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Introduction Systemic Thinking and Design

Marion Real, IAAC

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Design Research Module

3 Learning Units:

- Introduction Systems Thinking Module
- Research Methods Module
- Design Theories Module

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Plan of the talk:

- Situating Systemic Approaches for (Sustainability) Transitions
- Zooming on Systemic (design) practices in the T&F sector
- Discussing the Transitions project's systemic approach

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Recommended (Research) Resources

Entanglement of Systemic Design and Sustainability Transitions
PhD candidate: Svein Gunnar Kjøde

Systemic Design for circular and local textiles: designing a hemp ecosystem
PhD candidate: Eliana Ferruli

Systemic Design Association Resources:

https://systemic-design.org/

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Situating Systemic Approaches for (Sustainability) Transitions

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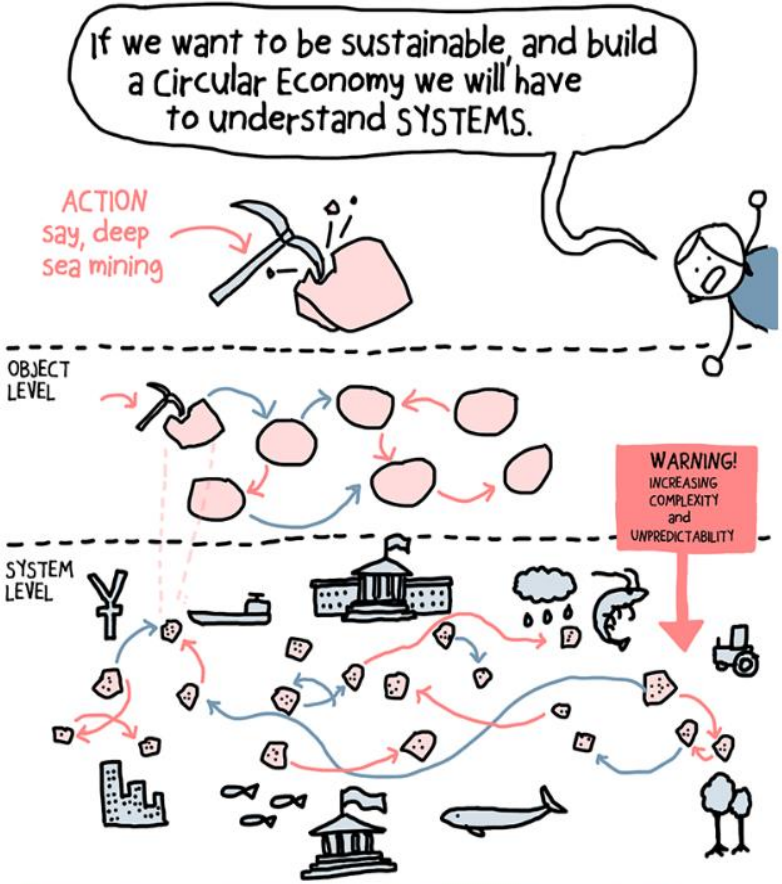

Beehner, C. 2022
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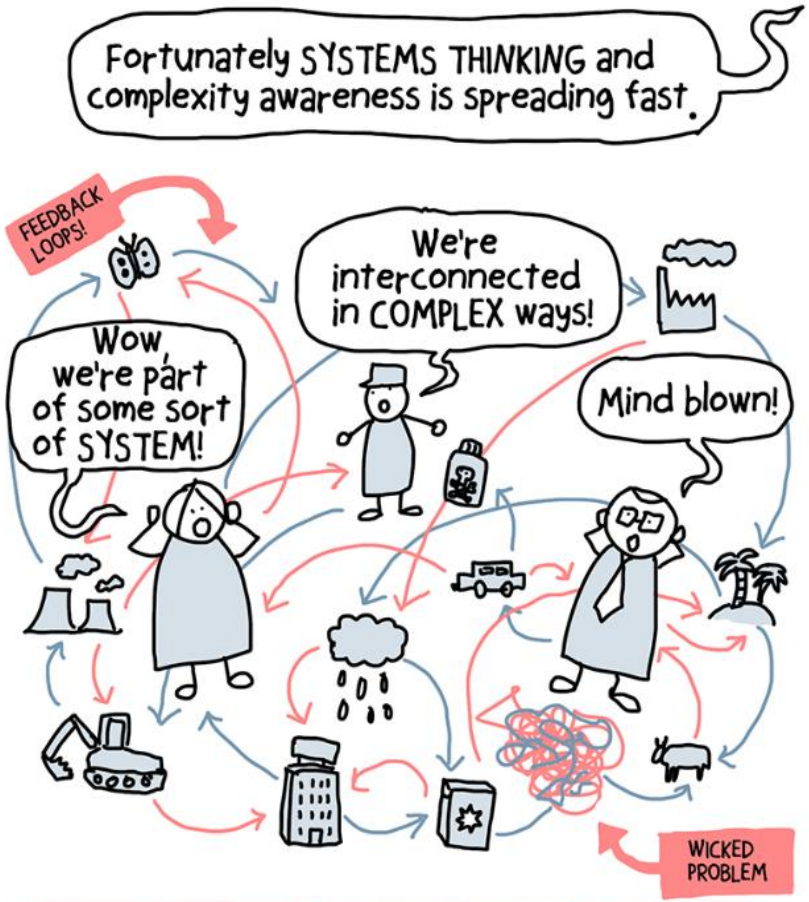
Haas, W. 2022
Metcalf, M. , Hinske, C. 2022
Sverdrup, H.U. et al. 2022



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Metcalf, M. , Hinske, C. 2022
Bozesan, M. 2022
Vahle, T. et al. 2022

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Wicked problems

Jones (2014)
A wicked problem is “a persistent, interconnected and generally worsening challenge that cannot be solved rather understood in their ecology of relationships.”

Wicked problems are “systems problems” that exist within large, **socio-technical systems**, and therefore require new problem-solving approaches with a system level perspective (Irwin, 2019).

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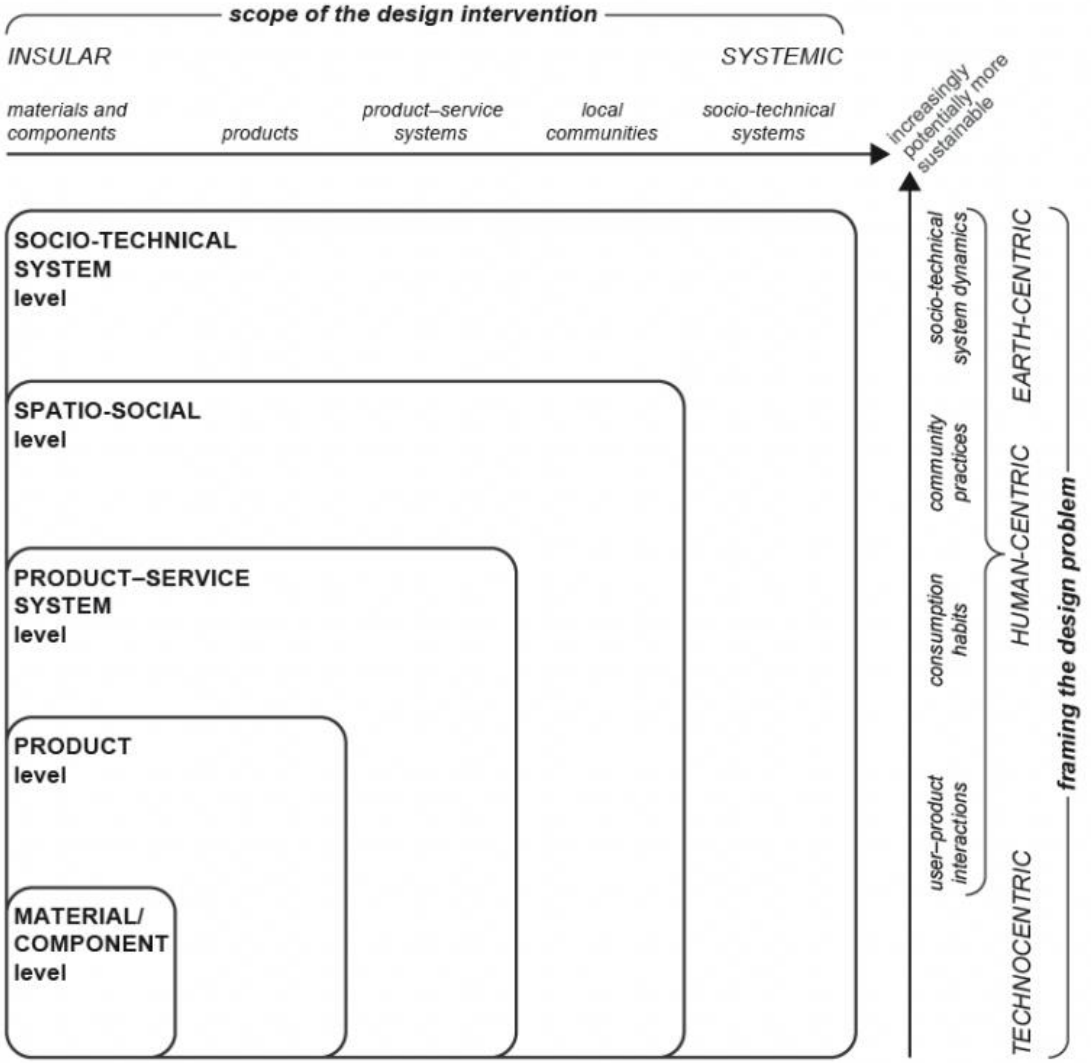
Socio-technical systems

A socio-technical system can be defined as a complex network of forms, infrastructures and facilities that are dynamically intertwined with human interactions and activities, in a process of mutual adaptations and feedbacks between technologies and people (Geels, 2004)

Design for Sustainability
The DfS evolutionary framework (based on Ceschin & Gaziulusoy, 2016)



Situating Systemic Approaches

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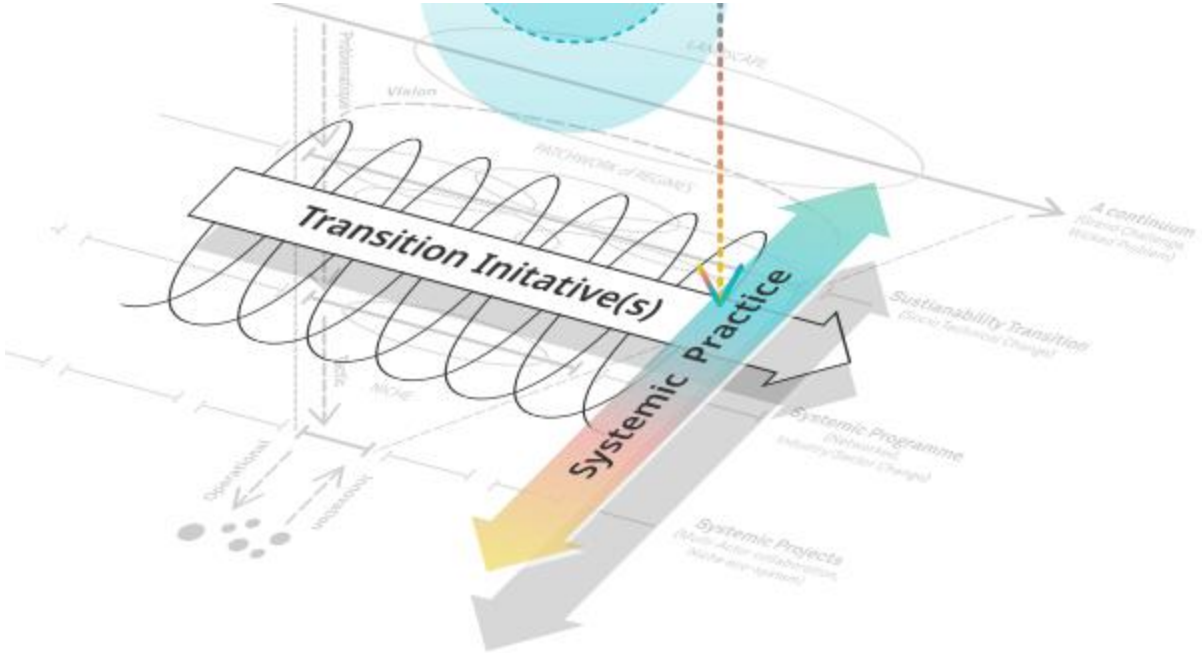

Situating Systemic Approaches

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Systems thinking as a need to foster sustainable transitions

The characteristics of contemporary societal issues suggest that sustainability is a systemic endeavour and must be addressed as such.

The complexity that arises from the interconnected, multi-level, multi-stakeholder contexts call for perspectives that can engage with macro, meso and micro perspectives as a dynamic whole.

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Historical insights

What is a system?

Von Bertalaffy stating that a system is

"**a complex of interacting elements.**"

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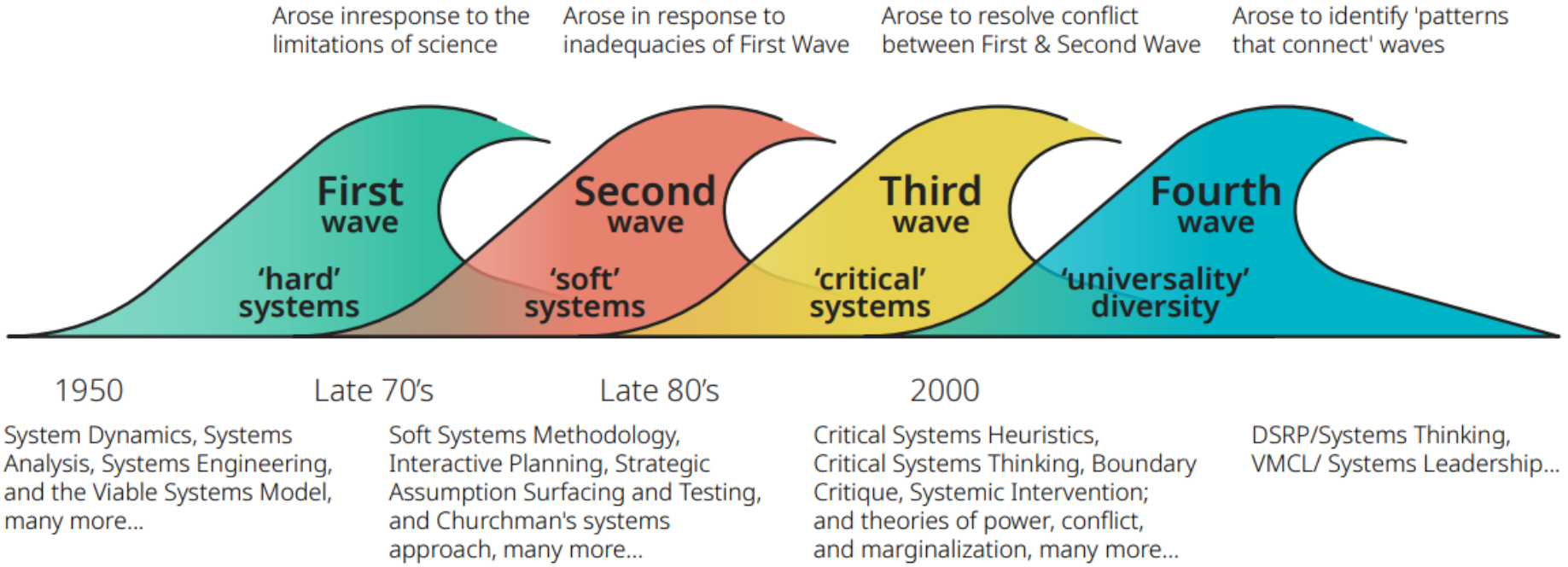
Historical insights



Systems Thinking and its Waves of Evolution

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References on systems thinking and theory

Systems thinking

Cybernetics (Wiener, 1948)
General Systems Theory (Von Bertanlaffy, 1950, 1968)
Systems Thinking (Capra, 1995)
Biomimicry (Benyus, 1997)
Cradle-to-cradle (McDonough and Braungart, 2002),
Industrial Ecology (Preston, 2012)

Systems theory

- General systems theory and systems dynamics (Forrester, 1994; Von Bertalanffy, 1972)
- Systems Thinking, soft and hard systems, (Ackoff, 1994; Checkland, 1999; Meadows, 2008)
- Socio-Technical systems, Multi-level Perspective (Geels, 2002; Trist, 1981)
- Regime change and Transition pathways (Berkhout et al., 2004; Kemp, 1994)
- Transition management and niche management (Loorbach, 2007; Rotmans et al., 2001; Smith et al., 2005)
- Sustainability Transitions (Elzen et al., 2004; Köhler et al., 2019; Markard et al., 2020)

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System thinking

Look at a situation holistically, understanding a system and its part-whole relationships
Understand the role of people within the system, their beliefs and worldviews, whether they are consumers, clients, or other stakeholders. Forlizzi, J., 2013

Systems Thinking in practice encourages:

- exploration of **interrelationships** (i.e. context and connections)
- exploration of **boundaries** (i.e. scope, scale)
- engagement with new **perspectives,** including that of actors and stakeholders

Situating Systemic Approaches

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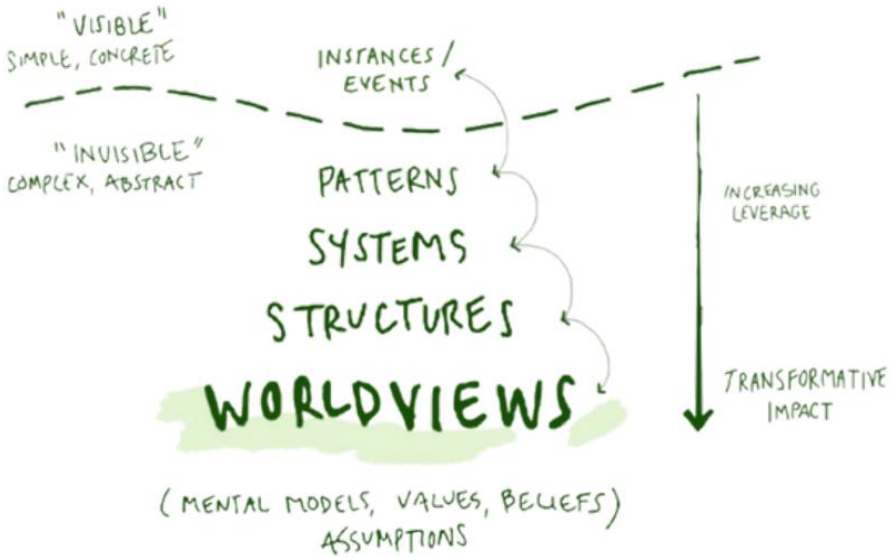

Adapted from: Meadows, D. *Thinking in Systems*. 2008;
Senge, P. *The Fifth Discipline: The Art & Practice of The Learning Organization*. 1990.

SYSTEMS

as (shared) mental constructions

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Changing design practices...from

- Problem solving to problem seeking
- Sketching to modeling and abstracting relationships,
- Prototyping solutions to understanding how potential solutions will perturb the system.

To guide the design team in problem seeking — creating judgments about improving the state of the world, in abstracting relationships — looking at the system at macro and micro levels to understand it holistically and analytically, and in perturbing the system — creating prototypes which will suggest an optimal systems redesign while understanding the implications of the system put forward.
Forlizzi, J., 2013

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From Systemic Thinking to Systemic Design

Systemic Design emerged from the integration of Systems Thinking theories and the design discipline, and focuses on a holistic approach applied to **products, services, and systems** while supporting **an active collaboration among different stakeholders** .

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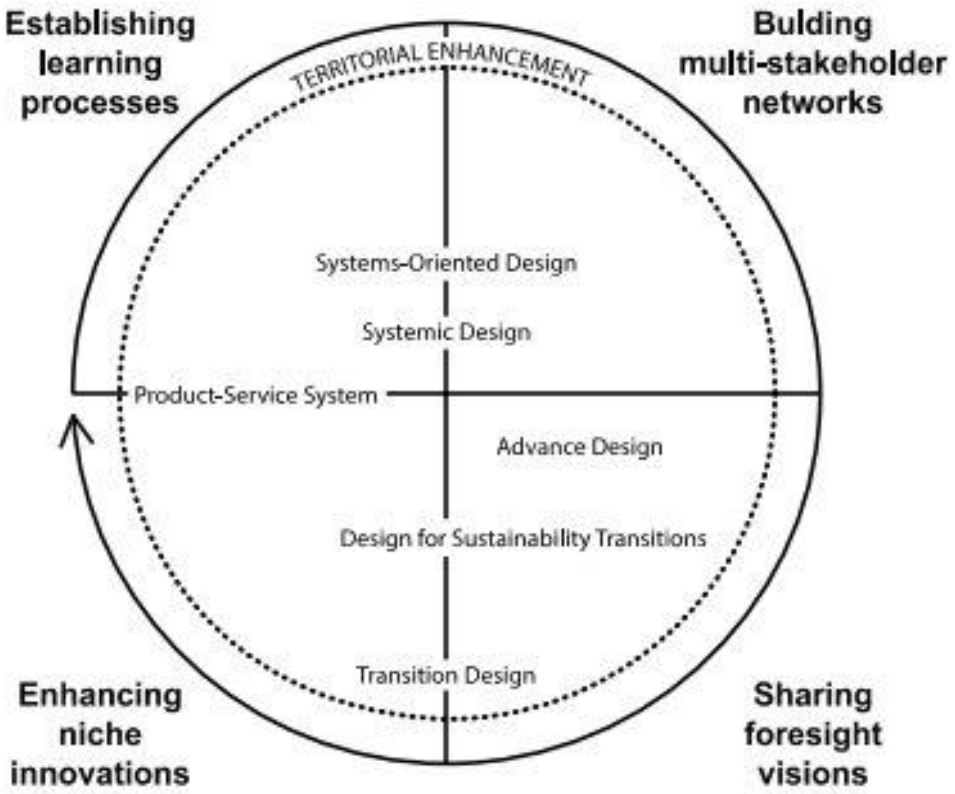
Ceschin & Gaziulusoy (2019),
six systemic design disciplines share common methodological frameworks based on :

1) establishing learning processes,
2) building multi-stakeholder networks,
3) sharing foresight visions,
4) enhancing green niche innovations



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The Systemic Design Framework (Design Council)

The Systemic Design Framework (SDF) was launched by the British Design Council in April 2021, developed to help designers working on major complex challenges across different disciplines and sectors. Rooted in Human-Centred Design, "It places our people and our planet at the heart of design."

It is considered an evolution of the Double Diamond framework, one of the most universally adopted design approaches to date. Key elements of the Systemic Design Framework include:

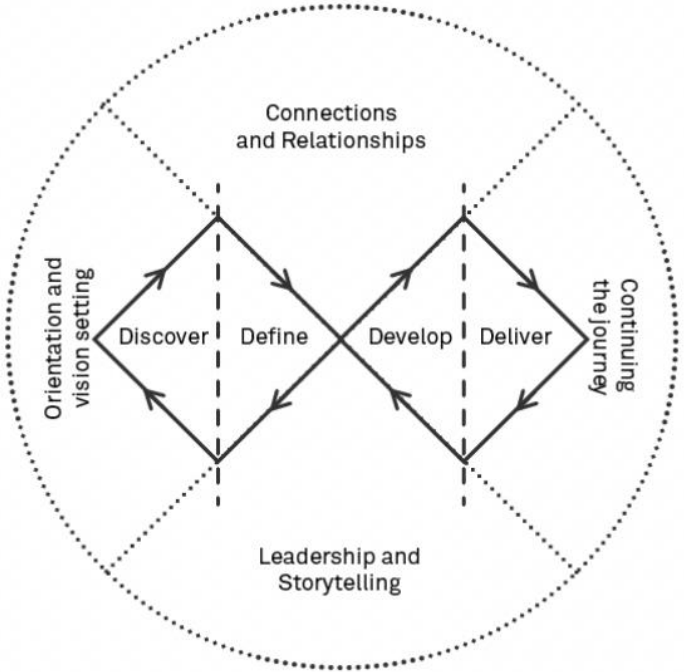
• Six systemic design principles to help people develop or adapt new design methods and tools from their practice:

people and planet centred, zooming in and out, testing and growing ideas, inclusive and welcoming difference, collaborating and connecting, circular and regenerative.

• Four key roles for designers to play when tackling systemic issues: system thinker, leader and storyteller, designer and maker, connector and convenor.

• Types of design activities: exploring, reframing, creating and catalysing.

• Enabling activity surrounding the design process: orientation and vision setting, connections and relationships, leadership and storytelling, continuing the journey.



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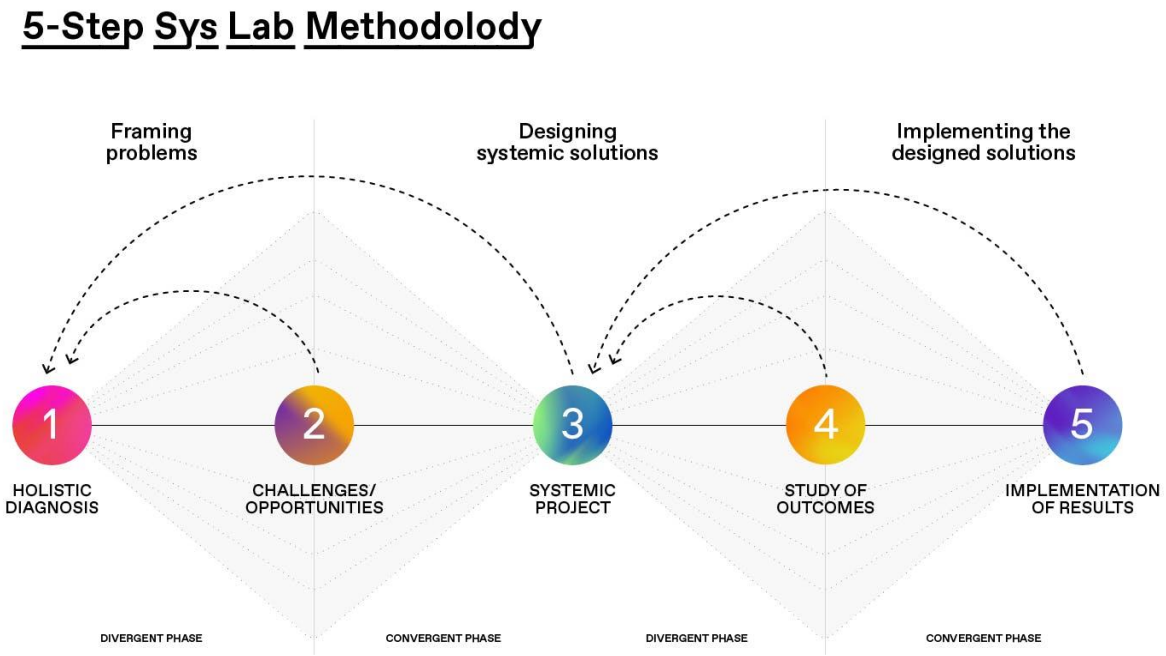
Systemic design Methodology (Polito approach)



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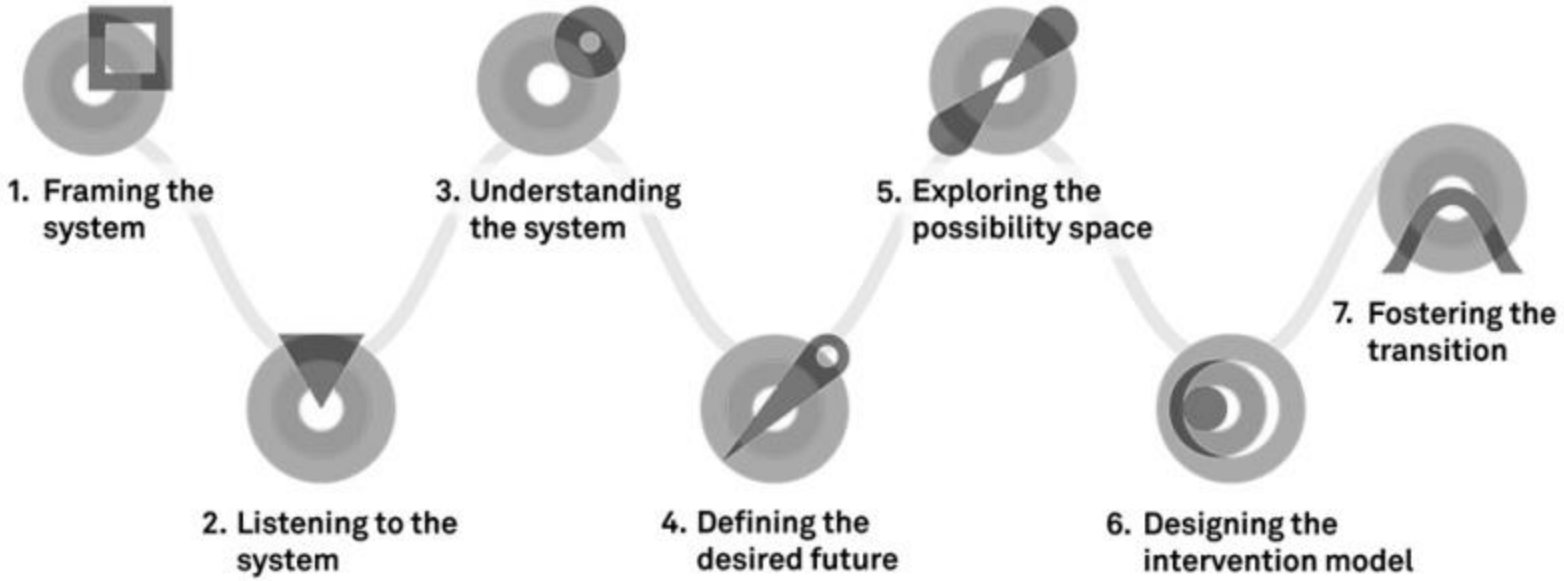
The Systemic Design Toolkit (SDA)



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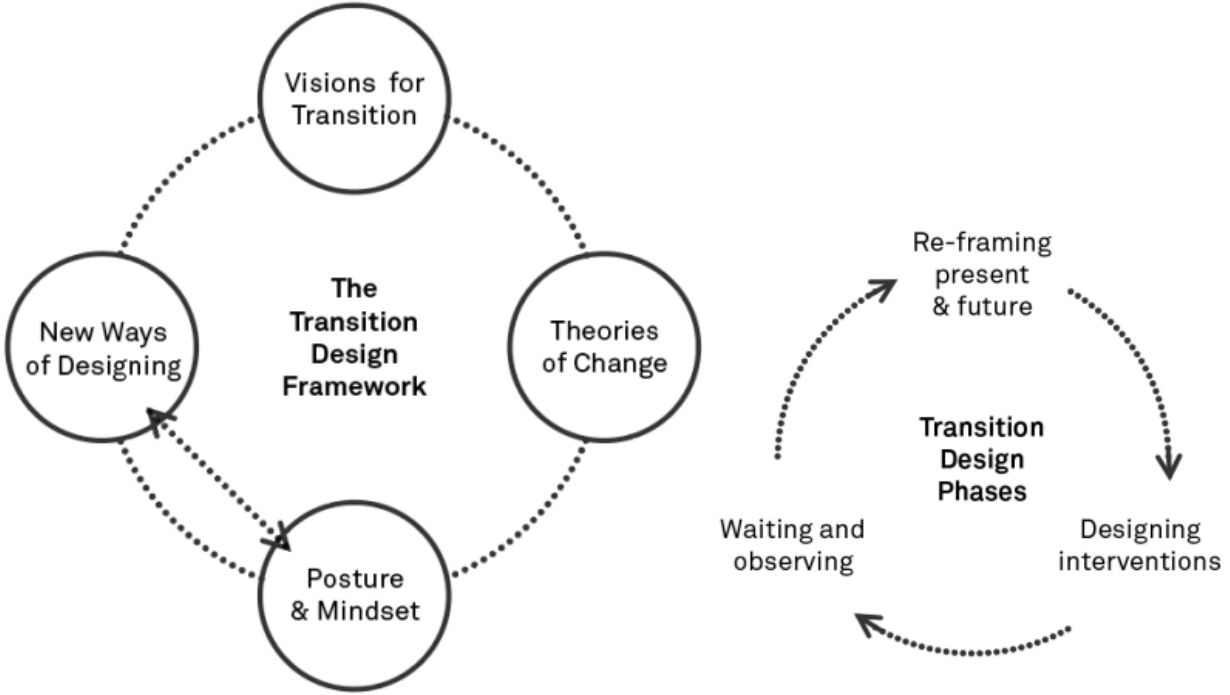
The Transition Design Framework and Transition Design Phases (Irwin 2015)



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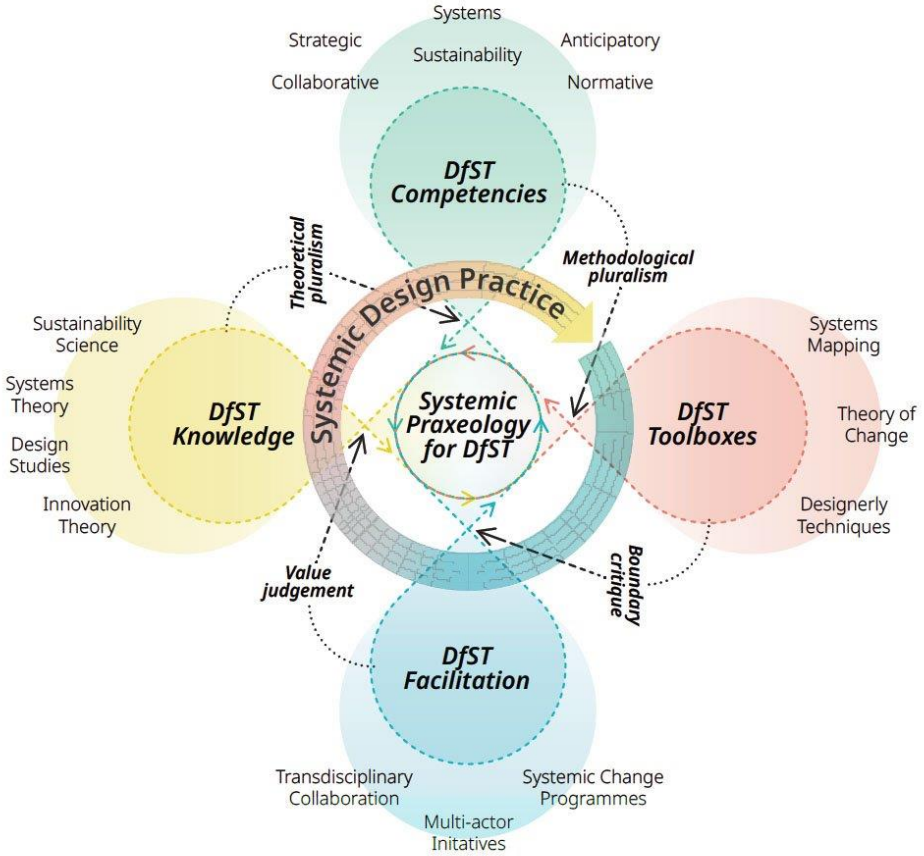

Recommended Resource

The grand challenges of our time, such as Sustainability Transitions (ST) are **non-linear, interdisciplinary and systemic**. In such complex contexts, prescriptive or reductionist approaches are not sufficient in addressing the interconnected and emergent nature of societal transitions.

Entanglement of Systemic Design and Sustainability Transitions
Kjøde, Svein Gunnar

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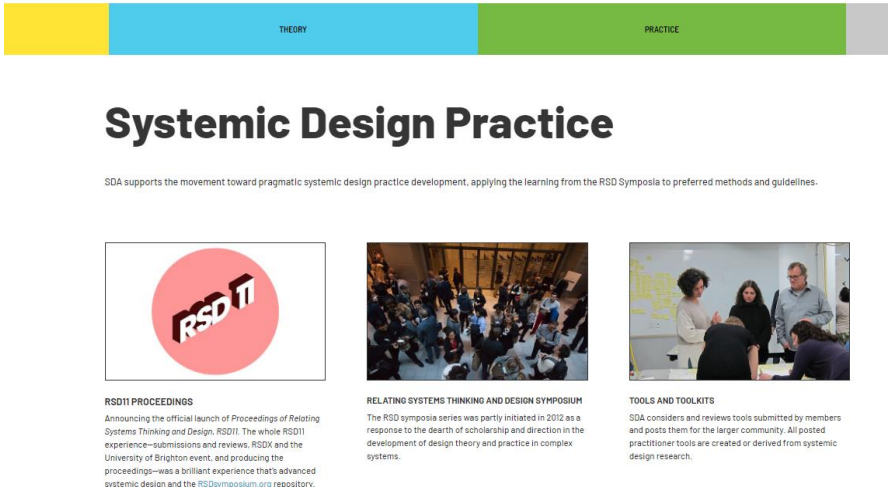
Recommended Resource

SYSTEMIC DESIGN ASSOCIATION | practice

Systemic Design Association website and conference



A worldwide community of systemic design scholars and practitioners engaged in complex organisational and systems change initiatives.

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Zooming on Systemic (design) practices in the Textile & Fashion sector

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Mistra Future Fashion 2011-2019
A pionnering collaborative research program
The program held a unique **system perspective** operating crossdisciplinary in a consortium with over 60 partners

Examples in T&F

The Soil-to-Soil Fibreshed Journey

The global systems driving Fast Fashion are unsustainable: With destructive environmental, economic, and cultural impacts, unfair labour practices, globalised retail and supply chains, people are seeking sustainable alternatives. Values-driven consumers want unique and durable fashion for comfort, self-expression, that is honour the source. Can we shift demand with entirely new, ecological business models?

The South West England Fibreshed is an emerging innovation for ecologically-designed clothing, localised natural sources and styles, and high craft style. This synthesis map shows the shift needed to transition from fast fashion to a novel sustainable model. The Fibreshed aims to build whole system value for a positive alternative for fashion industry, consumers and planet.

Fast Fashion

Exploiting Extractive Goods Logic

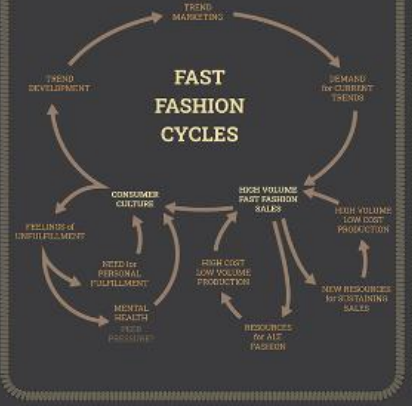
Fast Fashion uses global supply chains & retailing to accelerate the fashion cycle, to push constant trends, in affordable price points to capture youth consumers.

Constant acceleration of the process results in overconsumption, constant waste, and multiple points of exploitation.

Consumers of fast fashion are disconnected from the environmental and human impact of their addiction to buying.

A culture of excessive consumption with unchecked consequences

What if we shifted the basis of everyday fashion from quantity to quality, affordable artisanal quality?



Slow Fashion

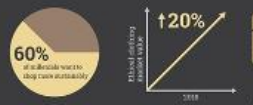
A "Slow Fashion" movement is evolving to reject the Fast Fashion industry.

The slow fashion system upholds:

- Safe working environment and fair wages
- Natural and organic fibres
- Choosing quality, not quantity
- Ethical supply chains
- Clothing recycling
- Consumer education and awareness

CHANGING CONSUMER VALUES

Increased awareness of the working conditions of garment workers, along with fashion's environmental impact are growing cause for concern.



"We continue our work to build an economically and environmentally just textile model from the ground up."
Rebecca Burgess (Executive Director, Fibreshed)

South Devon's Bioregion

Bioregions re-connect people with the natural ecosystems, often in mixed urban and rural territories. Bioregions include geology, topography, climate, soils, water, agriculture, biodiversity, flora and fauna. They are shaped by their "sheds," including water sheds, fibresheds, land conservation sheds, foodsheds and other webs of life.

How would the fashion industry change if it worked biomimetically, like an ecosystem?

Regenerative farming + Circular Economy

South West England Fibreshed

The SWE Fibreshed, encompassing South Devon, was the first in the UK (2015).

Historically one of the UK's most important regions for wool production and processing, the landscape features rolling hills, small towns, red sandstone cliffs and sea views.

- A fibreshed is a geographical landscape that defines and gives boundaries to a natural textile resource base.
- Fibreshed is a non-profit organization of independent producers, connecting fashion and farming through local fibre production.
- Fibresheds seek to protect and share fibre and dye knowledge passed down through generations.

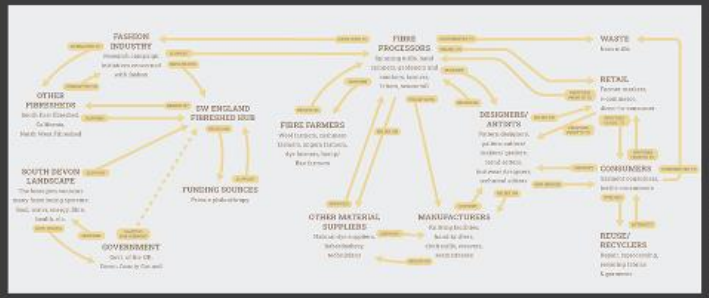
OBJECTIVES of the SWE Fibreshed

1. Connecting a bioregional community of fibre and dye growers, processors, clothing makers and manufacturers to build a more healthy, resilient and regenerative textile ecosystem rooted in, and resourced by, the South West England landscape.
2. Facilitating and collaborating on special research projects and initiatives that explore the feasibility of a UK homegrown fibre and fashion ecosystem more widely.
3. Reconnecting the worlds of fashion and farming through storytelling, case studies, and other place-based, narrative work.

Farming Fashion

As the fashion industry responds to changing consumer demands, the emergence of fibresheds present an opportunity for sustainability in fibre production by going "back to basics."

"The day that we can buy a fully UK grown and manufactured wool sweater or linen t-shirt in a High Street shop is a long way ahead, but the movement to achieve this is gaining momentum fast."
-Emma Hague (Founder, South West England Fibreshed)



Holistic approach to sustainability (South Devon)

A fibreshed, with its soil to soil values, is as integral to a bioregional landscape as a watershed.

When it becomes an active agent of the shift to regenerating both soil and human wellbeing, naturally it accelerates a shift in values that underpin human culture.

Coming back to Earth (Fashion industry)

Fibresheds create a holistic, localized approach to sustainability that aligns with consumer's shifting values and increasing sense of purpose. The rough embodiment of circularity. Fibre called fulfills purpose by reconnecting us with the biosphere and disrupting our addictive consumerism.

Sowing seeds of change (Government policymakers)

As partners of change and sustainability, local governments must support and drive collaboration between sectors to create a cohesive and integrated system that is incentivized towards and plans for sustainable production.

Regenerating for generations (Farming community)

Brimming with a wealth of knowledge and stories of success, Fibreshed breeds collaboration, inspiration and trust amongst diverse and ecological farming communities to enable and encourage adaptation, knowledge creation and preservation.

Sharing the value of Fibreshed

By leaning into Fibreshed as a resource, there is an opportunity to tighten local networks, generate knowledge and offer both materials and processes to the large fashion and clothing system to help create truly sustainable production.

This would also bring more resources into the Fibreshed to invest in local producers and knowledge generation.

Fibreshed interventions to transitions (Solutions for three-level change)

How might we build, capture and retain knowledge in the local Fibreshed?

How might we involve all Fibreshed actors at the local level to form relationships while creating value?

How might we align Fibreshed's value creation with the large local movements of sustainability?

Soil to Soil

Fibreshed uses regenerative 'soil-to-soil' processes to create positive feedback loops by nourishing and strengthening the entire system. It's about "going back to basics", harnessing nature's own materials and processes.

Future development & collaboration

Key opportunities for the South West England Fibreshed are related to increasing local knowledge, capital & interconnectivity between actors.

These opportunity spaces are where the Fibreshed has the most control and influence.

THE BIOREGIONAL LEARNING CENTRE

FIBRESHED South West England

Designed 2021 for Bounce Beyond and the BLC / Fibreshed by Isaac Mason, Jonas Law, Jocelyne Copeland, Jure Pak, and Kirby Hamman (OCAD University) with Prissy Arun Kumar and Peter Jones

https://rsdsymposium.org/wp-content/uploads/2024/01/Synthesis-map_Fibreshed.png

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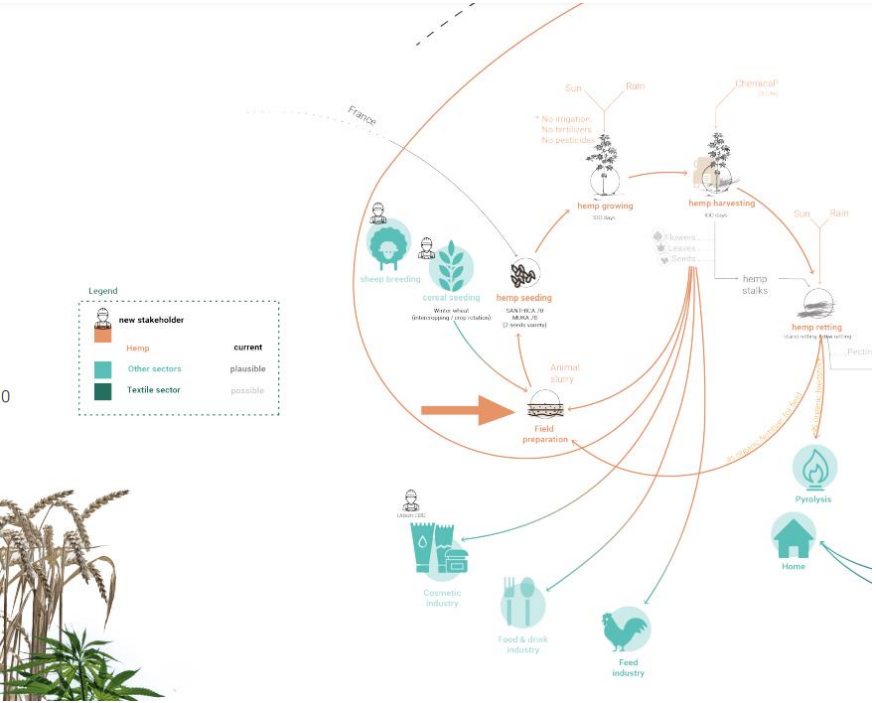


GOOD PRACTICE OF SYSTEMIC DESIGN FOR TEXTILE VALUE-CHAINS

Systemic Design for circular and local textiles: designing a hemp ecosystem (upcoming)

PhD Candidate:
Eliana Ferrulli, SysLab Torino

Examples in T&F

Recommended Resource

Routledge
Taylor & Francis Group

Fashion Practice, 2020, Volume 12, Issue 1, pp. 6–33
DOI: 10.1080/17569370.2020.1716546

Exploring Local Business Model Development for Regional Circular Textile Transition in France

Marion Real, Iban Lizarralde and Benjamin Tyl

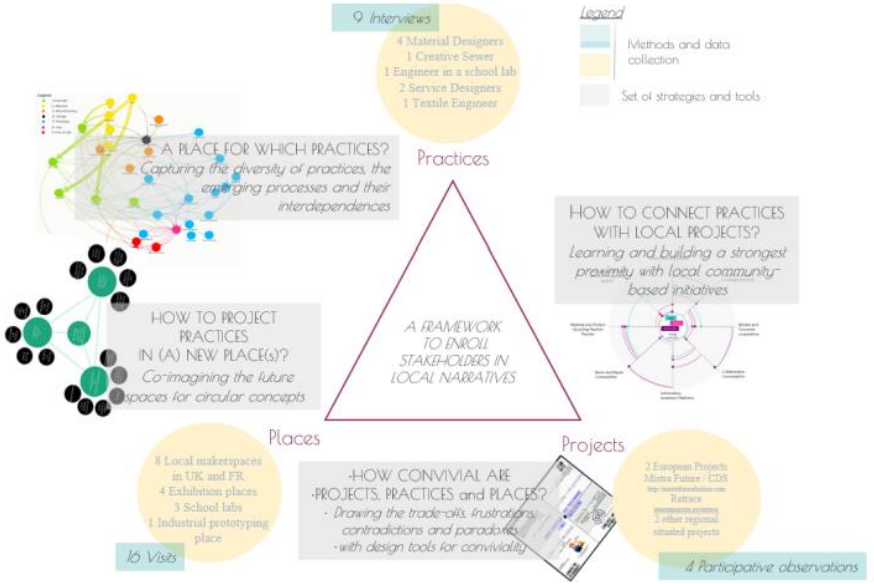
Marion Real recently conducted a PhD in the field of eco-innovation. With a strong background in user-centered design, ergonomics & human factor, she specializes in the field of sustainable fashion and apparel business, and is working on the recovery of clothing and the design of supply-chains built around natural fibers, recycled clothes and local products. m.real@estia.fr

Abstract

From a cosmopolitan localism perspective, the circular economy could be described as a web of smaller circular economies where the core development is situated in local areas, like cities, or regions, with the active participation of territorial stakeholders. The objective of this research is to explore the development of local business model niches within the scope of circular textiles and fashion, including social enterprises. The research is based on the analysis of a specific territory, the Nouvelle Aquitaine Region in France, where participative observations at different scales (local, regional and interregional) have permitted an

REAL, 2018

Systemic Design Research applied to local textile ecosystems



https://ualresearchonline.arts.ac.uk/id/eprint/13859/1/Practices_Places_Projects_Enrolling_Stak.pdf

Examples in T&F

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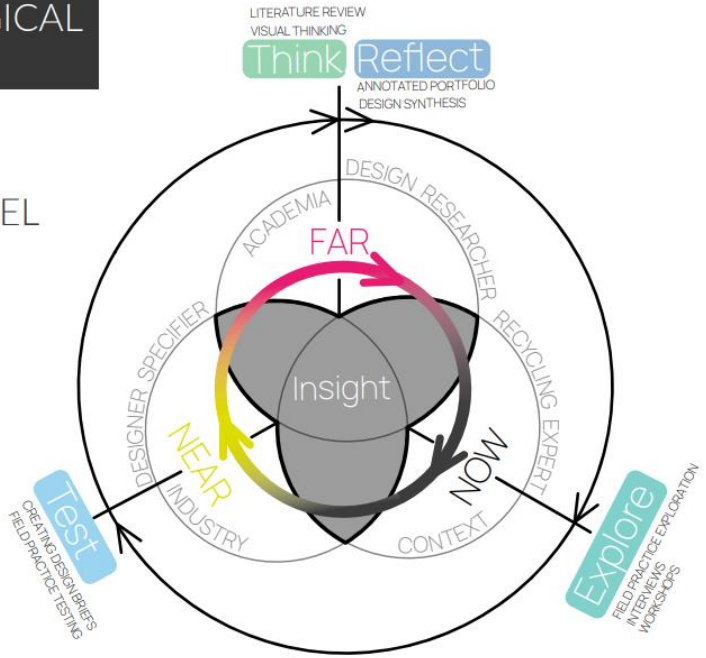
EMERGING (SYSTEMIC) DESIGN PRACTICES FOR TEXTILE RECYCLING

METHODOLOGICAL FRAMEWORK

INDUSTRY & ACADEMIC STEERING WHEEL



PRACTICE FRAMEWORK

DESIGN FOR RECYCLING KNITWEAR

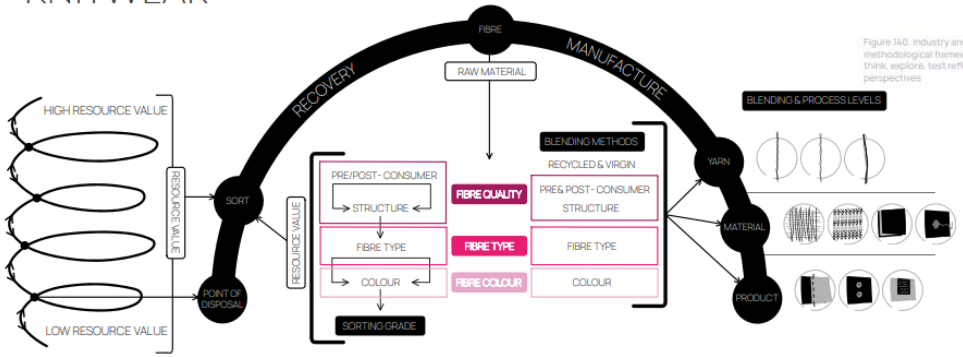


Figure 140. Industry and Academic Steering Wheel - A methodological framework combining four stages: think, explore, test reflect with collaborative roles and perspectives

Hall, C. (2021). *Design for Recycling Knitwear: a framework for sorting, blending and cascading in the mechanical textile recycling industry* (Doctoral dissertation, University of the Arts London).

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Discussing the Transitions project's systemic approach

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TRUE OR FALSE ?

- Transitions project aim to foster multi-stakeholder collaborations to **be aware** of and **rethink** the T&F towards digitalisation and sustainability

- The **Loophole toolkit** is based on a process that support system's perspective from system exploration to gap & opportunity analysis

- Transitions Labs act as playground to foster cooperation and learning, raise awareness, design interventions and generate reflections **with** current and future practitioners

- The Transitions project is using the **Systemic Design Framework** based on the Double Diamond process as project methodology to guide partners in developing their activities

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