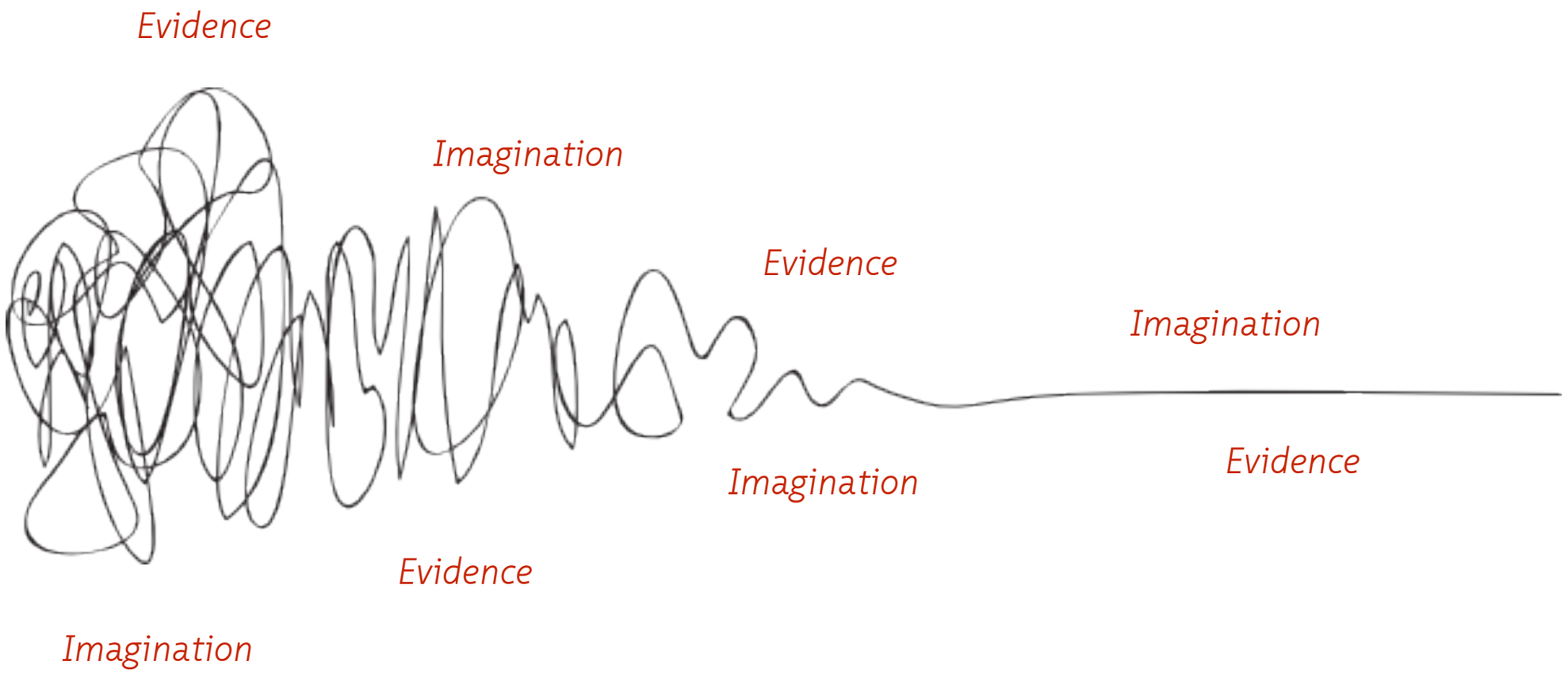
Imagination and evidence *at work*

16-09-2015 Design of the Urban Fabric

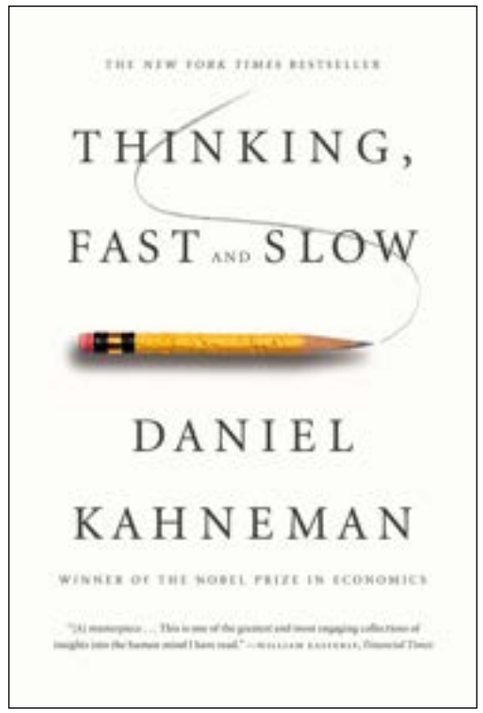
Birgit Hausleitner, B.Hausleitner@tudelft.nl & Egbert Stolk, E.H.Stolk@tudelft.nl

Design process



Thinking fast and slow

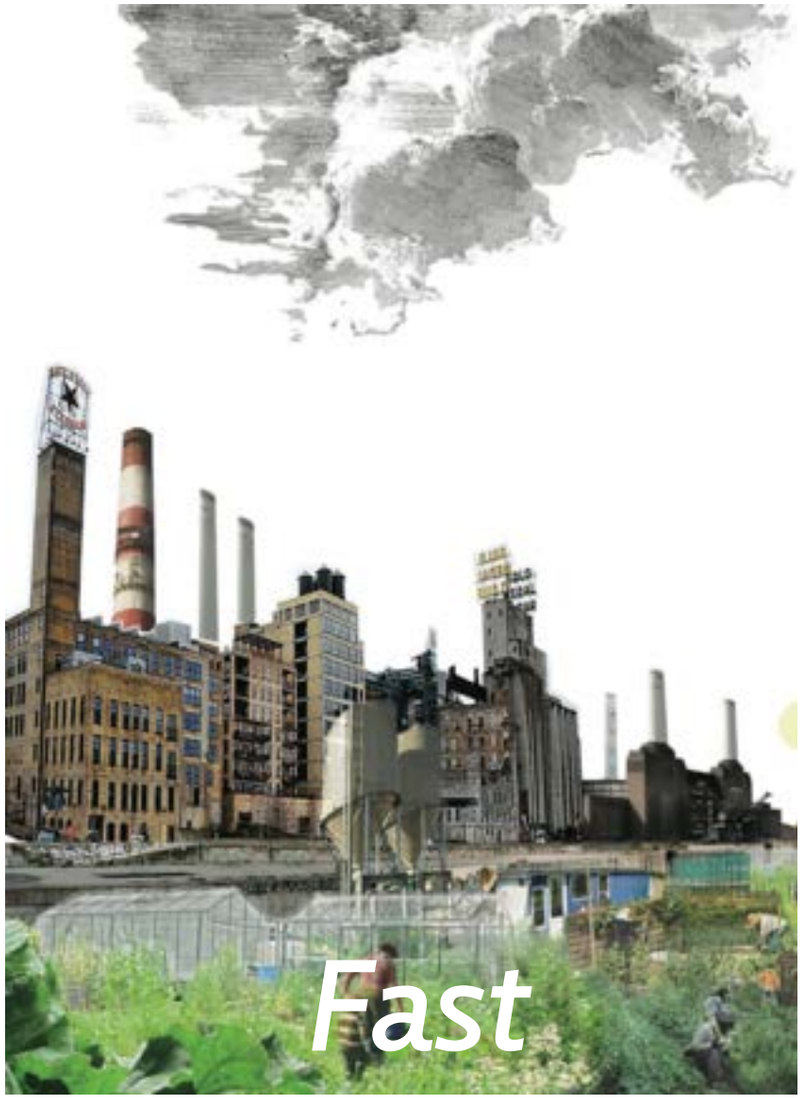
System 1	System 2
associative system	rule-based system
tacit thought process	explicit thought process
intuitive cognition	analytical cognition
implicit inferences	explicit inferences
recognition-primed decisions	rational choice strategy
relatively undemanding	relatively demanding
personalized	depersonalized
relatively *fast*	relatively *slow*

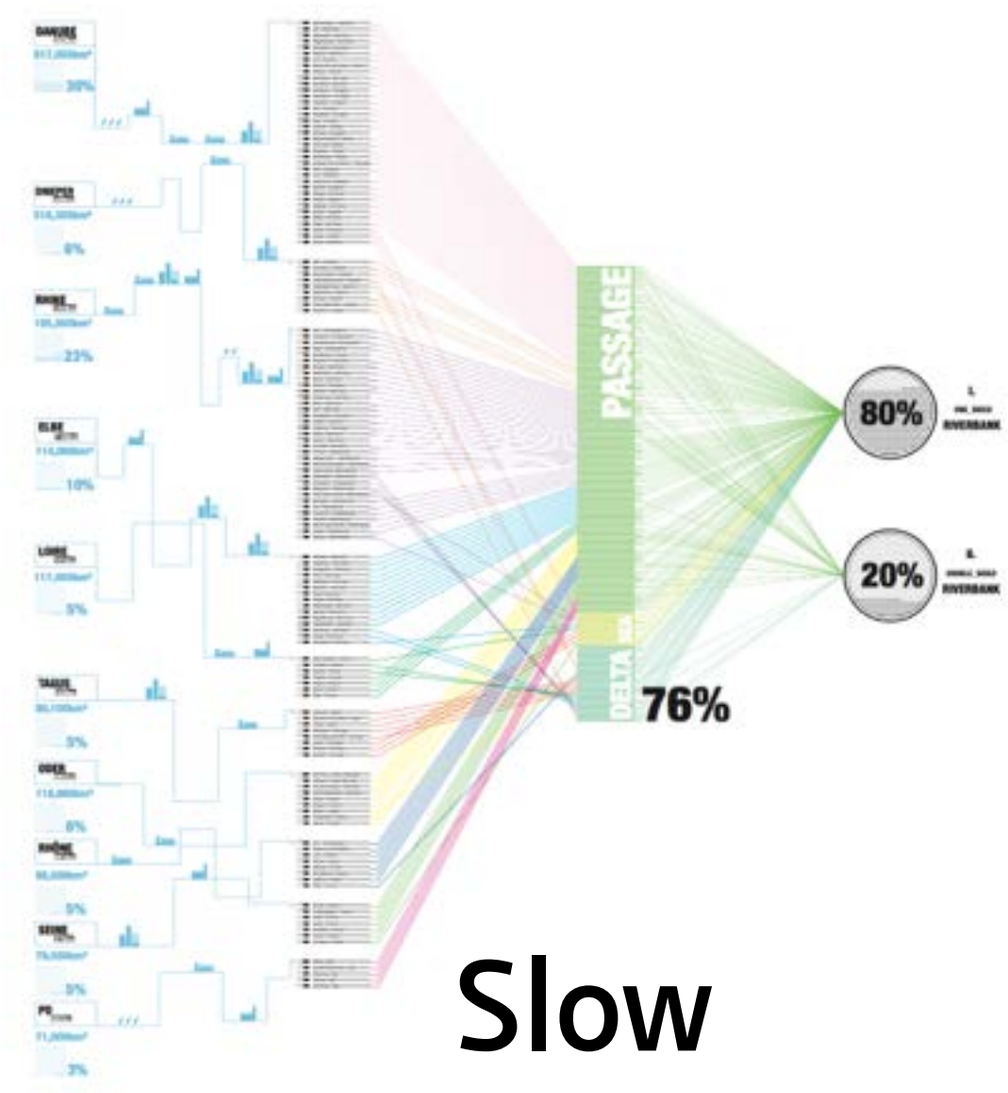


Kahneman, D. (2011). Thinking, fast and slow. London: Allen Lane.
Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? Behavioural and Brain Sciences, 23(5), 645-726.

David Klinkhamer: *fast and slow design processes*

"The potential of this model lays in the opportunity to connect the two in order to obtain synergy between the two. They complement each other." (p. 32)





Slow

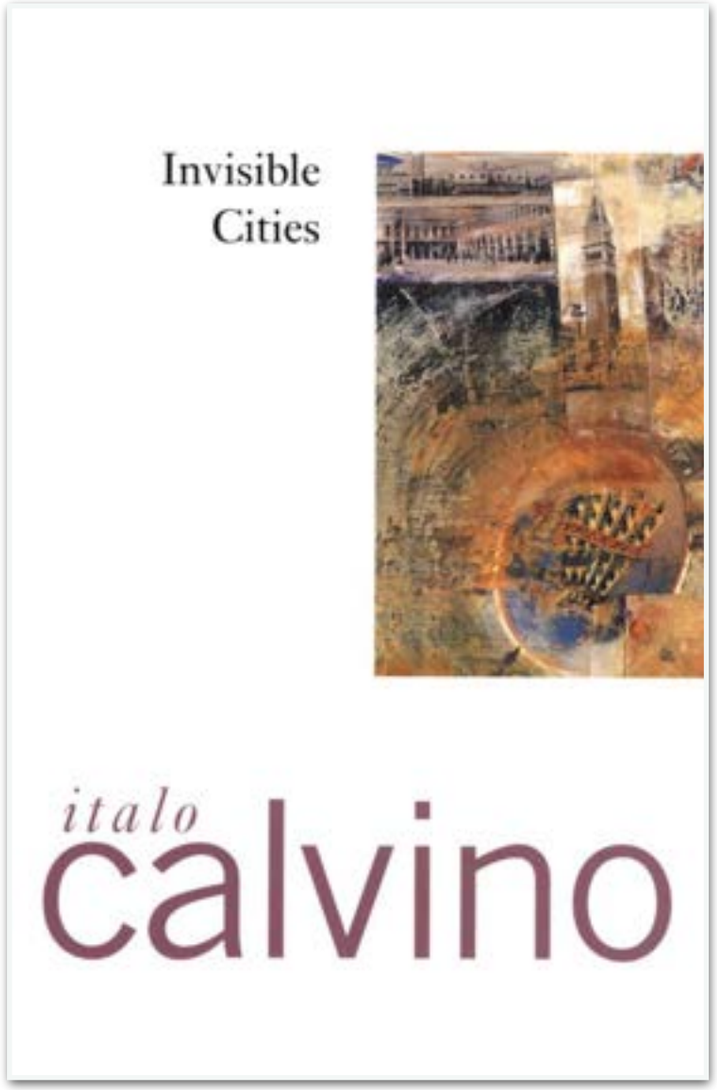
Klinkhamer, David (2012) The Resilient River, MSc thesis.

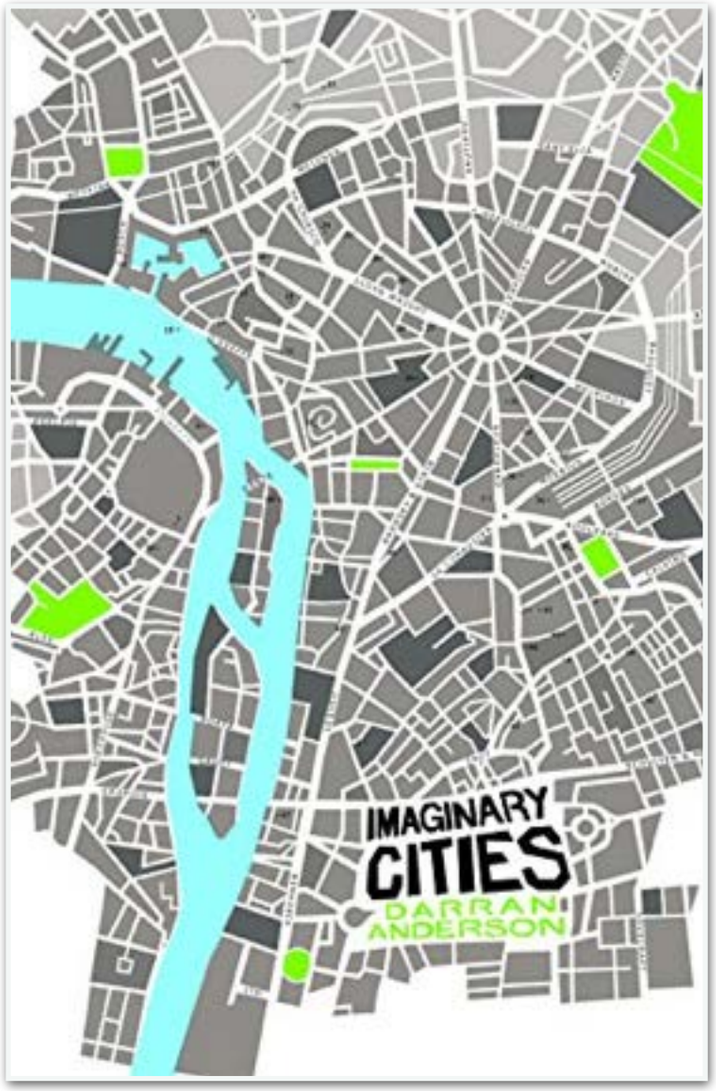
Imagination and evidence at work

- Imagination + evidence: please draw a mind-map.
- Short talk Birgit & Egbert.
- Points of discussion.

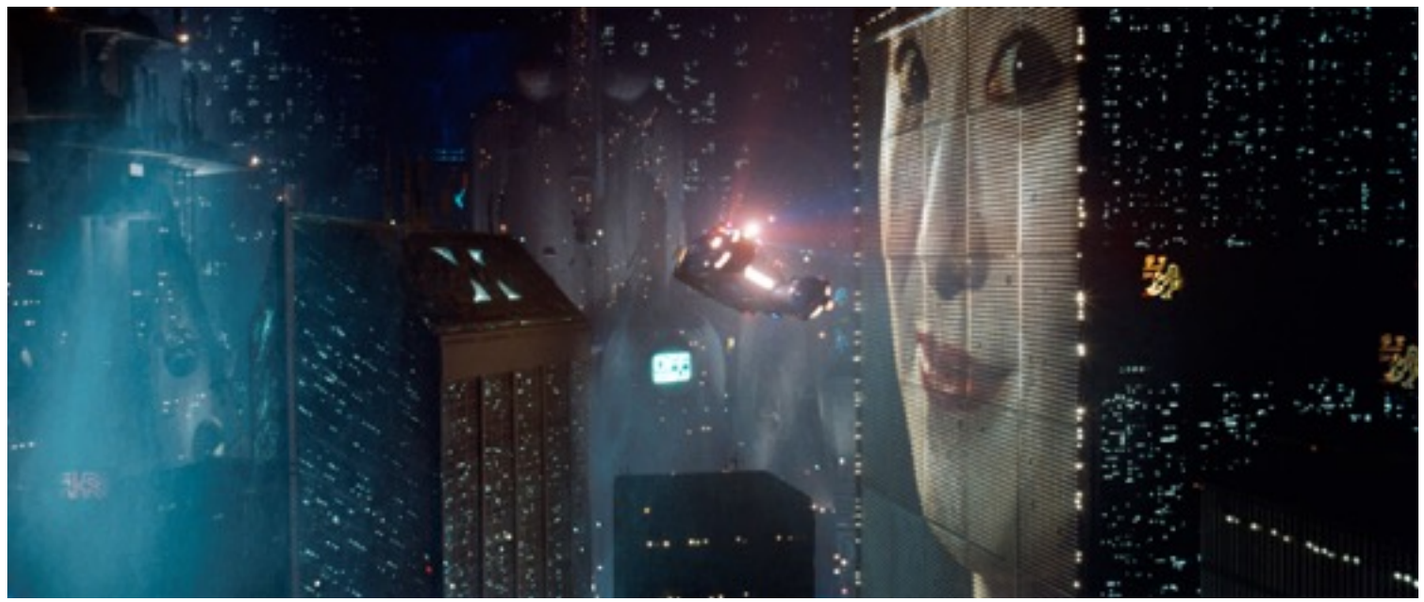
Imagination

Written cities: invisible and imaginary cities

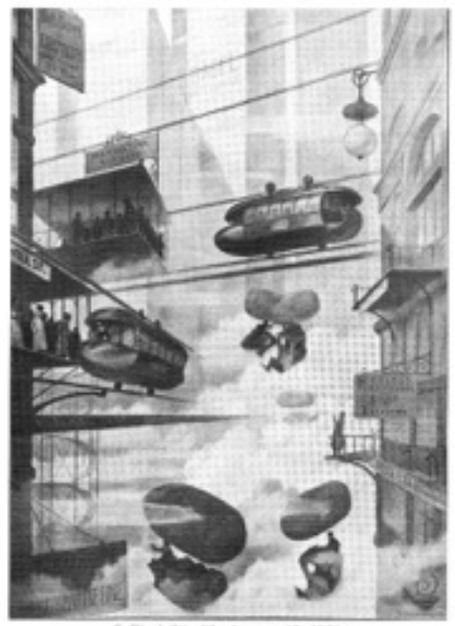




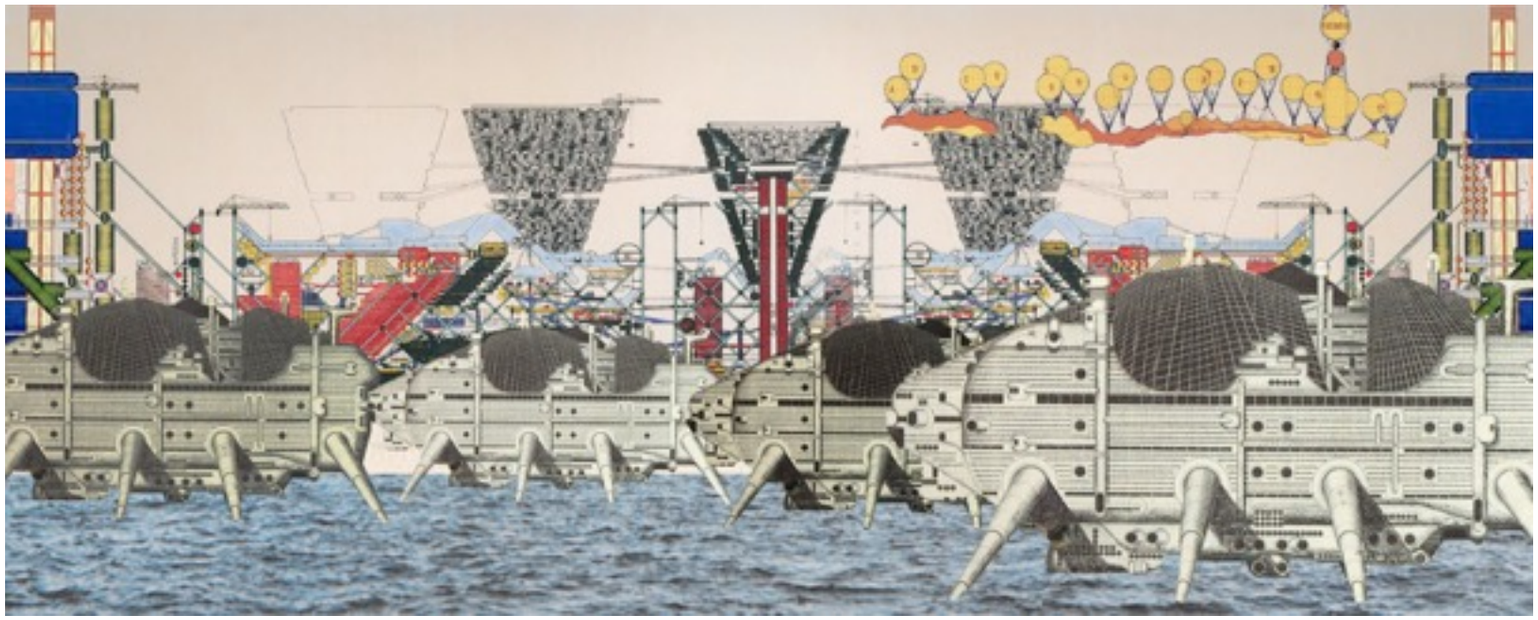
Contemporary images of the future

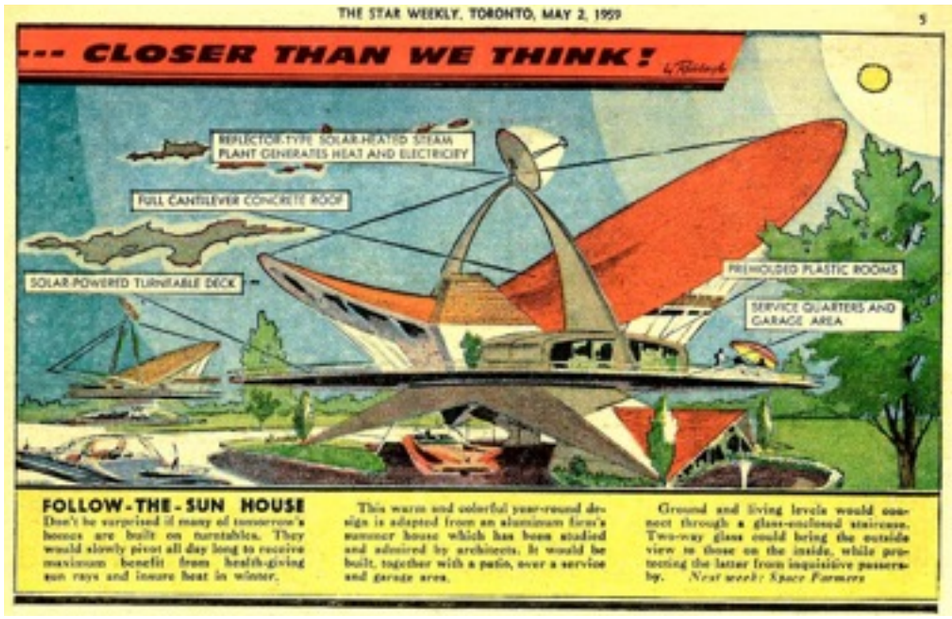


Past images of the future



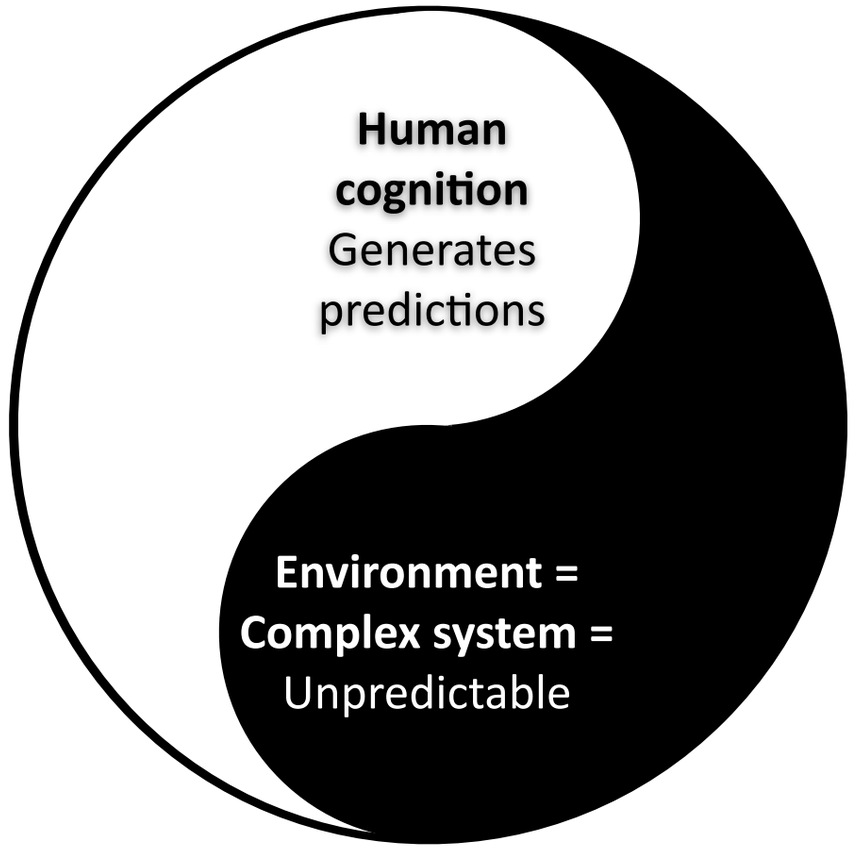
Collier's Weekly, *January 12, 1901.*





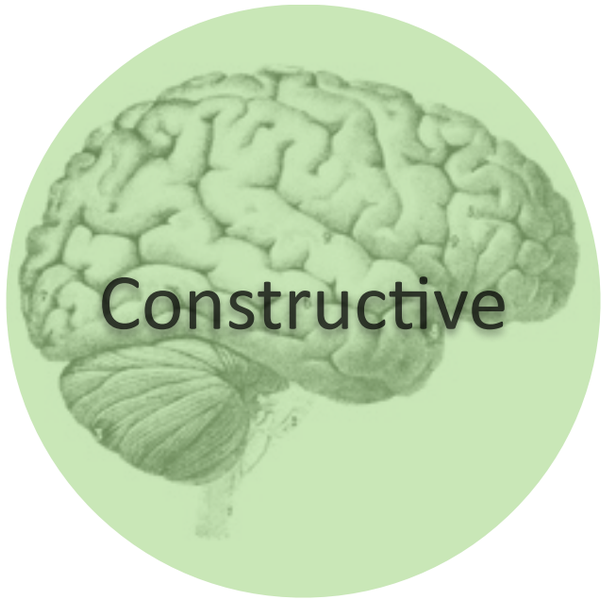
Imagination

- The environment is a complex system.
- Complex systems are unpredictable *in nature*.
- In order to be able to act in the here and now, humans generate predictions for the *near* and/or *present* future.
- These predictions are a kind of *mental simulations* of possible future events.
- These simulations require *imagination*: these are not perceived through senses such as sight, hearing, or other senses.

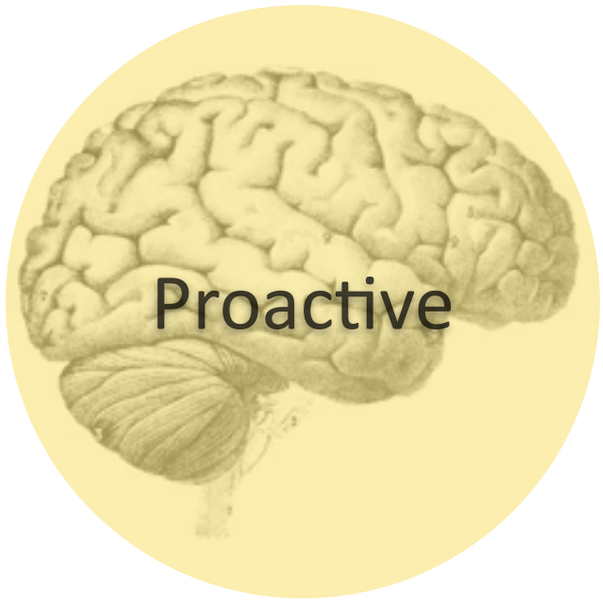


Imagination: human memory is…

the ability of think about past, present and future - it allows for Mental Time Travel



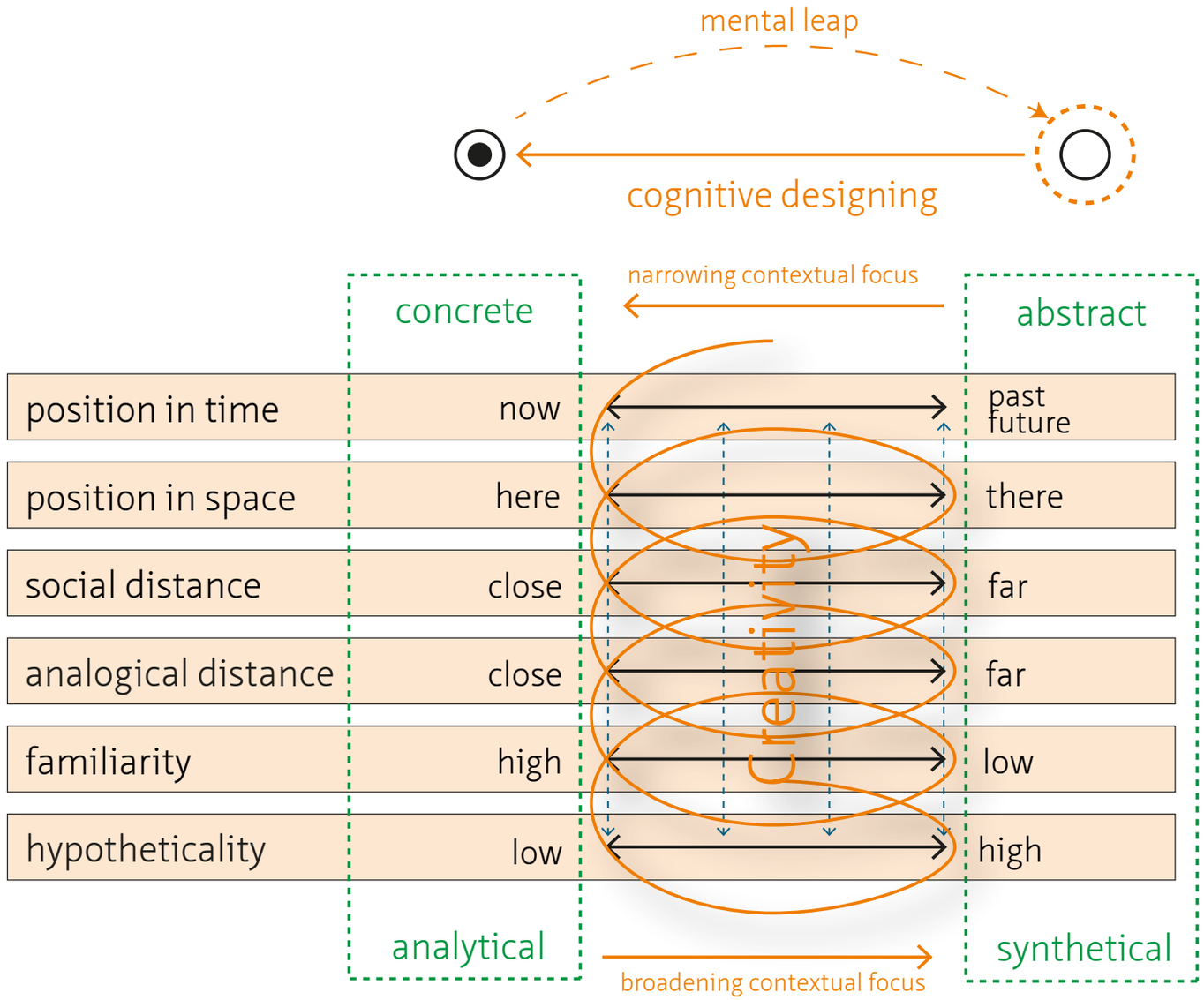
it allows the flexible re-combination of elements into coherent simulations of a novel event



it generating predictions that approximate the relevant future

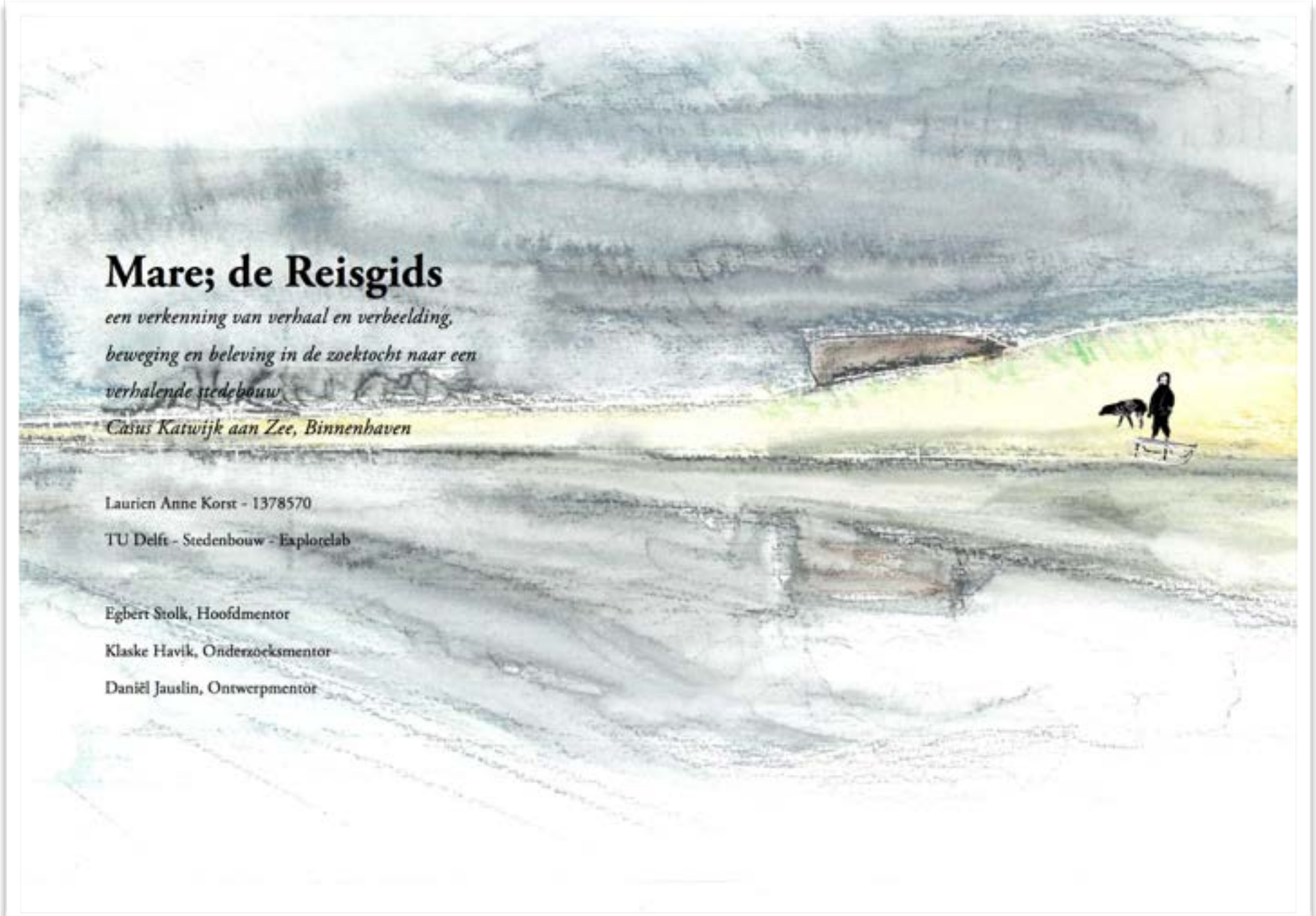
Nyberg, L., Kim, A. S., Habib, R., Levine, B. & Tulving, E. 2010. Consciousness of subjective time in the brain. Proceedings of the National Academy of Sciences
Bar, M. 2007. The pro-active brain: using analogies and associations to generate predictions. Trends in Cognitive Sciences, 11.
Schacter, D. L., Addis, D. R. & Buckner, R. L. 2008. Episodic Simulation of Future Events. Annals of the New York Academy of Sciences, 1124, 39-60.

Imagination: the role in design

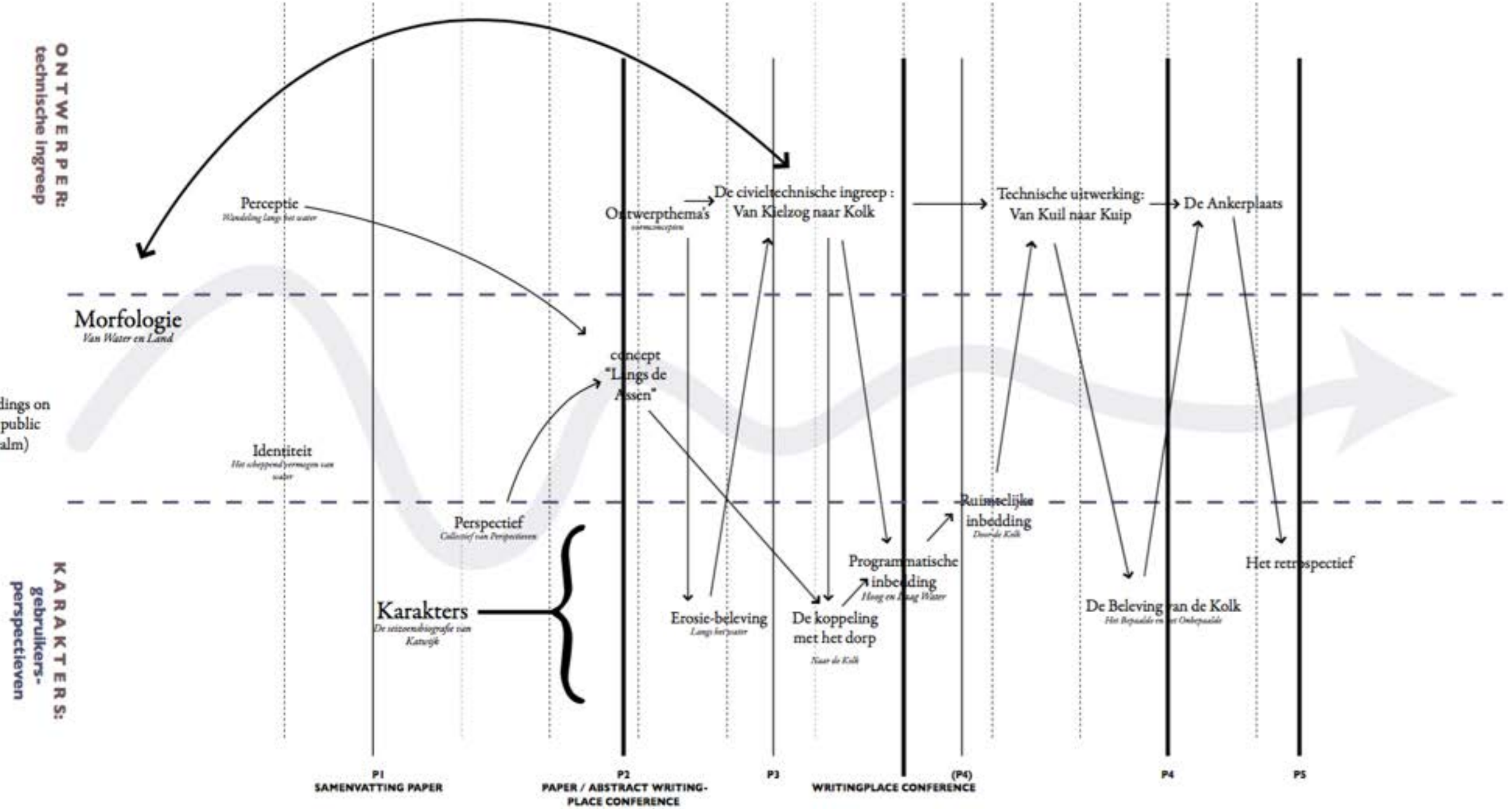


In design, we need to imagine a desired future image: we make a mental leap into the future. This leap stimulates abstract thinking, which is a prerequisite for creative design.

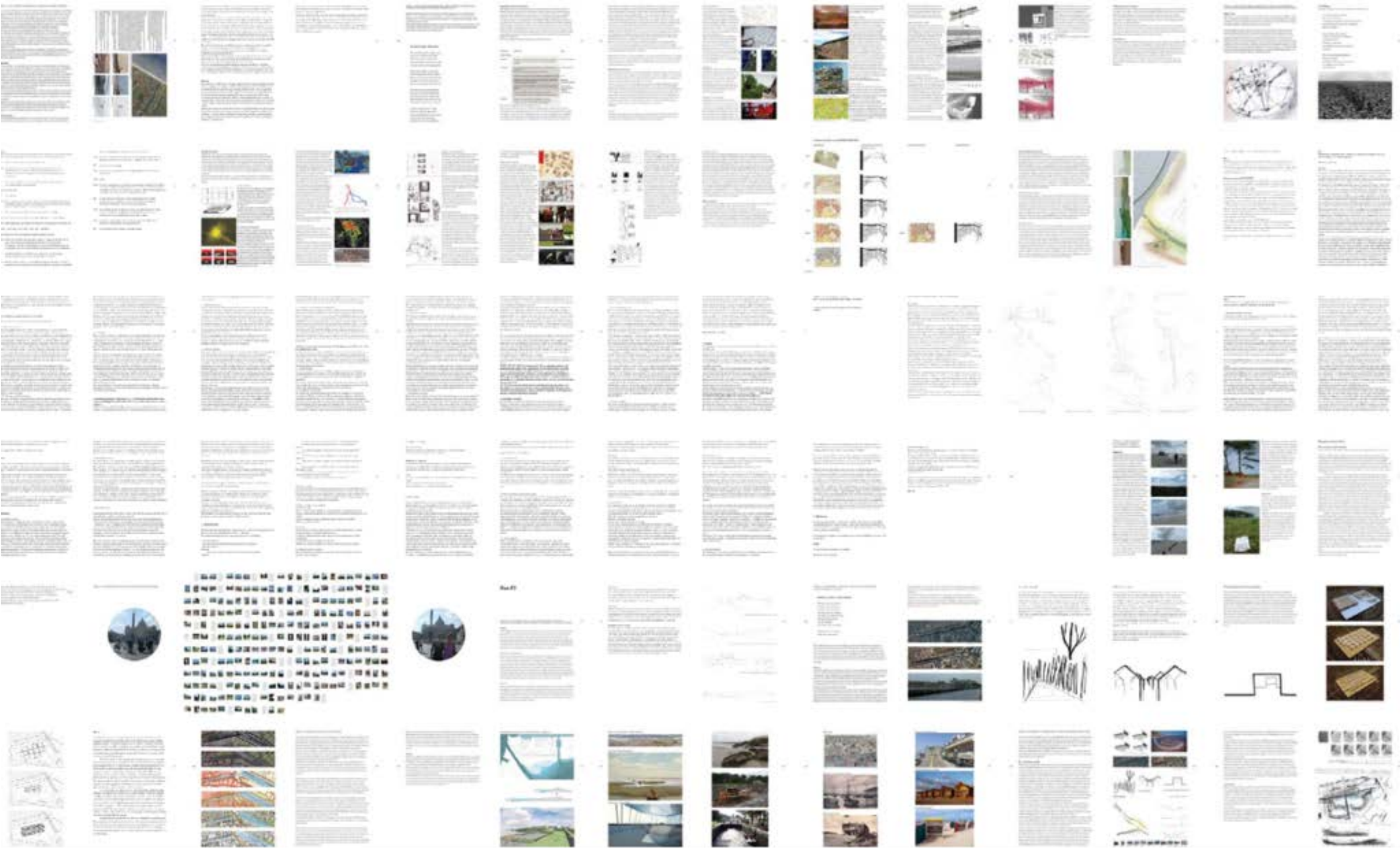
MSc-thesis Laurien Korst



The interaction between: writing and sketching/drawing & characters and morphology…



...an extensive logbook to keep track on the process of writing, sketching and drawing...



… explorations - using different drawing techniques (and writing texts)…

Fig. 11: Verbeelding bij Vormconcepten, afbeelding door auteur

Fig. 12: Verbeelding bij Civieltechnische ingreep 'Van Kwaag naar Kolk', afbeelding door auteur

Fig. 13: Verbeelding bij Kappeling met het dorp 'Naar de Kolk', afbeelding door auteur

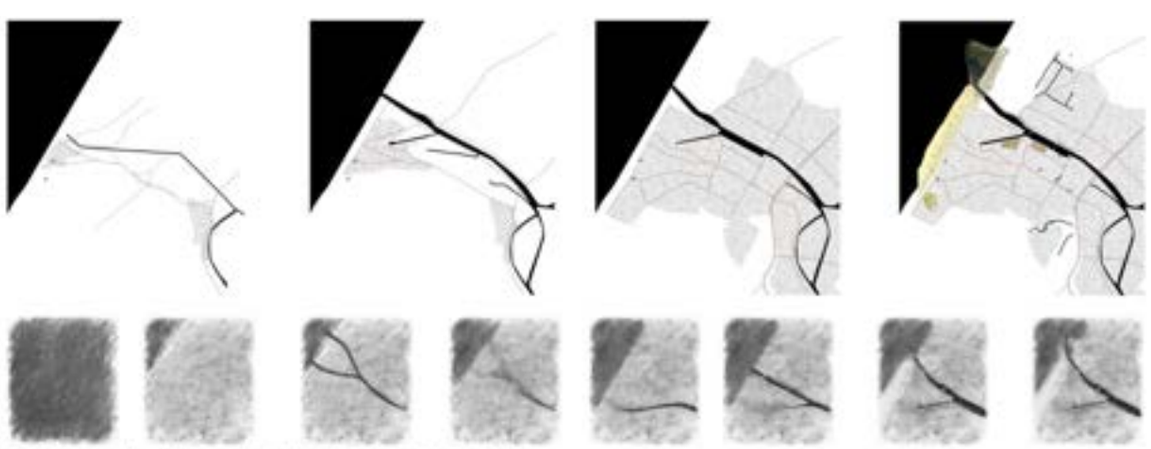


Fig. 7: Evolutie van de verbeelding van de morfologie 'Van Water en Land', afbeelding door auteur

Fig. 14: Verbeelding bij Programmatische inbedding 'Hoog en Laag Water', afbeelding door auteur

Fig. 8: Uiteindelijke verbeelding bij ideatext: ' Het schippende vermogen van water', afbeelding door auteur

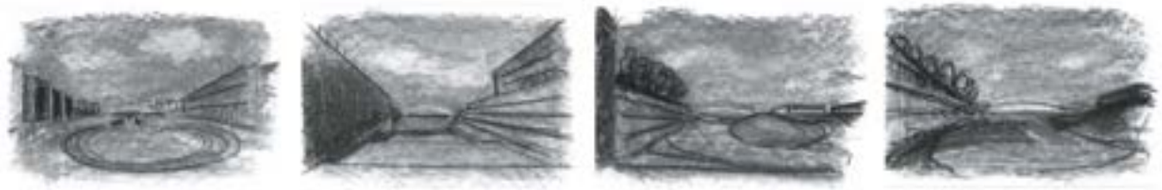
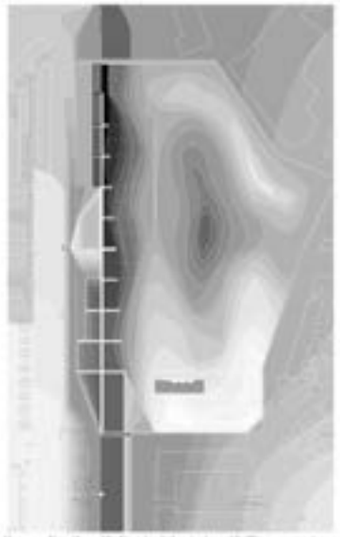
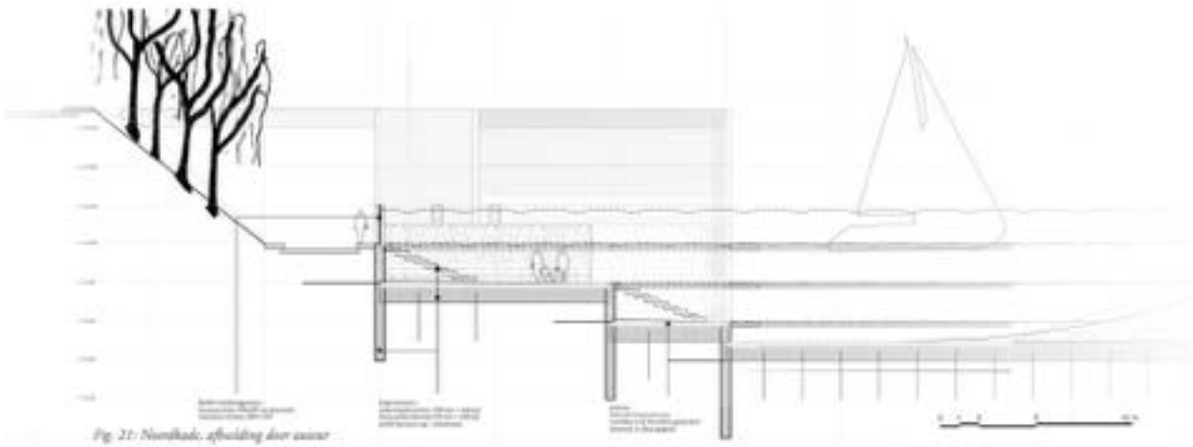


Fig. 15: Verbeelding bij Ruimtelijke inbedding 'Door de Kolk', afbeelding door auteur

... resulting in a concrete design proposal.





Evidence

Evidence

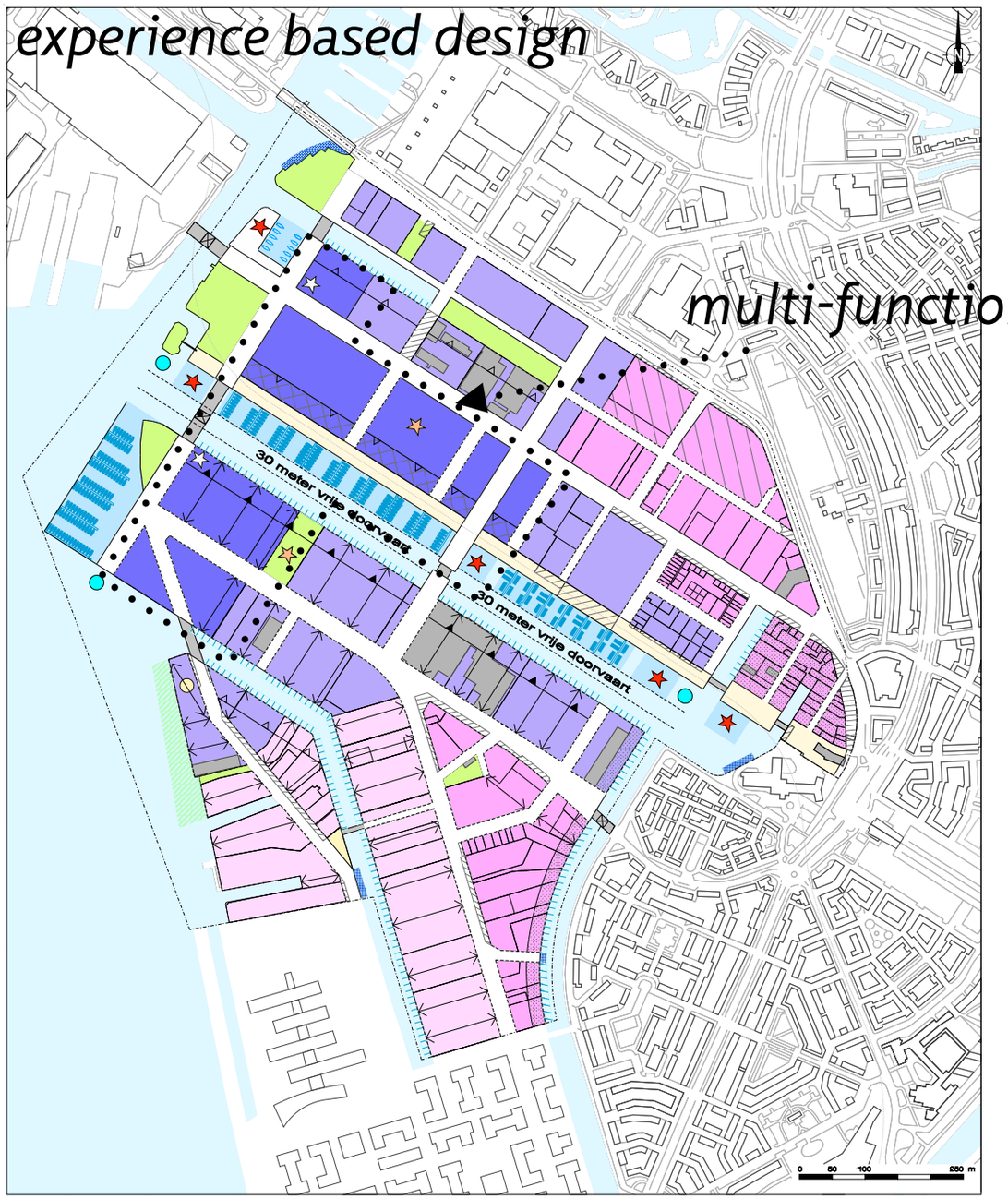
'Less than 500 feet could "make or break" an environmental support to walking'

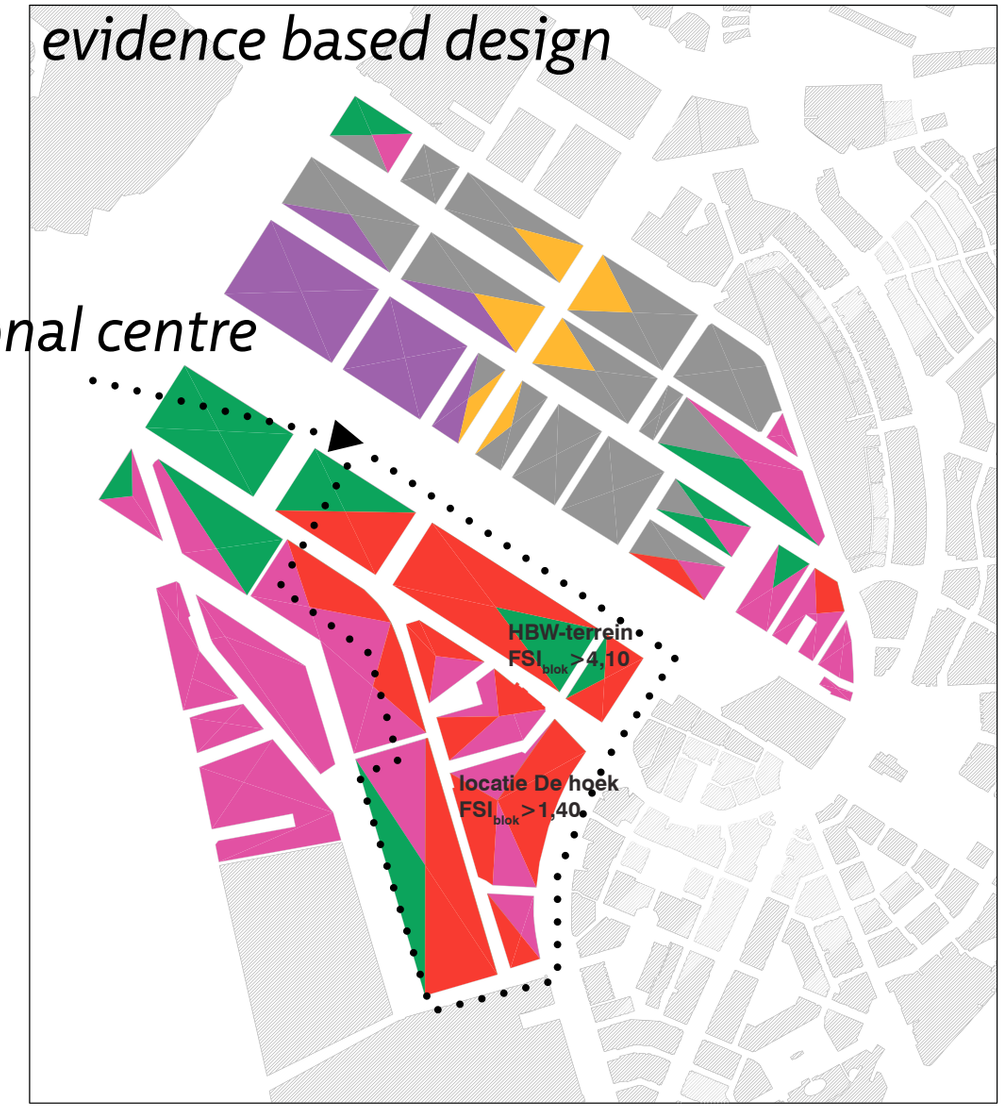
Vernez Moudon and Lee (2009)

- '*precision and accuracy* in dimensioning the physical neighbourhoods'
- work with evidence requires *reduction* of complexity of urban systems
- definition of relevant *measures* to collect evidence for
- understanding of *aggregation units* on the different scales of the system
- *contextualising* the evidence for interpretation

Moudon Vernez, Lee(2009) Urbanism by numbers. A quantitative approach to urban form.

Evidence: the urgency and role in design





Source: Berghauser, vNes, Hausleitner (2011) Report project Amsterdam Buiksloterham

Evidence: the role in urban development

evidence

↓

decision process

↓

decision

↓

evidence based

evidence organised and interpreted in process with different actors: experience, bargaining,…

↓

decision process

↓

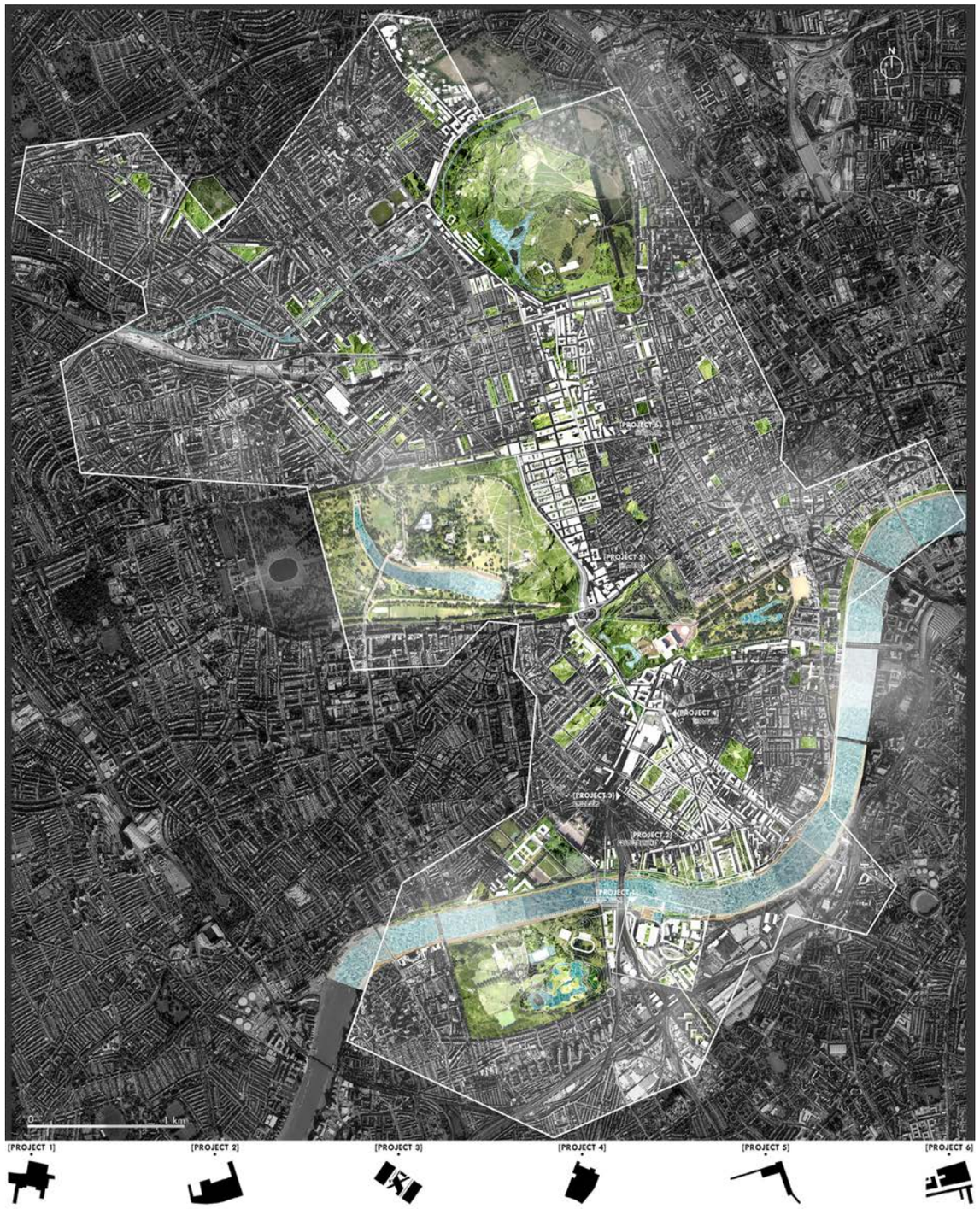
decision

↓

evidence informed

Source: Davoudi (2012) The Legacy of Positivism and the Emergence of Interpretive Tradition in Spatial Planning

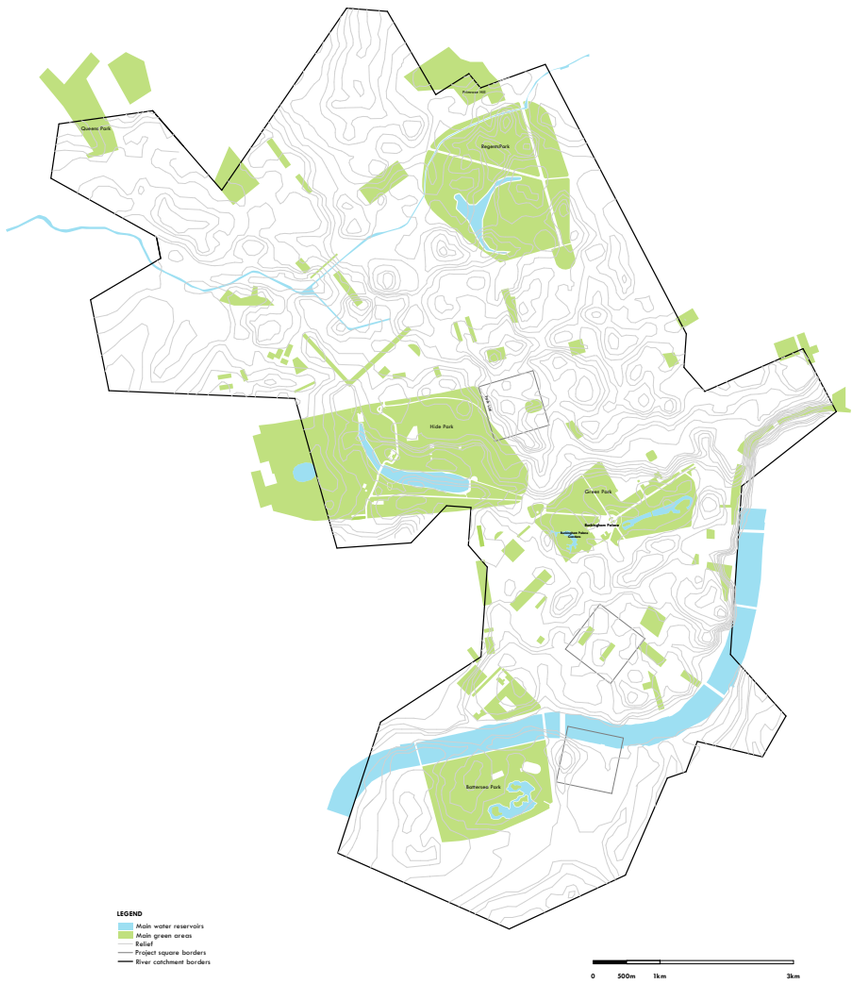
MSc thesis Kate Andrusenko



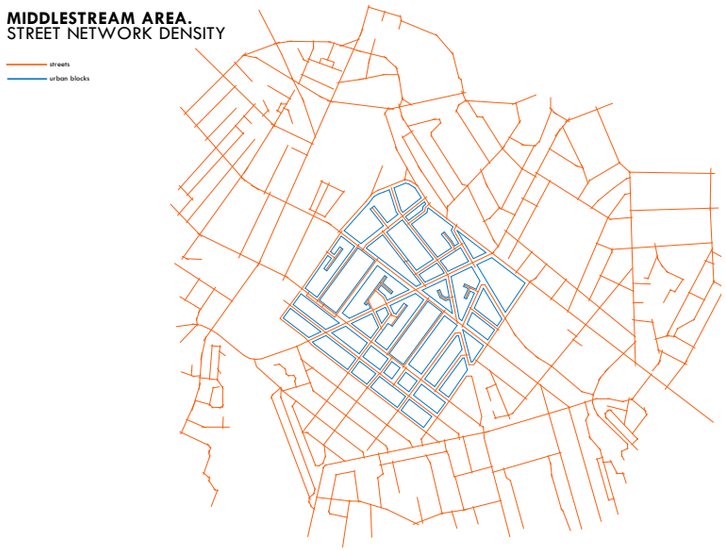
VERSATILE LONDON. WATER RESILIENT URBAN DESIGN IN FAST- CHANGING CONDITIONS

Aggregation units: scale and extend

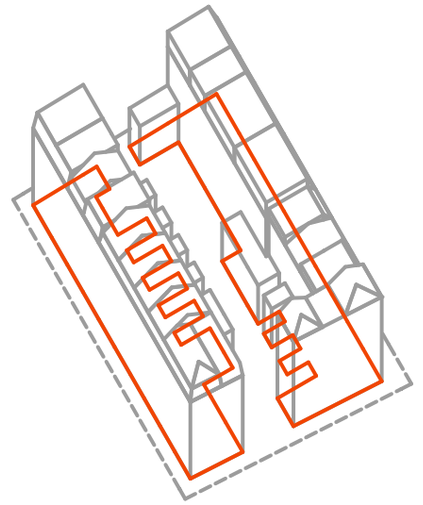
Catchment area



NB area 500/500m

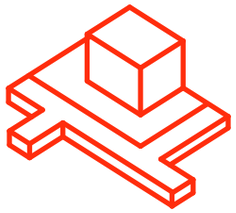


Urban block



Source: Andrusenko (2015) Versatile London

Measures

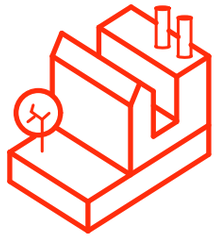


+STREET NET-WORK DENSITY

MAPPING
DATA-COLLECTING
PATTERN DEFINING
* The STREET NETWORK DENSITY indicates an open space in large areas of the city

+ DENSITY FSI

MAPPING
DATA-COLLECTING
PATTERN DEFINING
* the FSI express the intensity of an area

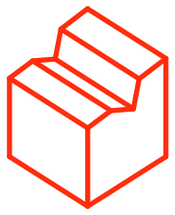


+LAND-USE

MAPPING
LITERATURE REVIEW
DATA-COLLECTING
CRITICAL REVIEW OF LAND-USE POLICY
PATTERN DEFINING
* the LAND- USE indicates facilities and uses of the space

+POPULATION DENSITY

MAPPING
LITERATURE REVIEW
DATA-COLLECTING
PATTERN DEFINING
* the POPULATION indicates the amount of people, which will be affected by floods

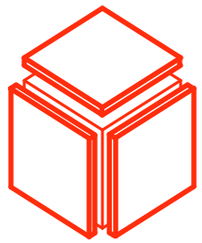


+ TOPO-GRAPHY

MAPPING
DATA-COLLECTING
PATTERN DEFINING
* The TOPOGRAPHY indicates a heights of the earth

+ GSI

MAPPING
DATA-COLLECTING
PATTERN DEFINING
* The GSI express the compactness of an area



+COVERING

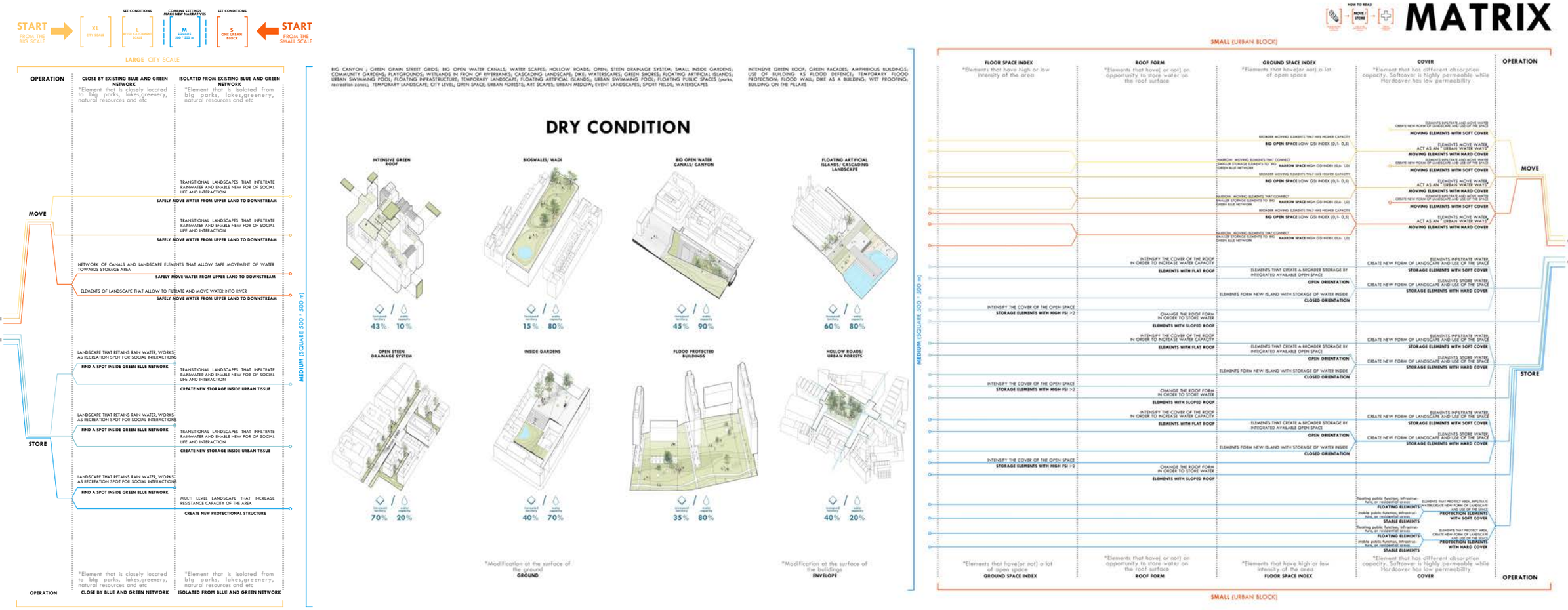
MAPPING
DATA-COLLECTING
PATTERN DEFINING
* the COVERING express the capacity of existing materials to cope with flooding

+FLOODING

MAPPING
LITERATURE REVIEW
DATA-COLLECTING
FREQUENCY ANALYSIS
PATTERN DEFINING
* the FLOODING indicates the periodicity property of the flooding events, there nature and topology

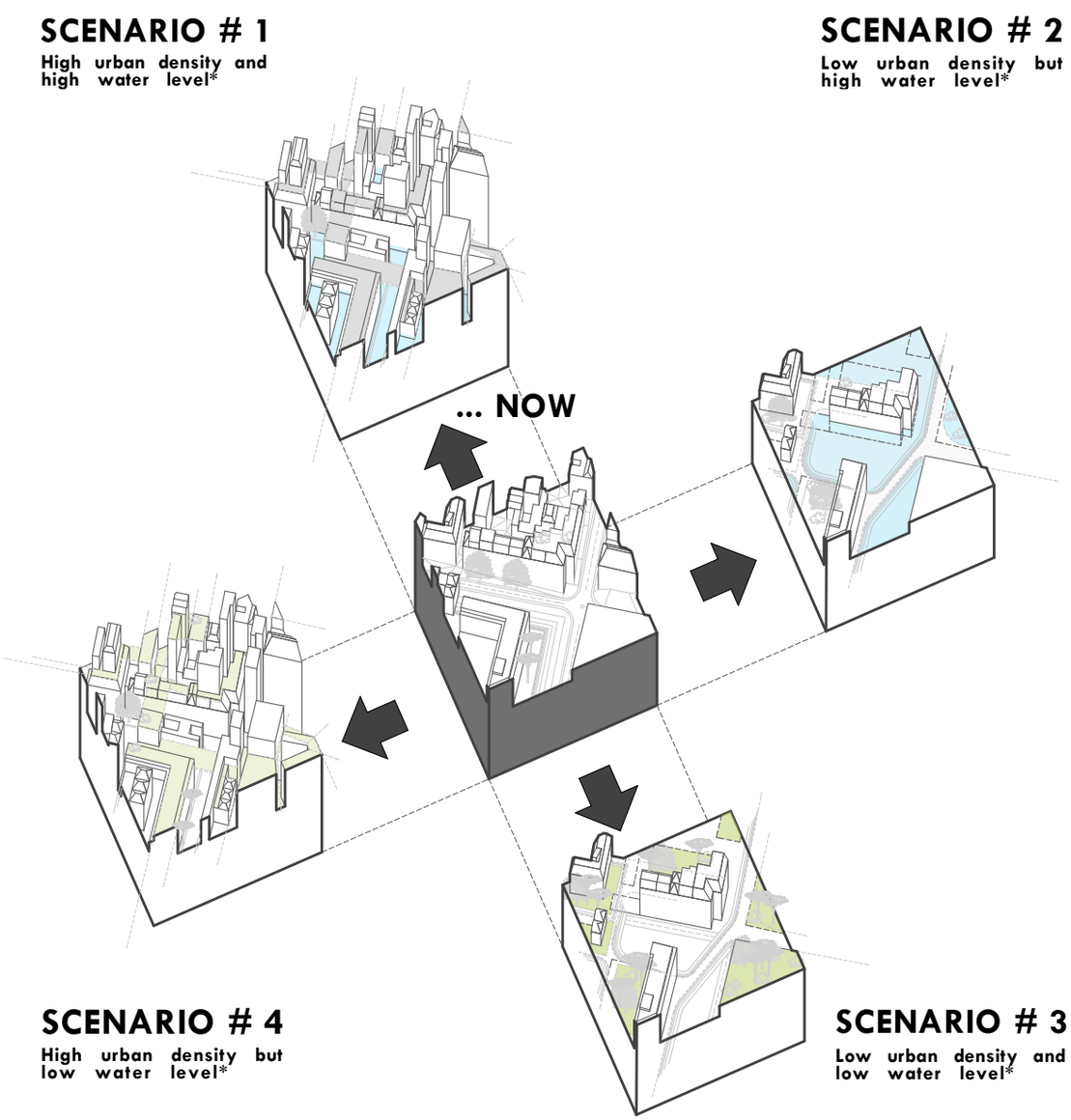
Source: Andrusenko (2015) Versatile London

Extracting regularities:
guidelines / patterns / design principles



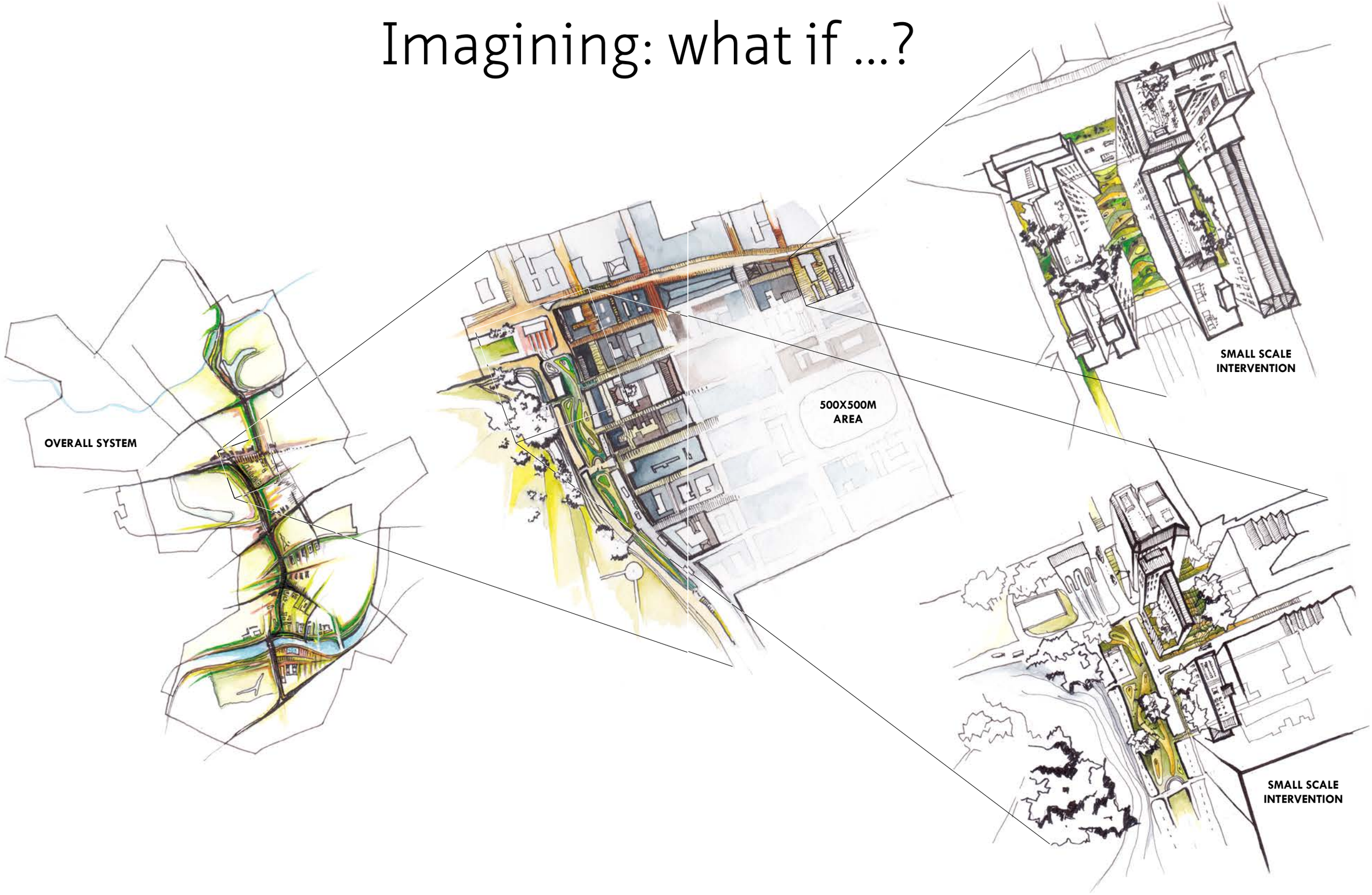
Source: Andrusenko (2015) Versatile London

Definition of future scenarios



Source: Andrusenko (2015) Versatile London

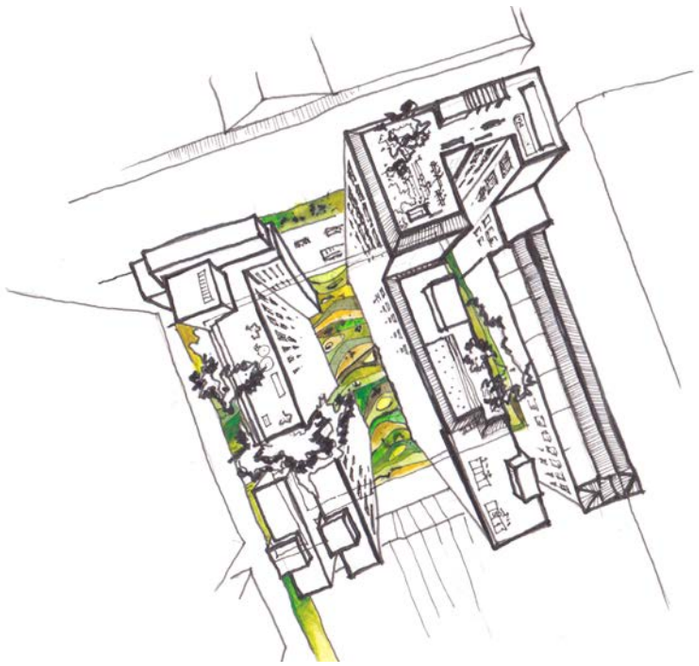
Imagining: what if ...?

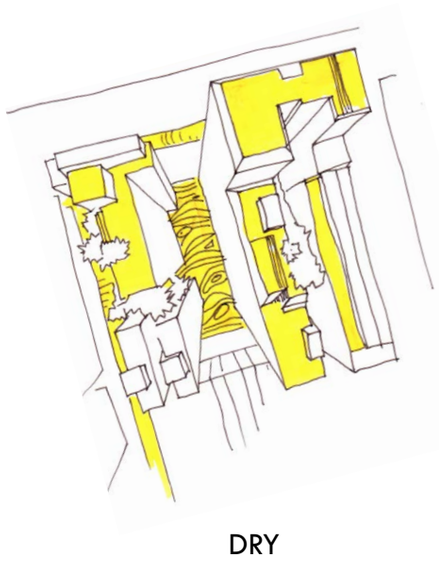


Source: Andrusenko (2015) Versatile London

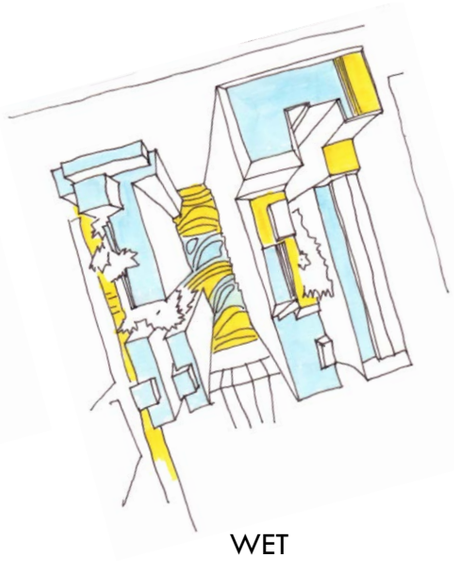
Evaluating the scenarios

Imagination → Test in scenarios

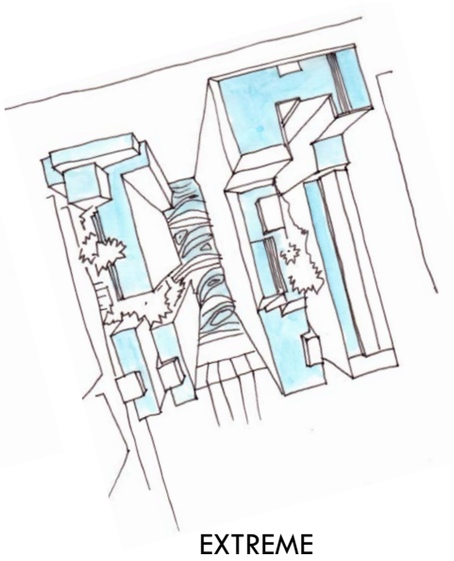




DRY



WET



EXTREME

Evaluation along performance measure

CURRENT STATE

20 %

RESULT OF DESIGN INTERVENTIONS

60 %

Source: Andrusenko (2015) Versatile London

I. Design as *problem solving* or as *co-evolution*

- Is design a rational problem solving activity or a process of co-evolution where problem-solution pairs evolve over time?
- [according to your answer] what are the implications of this for the working-plan of your MSc-thesis?

II. Big data, small data

- What is the relation between the *amount of data* and the quality of design decisions and it's transferability?
- What pitfalls and biases are related to using [big or small] data?

III. Patterns and scenario's

- Evidence and imagination are linked through patterns
- Patterns in the framework of scenarios can build evidence-based imagination
- Constructing scenarios is important in imagining futures > fix measurable performance objectives, leave flexibility in design of the urban environment, and allows a performance evaluation of the design proposal

How would you apply?

Could imagination and evidence play a role in your thesis, and if so - how?

15min - one A3