Innovative strategies in deltas and river basins – mechanisms for implementation

FUTURE URBAN WATER LANDSCAPES – SITE-SPECIFIC DESIGN APPROACHES

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Most citizens live in cities, or better: in URBAN LANDSCAPES, made up of a patchwork of built-up and unbuilt land. These urban landscapes face unpredictable economic development, energy crisis, a diversifying multiethnic society and the consequences of climate change, such as rising sea levels and increasing weather extremes.

In Sweden these challenges have been identified by the Delegation for Sustainable Cities (2008-2012) as key issues in the TRANSITION to a sustainable way of life, to be initiated urgently by a set of actions:

- The crucial role of people
- Combine the ability to take action with a long-term approach
- Invest in best practice examples
- Use leverage
- More research and innovation
- Reduce isolationism, work across the sectors
- Invest in the renewal of the million-homes project
- Improve the regulatory framework
- Strengthen international exchange
- National focus on sustainable cities is needed
In other countries, similar recommendations are formulated by similar commissions. In this context the **ROLE OF DESIGNERS** is to **PROPOSE METHODS** that encompass these challenges.

This is to counter the ‘super science’ of **ECOLOGY** which informs contemporary practice approaches such as GI (Green Infrastructure) and ESS (Ecosystem Services). They tend to turn descriptive protocols (the understanding of a system) into prescriptive ones (ideas about how to run that system in the future) while **OVERLOOKING** social and aesthetic aspects.

**DESIGN RESEARCH** helps identifying deontic questions and issues that need determination through critical thinking. Design research discloses the tacit knowledge of designers through investigating landscape architectural practice in order to participate in the creation of urban landscapes that offer solutions to the spatial problems of today and tomorrow.
Landscape Architecture Europe – triennial insights into cutting edge design
ON THE MOVE
LANDSCAPE ARCHITECTURE EUROPE

#4

Landscape Architecture Europe – triennial insights into cutting edge design
Scape the international magazine for landscape architecture and urbanism – cutting edge design
Scape the international magazine for landscape architecture and urbanism – cutting edge design
Cutting edge design – some examples/ 1
Method: Flexibilisation of water levels and dynamisation of coastal landscapes

The added value of an integral approach: bringing together the knowledge of specialists from different disciplines, combining it, translating it into clear visualisations and presentations

Challenge: water management and coastal development of the Ijsselmeer, The Netherlands
Preparation of decisions on water levels in showing relationships between actions taken and consequences.

Mapping aspects related to sustainable fresh water supply, flood protection, ecological, cultural historical and recreational values.

Setting up a flexible water level management in the short term allows to postpone fundamental choices to 2050 when the picture about climate change will be clearer.
Future perspective for the IJsselmeer, with water management measures linked to landscape and economic qualities

The water thermometer allows to draw up an adaptive development strategy.
Soft sand engines and sandbanks are developed to protect the coast and reduce erosion, resulting in a better protection of vulnerable natural features while creating opportunities for small-scale water and other forms of recreation.
North Sea tide

Sea level rise

Elbe floods

Cutting edge design – some examples/ 2
Osp/ Studio urbane landschaften: Tidal Elbe/ Water Atlas/ Dyke Park Elbe Island
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Linien überdenken?
Alternative Hochwasserschutzstrategien für Hamburg

Gesteuerte Flutentlastungspolder mit Polderklappen?
Flutpolder entlang der Tidowelle geben den Fluss wieder mehr Raum. Gesteuerte Flutentlastungspolder könnten als tidebeeinflusste Flachwassergebiete angelegt werden. Dazu muss die hauptsächlich ins Landstromende verlagert werden.
Die alte natürliche Elbe erhält Durchläufe mit Flutpolderklappen, die bei einer Sturmniederung die Hochwasserspitzen zu kappen, indem die Klappen beim höchsten Wasserstand geöffnet und der Polder geflutet wird. In solchen Gebieten können tidebeeinflusste und sturmflutangepasste natür- und Freizeitlandschaften, wohn- und landwirtschaftliche Formen entstehen.

Inseln in der Elbmündung?

Überströmmbare Deiche und kaskadierende Flutpolder?
Die hauptsächlich die durchgehende Überströmung erfordert, in diesen Gebieten kann das Wasser den Deich bei extremen Sturmspitzen kontrollieren überströmen. Es wird in dahinter liegenden Fluträumen aufgeteilt, wodurch die Überflutung des systems verhindert wird.
Die auf der Binnenseite des Deichs liegenden Polder halten das Wasser temperiert und die Wassermassen hinter den geschlossenen Kammern zurück. Sie sind als Schutz gegen die Überflutung von Flutsperren geeignet.

Ein Sperrwerk in der Mündung?
Ein Sperrwerk lässt das tägliche Tidowellen hin- und herlaufen. Es wird die zum Einfall der Sturmspitzen geschlossen bis als Tief, um in regelmäßiger Abstände die Funktionstüchtigkeit sicher zu stellen. Sperrwerke sind in der Errichtung, im Betrieb und der Unterhaltung sehr lösbar. Auch die Schlufverbindung wird durch ein Sperrwerk vor neue Herausforderungen gestellt. Allerdings gehören sie auch zu den sichersten und bewährtesten Maßnahmen gegen Sturmspitzen.
Osp/ Studio urbane landschaften: Tidal Elbe/ Water Atlas/ Dyke Park Elbe Island
2 The Hamburg example / WATER ATLAS

WaterLand

Water level

Water-land level

Land level

Harbour Land

Regulation Land

Protection Land

Osp/ Studio urbane landschaften: Tidal Elbe/ Water Atlas/ Dyke Park Elbe Island
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S für SMALL

Hamburger Deiche
Warum wachsen keine Blumen und Bäume auf dem Deich?
Osp/ Studio urbane landschaften: Tidal Elbe/ Water Atlas/ Dyke Park Elbe Island
Osp/ Studio urbane landschaften: Tidal Elbe/ Water Atlas/ Dyke Park Elbe Island
IBA Emscher Park, Emscher Valley and masterplan – cutting edge design/3
IBA Emscher Park GmbH, area of the Emscher Park exhibition, 1989-99
A laboratory for the post-industrial landscape
River Emscher
Reconstruction of River Emscher
Time line for reconstruction of River Emscher and creation of the new Emscher Valley
New Emscher Valley
Ruhr Metropolis and Emscher Park area
Zollverein Essen
Coke plant Zollverein Essen
Serra sculpture at Schurenbachhalde Bottrop
First projects of Masterplan Emscher Landschaftspark
Hudson river floods

Atlantic tide sea level rise

Kate Orff/SCAPE (2011), New York Oyster-Tecture – cutting edge design/4
Climate change effects in New York Harbour

- **S1**: 100-y flood in 2000 (surge of ~ 8ft).
- **S2**: 100-y flood in 2040s, with +2ft SLR.
- **S3**: 100-y flood in 2080s, with +4ft SLR.

**ClimAID**: Landward migration of 100-yr flood zone with SLR.
LIFE CYCLE OF OYSTERS

- Egg
  - Fertilized egg
  - Free-swimming larvae
  - Spat (young oyster)
  - Spat attached to old oyster shell

OYSTER-TECTURE

- Shell recycling
- Spat tank
- FLUPSY nursery raft
- Reef-net industry
- Oyster habitat
- FLUPSY parade: spats are moved to the new Palisade Reef

Kate Orff/ SCAPE (2011), New York Oyster-Tecture
BACK TO THE FUTURE

Oyster-tecture incorporates the historically prominent oyster reefs and shoals that formerly protected inland neighborhoods in the Red Hook/Gowanus Canal region and reintroduces the oyster as a protecting, cleansing, and generative agent in the harbor.
OYSTER-TECTURE

The development of "reef culture" reorients public life around the water. The Oyster-tecture life cycle, beginning in the Gowanus Canal, involves a series of components that not only fosters the growth of oysters but also provides recreational outlets for city dwellers and boosts the local economy—including a complex system of oyster husbandry, new pathways and parkland in the area, and a system of gardens that filter sewer overflow.

Kate Orff/SCAPE (2011), New York Oyster-Tecture
Entangle with life cycles
Entangle with people’s everyday’s lives
After Katrina

In 2005 hurricane Katrina destroyed much of the Mississippi Delta and New Orleans. Since than a core of international designers and engineers has been working on ideas on how to do better. Abel Coenen spoke to Jane Wolff, design researcher on North American delta landscapes and partner in the Gutter to Gulf Initiative. Wolff is author of the famous Delta Primer book.

Text: Abel Coenen

The recent design competition Changing Course explored the potentials for a redesign of the Lower Mississippi Delta. What are your ideas on the competition?

“Despite the horrors of Katrina, the main concern in this area still is persuasion. You will have to convince people who’ve spent the last century denying the presence of water, hiding it behind walls and levees, that letting the water in is a good thing. These people have been trying to ignore the fact that they were living at the bottom of the largest drainage basin in North America. Changing Course is an amazing endeavour for its implicit assertion that New Orleans can’t be saved without radical changes in the management of its regional landscape.

Most important is the premise that clear, reliable information about how the region’s ecology and infrastructure work – and how they might work in the future – is necessary both to the proposal of responsible design solutions and to the winning of public support for those ideas.

“People don’t always think of the Mississippi delta as a national landscape, but it is: it drains parts of 31 states and two Canadian provinces. Convincing politicians, policy makers and citizens from thousands of kilometres away that the landscape’s future depends on their support would also form an essential part of moving forward.”

Jane Wolff doesn’t emphasise the importance of persuasion for the first time. In the 2014 article Cultural Landscapes and Dynamic Ecologies: Lessons from New Orleans she pointed out the same concern. Here she vividly described how design solutions actually raise cultural challenges. Her main finding in the New Orleans region is the need for public education about the complex ecological realities of urban settlements in dynamic landscapes. Without it there can’t be any support for the changes needed for a more resilient management.

For her book Delta Primer (2003) Wolff created a playful field guide to the Californian delta that even included a set of special playing cards. She regards this particular aspect – communication on the need for new projects or at least causing awareness – as one of the most important issues related to the future of New Orleans and the California Delta. Both places have implications for national prosperity. New Orleans because of its port and the California Delta because of its central role in the water supply of California, an area that houses more than ten per cent of the American population.

An interview with Jane Wolff
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