2016

Synthesis maps: Systemic design pedagogy, narrative, and intervention
Bowes, Jeremy and Jones, Peter

Suggested citation:

SYNTHESiSMAPS
how to deal with systemic complexity

...and the wicked systemic problem?

We as designers can make progress on the historic opportunity to re-envision and redesign existing social systems through frameworks for understanding, a shared view of the problem, and tools to allow us to innovate, and provide transformative systemic change.

Design provides a variety of visual tools and frameworks.
The **GIGA-synthesis map** as a key systemic visual tool for complex problem understanding

*Provide context, precedent and relationship to other systemic mapping approaches*

*Outline elements & aspects of a Synthesis Map creation with examples*
Synthesis Map

how is it a systemic tool?
Choosing a topic – What are the essentials?

• A topic that interests you
• It should be challenging and have enough scope
• Is adequate research is available
• Who is the appropriate audience?

Thinking it Through: A Practical Guide to Academic Essay Writing, Avery et al..
Bruce Mau, Design and the Welfare of All Life, Design Ecologies: Essays on the Nature of Design, Tilder and Blostein
The MINDMAP as a research plan?

Drawing an informal and pictorial outline, sometimes known as a mind map, can be a way of freeing yourself from the constraints of sentences and paragraphs so that you can explore ideas more creatively. To draw a mind map, begin by placing a tentative thesis in the centre of a blank page. Explore the thesis by drawing branches from it to represent ideas and concepts that, from reading and research, you now associate with the topic thesis. As you are drawing/composing your map, create as many branches as you can, and as many twigs as possible from the branches. The mind map can be used as an exploratory method only if you push yourself to explore; restricting your thinking to the main branches will never allow you to recognize the smaller, more subtle possibilities of your topic.

A mind map for the “waste land” sample essay might look something like the diagram to the left. Thinking it Through, Avery
Converging your ideas?

Based on your research about developments in your topical area, and the overlaps between related topics, create diagrams which identify commonalities.

• For example if “diabetes” is the project topic and/or concern, your research might suggest that “food” and “wellness, and maybe “food production” are topics that overlap with it.
SCAFFOLDING ON EXISTING DESIGN METHODS

• the "referential sketch" as a visual pneumonic to understand a system of complexity

• the model & prototype to test team ideas, and create a dialogue around conceptual development

• A design process artifact needs to do both

Paolo Soleri's Sketche, and ongoing study model for Arcosanti
SCAFFOLDING ON EXISTING DESIGN METHODS

Le Corbusier's guidelines for the ATBAT project of 1946.
Checkland’s idealized model, as a “learning” model (LUMAS)

framed with the idea of the “soft system” as a more visual and qualitative method of seeing systems through an “idealized model”

a systemic map that is a shared vehicle for learning
Visual Support for:
Problem Solving, Decision Making, Strategic Planning,
Creative Design, Team Building, Change Management
Knowledge Management & Communication
SCAFFOLDING ON EXISTING DESIGN METHODS

- system stock and flow, and the representation of causal or systemic elemental relations. (Meadows)

- builds on system literacy

- includes influence maps, and other systemic diagrams similar to systemigrams

Diagram of Practicing Physicians in Ontario
The average age of family physicians in Ontario is 52 years old. 9.8% of family physicians in Ontario practice in rural communities, whereas 13% of Ontarians live in rural communities. One third of physicians in Canada practice family medicine, but to meet the need, it should be closer to one half of all physicians.

Diagram of Practicing Physicians in Ontario, Josina Vink, Jessica Mills, Phouphet Sihavong, Social Systems project, Strategic Foresight & Innovation, OCAD U

HEALTHY HEALTHCARE, Oksana Kachur, Jonathan Resnick, Karl Shroeder, SFI Student Project, identifying points of intervention

Professor Jeremy Bowes, OCAD University, Oct. 2016, RSD5
SCAFFOLDING ON EXISTING DESIGN APPROACHES

• uses the designed map, to represent a conversation and dialogue around the activity as demonstrated in Dubberley Pangaro work.

• develops a “rich picture” as outlined by Checkland to engage with the design problem

• co-creates a shared visual model as in the GIGAmaps by Sevaldson.
System diagrams, cause and effect, influence diagrams, etc.

“Systemigrams” by Boardman and Sauser

Protecting Workers in Global Economy, Maggie Dempster, Pansy Lee, and Simon Trevarthen, Understanding Systems & Systemic Design, Strategic Foresight & Innovation Student Project, OCAD U
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Images from IDEO Methods cards
Synthesis Map Creation

what are the principles?
SYNTHESIS MAP CREATION - PRINCIPLES

Synthesis Map creation

Collaborative transdisciplinary inquiry into real world problems to co-design solutions

Practice based approach to studio work & research, collecting user-based information integrated into the understanding of the complex system

Use of design and system thinking to provide a holistic lens, to understand systemic and social system relations, big picture - ecosystem thinking
SYNTHESIS MAP CREATION - PRINCIPLES

The application of “soft” systems qualitative thinking, to intuitively understand complexity of the system

The use of a synthetic “synthesis map” as a shared representation - mental model of the complex problem for collaborative work. “rich picture”
Establishing of a “shared view” of the systemic problem

Creation of the map as a process of discovery, ordering, identifying and simplifying problem issues, working through ambiguity, not definitive solutions

Creation of **narrative of the map** as a problem dialogue around the issues
Synthesis Map method

how are they created?
Seven Modes of the **Design Innovation Process**

**Sense Intent** - Gather info, map overviews, reframe problems

**Know Context** - Workplan for research, search knowledge base, map development and make comparisons, ask experts

**Know People** - Observe and engage people, collect and organize observations of activities, interactions, and findings

**Frame Insights** - Find insights, patterns, map values and experiences, create frameworks

**Explore Concepts** - Frame concept space, principles, assumptions, organizing concepts, make diagrams, sketches, prototypes

**Frame Solutions** - Generate options, cluster conceptual ideas, identify solution narratives and areas

**Realize Offerings & Implement** – create prototypes, strategies and tactics, evaluate feasibility
SYNTHESIS MAP - PROCESS METHODS & TECHNIQUES

TESTING & VERIFICATION
DATA COLLECTION / STATS
STAKEHOLDERS / USERS
UNPACKING SYSTEM ORGANIZATION
VISUAL LANGUAGE
STAKEHOLDER ANALYSIS
SYSTEMIC PURPOSE STRUCTURE
FUNCTION PROCESS MAPPING
CAUSAL RELATIONS & ELEMENT MAPPING
KEY CRITERIA & ISSUES

PROTOTYPES
IMPLEMENTATION PLANS

PATTERNS OF EMERGENCE

RELATED SYSTEMIC BEHAVIOUR MODELS

INFORMATION LAYERS & CATEGORIES

3 HORIZONS

SCENARIOS

NARRATIVE

SYSTEM CONSTRUCT

SHARED VIEW

SYMBOLS ANALOGY METAPHOR

VISUAL MAPPING & SENSEMAKING

RESEARCH QUESTIONS

PROGRAMMING

COMMUNICATION

RESEARCH

DEVELOPMENT

ANALYSIS

SYNTHESIS

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Creating a GIGA-synthesis Map

How do you create a GIGA-synthesis map?

- **Research**, analyze and summarize – evidence & analysis, brief of stakeholder analysis

- **Problem statement** – research question, scope, description, and boundaries of the social system / service.

- **Identify user research and terms in different fields, synthesized across different fields, evidence – based**

- **Unpacking of elements of system, and clarification of the systemic purpose function, structure and processes.**
SYNTHESIS MAP CREATION

• Systemic Principles, and associated visual design language and symbols identified

• Visual mapping of components and relationships of the social system

• Framework model – selection of a system construct /scaffold to test the framework for solutions, inform a possible way to model / visualize the problem

• Prefigured judgements of the solution set, mapping key issues / aspects of the problem; for “the shared view”; development of a narrative

• Look for analogies, metaphors & iconographic symbols that could serve as a vehicle for integration and assembly

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Student team of Icons describing different aspects of wellness for the Culture of Wellness Map project, and top an archetypal diagram of Reputation growth and investment at TIFF
Toronto Urban Ecology Group, Cathy Clark, Heather Russek, Mike Greenwood, Tara O'Neil, Understanding Systems & Systemic Design, Strategic Foresight & Innovation Student Project, OCAD U

Professor Jeremy Bowes, OCAD University, Oct. 2016, RSD5
SYNTHESIS MAP CREATION


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SYNTHESIS MAP CREATION

• Sensemaking visualizing the systemic story, and explores the possibilities for design intervention and change – making

• Layers and categories / groupings of information, analysis, visuals, stats etc. to describe complexity

• Patterns of emergence as possibility, future scenarios, and horizons of possible change and outcomes.

• Synthesis map as artefact.

• What other challenges or influences affect the narrative vision?
CASE STUDIES

Culture of Wellness, Melissa Tullio, Stephanie Massot, Sunita Ferrao, Tyler Calder, Understanding Systems & Systemic Design, Strategic Foresight & Innovation Student Project, OCAD U, 2016
Do Ontario university wellness programs effectively manage and support the mental health of their students?

How might Ontario university administrators achieve their job requirements while also creating a culture of wellness across campuses?
SYNTHESIS MAP CREATION

Elements of Synthesis Maps

Maps that illustrate and make sense of the complex network of elements

Narrative, graphs, behaviour over time graphs

Systemic and organizational diagrams

Photos, illustrations

Timelines and gant charts etc.

Iconography and symbols

Charts, Graphs, statistics and key quotes

Student team sharing research in a working session for the Synthesis Map project
GIGA Synthesis Map Cases

Professor Jeremy Bowes, OCAD University, Oct.2016, RSD5
thank you
Bibliography Resources


