RISE

NAVIGATING COMPLEXITY

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NAVIGATING COMPLEXITY – INTRODUCTION

"There is not a disorder (as there was an order) but several disorders: inequality, agitation, turbulence, chance, encounter, rupture, catastrophe, fluctuation, instability, disequilibrium, diffusion, dispersion, positive feedback, runaway, explosion"

Edgar Morin

Complexity is everywhere. It is in my body and between us. It is in the web of the organization and in the turmoil of the world. When we experience complexity as a problem, something that is overlooked, wrong or misunderstood, it is rare that we immediately know what it is. Complexity as possibility is not something different from complexity as a problem, it is just another quality that needs to be unpacked and understood.

Recognizing experience (or Experiencing complexity)

Sometimes, I find myself at a loss for words. The words that I normally use for something don't apply. Like half- forgotten street-signs, they confuse rather than clarify. We invented a vocabulary to keep things in place and to force agreement: big clunky words like "innovation", "knowledge" and "collaboration". They indicate a desired direction. But they don't say anything about the road or the best way to travel, and, most importantly, they don't say anything about me, the traveler.

When the words we are used to don't work anymore, when the place I find myself in is too surprising, scary, wonderful or weird to fit into phrases about "deliverables" or "client-perspective" or "prototyping", then we are stripped down to our own personal language. I fear. I want. I believe. Can I speak my own words? Who is listening? The biggest difference between the corporate language and my own words

is that, in the former, there is an idea that emotion and language are separate. But in the latter, everything is mixed together; I speak what I feel, I feel what I speak, the feelings make me lose words or find them anew. What should I do? Should I try to get back to the old vocabulary, wiggling my way back into syllables that don't fit? Or can I slow down, perhaps even stop and rest in uncertainty?

The experience of complexity is complex in itself exactly because it is so unclear. And because it is unclear, we tend to push it away. We tell ourselves that if we just try harder and do better, the discomfort will sort itself out. Most organizations don´t invite their employees to share dizzy discomforts – even though it would save them a lot of trouble and resources in the end if they did. The most common feeling when things start to become a bit weird in a project is "I am not good enough. It is my fault." For many of us, even though we are trying our very best, this feeling is always in the background, ready to step forward offering itself as explanation for whatever is going on, and often keeping us from dealing with what is going on. Most of us have enough difficulties trusting what we know for certain. Speaking

out about uncertainties and dizzy discomforts requires new methods, methods that operate on both the individual and organizational levels.

We asked people what they felt early in a difficult project, when they sensed, but didn't fully understand, that the project's complexity was increasing. What were the early, weak signals they noticed? These are some of their answers:

Shame.
Anxiety.
Not feeling good enough.
Not feeling professional.
Anger.
Frustration.

We are rarely in a group or an organization where there is room to share and explore these feelings with others, where these feelings are recognized and valued.

So we push the feeling to the back of our minds and try even harder. When things get too stressful and messy, we know that we somehow saw it coming, deep down, but we couldn´t do anything about it. Despite research like Brené Brown's showing the link between vulnerability and courage, most of us haven´t been able to figure out a systemic response to these

feelings. How do we utilize the early warning system of our vague emotional responses? Why are these warnings so seldom heeded, when they can save the individual as well as the organization from so much pain?

Complexity can be deeply problematic. But it is also rich, diverse, and holds the promise of unexpected solutions.

Navigating complexity

Complexity is about systems. Systems are about relationships. Things that act in one way as solitary entities sometimes behave in another way when interacting. A plastic bag, for example, is good to carry things in, but behaves differently from an environmental perspective. In almost any area dealing with societal change - communication, technological development, innovation, health care, etc. - we encounter layers of complexity. We perceive an increase in complexity due to a faster rate of change and greater fluidity between different systems and disciplines, but also a greater capacity to identify, frame and understand how complexity can be navigated.

What follows is a report from the pilot project Navigating

Complexity. The word "complexity" comes from the Latin words complectere (to embrace) and complexus (plaited or braided). The project has been exploring how to understand that which is plaited, and how to embrace it.

RISE is the biggest government-owned research institute in Sweden. Our mission is to be an innovation partner to companies and societal institutions in an increasingly complex world. Navigating Complexity is a step in understanding how complexity functions as pain and possibility for our clients and collaborators and identifying how we can help address it. In this project, our primary focus has been societal change and urban development, with a strong emphasis on how we organize collaborations and administration in projects.

Navigating Complexity has mainly consisted of conversations in the form of workshops and interviews. We have also, to some extent, mapped relevant research in this field. We have identified three areas that reappear throughout our explorations, offering to either move solutions forward or block their progress. These are: Perspectives and organization - how we regard, frame and structure work, and

how our work is affected by the organizational context; Methods and learning - how we understand and facilitate process and learning, and Terminology - how we use language to block or explore, discipline or encourage and clarify. The cases we will refer in this report all reflect one or several of these themes.

Systems & Emergence

As a field of research, Complexity Theory is fairly new, established by the Santa Fe Institute in the 1980s (ref). Complexity Theory is in and of itself interdisciplinary, springing out of natural and biological sciences as well as philosophy and social sciences. Complexity theory is both a continuation of System Theory (ref) and in dialogue with it. At its center is the concept of complex adaptive systems. This is a system that can't be understood as the sum of its smaller parts. It is nonlinear and behaves in ways that can be hard to predict. The human brain is an example of such a system. When municipalities, companies, global challenges such as migration and climate change display features of complex adaptive systems, we are faced with massive organizational challenges. Little, if not nothing, in our

well established industrial, linear, one-step-at-a-time approach can help us understand the layered clusters of this geography.

The study of complex adaptive systems (CAS) has had tremendous impact on such diverse fields as robotics and management theory (ref). This research raises questions about how we understand patterns and interactions. How can we work in more networked ways? What is the role of the narrative, the stories we share, in navigating complexity? How can we prototype in an environment of uncertainty?

Another model for how to describe different kinds of systems is one coined by the biologists Humberto Maturana and Fransesco Varela: autopoesis. This is a system that can maintain and renew itself (like the human anatomy with its renewal of cells and bacteria). Autopoesis is in contrast to allopoesis; a system that creates an external entity, like engineered systems for production. The sociologist and philosopher of social science Niklas Luhmann has pointed to the autopoetic qualities in social systems, in how we recreate culture through institutions and behaviors.

It's no surprise that the highly influential systems theorist Donella Meadows, when listing places to intervene in a system, put "change the culture" as the most powerful possible intervention.

To understand how we create the culture we are in is to understand how we can understand and navigate complexity, or, in other words, how we make and roll with change. Emergence is another word for change. More precisely, emergence describes a process in which things are revealed or come into being. Steven Johnson, a media theorist, and Kevin Kelly, editor and founder of the magazine Wired, have both written about emergence and how we might start to understand and operate change by using the metaphor of an anthill. Anthills may appear random, but they are anything but. Ants change their behavior when other ants change their behavior, and if they find an ant friend with a similar behavior as their own, they stick to that ant. Humans behave in the same way. When enough change agents move us in a new direction, we reach a tipping point and seek confirmation according to the new norm instead of the old one. Through many small behavior changes, the culture is transformed. What we

"Social systems use communication as their particular mode of autopoetic reproduction. Their elements are communication which are recursively produced and reproduced by a network of communications and which cannot exist outside such a network."

Niklas Luhmann

expose ourselves to and how we condition each other by our interactions decides the reality we will come to share. When we get feedback on our behavior and can create clusters, we make change together. Making change is navigating complexity.

In her book "Engaging Emergence", the author and educator Peggy Holman describes the history of the concept of emergence as intrinsic in the idea of evolution. She points to some of the key features of emergence, such as downward causation, where the system determines how we behave (like roads deciding where we drive), and how no one is completely in charge of the activities that emerge, like ecosystems and activity in a city.

Process vs project, beyond linearity

Different management theories look for different ways of organizing for change. Google undertook a project called the Aristotle Project to investigate what factors make a team successful; they arrived at the conclusion that social safety is the key characteristic. Social safety describes a climate where everyone in a team feels entitled to voice their thoughts, and each member is seen as a valuable part of the whole. In Reinventing Organizations, Frederic Laloux shows a multitude of examples, from companies in all sizes, of organizational practices that flatten the hierarchy and allow groups to co-create their everyday practices.

In our discussions throughout the project, we saw that many people feel locked in a power struggle between the organization and the individual. The structures that are in place between the individual and the outer framework and deliverables of the organization often serve more to control than to support. Middle managers are reduced to keepers of time and budget, victims of pressure and stress both from above and below. What is missing are the supportive clusters that go beyond projects, collaborative structures that focus on learning, recovery and reflection. This is not necessarily a question of resources; it is how we value and organize the time of collaborators. If we are all in constant production, then we will eventually produce the wrong things and burn out.

One of the reasons for the inability to organize qualitative and collaborative development might be what Ann Howard, president of the Leadership Research Institute, calls "lack of organizational vision of change". The organization needs to carry visions for processes and not just desired outcomes.

Most of our institutions are not built for processes but for projects. Projects are great

when you need to work with simple matters, and even with complicated matters, but they don't stand up to the demands of complexity. Complexity is not about "thinking out of the box." It is about fitting different boxes and trying to understand what goes on between the boxes. This requires working together and not being asked in advance for a fixed result. As one of the persons we interviewed said

"There are all these matrices being constructed for increasing agility and scaling resilience. But it is still a matrix and you have people working like crazy to be expert on the system of that matrix and do things according to this matrix. And since it is supposed to cover all the aspects of the unexpected there is no room for...well...the unexpected."

In his book "The Fifth Discipline", Peter Senge, a system scientist at MIT, offers guidelines for perspectives that may assist change. Senge writes: "Be aware of my own mental models and assumptions, and tap into my curiosity to inquire into what models my clients (or team) are applying to what they experience. Move beyond linear reactive thinking to understand the systems the client (or team) is trapped

in to help them design new systems to enable generative possibilities. Work towards getting both me and my clients (or team) comfortable with the creative tension between an inspiring vision (a jointly defined purpose) and our current reality."

To be aware of your own assumptions is to be willing to step into the unknown, into uncertainty. It can be scary for an organization moving from project to process, from focusing on the complicated to focusing on complexity, from silos to systems. People may find themselves wondering:

- How do we define and measure success if we don´t have sprints with clear deliverables?

- How do we build trust and social sustainability in a less hierarchical organization?

- How do we hold people accountable in a more collaborative environment?

- How do we develop and include tools to support navigating complexity?

- How do we define learning and skills in an environment where we embrace uncertainty?

In the project SIGURD (Sustainable Impact Governance for URban Development), some of our colleagues at RISE are looking at how we can identify and define paths to value and value creation in urban development. Many researchers have stressed the importance of a holistic perspective when working with sustainability, showing how one aspect of sustainability is meaningless without the others; social, environmental and financial sustainability must be considered together. Some things can be measured in the short term; elsewhere, the impact can only be understood much later or in a fragmented way.

We need to, and can, develop practices for mapping and understanding different values in what we produce. Did we increase the representation of ideas and perspectives? Did we try things with a greater number of people? Did we experience a new way to understand, ideate and organize our work? Did we discover connections to other topics, areas, disciplines? These are all examples of questions to help us understanding value differently.

When we have asked people about how to navigate complexity, they bring up trust as a key factor in whether they can be vulnerable enough to engage. Trust can be invited, but it cannot be enforced. Inviting trust requires structural change, like giving co-workers space and mandate and promoting a culture that rewards exploratory work. And, importantly, we must remember that most people are trying their very best. If we establish a reflective work culture, we can discuss challenges before they overpower us and be heard when we feel inadequate and vulnerable. Trust and reflection are part of the vision of change.

Though complexity may seem obscure, every single person is actually an expert in complexity. Our life in this world with other people require extraordinary skills in negotiating, revaluing and jumping daringly into the unknown, whether it is coaching our kid's soccer team, falling in love, working out a household budget, or throwing a party. But we somehow lose our hard-earned life skills when we sit down at our desks to work. The so called "20th Century Skills" framing the desired capabilities of the future job market, or rather our contemporary job market, focus mainly on social skills and the ability to identify, analyze and navigate complexity, creativity and communicative skills. This requires us to reflect on how we can assist each other in a collaborative environment to develop more of the relational capacities. These are the skills that will assist us in change; navigating complexity.

As one of our interviewees said: "to navigate complexity demands a shared responsibility for something that no one fully understands. It is the commitment and at the same time the willingness to let go of control and pushing your own agenda at all cost, that create the unique condition for something new to happen".

This report is written for anyone interested in surfing the waves of uncertainty. Wherever you are, in an operative or strategic position (or both) in private or public sector or civil society, this is for you, whether your relationship with complexity is happy or strained.

In this report we share real-life cases that illustrate different manifestations of complexity, its reasons and consequences and discuss methods to address complexity, with a specific focus on design and art-based approaches. Throughout the report you will find concrete advice that can support you in better navigating complexity.

Our hope is that you will find fresh inspiration, get some practical tools to try out, and feel that you have an ally by your side in times of great change.

Lisa and Pernilla

To begin with the worst idea is a good way to open up for creativity in a process. You can´t settle there but you have to move on and be open for something new. Leadership today is changing from "assertive and clear" to something that is more about establishing possibilities, a platform opening for collaborators to solve problems using their specific competences.

Oscar Stege Unger, Director Wallenberg Foundation

WHAT DO WE MEAN

When organizations, their culture and processes are discussed, it is easy to take the words we use for granted. We might assume that everyone has the same understanding of a concept such as "complexity" or "innovation". But these kinds of words, that are part of an ever-changing vocabulary, carry different meanings in different contexts. We see this as an opportunity to reflect on language together and to identify how this kind of reflection can build cultures in projects and organizations. In this report some concepts surface more often than others, or take a more central position. Here are some of them and how they can be unpacked and understood.

Complexity The roots of the word come from the Latin word complexus/complectere which indicates a group of related elements, embracing and something that is plaited or braided. When we talk about complexity we don´t mean something that is complicated and difficult. For the complicated challenges there are good practices to address them, even if they may take a lot of skill to master. The complex is characterized by multiple involved issues, stakeholders and agendas. Sometimes collisions and conflict. And a practice that needs to be created, and continuously built on.

Navigate is the other word in our project-title. This word means the art of directing your vessel. We like it because it plays on the balance between what you can control and what you can´t control.
You can´t control the winds and the currents, but you can control how you set your sails, and you can adjust to the changing winds and currents as they arise. We find this a very useful metaphor for working with complexity. You can build on your skills and together with your team you can try different models and perspectives, but there can still be a storm coming at the horizon. But you will be more prepared to ride it out.

Enabler This is an interesting double-edged word. Enabling can be something destructive as in being submissive and co-dependent with addictive behavior, cleaning up someone else´s mess without setting borders or asking uncomfortable questions. But it can also mean something constructive as in being the one to open doors for others and looking for ways to act as an ally and make space. Without enablers it is very hard to address complexity in any organization.
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Resilience   This word refers to a capacity (or rather a bunch of them) that is very useful when navigating complexity. Resilience is the ability to bounce back after a blow to the system. Picking oneself up after a divorce, rebuilding a city with as small losses as possible after a flooding are both examples of resilience. Now that we know that the storm will hit unexpectedly, we get busy figuring out how to build resilient egos, relationships, buildings, financial systems and so on.

Innovation   This is a word with to which we have a hate-love-relationship. It could easily win some kind of buzz-word-Oscar for the most exhausted concept. But lacking a good alternative for something that is simply brand new and creates value, we are not quite ready to drop it. This word first appeared in the thirteenth century law-texts as "novation" indicating a renewal of contract. In the sixteenth and seventeenth century it grew into a general reference to something new but it wasn't until the industrial revolution that this newness had a mainly positive connotation. It is common to separate between invention and innovation. Invention is the creation of something new (like the transistor), but innovation is when this new also creates value and/or is widely spread (like the radio): a new offer, a new way of delivering care, a new way to capture carbon dioxide in the ground. We need innovation but we recommend that you handle both the activities and the words with care. New is not always better.

Sustainable   Here is another word deeply connected to complexity. Why? Because the climate-crisis consists of many different crises in different parts of the eco-system, governance and financial systems of both un-knowns and knowns. It confronts us with complexity in different ways. The word in itself was originally a term that referenced how to not harvest more from the forest that it could regenerate. It became a term to describe boundaries for usage in a broader context in later part of the

20th Century. In 1987 The Brundtland Commission of the United Nations coined Sustainable Development as a goal, defining it as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Knowledge/Bildung   Defining knowledge is potentially a new book (or many), and we won´t claim to have the one and only definition. In fact, we really like that there can be different ways of understanding knowledge. There is the knowledge that you build through practice, the knowledge you receive by formal training, the knowledge that happens when you explore something by yourself, intuitive knowledge, the knowledge of knowing when, and… much more. The German term Bildung is useful to us. It contains the word Bild as in image and refers to both a visual image and form as well as repetition of these elements. As a pedagogical idea it seeks to bring together the individual with the societal. The concept of Bildung exploded in Germany around 1800 with roots in the ideas driven by enlightenment. To undertake learning in a spiritual yet secular way is one key-feature of the process of Bildung, as well as in navigating complexity.

Agile   This word led a quiet life meaning "active, quick and in movement" when in 2001 it was suddenly catapulted into stardom by The Manifesto for Agile Software Development. The Manifesto was created by seventeen people from different parts of software-development distilling their experiences into a new methodology and work-ethic. The impact of this seemingly simple document has been vast with transformative impact reaching far beyond software-production. We still find it highly useful. These are the values that opens it:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Creativity Another runner-up for the Oscars for buzz-words. This seems to be the desired state for just about anything except book-keeping. A reason good enough for us not to include it at all. But we can´t do that. We need creativity after all. This is a word that literally means "to make something from nothing", but that is not how it works. Creativity comes from friction. Friction between ideas, perspectives and literally bumping into each other (that is why a spacious office can be less productive). Creativity can´t be ordered. It doesn´t even work trying to bribe someone into creativity. It happens when we are busy doing other things. Aside from making a lot of friction possible, the best way to facilitate creativity is to allow people to fail. Constantly and without a shadow of shame. One of our favorite check-lists for creative environments is another oldie but goodie: "Bruce Maus incomplete manifesto for growth". These are the first three paragraphs (but we recommend you google it and read the rest):

1.   Allow events to change you: You have to be willing to grow. Growth is different from something that happens to you. You produce it. You live it. The prerequisites for growth are the openness to experience events and the willingness to be changed by them.
2.   Forget about good: Good is a known quantity. Good is what we all agree on. Growth is not necessarily good. Growth is an exploration of unlit recesses that may or may not yield to our research. As long as you stick to good you'll never have real growth.
3.   Process is more important than outcome: When the outcome drives the process, we will only ever go to where we've already been. If process drives outcome we may not know where we're going, but we will know we want to be there.

Governance This word is about the management of decision-making in organizations and systems such as politics. There are a lot of factors that affect decision-making in new ways, and there are a lot of things to make decisions about. How we handle crises, how we treat data, how we manage an aging population and so on. When complexity increases it is easy to lose sight of how decisions are made, who is included in the process and who can be held accountable for what. To discuss and work with governance allow us to take care of the process of democracy, especially when it is challenged.

Leadership Leadership today is not what it was yesterday. As one participant in the project Navigating Complexity pointed out, "…leaders have gone from being the ones with the answers and the vision to being the ones with the questions and explorative abilities". To practice leadership is to practice how to walk together with others into the unknown. Albert Camus famously said: "Don't walk behind me; I may not lead. Don't walk in front of me; I may not follow. Just walk beside me and be my friend."

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Make your own list of words and keep changing it. Our language is a tool and we need to take care of it together. Activate and re-activate our understanding of the possible meanings and applications of what we say.

"Complexity is a combination of courage and naivety. Naivety is trust, courage is to… have been fighting for the right to be complex."

Saadia Hussain, artist

CASES & WISDOMS

Complexity can arise on several interconnected layers: individual, people, group, organization, society, world.

"There are many reasons for complexity. We create a lot of complexity ourselves, which is very unnecessary. For example, through policy, finance, administrative tools, actors with different agendas. So part of the complexity is inherent, created within the organization – as opposed to the kind of complexity that arise from unexpected events or a complex challenge."

"When the topic of a project is a complex issue in itself, like segregation, that reinforces the other types of complexity that can arise. And the more complex the issue, the more skills it takes by those working in the project. Conversely, the safer you feel with navigating complexity, the more complex challenges you dare to take on".

But take away the trucks! Complexity demands new perspectives and experimentation.

"When things are really complex, another mindset is needed. You need to experiment, and I have had to learn that the hard way. At the traffic planning office, taxpayer money is holy, everything needs to get right from the start. Hence there is no tradition of trial and error, it is rather a chain of execution projects. Here I have realized that sometimes you don't know everything from the start. For example, a logistics case where we had the completely wrong entry point. Then we hired someone with completely different perspectives. It was about the inner city, trucks, load rates... and he just said, "but take away the trucks!". Which was brilliant. But when we started several years earlier, that approach was not there, and we lost three to four years – which we wouldn't have if we had prototyped and tested. One quality is delay; you need to minimize delays. But yet we were stuck in a way of working that was actually causing delays. The cities are not prepared for this more experimental way of working that is needed in complex issues".

- **Role: City planner, project leader, team member**

- **Challenge: Traditional ideas about efficiency and unnecessary spending hinder experimentation**

- **Wisdom: In complex situations, experimental and design-oriented mindsets and approaches are helpful. Invite a variety of perspectives and competences. Play with early ideas, create prototypes and test scenarios in creative ways.**

Into the unknown. How do you create policies for something you know nothing about?

"I was part of writing a government inquiry to members of the parliament. Sometimes you say you need to explain things at a level your parents can understand. Here it was below your parents! Not that they are stupid in any way, but they do not know anything about the area in which they are to create legislation – and we didn't either. Our task was to create regulations for something that didn't exist yet – autonomous vehicles. Where do you even start? A google search at the time would yield 15 hits. Yet your final report was something that more than a hundred referral agencies would be able to give referral responses to. We just had to simplify. A lot. When the issue is complex, you sometimes need to break it down in small bits that you can handle. But different people find different things difficult. How do you know when to break it down and not? There is also a very important aspect of time. Something rather simple that has to be done in very little time can get complex. And something very complex but with a long-term perspective can actually become simple".

- **Role: Researcher, policymaker**

- **Challenge: Knowing where to start when there is no pre-existing knowledge.**

- **Wisdom: Dare to not know and be curious – prioritize finding questions over answers. Let some issues to take time, while moving swiftly with others – experiment**

Communicating something complex

"There is a difference between reality and models of reality. The latter are always simplified with emphasis on certain chosen facts. But wicked problems are not possible to define, they are large and dynamic, the level of complexity is high. Navigating complexity can be about how you package and communicate what is wicked in a pedagogic way that still allows the dynamics. But it is not easy! How do you visualize complex information and what do you choose to display for the target group at hand? It is about time and ability to comprehend. The raw data may include a lot of complex information that you don't need to show. There is a lot of strategy and gut feel about communicating complex issues, especially since complexity make people insecure. When you show certain information, when do you show something simple or complex? It is extremely important, especially as images have the potential of skewing the truth".

-   **Role: Researcher, educator, project/process leader**

-   **Challenge: Communicating something complex in a less complex way**

-   **Wisdom: Get to know your target group – what do they need, how might they interpret your information? Prototype, play with different lenses, be visual. Test your ideas.**

"A map can help you navigate in a new situation – but there are different types of maps. Some give excellent information about a public transport system or route directions. Other maps include the topological information of Ruddalen. Do we show the single trees or the wood? Abstraction helps us in different situations, and different maps contain different types of information – so the map needs to match the needs of the map owner. In order to create a map for someone, you need to understand their needs. But it is also the realization that a map is always a simplification or reduction of reality. The abstract is not the reality".

Sacrificing oneself in organizational stupidity and political complexity

"I have been involved in this Swedish city and all the complexity around the process of setting up a new role in city planning, an "urban process leader". My role as action researcher became – unfortunately – to step right into what happened and sacrifice myself, becoming the persona non grata. I knew I had to act, but not what the consequences might be. There was really no right and wrong. In the project I met people who are engaged in change management, and I learned that they need to be listened to. Complexity can be mediated in several steps, but it is psychologically and emotionally draining to observe situations where people get hurt. It is hard to not become cynical. There is so much stupidity in organizations that it sometimes just makes you want to become a gardener instead. It can be about specific toxic individuals who just destroy everything around them. And everyone knows! They just wait for that person to retire. The role of the action researcher is to create a little bit of space and wiggle room for reflection and change. They need to have one foot on the inside but still create a bit of freedom. But this is such a tough role to have".

- **Role: Action researcher**

- **Challenge: Mediating complexity without getting hurt.**

- **Wisdom: Accept that a constellation of actors may make initial goals unattainable. Set mental boundaries for your responsibility, not everything can be solved and not everyone can be saved. Create room for reflection and support.**

Changed prerequisites and the curse of the waterfall logic

"It was a research project from our side. We set out to create a concept and test different ways of learning, using a smorgasbord of solutions where you could pick and choose. The project collapsed because of the client's changed expectations - in the end, it was like trying to push square pieces into round holes. Suddenly the client wanted something other than what we had produced. The joint conversations we had had about complex ways of learning, as well as our iterated solutions, were lost. We still wanted to launch in order to iterate further, but we were not allowed to, since they wanted to impose a waterfall logic from A to Z. We had very tough discussions, were heavily delayed, and we lost a lot of competency when some people quit. The lesson learned was really that you have to have patience – but in the end you may still end up at a dead end".

- **Role: The researcher, educator, team member**

- **Challenge: Risk-averse client, changed prerequisites and expectations**

- **Wisdom: Set goals that can be re-negotiated and involve the stakeholder at all stages to have a shared vision of the why.**

"Complexity is perceived differently in between individuals. It can have to do with their personal maturity – but also it can be related to disposition and personal inclination. Can they live with, or even enjoy, what is uncertain and uncomfortable? Research in psychology on adult development holds some clues, and a couple of developmental stages have been identified. In the first stage, issues are only perceived as complicated – people have a yes/no, black and white, way of seeing everything. This is often connected to what profession these individuals feel comfortable with. For example, people who work at a bank, or with policy and legislation, are more likely to see the world through this lens. In the second stage, people are open to what is complex, and they can see that things are not only black and white. When you are at this stage, it is very difficult to work with the black-and-white bank people. Research has also shown that stage two people will not stay longer than one or two years in a type one organization. If there are not enough people in the organization who share similar perspectives, they move on".

Balancing and navigating a "mess of actors" in urban development

"Cities are complex – there are so many layers and thematic issues that interrelate. For example, the traffic office interacts with city planning, there are all these social aspects… and then you just realize how little you know. In the city it is really a mess with all sorts of actors. Officials, politicians, and other actors – they all have their own agendas and want to push for their own perspectives. It is impossible to get an overview and hard to navigate this in the right way. What enables you to navigate this complexity is experience, sensitivity, relations, the ability to surface problems and tensions. You need to be able to adjust, to compromise, and to be brave when you see flaws. You need to consider how to act in the moment to balance different actors and unexpected situations, knowing when to push forward or slow down. You need to be able to coach external actors in the right way. This is primarily the job of the process or project leader, but not necessarily".

- **Role: A process/project leader**

- **Challenge: Navigating a web of actors with different agendas and perspectives**

- **Wisdom: Experience, relationships, social skills and well-being are crucial. Create room for reflection, experience-sharing and coaching to build capability.**

Hack: The organizational therapy couch

"In a municipiality where we support an innovation platform, we have prototyped how to create room for reflection, trust and critical discussion. We created something that we call "organizational therapy couches" where we met "officials in distress". We acted as psychologists or curators of stories".

Wisdom / Grass-root expert advice: What doesn't kill you makes you stronger

"I feel comfortable with complexity now; I feel secure because I got a lot of training. My first memory is when I was writing my bachelor essay in an aid-project. It was in the Ukraine and the topic was incubators. At first it seemed clear, but then it turned into plan B and then very quickly we ended up in plan E and F. If you are open to redoing your plan over and over again it can actually be really interesting! But this was really a crash course, jumping into cold water. Now I find that no situation after that can really scare me, not even a fuzzy process with a lot of elements. If you have handled a process like this once and it didn't go south completely, it is good. But if you got really burnt, you might not dare to try again".

Role: The boundary spanner as a catalyst

"We studied individuals involved in innovation in cities and identified a sort of intrapreneur with a passion for improving society, who doesn't like to be placed in a box. We tried to put a word on this and ended up with "boundary spanner"– which ties back to research from the 60s. We identified four important roles or tasks of the boundary spanner: (i) interpret, listen and translate; (ii) connect networks; (iii) coordinate and move things forward; (iv) be a fearless entrepreneur with wild ideas. The translation role is crucial – boundary spanners gain legitimacy and engagement by shifting language and tone when interacting with experts, employees, citizens, management, and can share one group's perspectives with another. You really need these boundary spanners, but it can't be anyone - it requires social skills, diplomacy, flexibility, and "organizational multilingual literacy". They need to be able to handle complexity, or else they get worn down. Therefore, recruiting for this role is very much about putting the right person in the right place.

When you have these individuals, you absolutely need a structure in the organization that supports their way of working. Otherwise, the boundary spanners will be drawn into a swamp of constant "no we can't do that", and an everyday fragmented with unimportant things that require ten mind shifts a day. A public organization that wants to be innovative and able to deal with complexity needs to think about roles, structure and leadership that enables these individuals.

I am absolutely convinced that these are skills that can be developed. As part of our research project, we had a "trainee program for boundary spanners". But you also need to work with their managers, so managers understand what the role means and can have their colleagues' back. We're making progress in quite a few places! Now there is even a program at Malmö University about handling complexity, and in Helsingborg they have an official "Krångelombudsman" (mess-mediator)".

Feeling unsafe reduces the ability to take on complexity

"You need to feel safe in a team to be able to work with complex issues, to handle changing prerequisites and unexpected events. The larger the project, the higher the likelihood that this sort of thing will happen. A typical problem is when project members transition in or out of the project. This can break the relationships, structures and safety that have been built up in a project. One example happened yesterday in a complex project with many actors. The project in itself dealt with very complex issues, and it had been very difficult for the project members to feel safe. After a long start, they were finally up and running – and then came a shift in project management that created a lot of stress. The new project manager had a completely different style with a focus on measurable deliverables and reports. We could immediately see the risk that relationships would scatter into pieces".

- **Role: Project team**

- **Challenge: Changed team constellation and leadership can break up relations, create changes in direction and create unsafety**

- **Wisdom: Coworkers and project leaders working in fewer parallel projects are less likely to move in and out of projects. Work proactively to build relationships and psychological safety, ensure open communication between project leader and team.**

Burn-out destroys the ability to navigate complexity.

"Complexity is harder to handle after a burnout. The loss of cognitive capacity or fragility makes me very vulnerable to stress, and it's harder to tackle the complex issues that I usually love. It's also hard to foresee when I will feel strong and not. A situation that seems easy to handle today may be nearly impossible tomorrow. We need to be allowed to experience highs and lows in the way we work, because how you feel is just as important as any tools or approaches to deal with complexity. If you are mature, ready and curious, then you can dare to take on something new. If you are healthy and in a good place, you can also handle what's complex. But if you are not feeling well, you just can't. This can be scaled from the individual to the group to the organization. In a healthy organization, it is easy to try something new; in an unhealthy organization where negativity grows, you can't."

- **Role: Anyone**

- **Challenge: Ups and downs in cognitive capacity, vulnerability to stress**

- **Wisdom: There needs to be an awareness of how well-being and complexity are connected, and the risks of a strong focus on productivity. (Try to find slack, time for recovery and relationships). Plan work and projects to relieve pressure, for example with shared responsibilities so that it is not a disaster when you have a difficult day.**

Message from the grass-roots: Create space for reflection, experience sharing, learning or just screaming.

"You need to get exposed to complexity and learn from your failures, live and breathe complexity. That's why you need space to learn from what happened – both successes and failures. If what it takes to navigate complexity is experience, safety, and sensitivity, then there needs to be space for sharing, giving each other advice and courage, coaching, picking up on small things. On an individual level, you need space for reflection, so you don't simply react in the moment".

" You need a safe haven to land in when there is a lot of frustration – complexity gives RISE to so much frustration that you need a space or forum to just take the lid off. If those feelings overflow, it will lead to stress and burnout, or to you leaving the project – which leads to even more complexity for those who stay. So we need a place to reflect and scream – we need opportunity, time and space".

Larger organizational units take away intimacy

"Many of us want to have as small a unit as possible, to be close to our unit manager and to each other. Unfortunately, in our division we are moving towards bigger groups. In a small group, it is more visible when you need help, or when you do something good. Right now, our boss doesn't see us. Psychological safety is so important, but it is hard to achieve in a group of 20 people or more. It doesn't take much to create a feeling that the group is impersonal and isn't a safe place. Who decided on our group size? It is also hard to build trust with the people in your group who are not in the same geographical location".

- **Role: The researcher, team member**

- **Challenge: When organization of units don't take social dynamics into account**

- **Wisdom: Reflect on your social needs, and where you can find support. What safe, soothing and inspiring havens are there or can you be part of creating? Prioritize and cultivate your social context at work, whether it is about finding people to sit with daily or participating in open supportive networks of likeminded.**

Hack: Find, sit and rest with your tribe

"I call them support groups. In my daily work I need to be close to colleagues that I can feel completely relaxed with. We whine about things, we share successes and joys. But we are not usually organized that way. I find it more important to sit with the support group than the organizational unit you belong to. I need personal connections and relations. How we meet doesn't have to be structured. But if people sit close to those they feel safe with, it's easier to handle difficult situations. This can also reduce social complexity quite a lot".

Nervousness and hampered creativity as a result of lack of time

"In my ongoing project, I need to identify the right people to interview as soon as possible in order not to waste time on interviewees who don't give valuable insights. I need people who are knowledgeable about the issue at hand and who have the right technical competence. But talking to the right person might give information that is not useful, and you may get stressed by talking about the wrong issue. This can be both good and bad! It may be that, at this specific moment with this specific knowledge and perspectives you have, you can't see the value of the conversation and how it fits the goal. But someone else might see it. Or you might see it once you have learnt more in the project, or after the goal has shifted. This is strongly linked to how much time you have in the project: if you're close to a deadline, you can't afford to miss your target, but with more time, you can explore in different directions and be less worried about getting "wrong answers". The worst situation is when you don't have time for exploration and diverse perspectives on the problem – it totally hampers your creativity. But not everyone is open to non-linear processes."

- Role: Researcher / team member

- Challenge: Open-ended exploration becomes narrow and nervous because of time pressure

- Wisdom: Let go of the idea of "efficient" interviews. Collect data in iterations to allow for exploration and focus, potentially redefining the inquiry.

Hack: self-observation, reflection in and on action.

"There is a difference between reflection in action and reflection on action, and both are needed. You need slack to be able to reflect in action, when unexpected things happen: "Here and now I see this… how do we handle this". By training reflection on action, you get better at reflecting in action, it is like building a repertoire. You can think "how did I reflect last time? What were my perspectives, how can they be useful now?""
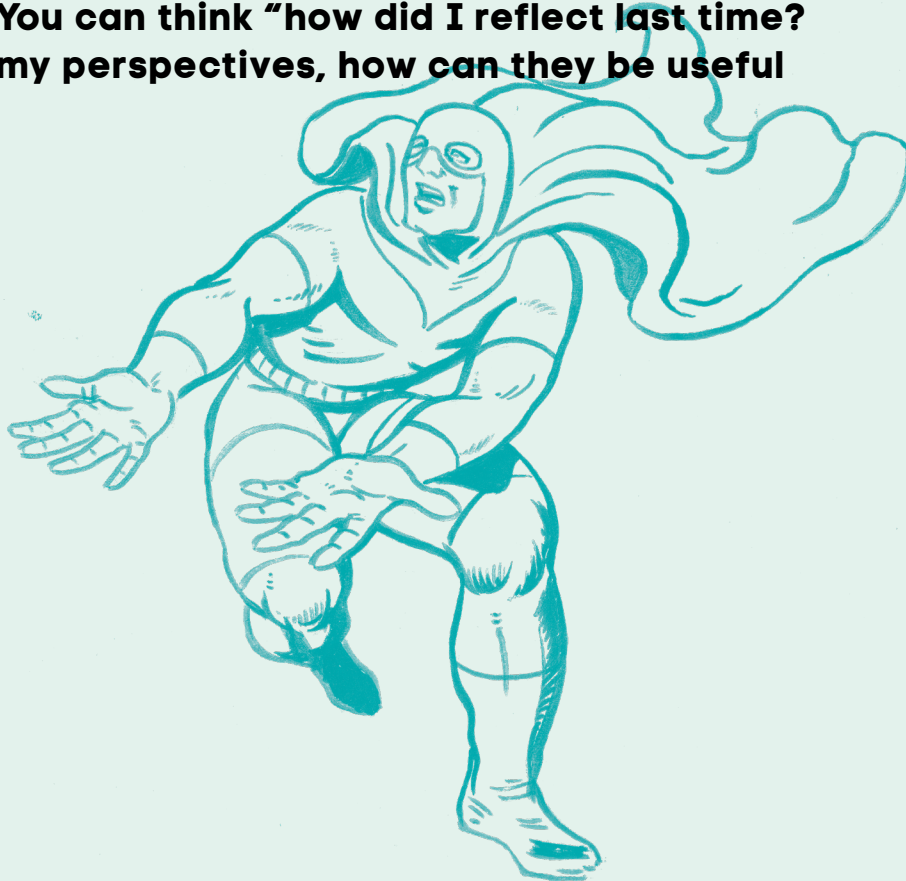
The paradox of a high degree of freedom and time pressure

"We had a project of the type "here is a bag of money, do what you want". How on earth do you start with that? We were expected to come in and do something around blockchain technology. We ran around doing different things and it wasn't very good. We sat with different technical perspectives. How do you even define a blockchain? There is no consensus. If even understanding the concept is so complex, how could we find technical applications? There was recent work that we were curious about, but the problem was that there was no time to look at two previous projects. It would have created a lot of value to sit down with those involved, but we didn't; instead, we went out of scope and delivered few results. We also didn't look at the expectations, thoughts, or ideas that were already there. What knowledge existed already, and did we have it in our team? You need to build a common ground and points of reference before you start looking into applications. "

- **Role: The project team**

- **Challenge: Time pressure makes unclear and high expectations hard to handle**

- **Wisdom: Defy pressure and take time to build a common ground, interact with what is already there. Revisit the issue with different perspectives.**

Not being able to go deep sabotages the beauty in working with complexity

"Most of the work that we do in my organization is complex, and that is also our business model - we take on complex societal issues and support different societal actors in doing the same. So it is completely counterproductive to work in a way that prevents us from doing a good job! A common observation is that we typically have too little time to get to know a topic in depth – even though that is what the researchers love to do, and that is what it really takes to approach complex issues.

The way we have to track and report our time reveals a focus on productivity that is really short-sighted. It creates a constant feeling that you are not doing enough. Also, time spent says nothing; it is a weird measure. A sudden epiphany may create incredible value. Letting a problem rest for a while may be the most productive strategy. What counts as work? These activities can bring great value to the project. And yet you may still feel insufficient.

So here we are, gathering people with a high tolerance for complexity, who like it and who are able to stay in the uncertain and ambiguous, but who are not allowed to work in the way they would like to and see fit to. This is part of a bigger transformation and how we are funded; our organization is not the only one harming itself. We all get better at efficiency but worse at reading a book. The whole society is just in a hurry".

- **Role: Researcher, project worker**

- **Challenge: A focus on task-fulfilment and measurability hinders engagement**

- **Wisdom: How can you take part in the transformation towards more holistic ways of working and understanding impact? Find reflective spaces where result is not measured in singular entities. Discuss what kind of aspects that are important in your organization. Value over time, involvement, capacity to collaborate etc.**

Hack: surplus – give and get time with others to break patterns.

"From the armed forces I bring the idea of surplus. In order to change and break patterns you need to talk to others. If no one can help because everyone is always busy, the model is broken".
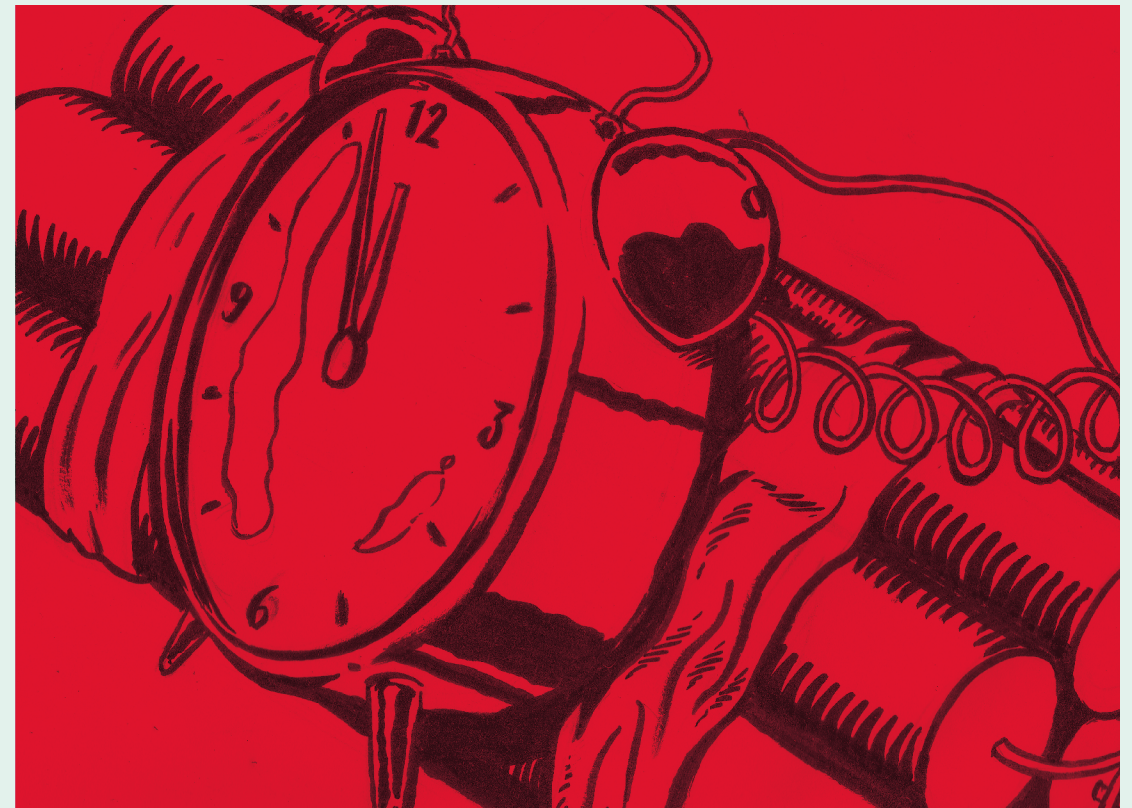
We don't plan for the unplannable

"The strong project logic in our organization is a dilemma, and it puts many people in a difficult situation: in each project we need to know beforehand what resources should be used when and by whom. But we know that in complex projects everything can change, which might require new competencies and new actors. Having this project logic in an organization where the majority of the issues we are working on are complex just doesn't make sense".

The nature of complex work is that it can and will take unexpected turns, leading to a constant renegotiation of challenges, dilemmas and problems. Yet organizations often set tight conditions that do not allow explorations outside of that frame. The boundaries set by the system can be rigid and general – strict deadlines, waterfall processes, forms to fill out, intermediary reports with set formats. The frames in themselves risk leading to complexity, when trying to fit that squiggly project into a box that doesn't fit. It becomes like putting out a fire using gasoline – reducing the space with even more forms to fill out and structures to fit within. This system may be imposed by the organization itself, or it may come from funding organizations, stemming from the way that calls for research are written.

Message from the grassroots: Institutionalized flexibility

"We need to gain acceptance for, and even institutionalize, ways of working that allow flexibility: Space for things that don't go as planned. Would it be possible that projects that treat more complex issues, or where complexity arises, don't have the same expectations on results? Could there be an acceptance that precise prognoses and follow up does not always fit, that the level of ambition can change over time?"

Message from the grassroots: Build in slack in the system

"You need to build in slack in the system, both on our side and at the recipient – well, in the whole institutional landscape. That you are constantly to prepared to mobilize by having some free resources. You need to think like a fire department: 80% of the time, the fire men are at the station playing ping pong. Somewhere you need to have resources that rest, everyone can't be booked 100% of their time. But that thought is extremely radical nowadays."

Message from the grassroots: An issue-driven process-organization

"There should be more of a network structure. The organization could be set up differently, with different support structures that could enable the ways of working required for complex issues. A process organization instead of a project organization. Different organizations that could jump in when some type of support is needed. It could be more bottom-up and driven by issues. But where does this ever happen? I would like to see that organization"

The project-leader

This project was initiated by a municipality. The goal was to help build a profile within a chosen area, and also to use the project as a method for prototyping. The project organization was built around two project leaders who were responsible for inviting a cluster of different partners to strategize on possible future scenarios. This proved to be challenging in several ways.

Running a pilot within a siloed organization like a municipality opens up a multitude of misunderstandings and collisions. This is true in particular for those munici-palities that have a strong culture of new public management. The walls of each respective silo are hard, if not impossible, to break down, yet the expectations on an individual to ensure success are high.

From the outset, the project leaders had to work on a business model that lacked support from the parent organization. This eventually led to a narrower scope than what was initially intended. The project had to adapt to where the money was.

Another challenge lay in asking partners to join an exploration that promised to be interesting but had unclear potential and outcomes. Many organizations have only very limited resources to invest in development (regardless of whether or not the goal is to explore and grow in collaboration with others). This can easily lead to a lot of enthusiasm in the beginning when the ambition is in the drivers' seat. But later, when the organizational reality hits, the formerly enthusiastic partners can become increasingly vague and absent.

- **Challenge: Finding a business model for a collaborative platform that resonates with the ambition to create something new. It takes courage on all sides and requires support-systems to be built around the core-team.**

- **Wisdom: The key to a successful collaboration is to take a shared responsibility with the clearly stated condition that the task is yet to be fully fleshed out and not to be driven by any individual agenda.**

- **Advice: Framing can be good for finding models to move forward. Make sure to keep the both the big picture and the small pains in focus.**

The change-maker

The change-maker was brought in to transform a large and complex organization. From the board it was clearly stated that there was a big need for renewal. The change-maker didn´t want a new department to be built for the transformative work. Instead he wanted to work across the organization involving different parts in valuable pilots. The change-maker started his work and soon a lot of successful projects started to emerge, people got involved, inspired and committed. But there was a backlash from the very same board that had so endorsed this work in the beginning. Resources and mandate were gradually cut back and finally the change-maker felt unable to execute the work he had been asked to do and left.

- **Challenge: When asked to work with change in a complex structure, it is easy to assume that there will be resources in place for this. There is a need for true resilience from the organization with a willingness to constantly re-negotiate what is needed.**

- **Wisdom: If you are not allowed to prototype with the actual people in their actual practice, change will not happen. Navigating complexity will transform the culture of the organization. This requires an openness to being transformed in ways that can´t be foreseeable.**

- **Advice: Talk about your fears first thing when entering into transformative work. Fears on the part of the organization, leaders, change-makers. This will prevent them from creeping up later and in problematic disguise.**

The facilitator

The facilitator is invited into an organization to address a particular issue. The issue can be often be of a complex nature such as trust, diversity and justice or cocreation. There might be an outspoken request from the organization to produce something like a checklist, a code of conduct or such. In the process of exploring the issue the facilitator finds that there are other things that needs to be addressed in the organizational culture. But there are no resources or willingness to allow the initial brief to change. Very few facilitators are invited to explore an organization without the framing of a particular task. When other, potentially more urgent matters, introduce themselves, it doesn´t fit within the expectation of the organization.

- **Challenge: The desire from leaders in organizations to work with bottom-up processes but at the same time, to stay in control and not allow for any issues to surface.**

- **Wisdom: Make sure that the facilitator has the mandate to work diagonally and re-negotiate the brief along the way. A diagonal way of working means moving between all levels of competence and decision-making in the organization. Build a network in the organization to take care of, implement and cocreate with the facilitator.**

- **Advice: Spend more time on everything from workshops to conversations. There are no quick fixes for culturally embedded challenges.**

The strategists

The strategists develop and run big projects with different stakeholders, manage time and resources. There is usually a lot invested in projects like these, and in large organizations the involvement can go across national borders and different areas of expertise and practice. There is with absolute certainty different agendas involved, some clear and outspoken and some not. Regardless of how each respective partner views their commitment, their individual particular conditions, constraints, expectations and resources will bleed into the project and determine the rules of collaboration.

If the framing of the project and the terms of collaboration is very tightly framed, there is a high risk that the individual conditions for the partners will emerge as lack of understanding, stress and conflict.

- **Challenge: How to create time and formats to share the starting-point of each stakeholder, and to keep that sharing happening in the group.**

- **Wisdom: If you can create a group where individual differences, time pressure and resource-management don't get in the way of open reflection and sharing ambivalence and concerns, you have a group that can truly co-create.**

- **Advice: Rotate as much as possible; roles, methods, spaces to help you get unstuck from hierarchies and fixed mindsets.**
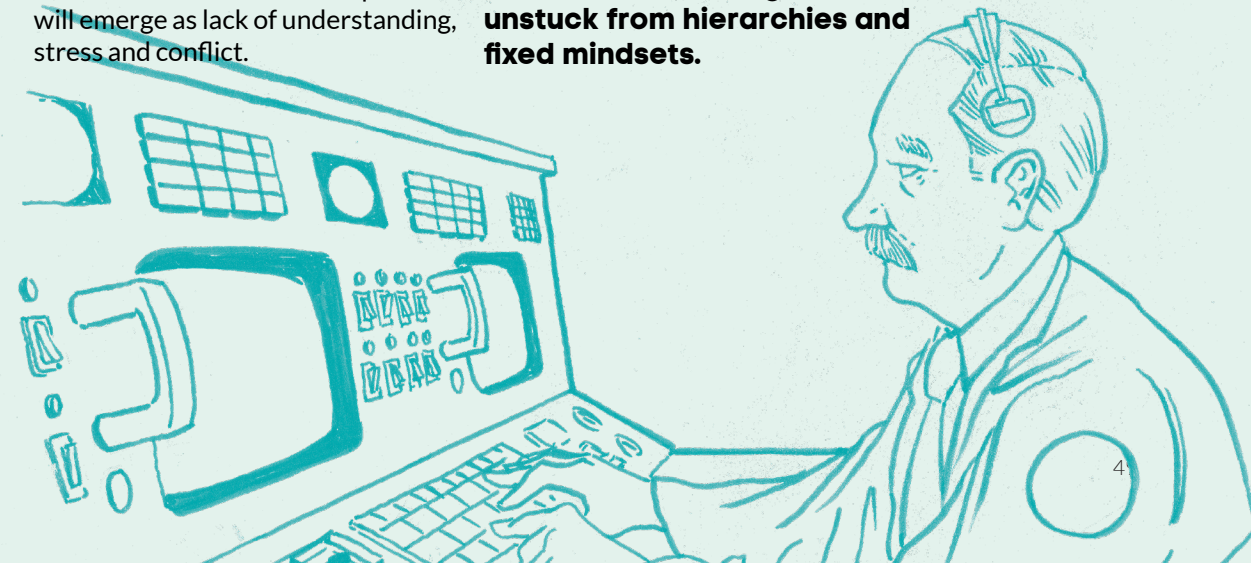
THE METHODOLOGY OF NAVIGATING COMPLEXITY

" At an individual level the demonstration and development of the 21th-century competencies in many settings will be seen as counter-cultural. Like the football player who stops to tend an injured colleague while the opposition plays on and scores. Or the teacher who encourages his pupils to ask better questions rather than parrot the required answers. Or the politician who asks her officials to organize a learning journey for her to get a better feel for a messy situation rather than give her a set of statistics to silence the opposition. These are all small acts of cultural leadership, eroding the dominant culture and demonstrating the possibility of working from different assumptions."

Maureen O´Hara and Graham Leicester
Dancing at the edge; Competence, Culture and Organization in the 21th Century

A point of departure - The Cynefin framework

The quotes and stories we have presented painfully illustrate that the ways we typically organize, lead and strategize often assume that complexity and uncertainty don't happen. Our system, our whole structure, acts as if every task were simple and straightforward. We need to gain acceptance for, and even institutionalize, ways of working that allow complexity.

The Cynefin framework (pronounced Kuh-NEV-in), created by Dave Snowden, is a model to create awareness about different kinds of situations and the mechanisms needed to address issues that arise. This type of analysis begins with identifying different ontologies (the nature of things) to determine epistemologies (the way we can know about things): "it's an ontological model, with epistemological consequences".

In its simplest version, the Cynefin framework categorizes situations into four domains: simple/obvious, complicated, complex and chaotic. The domains on the right (simple, complicated) are ordered: cause and effect are known or knowable (they can be discovered with enough expertise and analytical effort). The domains on the left (complex, chaotic) are in the domain of the unknown: cause and effect can only be understood in hindsight, if at all.

Complexity in everyday life, or in a project, occurs when several parameters interact in a dynamic way. "Complicated" and "complex" are far from synonymous: complexity is usually linked to life, social relations, society, or human-machine interaction. However, project planning and management often act as if all problems were simple or complicated. This

is where the Cynefin framework comes in. It can be a pedagogic tool to bolster an argument for why complexity needs to be addressed differently than mere complicatedness, with a different pace and space. Naming a situation as "complex" can legitimize alternative ways of working and alternative types of goals.

- In a **simple** situation, cause-effect relationships are predictable and easy to identify and the right answer exists. You can go about these situations using best practice: Assess the situation, categorize facts, use established procedures since the outcome is usually the same. Examples would be baking a cake, titrating chemicals at a water treatment plant.

- In a **complicated** situation, cause-effect relationships exist but are not apparent, and require expertise to identify and understand. These situations require analytical thinking and search for information to investigate available options (e.g. GAP analysis, analyzing metrics of various kinds). You may need to challenge existing knowledge and think outside of the box to reach solutions, and there may exist multiple solutions. Examples would be designing a structural system, sizing a pump.

- A **complex** situation is in a state of flux and unpredictability with no right answers. High-level patterns exist, but isolated events cannot be predicted. After the fact, one might see connections and underlying reasons, but they could not have been predicted at the time. Here the approach is to learn about the system through experiments, take in multiple perspectives, be patient, don't circle in on a problem too fast – seek to understand the patterns that appear. Reinforce what leads in a positive direction and reduce that which might have a negative effect. Examples would be designing a

road for emerging future technologies; climate change.

- A **chaotic** situation is characterized by high turbulence, and there are no clear cause-effect relationships. Many decisions need to be taken while there is no time to think. One must take action and see what happens, and formulate some kind of response. Examples would be a swarm of grass-hoppers, providing infrastructure right after a disaster.

Framing complexity

When identifying and navigating complexity, we find that it is helpful to simultaneously discuss how to operate and what we hope to achieve.

The tools we use to investigate something and the position we take enable different process and outcome possibilities.

Complexity can emerge as an unasked-for consequence of our work, or it may show up as the reason we are doing the work. We might realize that something that started out as simple has evolved into complexity. In this situation, we need to be alert and resilient, equipped to understand and communicate that the context has changed, and ready to explore what the new conditions might entail. Or we might set out to work on something that we know is beyond simple or one-dimensional solutions. Migration and climate change are clusters of complexity. They cannot be addressed by one size fits all solutions or by pre-conceived ideas about what to do and how to act. When working with issues like this, we need to span different kinds of knowledge and different practices. They require competences that go beyond our subject matter expertise, like empathy and emotional intelligence. Also crucial is the willingness to reflect, try, and fail, and to share that process and those learnings with others.
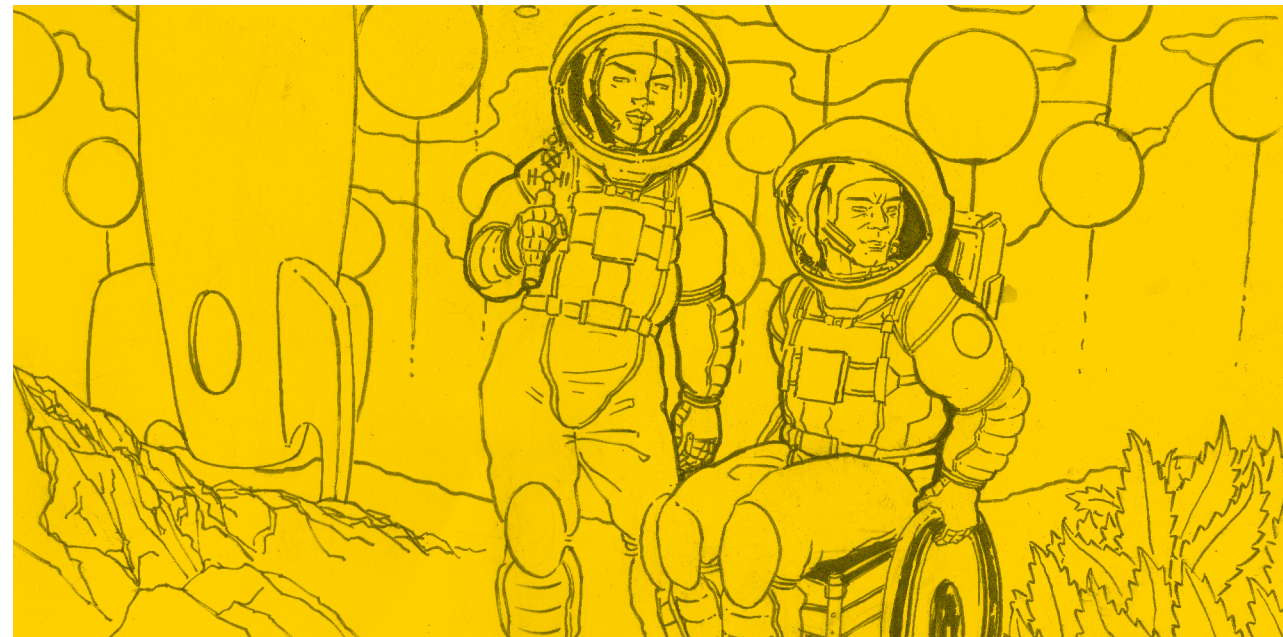
These skills are at the center of working with complexity, regardless of our position and the topic area of our project.

Jonna Bornemark in her book "Det omätbaras renässans – en uppgörelse med pedanternas världsherravälde" (translated: the renaissance of what can't be measured – a settlement with the world domination of pedants) refers to the pre-renaissance philosopher Nicholas of Cusa and his thoughts about how to deal that which we do not know. According to Nicholas of Cusa, exploring the unknown means stretching the horizon of knowledge in various directions, rather than finding missing pieces. Navigating complexity may seem like the opposite of a methodology. It often requires staying longer with something that is present but not yet defined, taking in multiple perspectives, and reflecting without rushing to take direction.

One way of tackling complex challenges with unclear boundaries is by imposing different perspectives and constraints in order to temporarily shape issues into something easier to grasp. Using these reframing techniques to search for meaningful issues to explore can be even more important than solving a problem.

Sometimes we need to reframe problems because the challenge is hard to define, but more often, we are handed a defined challenge, often by somebody else. Sometimes challenges are not framed in a particularly useful way. A question (often with sub-questions), like "what is safety in a public space?" is usually a more useful frame than a statement, like "let's make public spaces safer." The more concrete a frame the better, but it needs to be concreteness that offers itself up to complexity and opens up further questions. A question on how to keep the bus stop from being vandalized opens up questions on social security, questions about

the presence of adults, and moreThe different stakeholders that depend on the question may have needs that are questions in themselves. For example, one question may be, "how do we offer company and support to elders while keeping a physical distance, to protect them from the pandemic?"

Reframing is the process of shaping a challenge by repositioning it so that it can be tackled, by adding different perspectives to the problem. These perspectives may be alternative interfaces, discourses, ecosystems, social or natural environments, interpersonal collaborations, shared information environments, feelings, or identities. What can you learn about the problem when you apply these different lenses? Another approach is to look at the challenge using different levels of abstraction – what does it look like on an individual, group, organization, or societal level? What can you learn by applying a short-term or long-term perspective?
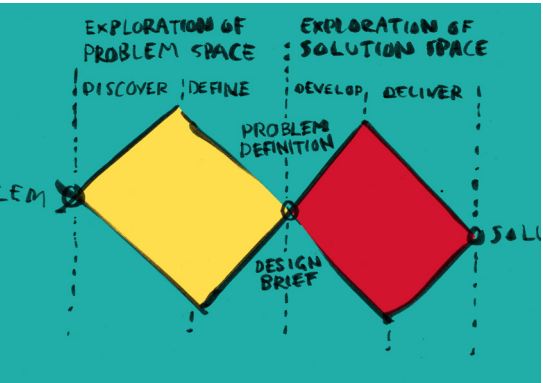

A design process to explore problems and solutions

It is often held forward that a design approach is suitable to work with complex issues, and framing and reframing of problems are central aspects of design work. When visualizing how we navigate complex issues, we often contrast a straight line with a messy squiggle. But looking closer at what happens in the squiggle, there is some structure to be found in the madness, a design process. Thinking of design as multiple explorations into problem and solution spaces, the British Design Council developed the "double diamond" model that visualizes the divergent and convergent nature of discovering and defining problems and developing and delivering solutions.

In the simplest version of the double diamond model, problem exploration is done through deep investigations of users, context and society, followed by (or in parallel with) making sense of the data collected – using logic and intuition, prototyping insights. The result of this narrowing down are different specific problems to solve.

Converging on a redefined problem doesn't mean that one concludes on the one grand problem that was hiding in the mist. The idea is to probe and understand a situation from different angles and perspectives to find ways forward that make sense; framing and reframing. The design process is iterative, going back and forth through multiple iterations and frames, and the double diamond represents just one iteration and one reframe. The more you find out and experiment, the more you work with various perspectives, the higher the chances that you will find something that can have a meaningful impact. The idea with a temporarily clearly defined problem is that constraints can

drive creativity; ideating and creating concepts with a fuzzy scope tend to reduce creativity and yield general and basic solutions.
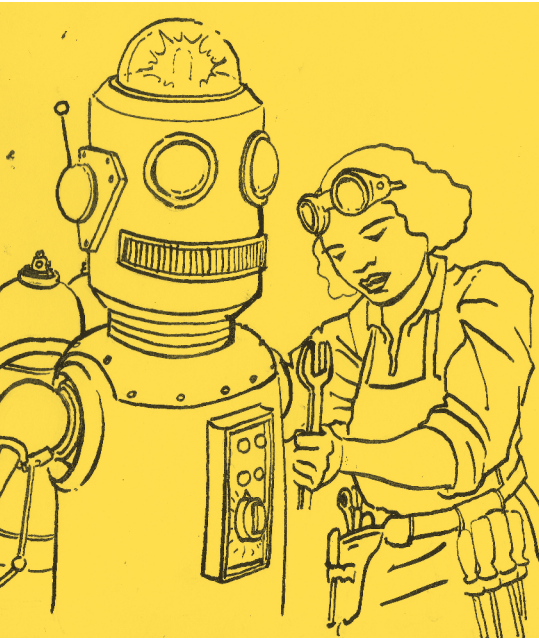
Exploring through making. Creating tangible representations or prototypes of ideas can also be a way of exploring a challenge – by creating something, you can understand more about the problem and discover questions to ask. Therefore, prototyping and exploring solutions is not necessarily a "second diamond" – sometimes you start by creating something, see how people react when they interact with the prototype, and use that as a prompt to find out more about their needs. One example of this approach is a research project at RISE that focused on digitalization and the future workplace. Here, the "prototypes" were speculative stories about how people work in the future, helping people to see how we might use digitalization to transform the landscape of work.

Design thinking / Human centered design

In the last decades, design thinking as a management idea or methodology has captured the interest of many sectors, from corporate to startup, nonprofit to academia.. It is often represented as a process consisting of a number of steps (according to one model, they are "empathize, define, ideate, prototype, test"), which correspond to the double diamond model above that illustrates the diverging and converging nature of exploring both problems and solutions. The design thinking process is iterative rather than linear, and in some cases the design thinking process is even represented as an infinite loop. Collaboration in diverse teams is a crucial aspect of design thinking; another key aspect is co-creation with different stakeholders, in order to gain a blend of perspectives and skills and to create ownership and engagement.

Empathize: An important part of exploring the problem space is empathizing with users and stakeholders, gaining a deep holistic user and context understanding through the use of ethnographic methods, such as interviews, observations, workshops, immersion, and interactions with actors in adjacent fields. The idea is to learn as much as possible about the both the explicit and unspoken needs of users in their specific contexts.

Define: The goal of this phase is to synthesize the information collected in order to identify the aches and pains that people are feeling. For example, tensions and contradictions within policies and systems may clash with the feelings and behaviors of individuals. Working with diverse perspectives and different levels of abstractions allows teams to reframe the problem(s) at hand. Some people find it helpful

to use visual tools and frameworks as support,

such as affinity diagrams, personas, journey maps and Venn diagrams. The phase ends with a set of reframed problems, or design principles, represented by the narrow waist of the double diamond.

Ideate & Prototype: As teams move into the solution space, their aim is to create, explore and develop solutions that address the identified challenge. Different brainstorming and ideation techniques are used in ideation. As quickly as possible, teams start to prototype solutions. in fact, ideation and prototyping are more or less inseparable. "Prototyping" in this context means the creation of something tangible to communicate an idea and develop it further, with the aim of creating something testable. This means sketching, creating artefacts with simple materials, making storyboards, or engaging in role-play. Prototyping should be rapid and cheap, in

order to not turn ideas into cherished concepts that are hard to let go of; once an idea becomes too close to its creators' hearts, it can be hard to listen to or take in any critique. Using material practices is another way of imagining – sometimes just interacting with different materials or using the body differently can create direction and spark ideas.

Test: Having come up with rough solutions, the team lets users experience their concepts by letting them interact with the prototypes in different ways to gain feedback. The idea is not to convince but to learn from the reactions and new ideas the users might have. Every concept builds on several assumptions – explicit or implicit - that are important to know more about. When you have explicit assumptions that you are aware of, you can create prototypes and experiences that target those specific assumptions in order to get crucial knowledge about what might make or break a concept. Prototyping and testing are also ways of surfacing a team's hidden assumptions and gaps in their understanding of the user. When the user is interacting with a prototype, teams may gain more information than in your interviews and observations. The testing situation becomes a way to understand the user and the problem, rather than just the solution.

Non-linearity and structure. Design thinking as a process is usually rather messy and iterative with phases blurring into each other. For example, teams usually start synthesizing data in parallel to collecting it, iterating as they explore the problem. It is difficult to ideate without sketching and building at the same time. Testing concepts with users may turn into both new data collection and co-creation. In the iterative process, the issue at hand is reframed over and over again, investigating parallel angles, understandings and perspectives. While this

may sound chaotic, it can also provide relief: decisions can be made based on gut feeling or without full consensus, because they are not final. The process does not have to be precise – it is a continuous exploration rather than searching for definitive solutions. When teams know that there will be several iterations, they can afford to be playful and experiment. Finding the only right problem to solve is not as important as identifying many problems and perspectives on problems. Each of these problems can be explored, both in finding creative solutions and finding out more about the needs behind the problems.

People with a lot of experience of using design thinking often see it as a way of approaching anything, from everyday battles to complex challenges; they see it as less of a process and more as a set of principles to adhere to, always with a focus on people. Even a "shallow use" of design thinking may influence how people go about things, relate to problems, experiment, think about users, which may affect any other work they do. In that sense, one could say that design thinking can be an entry point to design for non-designers.

Fun fact: The history of design thinking

Since design thinking is often presented as "the way designers think and work", many descriptions of design thinking are in many ways similar to the design process described above. The early influences contributing to the development of design thinking came from the San Francisco Bay Area in the 70s-80s. One center of this movement was the product design firm IDEO, whose founders were inspired by ways of working at the Joint Program in Design at Stanford University, as well as by tech firms and other design firms in the area.

In his doctoral thesis, Ingo Rauth describes how Stanford's Joint Program in Design, built on ideas around creative engineering and human-centeredness, was launched in the late 1950s as a graduate program located within the Department of Mechanical Engineering, but also invited students from social sciences, humanities and studio art. Inspired by Simon and Newell's book "Human Problem Solving" (1972), the Joint Program in Design proposed a multi-stage approach to visual problem solving. The JPD's methodology emphasized alternating between the use of creative or logical strategies to solve a problem at hand, as well as using iterative loops to quickly move the process forward.

In 1978, David Kelley, an alumna of the program, started a product design firm that would later become IDEO. The human values, interdisciplinarity and experimental process that Kelley learned at Stanford became central to IDEO's work, as well as a "fast, dirty, rapid prototyping process."

One of the most storied applications of this process was IDEO's collaboration with Apple in the late 1970s and early 1980s that resulted in the development of the first computer mouse. In 1980s and 1990s Silicon Valley tech startups, a counterculture attitude and a sense of technological optimism, coupled with access to abundant venture capital and technical talent, allowed an experimental, improvisational, and fun work culture to flourish.

This way of working was studied and described by several researchers, for example in Dorothy Leonard and Jeffrey Rayport's 1997 Sparking Innovation Through Empathic Design. ABC's Nightline featured IDEO in a 1999 documentary called The Deep Dive - One company's secret weapon for innovation, sparking a great deal of popular interest in this approach to innovation.

In the following years, IDEO engaged in collaborations with different companies and non-profit organizations to spread human-centered design methodology for products and services. Since the 1990s, design thinking has come a long way from these California roots: consultancies, companies, and governments have made design thinking an integral part of their way of working.

Design thinkers are constantly working to iterate design thinking itself, expanding the focus from studying users and products to studying systems, cultures, experiences, and contexts.

Artistic approaches to navigate complexity

While design thinking and many of the examples we share later in this report are quite hands-on, we would also like to give a broader perspective on what it means to invite art and design into complexity work. We have asked RISE researchers Nina Bozic and Ambra Trotto to share their perspectives. They were part of the group identifying initial pilot projects within the RISE Enablers initiative, aimed at developing focus and competence within the research institute. Nina and Ambra have also acted as support in the work with Navigating Complexity.

Nina Bozic has written a PhD thesis and a book on the use of contemporary dance and choreography as enablers of innovation in organizations. She has led several research projects and training programs in both industry and public sector over the last 10 years, exploring how artistic practices, knowledge and methods can be used as enablers of learning, creativity, collaboration, co-creation and critical reflection around complex societal challenges that often engage interdisciplinary teams with wide spectrum of competences and backgrounds.

How have artistic practices and design-methods assisted you in exploring complexity?

For me, artistic practices and methods have helped me and my co-participants in projects that usually come from very different backgrounds, use different languages, and have various ways of understanding of the world find a shared connection on a deeper human level. It helped us move beyond our power positions, being busy with what role and expertise we have in our jobs, and with re-af-

firming what we already know, rather taking us out of our comfort zone, making us expose our vulnerabilities and be silly in front of each other. Through artistic practices, we could see and experience things with fresh body and mind, using all our senses, starting to connect through playfulness, imagination, vulnerability, and our shared care for the deeper meaning or purpose behind complex challenges we have been engaging with.

I can give an example from my current research project called DIGI Futures, where we have been developing future scenarios on how our work could look like in the future, when technologies like AI, IoT, and VR will become more embedded in our work process. When you are exploring something as complex and unknown as the future, artistic methods can help us open our imagination and engage more fully. For example, instead of using our cognitive skills to conceptualize ideas about the future, we used performing arts methods to explore possible futures by acting them out, sometimes only using body and movement, other times combining movement with language. In this way, we started to experience how these futures would feel and taste like, and whether we want to be in them or not. That is rather hard when you only hypothesize and dryly talk about future ideas sitting around a table. Suddenly, it felt like we were creating memories of the future in that moment, and it gave us a feeling of empowerment. We were suddenly the ones creating the future, and we could feel in our bodies how different futures could mean very different things for us.

How do you think these practices could be used in the work of learning-institutions, in governance and societal development as ways to communicate, analyze and produce?

I think these practices have the potential to be used in many different ways. For example, when it comes to analysis, production, and communication around complex societal issues, my experience is that artistic practices would create more space for both exploration and critical reflection. If the Migration Office would, for example, engage with a group of artists in exploring sensitive and charged issues around refugees in Sweden, artists could analyze the issues through artistic research, providing authorities with fresh views on the challenges. Artists could also facilitate a learning process between refugees and bureaucrats solving their cases that would bring them closer together and connect them on a more human and less administrative level, deepening the understanding of real needs and challenges. But then artists could also produce an interactive exhibition or performance on the refugee issues in Sweden that could invite citizens into active exploration, reflection and dialogue around these issues. That would not prescribe answers in one-dimensional ways, such as the usual communication tools do - a campaign, website, or policy, but would rather open space for different stakeholders to meet, engage, and co-create together in more caring, multi-dimensional and personal ways.

What are the key conditions for navigating complexity with artistic practices in terms of resources and structure?

The first conditions that needs to be met are mutual trust, respect and curiosity about each other. I think when you bring different worlds together, for example public officials, businesspeople, and artists, you need to first spend quite some time building trust among them, what I would call "tuning in." This demands special facilitation skills from people who feel

comfortable moving between different worlds and have the capacity to empathically put themselves into the shoes of a CEO, politician, researcher or artist. Another important ingredient is patience and the courage to persist in the unknown. Time needs to be allowed for exploration of complex issues. Artistic methods are not driven by quick fixes and problem solving that just affirms what everyone already knows. Artists love to question and often feel comfortable in uncertainty. The unknown and the empty space of potentiality excites them. This can be very precious when exploring complex issues, but other participants might feel uncomfortable with it. Facilitation skills are needed here again to deal with these differences and juggle between them, so everyone will eventually realize they are learning and expanding their own views through collaboration. And last but not least, as long as there is some human openness, vulnerability and caring, which artistic practices often bring up when exploring important societal issues, these qualities can really act as a glue and connector between people.

When it comes to more hard-core resources, I often feel that there is a lack of financing for this kind of interdisciplinary collaborations. Arts, the public sector, and industry each have their own financing mechanisms. Each field finds comfort by staying in their own silo and old ways of doing things. To create better conditions for collaboration, bigger thinking is needed from all sectors, to realize that there is no one silo that can solve a complex societal issue on their own. We need each other and we need to become better creating shared structures and resources for collaboration around things that matter to all of us, such as building a sustainable, inclusive and well-being society.

Ambra Trotto has a long experience in working

with artistic and design research, in particular in the field of ethics in designing for intelligent products and systems and the development of design methodologies. During the last ten years, together with an international pool of design researchers, mainly connected to Umeå University and the Eindhoven University of Technology, Ambra has worked on the development of Transformative Practices, a design driven framework that supports complex constellations of actors addressing societal challenges from a systemic perspective. This approach is at the foundation of the RISE initiative The Pink, that Ambra is heading. Since two years, the Pink Initiative has established a pilot in Umeå, working in strategic collaboration with companies and public sector to design a regional transformation driven by equality and sustainability.

How have artistic practices and design-methods assisted you in exploring complexity?

After years of struggling to find its place within the scientific community, design has finally been widely acknowledged as the so-called "third way" to produce knowledge, next to the sciences and the arts. The particularity of design, when compared to science and art, is the ability of addressing and tackling a kind of issues that are complex and ill-defined. Design refutes the Cartesian approach of simplifying and dividing problems into separate smaller ones. Design goes beyond the analytical approach of the social sciences. It rather offers a constructive and propositional attitude, where a material synthesis, i.e. an experienceable proposal or a prototype, is created.

Design has the unique power of being able to deal with complexity. Like a child who might not know much, but trusts her gut, looks everybody

in the eye, thrives in her blissful ignorance, and dares more, good design is reckless. And how can we change, if not with recklessness?

The prototype, the construction, is the real game changer: it slams the change in everyone's face, so that nobody can hide behind one's role or mandate: it demands authentic engagement and there lies its power. And the impact of a prototype is wicked: since the prototype is a tool for triggering conversation, for enhancing negotiations between the parts, its repercussions are not limited to the prototype and its near context, but act on many levels: how the actors collaborate, how the actors define a shared way of talking about the issues at hand, how the actors can use the prototype as a trophy of change in their organisation, and so on.

In Umeå, RISE Societal Transformation has been assigned to create a prototype of a "smart" bus station as part of one activity of a EU H2020 project on smart and sustainable cities. The reason why this assignment was given by the Municipality of Umeå to a research institute, rather than a design consultancy, was because of the complex participatory process and the ability to reflect and relate the outcomes to the future of city planning in Umeå – something which was eventually more relevant than the bus station itself. We are currently observing how that process had a ripple effect on others: it led to the understanding, among strategic members of the municipality, that they needed to increase their innovation capacity and their ability to transform existing practices. This turned into a three-year strategic partnership with the municipality that focuses on exactly these themes. Furthermore, this led to new collaborations with other actors in the city to explore future-proof scenarios regarding mobility, electrification and sustainable urban planning.

How do you think these practices could be used in the work of learning-institutions, in governance and societal development as ways to communicate, analyze and produce?

In my professional life, I have worked on how design research is able to trigger transformations and able to shift paradigms, in particular when it works from a systemic perspective and adopts participatory techniques. I have witnessed how increasing everyone's competence level is extremely necessary when learning how to establish transformative practices. I also observed, with less pleasure, how this need is mostly still unperceived. All institutions and companies will have to work to acquire these new skills. The ones who won't will probably become obsolete.

With the framework for driving Transformative Practices, we aim at co-creating transformative and experienceable proposals. This is done through two main classes of activities. On the one hand, we use activities that are about designing and researching, such as acting and experiencing, communicating and engaging, and envisioning and creating. On the other hand, we use activities that are about collaboration and development: organising and collaborating, communicating and engaging, and reflecting and learning. Our collaborations take the form of Transformation Partnerships, where we work closely with a conglomerate of actors around a specific societal challenge, creating a transformative ecosystem. We work together with accepting the complexity of the challenge and learn to navigate it together, framing and reframing the challenge along the process and proposing acupunctural interventions and prototypes addressing sore points that emerge along the way in the ecosystem.

What are the key conditions for navigating complexity with artistic practices in terms of resources and structure?

In order to get started, the first resource we need is pain. It can't be just an itch. It has to be pain. The pain of a situation that needs to be changed, as soon as possible. It may be in the culture of an organisation, it may be in the way the mobility of a city is planned, it may be in the obsolescence of a policy that was not created to be able to deal with digital tools. It maty be because a disruptive event (such as the Covid-19 pandemic) has scrambled all the rules of the game and everything about the way we live our lives must be reconsidered.
This pain can have a multitude of origins. It can emanate from the feeling of being inadequate within the system one operates in; it can be caused by practices and procedures that merely feed the administrative machinery and do not produce the hoped-for value. The pain can arise from the realisation that values are going one way but actual change is taking a very different direction. It can stem from the acknowledgment that the incentives are wrong and the results that are produced are not in line with the stated vision. The pain can be triggered by recognising that there is no consistency, no alignment, no ability to respond to new challenges that can't be resolved with existing pedagogical tools. This pain is precious. It triggers the urge of transformation and dampens the fear of tapping into the unknown. It is precious because it produces ambassadors that can support the process. It is precious because it prepares the ground for the people participating in the process to be open. Openness.

Then I believe you need the recklessness of *design*, and *designers*: ignorant integrators that step naïvely into the process and, through

facilitating processes of making together, materialise what is not yet there, what was unthinkable before, what is so obvious when you see it and completely unimaginable when only the pain was there.

This process is not a styling exercise. It is design. It can go in any direction. It can burn down the place and imagine a new planet; it can find out that you, as an actor in the process, have become irrelevant; it can find out that it is time to shut down one department in the company or the municipality we are working with, and open two completely new ones.

And by facilitating processes of making together, designers water the necessary plant of trust to grow lushly on the ground of openness and pain.

As experts in design, we know a thousand and one ways to trigger that openness in the moment, we know how to soothe the pain for a brief but deceptive moment, we know how to light the warmth of trust. What is tricky is to sustain the pain, the openness, the trust. What happens when the facilitator is gone? In order to create practices of transformation that fuel ecosystems able to endure such transformations, infrastructures of collaborations need to be set in place. Appropriate governance and material resources need to be established. And in these formats, where partnerships of engaged actors gather around a complex challenge, the cyclical presence of designers and curators of transformation has to be ensured.

"There are so many things that are easier to absorb when it is art. To understand other people's experiences and situations can be hard just from a rational standpoint. Art goes straight to your heart and helps you to stay out of simplifications."

Yolanda Bohm, spoken word-artist, trans-activist and nerd.

"We need to change the playing-field for what counts as professional knowledge. Scientific evidence is not enough, we need another kind of knowledge. We need to learn from each other, from the processes we work in, and follow the complexity they implicate rather than feeding them into our pre-constructed systems."

Joakim Forsemalm, Researcher ethnology Gothenburg Research Institute

HANDS-ON ADVICE FOR DESIGN-ORIENTED WORK

Take a user and context perspective

Think about who your important stakeholders are. Who matters? Who is allowed to matter? Who will be affected by your project or any solutions you might propose? Whose needs do you need to understand?

Creating a stakeholder map will help you work with this in a visual way: make a drawing of different stakeholders, their relationships and the knowledge you have about them. As the project unfolds, new actors might become relevant and relationships may look different, so the map may need to be revisited. In a complex situation or process, there may not be a clear "end user", but rather a web of actors. At times, it can make more sense to map environments, flows or consequences. During the pandemic, fast decisions are being made focusing on what's visible, close and urgent today. Yet these decisions imply many invisible "non-decisions" that may entail wide-spread complex consequences that take a long time to surface. See if you can disentangle this and make the invisible more visible. There are no rules for visualization – try sketching in different ways, perhaps moving or acting if it is unclear

who to involve. Roleplay a situation to see what might happen in a speculative scenario.

You can also create personas for important users: visual representations of a representative user illustrating who she is, what she needs, what she feels and dreams about, and what hinders her today – perhaps in a specific situation. A persona, whether simple or detailed, is a visual reminder of the empathy you have for that person. When there are many different user groups, you can make several personas. You might even try making persona dice, with one persona on each face of the die. For any solutions you have in mind, throw the dice and rethink the solution from that user's perspective.

If you realize that you don't know so much about your stakeholders and their context, you need to design ways to find out: invite them to a coffee, do an interview, or start a more thorough investigation. Most projects (as long as they're not about, say, the tensile strength of concrete) benefit from understanding people, so this research should be taken into account in project applications and when work is planned. Make sure to learn about the context, not

just the people. For example, if the project is about investigating how autonomous public transport solutions could be used in the countryside in the north of Sweden, you need to build an understanding about the lives people live in that area, and what wishes and needs they may have. What is working today, and what isn't? When you interact with users, think about what kind of questions to ask. *Why* and *How* usually yield more interesting answers than *What, When,* and *How often;* try to get to emotions rather than facts. People are not terribly good at estimating their "usual" or "average" habits. Asking about specific situations gives the possibility to ask follow-up questions and dig deeper: *Tell me about the last time you recycled your waste* is a better question than *How do you recycle waste.*

Invite diverse perspectives in your team

Look at your team constellation – your team is likely fairly homogeneous in at least a few ways. How could you include people with a different background, competence or perspective? For example, if you are all white women, get some men and some nonwhite people. Invite "wild cards" to

workshops or meetings to get an outside perspective to what you do. They can come from inside or outside the organization. You might ask your neighbor who is a librarian to join, or invite a researcher in a completely different field of yours. Consider many types of diversity, such as gender, age, functional variations, educational background, work experience, or professional roles, as well as national background, race, disability, and political views. You might also consider different cognitive and learning styles. If you are all very analytical, bring in someone who is more of an explorer; if you are all very talkative, bring in a good listener/ observer.

You can also look within yourself and challenge the way you typically act in given situations. Work consciously to take a different role in a group: listen instead of talking, be intuitive one day and analytic the next. Invite the full experience of individuals– our experience as residents in a specific area, as parents, as activists.

Work with framing and reframing

You can reframe a problem by critically examining key concepts. In the example

challenge "Let´s make the public space safe," you might ask questions like: what does safety mean? What do we talk about when we talk about a public space? What is safety in a public space? You can also apply specific perspectives – for example, identities, multi-user systems, ecosystems, environments, collective perspectives, information sharing, or relationships. Engaging deeply with a context through ethnographic research enables you to take a wider perspective and expand the space of possible realities. Different visual and sense-making tools such as s*takeholder mapping, process mapping, customer journey mapping, clustering pain points, "point of view" templates,* and the creation of multiple *"how might we questions"* can lead to interesting and creative reframes.

The *"point of view"* is a simple sentence structure that describes i) the user with some detail depth, ii) a need they experience, and iii) why they have that need. For example, in one project a broad initial challenge was to improve healthier eating among teenagers. By close interaction with the users, the researchers identified several nuances of the problem. One core insight turned into the point of view statement: "

*Anna, a fifteen-year old girl at a new school, **needs** to feel socially accepted when she eats healthy food **because** in her life, a social risk is worse than a health risk".*

A reframe like this takes ideas and concepts in a very different direction than "teenagers need to eat healthy," enabling surprising solutions that you might not otherwise have thought of. The idea is to come up with several such statements or reframes, building on a thorough understanding of the users and their needs.

Another concrete tool is to brainstorm a number of "how might we questions" that can be used as inspiration for subsequent ideation or data collection by creating specific points of departure, stretching the potential solution space in many different directions. In the case of Anna, it could be: How might we…

… make healthy food look as appealing as fast food?
… make unhealthy food healthy?
… convince her of the importance of health?
… make her socially accepted in other ways?
… make her less worried about being accepted?
… change attitudes towards healthy eating at her school?

Do small experiments

If you are working on something complex, get into an experimental mode. What *small experiments* could you do to to learn more? With what and with whom? See if you can identify hidden assumptions and contradictions. Try to apply different filters and perspectives on your work. If you need structure, try using some of the tools we suggest in this handbook. Think like a mad scientist: what could be an experiment to find out something about a certain behavior? To get your team into a prototyping mode, you can use a warm-up exercise such as the *Protobot* (protobot.org)

developed by Molly Wilson, a website that creates random silly design problems to prototype in just 5-7 minutes.
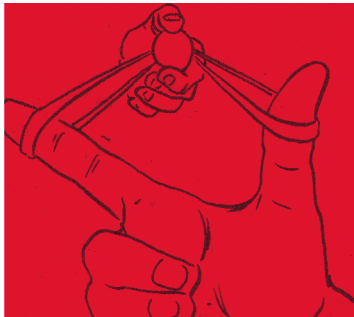

Share early ideas and iterate.

Many of us plan our work to death and spend a lot of time creating something perfect before we show it to someone else. A more productive approach is to share early ideas and get feedback from friends and colleagues. Considering what aspects you would like to get feedback on, and how you can explain them in an easy way, can sharpen your thinking. You can get feedback on anything – for example, insights about users, your emerging understanding of a system, a research project application or book chapter you are writing, workshop planning, or ideas about how to start a change process. Make sure your schedule isn't 100% booked, in case someone comes and asks you for research – you want to return the favor! Getting insights into another team's work can serve as inspiration, not to mention it is also nice for relationship building.

Make sure to capture the feedback you get – a short feedback session can easily turn into co-creation, so keep pens and paper at the ready. A lightweight, all-purpose, easy-to-use tool is a feedback capture grid. On a paper or a whiteboard, draw a cross to divide the space into four parts. In each part you note specific kind of feedback: Liked, Didn't like, Didn't understand and New ideas"
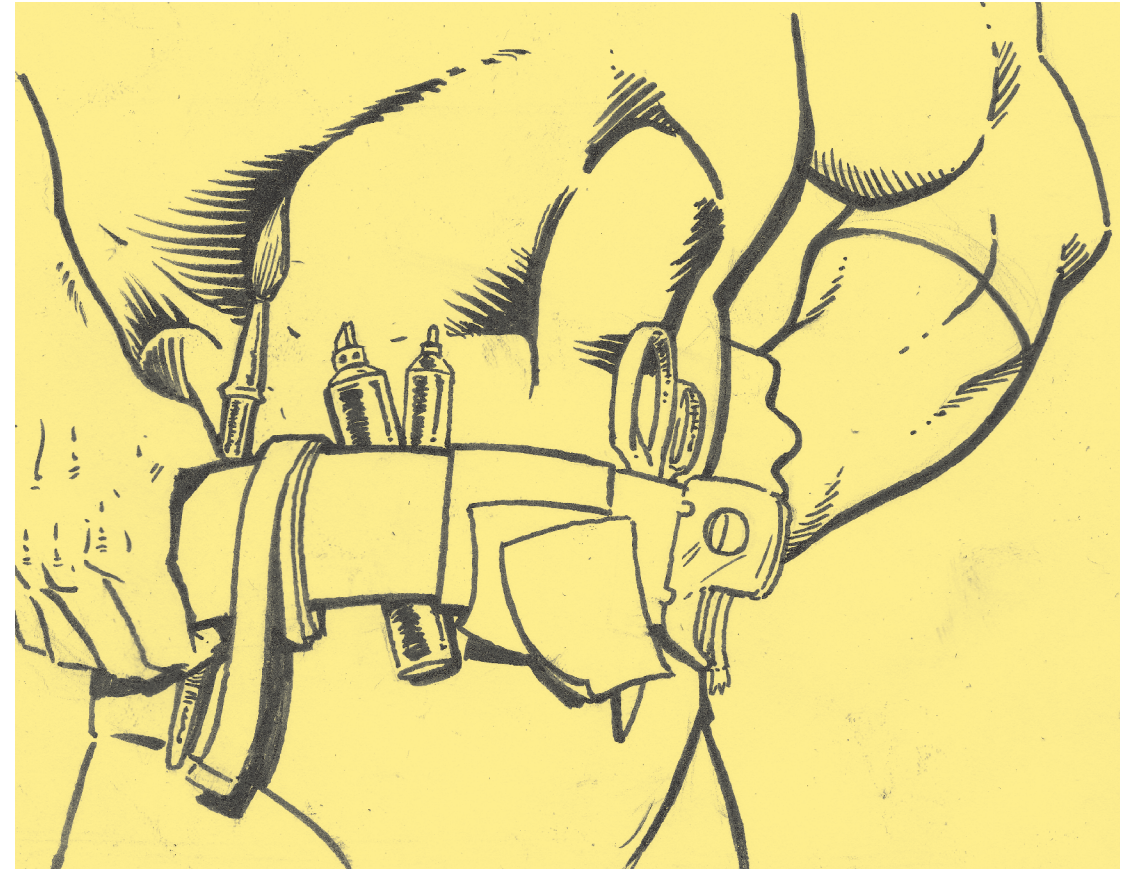
Start to work in a more visual way.

Try to go beyond words when possible. Most of us liked to draw as kids, but have since stopped, either because somebody told us we weren't "good" at it or because we came to think it didn't belong in "serious" professional life. But many of us still doodle when we are on the phone. We promise, you have it in you, somewhere. Engineers are famous for their napkin-drawing. The important point to remember is that whatever you draw or build does not have to be pretty, lifelike, or detailed – it is mainly for idea-development, co-creation and communication in the team. See the sketch as something that is and should be in constant change.

There are lots of ways of developing your drawing skills. You can draw faster if you build a library of symbols that you can draw really quickly. Google "graphic recording," "sketchnoting," and "visual note-taking," and you will find lots of YouTube videos and Pinterest boards – copy the ones you like and/or make your own. As a first step, think about the way you draw people – move beyond the stick-person to give more personality and modes of expression to the people you draw.

Prepare space and tools for creative work

Whether you have access to a permanent space or have to improvise in any meeting room that is free, creative, visual work demands some basic space hygiene that can be hard to find in the typical modern workspace. Try to set up a space where you have access to whiteboards or glass walls, as well as decent-sized tables so you can spread things out. If there are no whiteboards, get large sheets of paper (for example, flipcharts or brown paper) to put on the walls or on the floor. The trend towards open and activity-based offices makes it more difficult to store weird items and to leave things behind for subsequent work. Think about how you might be able to store things between sessions in your workplace or when you go to other locations.

A small bag with the following items can be brought to any meeting: Pens for drawing and writing on post-its and paper, whiteboard pens, post-its, paper for sketching and freeze tape (for e.g. putting up large sheets of paper on walls).

It doesn't hurt to have some prototyping tools and material at hand. For example:

- Tools such as scissors, scotch tape, a glue stick, a stapler

- Materials to build with, such as: wooden sticks, straws, paper balls, rubber bands, pipe-cleaners, binders, string, yarn, Legos, clay, aluminum foil - any craft material that children would use ("pyssel")

This material list is just a sample to get you started. When you're prototyping, use whatever is at hand, even if – or especially if – it might otherwise be seen as useless. Any kind of thick paper, cardboard, wrapping, textile, foam, paper cups and old electric appliances from the trash can be given new life as part of a prototype. A glue gun and/or bigger/stronger tape is handy if you work with larger pieces. Think about what inspires you: old magazines, cones and moss from a forest, pebbles from a beach, old clothes, a banana. Use whatever comes into your imagination, or whatever you happen to find along your way.

Take improvisation theater classes.

Improvisation theater may sound intimidating, but it is usually a fun and relaxing activity once you manage to let go of your fears of looking stupid or not being in control.

In fact, that's one of the greatest benefits of improvisation – learning to let go of those fears. The core of improvisation theatre is listening and paying close attention to the other actors – if you don't follow what they do, whatever you do will not make sense. All of these skills are very important in our interactions at work, crucial for working with complexity. See if you can find a course or convince your coworkers to bring an instructor to your team.

Sprint through a design process

You can find several 1-2-hour workshop formats online for trying design thinking free. One favourite is the "Design Dash," a fun, accessible, and easily adaptable exercise that manages to include several dimensions of design thinking. It was developed by Molly Wilson and her students at the Hasso Plattner Institute in Potsdam and is available open source. You can download templates as Powerpoint files, so they can also be altered if you want to adapt it to a specific setting, for example "gender diversity in the maritime sector". A facilitator guide is available, but the exercise works best with an experienced facilitator.

Take an online course together with your team or a group of friends

Several universities and organizations offer online courses for free. For example, Acumen currently offers courses in design thinking and systems mapping. Taking a course as a group is a great opportunity to learn and do something meaningful together. You will get a better experience if you choose to work on a challenge that you are already targeting in your work.

Work actively with facilitation

Facilitation is ensuring that there is a host, somebody who takes responsibility for the framing of the process. A facilitator asks questions like:

- How can we work with the space?
- Is it a digital meeting or a physical?
- What are our goals, and what will we do to reach them?
- What are the rules of conduct?
- Do we have ideas on how we distribute space to speak, take turns, involve everyone?
- Are there possibilities to reflect in various ways: by talking, building or drawing things together?

This is a professional field of expertise as well as a role that you can share in your team. You can take turns being the facilitator, but if the process involves conflict or tensions, it might be a good idea to bring in a professional facilitator who has expertise in dealing with interpersonal tensions and provides a neutral point of view.

TOOLBOX FOR PROCESS, COMMUNICATION, UNCERTAINTY AND DIVERSITY

Towards a process-oriented way of working:

How do you shift focus and method from project to process? In other words, how do you go from one contained and measurable activity at a time to a continuous stream of making and learning?

A **project** is often done in discontinuous sprints and built step by step like a staircase. In an ideal project world, we are expected to accomplish more and better, one step at a time, and in a final sprint deliver what we set out to do. A **process**, however, runs at a different pace. The root of the word "process" means "continuing/going on a journey". In a process, you might go back and forth on a challenge, you might move between roles and ways of working, or you might shift focus again and again.

In a project, you might need tools to support order and clarity, like clear roles, a defined mandate, and a straightforward framing of the objectives. In a process, you need tools to support the way you are going about things that support you in interacting and exploring together.

Project and process mostly exist simultaneously. In a project, you can have several processes going on. The trick is to know when you are discussing a project, and when you are discussing a process. If you apply a project mindset onto processes, you will suffocate them and if you apply a process mindset onto projects, you will make a mess.

We have gathered some tools that different groups use to assist a process way of working. Some are very hands-on. Some deal rather with perspectives and attitudes. They can all be hacked and changed to fit your needs. We believe that tools can be tried and tested with an open mindset. Whatever works, keep it, and throw away the rest. Every person is different, and every group is different. Also, invent your own! You might be surprised what you can come up with.

How to communicate to support a process-oriented way of working:

The key to a successful process is communication (and by "successful" we mean able to deliver meaning, tangible results and change).

Reflect without explaining and valuing

Allow everyone to give their perspective on where they are and how they perceive it without boxing them in with others' reactions, corrections and explanations.

Another expression

If you identify that the group prefers one way of expressing ideas (more often than not, it is talking), change it up and try something else (you don´t have to stop talking, just add something else into the mix). Draw, build models, write song texts or poetry.... it will open up new pathways in your brains.

Wait for it

When you are unaccustomed to sharing your feelings and individual perspectives, it is easy to go blank. Don´t be sca-red of not knowing something instantly. Go slow, and new things will present themselves.

Make temporary agreements

Discuss how you, at this particular time, understand the questions you work on and the way you would like to address them. Since everything is temporary, you don't need everyone to agree with everything all the time; support each other's convictions and wait to take the lead next time.

No feedback

Don't respond instantly. Try saying "let´s think about that and come back to it". Emotions are not problems to be solved – practice just listening and confirming. Say "I see that you are excited/frustrated/etc."; just acknowledging what is going on can be enough.

Nourish the side conversations

Allow for conversations that take place a little outside of the main topic. When you are working with complexity, you don´t know exactly what will end up being relevant. Find ways to probe areas that seem off-topic. Bring in conversations on worst-case scenarios, fears, small everyday habits that people associate with the theme, feelings, cultural phenomena and art.

Tools for prepping for uncertainty

The coat hanger exercise

This is a multi-step process where participants identify things that usually make them feel comfortable and certain and leave them on an imaginary coat hanger in front of the workshop room before entering. They might hang up their values, expertise, power, identity, resources, social capital/network, language, and more. This lets them experience how it feels to inhabit the uncertainty and feel vulnerable. You could use this exercise before a meeting, a workshop or a specific exercise.
(Created during the Cynefin retreat on complexity & foresight)

Fika for future

During a coffee break, a problem or challenge is stated, along with some context. The task during the fika is to resolve this challenge. Every new fika, a random event that disturbs or complicates the challenge is presented. Something in the context changes, some person is taken away or added, a major event occurs that alters everything, etc. They can be typical challenges normal for a project, or challenges that have nothing at all to do with the workplace context. Or they could relate to multiple areas – the pandemic, for example, which affects almost all the work we do and how we live.
(Created during the Cynefin retreat on complexity & foresight)

Continuous discomfort

Prepare a box with uncomfortable questions that can be used in different occasions. Uncertainty and unexpected events are seldom pleasant. This is a way to get used to discomfort in a playful, semi-structured way.
(Created during the Cynefin retreat on complexity & foresight)

Wheel of failure

When we work with complexity and uncertainty, we need to accept that "failure" is part of the process. How can we encourage and celebrate failures? This exercise releases people from feeling stressed about failing by shedding a positive, constructive light on the potential consequences of failing and nudging our culture towards one where failure is ok. Rather than just saying failure is okay, this exercise turns the heat up a couple of notches by looking at the consequences of the failure. Here's how to do it:

- Use A3 paper and pen to create and decorate "wheels of failure".
- In a team, members take turn sharing failures of various kinds.
- When a member has shared a failure, the team jointly looks at real and potential consequences of the failure / mistake, in several steps, thereby creating a wheel or fractal for each failure

This can be used in a therapeutic way with realistic or real-life failures to show that the failure wasn't so bad and to focus on what we can learn from failures. You can also choose more dramatic failures to get to more hilarious, extreme consequences.
(Created during the Cynefin retreat on complexity & foresight)

Critical Uncertainties workshop

Invite a group to identify and explore the most critical and uncertain "realities" in their operating environment. Let them formulate strategies that would help them operate successfully if these realities were to change. The idea is to expose assumptions and uncertainties and to widen the range of strategic options. This can also be an activity to map out the context of a new project. Here's how to do it:

- Make a list of uncertainties you face as a group - factors in your environment that are impossible to predict or control. You can also make a list of things you think are certain.
- Prioritize the most critical factors in terms of "least/most uncertain" and "least/most critical" on a 2x2 grid.
- Name each quadrant and write a thumbnail scenario describing what likely happened for this context to have happened.
- Brainstorm strategies that would help the group operate successfully in the scenario described.
- What strategies are robust in all or multiple quadrants? What strategies succeed in only one scenario, but protect against a potential disaster? Discuss what you discovered.
(Liberating Structures.)

Tools for better conversations and meetings

My shortcomings

When opening a process, share:
-   One thing you are really bad at that you would like to improve if you had one month
-   One thing you are really bad at that you know you will never improve on or learn, but that they have come to peace with.

This kind of sharing can help your group feel it is ok to be vulnerable and uncertain about the "right" way to be. It also creates an empathic, personal and thoughtful atmosphere in a meeting or workshop. It should not feel scary or tense - the participants get to choose what level of vulnerability they want to share. To achieve this, you might start by sharing some well-chosen personal examples that open up space for both easy-to-share things ("I am really bad at skating") and more personal confessions ("I am less of an expert than I am supposed to be").
(credit: Pernilla Glaser, RISE)

Video capture at the end of a meeting to jumpstart the next

To maintain some sort of continuity as a project progresses, we easily get caught up in trying to document activities, meetings, conversations. Yet, most of the time, we don't do anything with what we capture. If we want to capture something from a meeting or activity, how can we make it more intuitive to use? We want to capture our results in a way that does not encourage "eternal storage," but serves to get you going next time you meet and can facilitate onboarding of new project members?

To do a video capture, finish each each (important) meeting / workshop by shooting a small film that captures the essence of what happened. You need to allow five minutes at the end of your meeting to create the video – but this way, you don't have to spend any extra time between meetings doing documentation. The idea behind video capturing is to save a quick recap next session that gets you back to where you ended the last session. It can also help you not to forget an important discussion you didn't finish.
HOW: Choose one person to take the lead on concluding the meeting in a 2-3-minute video. You can cover both what happened and how it felt. For example, "we thought about this, we discussed this, we felt uncomfortable about…" The rest of the group can add and comment. No artistic or "it has to be perfect" ambitions! The important thing is that the video gets done. Check first to make sure everybody is okay with making and saving the video, and don't film people if they feel uncomfortable. If people don't want to be filmed, you can also film whiteboards, hands, any artifacts, etc., with a voice narrative.
(credit: Peter Ljungstrand, RISE)

Tools for reflection

These are some tools that you can use either on your own or in your team, or as a process leader facilitating others

The Couches

In order to promote a logic of care and create support systems for innovation and change, "the Couches" have been used in change processes in Swedish municipalities participating in the project Innovation Platforms. To use this technique, two or maximum three people meet face to face, often on couches. Then you open up a conversation and talk for 1-1.5 hours, using different reflective techniques, making space for the issues you typically do not take time for. What has already happened? Where are you now? Where are you going? To moderate this conversation, you need an insider, like an action researcher, or even a colleague – a consultant can't just step in from the outside. We often talk about learning and reflection, without really taking the time to actually do them. These conversations are a way to put those words into action. If you take the time for in-depth reflection, it can become radical. What if you discover something critical? What if you set something free?
(Credit: Innovation platforms project)

Blocker diary

This is a tool that can be used together with the couch. The blocker diary is an analog or digital diary to use in everyday work. Whenever you run up against a big blocker, document it in the diary, focusing on critical incidents. The diary can then be used in reflection sessions (such as the couch sessions described above), or as a starting point for discussion (for example among peers with similar roles) - Many change and innovation processes come to a halt for various reasons. This is a way to trace those reasons to their source in order to eventually adapt the bureaucracy to support, rather than hinder, innovation processes.
(Credit: Innovation platforms)

Algorithm for reflection on action

As an individual or in a team,
A)   Describe the situation today: facts, feelings
B)   Describe an ideal situation
A → B)   How to get from the bad to the good.
(credit: Håkan Burden, RISE)

Fishbowl

Two people sit with their back to the audience and discuss a dilemma. Then the listeners talk about how they think this should be addressed.

Diverse perspectives & joint understanding

Working with diverse perspectives is crucial to navigating complexity, yet at the same time these diverse perspectives may cause friction. Intersectionality is the understanding that we can act with our particular set of experiences differently in different contexts and also be perceived differently in different contexts. These tools bring together diverse perspectives and celebrate diversity. They help you collaborate and navigate complexity more effectively.

People-in-the-team awareness

To navigate complexity, we need to be aware of our relationships and interactions – which may be a major source of that very same complexity. A lot of the work we do is in teams - sometimes in new and temporary constellations, sometimes in a group that has worked together for years. In both cases, getting to know each other better or in new ways can be a way to identify perspectives and experiences that are relevant for a project or for future work together. In a group, share:
…Five ways I…
…Five things you don't know about me…
…The last thing that touched me emotionally was …
…A place that was important to me when I was growing up was…
(credit: student team)

Mental models visualisation

These questions and templates help visualise biases, hypotheses, and previous experiences that may cause "perspective blindness." Visualising these intangible aspects of our perception helps with self-awareness and also helps others shift perspectives.
(origin: Enablers workshop)

Perspective cards/ glasses:

Create cards that show different perspectives with which you can understand an issue. Which lenses do you usually use? What happens when you switch? Experience putting on someone else's "perspective glasses." Create cards that fit your context, or use some general cards: (it doesn't have to be these)

- "I only see infrastructure"
- "I only see power and agenda"
- "I only see processes and described procedures"
- "I only see people and relationships"
- "I only see financial costs and gains"
(origin: Enablers workshop)

Perspective dice

Assign some of these perspectives to the faces of a dice. Throw the dice now and then and force yourself to view the situation through a different lens. You can also assign the perspectives to different stakeholders – throw the dice and try to put yourself in the position of that user, decision-maker and so on.

Put in some wild cards, like "only short term ideas", "only grand visions", "only local solutions"….
(origin: Enablers workshop)

Joint (intermediary) understanding & reframing

We often talk about the importance of a shared understanding of a problem. Yet it is often more fruitful to look at your problem from different angles - when everyone shares the same view on a problem, you risk getting locked in. Joint understanding does not have to mean agreeing about everything; rather, your goal is to be aware of each other's perspectives. Book meetings from time to time to re-read the project application or description, bringing in the knowledge and perspective that you have gained since the

beginning of the project. Force yourselves to regularly take a step back to challenge and renew your personal understanding, as well as the team's joint understanding. Use some of the perspectives tools we suggest here.
(origin: Enablers workshop)

Language diversity awareness

Here we focus on the language we use, both to reduce unnecessary misunderstandings and to invite the serendipity that may arise from our different interpretations of words and expressions. Discuss what words will you typically use in a project. Then discuss what words you will NOT use. Why? Are there buzzwords that might be misunderstood? Make a map of all these words. You could also use sketching as a way to expose nuances. Each member of a group independently illustrates a number of words you have chosen. Then share and compare your drawings –the way you visualized a word can convey nuances that describe your interpretation better than words.
(origin: Enablers workshop, previous study circles)

Future tools

How do we explore the future to help us navigate complexity today? This series of workshop tools that helps us explore and navigate through possible futures in order to better cope with and navigate complexity and uncertainty today.

Futures backwards

This is an exercise to understand change, in order to prepare for and drive change. Map the current state of affairs on the team level and/or on the whole industry/sector level. How did you get to where you are today? By exploring the status quo, people can identify the weak and strong signals of change. They can identify the most important turning points when change already happened, as well as the drivers of past change. After you have drawn this map of the current situation, map two opposite scenarios: one utopia (most desired/ "heaven" scenario) and one dystopia (most undesired/ "hell" scenario). You can either leave these prompts open, or decide on specific characteristics that your "heaven" or "hell" should contain. Trace backwards from the future: what could have led to these two scenarios? What are the

key turning points that would need to happen to get there? You can do this with different focus points: policy changes, natural disasters, political shifts, economy, technical innovation…
(credit: Cognitive Edge)

Specularity cards

Speculative design is about opening up new perspectives on big societal issues, engaging your imagination to envision alternative ways of being, living, and organizing. The specularity cards are created to play with possible futures and encourage imagination.

Participants create three cards each: one showing the current status, one showing a desired future, and one describing the journey between the present and the desired future. The cards can be general, or can have a specific focus – for example, "the future of work" or "the future of education". As you're making the cards, ask:
- What goals are there, what roles, what technologies, what other aspects?
- What do people do, what do people want to do, what are people forced to do?

After you've made the cards, play different games with them. Create stories about

possible futures, exploring possible future characters, roles, contexts, plots, resolutions and learnings. Your goal is to conceptualize a shared, desired future; this is a type of speculative fiction, derived from your experience of playing together with the cards.

You can also use the specularity cards as a fun exercise to step outside of the ordinary, either as a warmup or for a longer time. Prepare a stack of specularity cards. In a group of 3-5 people, jointly build a story by drawing random cards and saying one sentence each, inspired by the card they just picked. The five sentences should roughly follow this guide:
1) Who is the main character of your story?
2) what did he/she/it usually do?
3) what sudden crisis happened?
4) what did they do to solve the problem?
5) what is the moral of the story?

After you've completed these five sentences, you will have created a story together. This storytelling technique has an element of improvisation theatre, so it should be very spontaneous; do your best to avoid overthinking.
(Credit: Nina Bozic)

Tools for collaboration & communication

Start a project with a design workshop with all stakeholders.

Start a project with a design workshop as a way to get to know the stakeholders and get an early understanding of the project and underlying thoughts. Use the first part of the workshop to explore problems by focusing on the perspectives you bring into the project and the needs of important stakeholders. Use the second part to explore solutions through brainstorming and prototyping. Typically, this workshop does not result in ideas for solutions. What you will gain is an understanding of each other's competencies and needs. You can also use this workshop to introduce some complexity into the process early on, then reduce it by focusing on the future.

Create powerful metaphors and images

Collaborate with a graphic designer or illustrator to create powerful visualizations or metaphors. In one research project, the team worked with an illustrator who created images that, on their own, became strong metaphors in the project. They served as frames of reference and inspiration for reflection.
(Origin – Innovationsplattformarna)

The world around you

Invite all team-members to bring an article, a lecture, an innovation, or something else from the outside world that they find interesting and inspiring that they can share.

Speed-dating

Arrange a digital or physical speed dating session. Invite people from other parts of the company, or maybe even from other organizations, to come in and listen to where you are in your process. Give them one or more three-minute pitches (not long lectures!). Then ask them to give their feedback.

Storytelling

Work on your story. Tell your project together like a fairytale, a poem, a short movie.

Create your own tools

Design a five-minute game to explore creativity, collaboration or.... whatever you like. Place random objects on the table and compete in two teams on how they can be used to improve dialogue with the end user, improve collaboration in the teams. Or something completely different!

Salong Krångel or The Messy Salon

The Messy Salon is a place and a method that partly arose from the project Navigating Complexity, an initiative created by RISE, Sweco and Savvy Design. This is a space for development of knowledge on understanding and working with complexity, in a trans-disciplinary way.

The Messy Salon is inspired by the classic salon creating both space and safety for diverse experiences and perspectives. In the Salon, art takes hold of the participants with an extended toolbox for learning but also as a provocateur for new ways of thinking.

The Messy Salon can assist organizations in reflection on complexity and co-host events to highlight various challenges and qualities.

The Messy Salon is inspired by the classical 19th Century Salon, created as a safe haven for thinking and action against normative thinking. The home of an eclectic mix of artists and thinkers, The Salon has become an important figure in feminist and queer contexts, providing methodology for diversity.

The Messy Salon is developed together with Katarina Bonnevier, researcher, architect and artist with a focus on the history of the Salon.

The first Messy Salon attracted over a hundred participants working on themes connected to different aspects of complexity hosted by guest-facilitators: artists, activists and researchers. The second Messy Salon takes place as a digital event in the middle of the pandemic. It is named Fragility to underline the tenderness of the times we are in and what it asks of us.

For more find Salong Krångel at FaceBook.

Not the last words (but the last words for now)

How do you write a conclusion for complexity? It seems like an impossible task, so we won´t try to do it. Consider this an invitation to the next step rather than a closure.

Complexity is something that we will have to deal with more and more. The years to come hold unforeseen impacts on individual and systemic levels. We are writing this in the middle of the Covid-19 pandemic (though who knows if it is the middle, the beginning, or the end) During the pandemic, societies have faced complexity and fragility in ways we couldn´t imagine when we started this project. We have witnessed extraordinary kindness, inventiveness and solidarity. But the pandemic has also caused losses of life and livelihoods and revealed deep injustice.

Questions about tenderness, recovery and care have surfaced and are, perhaps for the first time, the focus of many discussions. People are connecting the dots between climate change, violence, the pandemic crisis, and their personal life choices. Much of our normal lives is temporarily shut down, making space for reflections on what could be instead, or what was.
The field, or rather fields, of research dealing with complexity are vast and eclectic. This report is just a brief encounter with a very small part of what is out there to be explored. Depending on your interest, you might gravitate towards post-human studies, quantum-physics, feminist studies, systems theory, design fiction, and much more.

We would like to invite you to trust your own ability to investigate further, and not to be intimidated if you don´t understand everything. Invite someone new into the conversation. Try out new ways of talking and making together. Experience something new: watch a play, read a poem, listen to a talk about something outside of your area. Take a walk in a new part of your city. And be open with your questions. Invite others to explore and improve with you and share what you experience during your journey.

When we hosted our first "Salong Krångel", the knowledge platform for complexity that we reference in another part of this report, Oscar Stege Unger, director of the Wallenberg Foundation, described the difference between the leaders of yesterday and the leaders of today. He pointed to a shift from the authoritarian leader who leads the way to a future he (because it was often a he) claims to have all the answers to decipher, towards the open leader who asks questions rather than gives answers, and who makes space for others to investigate what is uncertain.

We know that we need to navigate complexity with a certain set of skills: a deep understanding of social interactions, empathy for fellow humans and all other living beings (yes that includes trees), and endurance in vague and unresolved situations. We know that interdisciplinarity and art will be essential.

But even with these skills and companions, navigating complexity is sometimes exhausting, so we would like to end with a word on the importance of rest. During the Covid-19 pandemic, a lot of people have been working from home. This has made it difficult to guard space and time for rest and recovery. On the other hand, it has also opened the door for rest to be a more natural part of working life. We believe that we need to rethink how we curate our working environments, places where stress is often a major problem. Pressure to continuously deliver tangible results fast and a low tolerance for ambiguity in our organizations force many to shut down the delicate, intuitive and sensitive abilities that allow them to navigate complexity. The challenge of co-creating a working environment where we not only feel psychological safety and have space to fail, but also have space to recover and reflect, is a challenge that needs to be addressed with boldness and courage in the absolute present.

Our deepest gratitude goes out to so many colleagues and collaborators (more than we can name, but you know who you are) who inspire us and have generously shared with us different ways to navigate complexity. We thank you for your attention, and we would love your feedback. Send us an email, and let us know what your complexity is made up of, how you handle it, and what supports you.

One of the next steps for us in our own exploration will be the making of a Laboratory of Disorder, where we will continue to work with societal organizations and companies on how to create and exchange knowledge on navigating complexity. If you are interested in joining, please let us know. We wish you joy (because it can be absolutely hilarious to find yourself in complexity!). We wish you the delight that comes from the company of open-minded collaborators. Doing better for ourselves and the world we live in starts with doing it together

TIMELINE

May 2019

As part of the initiative Redesigning RISE, we are asked to lead a project on complexity. RISE is a construction that is just a couple of years old, a merger of several government-owned research institutes into one. Re-designing RISE is a bundle of initiatives to understand how RISE should work, what competences should matter and what needs to be developed and emphasized. Two pilot-projects are set up to explore new ways of working, to inspire projects to work in a faster more start-up-like fashion. Navigating Complexity is one of those pilots. The task is to have a focus on societal development and to bring in different parts of our organization in our exploratory work.

We have never met and know nothing about each other. Pernilla, coming from an artistic background and based in the RISE group for Urban development and Lisa, researcher in design thinking and innovation management based in RISE Mobility & Systems. To get to know each other we have a coffee in Pernilla's garden and talk about our different backgrounds, fears and expectations. One thing that surface and that we keep coming back to during the project is how we describe and frame a problem to work with when working with complexity. Is it necessary, and if not, then how do you create a starting point and ensure that something is delivered in the end.

We have a kick-off workshop with the steering-group. It is fruitful and underlines the potential for this work to involve and be implemented in many different parts of RISE. In the workshop it is also discussed and stressed how we need to deliver something tangible and useful. This is another dynamic that will follow us through the project. If you make something that everyone can use tomorrow, have you made something that really matters when they face complexity? How abstract can you be without losing relevance and involvement from others?
It will prove difficult to involve management as much as initially planned for due to a reorganization and changing roles and positions.

June 2019

Workshops at RISE Interactive The Pink in Umeå during the Innovation CoWeek, a bi-annual event gathering coworkers with an interest for innovation. We host a workshop starting to map how our colleagues understand and handle the concept of complexity. We see that everyone has a lot to say about the topic which gives us confidence that this is something we can unpack with diverse groups in different relevant ways. We use a circus artist for a sensory-opening start, and we keep coming back to artistic practices as a central tool for understanding complexity.

September 2019

We host a workshop with experienced facilitators from different organizations to tap into their experiences of identifying and navigating complexity. In the group we have people working with dialogue practices, communication, norm-critical learning platforms, adult education (folkbildning), infrastructure and design. This becomes a central workshop for us, one that we often make reference to. We get tools to further understand how complexity can be understood, and we realize that many organizations don´t have the tools or the vocabulary for this. The idea for a conference on complexity that will later turn into Salong Krångel is born.

October 2019

We have discussions with the project steering group about how to report and follow up on what we do. The regular format for projects with expected deliverables doesn´t really work with our material that is an entanglement of activities, insights, prototypes and discussions, across organizational boundaries. It points to the need for new models for evaluation and measurements with a more effect-oriented focus.

We go back and forth between different modes and models to find ways of understanding how the messy process of complexity and creativity could be explained. We invent different kinds of maps to translate between our own thoughts, and prototype ideas and tools on our own and together with co-workers. We keep reminding each other that we too are allowed to move in a spiral rather than a straight line.

November and December 2019

Workshops and interviews are held with various researchers, urban developers, facilitators, project leaders and artists inside and outside of RISE.

At the Institute for Contemporary Ideas and Art in Gothenburg, we host another workshop that we will often make reference to, this time with RISE co-workers from different parts of the organization, to let them prototype ways of navigating complexity. The exhibiting artists are co-facilitating, and their installations serve as provocation and space for exploration. Several tools in this report originate from this workshop.

Discussions are held on various tools that could be the tangible output so craved for. But would people actually use things like cards with inspirational exercises placed in conference-rooms? Another discussion is about how to understand and unpack transdisciplinarity; the collaboration between different practices rather than interdisciplinarity which is the integration of one discipline into another. We understand that much of the complexity that people face comes from feelings in various ways, and also that feelings are a key-tool in navigating complexity. We come up with the term feeling-shaming for the lack of care and respect for emotional reactions that is common in many organizations.

We go to northern Wales to take part in Dave Snowden's workshop on complexity and mapping the future. The landscape is breathtaking. We take walks and reflect on how it is actually completely possible to create a very set power structure in a room and yet discuss complexity. We return home with models and methods we would like to prototype at RISE to better map the diversity of many experiences and many thoughts on practice, academia, inclusion and exclusion.

January 2020

The pilot project officially comes to an end with workshops and presentations at the subsequent Innovation CoWeek in Gothenburg. Our management is entangled in reorganization issues, and the future of our suggestions is uncertain. But when you are passionate enough about something you will always find workarounds, and our explorations continue. How can you pause that which you believe in, indefinitely?

February 2020

Just before the Covid-19 Pandemic starts to affect about everything in private and work life, we host the first Salong Krångel together with Sweco and Savvy Design. It becomes a beautiful mixture of more than a hundred artists, activists, civil servants and consultants working on complexity from a diversity of perspectives. We realize how much navigating complexity overlaps with re-negotiating norms and questioning hierarchies and power structures. And just as when you work with norm-critical processes, the reactions to Salong Krångel range from relief and excitement to rejection and irritation.

March, April and May 2020

We host a digital version of Salong Krångel. This one is named "Ömtåligheten/The tenderness" to indicate the need to recognize and discuss the Covid-19 pandemic situation of vulnerability, comfort and trust. We experiment with creating a shared story in a digital format. We also invite an actor and a poet to help us unlock less accessed parts of ourselves and each other.

We initiate the Complexity Lab together with Sweco and Dialogues. This is a laboratory for organizations to work on concrete cases of complexity, conflict and friction. It will also be a platform for educational offers on these topics.

The circle is closed, at least from a linear standpoint, with the completion of this report. One year after the project started and half a year after the project officially ended. But when does something start and end? The process taps into past experiences and unfolds into the future with research applications being written, networks that continue to collaborate, and many things in the pipeline. Where will Salong Krångel and the Laboratory of Disorder take us? How will people take the seeds planted through this report further, what will be created? And so we close this timeline with curiosity about what comes next.

June 2020

Work that has inspired us

Stacy Alaimo *Exposed; environmental politics & pleasures in posthuman times*

Michael Batty *Complexity and Emergence in City Systems; Implications for Urban Planning*

David Bohm *On Dialogue*

Sara Beckman and Michael Barry (2007). *Innovation as a learning process: Embedding design thinking.* California Management Review, 50 (1):25-56.

Geoff Boeing *Measuring the Complexity of Urban Form and Design*

Richard Boland and Fred Collopy *Managing as Designing*

Nina Bozic (2018). *Choreographing innovative practice in everyday work* (Doctoral dissertation, Mälardalen University Press).

Nina Bozic *Poetics of Everyday*

Rosi Braidotti *Nomadic Theory*

Brand, R., & Rocchi, S. (2011). *Rethinking value in a changing landscape: a model for strategic reflection and business transformation.* Philips Design internal document.

Brené Brown *Dare to lead: brave work, tough conversations and whole hearts*

Richard Buchanan (1992). *Wicked problems in design thinking.* Design issues, 8(2) 5–21.

Lisa Carlgren, Ingo Rauth & Maria Elmquist (2016) *Framing Design Thinking: The Concept in Idea and Enactment.* Creativity and Innovation Management, 25(1), 38-57.

David Chandler *Ontopolitics in the Anthropocene: An introduction to mapping, sensing and hacking*

Davina Cooper *Everyday Utopias; The conceptual life of promising spaces*

Design Council (2005). *Eleven lessons: managing design in eleven global brands A study of the design process.*

Nigel Cross *Design Thinking: Understanding How Designers Think and Work.*

Kees Dorst *Frame innovation: Create new thinking by design*

Amy C Edmondson *The fearless organization; creating Psychological Safety in the workplace for Learning, Innovation and Growth*

Erica Eneqvist, Heiti Ernits, Marcus Jahnke, Jenny Lööf och Anna-Karin Stoltz Ehn: *Innovationskapacitet för att leda och organisera hållbar samhällsutveckling – erfarenheter och rekommendationer från Innovationsplattformarna* (2019).

Heiti Ernits (2020) *Ledarskap i mellanrummen – fallstudie av gränsgångare och gränspraktiker i en komplex samverkansmiljö,* Licentiate thesis University of Borås

Daniel L. Everett *Language the Cultural Tool*

Pernilla Glaser *Translating Differences – making community through play*

Joan Halifax *Standing at the edge; Finding freedom where fear and courage meet*

Donna J. Haraway *Staying with the Trouble; Making Kin in the Chthulucene*

Samantha Hookway, Mia Fay Johansson, Anton Svensson & Bowman Heiden (2019) *The Problem with Problems: Reframing and Cognitive Bias in Healthcare Innovation,* The Design Journal, 22:sup1, 553-574

Ann Howard and associates *Diagnosis for Organizational Change*

Hummels, C. C. M. (2012). *Matter of transformation : sculpting a valuable tomorrow.* Eindhoven: Technische Universiteit Eindhoven

Hummels, C.C.M., Trotto, A., Peeters, J., Levy, P., Alves Lino, J., Klooster, S. (2018) *Design research and innovation framework for Transformative Practices.* In Handbook Strategies for Change, published by Glasgow University.

IDEO *Human-centered design toolkit, 2nd Edition.*

William Isaacs *Dialogue and the art of thinking together*

Marcus Jahnke (2013). *Meaning in the Making: Introducing a hermeneutic perspective on the contribution of design practice to innovation.* PhD Thesis, Business & Design Lab, University of Gothenburg.

Keith Johnstone, Carolyn Coughlin and Jennifer Garvey Berger Leading in Complexity; *What makes complexity different and how leaders can respond effectively?*

Sacha Kagan *Art And Sustainibility; Connecting patterns for a Culture of Complexity*

Klaus Krippendorff (2011). *Principles of Design and a Trajectory of Artificiality.* Journal of Product Innovation Management, 28; 411-418.

Bengt Kristensson Uggla *En strävan efter sanning; vetenskapens teori och praktik*

Frederic Laloux *Reinventing Organizations*

Bryan Lawson *How designers think: the design process demystified*

Russ Marion *The Edge of Organization; Chaos and Complexity Theories of Formal Social Systems*

Humberto R. Maturana *The Tree of Knowledge*

Latour, B. (1994). *On technical mediation: Philosophy, sociology, genealogy. Common Knowledge,* (3), pp. 29-64.

Merleau-Ponty, M. (1962) *Phenomenology of Perception, Trans*

Ian F. McNeely with Lisa Wolverton *Re-Inventing Knowledge from Alexandria to the Internet*

Helga Nowotny, Peter Scott and Michael Gibbons *Re-thinking Knowledge; knowledge and the public in an age of Uncertainty*

Helga Nowotny *The Cunning of Uncertainty* Stephen Nachmanovitch *Free Play; Improvisation in life and art*

Maureen O´Hara and Graham Leicester *Dancing at the edge; Competence, Culture and Organization in the 21th Century*

Overbeeke, K. and Hummels, C.. *Industrial Design. Encyclopedia of Human Computer Interaction*. Interaction-Design.org.

Maria Puig de la Bellacasa *Matters of Care; Speculative Ethics in More Than Human Worlds*

Horst Rittel and Melvin Webber (1973) *Dilemmas in a general theory of planning.*

Donald Schön *The Reflective practitioner*

Richard Sennet *Together; The rituals, Pleasures and Politics of Cooperation*

Richard Sennett *Building and Dwelling*

Richard Sennett *The Craftsman*

Trotto (2011). *Rights through Making.* Doctoral dissertation, Eindhoven University of Technology. App available at http://itunes.apple.com/app/rtmthesis/id484014614

Dave Snowden and Mary Boone *The Cynefin Framework*

Verbeek, P.P. (2006).*Materializing morality – Design ethics and technological mediation.* Science, Technology and Human Values, 31(3), pp. 361-380.

Sofia Wiberg L*yssnandets Praktik; Medborgardialog, icke-vetande och förskjutningar*

Art

Accelerator konsthall

Saadia Hussain   www.saadia.se

Eva Kosofsky Sedgwick: Touching Feeling

Olivia Laing: Funny Weather: Art in Emergency

Settings Normkreativa möjligheter www.settings.se

Studio Alight https://studioalight.com/

John Paul Zaccarini: Falling – The thought of circus (find it at Uniarts Diva)

Links:

The Design Dash developed by Molly Wilson and her students at the HPI Potsdam: http://molly.is/writing/design-dash/

The ProtoBot developed by Molly Wilson: http://protobot.org/#en

Stanford Tools for taking action: https://dschool.stanford.edu/resources

Liberating structures: http://www.step2improve.org/wp-content/uploads/2016/09/Liberating-Structures-One-Pagers_022116pdf-3.pdf

Wendy Schultz toolbox Infinite Futures: http://www.infinitefutures.com/tools.shtml

"It matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what descriptions describe descriptions, what ties tie ties. It matters what stories make worlds, what worlds make stories."

Donna Haraway, Staying with the trouble

"WE THANK COLLEAGUES AND EXPERTS WHO TOOL DEVELOPMENT, AND SALONG KRÅNGEL AND ENERGY.

PARTICIPATED IN INTERVIEWS, WORKSHOPS AND PARTICIPANTS FOR ADDITIONAL INSPIRATION

Lisa Carlgren

Researcher; studying and teaching design approaches in innovation and transformation

Catalyzer and collaborator: engaging, sharing, creating

Passionate about equality, planetary well-being and the right to be vulnerable

Typically obsessed with something, at the moment Korean tv shows, and always with chocolate

Returning to old habits of drawing

Pernilla Glaser

Teaching artists, architects and designers reflection, collaborative practices and storytelling

Writer; next book on the art of comforting

Prototyping governance and social sustainability

Creating conversations

Restlessly and constantly reading

Eating and cooking all the time, favorite herb parsley

Early blues and late techno