2018

Mapping disciplinary mobility for tackling complex problems

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Models and processes of systemic design
–

Mapping disciplinary mobility for tackling complex problems

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Ciao!

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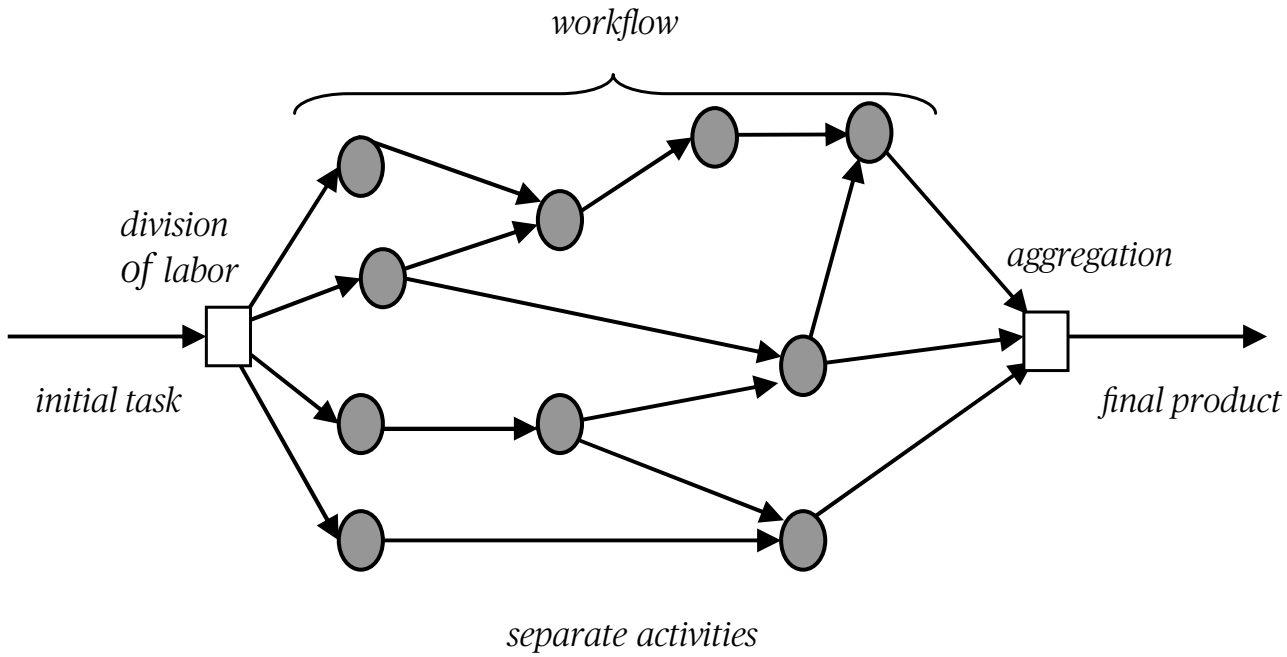
Working groups approaching to problems with high levels of complexity can be understood as complex systems by themselves.

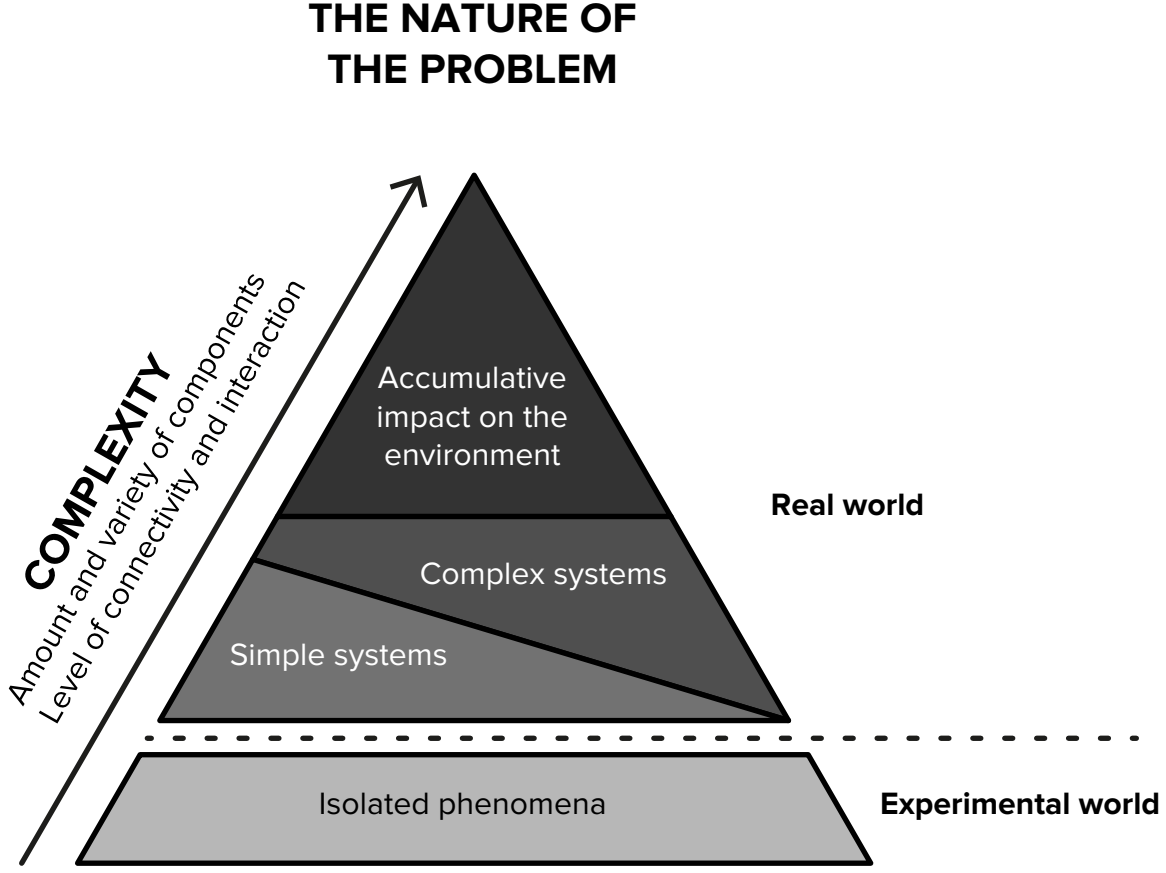
Working groups approaching to problems with high levels of complexity can be understood as complex systems by themselves.

Working together with creative purposes in order to approach to complex issues requires **to enable a self-organization process** among agents.

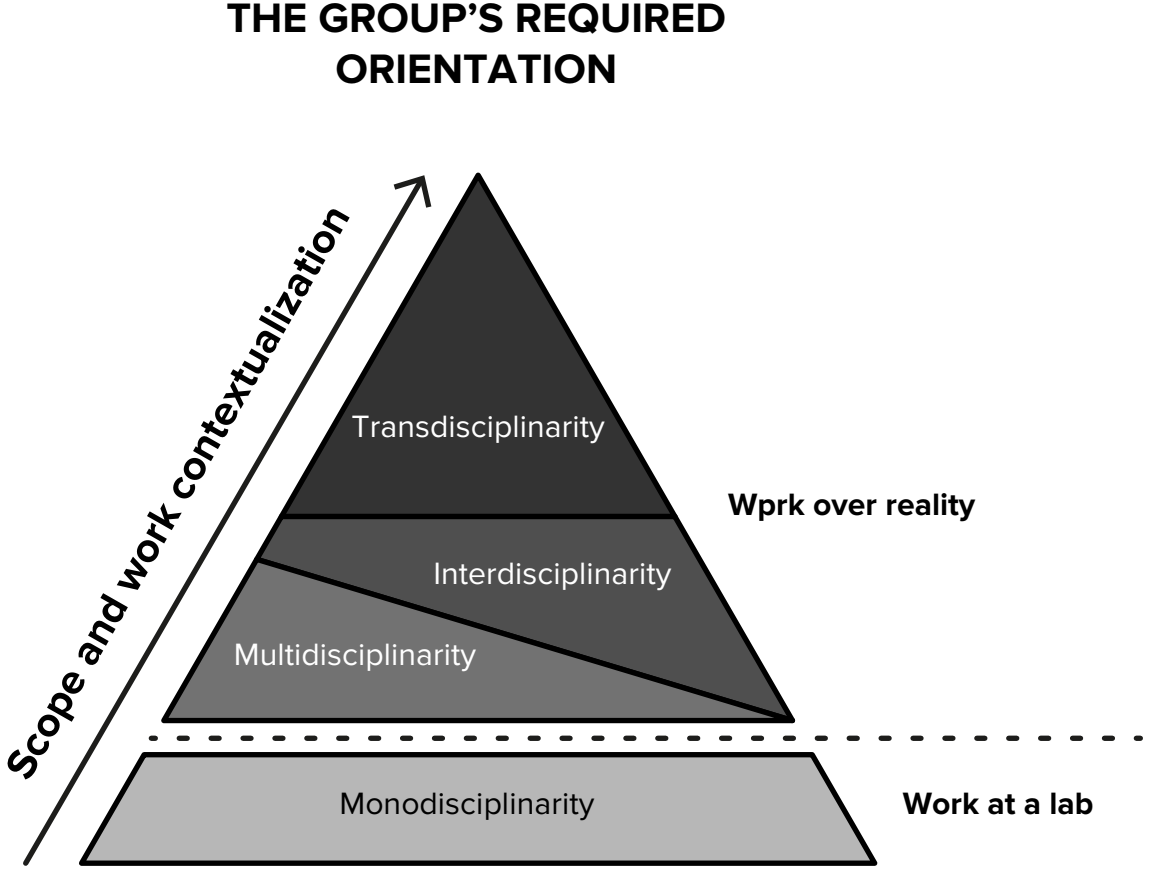


Model depicting a coordination process of self-organization in communicating groups
(*Heylighen*, 2013)

According to Heylighen (2013), collective intelligence in working groups can be studied as a **systemic interaction of self-organization** that aims to coordinate individual agents' forces in order to tackle a shared problem with a more powerful approach than the one any of them might have developed individually.



Adaptation of situations/problems pyramid
(González-Castillo, 2015)

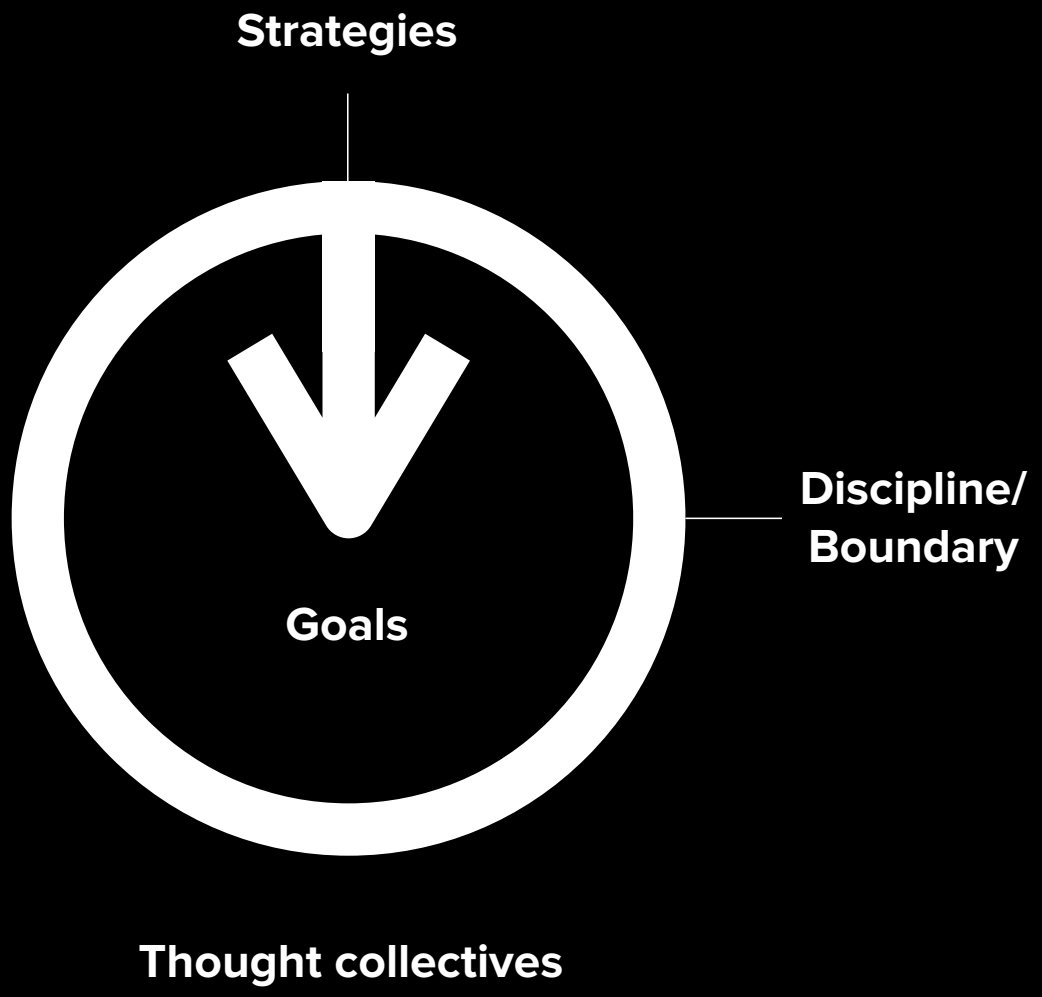


Adaptation of disciplinary orientations pyramid
(González-Castillo, 2015)

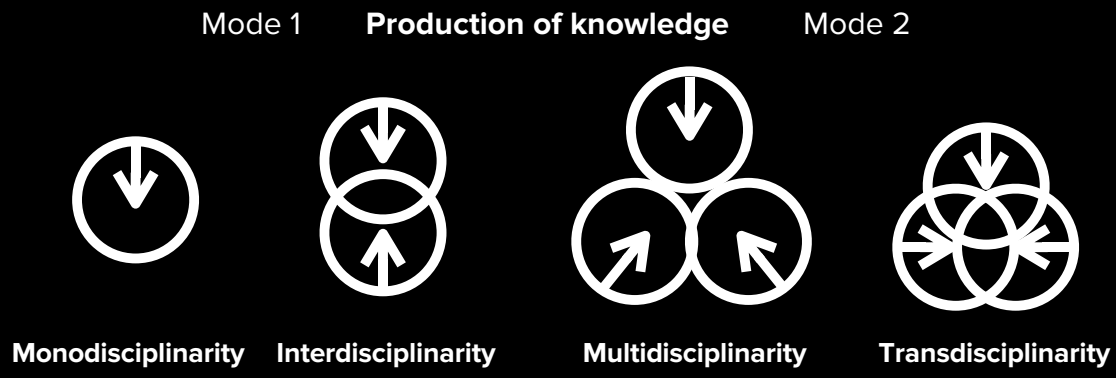
> To address the problems in the environment, social systems and human health, we need a paradigm shift that allow us to **understand, design and deploy interventions in complex systems.** This paradigm shift will require a post-disciplinary approach; a new "participant design" process in which **the participants in the system are the designers**."

— **Joichi Ito**, *The Practice of Change, How I survived being interested in everything,* 2018


The more complex our problem is, the more it takes **to design a self-organization process**.



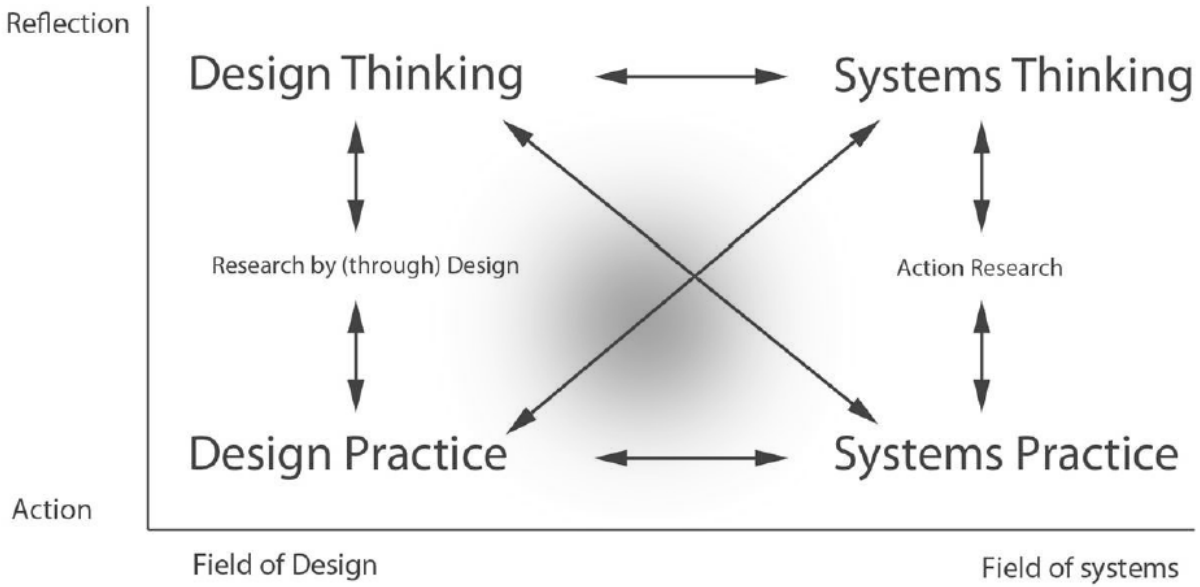
One of the main problems in self-organization processes of human working groups is the fact that **individuals' interventions respond to a shared framework of paradigms, interests, specialized language, methods and ideologies that were historically built through disciplinary practices.**



Moving forward from disciplinary boundaries enables a more complex way of self-organizing and producing knowledge.

Disciplinary mobility: the capacity of agents to flow across institutionalized systems of knowledge, oriented by their interests of agency, and regulated by diverse exchange dynamics that enable their organization and linkage with other agents through the consumption, production and application of information and knowledge.

– **Luis Marines**, *Disciplinary mobility: Elements for a critical cartography of ideas*, 2016



Field of possibilities in Systemic Design
(Sevaldson, 2013)

Complex problems solving for self-organized groups requires the formulation of **systems-oriented and cross-disciplinary approaches** to be developed collaboratively.

There is a possibility in systemic design to create innovative **theoretical and methodological frameworks for enabling disciplinary mobility**.

The challenge

- To design an experience that helps understanding **how our disciplines shape the way we approach to complex problems** and **how we interact with other individuals** while working in a group.
- To make those interactions explicit through **visual thinking tools**.
- To create an interactive dynamic that **promotes disciplinary mobility** in self-organizing groups.

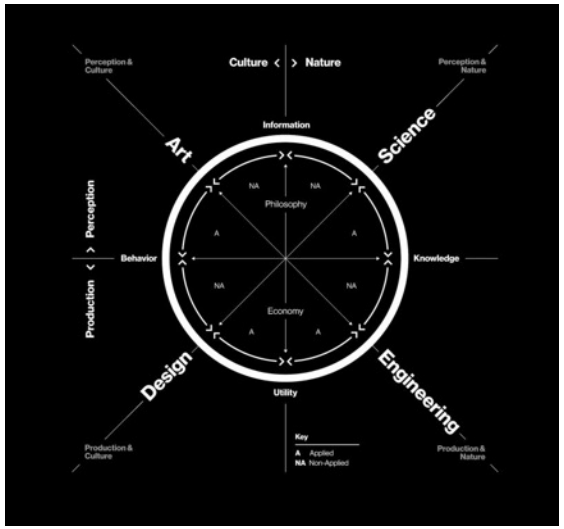
Journey stages

Adaptation of Arnold van Gennep's "rite of passage"

"rites which accompany every change of state and are marked by three phases: separation, margin, and aggregation."

(Turner, 1966)

Framework

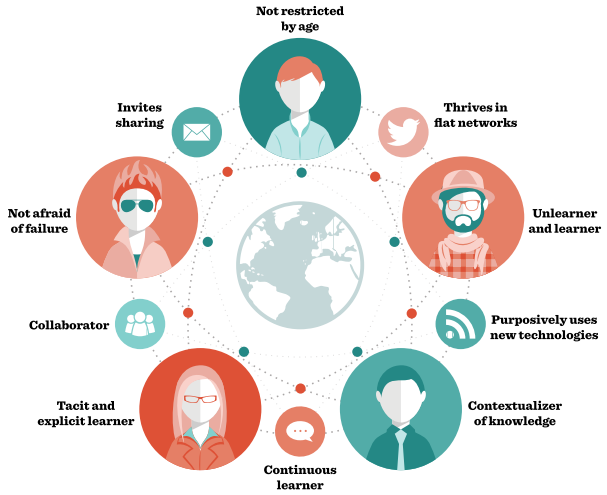


Neri Oxman's Krebs Cycle of Creativity

"a map that describes the perpetuation of creative energy [...] (across) four modalities of human creativity—Science, Engineering, Design and Art—."

(Oxman, 2016)

Persona

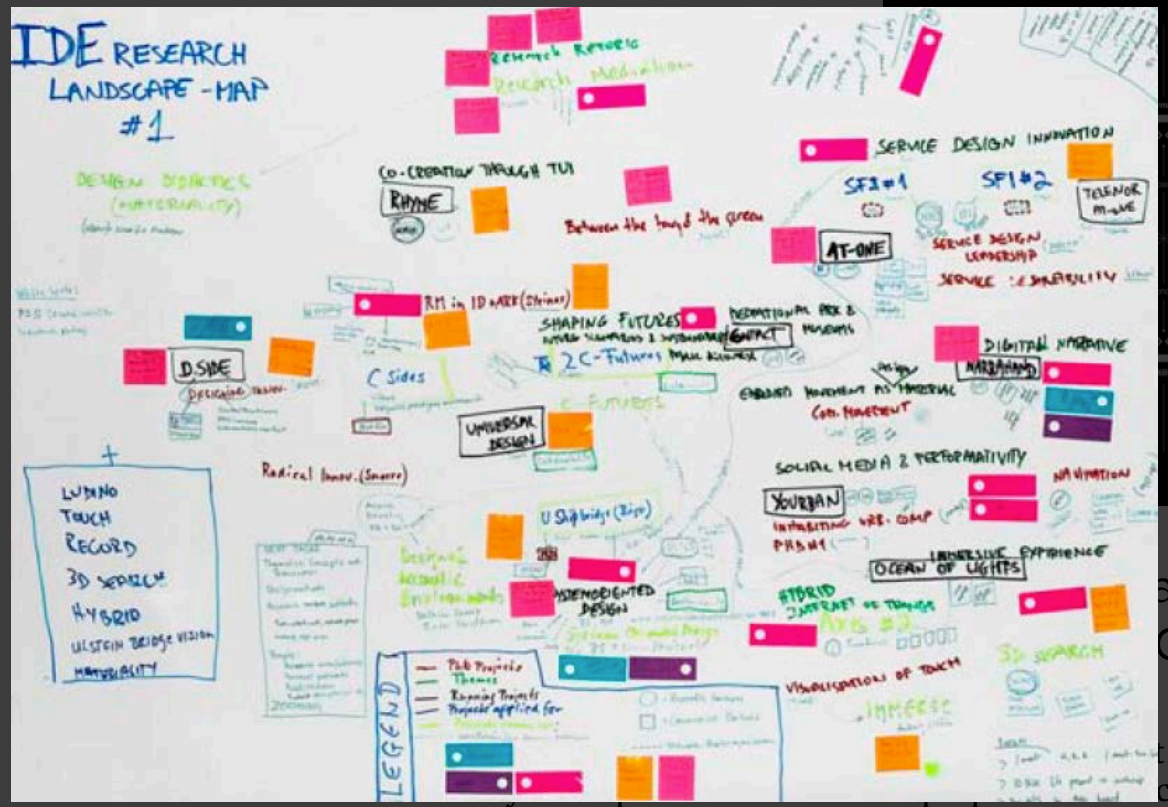


John Moravec's concept of "knowmad"

"... a nomadic knowledge and innovation worker [...] who can instantly reconfigure and recontextualize their work environments and relationships."

(Moravec, 2008)

Journey stages



separation, margin, and aggregation."

(Turner, 1966)

Framework

Technique

GIGA-mapping

"GIGA-mapping is super extensive mapping across multiple layers and scales, investigating relations between seemingly separated categories and so implementing boundary critique to the conception and framing of systems."

(Sevaldson, 2011)

an's Krebs
Creativity

describes the
creative energy [...]
(across) four modalities of human creativity–Science, Engineering, Design and Art–."

(Oxman, 2016)

Persona

John Moravec's
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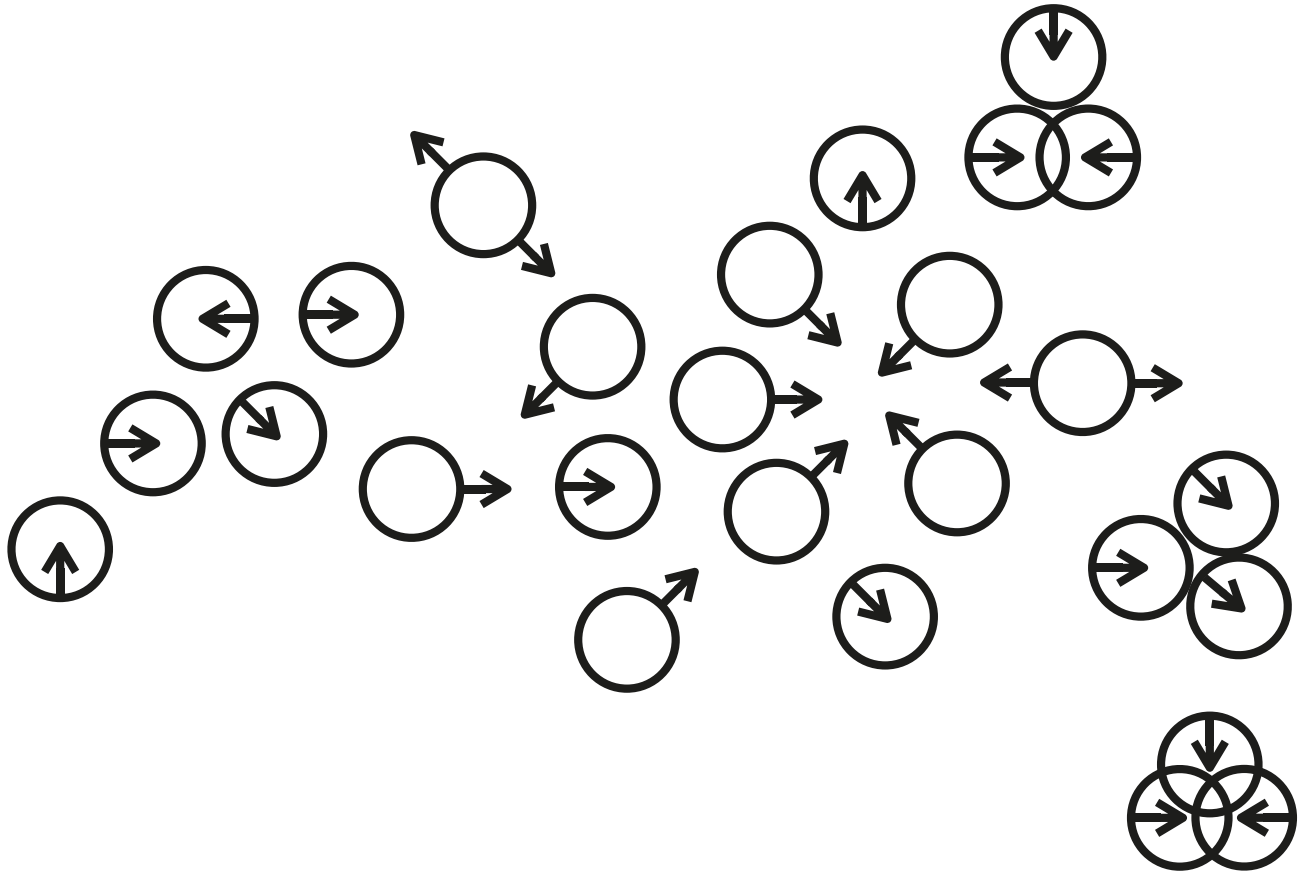
"... a nomadic knowledge and innovation worker [...] who can instantly reconfigure and recontextualize their work environments and relationships."

(Moravec, 2008)

Journey stages

Arnold van Gennep’s “rite of passage” model is applied to understand the disciplinary interaction process as a journey/experience where **the individual experiments an identity transformation**, moving from a monodisciplinary perspective into a cross-disciplinary reflection.



SEPARATION

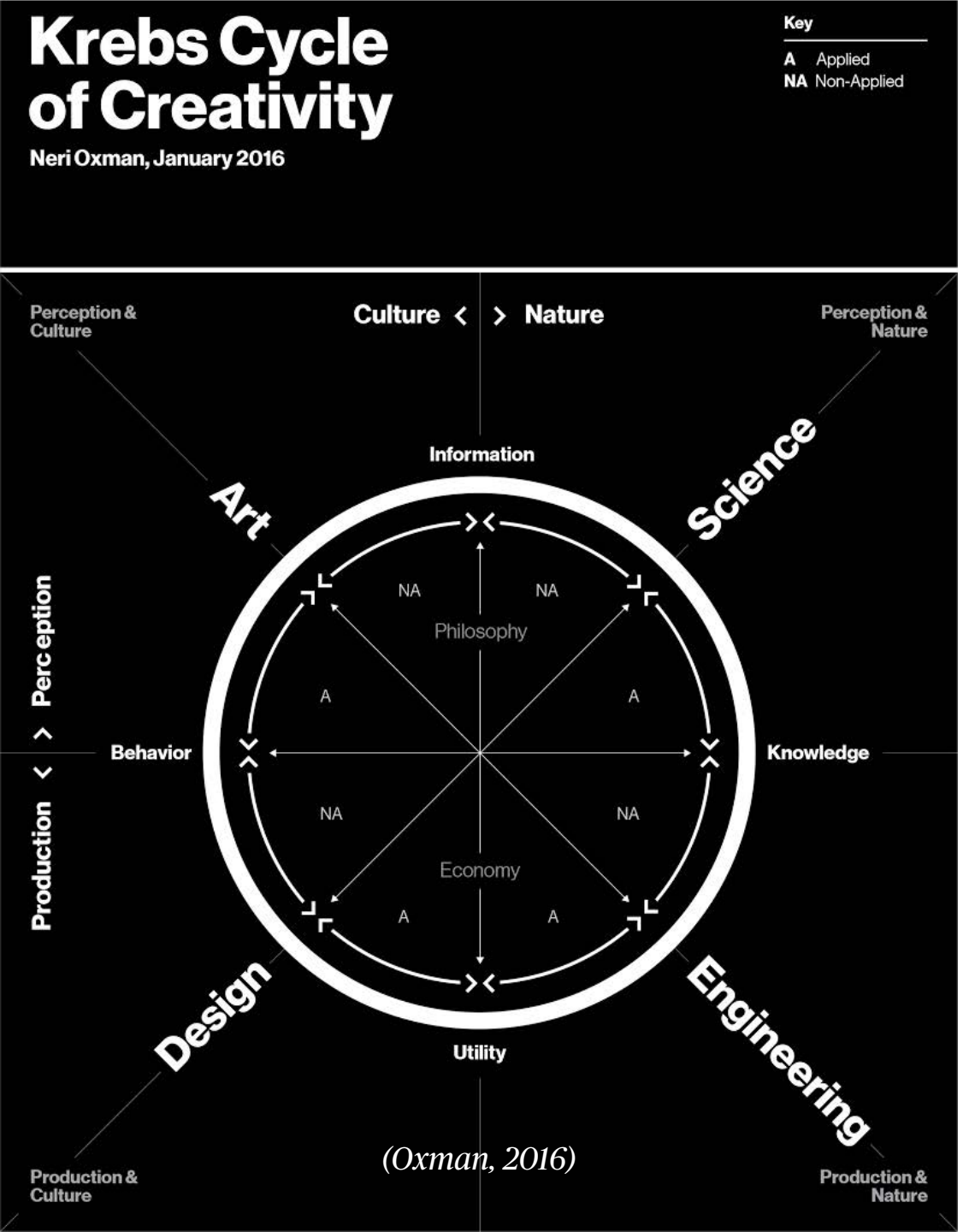
Leaving monodisciplinarity. First approach to complex problems and systems thinking.

MARGIN

Understanding cross-disciplinarity as a systemic interaction.

AGGREGATION

Integrating a cross-disciplinary team and designing a distributed workflow.

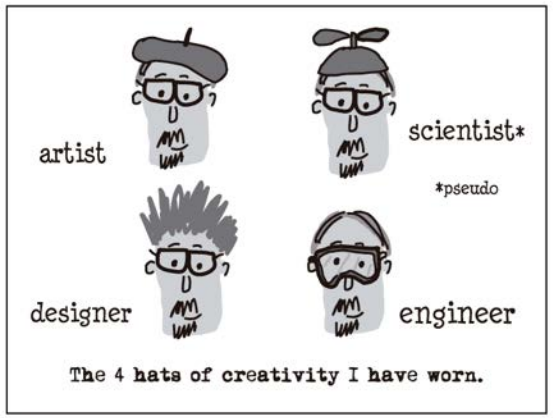


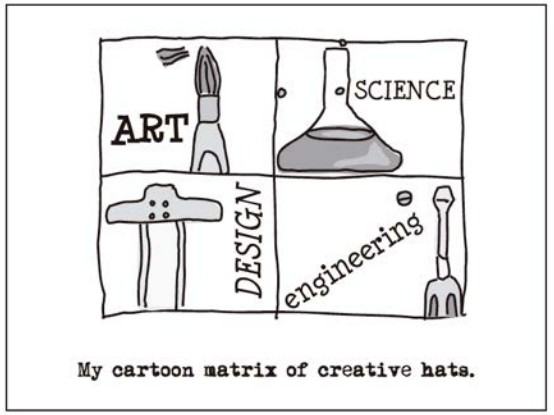
(Oxman, 2016)

Framework

Neri Oxman's Krebs Cycle of Creativity (based on Rich Gold's four hats of creativity matrix) works as a framework to locate the flows of human creativity across metaphorical disciplinary spaces.

As a speculative map, the KCC is intentionally abstract and can be understood as a clock, a microscope, a compass and a gyroscope





(Gold, 2007)

Persona

Finding attitudinal patterns and creating personas can help the understanding of the different profiles that you could find in a self-organized group.

“The local”

An expert on a single discipline who tends to isolate knowledge production.

“The tourist”

An interdisciplinary curious with mixed expertise who usually appropriates knowledge for specific purposes..

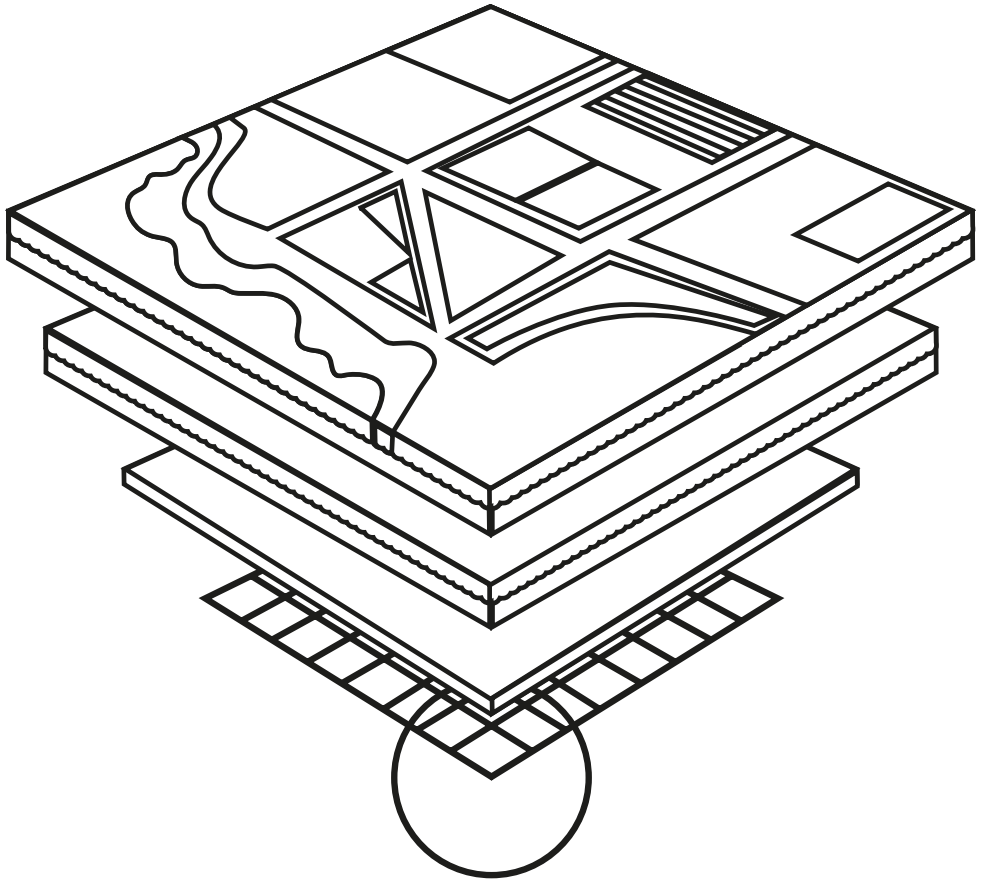
“The knowmad”

A transdisciplinary strategist and knowledge integrator who can easily work as a broker in heterogeneous groups.

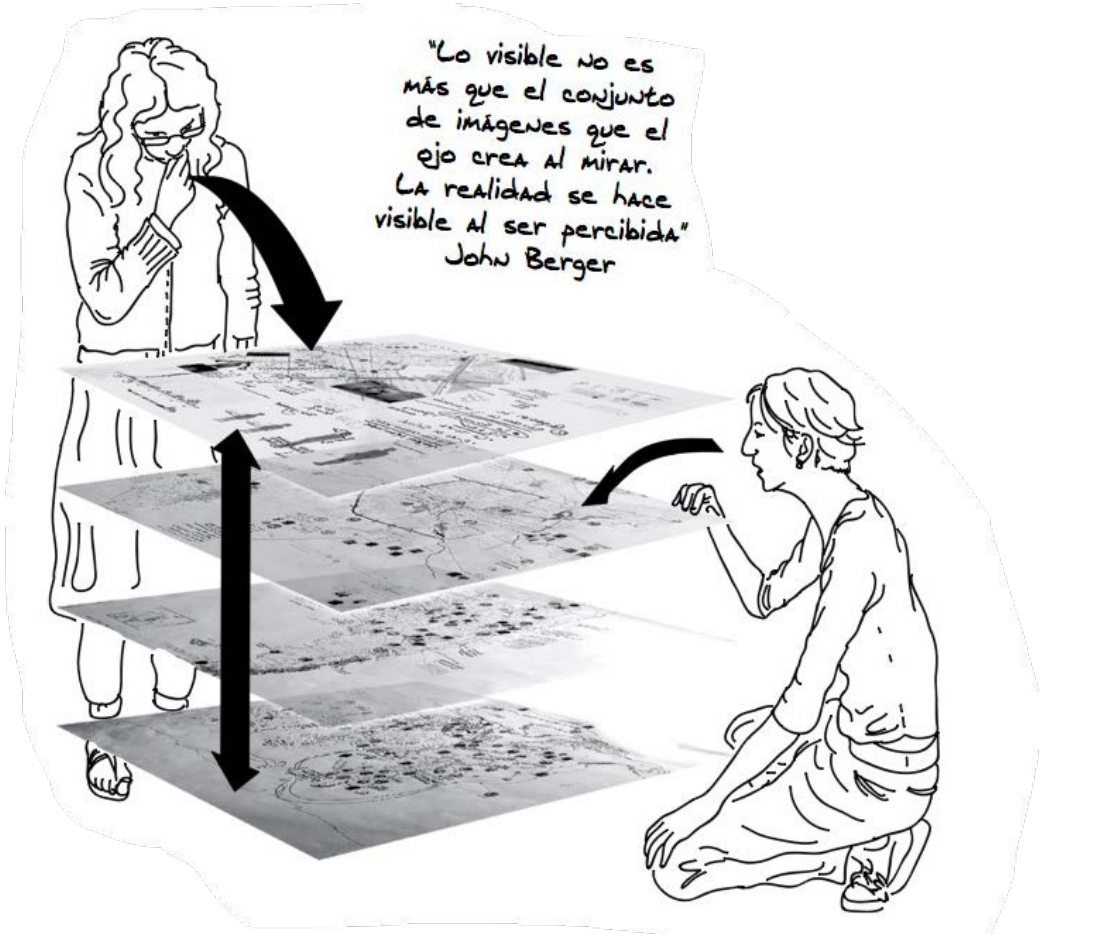
+ disciplinary specialization
- willingness to collaborate

+ willingness to collaborate
- disciplinary specialization

Technique



(Marines, 2017)



Multiplanos: abordajes y miradas

Creación de panoramas temáticos, a partir de la investigación, participación colectiva y sistematización de informes, abordando diversas miradas para construir una herramienta de reflexión con fuerte impacto visual.

(Ares & Risler, 2013)

Using spatial metaphors to conceive **disciplinary profiles as “nationalities”** and **disciplines as “mobile territories of knowledge”** can help self-organizing groups to understand the problems they are tackling and the strategies they can integrate into a workflow in a visual and interactive way.

Knowmap

Workshop

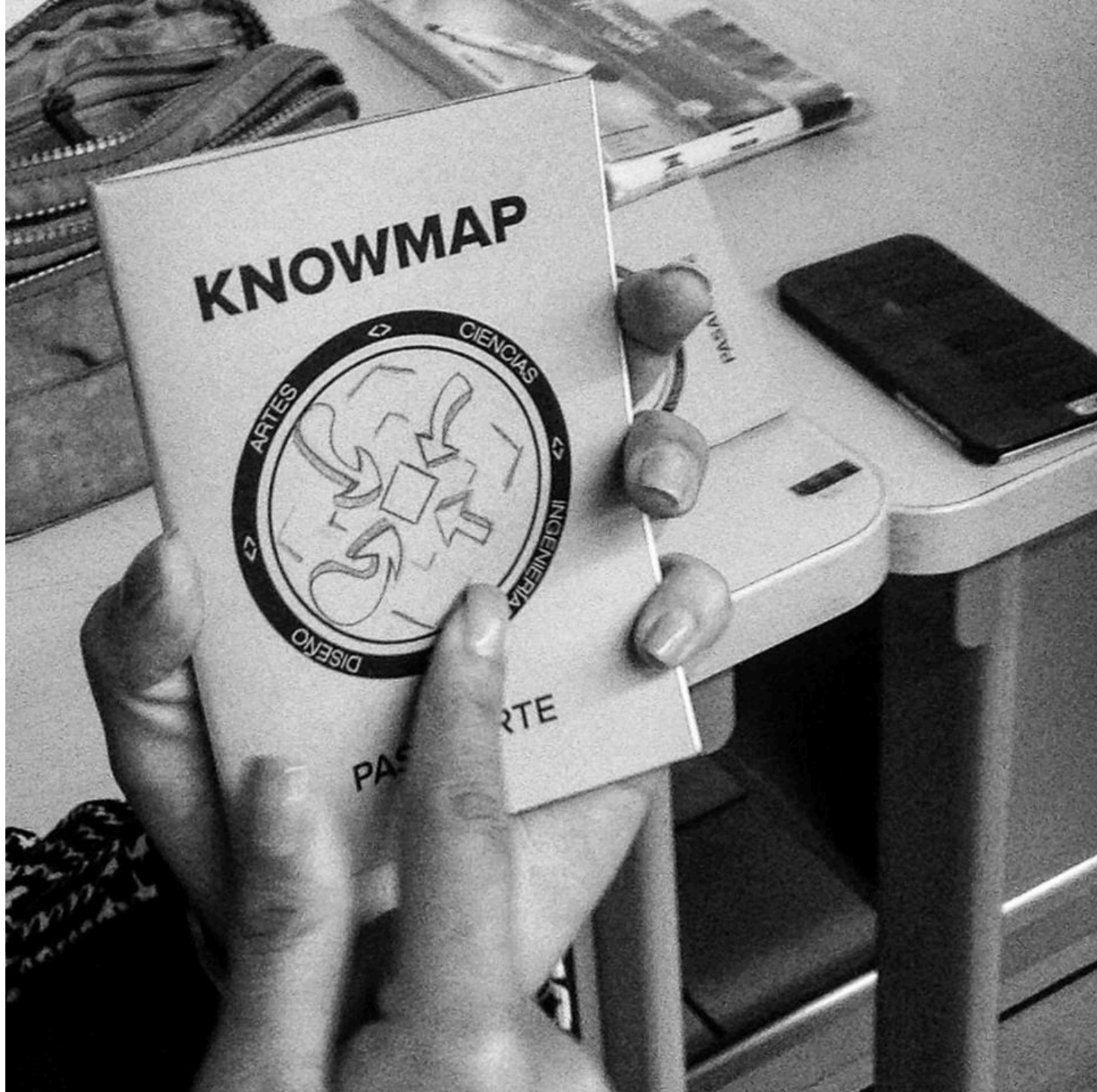
Antidisciplinary cartographies
for tackling complex problems

SEPARATION

The workshop begins with an ice-breaker activity inspired on **the moment when a migrant arrives to a new country and interacts with an immigration officer**.

This activity introduces participants to the metaphor of a voyage that will be constantly reinforced during the workshop in order to enable the conversation about **how disciplinary specialisation shapes our identity and the way we think, understand and respond to our complex world**.

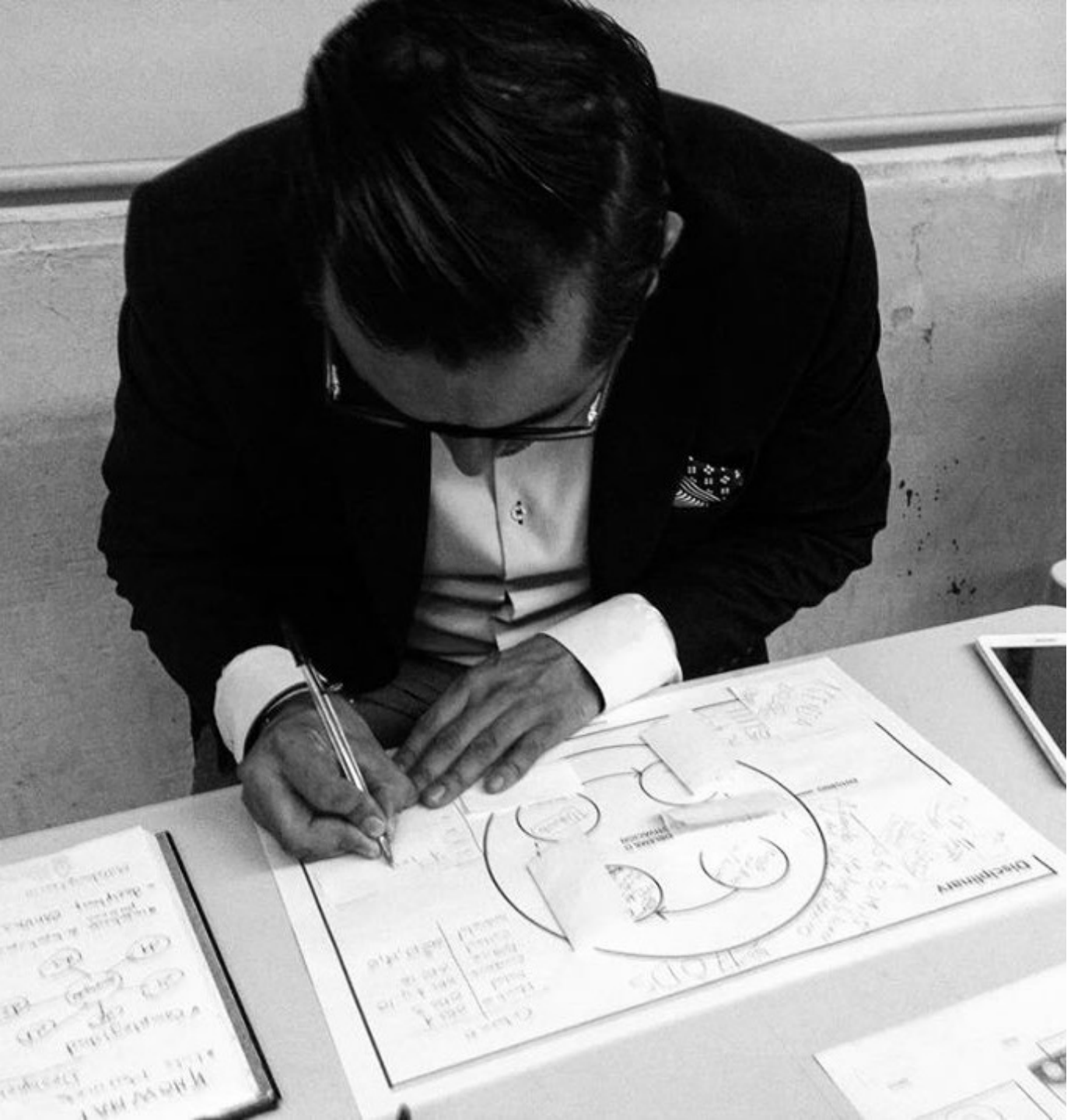
Tool: Disciplinary Passport




KNOWMAP
PASAPORTE


KNOWMAP
PASAPORTE
ARTES
CIENCIAS
INGENIERÍAS
DISEÑO


01. Disciplinary passport | Oficina de migración
KNOWMAP
Nací en...
Estoy aquí por...
He visitado...
Mi lugar favorito...
Puedo enseñarte sobre...
Quiero visitar...

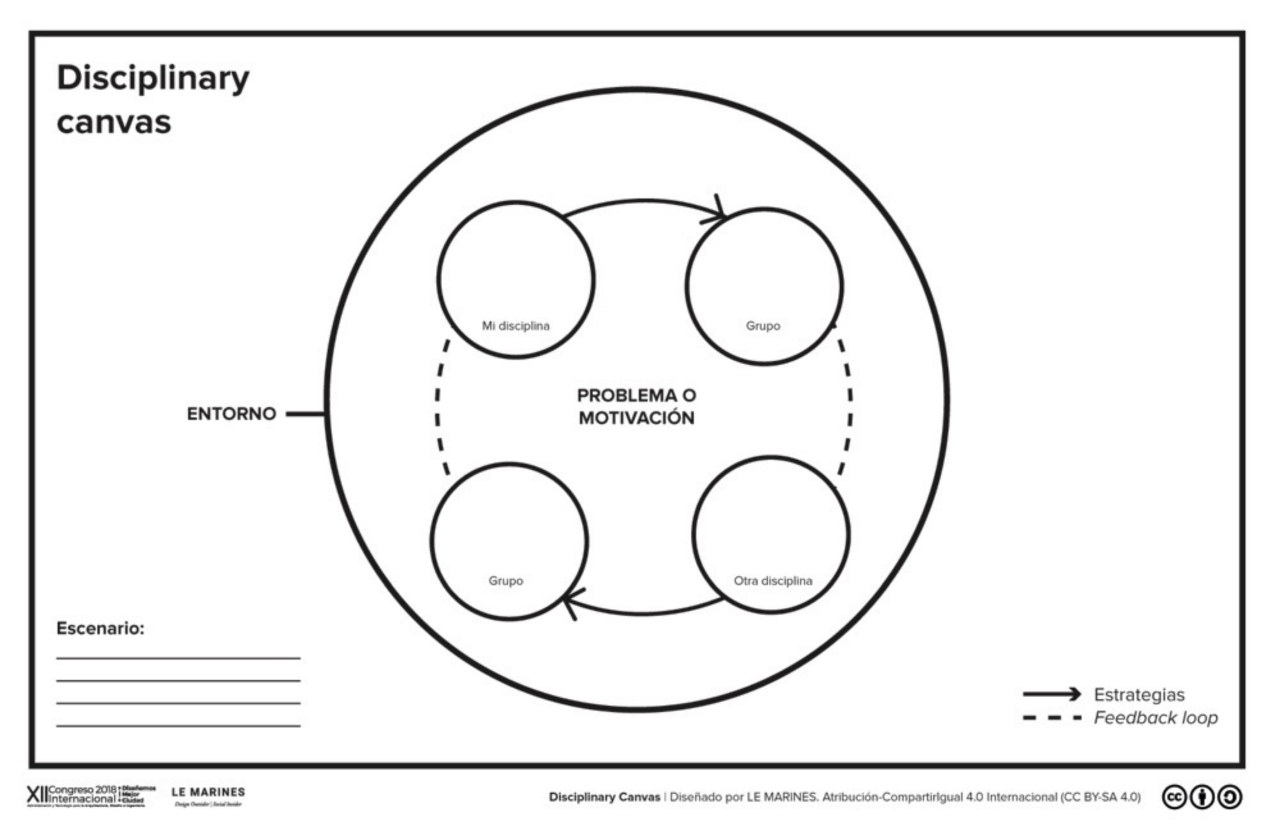


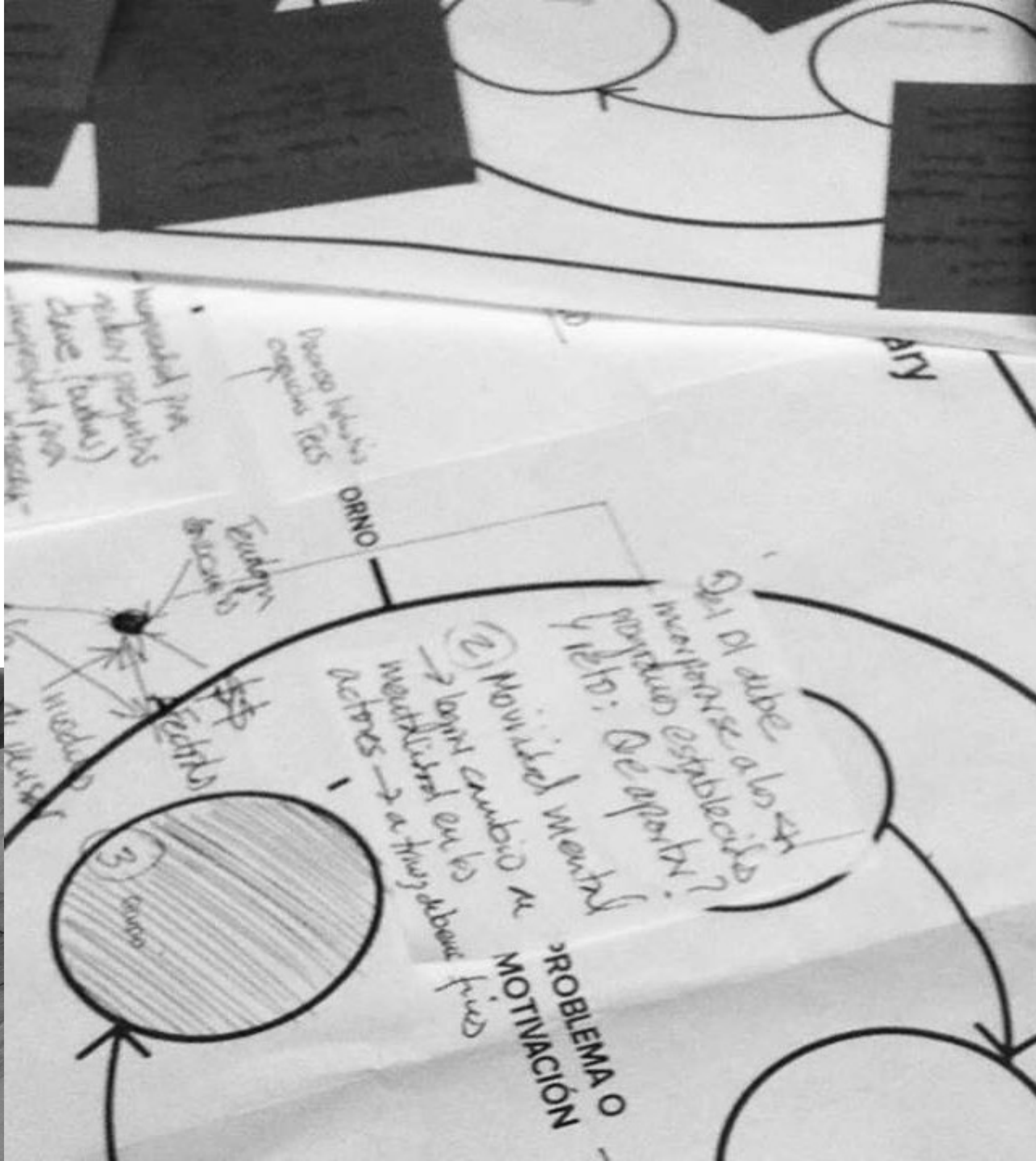
MARGIN

This phase is designed to help participants to move forward **from a monodisciplinary to a cross-disciplinary way of thinking and understanding of their problems**.

The activity starts with filling a "Disciplinary canvas", a tool created to develop hypotheses around a **random complex problem that is built collaboratively**, in order to enable a horizontal conversation about the participants' thoughts and perspectives about different problematic scenarios.

Tool: Disciplinary Canvas


Disciplinary canvas
Mi disciplina
Grupo
PROBLEMA O MOTIVACIÓN
ENTORNO
Grupo
Otra disciplina
Escenario:
Estrategias
Feedback loop
XII Congreso 2018 Internacional
LE MARINES
Disciplinary Canvas | Diseñado por LE MARINES. Atribución-CompartirIgual 4.0 Internacional (CC BY-SA 4.0)

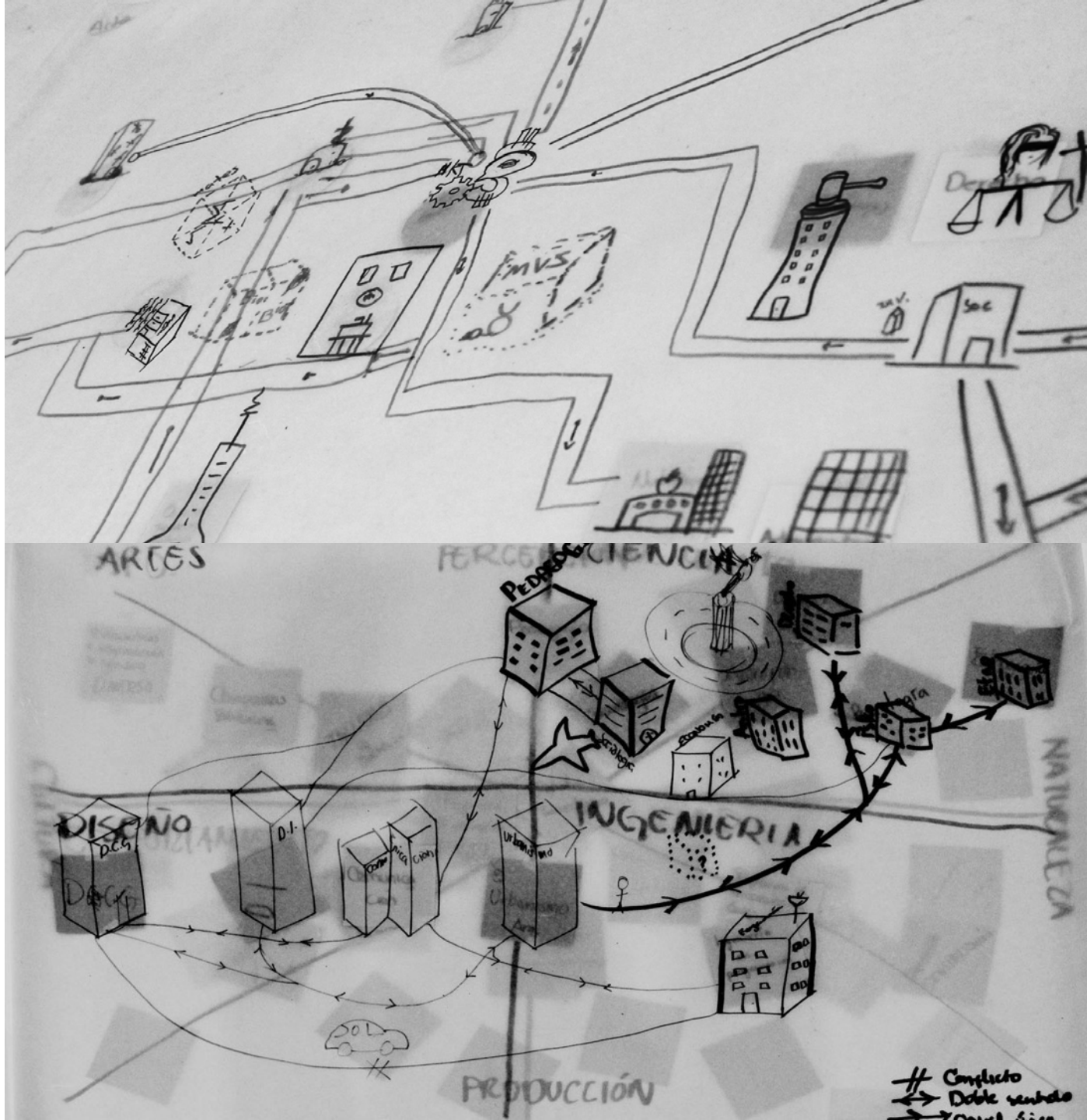

PROBLEMA O MOTIVACIÓN

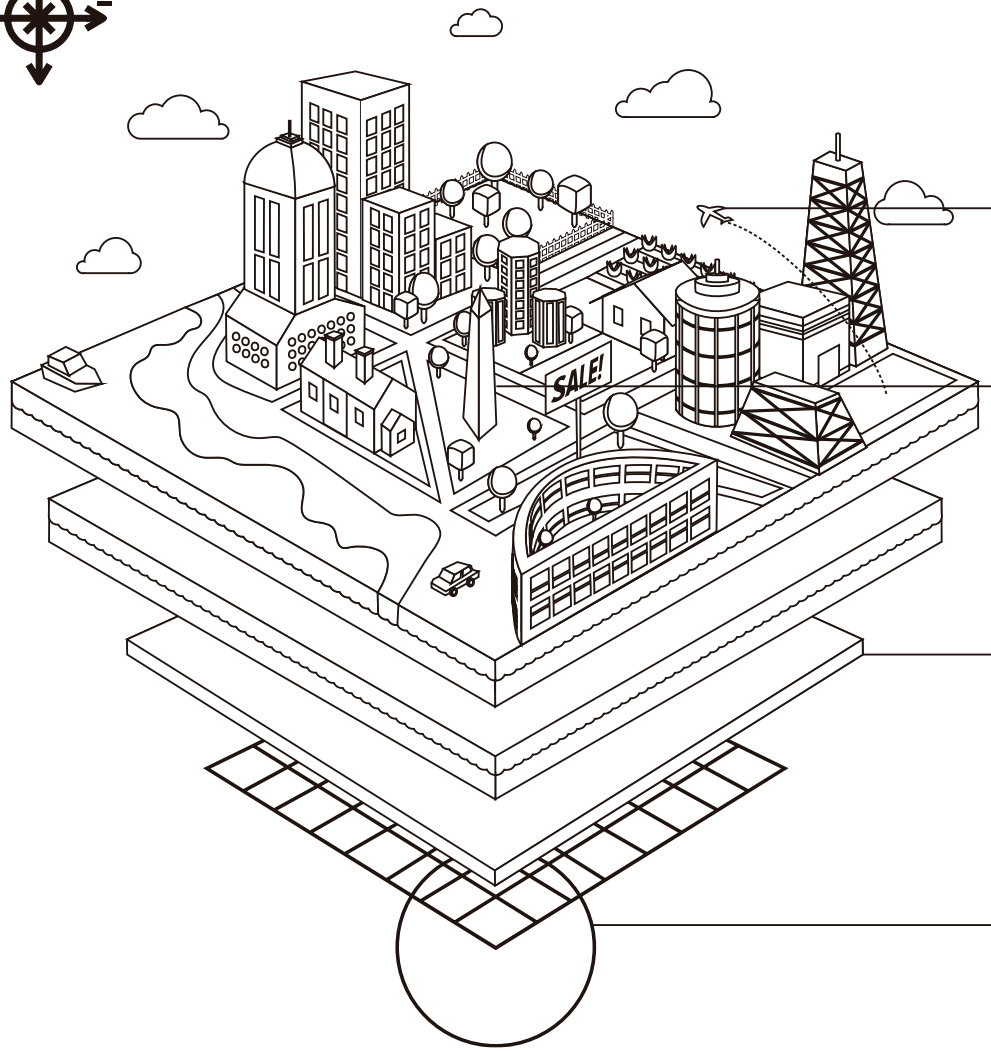
AGGREGATION

During this very last phase, the workshop participants build an organised team to map their own-crafted complex problem through the usage of the KnowMAP Canvas (a mapmaking visual tool **based on the layers of Neri Oxman's Krebs Cycle of Creativity**.

At the end of this activity, teams develop their own version of a KnowMAP journey, a GIGA-map that helps **visualise their interactions with spatial metaphors**, identifying buildings (disciplines), paths (workflows), roadblocks (conflicts) and vehicles (time-based strategies).

Tool: KnowMAP Canvas





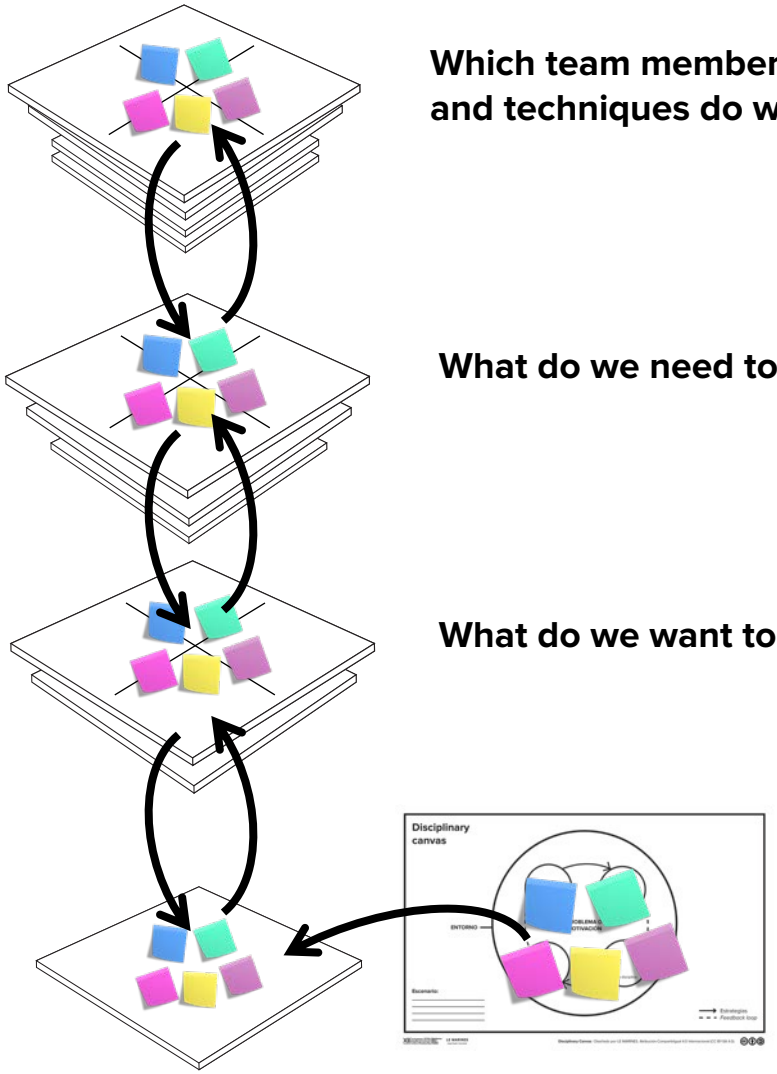
4. Project!

3. Associate your research

2. Measure your interests

1. Know your problems

(Marines, 2017)



Which team members, methods and techniques do we need?

What do we need to study?

What do we want to create?

Complex problem

Thank you!

Looking for feedback, collaborations and future workshop sessions!

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