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Codifying systemic design: A toolkit
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Systemic design workshop

@namahn
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Namahn and shiftN

— Namahn

- Human-centred design, digital products and services (Brussels, BE)
- An experienced, international, multidisciplinary team:
  - 17 designers, 3 staff + expert network
  - Founded in 1987

— shiftN

- Futures and systems thinking studio (Leuven, BE)
- Network of experts
About this workshop

— Introduction to our systemic design toolkit
  ▪ Why this toolkit?
  ▪ Underlying principles

— Overview of all the tools

— Case: child obesity - apply 4 tools to this case
  ▪ Actants
  ▪ System map
  ▪ Intervention strategy
  ▪ Paradoxical thinking/matrix
Systemic design toolkit
What is systemic design?

Systemic design is the combination of the tools, methods and principles of system thinking and human-centred design.

— Systems thinking offer a realm of methods to understand complex socio-technical issues but lacks practicality.

— Human centred design is hands-on and solution oriented but misses the approach to handle complexity
  - The current design methodologies are based on our linear way of problem solving.
Why do we make this toolkit?

— Type of projects: more complex, societal
  - Interconnectedness, circular thinking needed
  - Open solutions with self-adaptive capacity

— More collaboration needed
  - Push stakeholders to look at multiple perspectives
  - Make systemic design thinking explicit, approachable to all stakeholders (offer tools to make this simple & accessible to them)

— More about this in the paper sessions
Underlying principles
From a designer point of view

— Human centered
— Co-creation
— Value driven
— Modulate between levels of abstraction
— Evidencing to stimulate dialogue
— Solutioning as a learning process
— Embed triggers for abductive thinking (surprises, anomalies)
From a system thinkers point of view

— Zoom in (people) / zoom out (system)
— Focus on relationships and exchanges
— Work on micro/meso/macro level
— Feedback loops and leverage points
— Combination of interventions
— Multiple perspectives and worldviews
— Motivate boundary judgement
— Shape conditions for emergence
Systemic design toolkit
- Rich context map
- Actors map
- User insights
- Actants
- System map
- Value proposition
- Intervention strategy
- Paradoxical ideation
- Serious play scenarios
- Activity model
- Intervention map
- Transition by design
1. Rich context
1. Rich context

A map of the context of the issue:

— the longer term trends
— the current practices of the system to deal with them
— the emerging niche ways of doing things differently.

Why?
Build a common and visual understanding of the existing and emerging paradigms on the issue or purpose

Result
identify the (emerging) actors and other stakeholders for your actors map.
2. Actors map
2. Actors map

A map with the key players in the systems and their mutual relations with regard to the issue or intended outcome

**Why?**
Identify and select the actors you want to observe and/or interview in your field study

**Result**
A number of hypotheses to validate or falsify during the field study
3. User insights
3. User insights

Field study – observations, interviews with key users and stakeholders of the system (actors)

Why?
Get insights in the needs, wishes, frustrations of the actors. Validate and/or falsify the hypotheses you have made while making the rich context and the actors map.

Result
Insights in the form of personas, scenarios-of-use, a user type matrix or an experience graph.
4. Actants
4. Actants

A tool to model, summarize and communicate your systemic user research, focussing on the relationships between the different actors

Why?

Understand the quality of the relation between actors and identify the variables that are influencing the relationship in a positive or negative way.

Result

A list of variables to start off your system map
5. System map
5. System map

A tool for visualising the system, its structure, the interrelations between the elements/variables of the system and the things that flow in the system.

Why?

You want to understand the system and to identify the variables that have potential to change the system (leverage points)

Result

List of potential leverage points
6. Value proposition
6. Value proposition

Apply the themes to improve the system (often at individual level) to other value layers, using the Universal Values model by *Elke den Ouden*

**Why?**

Broaden and stretch out the themes/leverage points to create meaningful innovations on different levels (organisation, ecosystem, society as a whole)

**Result**

The design challenge
7. Intervention strategy
7. **Intervention strategy**

A tool to help you to understand and explore how (on which levels) you can intervene in the system, using the levels of intervention (Donella H. Meadows)

**Why?**

A solution to a systemic problem should always be a combination of interventions. This tool/template helps you see the spectrum of possibilities in a workshop together with your client and stakeholders

**Result**

Scope and list of possible intervention domains
8. Paradoxical ideation
8. Paradoxical ideation

The paradox card set is a tool for consciously bringing together the paradoxical sides of a problem to achieve solutions for the whole. It is about AND thinking instead of OR thinking.

Why

Generate unusual viewpoints. Find solutions that suit all, in spite of multiple perspectives.

Result

List of solution ideas
9. Serious play scenarios
9. Serious play scenarios

Serious play scenarios is a technique for finding concept ideas for the future user experience by tinkering and role playing...

Why?

By ‘playing’ you’ll find ideas that you hadn’t thought of because the technique encourages you to think from a user’s standpoint and to go through all the steps.

Result

Scenarios (and processes)
10. Activity model
10. Activity model

A visual representation of your solution concepts. You depict the touchpoint and the actors involved, and the flows/activities between them.

Why?

To present the system solution to your client and stakeholders to discuss or to validate them. You can also make the drawing in a workshop together with the client and stakeholders.

Result

Solution concepts
11. Intervention map

The interventions map helps you see the connections between the to be interventions, both the designed as the non-designed ones.

Why?

Understand how the interventions are reinforcing one another (both in same or opposite way) and to adjust them accordingly if necessary.

Result

Verified system solution
12. Transition by design
12. Transition by design

A transition roadmap is a tool to think about the implementation of the new system concept to bring about change. Set out design interventions in time and space.

Why?
When a new system is introduced within an existing system it often fails because there is too much resistance to change. The transition roadmap offers a strategy to deal with this by working from the micro to the macro.

Result
Implementation briefing and strategy
Case: child obesity
The problem: child obesity

— Overweight versus obesity - diagnosis based on BMI

— Obesity has doubled in children and quadrupled in adolescents in the past 30 years (U.S.)

— Health effects: short and long term

— Prevention?

— [video]
How to deal with the issue of child obesity?

Note: focus is on learning about the tools and the toolkit! We will not solve the problem...
Applying the systemic design toolkit

(4 tools, 20’ prep + 10’ present and discussion per tool)
4. Actants
4. Actants

A tool to model, summarize and communicate your systemic user research, focussing on the relationships between the different actors

Why?

Understand the quality of the relation between actors and identify the variables that are influencing the relationship in a positive or negative way.

Result

A list of variables to start off your system map
Actants, exercise

How

— Identify two main actors with a crucial relationship concerning your issue

— Describe the activities between the actants in the middle and qualify the nature of the relationship with different lines (see legend)

— Define the drives of each actant concerning his/her engagement in the relationship. Then, identify what each actant gives to and receives from the relationship

— Clarify external factors that have additional influence on this relationship and its activities
5. System map
5. System map

A tool for visualising the system, its structure, the interrelations between the elements/variables of the system and the things that flow in the system.

Why?

You want to understand the system and to identify the variables that have potential to change the system (leverage points)

Result

List of potential leverage points
System map, exercise

How

— **Core activity**: state the high-level activity/activities between your primary actants (A and B). Qualify what they exchange in a qualitative and quantitative way

— **Micro influencers**
  - Variables: add variables that influence the core. Start from the drives, gives and takes from your primary actants
  - Relations: indicate how the drives, gives and takes reinforce the core and each other (in the same (S) or opposite (O) direction)

— **Meso and macro influencers**: add variables on meso (community, organisation) and macro (society) level
7. Intervention strategy
7. Intervention strategy

A tool to help you to understand and explore how (on which levels) you can intervene in the system, using the levels of intervention (Donella H. Meadows)

Why?

A solution to a systemic problem should always be a combination of interventions. This tool/template helps you see the spectrum of possibilities in a workshop together with your client and stakeholders

Result

Scope and list of possible intervention domains
Intervention strategy template

Constants, parameters, numbers
Buffering capacity
Physical structures
Digital structures*
Delays
Feedbacks
Information flows
Rules & regulations
Goals
Paradigms
Intervention strategy, exercise

How

— Answer the questions under each intervention level category from the perspective of the actors you are focussing on. Write the answers on post-its

— Look at the result

  ▪ Which are the most relevant interventions?
  ▪ Which ones are feasible because you/your client has the power and knowledge to intervene on this level
8. Paradoxical ideation
8. Paradoxical ideation

The paradox card set is a tool for consciously bringing together the paradoxical sides of a problem to achieve solutions for the whole. It is about AND thinking instead of OR thinking.

Why

Generate unusual viewpoints. Find solutions that suit all, inspite of multiple perspectives.

Result

List of solution ideas
Paradoxical ideation, exercise

How

— From your system map, choose the most important paradoxes. Select two paradox cards and write the extremes of each paradox on the axes on the poster.

— Look at each quadrant separately and ideate on solutions that address their paradox extremes. (Try to generate as many ideas as possible.)

— Combine into one solution – try not to compromise.
Some references
Donella Meadows
Systemic Design Principles for Complex Social Systems

Peter H. Jones, PhD
OCAD University, Toronto, Canada
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Accepted chapter in Social Systems and Design, Gary Misurvell (ed.)
Volume 1 of the Translational Systems Science Series, Springer Verlag

1. Introduction

System theory and its guidelines in practice—systems thinking—have been promoted as the best techniques for raising social awareness about interconnected and complex systems, which may determine human destiny. Societal problems have grown to levels of existential risk, and human limits to cope have been reached or breached. We find ourselves socially incapable of harnessing the political will to enact appropriate policies and forge long-term actions to address these problems. The systems discipline is not to blame for the failure of social will, but the analysis processes and methods claimed as uniquely effective for these problem situations have failed to advance the human crisis of climate change, energy production, political organization, connected economies, globalization, corporations, and urbanization. The systemic movement has been criticized as failing, solipsistic or unrealistic (Enders, 2009; Colopy, 2009; Jones, 2009), leading some to call for integrating systems thinking with practical methods of design practice.

For decades we have seen cycles of convergence and divergence between systems theory methods and the creative design disciplines. While some thinkers have articulated systems thinking as a design process (Ackoff, 1959) or design as a systemic discipline (Nelson, 1954), these positions are not the norm within each field. For instance, Weck and Wibbels (2011) present a recent approach to define a common integration of systems thinking and design thinking as a strong systemic view of complex systems problems addressable by the intuitive and productive approach implicit in design thinking. Design can be considered a third culture with science and humanities (Cross, 1995). This idea is supported by the increasingly popular belief that “all people are designers,” at least in the sense of intentionally constructing their work and lives.

The first conceptual blending of design and systems thinking entwined with design science, a systematic approach to defining large scale systems. The development of design science attempted to bridge design practice and the empirical sciences, following Fuller (1961) and Smart (1950) positions of design as a process of creating sophisticated forms and concepts consistent with scientific and engineering principles. In practice, design science evolved toward a stronger orientation to design methods and process, manifesting a systemic mindset and approach, but without the creative discovery of science or design. The inherent rationalism of design science and the first design methods movement were later rejected by some of the originating designers and theorists (Crosby, 2001).

So we might conclude that design science refers to an explicitly organized, rational and whole systems approach to design, but just the utilization of scientific knowledge of patterns, but design in some sense is a scientific activity itself. This is certainly a reasonable approach, challenged by many designers and design theorists.”
Framing design as conversations about systems

Hugh Dubberly
presentations.dubberly.com/compostmodern.pdf
Philippe Vandebrooeck
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