Co-Creating Sustainable Cities;

Using Design to Facilitate Transitions

Dr.ir. Jotte de Koning TUDelft

Co-Creating Sustainable Cities;

Using Design to Facilitate Transitions

Dr.ir. Jotte de Koning, TUDelft

Dr.ir. Jotte de Koning

Work

- 2018 - now: *Assistant Professor* Design for Sustainability Transitions
- 2016 - 2018: *Postdoc* at DRIFT, Dutch Research Institute for Transitions
- 2012 - 2016: *PhD* at TUDelft/Bach Khoa Vietnam: Sustainable Food by Design
- 2009 - 2012: *MSc* in Strategic Product Design
- 2005 - 2009: *BSc* in Industrial Design Engineering

Life

- Bike enthusaist
- Passionate home cook
- Mother of 4 kids (including twins)
- My mother tongue is Dutch
- I like to learn other languages: I speak English, Italian, basic German, some Spanish and French, and I have tried to learn Vietnamese but failed

Co-Creating Sustainable Cities;

Using Design to Facilitate Transitions

Dr.ir. Jotte de Koning, TUDelft

University: Technical University Delft (TUD)
The Netherlands, ~~Amsterdam~~ Delft

TUDelft, 25000 students, 6000 employees

TU Delft

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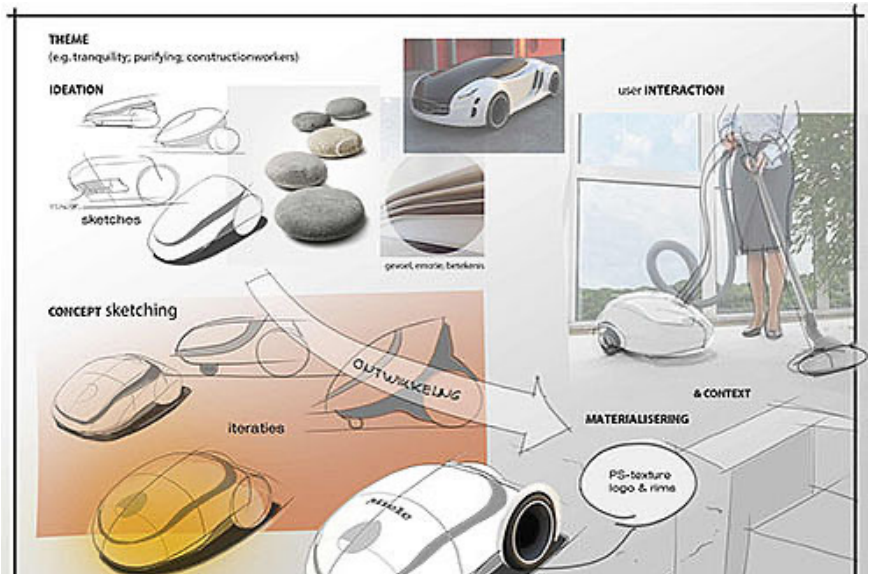
University: Technical University Delft (TUD)
The Netherlands, ~~Amsterdam~~ Delft

University: Technical University Delft (TUD)

Faculty: **Industrial Design Engineering** (IDE)



TUDelft, 25000 students, 6000 employees

Faculty of Industrial Design Engineering, 2000 students, 350 employees

University: Technical University Delft (TUD)

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Group: *Design for Sustainability (30 researchers)*

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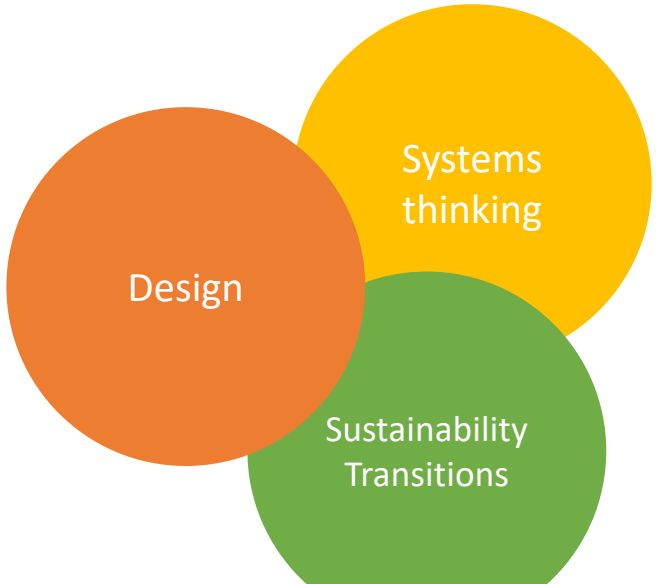

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Dr.ir. Jotte de Koning
Assitant professor *Design for Sustainability*
Systemic Design lab (director)
https://delftdesignlabs.org/systemic-design-lab

Part 1

Introduction: Co-creating sustainable cities

Part 2

Design, Systems thinking & Transition thinking

Part 3

Systemic Design: 4 types of design activities & example projects

Part 1

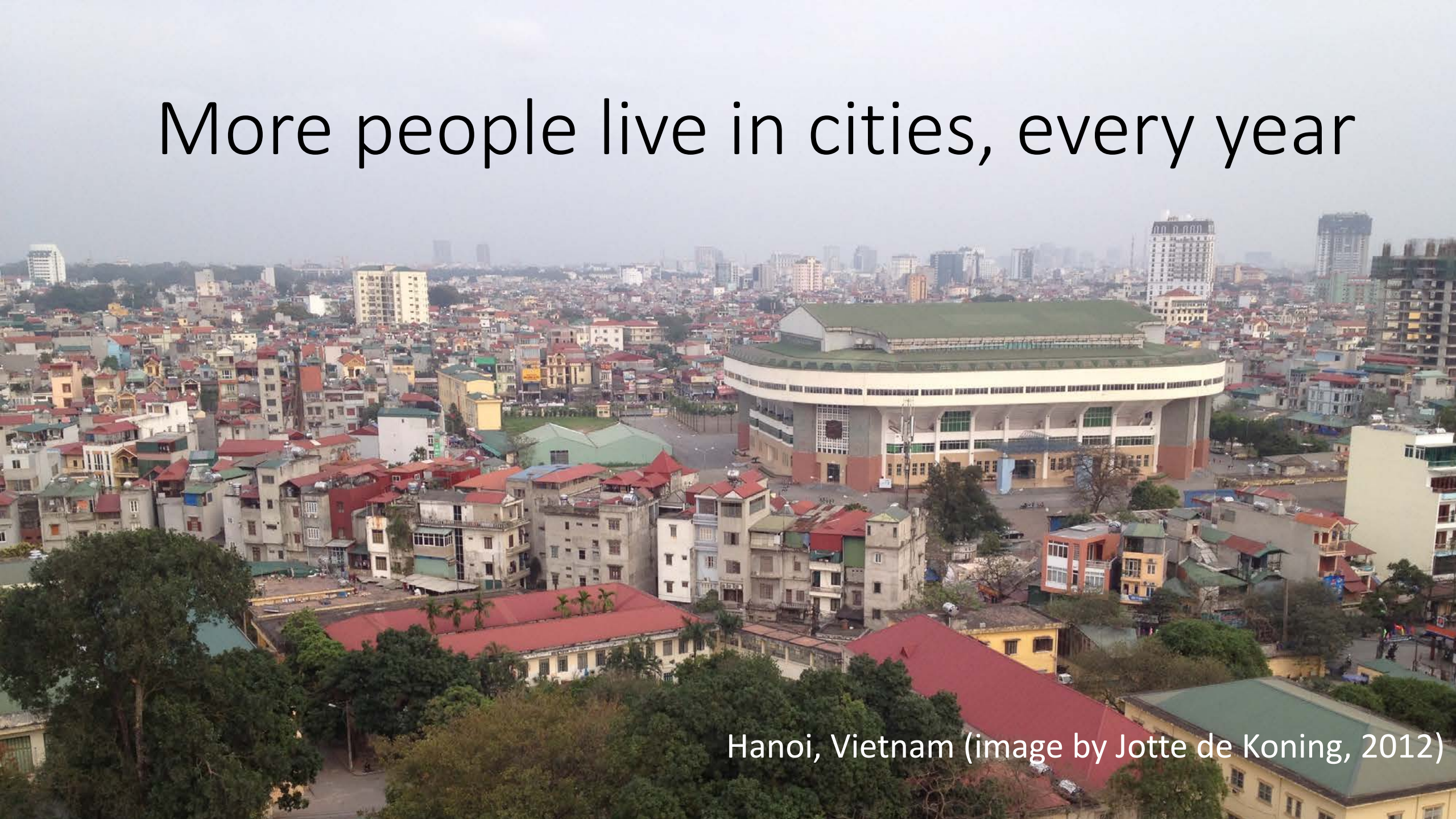
Introduction: Co-creating sustainable cities

Co-Creating Sustainable Cities;

Using Design to Facilitate Transitions

Dr.ir. Jotte de Koning TUDelft

More people live in cities, every year



Hanoi, Vietnam (image by Jotte de Koning, 2012)

Cities get bigger, more dense, every year

Barcelona, Spain (image by Jotte de Koning, 2010)

Cities are different all over the world

Wolsfburg, Germany (image by Jotte de Koning, 2011)

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What is a sustainable city?

- A city where people are healthy, with no poverty, CO2 emissions are low, availability of green spaces (for health, heat and pleasure), with comfortable housing, happy citizens, high levels of wellbeing, food security, etc.

Persistent problems

*"Persistent problems are related to the **system failures** that crept into our **societal systems***

and that contrary to market failures, cannot be corrected by the market or current policies.

*System failures are **locked-in flaws** in our societal structures, such as technological bias, weak or dominant networks, institutional barriers, and path dependencies."*

(Rotmans and Loorbach, 2010)

Persistent problems are:

Complex because they are deeply embedded in our societal structures;

Uncertain due to the hardly reducible structural uncertainty they include;

Difficult to manage, with a variety of actors with diverse interests involved;

Hard to grasp in the sense that they are difficult to interpret and ill structured

(Dirven et al. 2002).

Cities are made by people

Urban planners, architects, policy makers, citizens, builders, gardeners, garbage collectors, doctors, etc

Milan, Italy (image by Jotte de Koning, 2008)

We need to work together, *create* together

TO MAKE MORE SUSTAINABLE CITIES

Co-Creating ***Sustainable Cities;***

Using Design to Facilitate Transitions

Dr.ir. Jotte de Koning, TUDelft

Co-creation
= intentional creation together

Co-creation / Co-design = my area of expertise

sustainability

MDPI

Article

Co-Creation Dynamics in Urban Living Labs

Emma Puerari [1,2,*], Jotte I. J. C. de Koning [1,2], Timo von Wirth [2], Philip M. Karré [3,4], Ingrid J. Mulder [1] and Derk A. Loorbach [2]

1 Faculty of Industrial Design Engineering, Delft University of Technology, 2628 CE Delft, The Netherlands; jotte.dekoning@tudelft.nl (J.I.J.C.d.K.); i.j.mulder@tudelft.nl (I.J.M.)
2 Dutch Research Institute for Transitions (DRIFT), Erasmus University Rotterdam, 3062 PA Rotterdam, The Netherlands; vonwirth@drift.eur.nl (T.v.W.); loorbach@drift.eur.nl (D.A.L.)
3 Research Group City Dynamics, Inholland University of Applied Sciences, 3072 AG Rotterdam, The Netherlands; karre@essb.eur.nl
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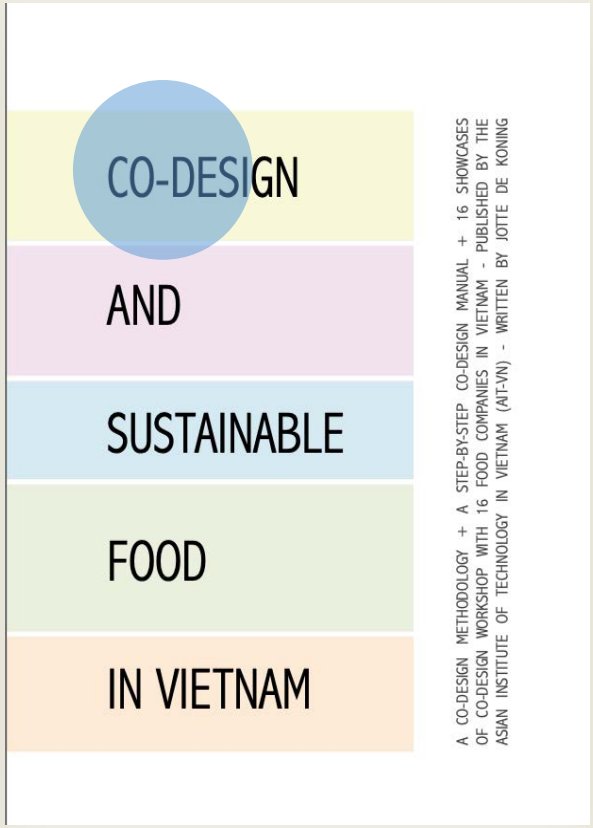
check for updates

Abstract: Citizens and urban policy makers are experimenting with collaborative ways to tackle wicked urban issues, such as today's sustainability challenges. In this article, we consider one particular way of collaboration in an experimental setting: Urban Living Labs (ULLs). ULLs are understood as spatially embedded sites for the co-creation of knowledge and solutions by conducting local experiments. As such, ULLs are supposed to offer an arena for reflexive, adaptive, and multi-actor learning environments, where new practices of self-organization and novel (infra-) structures can be tested within their real-world context. Yet, it remains understudied how the co-creation of knowledge and practices actually takes place within ULLs, and how co-creation unfolds their impacts. Hence, this paper focuses on co-creation dynamics in urban living labs, its associated learning and knowledge generation, and how these possibly contribute to urban sustainability transitions. We analyzed empirical data from a series of in-depth interviews and were actively involved with ULLs in the Rotterdam-The Hague region in the Netherlands. Our findings show five distinct types of co-creation elements that relate to specific dynamics of participation, facilitation, and organization. We conclude with a discussion on the ambivalent role of contextualized knowledge and the implications for sustainability transitions.

Keywords: sustainability transitions; urban innovation; participatory design and planning practices; co-creation; experimentation; Rotterdam

1. Introduction

Nowadays, citizens and urban policy makers are experimenting with new collaborative approaches to tackle persistent urban issues, such as climate change adaptation, quality of life, and urban inequalities [1,2]. Regular policy-centric approaches fail to address the root causes of such complex persistent problems; practices in the existing urban regimes are not able to give answers to the new demands and needs arising from these problems. Hence, new approaches are explored that help to ensure that the city is and remains a healthy place to live, providing a high quality of life, without depleting natural resources. In search for more effective action plans, citizens, public institutions, private sector, and knowledge institutions are increasingly teaming up in formal and informal networks. Such networks address various urban development topics, aimed at weaving different types of knowledge together while differing in their socio-spatial contexts and respective purposes. The emergence of these new urban networks is driven by two major trends. On the one hand,



CO-DESIGN

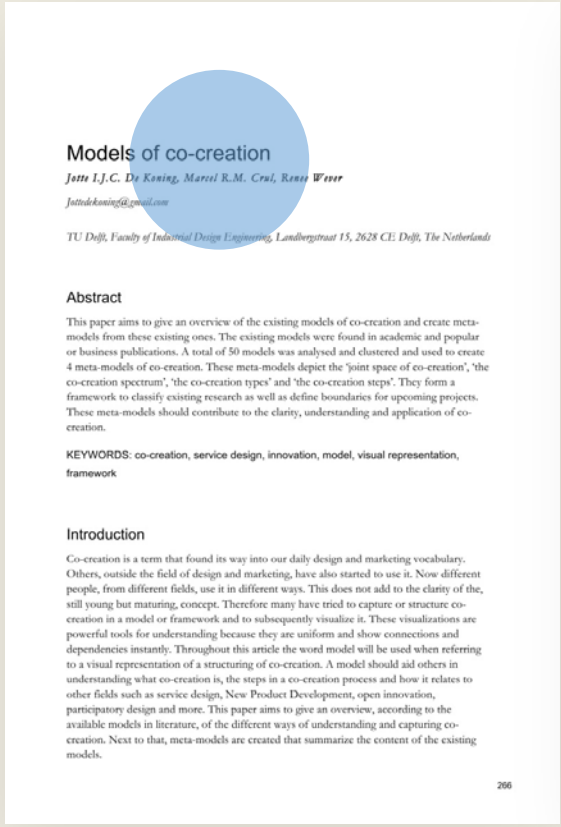
AND

SUSTAINABLE

FOOD

IN VIETNAM

A CO-DESIGN METHODOLOGY + A STEP-BY-STEP CO-DESIGN MANUAL + 16 SHOWCASES OF CO-DESIGN WORKSHOP WITH 16 FOOD COMPANIES IN VIETNAM - PUBLISHED BY THE ASIAN INSTITUTE OF TECHNOLOGY IN VIETNAM (AIT-VN) - WRITTEN BY JOTTE DE KONING



Models of co-creation

Jotte I.J.C. De Koning, Marcel R.M. Crul, Renee Wever

Jottedekoning@gmail.com

TU Delft, Faculty of Industrial Design Engineering, Landbergstraat 15, 2628 CE Delft, The Netherlands

Abstract

This paper aims to give an overview of the existing models of co-creation and create meta-models from these existing ones. The existing models were found in academic and popular or business publications. A total of 50 models was analysed and clustered and used to create 4 meta-models of co-creation. These meta-models depict the 'joint space of co-creation', 'the co-creation spectrum', 'the co-creation types' and 'the co-creation steps'. They form a framework to classify existing research as well as define boundaries for upcoming projects. These meta-models should contribute to the clarity, understanding and application of co-creation.

KEYWORDS: co-creation, service design, innovation, model, visual representation, framework

Introduction

Co-creation is a term that found its way into our daily design and marketing vocabulary. Others, outside the field of design and marketing, have also started to use it. Now different people, from different fields, use it in different ways. This does not add to the clarity of the, still young but maturing, concept. Therefore many have tried to capture or structure co-creation in a model or framework and to subsequently visualize it. These visualizations are powerful tools for understanding because they are uniform and show connections and dependencies instantly. Throughout this article the word model will be used when referring to a visual representation of a structuring of co-creation. A model should aid others in understanding what co-creation is, the steps in a co-creation process and how it relates to other fields such as service design, New Product Development, open innovation, participatory design and more. This paper aims to give an overview, according to the available models in literature, of the different ways of understanding and capturing co-creation. Next to that, meta-models are created that summarize the content of the existing models.

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JOTTE I. J. C. DE KONING
Delft University of Technology

Exploring co-creation with agri-food smallholders in Vietnam

ABSTRACT

The food system in Vietnam is changing whilst the middle class is growing. Agri-food smallholders have the strengths of responding to the changing needs of the middle class by offering freshness, proximity and convenience but they also face increasing competition from larger and international firms. At the same time, issues with food safety are prevalent and a rising concern among consumers. For this study we completed sixteen co-creation workshops between local agri-food smallholders and consumers. The goal of these workshops was to explore the value of participatory processes, non-hierarchical decision making and creativity for smallholder firms in Vietnam through co-creation workshops focused on sustainability. The outcomes show that the workshops can stimulate customer understanding and participatory processes among the smallholder businesses, but creativity in the form of novel ideas less so. The workshops did not result in directly feasible or manageable product and service concepts. The topic of sustainable food opened a dialogue: insights between the firms and customers on this topic were mutually rich. The outcomes suggest that co-creation workshops can create a sense of community and urgency for sustainability. In the future, the challenge for smallholders is to invest in participatory processes with a long-term view on sustainability as well as come to practical design outcomes on the short term.

KEYWORDS
participatory design
urban middle class
food
transitions
sustainable consumption
co-design
local knowledge

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Using Design to Facilitate Transitions

Dr.ir. Jotte de Koning, TUDelft

Designers
Designs
Design methods: Co-creation

Co-Creating Sustainable Cities;

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Designers
Designs
Design methods: Co-creation

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Sustainability Transitions

- 20-50 years
- Long term visions
- Short term interventions

Co-Creating Sustainable Cities;

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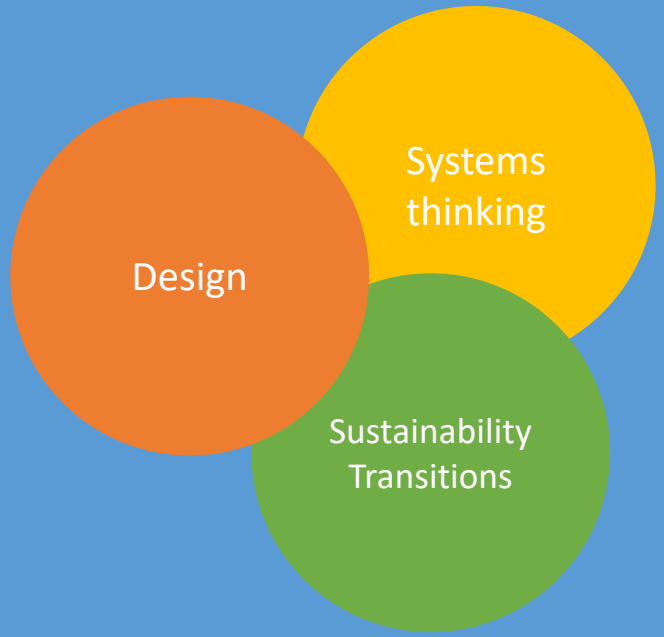
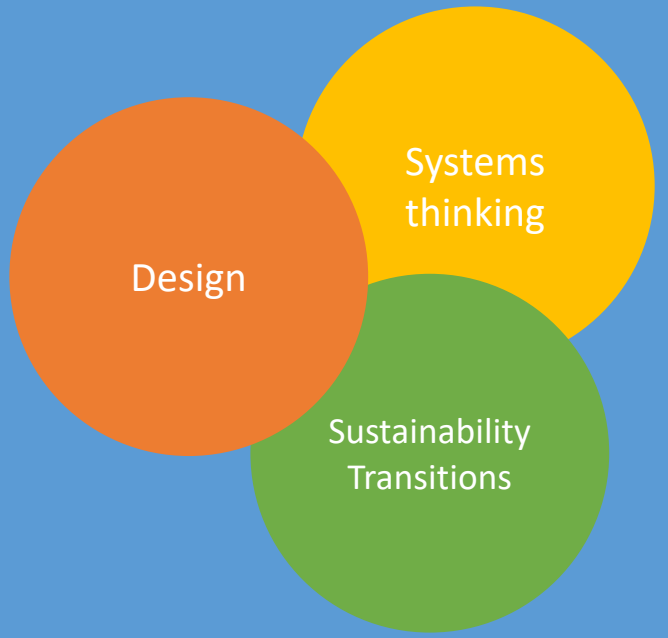
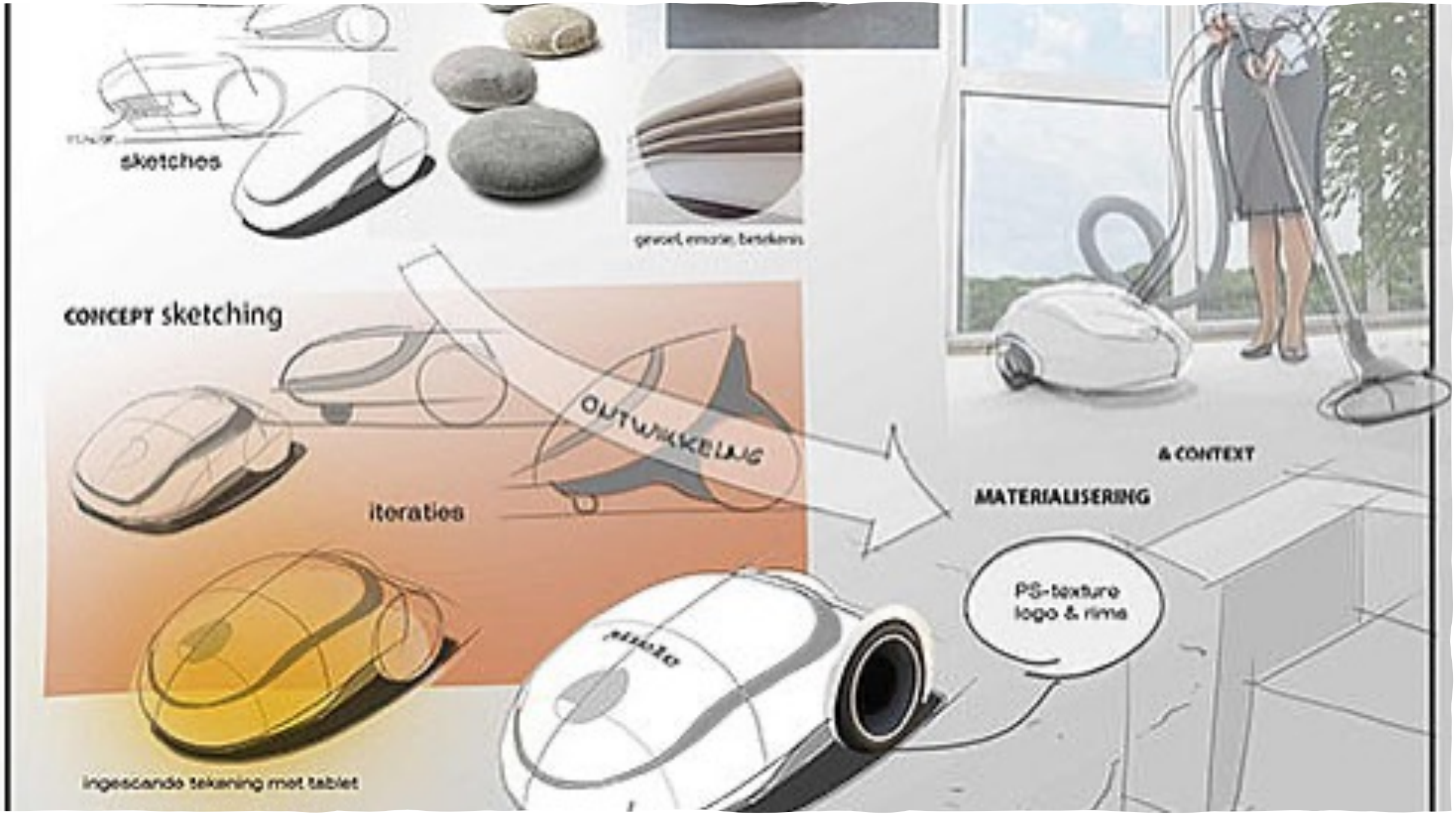


Part 2:

Design,
Systems thinking
& Transition thiking

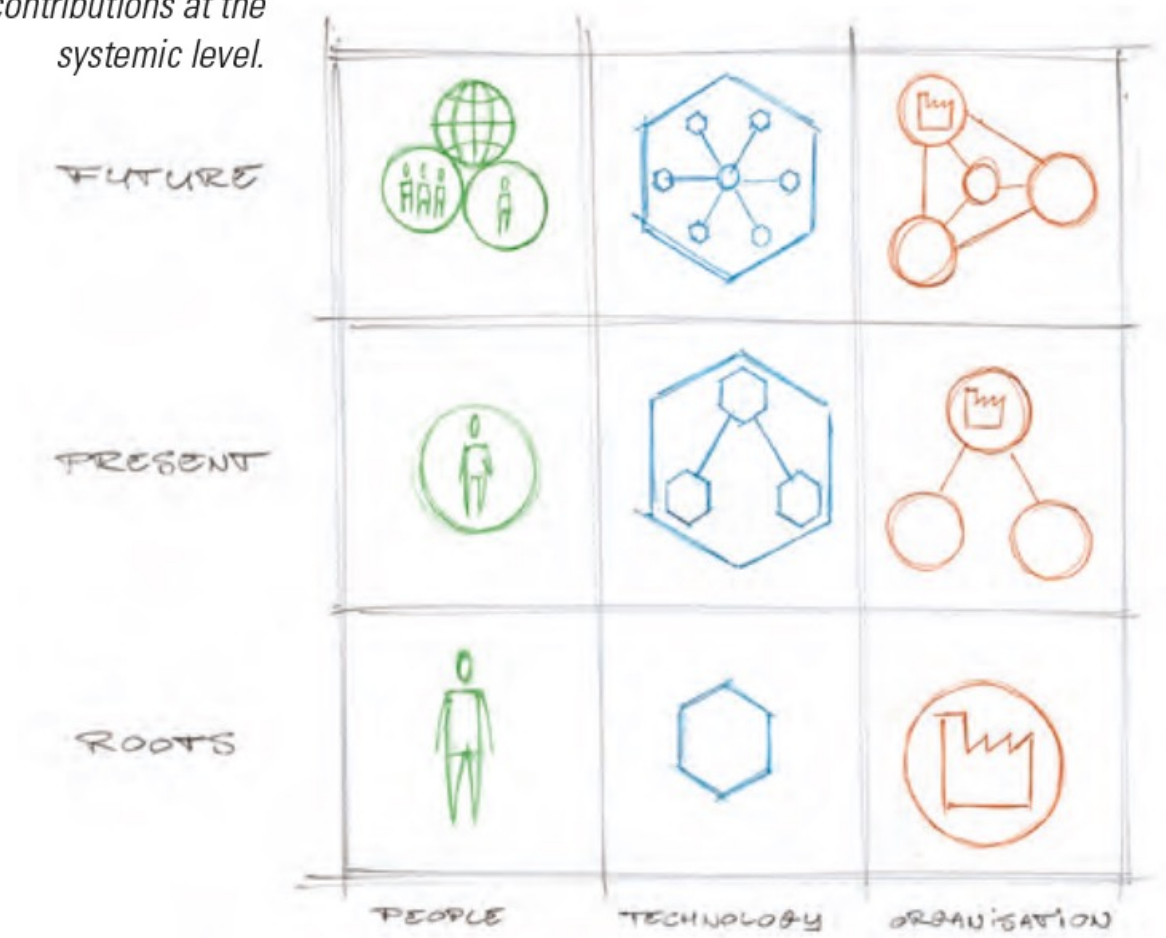



sketches
CONCEPT sketching
iteration
ingescande tekening met tablet
& CONTEXT
MATERIALISERING
PS-texture
logo & rims

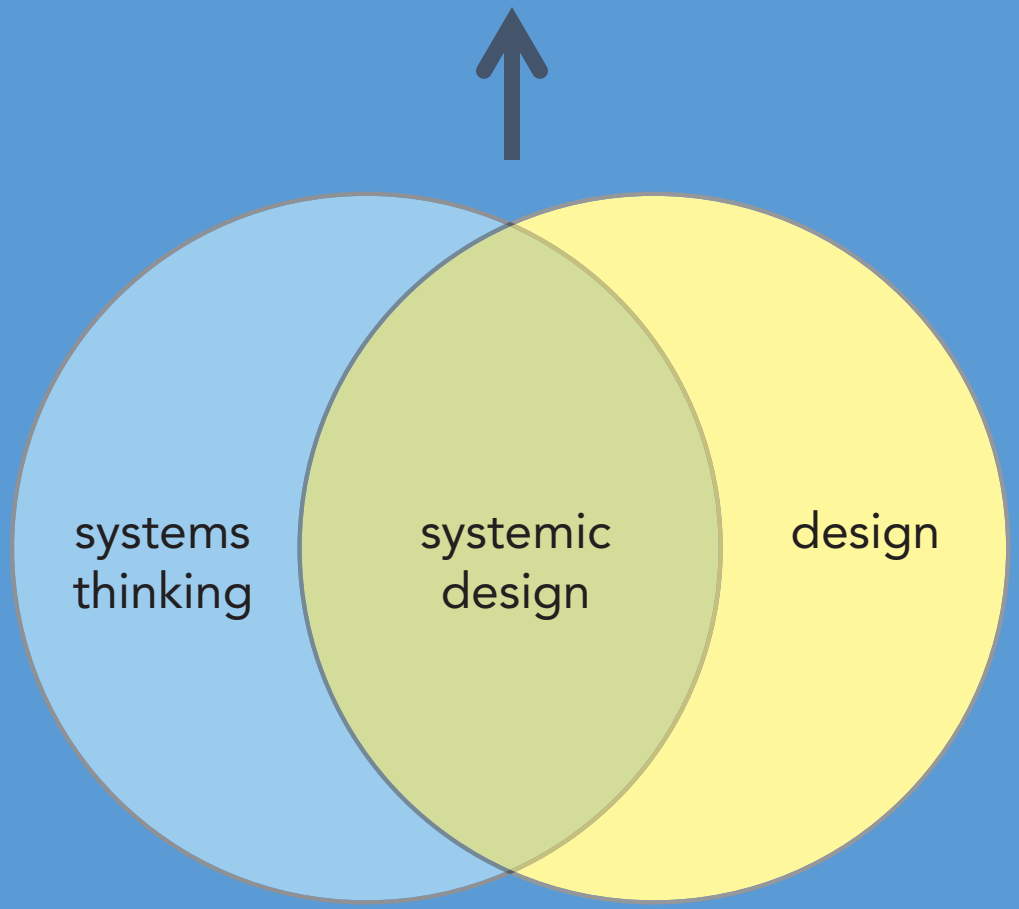
The field of design is moving from product to systems focused

Figure 2
The outcomes of design now also cover services and contributions at the systemic level.

Design is moving to the systemic level.
IDE research is matching this move.



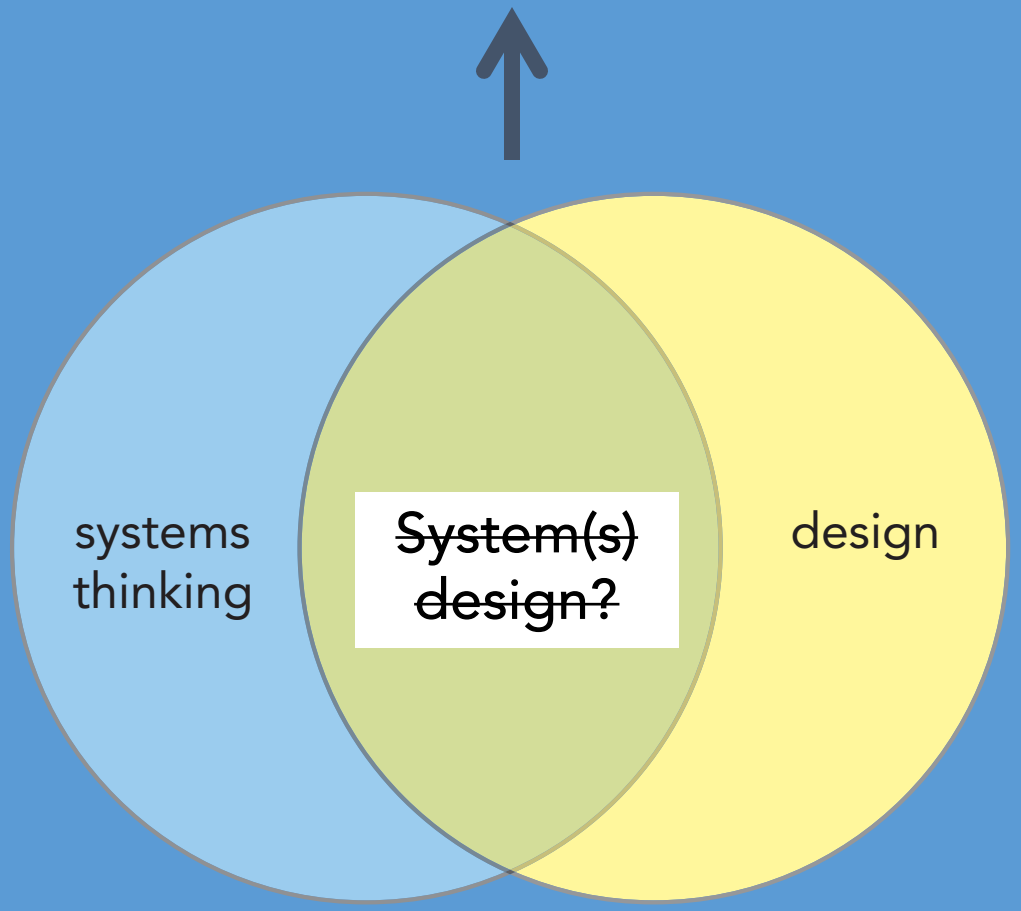
Complex societal challenges



Systemic Design Lab

Complex societal challenges

IT IS NOT SYSTEMS DESIGN



Systemic Design Lab

From systems design to systemic design

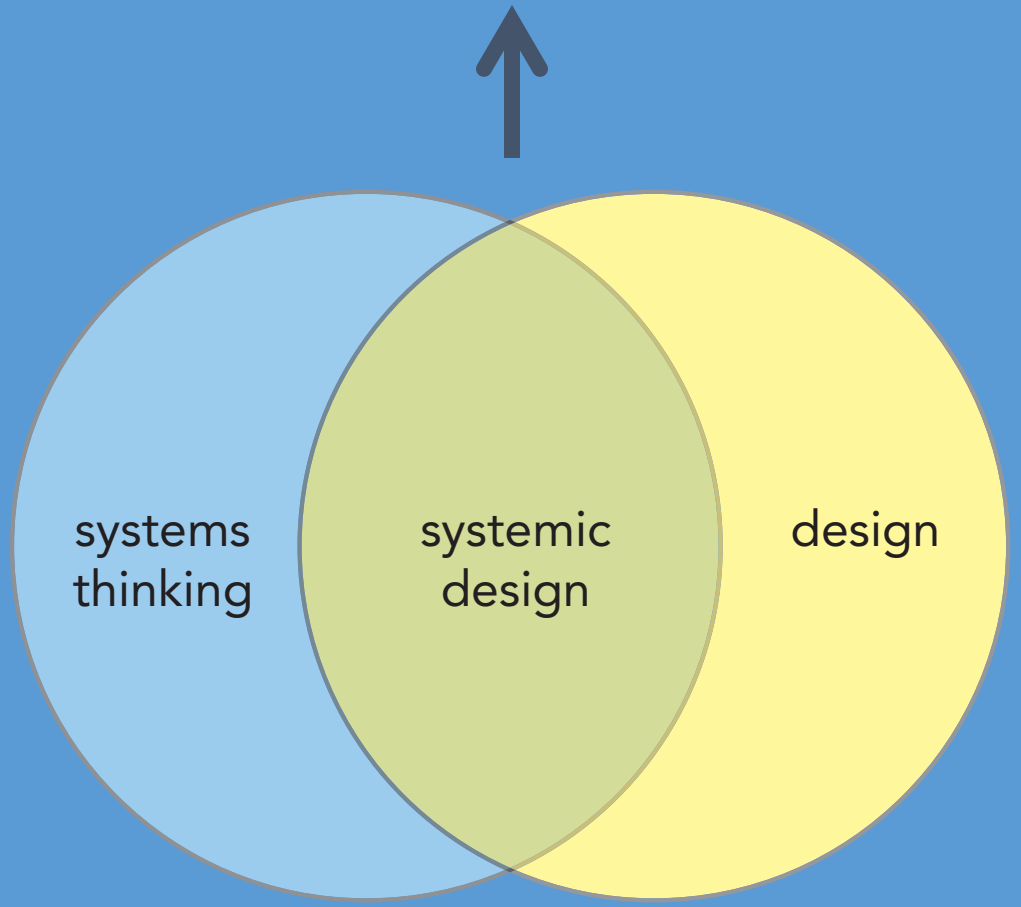
Complex societal challenges emerge from systems that:

- show complex behaviour
- are ”soft”: there is not one objective system
- have limits to what is ‘designable’

Systemic Design Lab

Systemic design

complex societal challenges



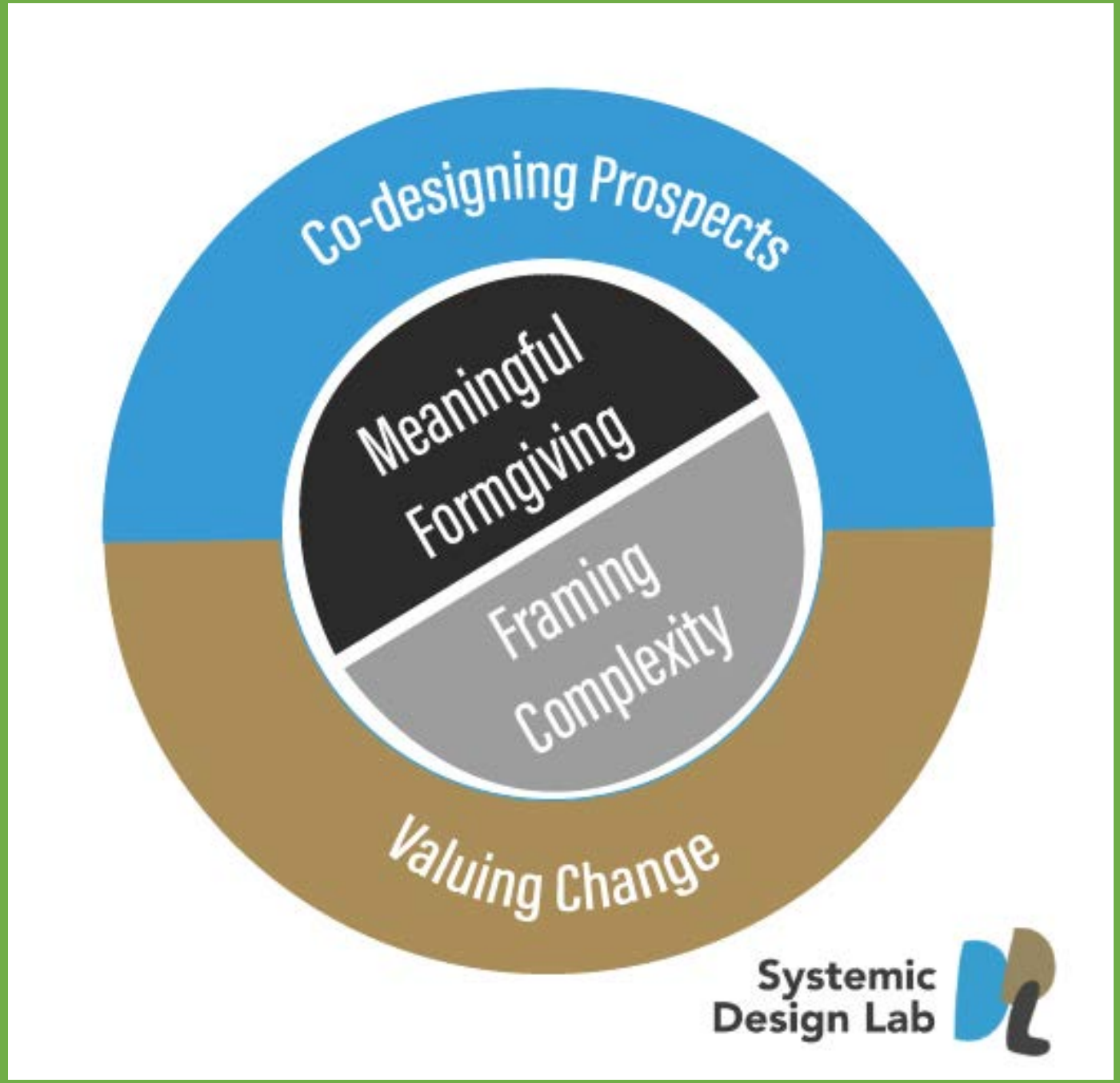
Systemic Design Lab

Part 3

Systemic Design: 4 types of design activities & some example projects

4 TYPES OF DESIGN ACTIVITIES

Systemic Design Lab Delft



1. Co-designing prospects

- Engage different people and their perspectives.
- Facilitate and show do not dominate.
- Be vocal about your inclusion strategy.
- Facilitate a system change, because you cannot change the system alone.

Participatory City Making

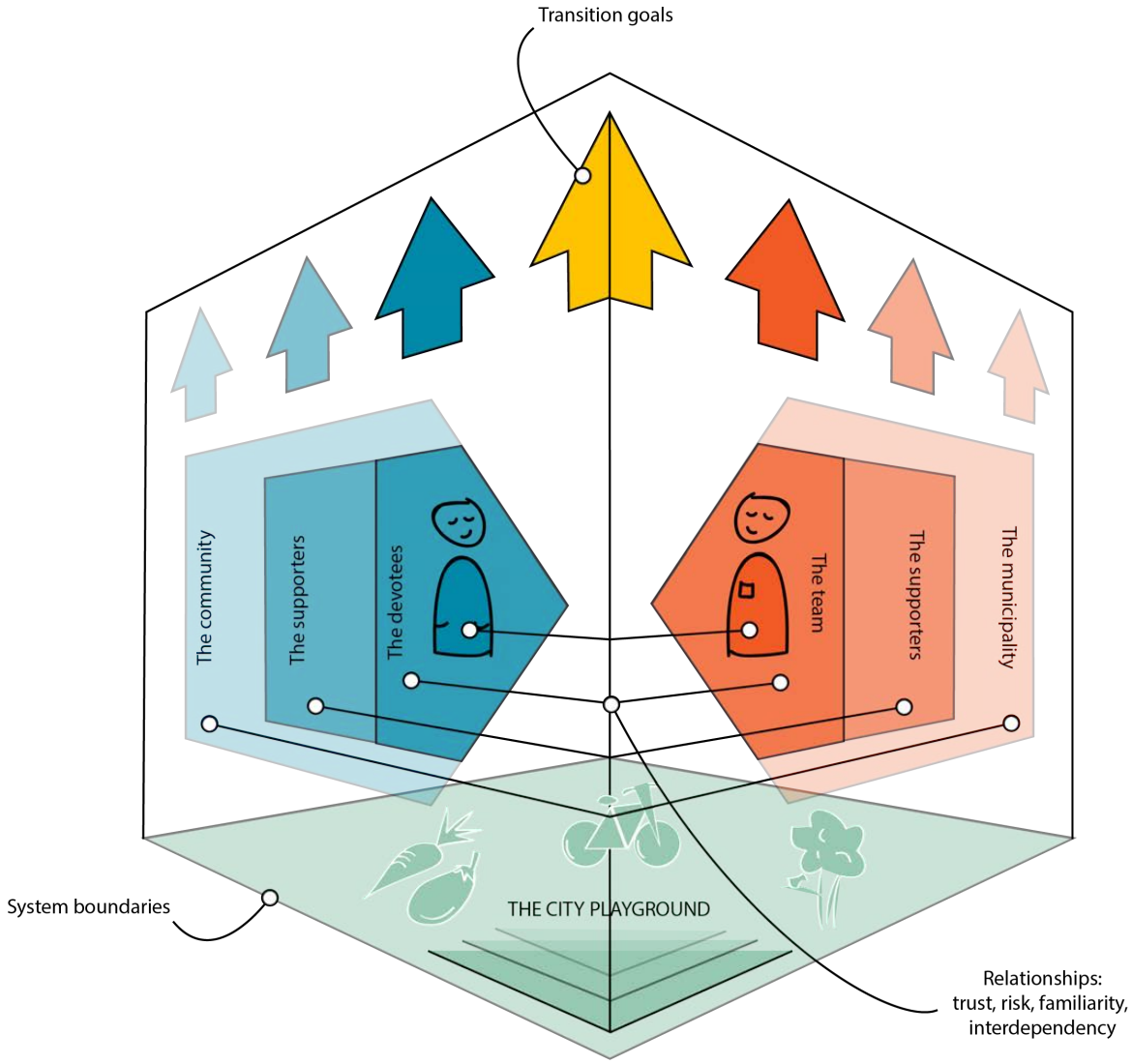
https://participatorycitymaking.nl

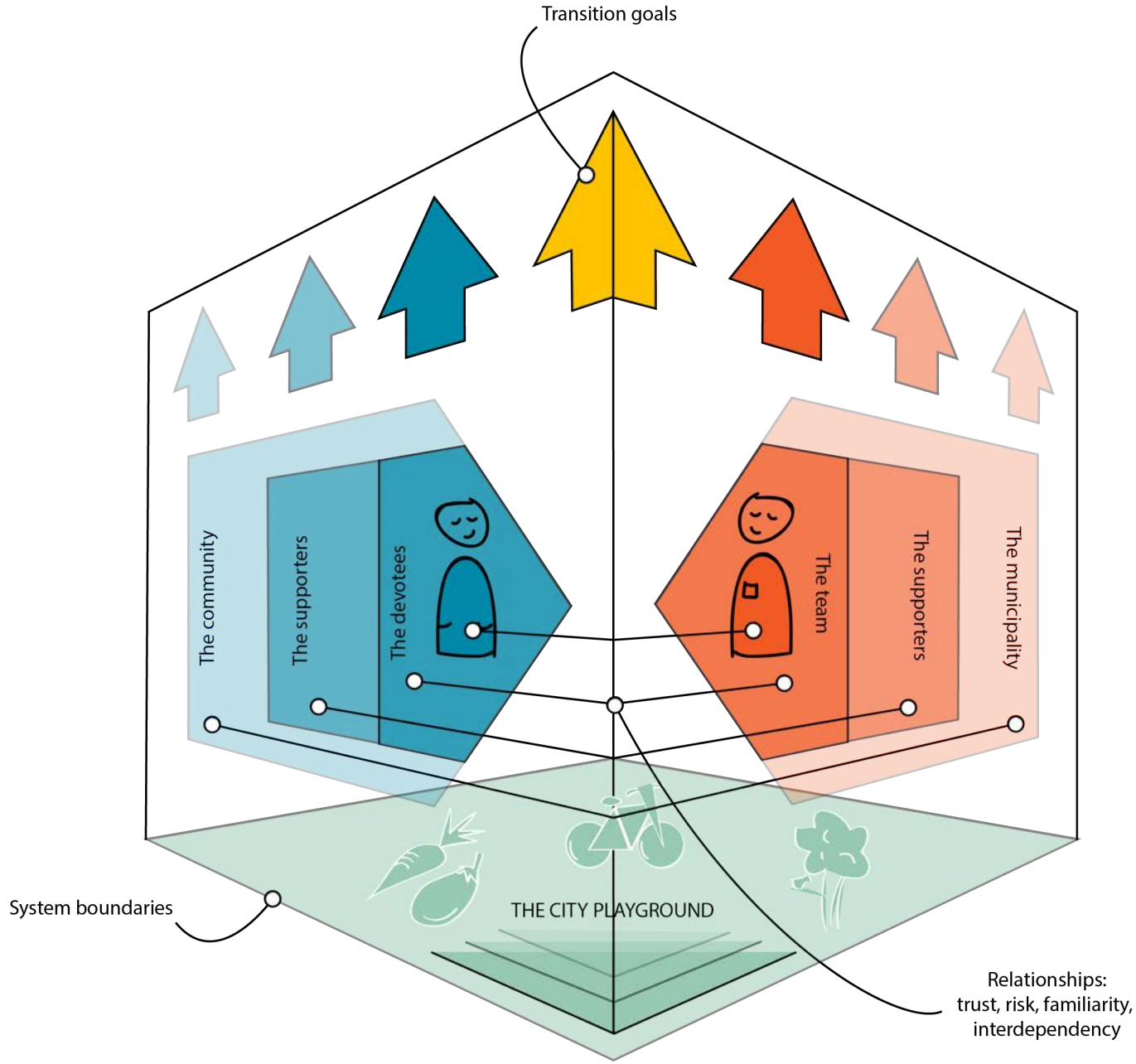
drift for transition

Postdoc

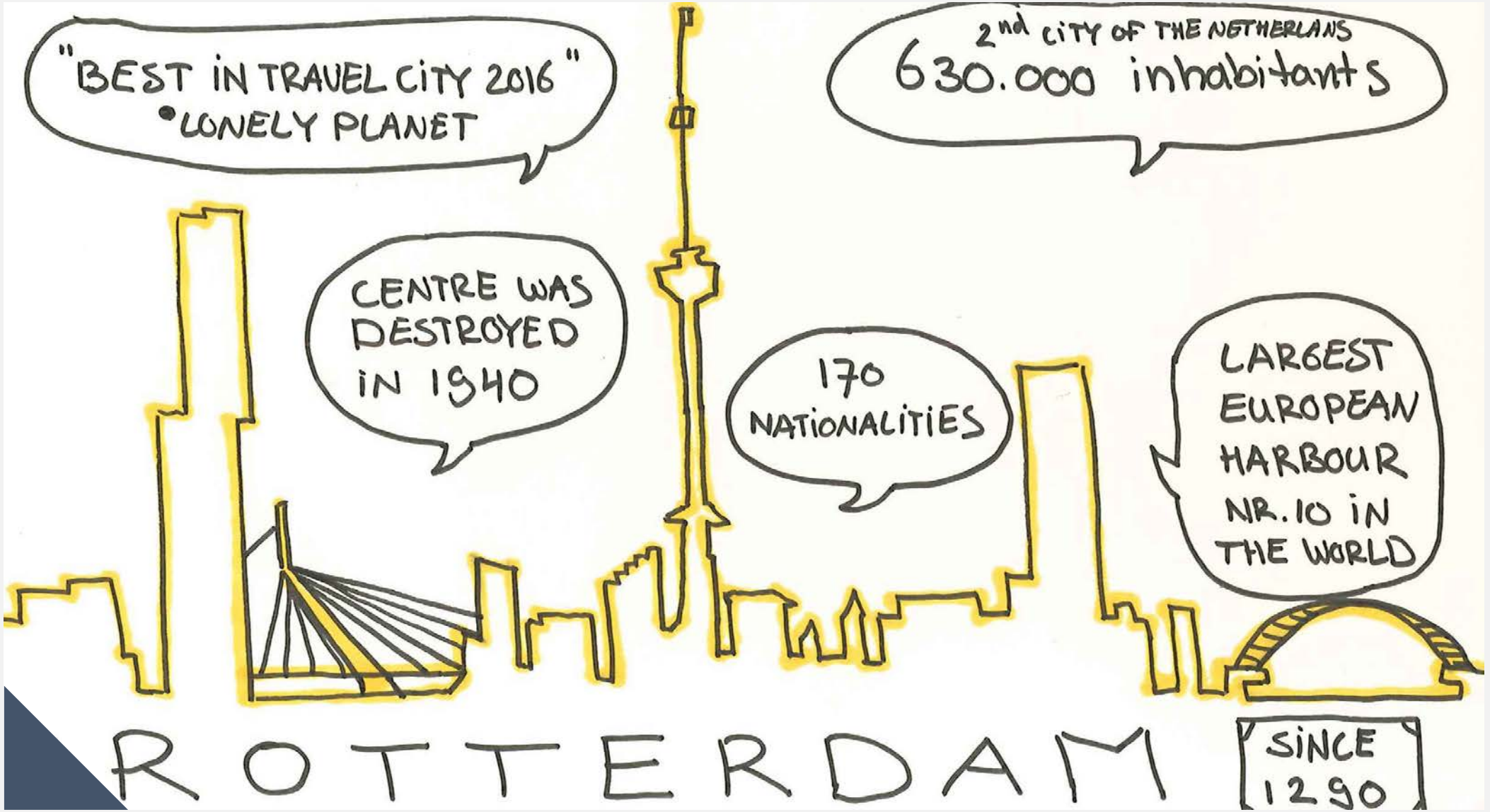
TUDelft & DRIFT

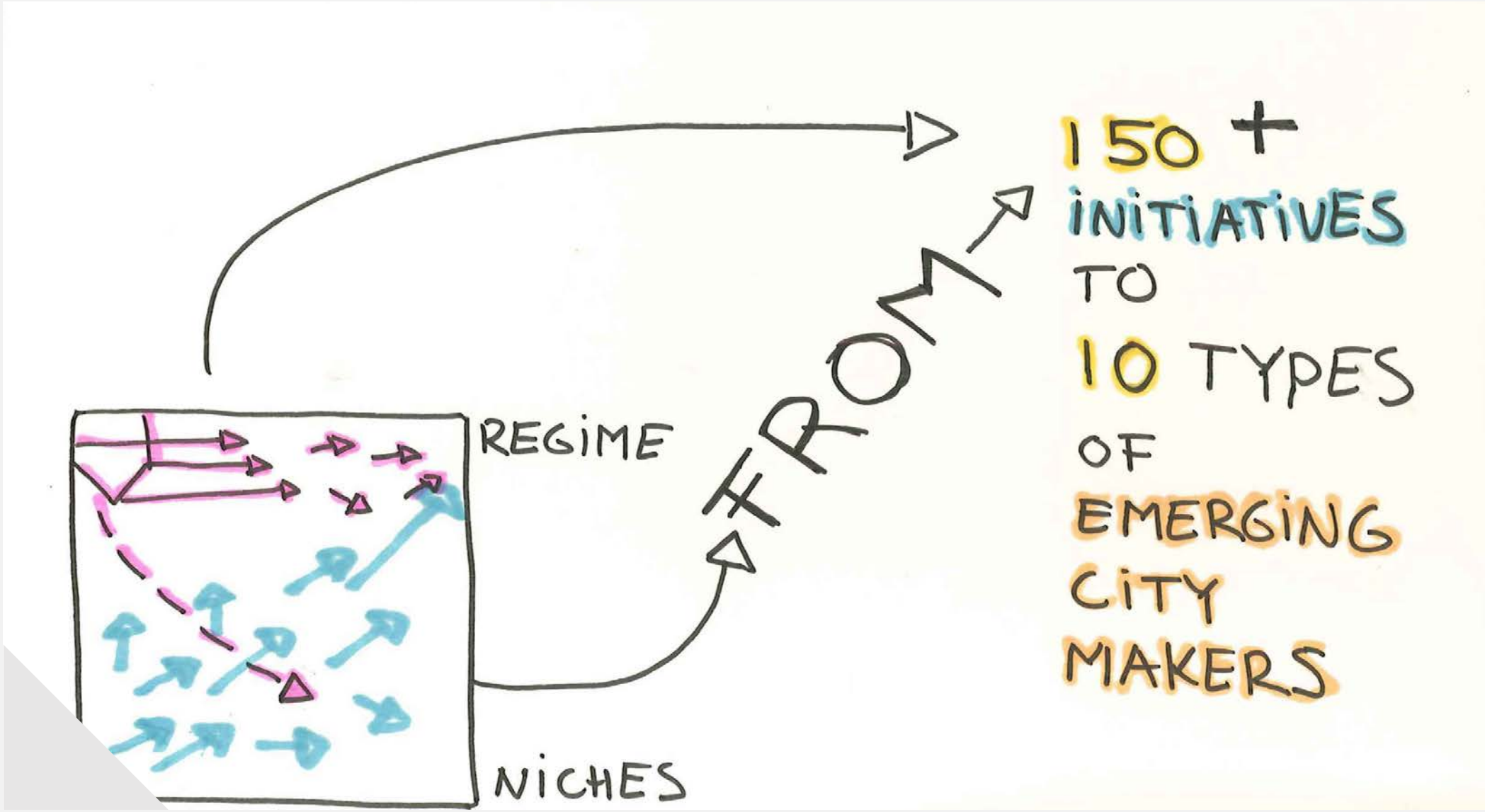
(Dutch Research Institute for Transitions)



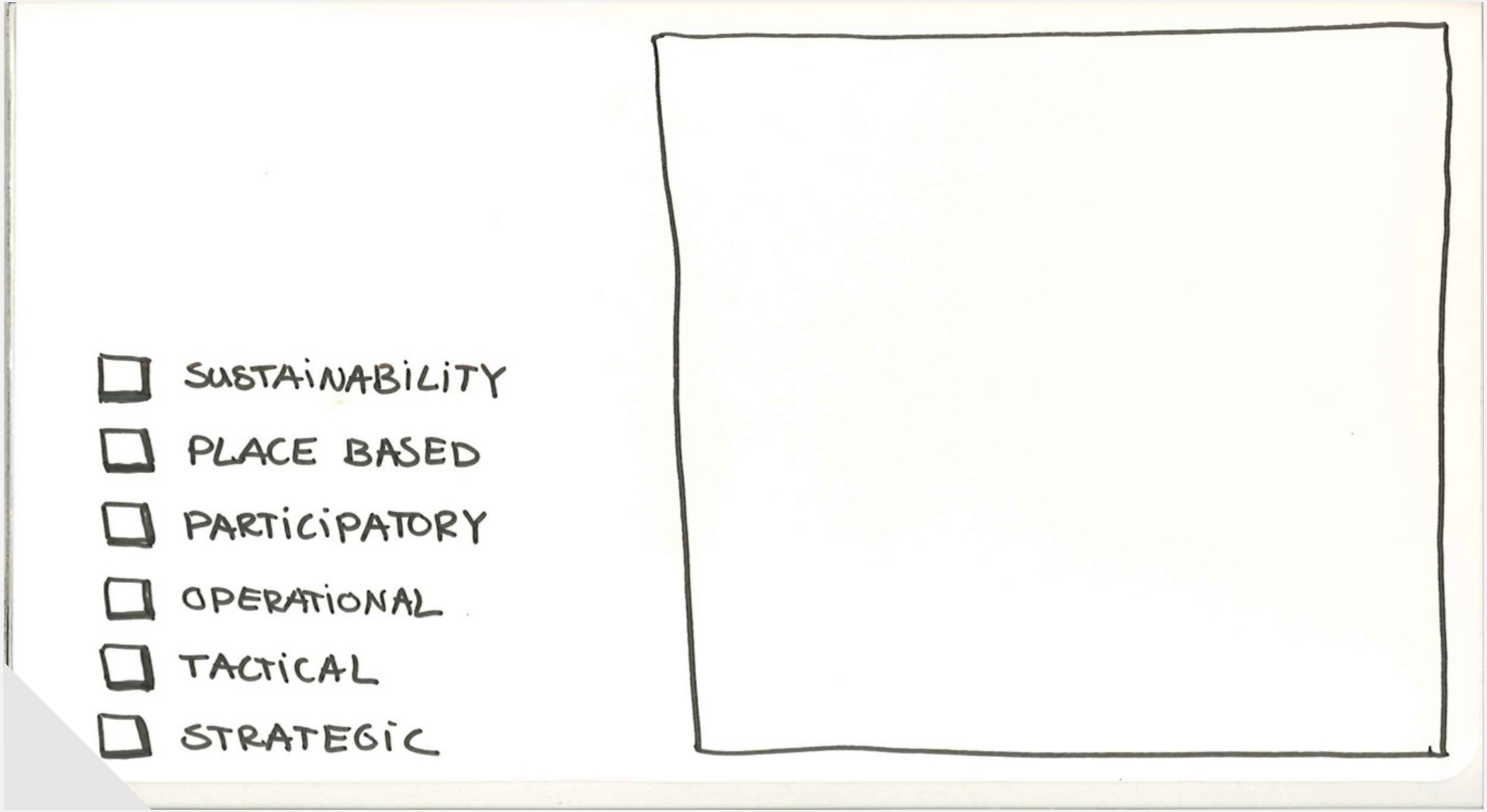

Transition goals
The community
The supporters
The devotees
The team
The supporters
The municipality
THE CITY PLAYGROUND
System boundaries
Relationships:
trust, risk, familiarity,
interdependency

Our particular urban context




REGIME
NICHES
FROM
150 +
INITIATIVES
TO
10 TYPES
OF
EMERGING
CITY
MAKERS

The template for the 'initiative data'



1. The community building

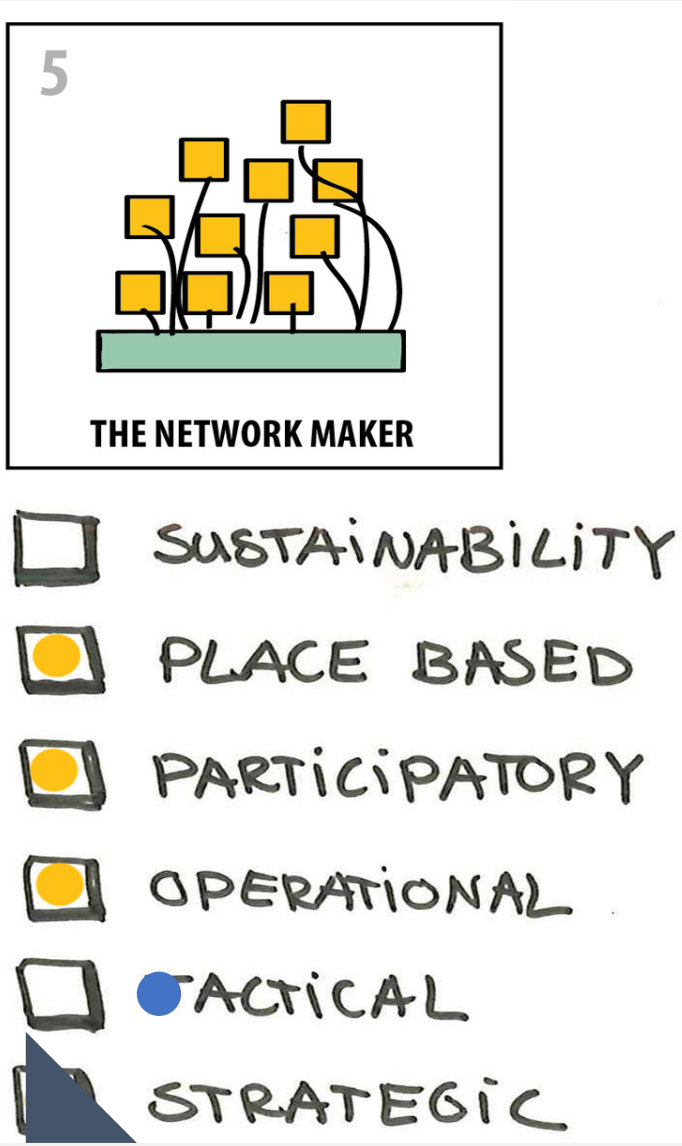
- [ ] SUSTAINABILITY
- [x] PLACE BASED
- [ ] PARTICIPATORY
- [x] OPERATIONAL
- [ ] TACTICAL
- [ ] STRATEGIC

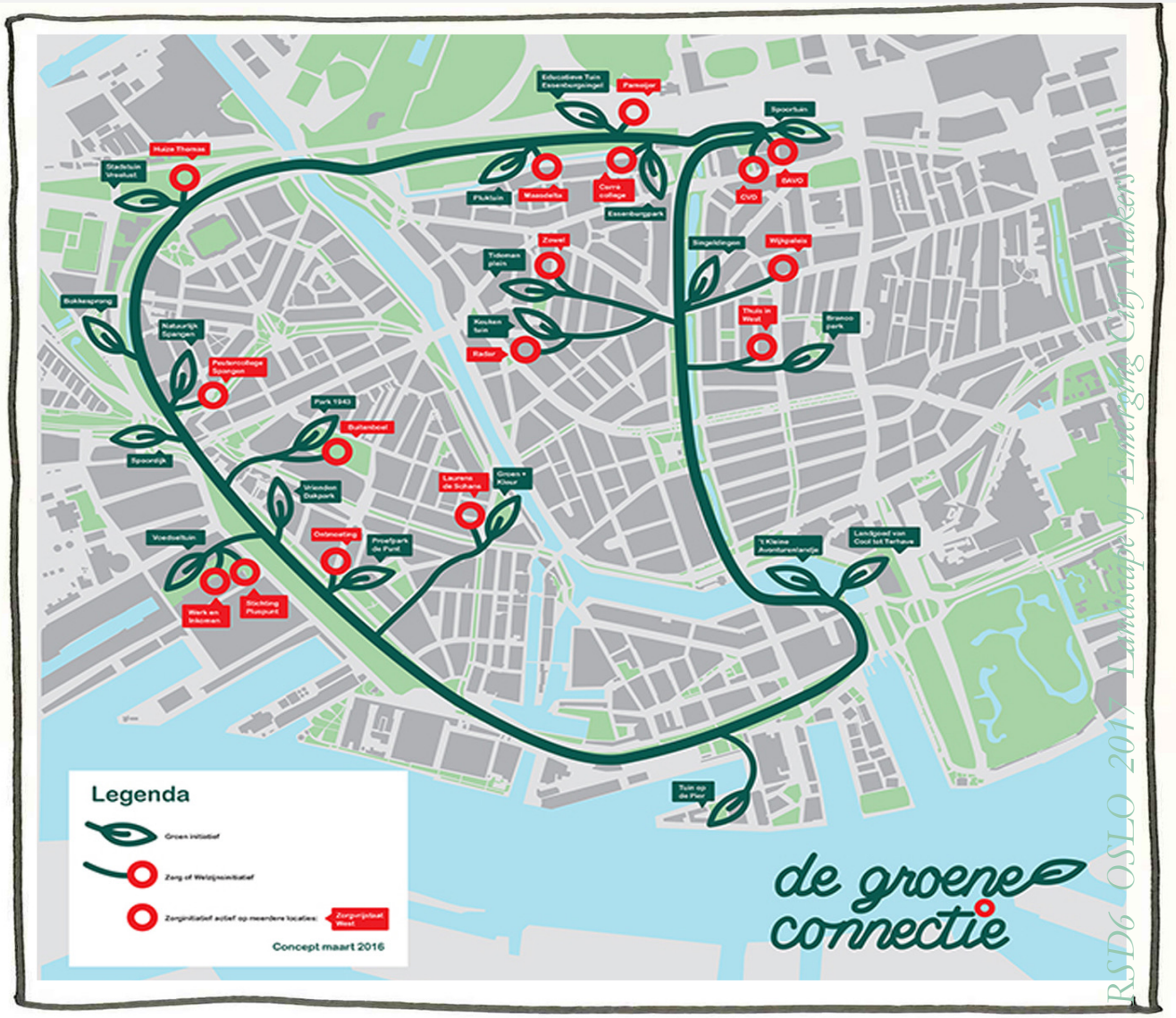
2. The community garden

- [x] SUSTAINABILITY
- [x] PLACE BASED
- [ ] PARTICIPATORY
- [x] OPERATIONAL
- [ ] TACTICAL
- [ ] STRATEGIC

RSD6 OSLO 2017 Landskrape of Emerging City Makers

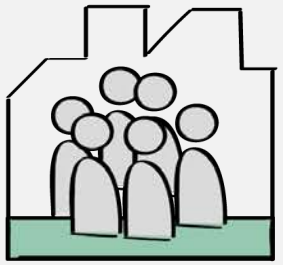
5. The Network Maker





The 10 types of emerging city makers

1



THE COMMUNITY BUILDING

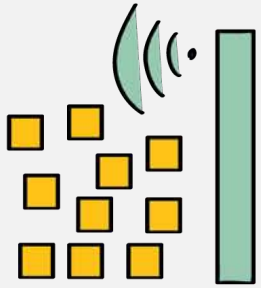
2

THE COMMUNITY GARDEN

3

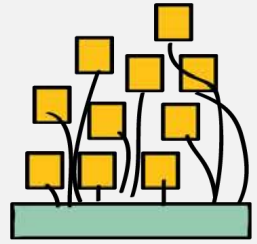
THE COMMUNITY PLATFORM

4



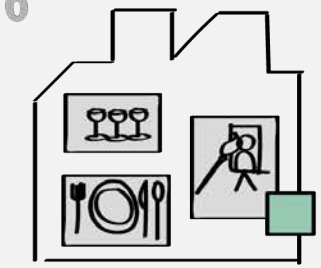
THE SUPPORTING PLATFORM

5



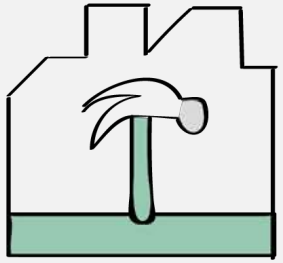
THE NETWORK MAKER

6



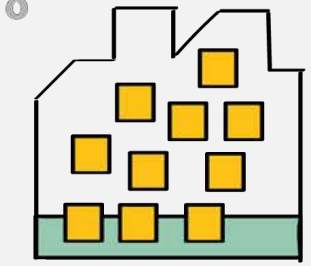
EVENT HOSTING BUILDING

7



THE MAKER SPACE / LAB

8



THE ENTREPENEURS BUILDING

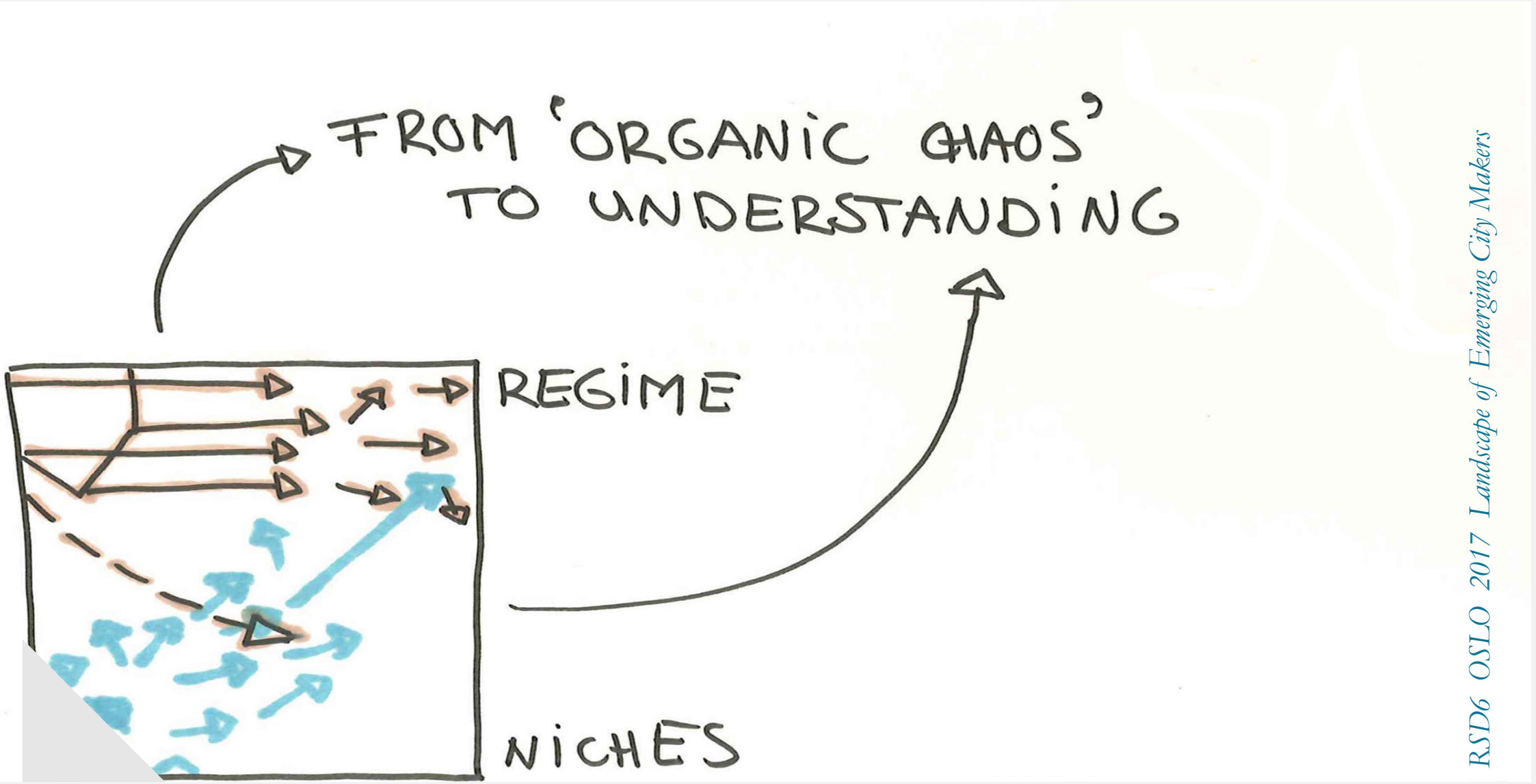
9

THE BRIGHT IDEA

10

THE ALTERNATIVE SYSTEM

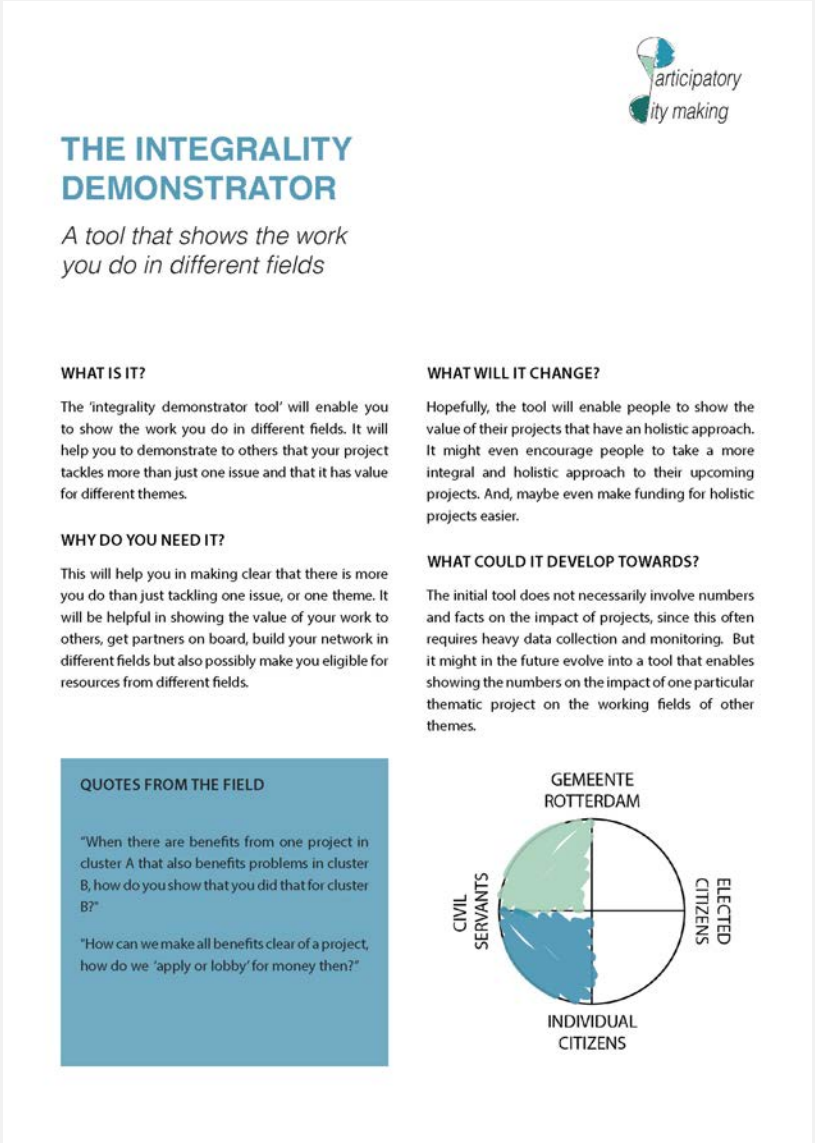
But why make a categorization?



Tool example 1 for Participatory City Making

"How can we make all benefits clear of a project, how do we 'apply or lobby' for money then?"

"When there are benefits from one project in cluster A that also benefits problems in cluster B, how do you show that you did that for cluster B?"



Participatory City making

THE INTEGRALITY DEMONSTRATOR

A tool that shows the work you do in different fields

WHAT IS IT?

The 'integrality demonstrator tool' will enable you to show the work you do in different fields. It will help you to demonstrate to others that your project tackles more than just one issue and that it has value for different themes.

WHY DO YOU NEED IT?

This will help you in making clear that there is more you do than just tackling one issue, or one theme. It will be helpful in showing the value of your work to others, get partners on board, build your network in different fields but also possibly make you eligible for resources from different fields.

WHAT WILL IT CHANGE?

Hopefully, the tool will enable people to show the value of their projects that have an holistic approach. It might even encourage people to take a more integral and holistic approach to their upcoming projects. And, maybe even make funding for holistic projects easier.

WHAT COULD IT DEVELOP TOWARDS?

The initial tool does not necessarily involve numbers and facts on the impact of projects, since this often requires heavy data collection and monitoring. But it might in the future evolve into a tool that enables showing the numbers on the impact of one particular thematic project on the working fields of other themes.

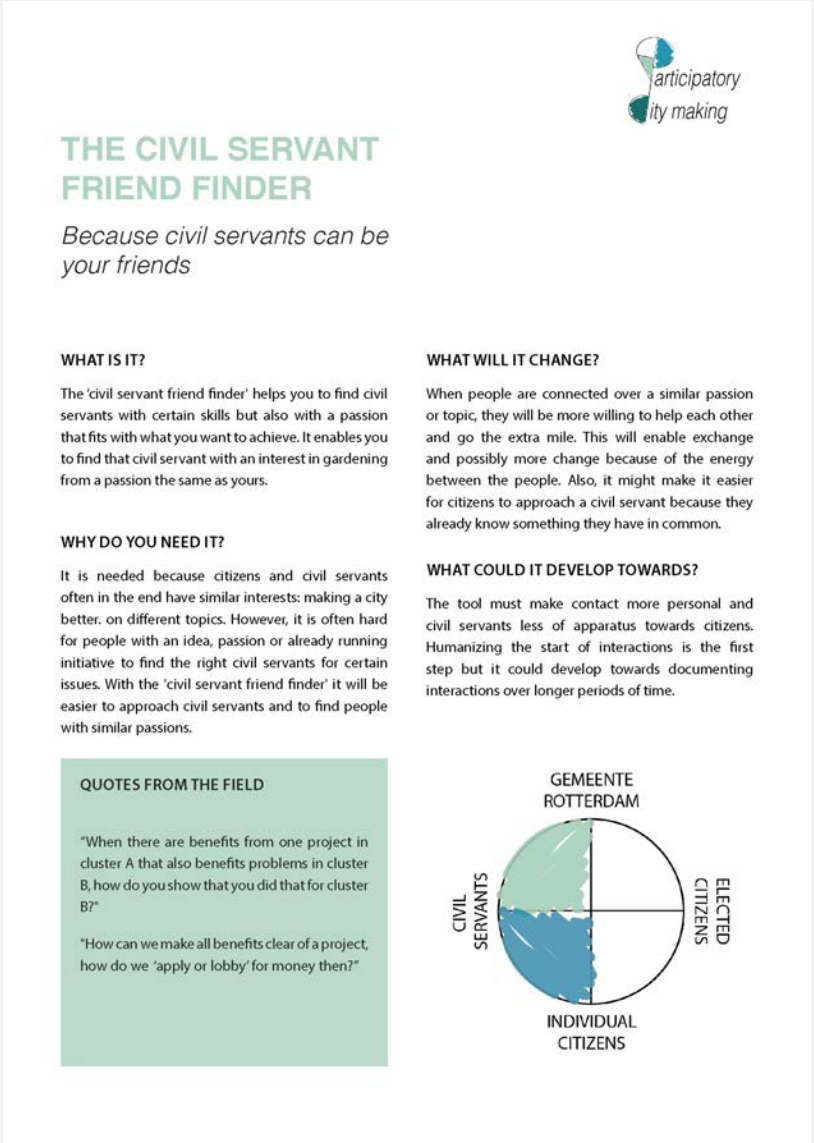
QUOTES FROM THE FIELD

"When there are benefits from one project in cluster A that also benefits problems in cluster B, how do you show that you did that for cluster B?"

"How can we make all benefits clear of a project, how do we 'apply or lobby' for money then?"

Tool example 2 for Participatory City Making

"People know people that know us and I am a nice guy, they trust us [laughs]. It is not very organized, it is a very flexible and fluid network because people start doing other things, leave the environment, or get new jobs" (a civil servant).



participatory city making

THE CIVIL SERVANT FRIEND FINDER

Because civil servants can be your friends

WHAT IS IT?

The 'civil servant friend finder' helps you to find civil servants with certain skills but also with a passion that fits with what you want to achieve. It enables you to find that civil servant with an interest in gardening from a passion the same as yours.

WHY DO YOU NEED IT?

It is needed because citizens and civil servants often in the end have similar interests: making a city better. on different topics. However, it is often hard for people with an idea, passion or already running initiative to find the right civil servants for certain issues. With the 'civil servant friend finder' it will be easier to approach civil servants and to find people with similar passions.

QUOTES FROM THE FIELD

"When there are benefits from one project in cluster A that also benefits problems in cluster B, how do you show that you did that for cluster B?"

"How can we make all benefits clear of a project, how do we 'apply or lobby' for money then?"

WHAT WILL IT CHANGE?

When people are connected over a similar passion or topic, they will be more willing to help each other and go the extra mile. This will enable exchange and possibly more change because of the energy between the people. Also, it might make it easier for citizens to approach a civil servant because they already know something they have in common.

WHAT COULD IT DEVELOP TOWARDS?

The tool must make contact more personal and civil servants less of apparatus towards citizens. Humanizing the start of interactions is the first step but it could develop towards documenting interactions over longer periods of time.

Co-creation

Intentional creation together

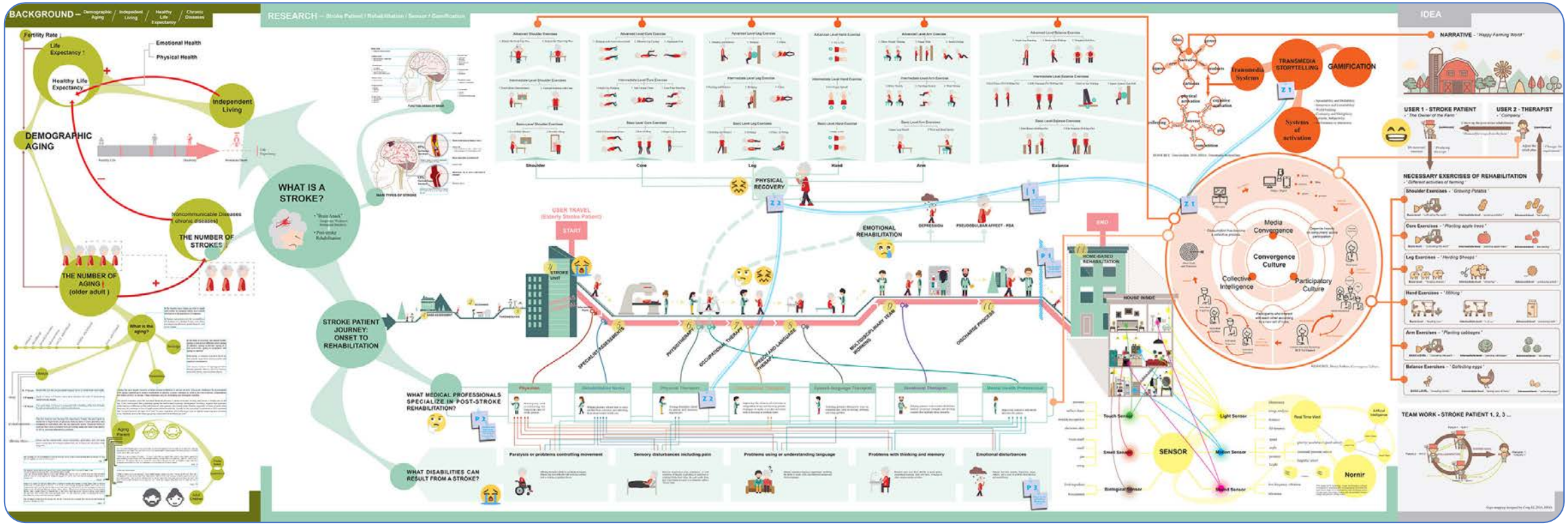
2. Framing complexity

- Frame & Reframe the problem
- Show empathy with the system
- Do not deal with complexity but embrace it
- Focus on finding patterns
- Emphasise the relationships, not the entities

Bad choices in a obvious system?
Image from Shutterstock

Obvious choices in a bad system?
Image from Shutterstock

Method: Synthesis mapping / giga mapping

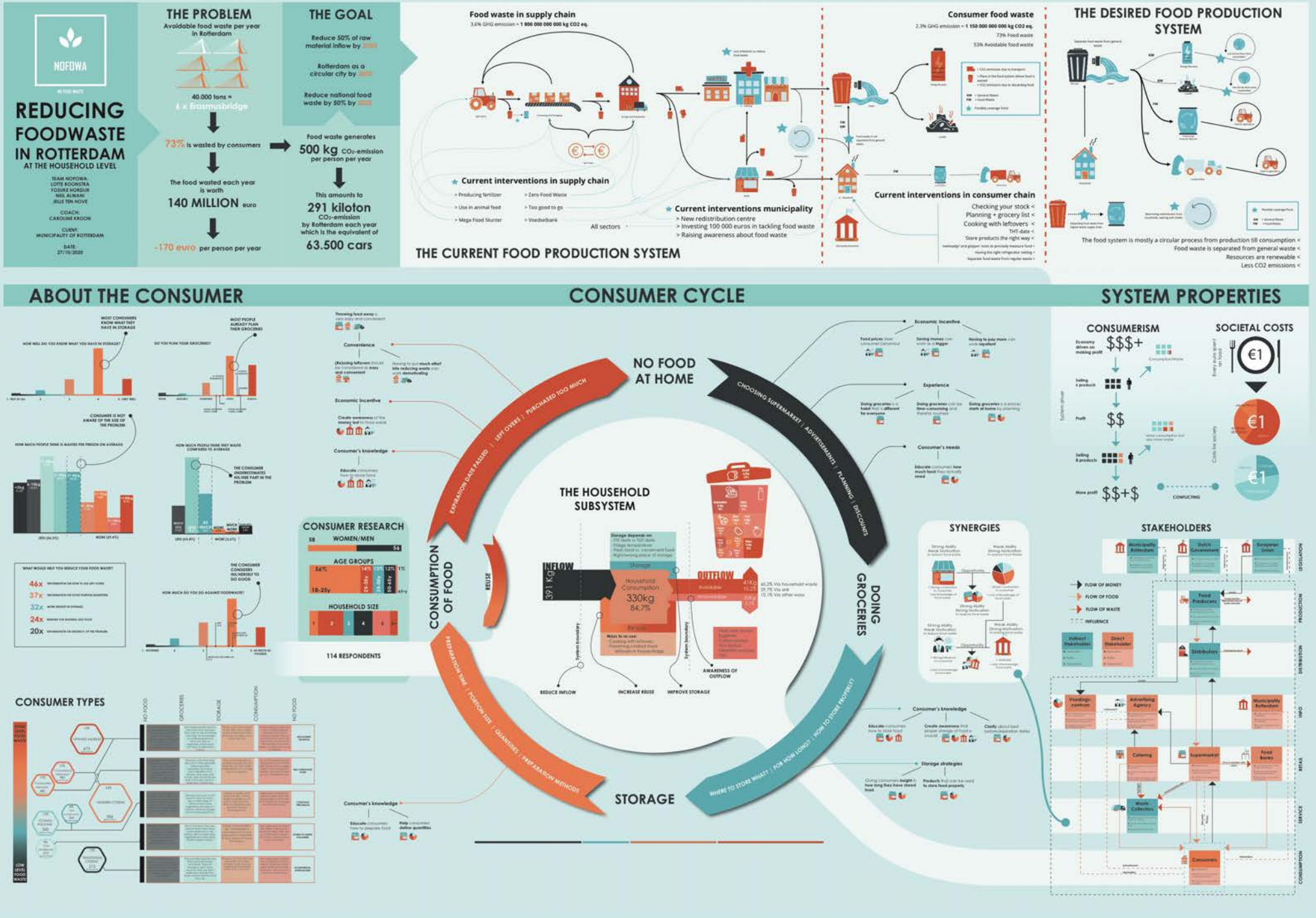


Synthesis maps

Jones, P., & Bowes, J. (2017). Rendering Systems Visible for Design: Synthesis Maps as Constructivist Design Narratives. *She Ji*, *3*(3), 229–248. https://doi.org/10.1016/j.sheji.2017.12.001

1. *… integrate knowledge from research cycles and iterative sensemaking to define a coherent **visual design narrative**.*
2. … articulate the **processes and relationships** that are vital to stakeholders of the system.
3. … use **visual narrative** to reach broader audiences than analytical models.
4. … **engage** stakeholder groups.
5. … represent **perspectives** and enable stakeholders to understand systemic problems.
6. … define salient problems and design options of interest, helping observers to develop sophisticated **mental models**.

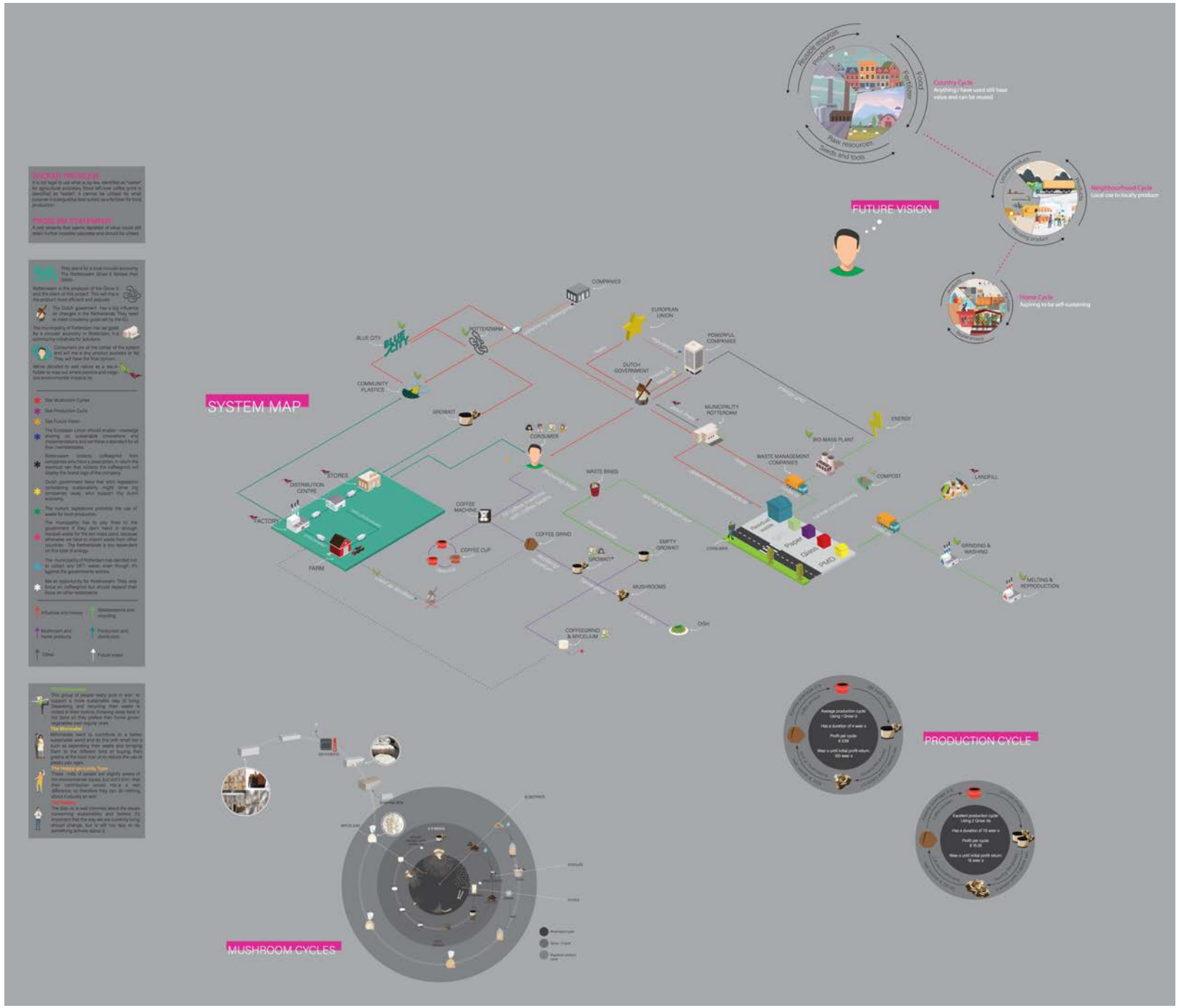
Citizen Food Waste in Rotterdam



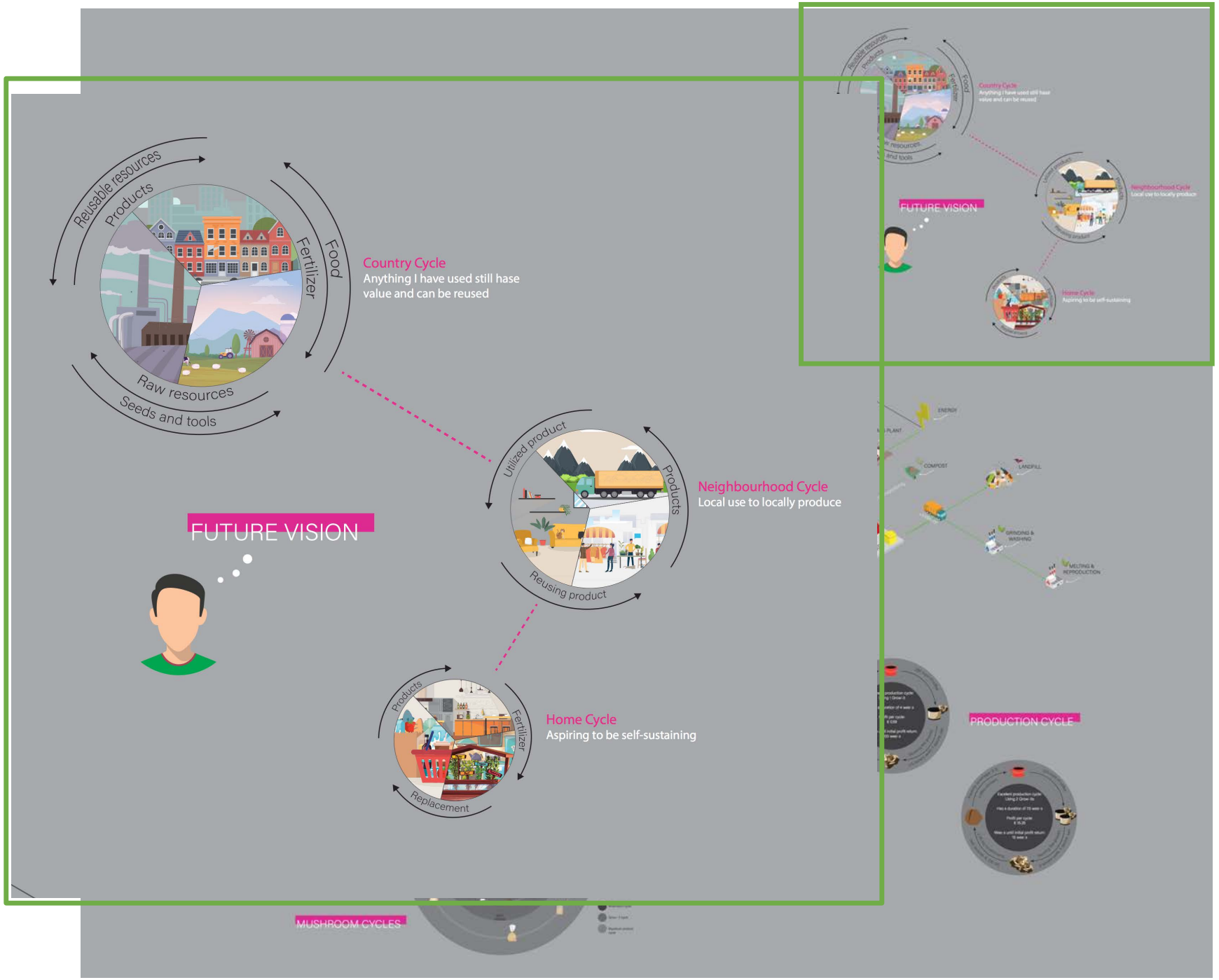
HOW ARE THEY MADE?

1. Synthesis maps are developed during a (studio or professional) project, with stakeholders, it is a constructivist inquiry. (Typically in 6-16 weeks)
2. Designers continually interrogate the meaning of relationships in a system as they externalize and represent them.
3. The act of framing defines the boundaries of a system.
4. Evidence is selected from various sources - the rationale for the knowledge is acquired through conversations about the social systems found in the world (conversational inquiry).
5. Actors construct the shared social meaning that synthesis maps represent. The maps are products of socialized synthesis.

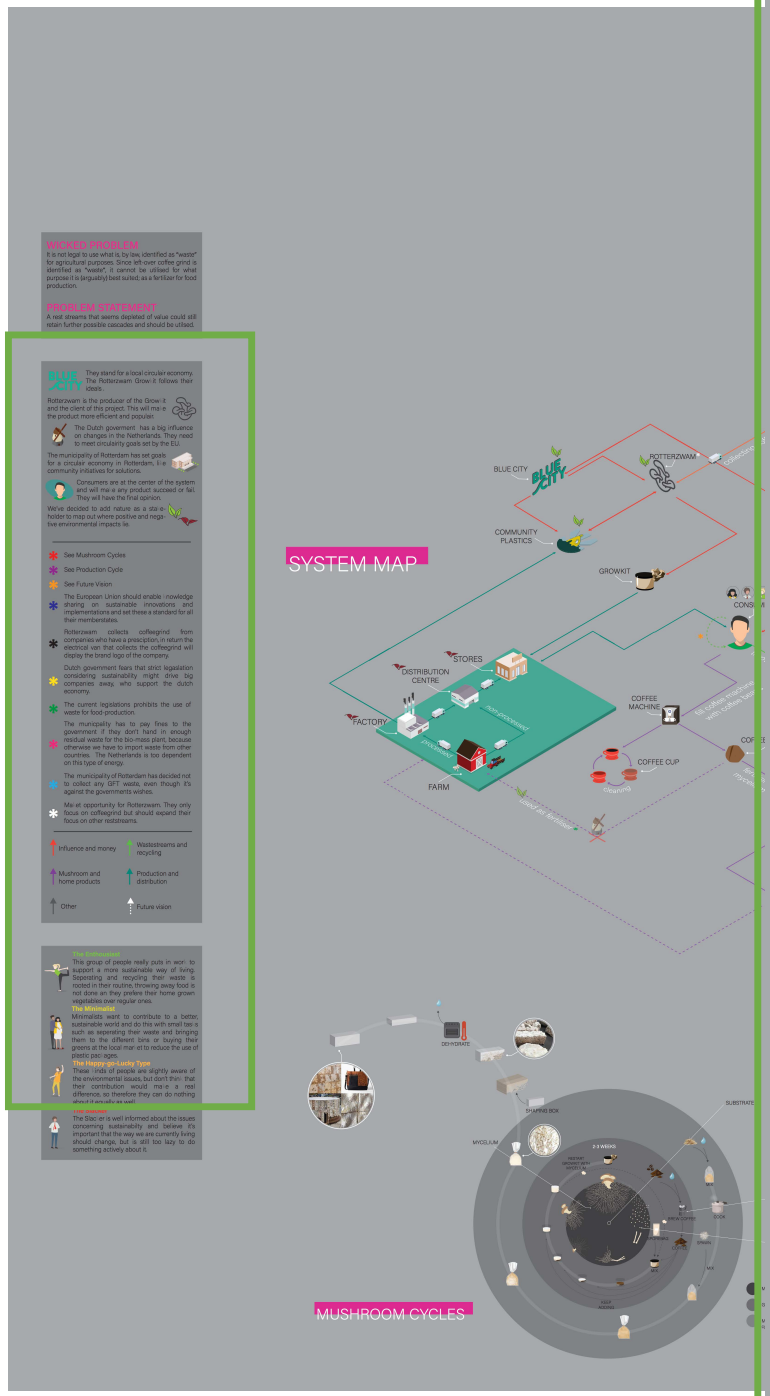
Mushroom grow-kit on coffee grind



Future Vision



Focus on relations



Design for relations

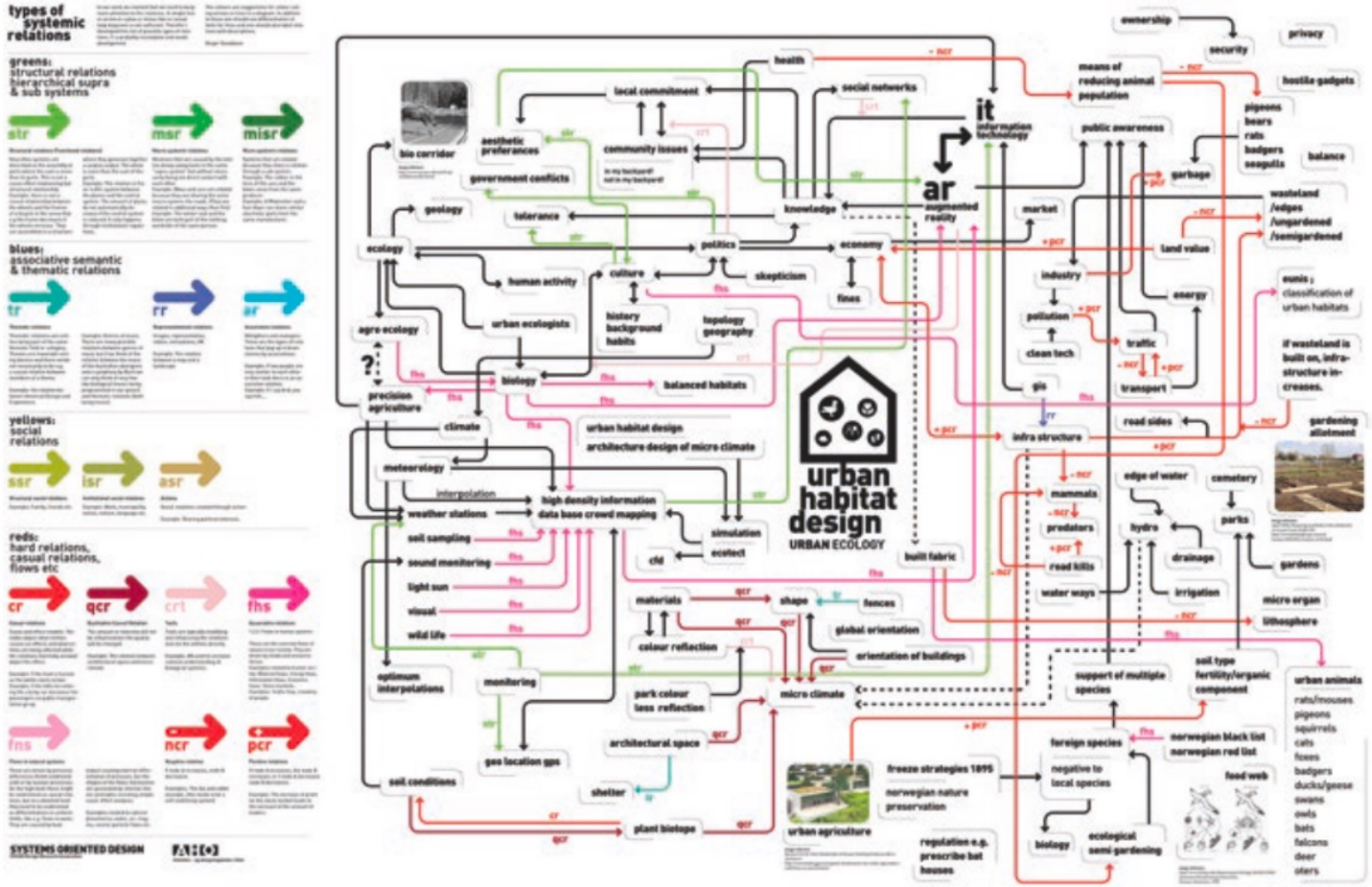


Fig. 5 A Gigamap with heavy emphasis on the relations. The relations are colour-coded according to the suggestions from the "Library of Systemic Relations" web page. The library is part of the Gigamapping praxiology and not seen as a method of rigid classification (Young Eun Choi, Birger Sevaldson, AHO 2013)

3. DESIGN FOR RELATIONS

An example from Mieke van der Bijl-Brouwer

MindLab,
Copenhagen,
2016
Mieke van der
Bijl-Brouwer
Anette
Jakob

MindLab:
A time – quality dilemma for teachers

http://www.nesta.org.uk/blog/creating-solutions-danish-teachers-time-and-quality-dilemma-0

Photo by NeONBRAND on Unsplash

lesson boxes

Systemic Design Lab

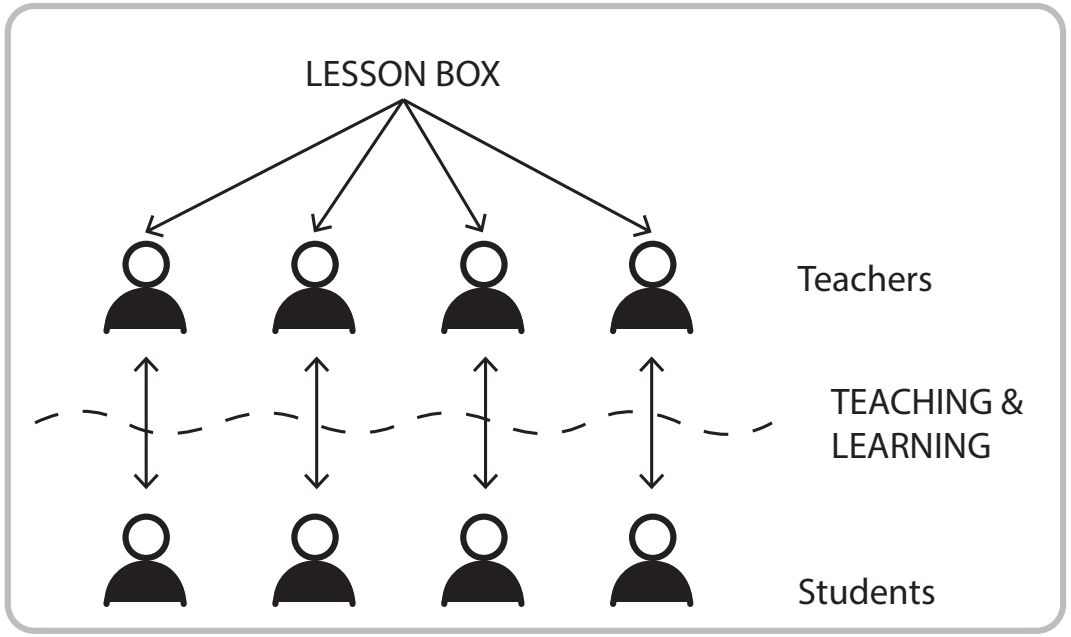
http://www.nesta.org.uk/blog/creating-solutions-danish-teachers-time-and-quality-dilemma-0

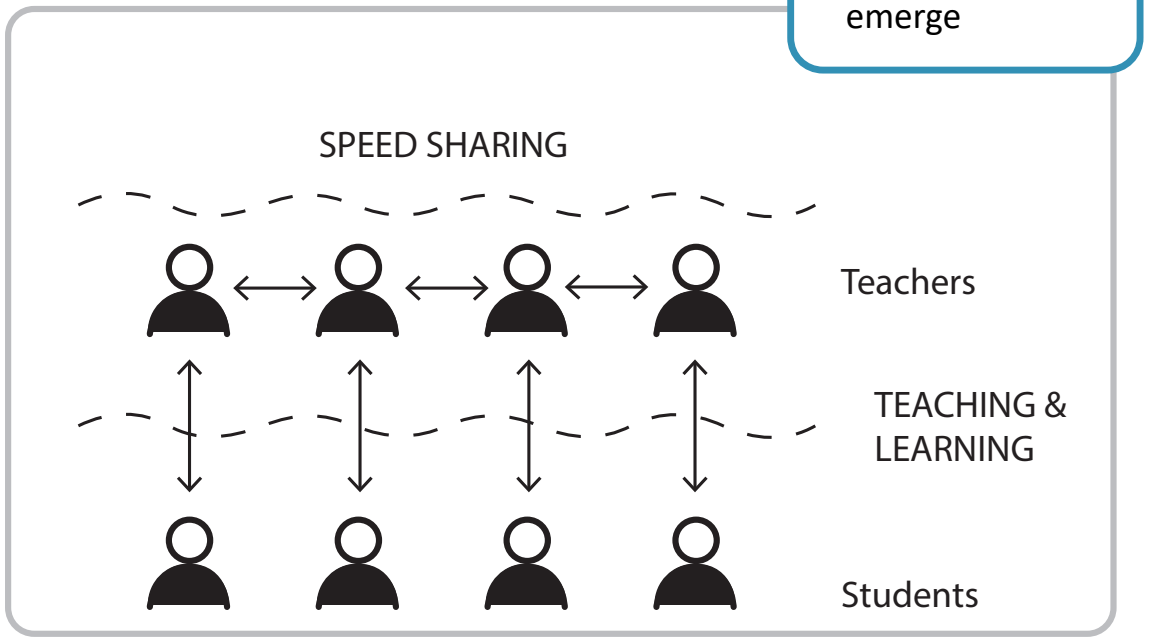
speed sharing

Systemic Design Lab

http://www.nesta.org.uk/blog/creating-solutions-danish-teachers-time-and-quality-dilemma-0

a systemic view on the MindLab case





novelty and creativity emerge

In complexity theory: self-organisation & emergence

creates ‘knowledge flows’, teachers learn from each other.

Systemic Design Lab

van der Bijl - Brouwer, Mieke, and Bridget Malcolm. "Systemic Design Principles in Social Innovation - a Study of Expert Practices and Design Rationales." *She ji - The Journal of Design, Economics and Innovation* 6, no. 3 (2020): 386-407.

Systemic Design Principles

Mieke van der Bijl-Brouwer & Bridget Malcolm

she ji

Systemic Design Principles in Social Innovation: A Study of Expert Practices and Design Rationales

Mieke van der Bijl-Brouwer
Bridget Malcolm

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Abstract

In recent decades, design has expanded from a practice aimed at designing things to one that helps to address complex societal challenges. In this context, a field of practice called *systemic design* has emerged, which combines elements of systems thinking with elements of design. We use a case study approach to investigate how expert practitioners carry out systemic design work in the context of public and social innovation, and explore what we can learn from their practices and design rationales when we compare them to systems thinking theories and approaches. Based on findings from five case studies, we present five systemic design principles: 1) opening up and acknowledging the interrelatedness of problems; 2) developing empathy with the system; 3) strengthening human relationships to enable creativity and learning; 4) influencing mental models to enable change; and 5) adopting an evolutionary design approach to desired systemic change. One way that scholars can contribute to this field is by continuing to monitor and describe emerging systemic design principles developed and performed at the forefront of the field, strengthening these learnings by building on the body of knowledge about systems thinking and design.

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Peer review under responsibility of Tongji University and Tongji University Press.

http://www.journals.elsevier.com/she-ji-the-journal-of-design-economics-and-innovation
https://doi.org/10.1016/j.sheji.2020.06.001

- *Take a systemic perspective*
- *Empathy with the system*
- *Designing for human relationships*
- *designing for mental models*
- *Take an evolutionary design approach*

Van der Bijl - Brouwer, M., & Malcolm, B. (2020). Systemic Design Principles in Social Innovation - a Study of Expert Practices and Design Rationales. *She ji - The Journal of Design, Economics and Innovation, 6*(3), 386-407.

3. Meaningful formgiving

- You do not need to design new systems, but interventions that can lead to change.
- Dream big, start small.
- Probe, prototype.
- Design for constant change, focus on dynamic designs, permanent-beta state.

Co-Creating Sustainable Cities;

Using Design to Facilitate Transitions

Dr.ir. Jotte de Koning, TUDelft

Sustainability Transitions

- 20-50 years
- Long term visions
- Short term interventions

Happy Streets

A project from DRIFT

2018

City and transition towards…

…sustainable and inclusive mobility

&

…new ways of city making

happy streets

SCHELL
TOKO KONDREMAT
TOKO LIEUW
Y FAIR

GIRAFFE

happy
streets
Goal: show the city of the future today, ins
people to think about mobility their city

happy

happy
streets
Cool-Zuid
1 november →
20 december
happystreets.nl
happy
streets

CHANGE
KFC
KFC

TOKO KONDREMAT
TOKO LIEUW

CHANGE

4. Valueing change

- Keep on monitoring what happens
- Keep talking to each other
- Keep working together
- Keep reflecting on the goal

Role of Design for System Sustainability

Design as the link between high level system thinking and on the ground everyday life things.

1. Enriched methods of retrieving knowledge of current objects and current systems, connecting everyday life to high system goals;
2. Prototyping activities to leave traces of transition activities in everyday life, not only envision use-before-use but also design-after design; remain **open-ended** and **speculative**.
3. Actively envisioning the effect of design things during and beyond their lifetime;
4. Facilitating and providing boundary objects in multidisciplinary settings beyond language games;
5. Focus on building interactions through a broad range of co-creation activities.
6. Establish a real effective connection between ***social*** and ***environmental*** sustainability

Final remarks

And a call to action

Use Design & Systems Thinking yourself

Alex Ryan (2013). A Theory of Systemic Design. *Relating Systems Thinking and Design 2013*. www.systemic-design.net

- Based on Bruce Mau (1998)

- Ask stupid questions. Growth is fueled by desire and innocence.
- Allow events to change you. Postpone judgement
- Organization = Liberty. Real innovation in design, or any other field, happens in context. That context is usually some form of cooperatively managed enterprise.
- Collaborate. The space between people working together is filled with conflict, friction, strife, exhilaration, delight, and vast creative potential.
- Keep moving. The market and its operations have a tendency to reinforce success. Resist it. Allow failure and migration to be part of your practice.
- Slow down. Desynchronize from standard time frames and surprising opportunities may present themselves.
- Don’t be cool. Cool is conservative fear dressed in black.