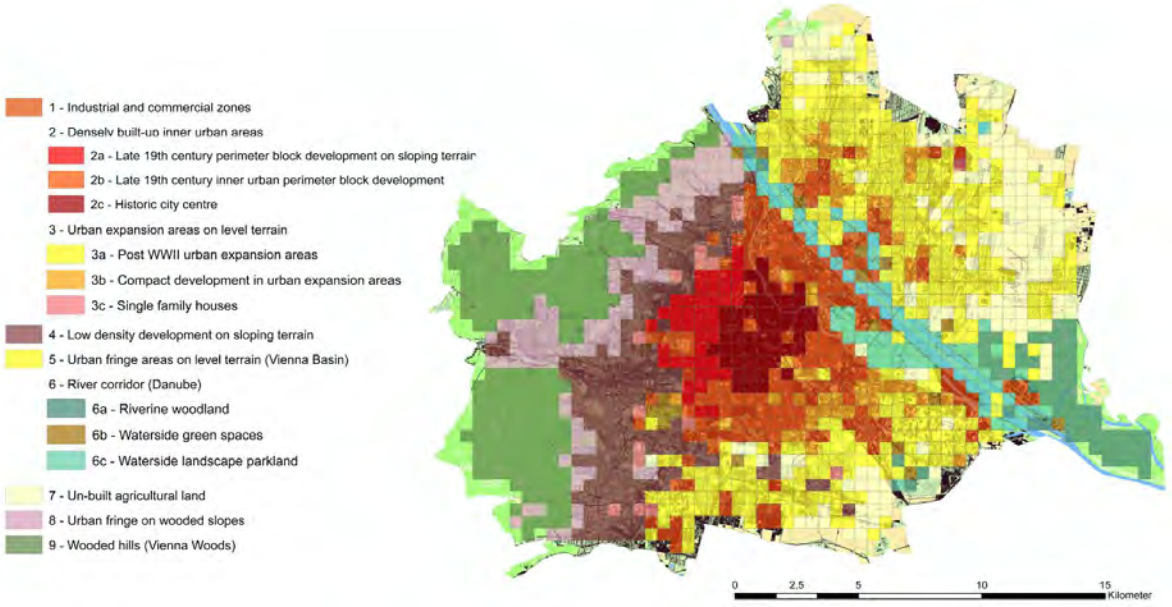


Fig. 5.2: Urban fabric types for Vienna concerning the climate sensitivity (Urban Fabric 2014)

A variety of studies such as RUROS (2004), ASCCUE (2006) and KLIMES (2010) prove that intra-urban natural surfaces and vegetation are key factors in the mitigation of, and adaptation to, climate change. Natural land cover enables infiltration and water storage; vegetation prevents the heating up of its own surface and the surrounding air by evapotranspiration and of the underlying ground by shading in multiple layers; vegetation prevents high wind speeds by enabling at the same time necessary ventilation (e.g. Geiger 1961, Dimoudi and Nikolopolou 2003). Figure 5.3 shows the direct positive effect of vegetated urban areas on the heat island.

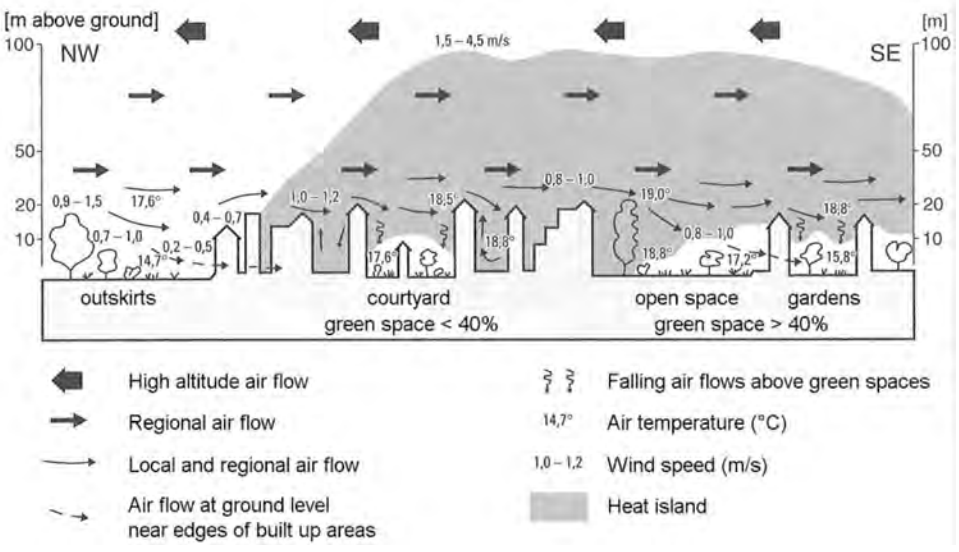


Fig.5.3: The positive effect of vegetated areas on the urban heat island adapted from Zimmermann, 1984 (Fezer, 1995, p. 39)

Especially the network of green open space can mitigate climate impacts and offers at the same time an adaptation to the changed climate conditions. Therefore the streetscape holds a huge potential in this regard. The street system forms a stable network of open space defined by building structure and in addition is publicly owned and thus directly accessible to public authorities for the immediate development and implementation of the sort of urgent strategic climate amelioration programme which is clearly necessary. Furthermore a change in mobility patterns is to be expected, that will initiate a debate about new approaches to the role and use of the street system. Last but not least, studies such as the above mentioned “Urban Fabric and Microclimate” project indicate, that the desealing of surfaces and the integration of trees and other vegetation offer a particular adaptation potential especially within the streetscape.

And even the building structure itself can be seen as an important future part of the green infrastructure: vertical facades and roofs open up a further potential for green area to ameliorate both the outdoor and indoor climate, improve energy efficiency, biodiversity, rainwater management and tackle particulate pollution, etc. Urban green is to be seen as an all overflowing landscape layer within the urban fabric - Roehr and Laurenz (2008) bring it to the point by talking of ‘living skins’.

The NASA states 2017 as the second hottest year since beginning of climate data measurement in 1880 - only topped by the year 2016 and directly followed by 2015 and 2014 (Falter 4/18 S. 17). Action is urgently needed. Even assumed that an enforcement of climate change could be stopped completely - which is extremely unlikely - the impacts will still be effective far ahead. Cities will have to deal effectively with their changed urban climate conditions.

The need of Climate Change adaptation and implementation strategies

How do cities face up to the challenges of climate change? How can they implement strategies that help to transform urban areas into more climate resilient ones that guarantee at the same time high urban quality standards with a high amount of green, unsealed urban open spaces that ameliorate the urban microclimate situation?

Worldwide, planers, governmental and political responsibilities, take action against the struggle of urban climate change, as it can be seen, on the one hand in the “UN Millennium Goals” that wants to ensure “Environmental Sustainability”, that concerns urban areas as well, and on the other hand, by regarding the success of the United Nations Framework Convention on Climate Change in 2015 in Paris . Luckily, the Paris Agreement - entered into force in November 2016 - has finally stressed the equal importance of protection and adaptation (UN 2015).

Besides, the European Union recognized the need to prepare European cities to the impacts of climate change and to develop adaptation strategies. Therefore, in 2013 the European Commission launched the “EU strategy on adaptation to climate change” (EU Commission, 2018). The aim of this strategy is to make European Cities more

climate-resilient. Simultaneously, many European cities realized the threat of climate change already before the publication of the study, and started developing "green strategies" to make their cities more resilient to climate change. Nevertheless, within the same year, in 2013, the European Commission published the "European Biodiversity Strategy 2020". This strategy favoured Green Infrastructure (GI) strategies as "*a successfully tested tool for providing ecological, economic and social benefits through natural solutions. It helps us to understand the value of the benefits that nature provides to human society and to mobilize investments to sustain and enhance them. It also helps avoid relying on infrastructure that is expensive to build when nature can often provide cheaper, more durable solutions […]"* (EU, Green Infrastructure Enhancing Europe's Natural Capita, 2013). By pointing out the need of Green Infrastructure measures, which encourages the use of Nature-Based solutions in urban areas as well, European Cities underlines the need to implement more Green and / or Blue Infrastructure as one solution to implement climate change adaptation measures into current planning habits.

European cities are coping with different kind of obstacles, like different kind of weather extremes. Some cities are endangered by rising sea levels, or heavy perceptions, others are faced to longer and heavier heat waves and dry seasons during summertime. Consequently, these climate change hazards do have different impacts on the vulnerability of people and urban infrastructure. This makes it rather difficult to develop the "one" strategy, which might be suitable for all cities. Hence, this lead to a wide range of guidelines or strategy plans as well as projects that show how cities can handle with different kind of challenges or which kind of measures can be implemented into cities (e.g. by changing administrative policies). As one example for a project that spreads out information and support, what planners, experts or administrative responsibilities at cities might be able to do, is *"The Future Cities Project"* (2013), founded by the European Regional Development Fund (ERDF). The aim of this project is prepare city regions in North-West Europe for a better handling with the predicted climate change impacts.(Future Cities, 2014). One example for a city that developed a strategy quite early was the City of Malmö, which is faced with *"increased precipitation, risk of flooding, rise in sea level and a warmer climate"* (Malmö Stadt, 2009). The city established already in 2009 a "City Action Plan for Climate Change". This document gives a short catalogue of adaptation strategies on city level, addressing local politicians and municipal authorities. Another example for a prior strategy plan is e.g. the climate change adaptation strategy plan of London, named "Rising to the challenge" which was developed in 2007 (City of London, 2010). Different to the Malmö strategy plan, which gives a wide overview about measures and defining action plans, this one is based on a distinct scientific approach, the uses uses the UK Climate Projections (UKCP 09).

Although there are now more than 5 years since the release of the EU climate adaptation strategy and more than 10 years since the Malmö strategy was published, many other European Cities still are developing adaptation, and more of this, many cities are working now on implementation strategies for making their cities more climate resilient, by following different kind of strategies concerning their concepts: some of them have a strict scientific focus with a grounded research base (like the London-strategy), other strategies concentrated more on local stakeholder and public participation.(EU Commission, 2013, Appendix 4) Due to a study, which analysed 11 European Countries and 200 large and

medium sized cities and their adaptations strategies, the highest amount of adaptation plans and strategies are in the UK (80% of 30 cities), followed my Finland (50% of 4) and Germany (33% of 40 cities) (RIECKEN, 2013) However, most of the mitigation plans have a lot of adoption or mitigation statements concerning e.g. energy consumption, but there is a lack of statement concerning urban planning and climate change mitigation strategies. One explanation is, that climate change in cities should be seen in a systemic challenge, that means that it intervene with other environmental and socio-economic factors (e.g. lifestyle, consumption, production that affect the amount of greenhouse gas emissions). Adaptation and mitigation strategies for urban areas should be seen in a broader perspective (EEA, 2016). A successful urban implementation strategy should take this into account.

The following chapters present two ambitious examples of climate adaptation strategies with a strong focus on an effective implementation.

Viennas “Urban Heat Island Strategy Plan”, published in 2014, has been developed closely linking administration and research. It focuses on concrete implementation tools highlighting the urgent need for action and at the same time giving support for the implementation of respective measures.

The landscape design office De Urbanisten (Rotterdam) specialised in climate-sensitive urban design following a very holistic approach. Their work gives a wide insight into challenges and solutions on multiple scales from the entire city to the district level and single building respectively specific open space. Besides the development of strategies such as the “Rotterdam Climate Adaptation Strategy” in 2013 or the “Roofscapes” study in 2015, De Urbanisten also focus on cooperative planning processes with stakeholders and users leading to highly accepted and innovative design solutions.

List of References:

CITY OF LONDON (2010). Rising to the Challenge. The City of London Climate Change Adaptation Strategy; https://www.cityoflondon.gov.uk/services/environment-and-planning/sustainability/Documents/climate-change-adaptation-strategy-2010-update.pdf

CITY OF MALMÖ (2009). Climate Adaptation Strategy - The City of Malmö; http://www.mcrit.com/ADJUNTS/ciutats_sostenibles/malmo.pdf

DIMOUDI, A. & NIKOLOPOULOU, M. (2003). Vegetation in the urban environment: microclimatic analysis and benefits. Energy and Buildings, 35, 69-76.

EEA Report (2016); Urban adaptation to climate change in Europe 2016; Transforming cities in a changing climate; European Environment Agency, Copenhagen, Denmark

ELIASSON, I. (2000). The use of climate knowledge in urban planning. Landscape and Urban Planning, 48, 31-44.

EU Commission (2013). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions; Green Infrastructure (GI) – Enhancing Europe's Natural Capital; Brussels

EU Commission (2013); Adaptation Strategies for European Cities: Final Report; Appendix 4: Review of adaptation strategies;

EU (2013). EU strategy on adaptation to climate change, https://ec.europa.eu/clima/sites/clima/files/docs/eu_strategy_en.pdf

Falter 4/18 S. 17

FEZER, F. (1995). Das Klima der Städte
54 Tabellen, Gotha, Perthes.

FUTURE CITIES (2014) Adaptation Compass - A guidance tool for developing climate-proof city regions, Future Cities - urban networks to face climate change, EU Interreg Project; http://www.future-cities.eu/fileadmin/user_upload/pdf/FUTURE-CITIES_Adaptation-Compass_Guidance.pdf

GEIGER, R. (1961). Das Klima der bodennahen Luftschicht
ein Lehrbuch der Mikroklimatologie, Braunschweig, Vieweg.

IPCC (2007). Climate change 2007, Cambridge [u.a.], Cambridge Univ. Press.

KLIMES (2010). Planerische Strategien und städtebauliche Konzepte zur Reduzierung der Auswirkungen von klimatischen Extremen auf Wohlbefinden und Gesundheit von Menschen in Städten. BMBF.

KUTTLER, W. (2009). Klimatologie, Paderborn ; Wien u.a., Schöningh.

MA22 (2015). Urban Heat Islands. Strategieplan Wien.

MEEHL, G. A. & TEBALDI, C. (2004). More intense, more frequent, and longer lasting heat waves in the 21st century. Science, 305, 994-997.

LEBENSMINISTERIUM (2012). Die Österreichische Strategie zur Anpassung an den Klimawandel - Teil 2 - Aktionsplan, Handlungsempfehlungen für die Umsetzung.

RIECKEN et al, (2013); Climate change response in Europe : what's the reality ? Analysis of adaptation and mitigation plans from 200 urban areas in 11 countries; Springer Science + Business Media, Dordrecht

ROEHR, D. & LAURENZ, J. (2008). Living skins: environmental benefits of green envelopes in the city context. Eco-Architecture Ii: Harmonisation between Architecture and Nature, 113, 149-158.

RUROS (2004). Designing open spaces in the urban environment: a bioclimatic approach. Key Action 4, City of Tomorrow, Fifth Framework Programme EU.

UN (2015). Paris Agreement.

URBAN FABRIC (2014). Urban fabric types and microclimate response - assessment and design aprovement. Final Report. TU Wien

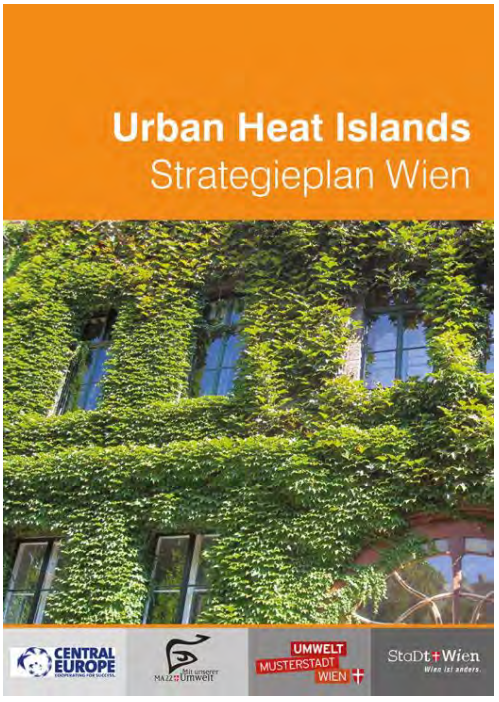
WHO (2004). Health and Global Environmental Change. Series No 2. Heat-waves: risks and responses. Regional Office for Europe.

5.2. Vienna: Urban Heat Islands - Strategy Plan

(Jürgen Preiss)

Current implementation process

Projections suggest that by 2030 Vienna's population will increase from 1,8 to 2 million, resulting in growing settlements, urban densification, and the loss of open spaces. These side effects of population growth result in an increase in the temperature in cities and temperature difference between cities and the surrounding areas, a phenomenon known as the Urban Heat Island effect (UHI). To combat this, Vienna's Environmental Department – MA 22 and external experts developed the Urban Heat Islands Strategy Plan (UHI-STRAT) project, which was finished in 2015, with the goal of showing planners, architects, and other relevant stakeholders what measures can be implemented and the potential benefits thereof. Within this project, possible actions for the City of Vienna based on planning tools and instruments of the different control levels of urban planning and development have been identified.



(Fig. Urban Heat Islands Strategy Plan, published in 2015)

The implementation of the UHI-STRAT was anchored in parallel as a goal at the highest level, namely in the government program 2015. The political order to implement UHI-Measures contains key measures such as "Creation of air-conditioning systems in densely built urban areas through vertical green areas and roof greening" and

“promising measures from the UHI strategy plan are being implemented to prevent heat islands in the city.”

The implementation of the UHI-STRAT takes place in various fields of urban development. These are planning tools based on different scale levels, such as the urban development plan STEP 2025 and mission statements at the city level, master plans and city development models at the district level, the zoning and development plan at district level and finally the planning of buildings and open spaces at the neighborhood / building block level. Depending on the scale, different measures from the UHI-STRAT come into effect. Current planning processes show that the success of the implementation of UHI measures depends on transdisciplinary and integrative approaches and on stringent consideration over all relevant planning levels.

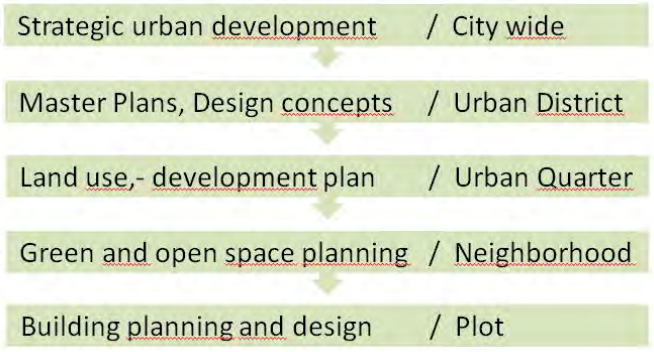


Fig: Planning levels in the City for the reduction of the UHI effect
(source: from top to bottom: Stadtentwicklung Wien, Magistratsabteilung 18 – Stadtentwicklung und Stadtplanung, 2014, STUDIOVLAY; Stadtentwicklung Wien; Büro tilia; Jürgen Preiss, MA 22)

Examples for important fields of action include the **City of Vienna's Climate Protection Program**, the **Urban Development Plan - STEP 2025**, the **Public Space Concept**, and the management of measures within the framework of the **development plan** and **competition procedures** (urban planning competitions).

As part of the ongoing process of **adaptation to climate change** in Vienna, a working group was formed to develop a concept for the systematic consideration of climate-relevant criteria in urban planning procedures. The group developed statements on the questions, which climate-effective criteria / measures should in what way be (considerations for a suitable process) systematically taken into account in future urban planning procedures.

A significant statement on heat adaptation is provided by the **urban development plan (STEP 2025)**. UHI measures are included as key objectives like *“city green instead of air conditioning”, "Improving the comfort of public spaces by protecting them against summer overheating (for example by adequate greening, shading and ventilation, adequate choice of materials) and greening measures for buildings (facades, roofing, roof gardens).”*

As part of the STEP 2025 the **thematic concept “Green and open Spaces”** lines out the importance of the development of Vienna’s open space network and lists arguments for the need of green space measures for the urban climate in particular. Such aspects are linear open space structures to contribute to air circulation, plants in general to provide shading, better air quality and active cooling of the air, water surfaces, roof,- and facade greening, further water cycle and rainwater management.

One of the latest developed guidelines, the **STEP 2025- thematic concept "Public Space",** contains a series of relevant UHI measures to control the heat development in public space directly or indirectly. The public space concept addresses the issues of climate change (adaptation) and small-climatic changes and names concrete measures in the planning and design of public spaces. Selected indicators include the increase in tree locations in public space (10.000 newly planted trees for all of Vienna by 2025), the overshadowing of walking or resting areas by trees (should be increased) and the increase in the number of fountains and water surfaces in public spaces.

The **Land use & development plan** is usually enacted as a by-law to the Vienna Building Code. It creates legally binding specifications for all downstream planning and project planning processes. At this level of activity, the urban density (gross floor area, usable area), which areas may be built on, the degree of sealing, possible building types and heights and the orientation of the buildings are planned. Likewise, UHI-relevant measures can be anchored via special provisions. In addition to the building orientation and size regulations e.g. with respect to the extent of green spaces on the plot, rows of trees or groups in traffic areas as well as roof and facade greening can be set.

Some typical determinations (“TB”-examples found in the plan document below):

- Introduction of rainwater into the channel is not or only by Traffic areas allowed.
- Non-built, but buildable building land have …. to be designed as gardens.
- The roofs … up to a roof pitch of 15°….are to be greened.
- The cross sections of the streets no xx) … are to be designed in such a way that the production or conservation of a row of trees is possible.

(Source: Flächenwidmungs,- und Bebauungsplan PD 8117, MA 21)

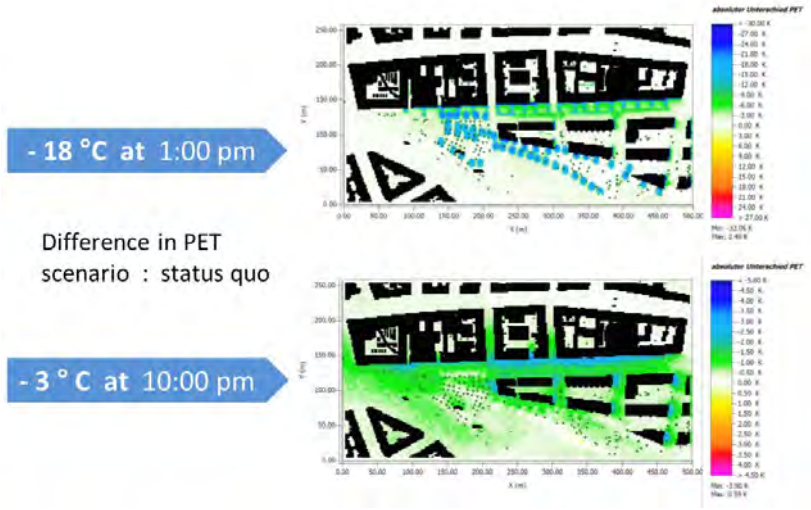
In the determination of measures in zoning and development plans, but also in the context of urban planning competitions and cooperative procedures for urban development, it is increasingly discussed in which way future climate-relevant criteria / measures should be systematically taken into account. In order to be able to develop application-oriented methods for recording and assessing the climate impact of measures in urban development processes, several research collaborations are currently being conducted between the City of Vienna and scientific research institutions and planning offices.

It examines the feasibility and compatibility of different developed instruments, such as the Green and Open Space Factor (GFF) (BOKU) as an urban measure and instrument for controlling and planning green infrastructure, the GREENpass (Green4Cities) as an optimization tool for the microclimatic effects of green infrastructure at the level of plots and neighborhood and in addition to that, various urban climate models as an evaluation

tool for the mesoclimatical effect at city level and finally the feedback of regional climate simulation models.

The aim is the development of a method for the harmonization of instruments and models as well as the clarification of the interfaces of climate models. There is agreement that there is a need for a standardized "proof of concept" control loop and tool set for controlling, optimizing and evaluating a green and climate-sensitive town planning.

Climate modeling with computer aided simulation tools have also proven to be a very important tool for visualizing the effectiveness of UHI measures. This plays an important role in the persuasion of project developers, planners but also for addressing local politician and citizens.



(Fig.: Scharf B et al (2017) – Difference in physiological equivalent temperature (PET) assessed by a microclimate retrofit at Aspangstrasse (Vienna).)

It turned out that these applications help to make the effectiveness of measures more visible and they help to find clear answers to the trivial question: how strong is the cooling effect how do the measures actually affect the perceived temperature (PET)?

The UHI-STRAT contains the field of action “awareness building information, public relation and educational campaigns”. This field of action covers measures aimed at making heat a major issue for future urban planning and development and at building awareness among people and planning experts in general. It is primarily about providing information, whereby a distinction has to be made between information for residents on the one hand and information relevant for planning purposes on the other hand.

Analyzes have shown, that there is considerable potential on existing building for implementing green roofs and facades. In fact there are 5.700 ha of roof areas and 12.000

ha facades which, compared to a total of the city area of 41.000 ha is a considerably proportion.

Using best practice projects, the city of Vienna shows how this potential can best be used. On the facade of the MA 48 - waste management department, a 850 m² living wall has been constructed in 2010. Investigations have shown a significant improve of the U-Value (50 % less heatflux (W/m²) during summer and 20 % less heatflux in winter) in comparison with a common facade (KORJENIC et al., 2015).

Green instead of airconditioning on the MA 48 – Wastemanagement department
Source: MA 22

Vertical garden on the MA 31 – Vienna Water (Source: Jürgen Preiss)

Another Lighthouse is the greening of the office building MA 31 – Vienna Water at Grabnergasse 4. The city of Vienna has seen this as a challenge to show, how a significant improvement energy consumption, microclimate, biodiversity and social sustainability can be achieved in a dense inner city area. In the sense of a sustainable development of the city of Vienna, it is highly desirable to evaluate this prototype, to further develop it, and to continue applying it in the context of successive urban renewal.

As the implementation process for greening facades is very complex and it has been shown that successful cooperation requires several actors and the cooperation of experts from various disciplines. In order to promote facade greening, in 2016 a project was launched by the City of Vienna with experts from all relevant interdisciplinary disciplines working on defining legal requirements and framework conditions, ecological, economic and social sustainability, best practices, quality assurance procedures, and implementation instruments. The clarification of fire protection relevant questions are already finished and the new guideline for facade greening will approximately be published in early 2018.

List of References:

Bauordnung für Wien (2014): Wiener Stadtentwicklungs-, Stadtplanungs- und Baugesetzbuch (Bauordnung für Wien – BO für Wien), B 020-000.

Magistrat der Stadt Wien, Preiss J et al (2015) Urban Heat Islands Strategieplan Wien https://www.wien.gv.at/umweltschutz/raum/uhi-strategieplan.html

Magistrat der Stadt Wien, Preiss J et al (2017) Fassadenbegrünungsleitfaden der Stadt Wien, 2. Edition Magistratsabteilung 22 für Umweltschutz der Stadt Wien Status: Not yet published, official Date May 2018

Korjenic A, Tudiwer D (2016) The effect of living wall systems on the thermal resistance of the façade. Energy and Buildings, Accepted Manuscript, 2016 (Forschungsbericht im Auftrag der Magistratsabteilung 22 der Stadt Wien – 154330/2015: Erforschung von Grünfassaden hinsichtlich deren wärmedämmenden Wirkung mittels flächigen Wärmeflussmessungen)

Preiss J (2015) A Strategic Programme for the City of Vienna in: Terrin J-J (2015) Villes et changement climatique – Cities and Climate Change Urban Heat Islands – Editions Parentheses

Damyanovic D et al (2016) 9 Pilot Action City of Vienna – UHI-STRAT Vienna – in: Musco F (2016) Counteracting Urban Heat Island Effects in a Global Climate Change Scenario http://eu-uhi.eu/download/publications/wp2/UHI_FinalPublication.pdf

Scharf B et al (2017) Smart Greening Aspang – Optimierung des Mikroklimas zur Senkung des Kühlenergiebedarfs und zur Verbesserung der Lebensqualität im Pilotgebiet Aspangstraße Status: Not yet published

Bretschneider B et al (2017) Greening Aspang - Entwicklung eines Verfahrens zur gesamtenergetischen Optimierung von Stadtgebieten am Beispiel der Aspangstraße

5.3. Rotterdam: Towards climate sensitive cities

(Dirk van Peijpe)

Kommentar Katrin:
Meine Ergänzungen wurden von Dirk akzeptiert… ist also die derzeitige Endfassung!

Climate sensitive urbanism

Our climate is changing. We will experience more extreme weather conditions like heavy rainstorms, long periods of drought, heat waves and rising water levels for sea and rivers. Recent disasters in the US and India show how vulnerable our societies and cities are for climate change. A risk that becomes even larger in the fast growing cities of the 21st century. Many of them are situated in delta areas.

There is a political agreement (Paris Agreement 2015) to actively perform on the agenda of climate mitigation and adaptation. This is an imperative to act for all who are involved in the planning and design of our cities and landscapes. How can we make our cities more resilient to climate change? And can we improve the quality of life at the same time? Certainly we will have to come from a purely technical approach to an integrated approach with people playing an important role - looking at the city as an ecosystem. Innovation can hereby act as a key driver.

The portfolio of De Urbanisten explores the possibilities for urban design and landscape architecture to contribute to the agenda of a 'climate sensitive' urbanism. In this article, I want to present some of the climate sensitive' projects by De Urbanisten, all situated in Rotterdam (NL).

A climate adaptation strategy for Rotterdam

In 2013 De Urbanisten were invited to support the city of Rotterdam to develop their Rotterdam Climate Adaptation Strategy. Rotterdam is situated in the Dutch delta. The city has a long tradition of continuous adaptation of the city to new hydrological circumstances. This resulted in a robust system that keeps the delta city dry and safe. The maintenance and improvement of this system of dikes, open water and sewers is the starting point for a climate proof Rotterdam.

But more adaptive measures are needed to alleviate the system and to make it more resilient. Solutions are found in the urban landscape, both in the public and private domain. In the 'arteries of the city', small scale measures can be taken like depaving hard surfaces for blue and green spaces.

Climate adaptation is always site-specific. In outer dike Rotterdam the principle is a multi-layered flood protection based on adaptive construction and flood resilient public spaces (e.g. tidal parks). Inner dike Rotterdam will be protected by strong and integrated urban dikes. Behind these dikes, the 'sponge function' of the city will be restored by

implementing watersensitive projects that store rainwater where it falls to improve the quality of spaces, per example with watersquares and urban raingardens.

Fig. Risks Rotterdam_© De Urbanisten

The watersquare in Rotterdam

The concept of watersquare illustrates that innovation takes time - in this case about 10 years from simple idea to realization - involving research, design, conviction and money search. Urgency came from several directions: missing usable public space (social dimension) and the necessary revision of the sewage system (water management).

The water square in Rotterdam (Benthemplein) holds a twofold strategy: it is public space and rainwater storage combined in one space. Three basins on the square collect the rainwater: two undeep basins for the immediate surroundings and one deeper basin that receives water only during extreme rain events. This water system is disconnected from the combined sewer. Rainwater slowly infiltrates or is delayed and pumped to the nearby canal.

All spaces that can flood are painted in shades of blue. Rainwater from the catchment area runs into the basins via generous stainless steel gutters. Special features are a rain well, a water wall and a baptistery.

The space is softened and subdivided by a green structure of high grasses, colourful flowers and large trees. The water square creates a new context for modernist buildings around it and the impressive artwork of Cobra artist Karel Appel. But most important, the square creates a landscape of possibilities for active public use. After its opening (2014) the square became a popular place for people to enjoy and to be engaged in sports, events and everyday activities.

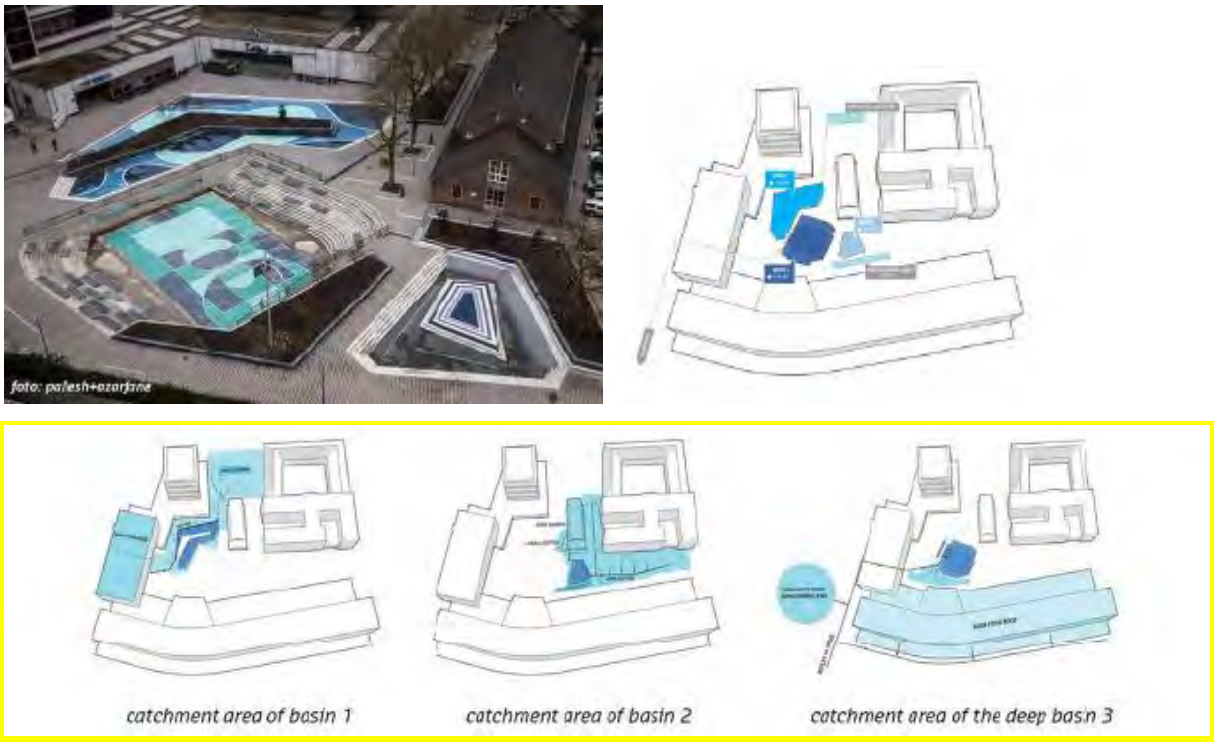


Fig. Benthemplein waterstorage spaces _© De Urbanisten

Benthemplein_© Jeroen Musch

Benthemplein_Full_© De Urbanisten

Tidal Parks

In the same city of Rotterdam De Urbanisten explored another climatesensitive landscape: the ‘river as tidal park’. The region with his harbour areas has 360 kilometres of river banks. 70% are hard quays, mainly for economic reasons. At the same time, Rotterdam is the only open connection between rivers and open sea in the Dutch Delta. This brings along great natural potential for tidal biotopes.

Goal of the tidal parks is to strengthen the qualities of the river as a central, green space in its urban area and to improve the experience of the tidal dynamics for all inhabitants to enjoy. The potential of a tidal park stretches from increasing biodiversity to increasing flood resilience and its public awareness; and from providing a base for urban development to

creating new significant public space for the city. A first project (Groene Poort) started recently and more riverbanks are part of a Tidal Park programme for the coming years.

Fig. Tidal park_perspective_© De Urbanisten

Roofscape Rotterdam

Another climatesensitive environment that De Urbanisten explored is the roofscape. The Rotterdam municipality wants to encourage sustainable roofs and invited De Urbanisten to examine the conditions for the multifunctional use of rooftops in the city and to visualize the potential of the Rotterdam roofscape.

Every roof is a different roof. All the roofs of the city – from very high to low, from large to small and flat or inclined – offer different opportunities to add value to both the owners and the city. 4 colours for roofs were categorized: green roofs for flora and fauna, blue roofs to buffer rainwater, yellow roofs that generate sustainable energy and red roofs that are actively usable for people.

Collage_Rotterdam_Rooftops_© De Urbanisten

Daktuin-Rotterdam-Dakakker-Schieblock
© Binder Groenprojecten

1_De_Trap_© Ossip van Duivenbode

2_De_Trap_© Ossip van Duivenbode

We combined and linked these usages to different Rotterdam city typologies, varying from the compact inner city to the post-war districts and the harbour and identified the most suitable roofscapes for each type of district. By doing so, we offered a more intelligent alternative for the fashionable greenwashing of roofs.

aquaduct 010

In the project Aquaduct 010 De Urbanisten propose a water sensitive perspective for the “Hofpleinlijn”, a former railway viaduct and its surrounding district. Clean water is the connecting element. Aquaduct 010 explores the possibilities to use the roof of the Hofpleinlijn as a monumental urban structure that collects, transports and purifies water. This water will be delivered to its surroundings for various uses.

Inspiration for the project is the legacy of W.N. Rose and his “Singelplan” for the city of Rotterdam. Attractive and diverse plants on the roof of the two kilometre long aquaduct are crucial in the design, even as the opportunity to access the roof to walk and stay there. Aquaduct 010 creates an added value for the spaces directly under the aquaduct and for

the people using it. Also the surrounding neighbourhoods and even the city of Rotterdam could take their share of profit.

Fig. Hofbogen_Circular_Scheme_© De Urbanisten
Aquaduct 010 a circular system organized around clean water

Climate Proof ZOHO

The Zomerhofkwartier (ZOHO) is one of the areas in Rotterdam that is vulnerable for the effects of heavy rainfall, longer periods of drought and heat stress. With the initiative “Climate Proof ZOHO” De Urbanisten linked the urban transition of the district with the implementation of the Rotterdam Climate Adaptation Strategy. In their perspective, an abundance of hard surfaces made place for a system of more soft and green public spaces that can hold water by infiltration and local storage. This adds to a more attractive network of streets and public spaces for people to enjoy. Following this perspective, several pilot projects are realised in the district.

Raingardens for ZOHO

Katshoek Rain(a)way Garden is part of a new street profile in which an abundance of hard surface is transformed into soft spaces. In the context of a colourful linear rain garden, innovative Rain(a)way tiles that infiltrate water (design by Fien Dekker) are integrated and tested for future production on a larger scale.

The nearby ZoHo Raingarden turns an abundance of hard surface and underused parking spaces at the entry of the ZOHO district into an attractive welcome garden that collects rainwater from nearby buildings and public spaces. The project started with a small guerrilla raingarden. In just two days and zero budget De Urbanisten and friends created the first piece of ZoHo Raingarden. The big raingarden opens January 2018.

Fig. Perspective ZOHO raingarden - rain and dry_© De Urbanisten

To sum up innovative approaches are needed to face the challenges of climate change - innovation might take time, but once established it offers new potentials. This also includes a change of focus, e.g. not increasing the sewage system but creating detached overground storage and thus “orchestrating” water within usable public space. New concepts are needed to mitigate counter-arguments and prejudices like assumed risks (watersquare) or costs (aquaduct 010). We have to add an adaptive layer to the city, considering among other aspects resilience, flexibility, technical infrastructure and devices, people, green and nature. It needs urban design solutions, strategies and district development. And it needs technical solutions, design solutions and spirituality. We need to think multi-functional and multi-usable and we have to understand urban planning as a truly cooperate task.

List of References:

Rotterdam Climate Change Adaptation Strategy

- **Year:** 2013
- **Location:** Rotterdam, NL
- **Client:** City of Rotterdam / Rotterdam Climate Proof
- **Status:** approved city policy
- **Collaboration:** Rotterdam Climate Proof

http://www.urbanisten.nl/wp/?portfolio=rotterdam-adaptation-strategy

Rotterdam Roofscapes

Year: 2015
Location: Rotterdam, NL
Client: Municipality of Rotterdam
Status: Study

http://www.urbanisten.nl/wp/?portfolio=rotterdam-roofscapes

Tidal Park Rotterdam

- **Year:** 2014 - ongoing
- **Location:** Rotterdam Region, NL
- **Client:** Ministry of Inrastructure and Environment | WWF/ARK | Municipality of Rotterdam | Municipality of Ridderkerk | Port of Rotterdam | Region of Rotterdam
- **Status:** explorative study, stakeholder workshops
- **Collaboration:** City of Rotterdam | Stroming (Brienenoord - De Esch study) | Strootman Landschapsarchitecten (landscape framework) | Ecoshape

https://www.rotterdam.nl/wonen-leven/getijdenpark/
http://www.urbanisten.nl/wp/?portfolio=river-as-tidal-park

Watersquare Benthemplein

http://www.urbanisten.nl/wp/?portfolio=waterplein-benthemplein

- **Year:** Design 2011-2012, completed 2013
- **Location:** Rotterdam, NL
- **Client:** Rotterdam Climate Initiative, City of Rotterdam supported by the Waterboard Schieland & Krimpenerwaard
- **Status:** Final design, built
- **Collaboration:** City of Rotterdam Engineering Bureau. Baptistry: Anouk Vogel. Color advice: Annet Posthumus. Social feedback: Arnold Reijndorp & Machiel van Dorst. Construction/coordination and concrete works: Wallaard. Steel gutters: ACO

Climateproof ZoHo

- **Year:** 2014-ongoing
- **Location:** Rotterdam, NL
- **Client:** Rotterdam North District and Rotterdam Climate Proof
- **Status:** feasability study / district climate coordination / hands-on realization / fund raising
- **Collaboration:** Urban transition: STIPO | Polder roof: Basement bv, Dakdokters, Valorisation program Deltatechnology and Water | Katshoek Rain(a)way Garden: Fien Dekker, Binder groenprojecten, Thijsen – den Brok beton, Rotterdam Engineering Bureau | ZoHo Rainbarrel: Rien Hilhorst, Studio Bas Sala | Greening Hofbogen: Post-Office, 7 seasons, Hofbogen BV. | ZoHo Raingarden: Van Dijk Maasland, GreenSand, Municipal Nursery of Rotterdam, NAS (Nico Adriaanse Stichting)
- http://www.urbanisten.nl/wp/?portfolio=climate-proof-zomerhofkwartier
- http://www.urbanisten.nl/wp/?portfolio=water-sensitive-zomerhof-agniese-district

Aquaduct 010

Year: 2016 - 2017
Location: Hofpleinlijn, Rotterdam, the Netherlands
Client: City of Rotterdam ,Water Sensitive Rotterdam
Status: Research by design, initiative
Collaboration: KWR, Ecofyt, Water Sensitive Rotterdam
http://www.urbanisten.nl/wp/?portfolio=aquaduct-010

6. THINKING BIG

6.1. LARGE SCALE interventions, the political dimension

Norbert Trolf

Work in Progress

Kommentare Katrin:

Aussagen sollten möglichst durch Referenzen gestützt werden…

stärker herausarbeiten, dass der große Maßstab gerade für Grüne-blaue Infrastruktur besonders großes Potential (Stichwort Vernetzung: Ökologie, Klima, Gesundheit, etc.)... aber natürlich andere soziale Aspekte dabei nicht untergehen dürfen...

Bitte kurz überleiten zu den beiden externen Texten: warum gerade diese?

Evtl. 2-3 Abbildungen einfügen?

Through the last decades with an ongoing globalization and liberalization, policy makers brand and market cities through spectacular images of large scale urban interventions like attractive commercial areas and leisure zones, green parks for recreation and outstanding architectural artifacts. Large Scale urban Projects transformations took place in many cities, most of them closely related to the renewal of the economic and infrastructural fabric (Park La Vilette in Paris, Eurolille Project, Airport Riem Munich, Tempelhof in Berlin, Madrid Rio Project, just to mention a few) The search for growth and competitive redevelopment has become the leading goal in an attempt to reposition the cities in the emerging global economy.

No doubt about the necessity of big interventions. Large scale urban projects will be an instrument of planning policies of the future (just to think about renewing the infrastructure, sustainable energy supply, new mobility systems etc). But establishing large scale urban projects show some specific characteristics, that lead us, at least in certain aspects, to the limits of our democratic commitment.

Large scale projects effect more people, more stakeholders, more different interests than small scale interventions do. Integrating all those different interests into a planning and decision process is a complex task, that will take its time, money and probably will - due to conflicts of interests- not necessarily lead into a successful realization.

To keep the project into clear time frame, developers and politicians tend to push this planning process, that leads into pressure of time and often in a limited possibility of participation. The extraordinary complexity and scale of those projects is used as an argument for exceptional instruments of implementation, using a diffused, fragmented, and flexible mode of governance instead of existing statuary planning tools (xy 2011). The time frame is limited and defined by economic opportunities and as well as legislative sessions. As our political landscape is getting less calculable, a political continuity as a common base for the establishment of long term urban renewals is getting increasingly unlikely.

the problem of acceptance

With a rising scale, the complexity of projects is increasing, making it difficult for people concerned to read, to understand, and at least for the developers to manage and calculate the project. The difficulties related to such projects due to various kinds of political and economic constraints, uncertainties and unbalanced effects have been widely acknowledged. Costs explosions and delays are typical characteristics of large scale interventions often ending up in critics and protests as recently seen at Stuttgart21. These facts often lead into a general negative attitude towards large scale projects.

Critics of large scale urban projects in general is also related to its symbolic power. When we look back in history, large interventions in the urban structure were misused as demonstration of political power mostly related to totalitarian political system. And truly, through a concentration of power (and money) large scale interventions are much faster and efficient implemented in autocratic political systems than in countries with a long term democratic culture. It is not a coincidence that the superlative urban scale projects are realized in sham democratic or totalitarians systems as we can see in Dubai or China.

One of the biggest challenges of the cities of the future is the expected climate change that will affect life quality and well-being on different levels, directly by the increase of temperatures and changed precipitation, but also be expected side effects as migration and displacement.

Big threads are asking for big actions. Implementing sustainable structures like a vital green and blue infrastructure affecting our daily life, the way we work, we interact and we move through the city, is not only a technical issue, it has far more a political dimension kindly forcing people to undergo fundamental changes bearing an economic and social

dimensions. change their life from the bottom. In fact at the margin of societies democratic commitment.

List of References/Literatur

Erik Swyngedouw, Frank Moulaert , Arantxa Rodriguez (2002): Neoliberal Urbanization in Europe: Large-Scale Urban Development Projects and the New Urban Policy, Antipode.. Blackwell Publishing, 108 Cowley Road, Oxford OX4 1JF, UK and 350 Main Street, Malden, MA 02148, USA

Davide Ponzini (2011): Large scale development projects and star architecture in the absence of democratic politics: The case of Abu Dhabi, UAE in Cities Bd 28, Elsevier Ltd

6.2. Madrid: The difficult process of transforming mobility patterns

(José Manuel Calvo del Olmo)

Madrid, as other large cities in the world, is starting to shift the urban mobility model, recovering the human scale in the street design, integrating cyclists and pedestrians in order to achieve higher quality life and environmental standards, as it has been happened many years ago.

Most of the streets in Madrid constructed throughout the 19 century were thought as boulevards. Madrid has a large network of tree-lined avenues inspired by the projects of Baron Haussmann in Paris according to the ideas of urban health and embellishment. The streets were designed as wide promenades with 2-4 lines of trees arranged along wide walkways, decorated with urban furniture, statues and fonts, also cafes, theatre halls were often located nearby these avenues providing places for the people pleasant to stay and socialized. It was also important to connect with the most important parks of Retiro and Casa de Campo, so the old map of the city showed a very current and modern concept of green infrastructure.

The construction of these green avenues began in 1870 with the urban extension of the city and finished in 1952 when the first boulevard was destroyed, (calle Maria de Molina), replacing the boulevard by a new high traffic avenue to cross quickly from East to West the city. The destruction took placed in 20 years, so in 1975 only 2,5 km length of promenades still remained undestroyed. In this age people talk about “urban arteriosclerosis”, the new demand of mobility was considered a symbol of modernity and economic development. The decision has been taken Madrid should adapt the capacity of streets and roads to host

higher amounts of cars. At the same time other urban infrastructures appeared as a new essential need: bridges, tunnels, and underground parking constructions in central areas.

This period of time, from 1950 to 1970, is also the time of the largest growth of the city in terms of housing development and increasing of population. Never before the city has received such a number of immigrants of rural population looking to work in new industries and offices of the modern economy. In 20 years the numbers of inhabitants was doubled, growing from 1,6 Million people in 1950 to 3,2 Million in 1970, and as a response a Urgent Plan of Social Housing was developed. Madrid turn into a modern metropolitan area and new regional infrastructures were required. From 1967 to 1986 several plans were implemented for developing the regional network of transport. In 1967 an Arterial Road Plan was approved, and started the construction of new ring highways, M-30, M-40 and access roads to the city. Meanwhile the Madrid public transport system became one of the most efficient systems compared to other European cities, underground and regional railways spread in the territory.

In the last two decades, despite the fact of the lower demographic growth, the city extension has continued with a new Master Plan in 1997 that planned 6.000 Has of new urbanization able to provide over 400.000 dwellings and 20 Million square meters buildability for new offices and industries.
The regional model of mobility has been reinforced through the main road and railway networks extension of a second period of transport planning.

Timetable of the evolution Madrid urban mobility:

- 1952-1972 Destruction of the boulevards
- 1957-1970 Urgent Plan of Social Housing
- 1970-1980 Construction of vertical levels junctions, and parking places in central areas
- 1967-1987 First stage of regional plans of transport system: highways, railway and underground extension
- 1990 -2010 Restoration Plan for the Historic District. URBAN European Initiative. Application of traffic calming measures and pedestrian streets.
- 1997 Master plan of Madrid, 8.000 Has of new urbanization. 1987-2004
  Second stage regional plans of transport system.

In the meantime of the city and mobility sprawl, during the 1990 decade, Madrid took part in the European URBAN initiative with a Restoration Plan that consists on the recovery of buildings and the protection of the historical parts of the city, conditioned by the application of measures to reduce motor traffic and air pollution, in order to receive European funds. So the city began to implement projects of pedestrinization, reduction of parking places and traffic capacity and to improve significantly the quality of open spaces .

This was a remarkable milestone in the mobility policy of the city, the awareness about the negative impacts of the cars widespread was beginning to rise. Since then, highly interesting proposals and ideas have been drafted to upgrade the landscape and environmental conditions of public spaces. Some of them has not been implemented such

as the plan for pedestrinization of the surrounding area of the main Museums in Madrid Prado, Thyssen and Reina Sofia, or the Boulevard Restoration Plan in 2012. But the most important and recent built project that change significantly the urban landscape of the city has been the Madrid Rio Project, developed during 2004-2011. The project consisted on the creation of the Madrid River Park, a 6 km linear park, putting in underground one section of the M-30 ring road. This project was controversial due to its high cost (budget: 4.100 mill€) , but currently it is an important value of the city that can serve as the basis for the creation of a network of green corridors.

Current projects

At the present, the city of Madrid faces the challenge of leading the urban mobility to the achievement of environmental and health goals. The Air Quality and Climate Change Plan has recently been approved by the local government with the aim in 2030 of reducing by half the pollution levels and greenhouse gases in comparison to the situation of year 2012. The plan includes general objectives concerning with the regulation of a Zero Carbon Emission Zone in the central district, the redesign of avenues with a new distribution of the space in favour of bicycles, pedestrian and public transport, a new system for transportation and delivery of goods in central areas, and the implementation of rapid bus platforms in main accesses to the city connected with park and ride spaces that should be developed in the coming years.

The performance of these measures will hopefully carry on a significant change of the “mobility culture” and a new meaning for public space in the city of Madrid. Currently we are developing the following actions:

- New policy of public space applied in peripheral districts as a way of urban regeneration through strategic actions.

  The local government has launched a call for proposal to redesign 11 squares to improve the quality of open spaces in peripheral and vulnerable areas. We believe in the role of public space for the urban regeneration to reinforce the sense of belonging and social cohesion. The citizens should feel proud about their neighbourhoods. A participation process has been held to know the expectation of residents about these places using the website “Madrid Decide”. Moreover, the winning project will have been selected in October by a population voting and the project will be built during 2018-2019.

  Additionally, other strategic actions for urban regeneration are going to be implemented to provide new pedestrian itineraries connecting Madrid Rio park with other green areas in the outskirts of the city. We expect these project could transform the places in high quality and urban landmark projects. The main idea is to generate green corridors that provide shade, humidity and refreshes the atmosphere to promote pedestrian mobility. The path will put together also the most widely used places: schools, commercial areas, libraries, bus and metro station and the districts centers, and in some cases will enhance the value of unknown and incredible places with panoramic views of the city .

All these measures are complementing an ambitious plan of urban renewal, called Plan MADRE, with a large budget for building recovery in deprived areas.

- Fostering the cycling Mobility Plan of Madrid with the construction of 116 km length of new cycle lanes..

  The aim of the plan is to increase the average of cyclists in the city by more security and accessibility, and also to promote the use of bicycles in work and student-related movements, and in the daily life. At the present, the most controversial debate concerned the design of cycle lanes and is putting the supporters of separated lanes against those who argue in favour for shared lanes with motor traffic, and instead request for reducing the maximum speed limit.
  There are some concluded projects, that represent 32 km of new cycle lanes in the city:
  Santa Engracia, Bravo Murillo, Bulevares, Paseo de Moret- Pintor Rosales, Puerta de Toledo- Antonio Leyva-Avenida de Oporto-Eugenia de Montijo, Avenida de los Toreros.

- Zone 30 Chamberi: an attempt of tactical urban planning.

  Traffic calming measures applied in the city centers seem to be extremely difficult to extend to other neighbourhoods in Madrid. These measures have been frequently used in north European cities, but the experience in Madrid is quite different with a high rate of car ownership and mobility patterns deeply rooted in the use of private vehicles. Each step to remove cars of the streets should we carefully assessed and even better if the measure has a temporary and reversible nature. These is the main aim of Chamberi Zona 30 project. Chamberi is a very dense district of the central area with lack of open spaces and high noise and air pollution.
  The plan consists on 8 small-actions for reducing traffic flows in different portion of roads located close to market places, schools or cultural centers with a “woonerf design”, increasing pedestrian space with a low cost performance using painting , urban furniture and plant pots.
  The first measure is currently being applied and has caused a stir in the neighbourhood with people for and against the project. The results should be assessed by the end of September and a decision will be taken whether to remove the traffic calming scheme or not.

- New Program of Reshaping arterial streets.

  A more lively city requires think about the functions of some arterial streets according with a new urban mobility model. The streets could have different roles for motor traffic and for people*. “ARTISTS: Arterial Streets Toward Sustainability*”(2004) was a land use and transport research project that define a new classification of streets according to the “link status” and “stay status” of the street, and determine the size of the pedestrian space in roads to achieve better

conditions for walking, staying and living the city. The research established that a street with over 60 % of walkways could be considered the optimal for pedestrian, and between 50-60 % it could be possible to bring the traffic compatible with the requirements of people. Behind 50% of sidewalks the streets are specialized only for transit and movement.

This is the basic concept of the pilot projects for two main commercial streets of the city: Calle Alcalá and Calle Gran Vía, that will be reshaped in the next months to merge the different functions of the street.

List of References:

(Puente Toledo, Images property of the City Council of Madrid)

(Matadero, Images property of the City Council of Madrid)

(Pza Letras, Images property of the City Council of Madrid)

(Pza Remonta, Images property of the City Council of Madrid)

(Pza del Encuentro, Images property of the City Council of Madrid)

6.3. Reframe

(Edzo Bindels)

Designing Illusions of Nature Giving spaces for cyclists and pedestrians

Edzo Bindels, West 8

Kommentar Katrin:

da sind noch einige lose Gedankengänge - arbeitest Du sicher noch in den Text ein?!

Referenzen nicht vergessen...

Among the various challenges of today's cities, the addiction of urban citizens to the car, the vehicular domination, is one of the most challenging problems. The shift towards a sustainable urban mobility is one of the major issues of most European Cities. Moving through a city as a cyclist or pedestrian along public spaces and Urban Green directly competes with the conveniences of using a private car. But it is not only about the implementation of attracting public transport, cycling paths and pedestrian-zones, it's much more about designing beautiful and inviting urban spaces to attract people to change their long term mobility behavior.
The following large scale projects by WEST8 give people a piece of nature in a dense built urban environment. The designs are part of an overall green infrastructure in the city of Madrid, Rotterdam and Toronto, emphasizing a new culture of open space.

Madrid Rio Project

The ambitious plan by Madrid's mayor Alberto Ruiz-Gallardón to submerge a section of the M30 ring motorway immediately adjacent to the old city centre within an underground tunnel was realised within a single term of office. The city undertook infrastructure works over a total length of 43 kilometres, six of them along the banks of the River Manzanares, at a total cost of six billion Euros. West 8 together with three renowned architects from Madrid (Burgos & Garrido, Porras La Casta, Rubio & A-Sala), united under the name MRIO arquitectos designed the master plan for Madrid RIO.

In 2005 an invited international competition was announced. The proposal submitted by MRIO and West 8 for the design of the reclaimed area above the tunnel was the only submission to resolve the urban situation exclusively by means of landscape architecture. The design is based on the idea »3 + 30« – a concept which proposes dividing the 80 hectare urban development into a trilogy of initial strategic projects that establish a basic structure which then serves as a solid foundation for a number of

further projects, initiated in part by the municipality as well as by private investors and residents.

A total of 47 subprojects with a combined total budget of 410 million Euros have since been developed. In addition to the various squares, boulevards and parks, a family of bridges were realized that improve connections between the urban districts along the river. The first subprojects were realized in spring 2007. In April 2011 the whole project was completed and opened to the public.

The project includes a cycle network that is conceived as an infrastructure for leisure and sports but also to meet the everyday needs of mobility, with 30 km of trails cycling trails that run from north to south and are connected to the City's Cycling Green Belt. A dense canopy of trees provides shade for the visitors along the paths, which is essential in Mediterranean climate with summer temperatures beyond 30 degrees Celsius already in the morning.
The cycling paths of Madrid Rio are shared by pedestrians and cyclist alike. This requires patience and understanding for coexistence and to ensure the enjoyment of all users. Priority is given to pedestrians and cyclists are advised to use caution when biking.
The cycle tracks linking Madrid Rio to the Municipality of Getafe in the Sierra de Madrid are connected using existing channels. On the right bank of the river, between Avenue and South Manzanares Park and the South Knot of M30 a new BMX circuit links both riverbanks.

Remarkable that a city like Madrid in spain could establish such a big project like the madrid rio project

Need of shade, provide shade
Dreamy space , not allowed to ride a bike, you are invited to ride a bike, the park has to be competitive towards the car

It works, people walk an bike
How to bring people on the streets on the bikes in a hot urban climate

Rotterdam Cool Single

Wake up call 55000 ped vs 20000 cars

Another City, where the government wants to improve the perception of cyclists and pedestrians, from a hurdle for cars into a vivid part of the city image, with all its cyclists as a part of a young urban generation, is the city of Rotterdam.

Coolsingel is the promenade of Rotterdam: West 8 working with the municipality of Rotterdam has unveiled plans restore the allure of the 19th century boulevard which

Rotterdam once had. The reinvigorated street profile will improve the attractiveness and success of the city center, help to catalyze new development.

The new vision, for the currently vehicular dominated boulevard, will see Coolsingel become a comfortable space for pedestrians and cyclists alike. The design vision balances traffic on the one hand while simultaneously restoring cycling, pedestrian and public transport corridors on the other, without disrupting the existing spatial and urban structure. Three lanes of Vehicular traffic will be situated east of the existing tram line (next to Lijnbaan) , while a spacious two-way bicycle and pedestrian promenade will be located on the West side of the street, adjacent to the Stadhuis. By retaining the existing tramway and underground infrastructure, emphasis can be placed the quality and allure of the public realm. Including details such as quality paving, ornamental furniture, decorated subway entrances, lighting and greenery.

West 8's design vision also emphasises the visitor experience. Whether on foot, by bike, public transport or by car, Coolsingel will offer visitors a warm welcome. Capitalizing on the quality of the existing green space and combining it with a new high quality public space design creates a meeting place at all times of the day and in all seasons. The Design of a Boulevard is not only about driving through but also how to enjoy it.

Framed by trees, terraces and pleasant seating areas, visitors can stroll, shop or sit on a terrace. The new street profile goes hand in hand with strengthening the imagery, and the monumental allure of the Coolsingel.

When we talk about density, it's not only about the daily use of our public spaces. We also have to think about offering enough space for big events that take place like carnivals, markets, a.s.o, especially in the dense built city centers. With some small technical improvements, the design of the coolsingel provides a certain flexibility for different activates. (Image).

There is a common sense about the importance of public transport but in the past we often forgot about the design. It is important to think about the image of the city seen by visitors and travelers. Within the Cool Singel Project one major goal was the redesign of the Metro Stations along the Boulevard. The transformation from a tunnel system to the underground into inviting entrance squares stresses out the importance of the cools single as a central public open space for Rotterdam

The improvements to the Coolsingel are part of the city's 'Binnenstad als City Lounge' program (Literally the City Center as a City Lounge), that aims to stimulate new development in the city center and make it more lively and attractive. Construction of the Coolsingel project is slated to begin 2017.

(West 8, Nieuw Crooswijk, Rotterdam)

(West 8, Rotterdam Central District)

Toronto Central Water front

Part of the city where the government wants to densify and grow.
The mayor had the idea of activating the waterfront for recreation, a place to enjoy nature and to open it for cyclists and pedestrians. The waterfront of Toronto is not a continuous line but a sequence of small harbors and docks so called “slips”. The goals was to find a design for this discontinued waterfront that is obstructed by highways and rail tracks, from city that is behind that matches the needs and identity of the City of Toronto

The project started with a parade of bikers on the main boulevard, installing an “Arc de Triumph” made of old bikes” The Road was closed for cars but opened to the public for one month.

The Central Waterfront extends along 3.5 km along Lake Ontario and is in close proximity to the city’s central business district. The water’s edge is one of Toronto’s most valuable assets, yet, despite decades of planning and patchwork development projects, there was no coherent vision for linking the pieces into a greater whole – visually or physically. In this context, the fundamental objective of the project, which received its main impetus as an international design competition in 2006, was to address this deficiency by creating a consistent and legible image for the Central Waterfront, in both architectural and functional terms.

West 8 submitted a comprehensive vision for the Central Waterfront that produced a powerful design language with the strength and simplicity to overcome the existing visual noise and create a sense of interconnectedness and identity. Connectivity between the vitality of the city and the lake and a continuous, publicly accessible waterfront have been West 8’s award winning Masterplan priorities. The plan expresses a vision for the Central Waterfront that brings a sustainable, ecologically productive ‘green foot’ to the rich culture of the metropolis. It suggests a new coherence and continuity along the waterfront, produced by four seemingly simple gestures that create a new ‘Multiple Waterfront’: the Primary Waterfront – a continuous water’s edge promenade with a series of pedestrian bridges, the Secondary Waterfront – a re-calibrated Queens Quay Boulevard with a new urban promenade and public spaces at the heads-of-slips, the Floating Waterfront - a series of floating elements that offer new boat moorings and public spaces in relation to the lake, and the Cultures of the City – connections from Toronto’s diverse neighbourhoods towards the waterfront.

Having been awarded the commission, further elaboration of this vision seeks to develop these elements, as well as the activities that can and should be sustained in the public realm. Articulating the point of contact between the city and the water and providing continuous public access are key priorities. The proposal creates a waterfront that is public, diverse and expressed through a multiplicity of experiences. West 8 has completed the strategic master plan for the Central Waterfront and is currently engaged in design and implementation of various components of the plan, including the reconstruction of Queen’s Quay Boulevard to create a new balance between automobiles, public transportation, pedestrians and cyclists, the implementation of the

first parts of streetscape for the new east Bay Front development and the construction wave-deck public spaces at the heads of slips. Having been awarded the commission, further elaboration of this vision seeks to develop these elements, as well as the activities that can and should be sustained in the public realm. The proposal creates a waterfront that is public, diverse and expressed through a multiplicity of experiences.

(West 8, Toronto Central Waterfront)

List of References:

7. COMMENT/REFLECTION

(Volkmar Pamer, City of Vienna - MA 21)

Being courageous

Urban planning with a focus on urban densification needs something crucial: A clear commitment for clear interventions, briefly said a backbone in decision making. Whenever something is planned one can be sure there is opposition against it. Planned measurements are seen as too big, too extreme, too much changing the well-known environment or whatever. For some people projects are always evil because the world afterwards is not the same as it was before. In most of the cases traffic is seen as the problem and people see traffic chaos as something unavoidable. With the chaos the environment and living quality suffers and self-evidently the economic situation in certain areas declines because of less customers etc.

According to the cases inter alia in Rotterdam and Madrid the reality shows the opposite. Traffic looks for its flow and quite often it evaporates because e.g. of the change in mobility behaviour. Economy rises because of better conditions with less emissions and a more liveable environment. Areas nobody could think of before become attractive; people conquer public spaces and separated areas grow together. Leisure and pleasure areas are not compelling outside the city; they are within the urban boundaries again.

Fear is not a good adviser for decision makers and some great interventions like the Madrid Río project or the water parks in Rotterdam show that existing situations are not cast in stone and can be changed if there is will. Of course, good communication is essential. Not only promotion but explanation is necessary. In the very end still a certain number of people will discountenance a change but in most cases it will be a minority which pretend (because of being loud) to be the majority. And this is the point decisions require nerve. In the very end it is likely that projects are widely accepted. Being courageous is a key.

8. STUDENT EXPERIMENTS

During the summer semester 2017 the interdisciplinary course “Ressource Landschaft” took place at our institute of Landscape Architecture and Landscape Planning, at the University of Technology. Spatial planning as well as architectural students were grouped and worked together on one project. In this particular project, the interrelationships between densification processes and the changed demands on the design of urban open and green spaces in different city quarters of the 10th district of Vienna's municipal district were examined.

Kommentar Katrin: Ich würde den gesamten Absatz nach hinten stellen (vor assignment of tasks) und mit “Pursuing the goal…” beginnen!

Pursuing the goal of a dense and compact city is claimed by many planners and designers to be a vital contribution to sustainable urban development. The resulting densification

processes are thus seen a being as one of the most important steps towards achieving the sustainable development of our urban environment.
However, the consequences of these densification processes are shifting the balance between urban open space and building development within the existing urban fabric.
At the same time, the awareness of the importance of green infrastructure in urban areas, is growing - it is also seen as having the role of furthering sustainability in urban areas and ameliorating the effects of climate change. The ecosystem services, provides by green (as well as blue) infrastructure are largely dependent in the quantity and quality of urban open spaces.
At in a time, when ever more is being expected of urban open- and green spaces they are under increasing pressure, especially as the calls for densification grow. But, higher urban densities also have ecological arguments in their favour: shorter distances to travel, more efficient infrastructure. However, densification without a simultaneous upgrading of public and semi-public open spaces is likely to lead to a reduction in the quality of life for urban residents. On the one hand, the resource 'urban green space risks being consumed by new development, while at the same time the use pressure on the remaining open spaces increases correspondingly.
Climate change present new challenges to our cities. The green and blue infrastructure and their ecosystem services offer them the opportunity to adapt to these changing conditions.
In order to safeguard the urban quality of life in the long term, a holistic approach is required: this should not only define development densities as a criterion, but also include the quality and quantity of the semi-public and public open and green spaces as an essential part of the urban fabric.

Assignment of tasks
Introduction to the topic; theoretical analysis of densifications processes with the focus on urban open space, analysis of best practice examples, analysis of selected city districts in the 10th district of the municipality of Vienna, development of different density scenarios based on selected project areas; implementation of density scenarios in plans and models, discussion of the functionality and design quality of the existing open spaces in relation to the different densities.

An exhibition of all projects results was realized during the conference day. The three best projects will be presented here.

9. CONCLUSION

Kommentar Katrin:
hier schonmal ein paar Gedanken meinerseits…

ABSCHLUSSGEDANKEN

Jetzige Situation

großes Potential Straßenraum, vor allem auch in (stadt)klimatischer Hinsicht

großes Potential Fassade und Dach

großes Potential wandelbare Freiräume in EG-Zone (z.B. water plazas)

es braucht innovative Ansätze

Wandel Mobilität, zusätzlich direkter Einfluss auf Klimawandel, Stadtklima und Wohlbefinden;

Wandel der Mobilität führt auch dazu, dass mehr öffentlicher Freiraum für andere Nutzungen frei gespielt werden

man sollte nicht in die kostspielige Sanierung subterraner unsichtbarer Infrastruktur investieren, sondern in **nutzbare oberirdische Flächen**, die das Gleiche leisten können (Hauber)

Noch so kleine Interventionen erhöhen die Lebensqualität... auch durch **Aktionismus „de-pave (Kanada)“** (van Peijpe)

Bis jetzt wurde „Raubbau“ betrieben - wenn man etwas (Natur) wegnimmt, muss man es auch wieder zurückgeben (Bezug zu Hundertwasser)

Freiraum in der Stadt = Landschaft... fließt durch die Stadtstruktur herum, drüber und durch!

Als Einheit zu betrachten

APPENDIX/ANNEX