Rediscover Agile Values with Sociotechnical Design

Xin Yao, Keynote Agile Tour Vienna 2024

Today's path
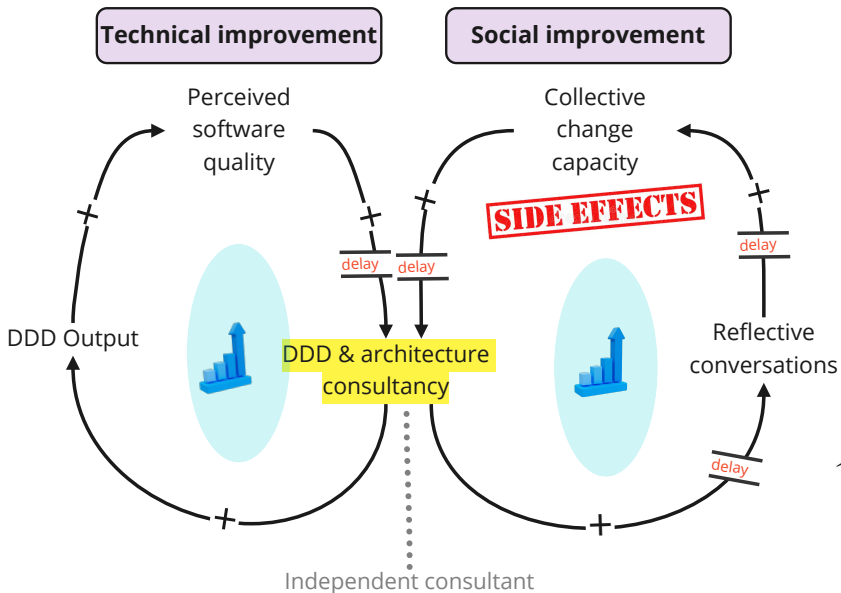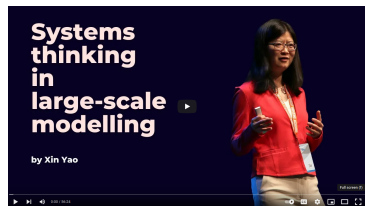
Rediscover agile values with sociotechnical design

Sociotechnical **agility**

Probe **social patterns** in technical context

Work as a **complex social system** with technical parts

Agile **values** & Agile **reality**

Today's path
Rediscover agile values with sociotechnical design

Sociotechnical **agility**

Probe **social patterns** in technical context

Work as a **complex social system** with technical parts

Agile **values** &
Agile **reality**

Agile values are born social and technical:
A collaborative capacity to respond to change

Responding to change

Working software

TECHNICAL

Software Aptitude

(XP, TDD, CI/CD, iterations, feedback loops, automation)

Individuals and interactions

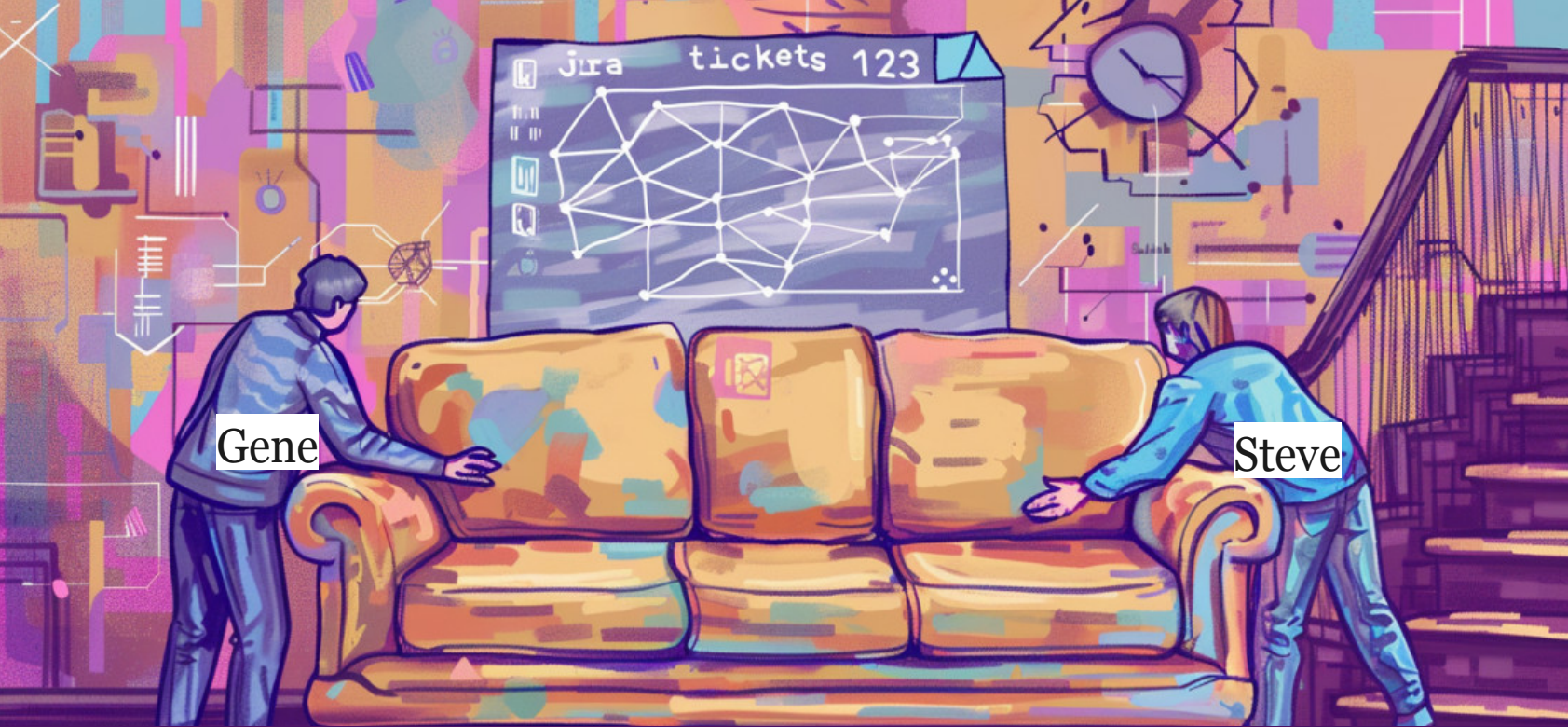**Customer collaboration**

SOCIAL

Humane Attitude

(Humans talking to humans, autonomy, co-creation)

Before 2001, Agile went by the name of Lightweight Methods

In 2024, **how** heavy, or light,
do Agile practices feel to you?

And **why** do you think it has become so?

jira   tickets 123

Gene

Steve

How do we "move a couch" within a scaled agile organization?

Credit: Gene Kim & Steven Spear

A true "moving the couch" story involving 26 teams, deeply nested API call chains & event choreography [Anno 2022]

Overview of teams in product initiative
"Space, the Final Frontier"

A true "moving the couch" story involving 26 teams, deeply nested API call chains & event choreography [Anno 2022]

And this was supposed to be a scaled safe-to-fail experiment

Overview of teams in product initiative
"Space, the Final Frontier"

		9		4	2	6	6
Tribe		Tribe Deep Space Nine		Tribe Enterprise	Tribe Voyager	Tribe Discovery	Tribe Next Generation
Squad		Squad xxx ...		Squad xxx ...	Squad xxx ...	Squad xxx ...	Squad xxx ...
Partcipants							

[Two decades since the manifesto]
Legacy organizations struggle with legacy systems

Software industry matures

⬇
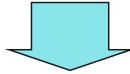
Every business is a software business

⬇
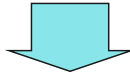
Aging companies with aging software

⬇
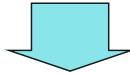
Compounding sociotechnical complexity

Has complexity made value increment an x-legged race?

Surely, the more complex the world is, the more planning (aka. alignment) we need?

Otherwise teams will move in an uncoordinated way - we can't have that.

Is **lightweight** operating model an illusion as companies and software both grow larger, and older?

Today's path
Rediscover agile values with sociotechnical design

Sociotechnical **agility**

Probe **social patterns** in technical context

Work as a **complex social system** with technical parts

Agile **values** & Agile **reality**
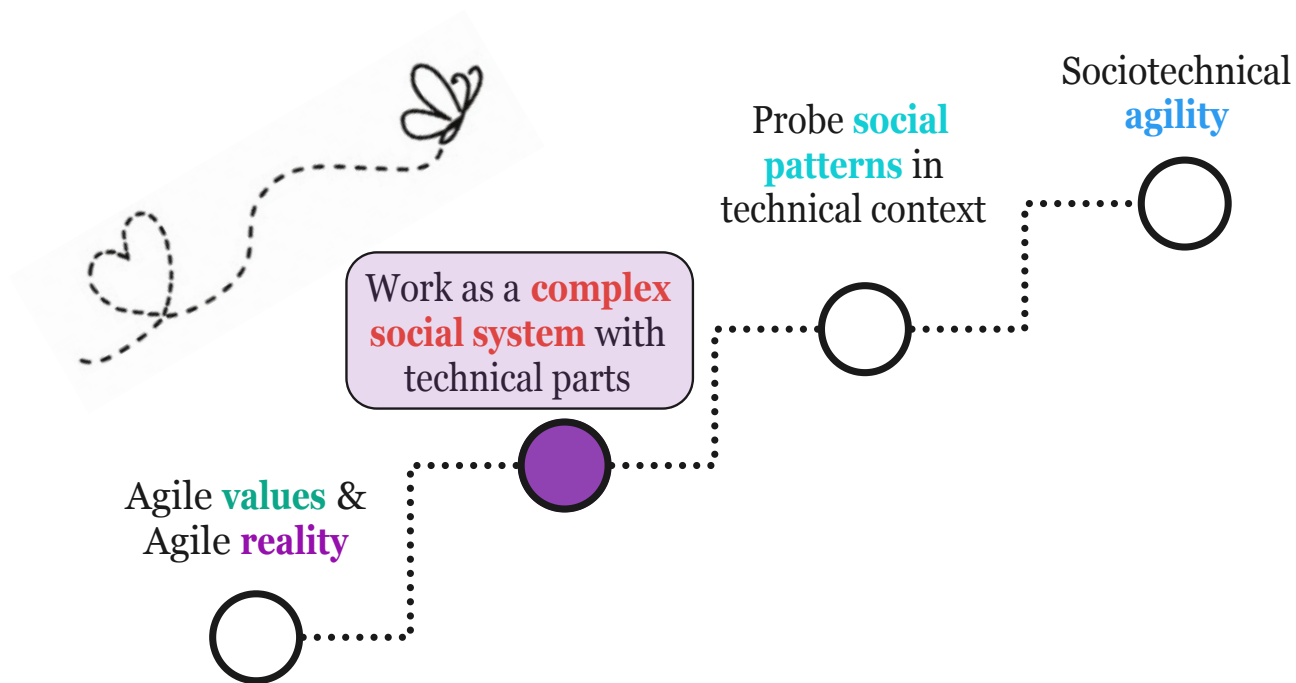
Many shades of complexity in software work

How do we talk about things being complex in different ways?

Complex is not the same as *Complicated*

Credit: Cynefin, Dave Snowden

Complicated

CAUSE→EFFECT

new relation

new element
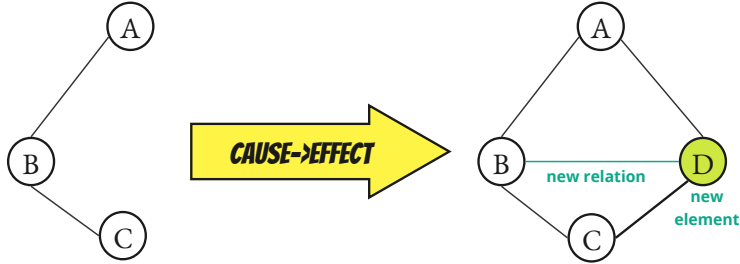
Many moving parts sum up to the whole

↓

System properties **predictable**

↓

Knowable through analysis ("Sense, Analyze")

↓

Plans & Policies ("Respond")

↓

Repeatable, Consistent ("Scale best practice")

Complex
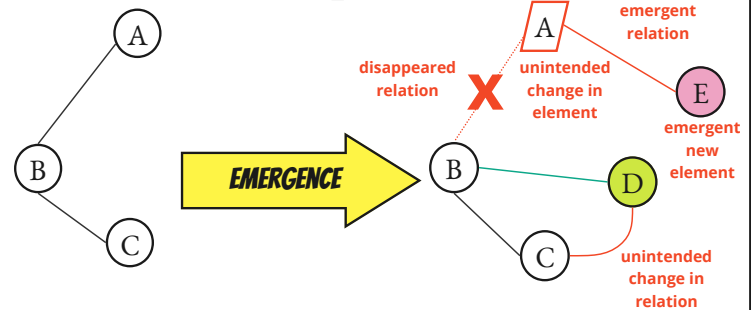
EMERGENCE

disappeared relation

unintended change in element

emergent relation

emergent new element

unintended change in relation

The whole is greater than the sum of its parts

↓

System properties emergent, **unpredictable**

↓

Knowable through interaction ("Probe")

↓

Experiments & Patterns ("Sense, Respond")

↓

Unrepeatable ("Hindsight does not lead to foresight")

Ferrari vs. Brazilian rain forest

Credit: Cynefin, Dave Snowden

Complicated

new relation

new element

Many moving parts sum up to the whole

↓

Systems properties predictable

↓

Knowable through analysis ("Sense, Analyze")

↓

Plans & Policies ("Respond")

↓

Repeatable, Consistent ("Scale past practice")

Complex
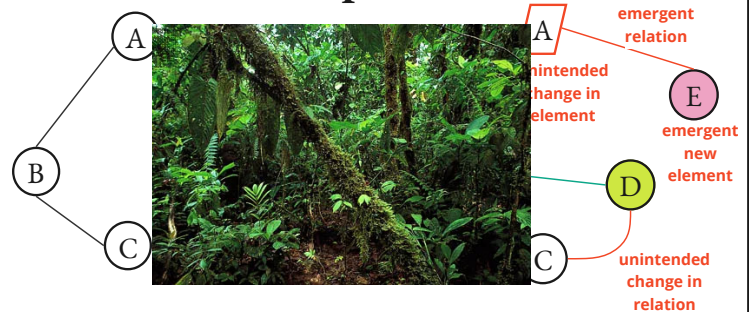
emergent relation

unintended change in element

emergent new element

unintended change in relation

The whole is greater than the sum of its parts

↓

System properties emergent, unpredictable

↓

Knowable through interaction ("Probe")

↓

Experiments & Patterns ("Sense, Respond")

↓

Unrepeatable ("Hindsight does not lead to foresight")

Are organizations working with software more like complex or complicated systems?

Are organizations working with software often **managed** as complex or complicated systems?

Is a software system more of a complex or complicated system?

Organizations are open, sociotechnical systems

Work is a complex social system with technical subsystems as parts

The environment

(Complex)

[organization]
Social systems

(Complex)

[software]
Technical systems

(Complicated/Liminal*)
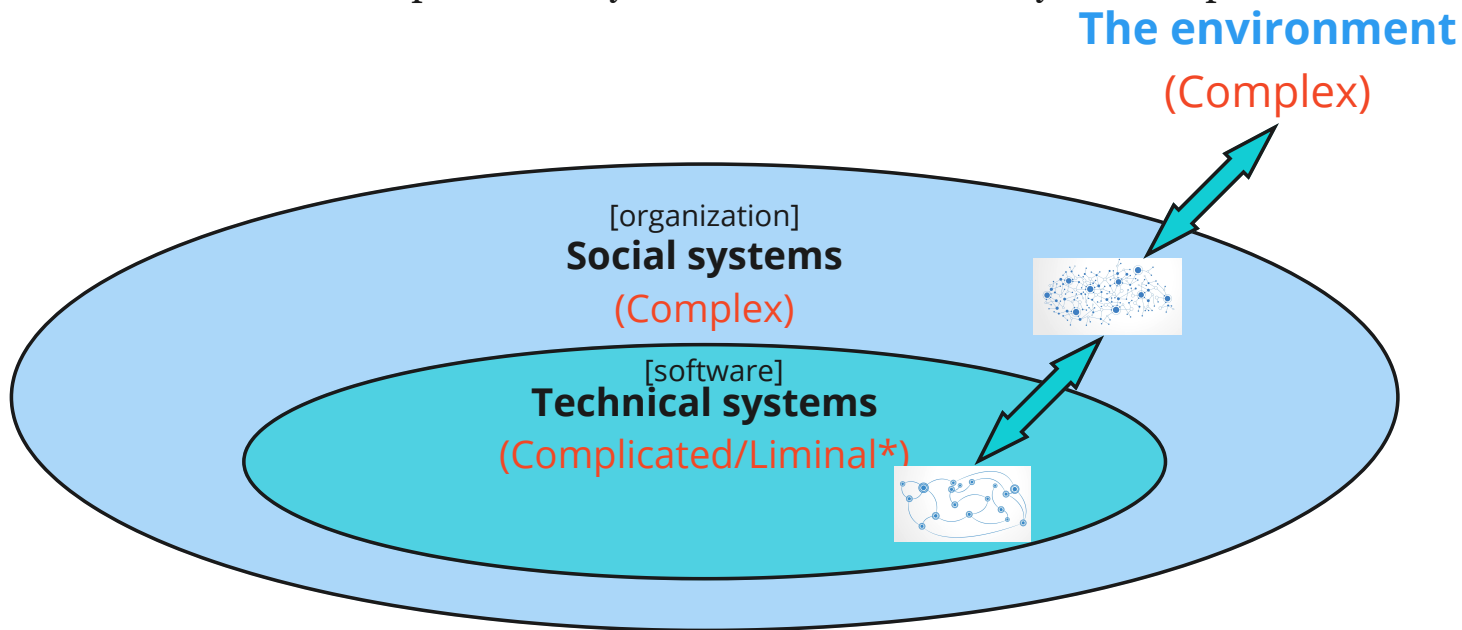
*liminal: in between complex and complicated

(credit: Dave Snowden)

Our default social intervention mode is analytical divide-and-conquer

Strategic pillars are cascaded all the way to Sprint work through T-I-E-S, and each element is prioritised and planned for in the governance processes

		Outlook	T-I-E-S	Governance processes
		~3-5 year outlook	Strategic pillars	ELT and BoD Strategy process[1]
Themes	Strategic Objectives are broken into Themes which are aligned to the purpose of the Tribe	~1-2 years duration	Themes	Annual Business Review
Initiatives	Themes are broken down to Initiatives – deliverables that multiple Squads work on over ~3-9 months	~3-9 months duration	Initiatives Initiatives	Quarterly business review
Epics	Initiatives are broken into Epics - pieces of work that can be delivered by one Squad in ~3 months	~3 months duration	Epic Epic …	
Stories	Epics are broken into Stories - outcomes that can be delivered by a Squad in a single Sprint of ~2 weeks	~2 weeks duration	Stories Stories Stories	Sprint events

(Example: governance process in a corporate change initiative)

We don't want to think of our work as a Brazilian rain forest
a randomly evolving mess of emergent relations that keep changing

- The traits of complexity are anxiety inducing.

- Our human brain is hard-wired to fear the uncertain, unpredictable, uncontrollable, ambiguous.

We wish our organizations were complicated Ferraris

- We would rather treat organizations as complicated systems - many moving parts and relations, but predictable, plannable, controllable.

- We wish we could divide-and-conquer human communication as decomposable software APIs.

Planning and process - a collective defense against our anxiety about uncertainty

No one loves big, hairy plans.

→

But, reality gets more complex & uncertain - inducing **stress**

→

We cannot step into the future without a plan

We need **plans** to break big problems into small parts

→

... and **processes** to align the many moving parts, people and tasks

→

Plans & processes make us feel safer, in control, on the same page

Credit: Steve Hearsum
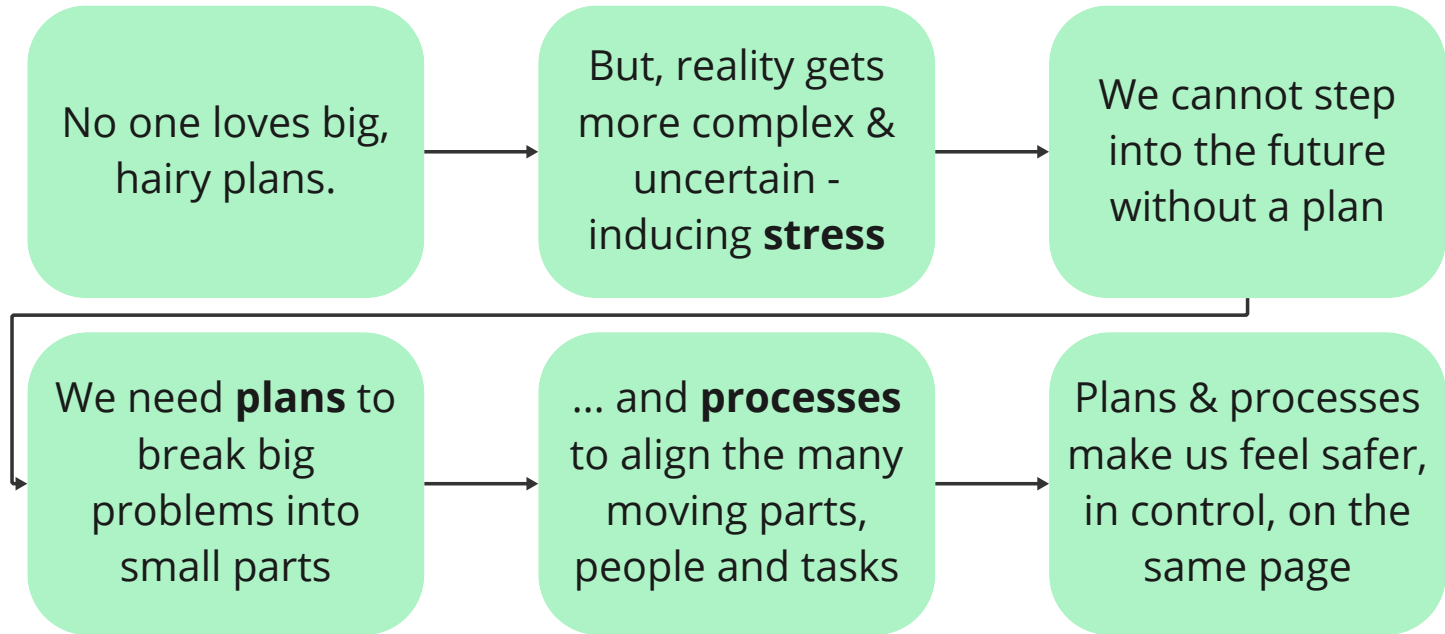
We identify with our "roles" and feel alienated playing our "part" at the same time

			T·I·E·S		**Governance processes**
		~3-5 year outlook	Strategic pillars		ELT and BoD Strategy proce...
Themes	Strategic Objectives are broken into Themes which are aligned to the purpose of the Tribe	~1-2 years duration	Themes		Review
Initiatives	Themes are broken down to Initiatives – deliverables that multiple Squads work on over ~3-9 months	~3-9 months duration	Initiatives	Initiatives	Quarterly business review
Epics	Initiatives are broken into Epics - pieces of work that can be delivered by one Squad in ~3 months	~3 months duration	Epic	Epic ...	
Stories	Epics are broken into Stories - outcomes that can be delivered by a Squad in a single Sprint of ~2 weeks	~2 weeks duration	Stories	Stories Stories	Sprint events

The planning roles

The executing roles

(Example: governance process in a corporate change initiative)

Large-scale Agile practice
Org Design: can we technicalize the social complexity?

Inverse Conway
Sociotechnical mirroring
Reorg
Spotify model
Agile frameworks
Transformation initiative

Dehumanizing
Skepticism
Learned helplessness
Pessimism
Lack of agency
Unknowability

A big divide
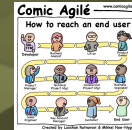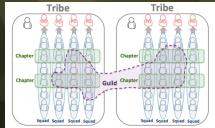
Human systems are too complex to manage

Let's have the next joke about SAFe, anyone?
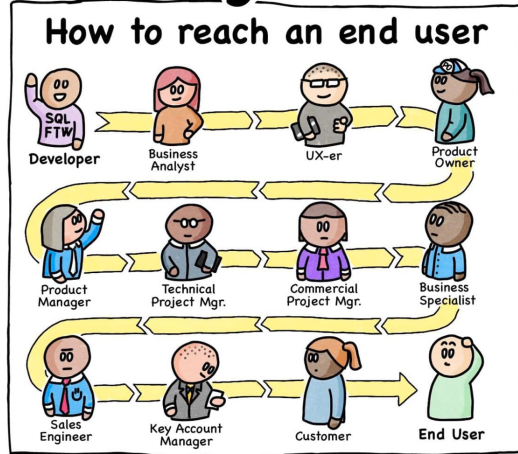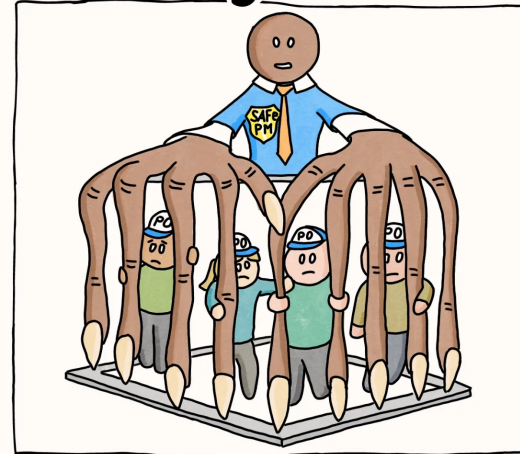
Wardley Map - technical practice vs. social practice fluency

Technical innovation · · · · · · Everything evolves with time · · · · · · → Mature technical practice

Social practice?

Sociotech practice?

?

| Genesis 1 | Custom 2 | Product (+rental) 3 | Commodity (+utility) 4 | Evolution |
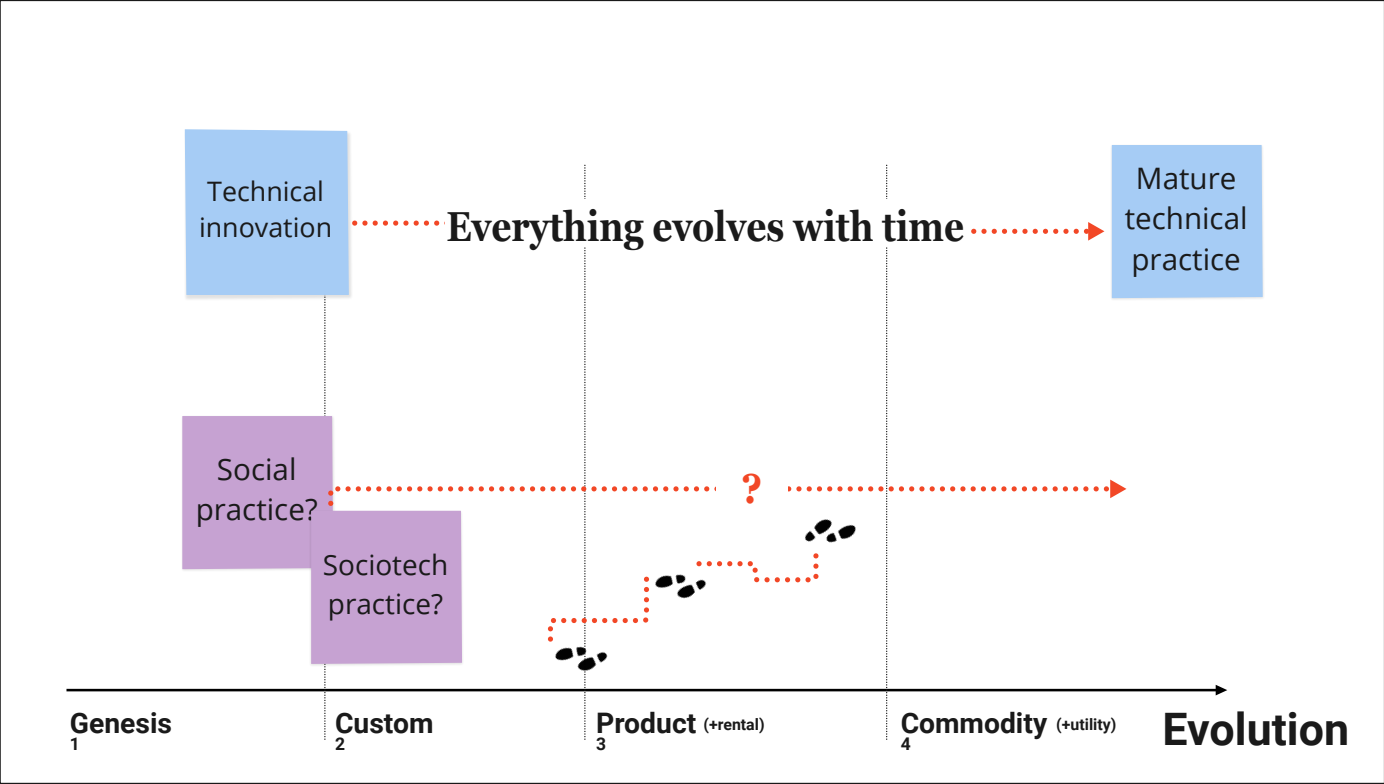
We haven't evolved much in our understanding of social systems

If the ancient Greeks could come back now and walk among us, they would not understand much of our technology and our science. It would be very foreign. But they would be quite at home in our social problems - wars, politics, economics, various kinds of difficulties.

~ Jay Forrester

The next great frontier is to understand
human systems.

~Jay Forrester

Today's path
Rediscover agile values with sociotechnical design

Probe **social patterns** in technical context

Sociotechnical **agility**

Work as a **complex social system** with technical parts

Change the social system

Share the social system

Agile **values** & Agile **reality**

See the social system
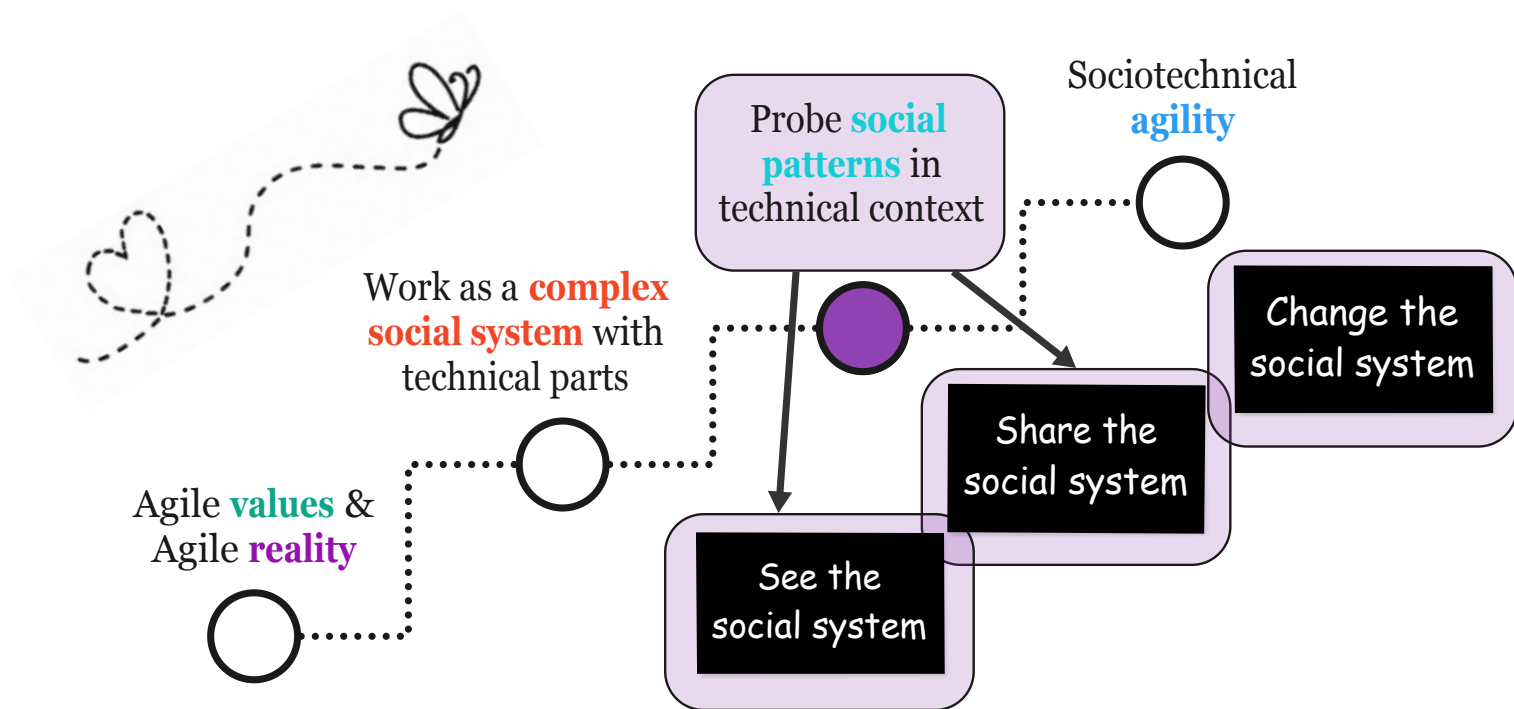
See the social system

Visual modeling of social architecture

YOU

CAN'T FIX

WHAT YOU

CAN'T SEE

We need models to help us design the WHOLE work

Event Storming

Linking strategy to everyday work
Good experience with "the North Star Framework"

Northstar Framework
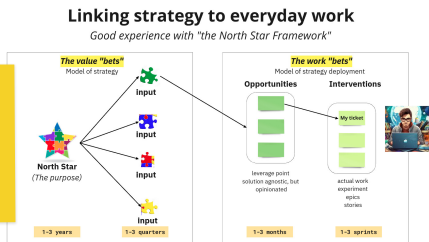
Constraint Closure: virtuous probability cycle
Development Value Stream Mapping

Value Stream Mapping

My place in the story

Where does my work **come from**?

Where does my work **go**?

What *skills*, *materials* and *meanings* do we **share**?

Credit: Jabe Bloom

Visualizing work as a sociotechnical architecture
See the whole system

Tactical info
(Presentation layer)

Strategic Info
(Business layer)

Cultural Info
(Infrastructure layer)

Example: 7 Elements of Visual Management

what is going on?

Current WIP	Who is working	Who is collaborating
What is ready for release	What is stuck	Backlog

State

what needs attention now?

Complex work	Shared work	Discovery need
Emergencies	Action	Improvement Opportunity

Triggers

Direction

Strategy	Plans	Upcoming work options	Shared Meaning

Where are we going?

Visualized work

Narrative

Discoveries	Decisions	Purposeful models	My part in the whole

Where is my place in the story?

Culture

Onboarding	Upskilling	Human repair
Team identity	Interaction & meetings	Social contracts

How is my team a team?

Professionalism

Improvement	Correction
Learning	Quality

What does good look like?

Identity

Who am I and what are my values?	How is work meaningful?	How is work developmental?
Affordance	Agency	Spheres of influence

What is meaningful for me? (Agency)

c. 2021 Modus Institute www.modusinstitute.com

Credit: Jim Benson

Visual thinking & visual models
for social & technical systems

Thinking across The WHOLE sociotechnical system is **a lot to hold in mind**

Visual models (sketches, diagrams etc.) create an **external memory**

Visual thinking expands our **mental capacity**
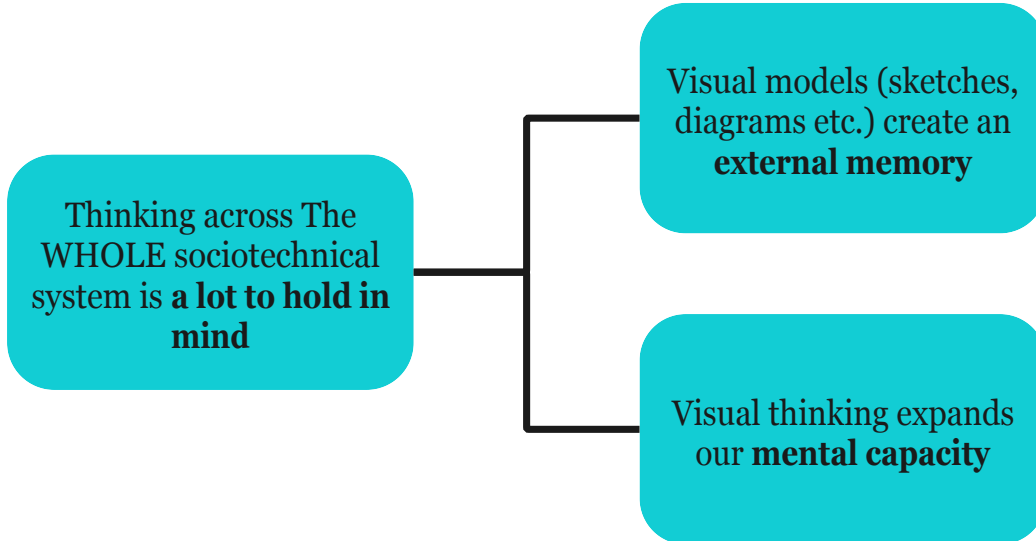
Inspiration: Ruth Malan

Are we aligned after a townhall or all-hands
with visual models for strategy, plan, org structure?
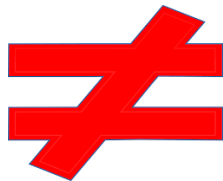

Illustration : Jeff Patton

Having a visualization is no guarantee that everyone has the same interpretation of what's visualized.
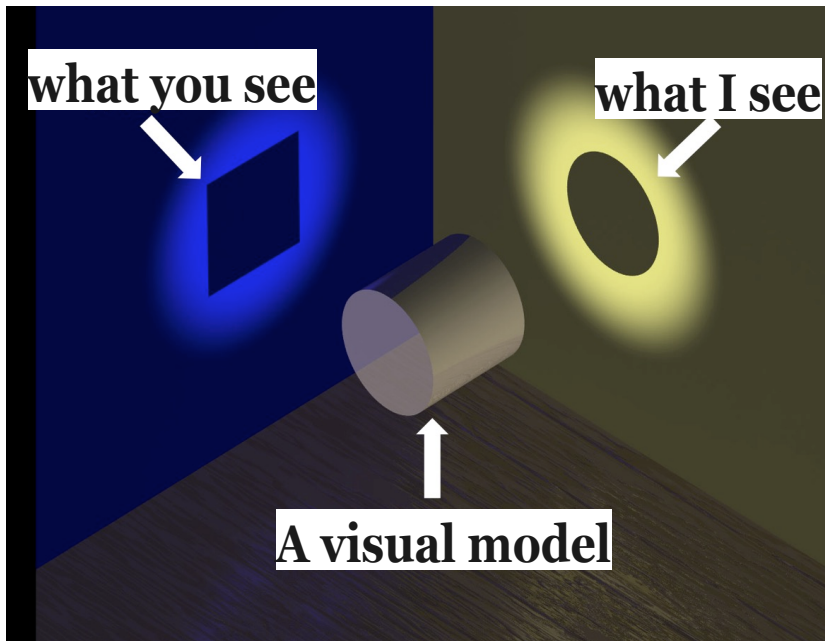
Share the social system

Surface mental models
Collaborative modeling & sense making

Visual model ≠ Shared understanding

what you see

what I see

A visual model

Org chart
(+roadmap, plan, backlog)

≠

A social system's runtime behavior

Jesper

"Mainframe specialist in a big bank"

> There have been 10+ reorgs in my tenure here. But it's always the same people you need to know to pool knowledge together and get stuff done. That's my **knowledge network**.

Mental models are the infrastructure layer of social system runtime

A social system is continuously regenerated by recurring **relational patterns**

E.g. Knowledge network as a relational pattern

Relational patterns are shaped by local and collective **mental models** (i.e. habits of thoughts & actions)

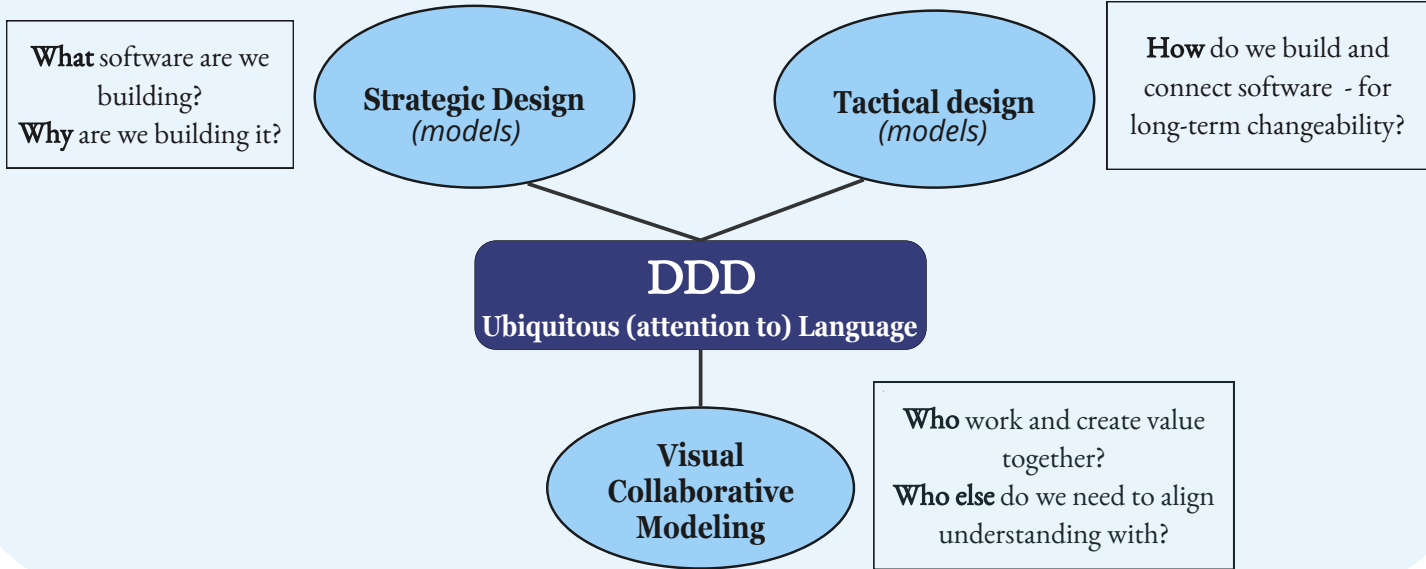*E.g. Mental model of my fastest path to knowledge and help*

To <u>share</u> the system, we need to have a way to **surface** mental models

To <u>change</u> the system, we need to have a way to **unfreeze** mental models

Collaborative modeling - make the implicit explicit
DDD to "smuggle in" social sensemaking

What software are we building?
Why are we building it?

Strategic Design *(models)*

Tactical design *(models)*

How do we build and connect software - for long-term changeability?

DDD
Ubiquitous (attention to) Language

Visual Collaborative Modeling

Who work and create value together?
Who else do we need to align understanding with?

Credit: Paul Rayner, Eric Evans

**Smuggle social sense-making in technical design process
(e.g. collaborative modeling sessions)**

does not necessarily lead to

Collaborative Modeling

≠

Reflective Conversations

To <u>share</u> the system, we need to have a way to **surface** mental models

To <u>change</u> the system, we need to have a way to **unfreeze** mental models

[Sociotechnical pattern inspired by DDD]
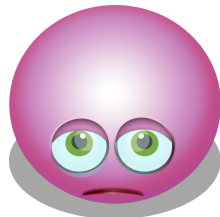## Collaborative Modeling --> Reflective Conversation

[technical design pattern]

Make the implicit explicit

+

[social design pattern]

Make the undiscussable discussable

Let's edit out the uncomfortable elements

Shame

Guilt

Anxiety

Fear

Blame

Resentment

Change the social system

Reflective conversations
Make the undiscussable discussable
Languaging & emotioning

Reflective conversation

[Reflective]: being self-aware   [Conversation]: open dialog

discussion

advocacy

I prefer that we do it this way - here is my reasoning.

This is what they mean to me, and how they make me feel.

Here are the data and events I see.

reflective advocacy

How do you feel about what's going on right now?

That's a perspective I haven't considered - tell me more!

I know I don't see the whole picture, how do you see it?

reflective inquiry

dialog

advocacy   inquiry

Psychological Safety

Credit: David Bohm, Peter Senge, Chris Argyris

Change the itinerary of knowledge
from language to languaging (and emotioning)

Language

**Languaging
Emotioning**
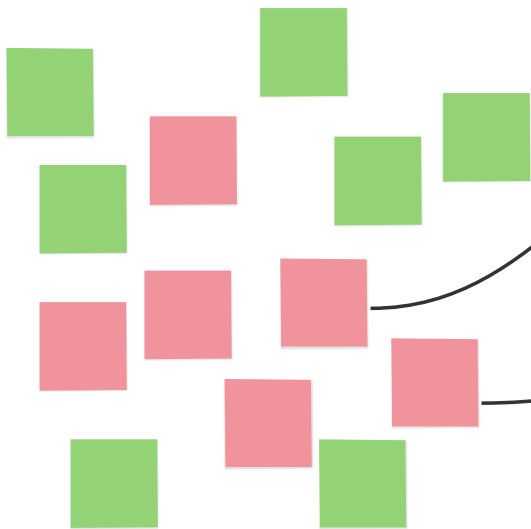
Knowledge transfer

Knowledge processing
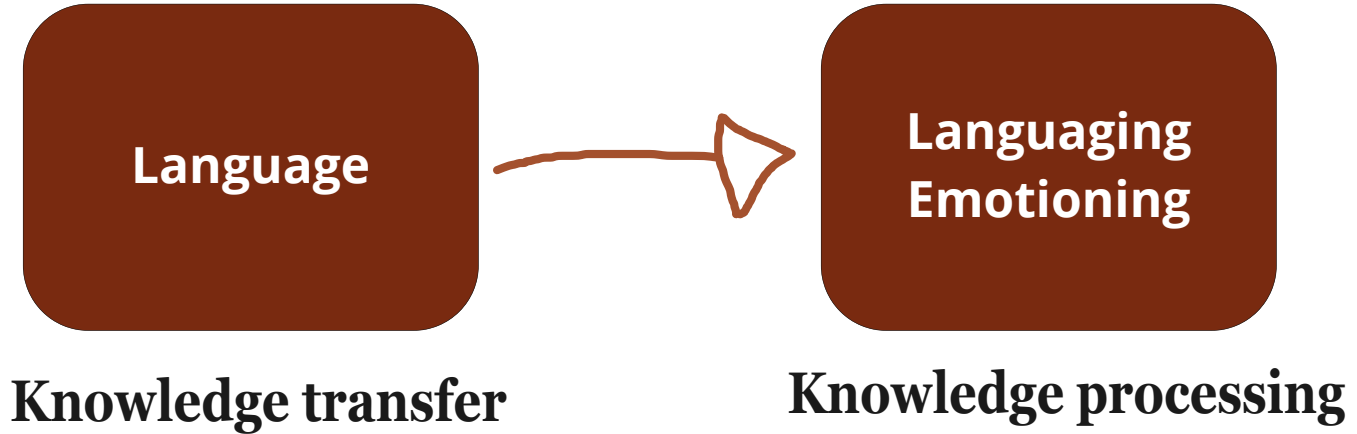
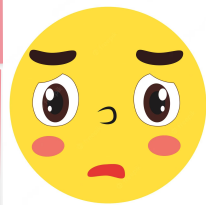Credit: Humberto Maturana

Workshop retrospective
My worst event storming workshop

We don't see the forest, only trees

You are too in love with your model :-).

You=Me
model=event storming

The questions that got us unstuck

Theory U

Languaging Emotioning
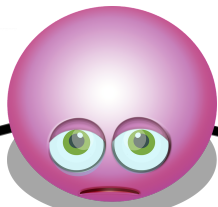
What is it about this situation, and about me or others, that is making open exchange difficult?

Guilt

Shame

Fear

Anxiety

Blame

Resentment

[social design pattern]

Make the undiscussable discussable

What is the future we dream of for this domain?

What are you most passionate about contributing to in this domain?

Conversation is a dance of languaging and emotioning

Conversation is a dance of languaging and emotioning. What I say in an open conversation, is an invitation to participate with the other(s) in a domain of experiential coherence.

— *Humberto Maturana* —

The system changes itself in open, reflective conversations
(Mental positions become changeable in the moment)

Experiential Coherence
(Social experience of coherence)

* I am contextually informed

* I feel seen, heard and understood

* I feel connected with others in co-creation

* I feel powerful making my contributions to the whole

What happens to visions, plans, processes, and org structures
(Conventional view)

design time

run time

A good vision, plan, process → implemented by people in the org

↓

Org then becomes what the plan etc. says it will become
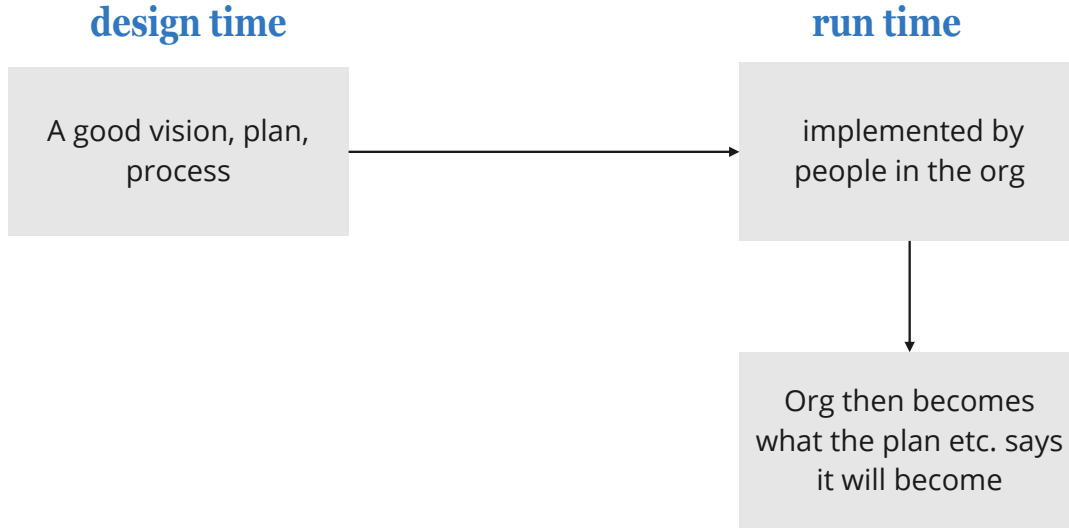
Meaning and effect of plan, process, etc. is emergent and unpredictable

design time

A good vision, plan, process

run time

mixed with competing priorities, localized **meanings, actions and interactions**

?

Mission drift

Credit: Humberto Maturana, Alicia Juarrero, Ralph Stacey
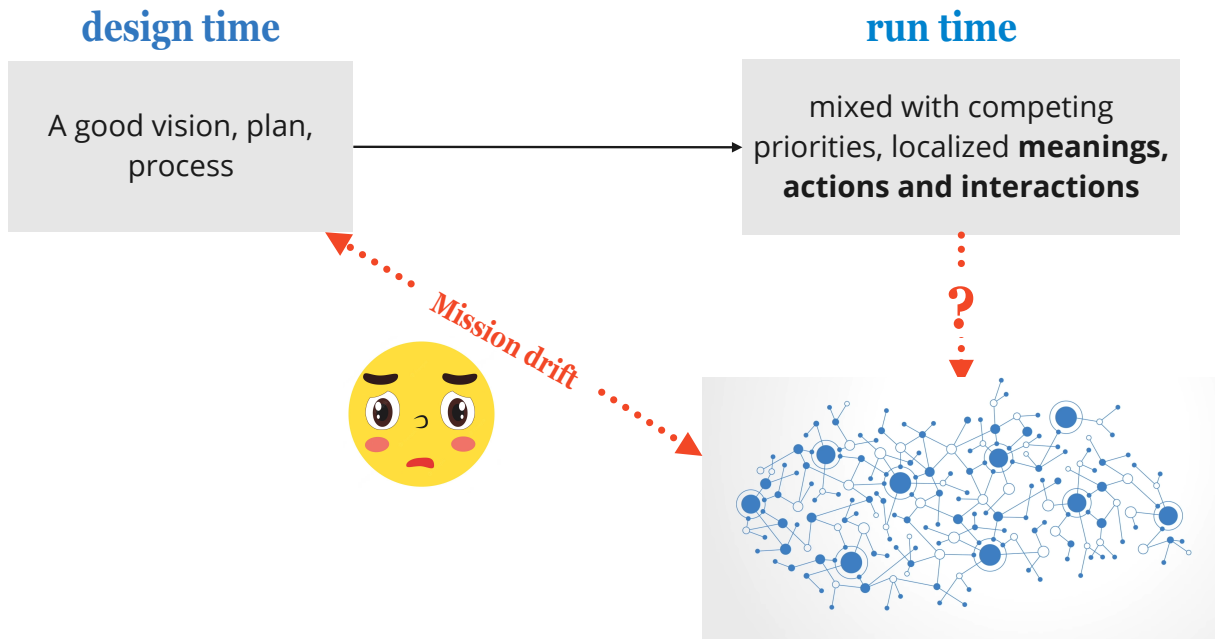
Systemic interventions require descaled conversations
(Experiential coherence is needed for change)

design time

A vision, plan, process etc. as probe
+Social pattern probes

run time

mixed with competing priorities, localized **meanings, actions and interactions**

Experiential coherence

Reflective conversations

Ideally, coherent **social patterns** (enabling constraints) are **multiply realizable** and persisted in a system-wide architecture of social dynamics.

Credit: Humberto Maturana, Alicia Juarrero, Ralph Stacey, Dave Snowden

The way to scale is to descale
(Conversational Leadership)
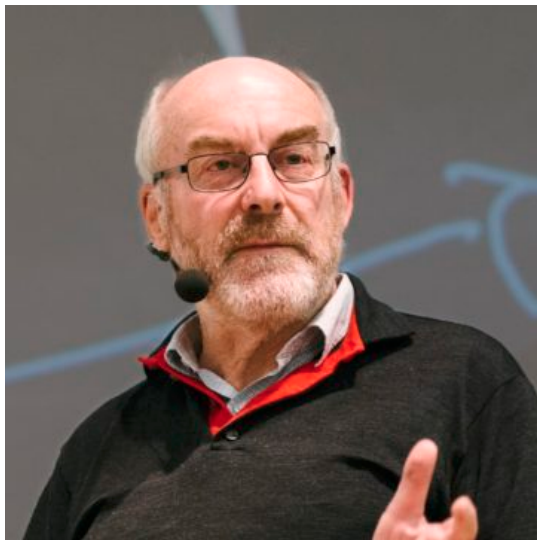
Complex Systems scale by **decomposition** to the lowest consistent level of granularity, and **recombination**, not by aggregation or imitation.

-- Dave Snowden

Granular discovery	Distributed cognition	Dis-intermediation of data

Principles of managing social complexity
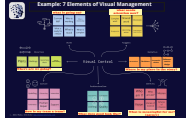
(Credit: Dave Snowden, Carolyn Baldwin, David Gurteen)

Design artifacts, events, processes as

Prompts for dialog

- Roadmaps
- Backlogs
- Plans
- Dailys
- Meetings
- Retrospectives
- Workshops

Daily reflective conversation
Team daily stand-up prompts

The Whole Work - is more than the sum of its parts

Tactical

How are we **doing** with work?

- (Planned work) Are we comfortable with our upcoming commitments? Any complications?
- (Unplanned triggers): Any emergency or requests needing our attention now?

Cultural

How are we **being** as a team?

- (Care) Does anyone need help, have impediment, or feel stuck?
- (Work flow) How's our energy level, WIP level and flow level?
- (Psychological flow) Do we work in a calm, professional and non-stressful way?
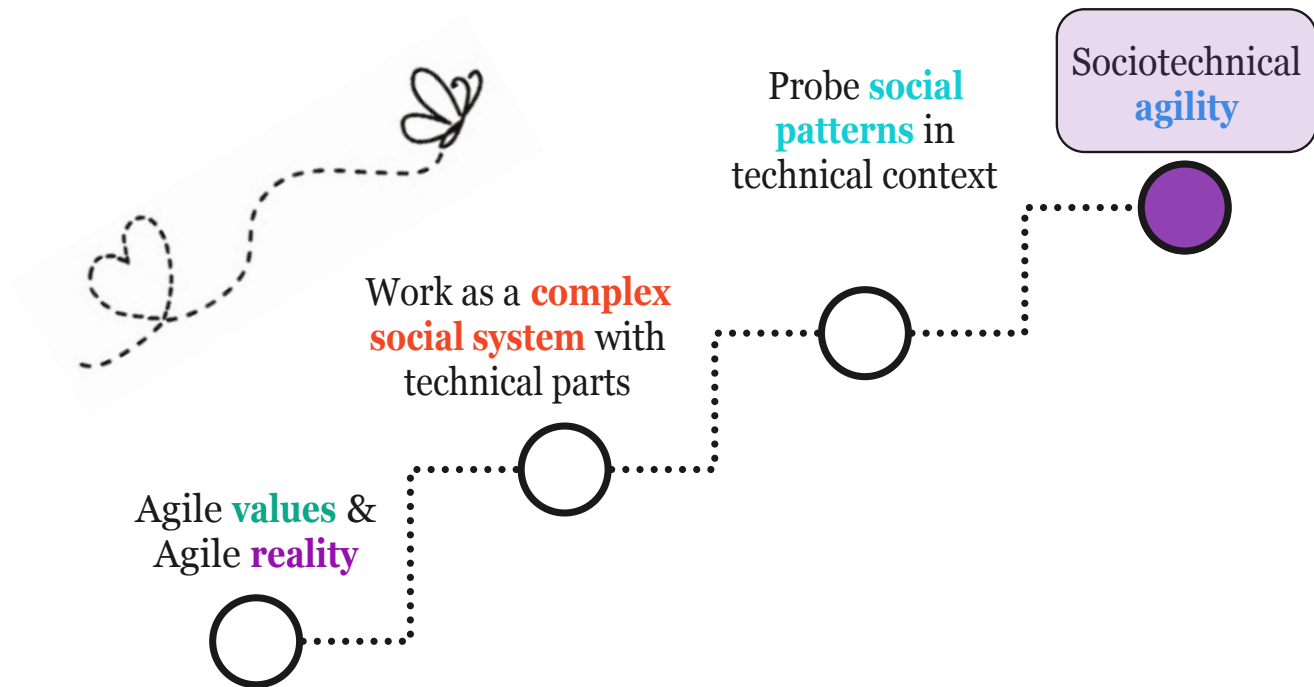
Strategic

How are we **feeling** about the Big Picture?

- (Coherence) Does the whole story (why, what, how, with whom) hang together for you?
- (Agency) Do you feel seen and heard, within and outside our team?
- (Affordance) Do we have sufficient skills, support, leadership cover, psychological safety?

Credit: Milestone Systems, Systems Architecture Team

Today's path
Rediscover agile values with sociotechnical design

Sociotechnical **agility**

Probe **social patterns** in technical context

Work as a **complex social system** with technical parts

Agile **values** & Agile **reality**

True agility is to detach from fixed mental positions
A cautionary note for people with a passion for modeling and models

Stay in discovery mode

Hold on lightly to your favorite models

Be ready to kill your darlings

Let go of expecting a fixed outcome

Agile was born a sociotechnical practice

2001

Socio TECHNICAL

A collaborative capacity to respond to **change** in *technical* systems

2024

SOCIO technical

A collaborative capacity to respond to **change** and become the change in *social* systems

The transition to <u>higher</u> **social awareness**

Beware of reducing social <u>complexity</u> to technical <u>complication</u>

2001

SocioTECHNICAL

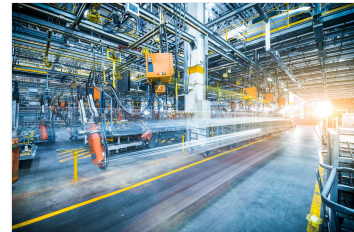A collaborative capacity to respond to **change** in *technical* systems

2024

SOCIOtechnical

A collaborative capacity to respond to **change** and become the change in *social* systems

Reduce social systems to technical structures & processes

Credit: Nick Tune

medium.com

The Structure and Process Fallacy

"If our teams were just organized in the right way, and we adopted the agile process, we'd be so much more efficient."

Monoculture is bad for living systems

Let's not containerize ourselves as repeatable deployment units

Let's not treat each other as abstractions

Let's not forget descaled conversations in the pursuit of scaled processes

Rediscover social agility
through our work with software

We are at an important **edge**. Our rich and messy work is a challenge but also an opportunity.

Complexity means we depend on each other to succeed, and we need to work this out together.

We have developed many good habits of **learning together** in software system design.

Time to build our **collaborative change capacity**, and agility, in the **social systems** we are part of.

[Final reflection]
Crafting software can be developmental and reparative

Maybe *software design and modeling* is just an *excuse* to have the reflective conversations, no one has time for otherwise.

Maybe *software development* (in all its complexity and yearning for agility) is just an excuse for humans to find our way back to each other.

Working together with complex software in complex organizations, gives us a valid context to rediscover our agility and humanity.

EXCUSE LIMIT 0

Thank you

@settling_mud

xin.yao.dk@gmail.com

@xinyao@mathstodon.xyz

/in/xinxin/