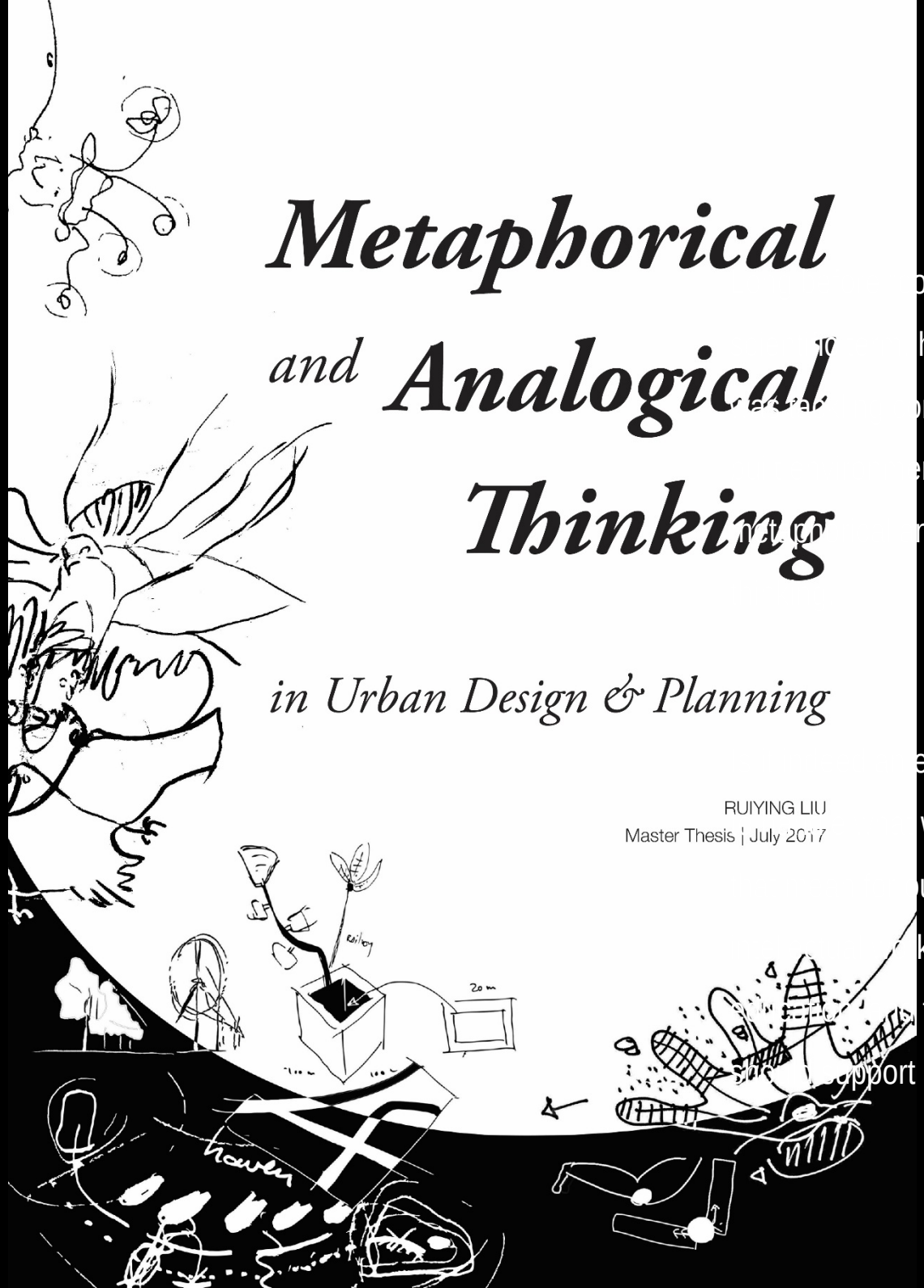


omplexity" was a
human intelligence
omplex issues of the
nt. One of its tricks is
nd analogical

evolved mechanism
we do? What would
ur evaluation of
ks, our focus in
the way technology
pport us?

We still know very little about its roles in
real-world phenomena, esp. in ***urbanism***

OBSERVATION IN DESIGN

Creative strategy (Antoniades, 1990)

A way to grasp the essence (Ungers, 1982)

Origin of many theories, models and design methodologies
(...)

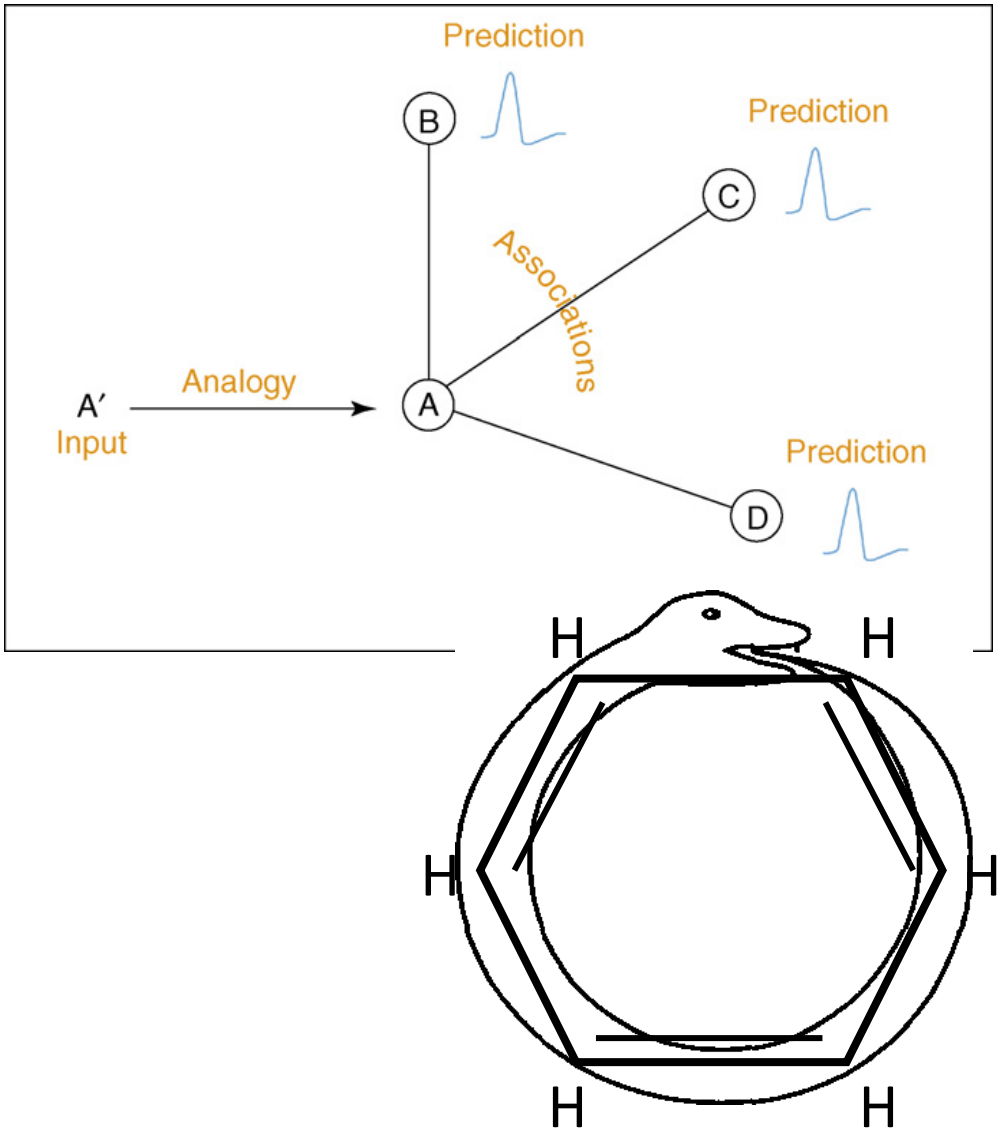
EXPLANATION IN DESIGN

Heuristic reasoning for ill-defined problems (Rowe,1982)

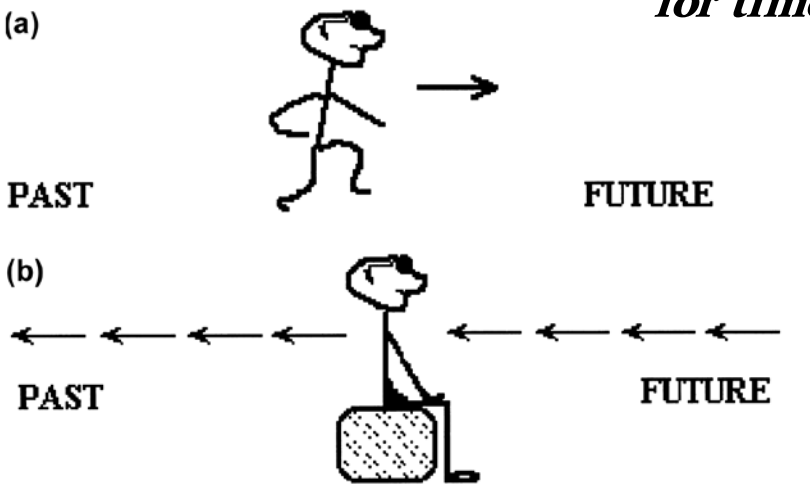
Displacement of concepts for innovation (Schön, 2001)

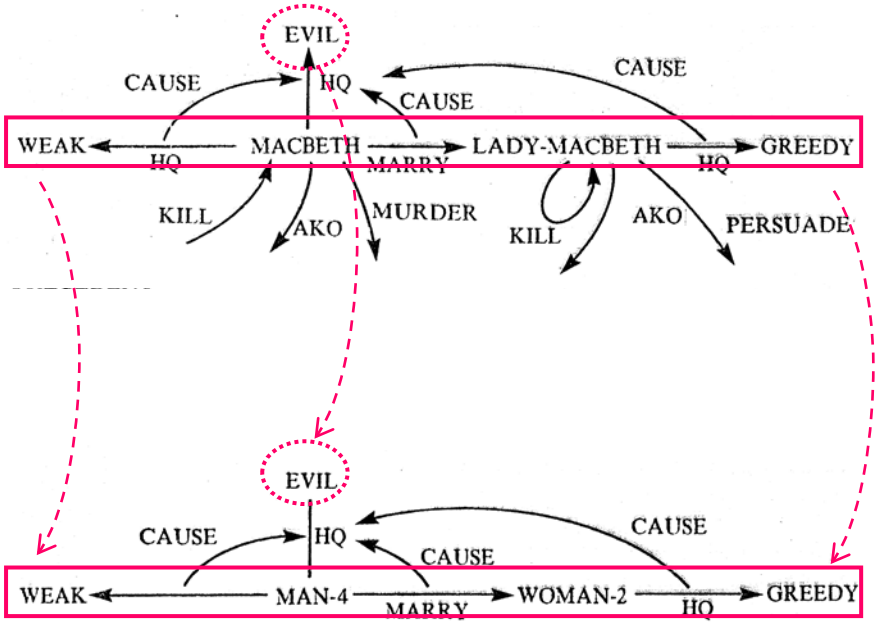
Cognitive strategy for morphological design
(Tzonis, 1992)

SCIENTIFIC THEORIES

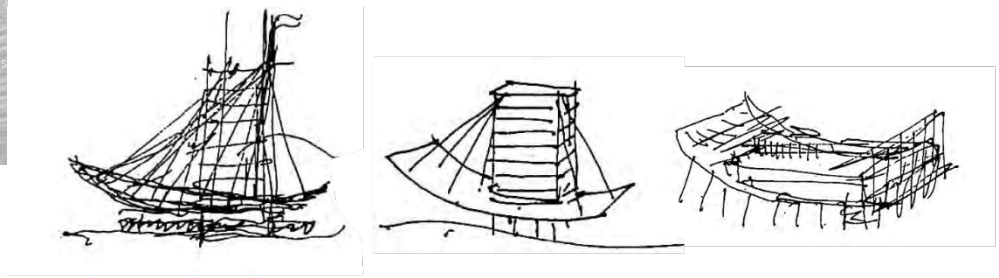


Spatial metaphors for time

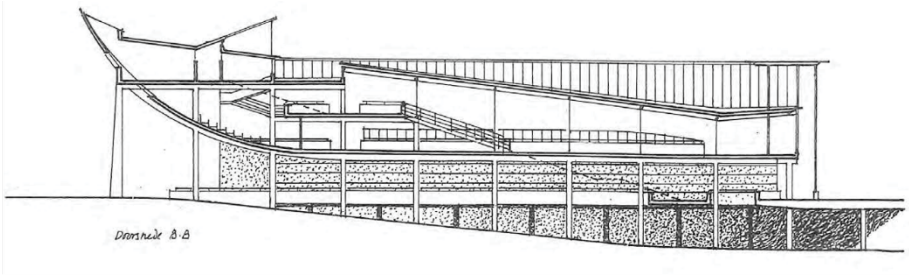




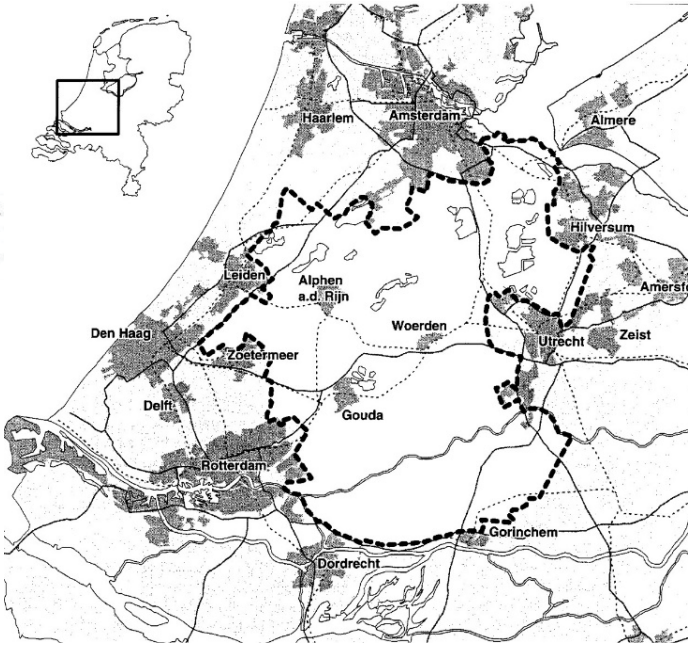
Superficial appearances—
can it be used for design?



Just a story—what scientific reasons
does it have?



Exploiting public sentiments?



Maybe we have the wrong expectations for them …

*Because we don't know what **roles** they play and **why**.*

What if it is indeed an evolved mechanism to handle what we do? What would that mean for our evaluation of intellectual works, our focus in education, and the way technology should support us?

Strategy

Research goals

Output format

Structure of communication

RESEARCH GOALS

- A framework to structure M-A phenomena based on scientific theories
- Further demonstrate how complex M-As work

OUTPUT FORMAT

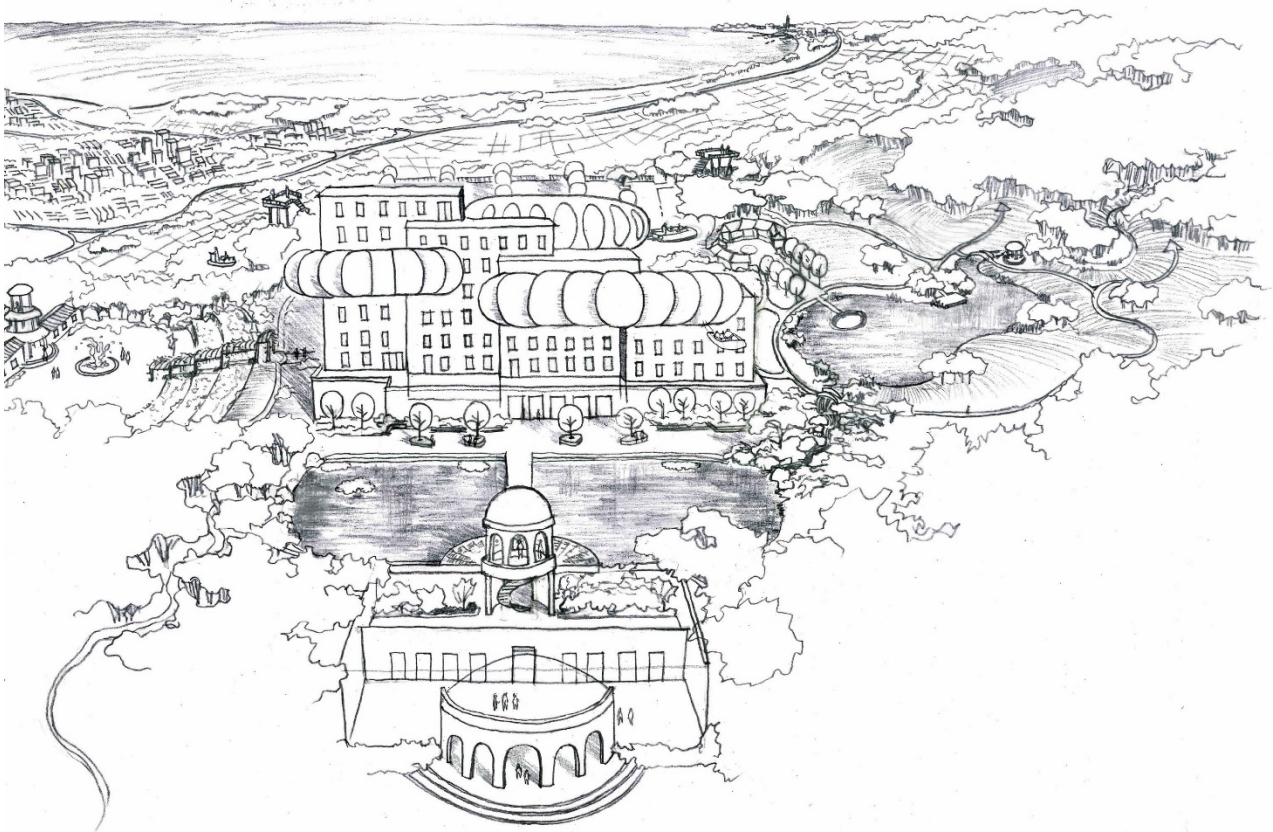
- Journal paper

Single line of reasoning, for reporting and recording findings.

- Book

Chapters afford building up more than one plot/perspective.

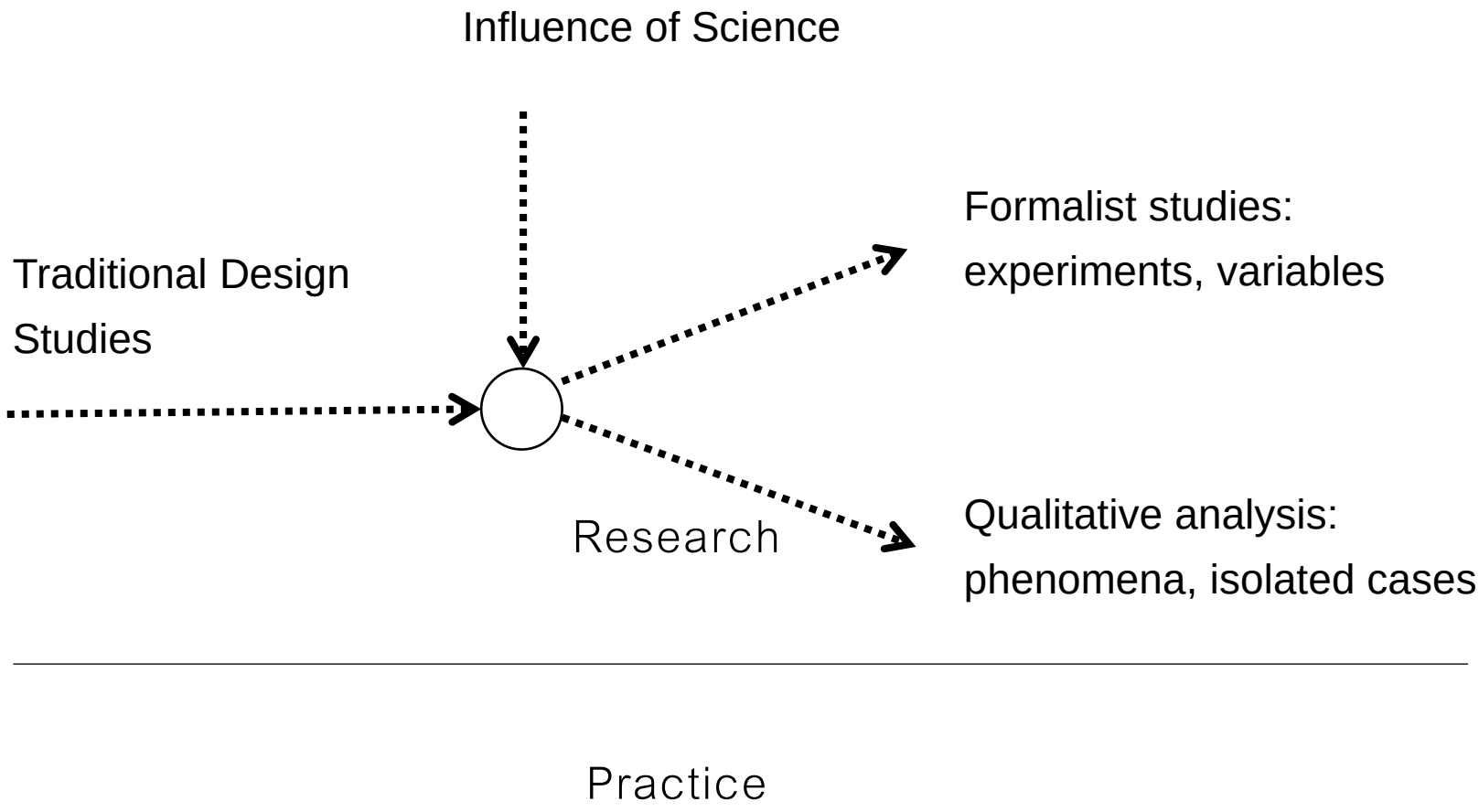
7 CHAPTERS, 3 PARTS



Design Frame-work

Theory construction as design.

Phenomena detection & structuring


Influence of Science
Traditional Design Studies
Formalist studies: experiments, variables
Research
Qualitative analysis: phenomena, isolated cases
Practice

Research

Practice

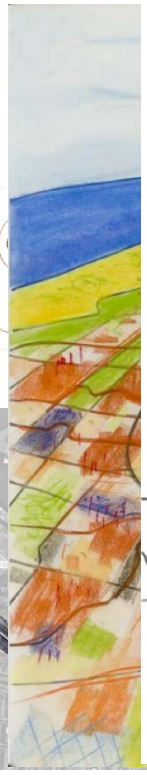
Zo ziet de IJ-oever
komen twee woont
filmmuseum Eye. ©

Rotterc

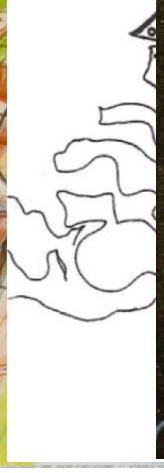
by Els Bet

The

Willem-Jan

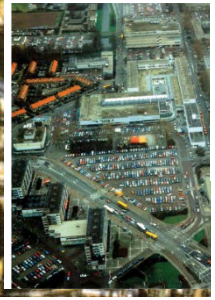


A4 Cc
of Zuid-H



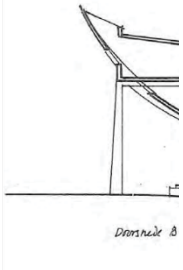
Precede
referenc

Amstelveen city cen
design,
Paul Broekhuizen an



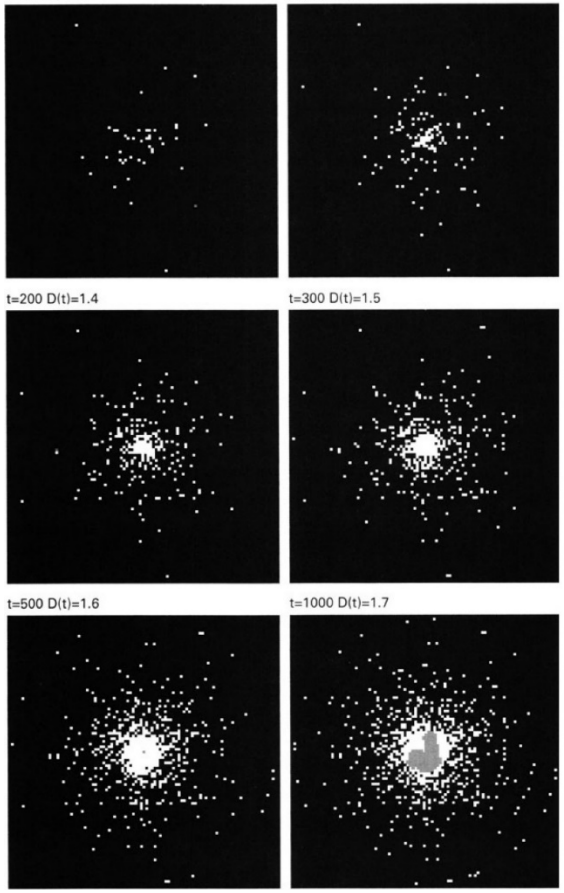
Building

Amstelveen city centr
Hans Ruijssenaars (At



Sand pile model for urban growth simulation

in complexity theories of cities (Batty, 2005)



We need an overview that ***connects*** the formalist findings, the qualitative analyses, and practical processes.

Deriving own structure & data through interview: everyone's opinion is a structure, cases they provide are data

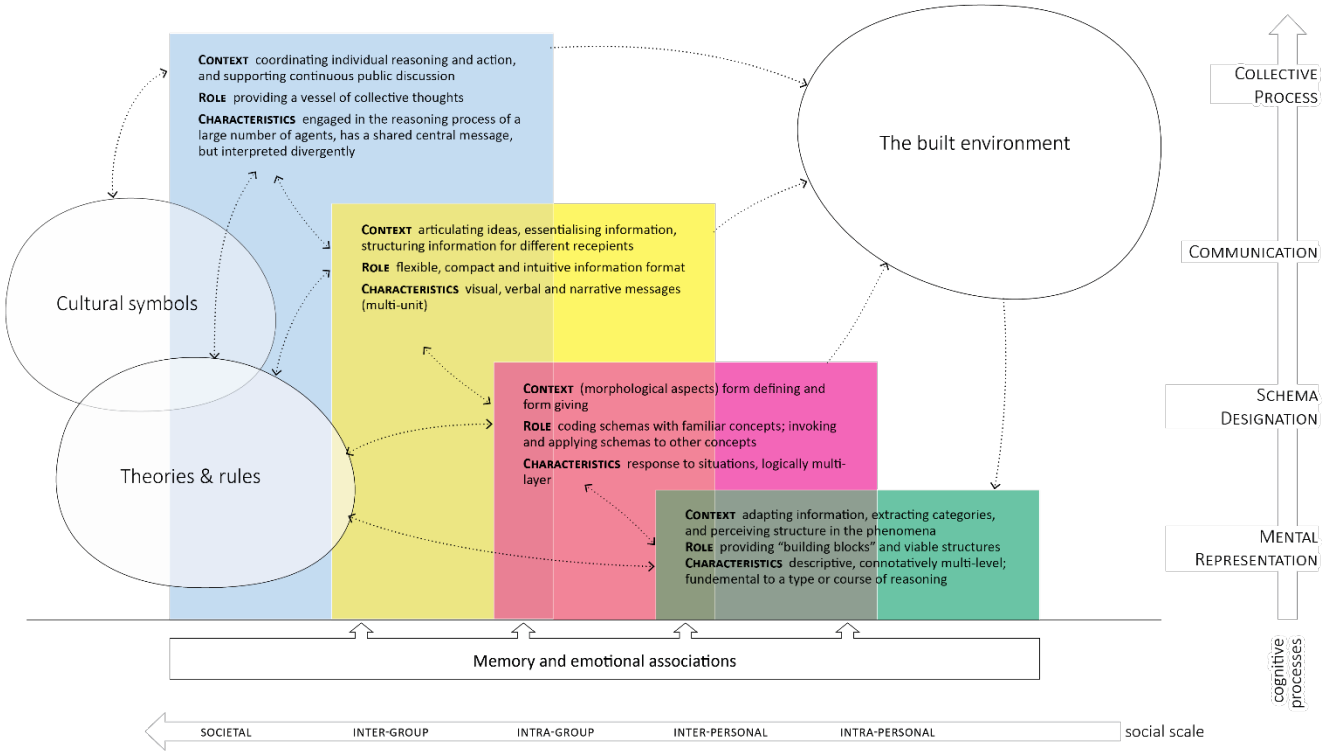
Different M-As *play different* ***roles*** *to support different* ***processes***.

*Different M-As play different **roles** to support different **processes***

Differentiating Characteristics

Mechanism (in context)

Cognitive processes in design & planning



Mental representation

Representing complex phenomena with the thinker's own knowledge, to achieve certain reasoning.

⇦ Information, scale, novel nature, etc.

The highway is a barrier between the two areas.

The shoreline is not a monolithic whole, but a thread with beads.

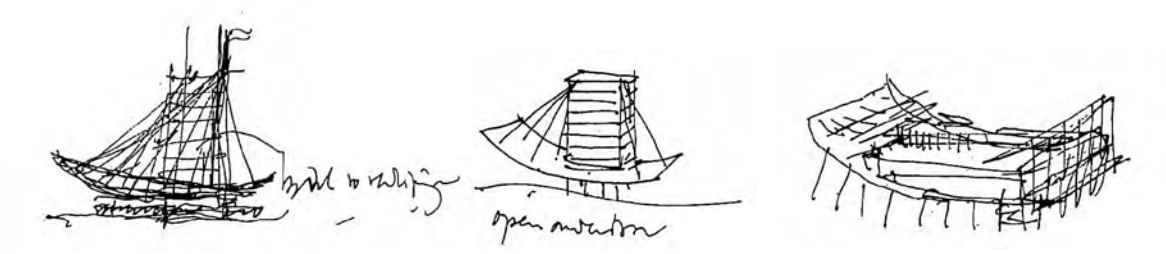
The highway experience is like that of music.

The Carpet Metropolis

Willem-Jan Neutelings, 1989

Mental representation

Representing complex phenomena with the thinker's own knowledge, to achieve certain reasoning.

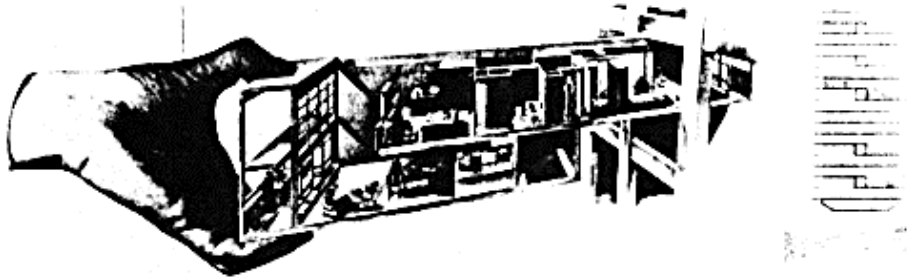


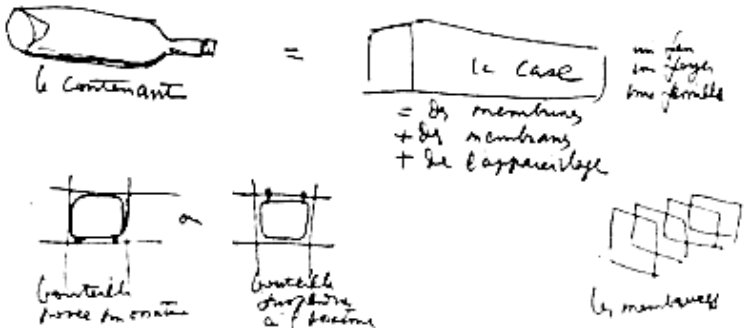
Schema* designation

Applying procedural knowledge to translate abstract needs into material objects (or the reverse).

*schema is procedural knowledge: something does something to achieve something

⇐ (For spatial design) variation, non-verbal, acquisition, organising & retrieval of knowledge





Unite d'Habitation

Le Corbusier

Mental representation

Representing complex phenomena with the thinker's own knowledge, to achieve certain reasoning.

Schema* designation

Applying procedural knowledge to translate abstract needs into material objects (or the reverse).

Communication

Conveying the essence of design/planning in common terms; interpreting cross-disciplinary ideas.

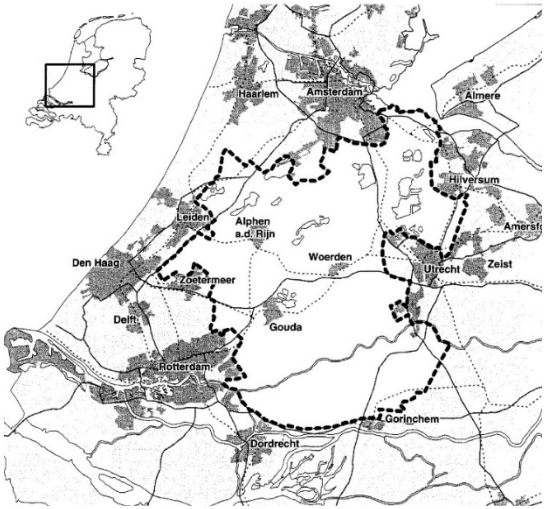

Het Parool HOME AMSTERDAM STADSGIDS OPINIE

En zo wordt Noord het Manhattan aan het IJ

Zo ziet de IJ-oever in Amsterdam Noord er in 2019 uit. Naast de A'damtoren (voorheen van Shell) komen twee woontorens en een hoteltoren van congreshotel Maritim (rechts). Uiterst links filmmuseum Eye. © Team V Architectuur

Making explicit, synthesising; implications, limits

The Green Heart
of West Holland



se metropool dankt aan zijn histor
grotere en kleinere agglomeraties, el
bied als het groene hart van het g
kunnen aangeven voor de oploss

Sandpile model
Metabolism

Mental representation

Representing complex phenomena with the thinker's own knowledge, to achieve certain reasoning.

Schema* designation

Applying procedural knowledge to translate abstract needs into material objects (or the reverse).

Communication

Conveying the essence of design/planning in common terms; interpreting cross-disciplinary ideas.

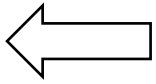
Collective process

Through which the collective imposes control and plans on its large-scale environment.

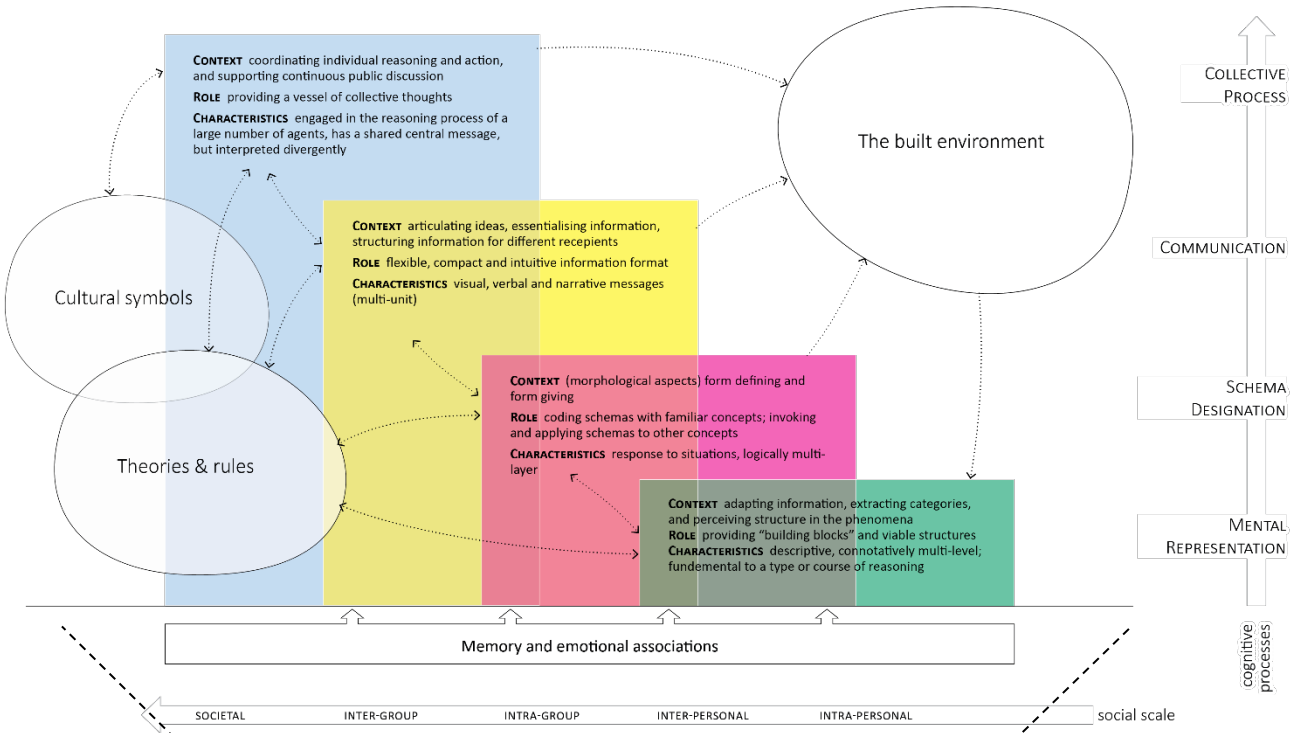
The Green Heart of West Holland

The Finger Plan of the Greater Copenhagen

A "vessel" concept for collective interaction



conscious agents, individual reasoning, organised action, collective reflection



Categories are inter-connected; M-A mode exits into other modes.

Looking from the outside at a distance reveals how parts fit together as a whole; but looking inside reveals how it works

But how?

Design Dyna-mics

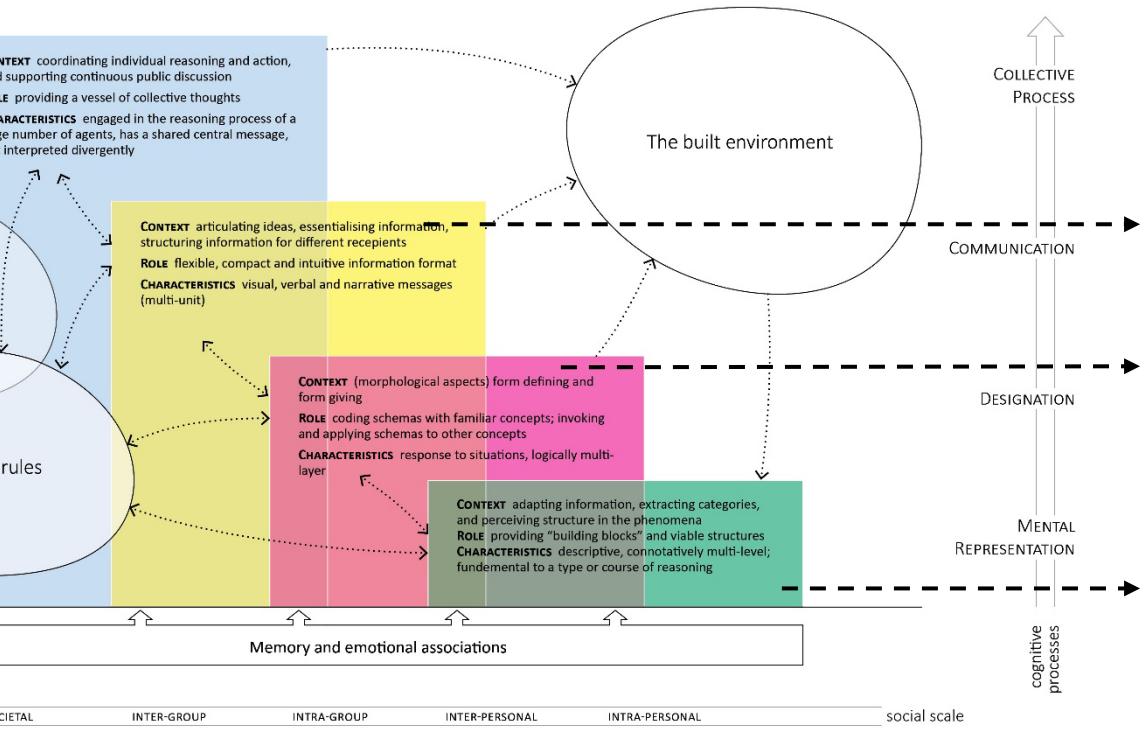
Theory construction as design.

Mechanisms

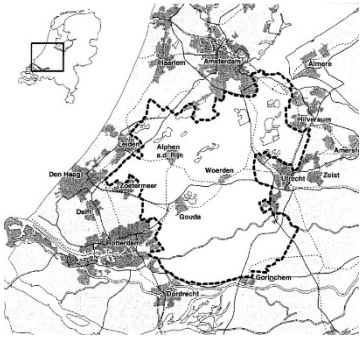
Patterns

Dynamics of phenomena

Chap. 3 COGNITIVE PATTERNS IN M-A THINKING

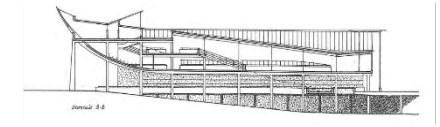


The Green Heart



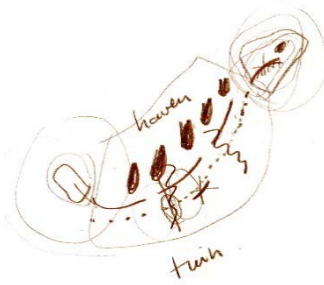
Building as Ship on Water

Amstelveen city centre library design by Hans Ruijssenaars (Atelier Quadrat)

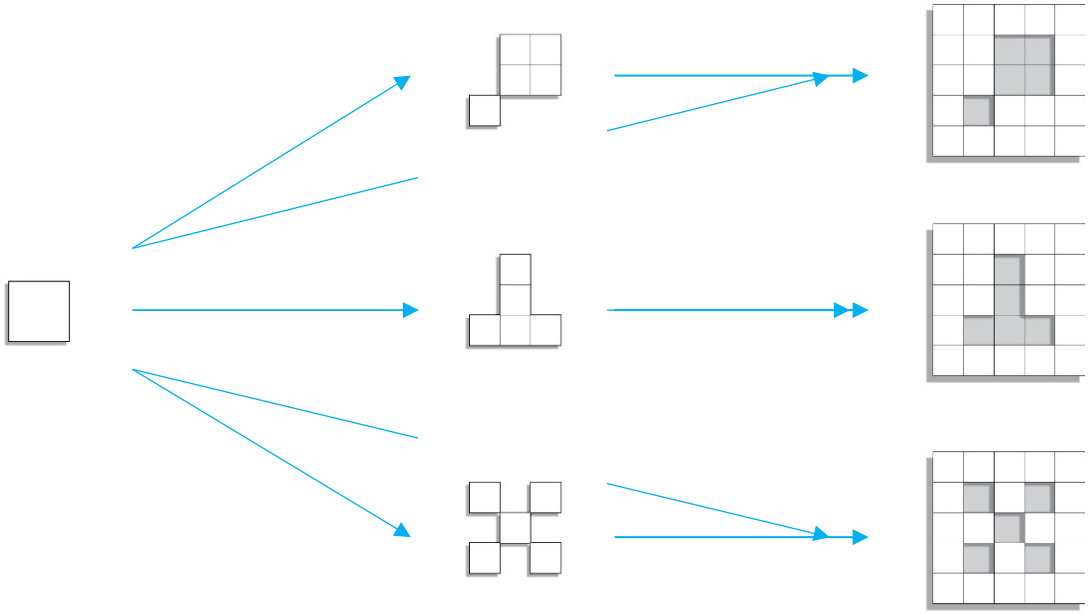


Rotterdam South as a Fish

from cultural-historical survey of pre-war neighbourhoods in Rotterdam South by Els Bet



*Three **cognitive patterns** that build up complex M-As from basic building blocks.*



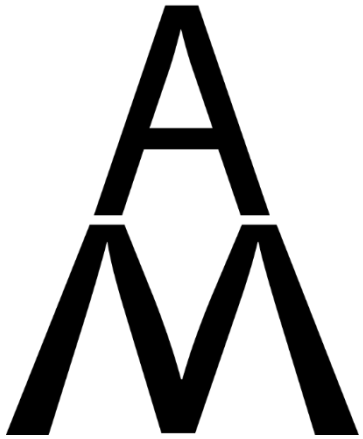
- Accounts for the different characteristics of M-As, and how one thinking mechanism fits into various situations.
- Reveals the manoeuvrability—or, the window for creativity—in making M-As.

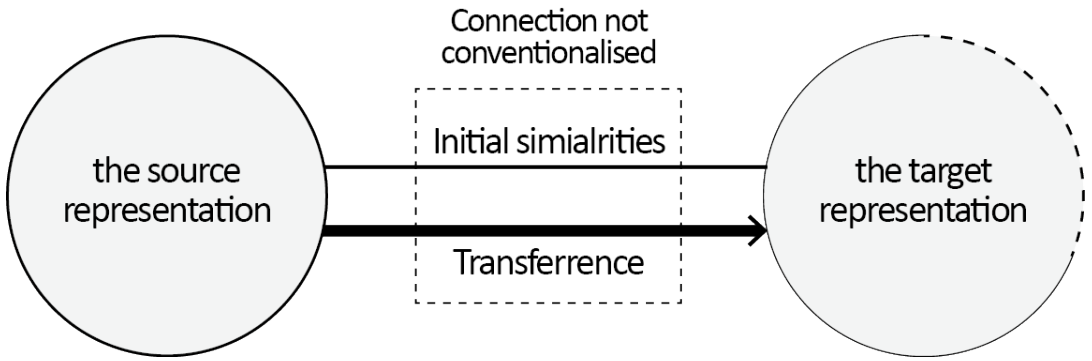
1. BASIC FORM

Simultaneously involving two concepts, one better known than the other;

Contents of the better known one is transferred to the other, creating inferences or reasoning possibilities;

The transference is guided by similarities between them.

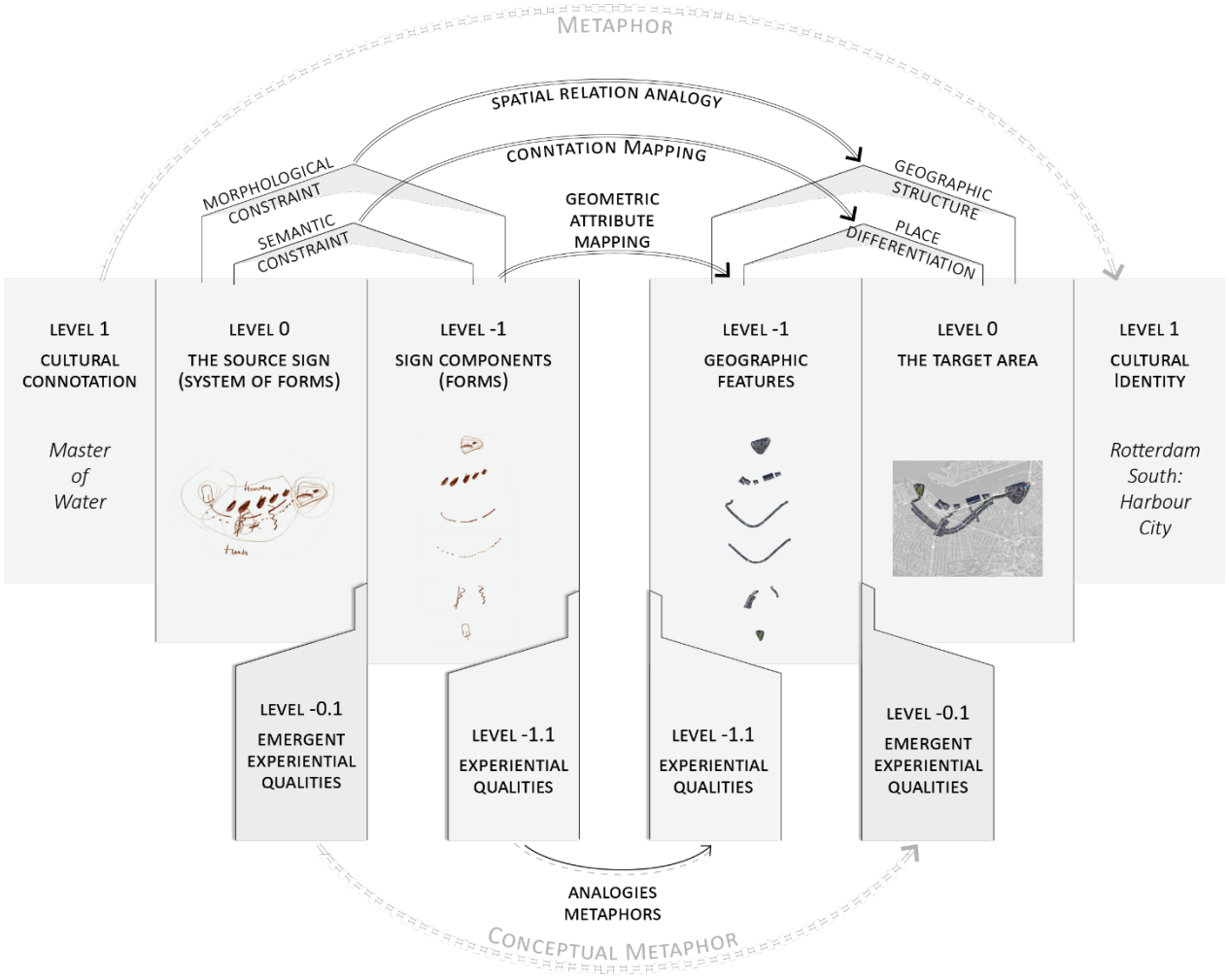




2. PATTERNS

Multi-level

Multiple levels of meanings regarding the same objects are superposed.



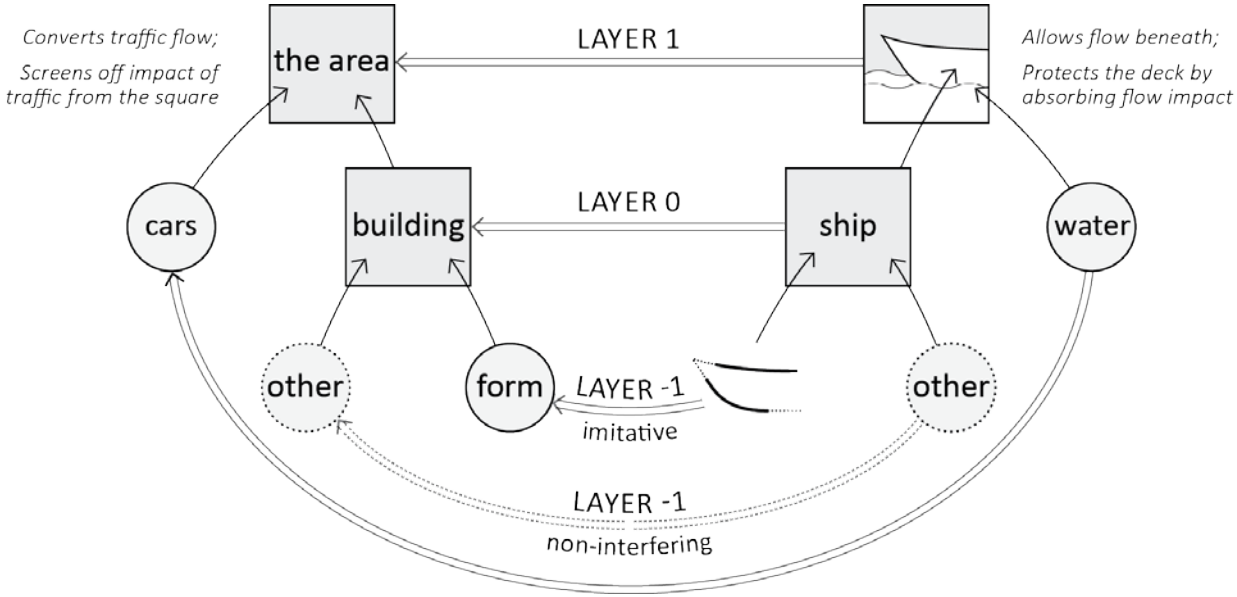
2. PATTERNS

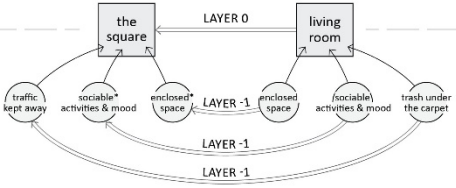
Multi-level

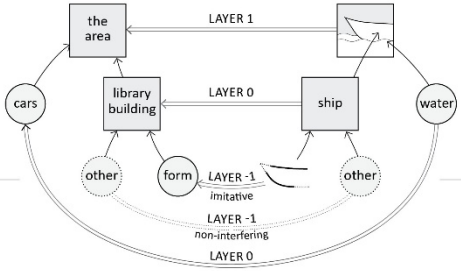
Multiple levels of meaning regarding the same objects are superposed.

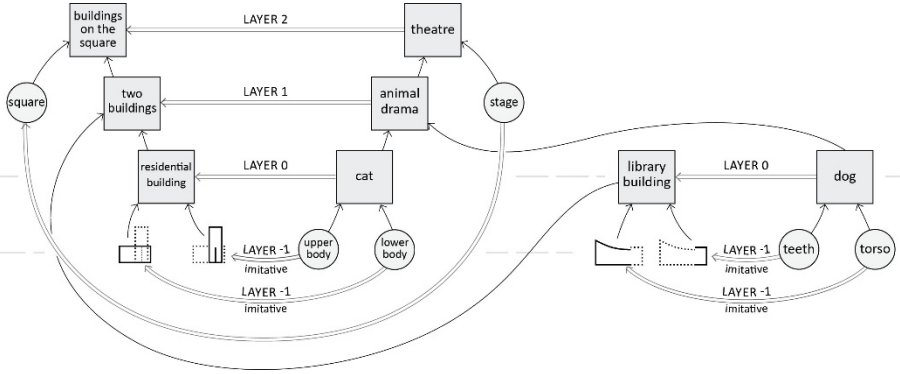
Multi-layer

Objects take up different roles in a logical hierarchy to form one narrative.









2. PATTERNS

Multi-level

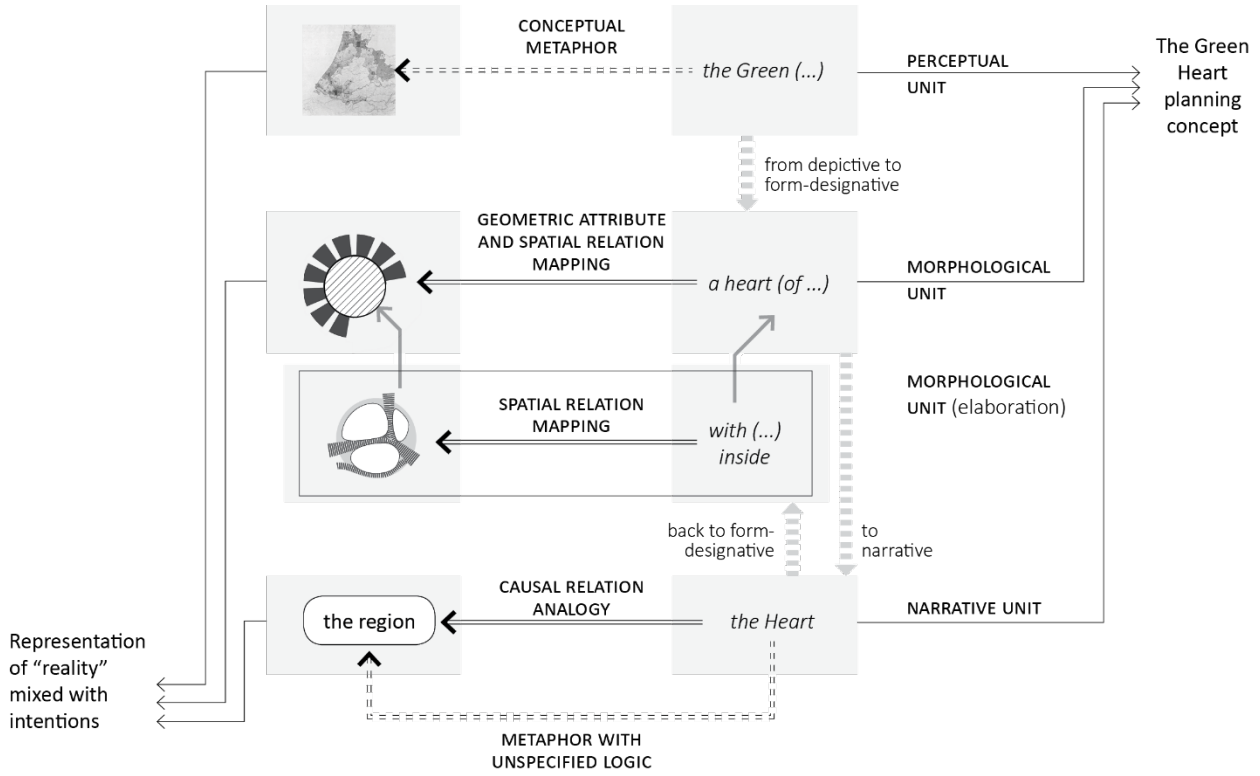
Multiple levels of meaning regarding the same objects are superposed.

Multi-layer

Objects take up different roles in a logical hierarchy to form one narrative.

Multi-unit

Units are relatively independent M-As and have complementary relationships.



2. PATTERNS

Multi-level

Multiple levels of meaning regarding the same objects are superposed.

Multi-layer

Objects take up different roles in a logical hierarchy to form one narrative.

Multi-unit

Units are relatively independent M-As and have complementary relationships.

3. TRANSFORMATION

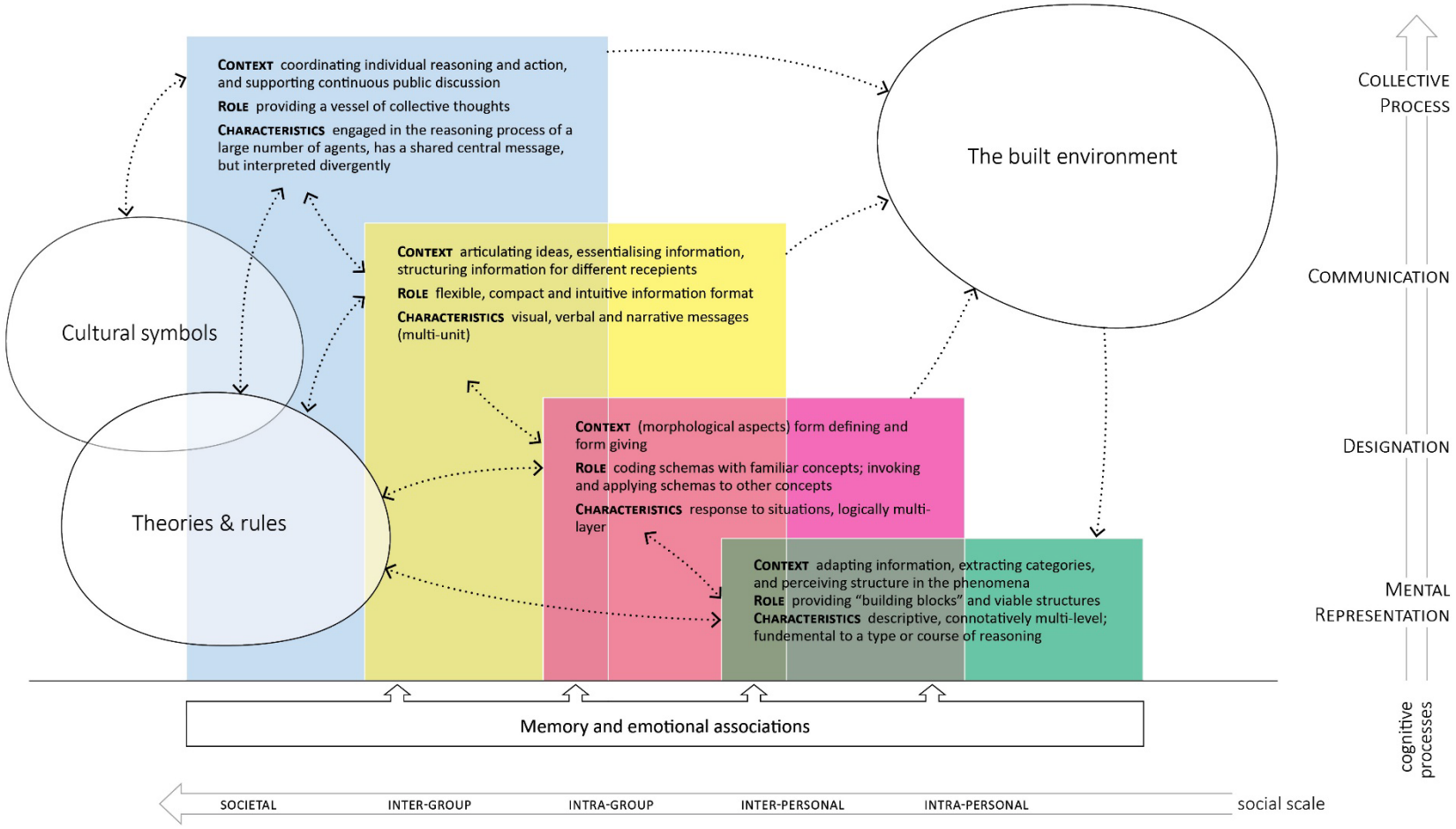
Schematising

The context–response relationships among objects are identified so that a matched context can prompt the transfer of the response.

Developing verbal narrative

The narrative is made more prominent as a relatively independent unit (often by naming).

4. INSTANTIATING LINKS through case studies

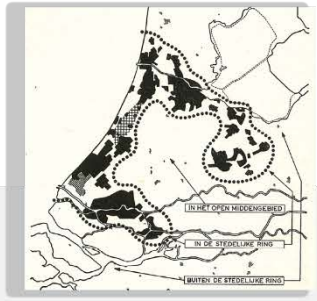


LONG-TERM

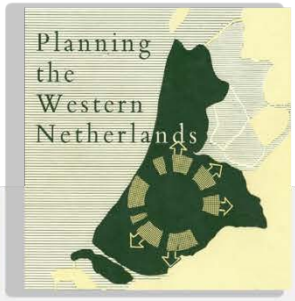
Transformations of the Green Heart

1924, mapping urbanisation pattern[2]

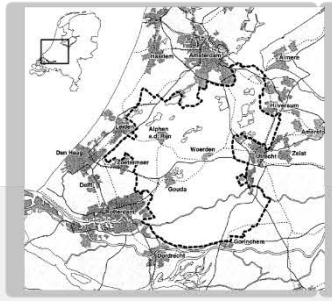
ca. 1935, "randstad" named by KLM founder A. Plesman[3]



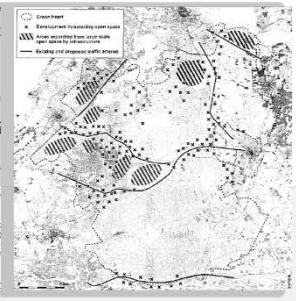
1958, "green heart" = the open central space/Hollands-Utrechtse weidegebied[4]



1966, Greenheart Metropolis[5]



1990, Borders designated by VINEX[7]



1995, Public debate on the concept[6, 7, 8]

2004, A differentiated Green Heart[3]

PRECONSCIOUS STAGE

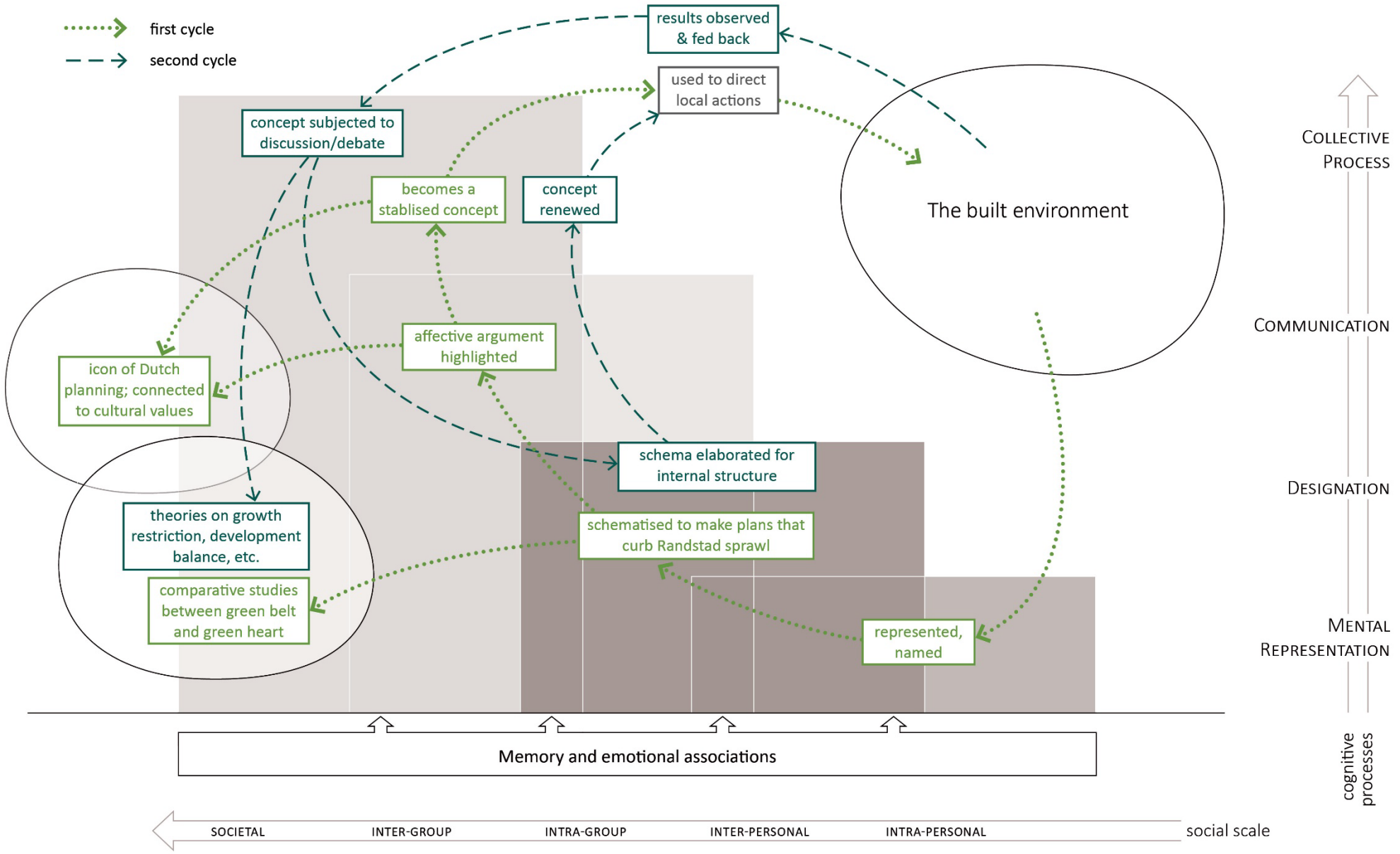
'30S–'50S AWARENESS

'60S, '70S PRESERVATIVE POLICY, AND GROWING INTERNATIONAL FAME

'80S, '90S DOUBTS, OPPSITION

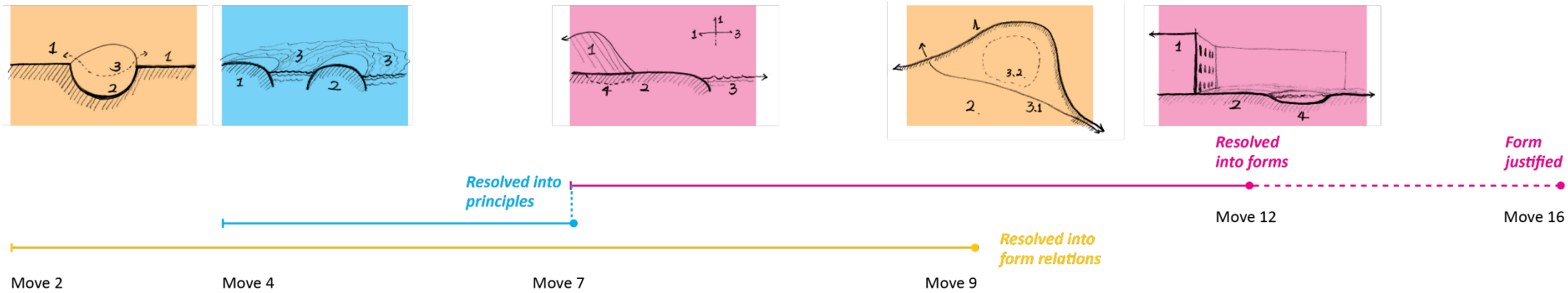
MID-'90S ON, CALL FOR REALISTIC MEASURES, AND CONCEPT RENEWAL

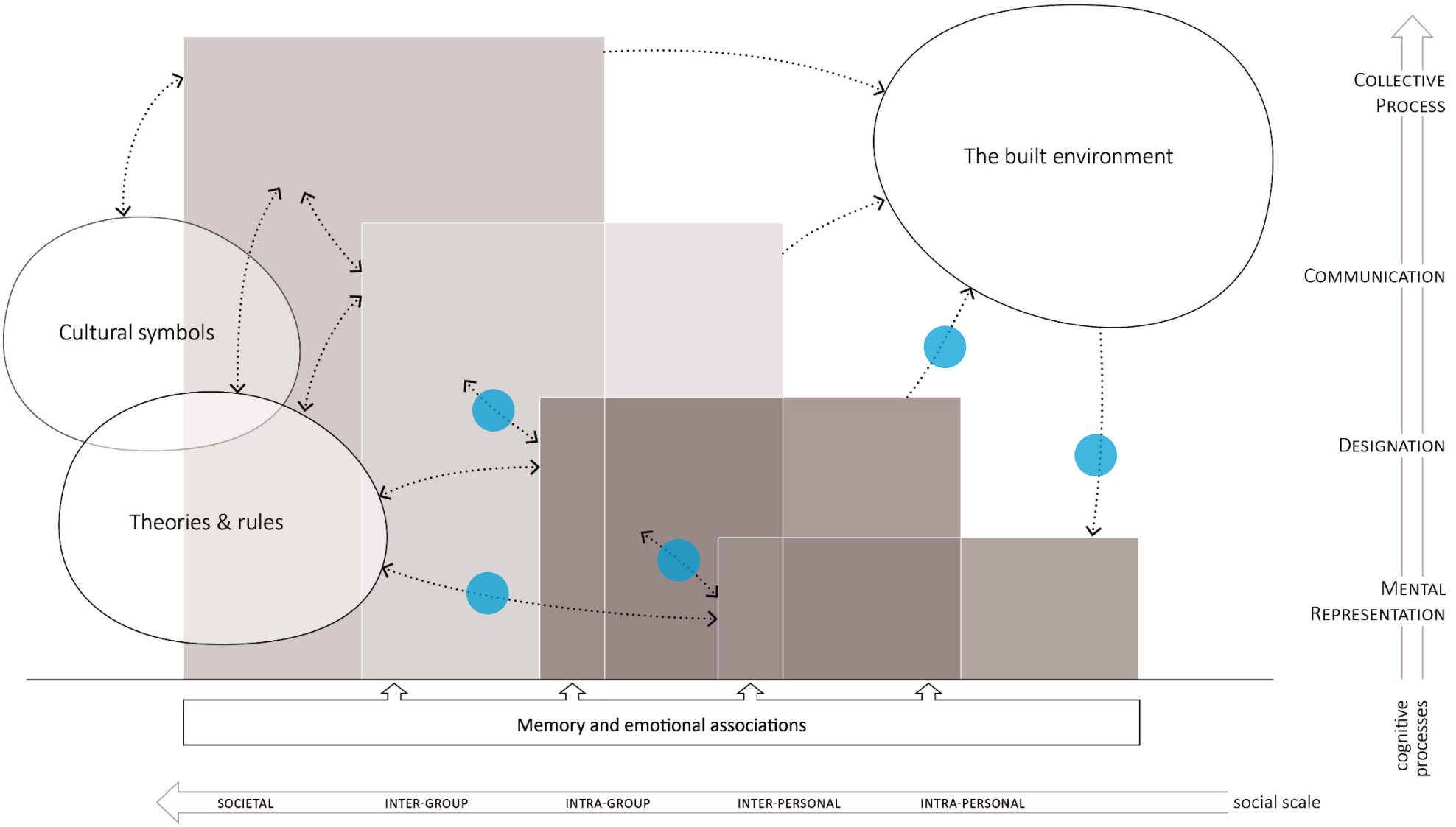
2000S DECLINE OF NATIONAL PLANNING


first cycle
second cycle
results observed & fed back
used to direct local actions
concept subjected to discussion/debate
becomes a stablised concept
concept renewed
The built environment
affective argument highlighted
icon of Dutch planning; connected to cultural values
schema elaborated for internal structure
theories on growth restriction, development balance, etc.
schematised to make plans that curb Randstad sprawl
comparative studies between green belt and green heart
represented, named
Memory and emotional associations
COLLECTIVE PROCESS
COMMUNICATION
DESIGNATION
MENTAL REPRESENTATION
cognitive processes
SOCIETAL
INTER-GROUP
INTRA-GROUP
INTER-PERSONAL
INTRA-PERSONAL
social scale

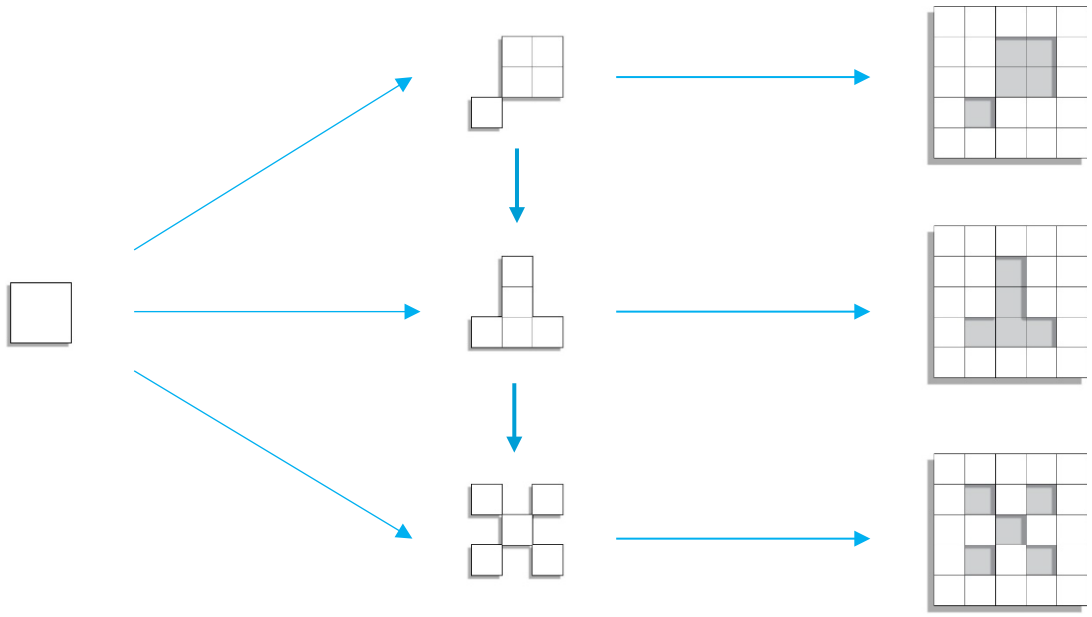
DESIGN CYCLE

Capelse Put by Frits Palmboom, 1981




The built environment
Cultural symbols
Theories & rules
Memory and emotional associations
COLLECTIVE PROCESS
COMMUNICATION
DESIGNATION
MENTAL REPRESENTATION
cognitive processes
SOCIETAL
INTER-GROUP
INTRA-GROUP
INTER-PERSONAL
INTRA-PERSONAL
social scale

Design creativity is not just about generating ideas from our own direct experiences, but also ***appropriating*** *and* ***transforming*** *existing ideas.*



Expe-
rience

Addressing practical perspectives as experience of theoretical work.

Interpretation

Find out the implications and opportunities of M-As by giving them context.

Rotterdam as Islands/Floes

The human body metaphor
in urban metabolism

Rotterdam Circular Economy Conference (2014)

- ***Islands***—*isolation: design for accessibility*
- ***Floes***—*homogeneous, segregated parts: modify the dividing structure*
- ***Archipelago***—*diverse, complementary parts: harmonious interaction*

Interpretation

Find out the implications and opportunities of M-As by giving them context.

Analysis

Dealing with complex cases: a series of paradigms for reflection on & in action.

Rotterdam East as Landscape
by Frit Palmboom, 1981

Interpretation

Find out the implications and opportunities of M-As by giving them context.

Analysis

Dealing with complex cases: a series of paradigms for reflection on & in action.

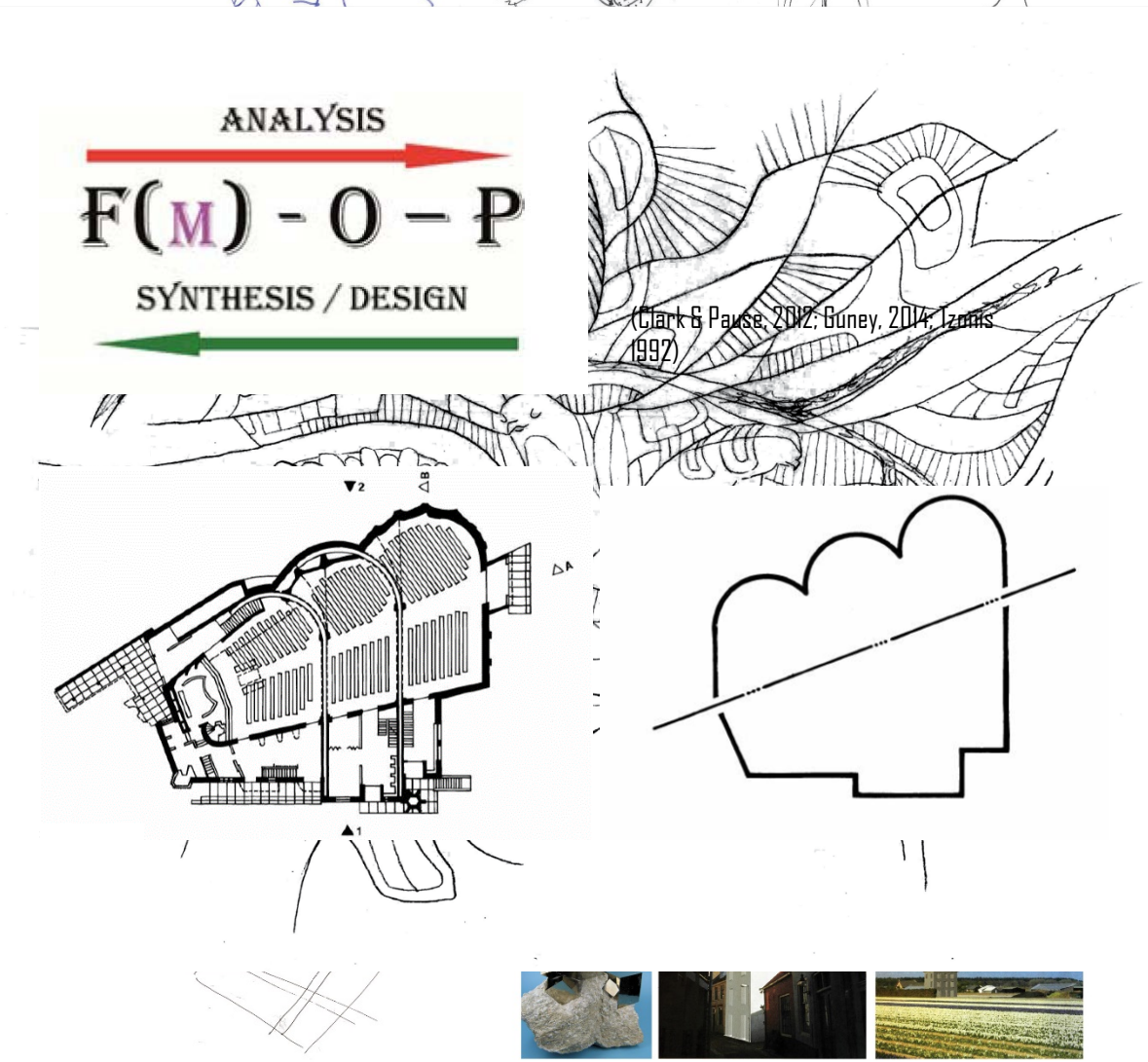
Making

Reference patterns for inspiration and self-reflection.

What ***source*** analogues does each designer tend to use?

Playing with the ***limits of common sense***

Method/system for routine analogies



One way or another, we all have to deal with M-A thinking.

Education should not just *teach*, but *teach about*. It needs to explain the phenomena, and present the possibilities.

What questions can be answered by a course in M-A, based on this research?

Why is M-A thinking practised in urbanism?

How does it meet the various needs in urbanism?

What characteristics do the M-As of different roles have?

How to synthesise knowledge in correspondence to phenomena with M-A?

How to interpret descriptive M-As and develop them into design intentions?

What are the general focuses in schemas of urban designers/planners?

How do they develop and use them?

How to interpret cross-disciplinary concepts critically and find out their limits of validity?

How to synthesise information in correspondence to design/planning intention?

What historical lessons do we have on (un)anticipated societal outcome caused by M-A interpretation?

How are M-As transformed to support various cognitive processes?

Why is M-A thinking practised in urbanism?

How does it support design, planning and theorisation?

What characteristics do M-As have?

What cognitive patterns underlie their differences?

Implications for our evaluation of intellectual works, our focus in education,
and the way technology should support us.