Systems Thinking Workbook

Practising the art of systems thinking in a complex world
Acknowledgements

Many thanks to all those who contributed to this project. Joséphine von Mitschke-Collande provided insights into the framing of the project and the approach. Bob Williams provided perspectives on the systems field and inspired some of the framing. Hélène Finidori helped refine the pedagogical approach. Dina Hestad provided theoretical guidance. Senja Vaatainen and colleagues, and Leena Helenius, provided input on its use. Cover page photo credit to Eveline Fèvre. I would like to thank Viki Lafarga for proofreading and Ina Lohner for help with the layout.

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Preface

Purpose of this workbook

This workbook is aimed at trainers, facilitators, One Health and development practitioners, campaigners, team leaders and researchers who would like to practise systems thinking and apply it to their own, their team's or a group's efforts in tackling global issues. It will:

- Provide a guided process to help enable and create conditions for practising systems thinking.
- Allow activists and change agents committed to transition to apply principles and ideas from systems thinking in their reflection process.
- Support learners to practise thinking in a way that helps to develop strategies that are more effective in tackling systemic challenges like climate change and inequality.

What this workbook is NOT

- A beginner's introduction to systems thinking and transition. It assumes some basic familiarity with these ideas already, for example, from having read the Re.imagining Activism guide, or from working in research, campaigning or programmes for social change/transition.
- It is not a comprehensive review of systems theory. There are many guides on the subject already which explain the history, science and theory of systems.
- It is not a detailed facilitation guide and assumes that the reader/facilitator will develop their own framing and explanations for presenting the ideas. The instruction is therefore fairly “light”, leaving space for you to adapt the contact. The references provided will help.
- It is not a toolkit that will give you all the answers, a one-size-fits-all approach to systems thinking....! If that were possible, we might not be in the mess we are in!

How this workbook can help you

So what is it? This workbook was conceived to fill a gap – a gap experienced by the author and editorial team, through multiple interactions with clever, motivated, engaged people. We noticed that "systems thinking" is the new buzz, that lots of people are talking about it, but that in fact, we are often not sure how to do it or are too embarrassed to admit that we are not sure how to do it.

And yet, systems thinking is a core skill in our current and evolving world. In order to deal with the complexity and globality of our current world, we need to be able to
understand the unpredictable, interconnected and complex nature of the world. To do this we need to work in a transdisciplinary manner, with an open mind and the ability to keep asking questions: to keep learning.

We do all in fact have the capability to unconsciously and instinctively act and think systemically in many situations in our day-to-day life. Uncovering these capabilities will enable us to use them for attempting to tackle global issues too.

The aim of this workbook is therefore to embed systems thinking into the way we practise thinking about global issues like climate change and inequality, or what are often called “wicked problems”. Hopefully, it will help you think slightly differently about what you are doing and how you can use reflection and planning tools in the way you conceptualise, execute and adapt your ongoing work.

Above all, the workbook will guide us through how to ask different sorts of questions, and how to integrate knowledge from different sources and from different people. Often, the reflection and discussion around an issue will be the zone most ripe for learning, rather than the production of certain outputs or tools. Essentially, much of the emphasis is on thinking about thinking. That is to say, learning to understand the scope of our thinking, the perspectives and types of knowledge we are incorporating, and how we act on what we know. This can be quite an introspective process, and quite challenging emotionally, because we come to question our beliefs, values and mindsets. For that reason, we really do believe that systems thinking is an art and practice that we learn to cultivate over time, and the tools and methods we pick up along the way simply support that journey.

A note on systems thinking theory and complexity: There are many streams of systems thinking (general systems theory, complex adaptive systems, cybernetics, systems dynamics etc.), with hundreds of different methods and techniques. This document does not go into the detail of any one theory and will take a broad perspective on systems thinking within a context, which acknowledges complexity. We will apply methodological pluralism (choosing the method(s) based on the problem at hand) when applying systems approaches. The definitions of systems thinking this guide refers to align themselves with recent developments towards methodological pluralism and problem-based approaches to systems.

How to use this workbook

- The workbook is designed to fulfil a range of possible uses. The activities and reading can be done alone, or amongst a peer group, such as a team, study group or community of practice, to review some of the basic principles of systems thinking, applied to the context of the learners’ work.

- Secondly, the workbook can be used by facilitators or trainers as the basis for workshop or group activities around systems thinking.

- Finally, the workbook can be used as a companion toolkit to the publication *Re.imagining Activism: A practical guide for the Great Transition* and is part of the

Companion resources

We have deliberately avoided long reading lists, so as to make this workbook immediately accessible. However it goes without saying that it can only be of benefit to read around the subject. If you are not very familiar with transition and systems thinking, these texts may be useful places to start:

- Short article introducing the basic aspects of systems thinking, available at https://thesystemsthinker.com/making-the-jump-to-systems-thinking
- Longer introductory article about systems, available at https://thesystemsthinker.com/introduction-to-systems-thinking
CHAPTER 1. WHAT DO WE MEAN BY SYSTEMS?

Introduction to the topic

In this section we will explore what we mean by systems thinking and practice. We will notice the intuitive nature of systems thinking and see how we are already able to organise complex information into meaningful patterns. We use the term "map" to describe a way of representing interconnected information visually. After the exercises, we will compare our definitions with some of the prevailing definitions by systems thinkers.

Learning objectives

• Clarify why systems thinking is important to you/the group

• Explore how you already use skills of systems thinking and what you would like to learn more about in that regard

• Understand and experience first-hand the complexity of systems thinking

Activities

1 Define 'system'.

Think briefly about what you understand by the term "system". Write out a few key words, or a definition, of the term. There is no need to spend too long on this – write down or draw what comes to mind first.

2 Why is systems thinking valuable?

Now spend a few moments reflecting on why you are interested in systems thinking (i.e., thinking about systems AND thinking in a systemic way).

Think about the following:

• how is systems thinking different from non-systems thinking?

• how could systems thinking be helpful to you?
• how could systems thinking be helpful to the people with whom you work or the wider environment?

Write down some ideas.

If working in a group, share the ideas from these questions amongst yourselves.

3 Think of an example.

Can you think of an example in your personal or professional life where you use or have used systems thinking? Again, share amongst yourselves.

4 Let’s party!

We are going to do a little systems thinking exercise together. This could be a good icebreaker if done in pairs. Let’s have fun!

• Choose one of the following examples of an activity that you have done recently, are doing, or are planning to do soon (or make up your own, but keep it “light”). Choose one moment in time to describe the situation: you do not need to think of how things have changed over time, but just imagine how things are at one specific point in the situation.
  o Organise a party/dinner, or other event, with various people
  o Manage, plan or take care of a garden
  o Participate in the daily life of a family (raising children, managing domestic tasks etc.)

• We are going to make a big diagram or “map” to describe the situation and patterns of behaviour.

• Think about the key people involved in this situation – who are they, where are they and how do they relate to each other?

• Draw/write in the key people on a big sheet of paper, showing how they influence each other.

• Are there important issues that influence the situation? E.g., values around what matters or about who gets to decide things? Write or draw these in.

• Add in any other information that seems important in understanding the situation.

5 Debrief. Now review the process and results – share and discuss with your peers.

• What were the main skills and attitudes that you used in order to think systemically?
• What did you learn by doing this exercise?

• What elements of systems thinking seem to already be happening in the way you perceive the situation and act in it?

• How useful was doing the mapping compared to seeing the result of the mapping (i.e., the actual diagram)?

Background information

Definitions of systems thinking

Although there are numerous definitions of systems thinking, they tend to have a few key elements in common – essentially, describing sets of interactions between people and things, which behave differently by nature of interacting than they would if they were on their own. As mentioned in the preface, in this workbook we will not tie ourselves down to one specific definition or theory and here provide three different definitions, which offer a starting point for describing what we are talking about when we talk about systems.

In section 5.1 of OpenLearn’s course Systems thinking and practice, a system of interest is described as follows:

1  “A system is an assembly of components connected together in an organised way.

2  The components are affected by being in the system and the behaviour of the system is changed if they leave it.

3  This organised assembly of components does something.

4  This assembly as a whole has been identified by someone who is interested in it.”

Peter Checkland:

“The central concept ‘system’ embodies the idea of a set of elements connected together which form a whole, this showing properties which are properties of the whole, rather than properties of its component parts.” (OpenLearn, section 5.1)

Donella Meadows:

“A system is a set of things—people, cells, molecules, or whatever—interconnected in such a way that they produce their own pattern of behaviour over time.” (2008)
Describing systems

We like the expression “system of interest” or “situation of interest” because it reminds us that we are describing a particular situation (not the whole world) at a specific point in time. We will spend a big part of this workbook thinking about and describing what we know about situations of interest and exploring that knowledge until we feel we have enough understanding to start talking about acting.

A large community of researchers and development practitioners in Canada and around the world has developed an approach called ‘ecosystem approaches to health’ which attempts to integrate systems thinking into research. Their teaching manual (Waltner-Toews et al. 2012) offers some insights, which may help us approach systems thinking:

“The world we live in is complex. The complexity we see in the world around us is a function of the nature of the world itself, we who observe the world and the questions we ask. If we ask how to fix a broken watch, we can think of the watch in fairly simple mechanical terms, and we do not need to invoke notions of complexity; if we ask about the function of watches in society, or the social, political, economic and ecological relationships required to acquire the resources and pull together the materials and skills necessary to build a watch, we need to invoke complexity. Similarly, if we wish to save people dying of cholera, we have the relatively straightforward, albeit challenging tasks of providing them with the potable sources of fluid replacement. If we wish to prevent cholera epidemics, we are faced with complex, interacting political, social, economic, biomedical and ecological forces.

[...] Industrial economies of scale make efficient use of certain kinds of resources if one externalizes interactions with the social-ecological context. This industrial efficiency is dependent on stable external conditions, and is very brittle in the face of changes in external resources and economic structures. If everyone is growing corn, and the price of fossil fuels goes up, or the markets for corn collapse, the system cannot adapt; people might go hungry because all the corn is used for fuel, or, conversely, because they can’t sell their crops. [...]”

Every description of the world is a simplification, and systems descriptions are no different in that regard. Complex systems are descriptions of complexity, that is, they are attempts to describe the world as we live in it and experience it, that attempt to accommodate multiple dynamic interactions of as many variables as possible. By definition, there are many such descriptions (and hence many complex systems) possible; different observers will see different things in the world, and model them differently, either formally, or perhaps just in their heads.”
CHAPTER 2. A METHOD FOR SYSTEMS MAPPING

Introduction to the topic

In the first chapter, we worked with an intuitive approach and used minimal structure to explore our understanding of issues and relationships in a particular context. In this chapter, we will explore a more structured approach for eliciting and organising information. This will help build our toolkit for later tackling wicked problems and learning how to describe and understand them systemically.

Learning objectives

- Experience communicating information through pictures
- Identify what is important when communicating about a process
- Learn building blocks for mapping relationships and processes

Activities

Individually: go through the exercises and write/draw the steps as you go.

In group/workshop setting: The Draw Toast exercise should be done individually first, then drawings compared and developed as a group.

1 Draw Toast.

We will now practise our drawing skills!

Why? Because this will help us move away from linear thinking. This is foundational to helping us think systemically at all stages of our work. We will inspire ourselves from Tom Wujec’s Draw Toast exercise.

Take an A4 sheet of paper. “Draw a picture of how to make toast. That is, darkened crispy bread. Use no words in your diagram. Try to illustrate the important actions to someone who has never made toast before.”

2 Now, as a group, try to make sense of the drawings. Ask a series of questions:

How are the illustrations similar? In what ways do they differ? Which are clearer?
Which contain surprises?
Which would actually do the best at explaining how to make toast?

Count the number of nodes (parts: things, people) on the drawings and identify what kind of nodes they are – people, objects, actions? How are relationships between nodes illustrated?

3 Debrief. Discuss what helps make a good systems drawing, and how best to show the relationships between nodes.

- What kind of information was often hidden in the original drawings?
- What have we learned from this exercise about eliciting and organising information?

4 Watch Wujec’s 9-minute video on the DrawToast exercise.

The video is available at https://www.drawtoast.com. This will give you some background information on the method. We will use the sticky note mapping method in the next chapter.
CHAPTER 3. MAPPING THE SYSTEMIC NATURE OF GLOBAL CRISSES

Introduction to the topic

Why do we talk about global crises?

What are the linkages between climate change, biodiversity loss, social inequality and political polarisation?¹

And what is happening that means that problems often seem to apparently evolve quickly into crises and become situations of extreme danger, such as climate change or extreme social unrest?

In this chapter, we will explore concepts of interrelationships, inter-linkages and power balances through collective mapping. We will start off by choosing a system or situation of interest and describe it from one stakeholder perspective. Then we will explore what we think works well and less well for the interests of that stakeholder. We will use sticky notes and lines to draw the system, allowing us to change our ideas as we go and thereby change how we depict the system visually. In the next chapter on leverage points, we will then imagine how different strategies for action might influence the system.

Mapping a system can feel like an overwhelming task, and it is important to know why you are doing it in order not to get lost in the complexity of the information. Here are a few guidelines to help.

Mapping guidelines

• Clarify your purpose for the mapping. It may be to elucidate a topic that some people know a lot about and some people know very little about; in that case its purpose would be to share understanding more equally around the group. Or it may be to explore complex aspects of a situation in order to better understand why and how certain patterns are in place; in that case, it would be to focus on specific elements of a system of interest to explore how they are related.

• Do not worry about having to include everything. Focus your discussion on trying to better understand what you are interested in exploring. It does not matter if some elements are left out. No systems map can ever include everything.

• Bring an intention of learning. Mapping exercises can feel onerous if you are simply downloading everything you already know. Indeed, some downloading is

¹ Some background to this topic can be found in Re.imagining Activism, pp. 3–4 and 22–23.
needed – that is, stating some of the key information. But if you get stuck in simply downloading and do not feel like you are learning anything new in the exercise, change how you are doing it: take a break, talk about it with the group, adapt the process. It is a time-consuming activity and you well get out of it the quality of work that you put in.

Learning objectives

• Practise making a visual summary (map) of what we collectively know about a chosen situation of interest from one stakeholder’s perspective

• Explore and challenge our assumptions about the situation through analysing the relationships and patterns of this system, using empathy and imagination

Activities

1 Brainstorm and identify your “situation of interest”.

Identify some of the themes and issues related to what you see as the most pressing “global crises” or wicked problems you are trying to address. These could include themes like: migration, climate change, biodiversity loss, the global food system, socio-economic inequality, economic growth, political polarisation, rates of mental illness etc.

• Discuss or write down some of the key issues which you are interested in working on

• Discuss what makes these issues systemic problems – for example, there are multiple actors, the issue is present at different scales, some solutions may cause other problems etc.

• Now choose one issue amongst these ideas on which you would like to focus – “a particular issue or problem that interests or puzzles you” (Williams and van’t Hof 2016).

  o Narrow down the scope of the issue to something manageable – where you know enough about it to have an in-depth discussion. This will become your “system of interest”. For example, if you are interested in the ‘global food system’, you could narrow it down to ‘our city food system’. Or if you are interested in climate change, you could narrow it down to ‘climate change causes and mitigation in the transport sector’. If you are reluctant to narrow
it down, remember that you can always branch out later. Starting with a narrower scope will allow you to have a more meaningful discussion. It is also part of learning to set boundaries in defining your system of interest.

- Agree on your purpose (see mapping guidelines above). Are you trying to gain more insight about a situation, i.e., remain purely descriptive? Or are you trying to solve a problem?

2 Mapping: a stakeholder experience of the situation
   
i Define your situation of interest.
   - From the discussion in step 1, clarify your situation of interest and write it up on the wall or on a big sheet of paper where everyone can see it.
   
ii Choose a stakeholder perspective
   - Do a brief stakeholder analysis: make a list of the stakeholders. You could put a + or − sign next to each stakeholder based on whether they seem to have high or low power or influence in the system.
   - Choose one stakeholder from whose perspective you will describe the system. It may be a type of person (e.g., local female farmer), or an organisation (the National Ministry of Health, a multinational company, a citizen group). Determine why you think it is interesting to analyse the situation from their point of view.
   - Describe this stakeholder (your stakeholder of interest) – their interests, needs, priorities, and write some of these characteristics next to their name. Try and immerse yourself in this stakeholder’s perspective.

Explanatory note: Having practised different types of mapping during the piloting of this workbook, we found that mapping through one stakeholder perspective can give focus and clarity to the process and help narrow in on key issues. We found that sometimes a system mapping discussion which is too general can lead to information overload, and we got lost. You are obviously free to adapt the process to what suits your needs! This exercise also requires using your skills of empathy and imagination. We are not claiming that the map produced is the ultimate truth about the situation, particularly if you lack information about the stakeholder of interest, but it is one step further to building understanding. It is an exercise for learning. If you want to use this exercise for developing actions in the real world, then you would definitely want to do this exercise with different stakeholders describing their own perspectives.

iii Describe the system of interest (downloading).
   - Think about the elements, which make this system behave the way it does – people, things, values, beliefs. What are the important stakeholder roles and entities, which interact with your stakeholder of interest – people, organisations, companies, ecosystem services, flora/fauna, places, beliefs?
o Write/draw each of these on separate sticky notes and lay them out on a big sheet of paper.

o You may want to start off working in silence, and then, once you have some patterns emerging, start discussing the questions below.

  ▪ Now think about how these elements influence each other. This can be through physical relationships, power dynamics (authority, status), market relationships (demand/supply), emotions (love, jealousy, fear) etc.

  ▪ Who and what influences whom and how?

  ▪ As you think about the stakeholders, think also about their stakes in the system – what do they have to gain or lose from the way things are?

o Working as a group, move your nodes around the paper to show the patterns of relationships.

o You can also start drawing in lines to show the relationships. You can make the lines thicker if the relationship is strong, and thin if they are weak, or find other ways (colours, line styles...) to illustrate relationships.

o Think also about what the dominant narratives are – stories that people tell themselves, or which powerful entities like governments, media and companies, tell – about what is going on? You can add reference to these narratives by adding thought clouds or sticky notes, or by labelling the arrows and lines in your map.

o Write and draw in as many of these relationships, factors and narratives as you can.

iv Explore what works well and less well in the system from the point of view of your chosen stakeholder.

o Take a step back and look at how your system of interest has been depicted. Is there anything missing? Do you need to review any key elements?

o Now you may draw on your subjective notions of what should be (your normative vision). Explore what you think is working well, and working less well, in this situation for the stakeholder of interest. Where are the tension points? Are there conflicts of interest, of resources, of power? Label these with sticky notes and/or symbols.

o Are there points of strength, power and fulfilment? Explore these and what seems to enable them. What could help them grow stronger?

v Alternative stakeholder perspectives.

o If you have time, repeat the mapping process from the perspective of another stakeholder. You may want to choose quite a different stakeholder with different needs and interests. If you don’t have time to repeat the detailed mapping, you could have a discussion about the main issues, needs
and relationships and note down some of the main points. Ideally, if you are developing projects on these themes, you would have time to do stakeholder mapping with different stakeholder groups so as to ensure that those involved in the situation are consulted and involved.

vi The next system.

- How could this situation evolve in the future? What would a positive scenario look like? What would a negative scenario look like?
- Complete your discussion when you feel like you have a tangible sense of some future scenarios, without necessarily going into too much detail. In the next chapter we will explore some pragmatic ways of thinking about influencing the system.

vii Debrief. What have you learned from this exercise so far about:

- The set of issues you have explored?
- How mapping the issues collectively can influence the way you understand them?
- How you feel mentally and emotionally while trying to take a more systemic view of the situation?
- What you still need to do to for the discussion to feel complete?

Background information

Mapping as a backdrop for this workbook

Why is it helpful to map out what we know? Williams and van’t Hof (2016, p. 7) explain humorously why this is so important:

“There are two common reactions when faced with wicked, complicated or complex situations – or, using systems language, a problématique or a systems mess (yes, ‘mess’ is a common system term). One is blank incomprehension; like a deer in car headlights you are frozen into immobility. The other is to jump in and just, well, start. Neither is especially satisfactory. Freeze, and you just get hit by the situation. Jumping in creates potentially more problems, since a wicked situation will respond to your intervention. To use some more systems jargon, messy, complex situations are starting point sensitive; where you start will determine where you end up. Start anywhere and you may end up nowhere. So the very place to start is to pause, think, deliberate and carefully consider your investigation or intervention. Just because a
situations is complex, just because it is not easily controllable doesn’t mean that you can’t craft your intervention carefully. It doesn’t mean anything goes. It doesn’t mean things may just come out in the wash. Deliberation may delay action by a few hours or even a few weeks, but unless triage is needed to stop blood flow draining away the life of the situation, careful consideration of where and how to start can save time, lives and expensively acquired resources – like people.”

You will see that we revisit the mapping exercise which we started in this chapter again. This offers opportunities to adjust it or even start again. As explained by the OpenLearn course:

“Since in many situations we will not know which the significant connections and factors are, we should not expect our first attempt to analyse the situation to lead us to the best representation or ‘answer’. In general, we should expect to need several attempts at approaching the situation before gaining the confidence that we have identified the important features.”

You can watch a short video (3 and a half minutes) for a fairly comic presentation of what is known as network mapping, available at https://www.ted.com/talks/eric_berlow_how_complexity_leads_to_simplicity. It will link to our work on leverage points next.
CHAPTER 4. LEVERAGE POINTS

"[H]ow do we change the structure of systems to produce more of what we want and less of that which is undesirable?" (Meadows 2008)

Introduction to the topic

The concept of leverage points, popularised by scientist and thinker Donella Meadows, has been powerful and much debated in the systems field. Meadows defined leverage points as:

“Places in the system where a small change could lead to a large shift in behaviour.

Leverage points are highly sensitive trigger points in a system and are characterised by their level of interconnection within the system. High leverage points are highly connected and when triggered have the biggest impact on the system, low leverage points are less interconnected, hence their impact on the system is less strong." (2008)

To understand leverage points, we can think of the body as a metaphor for our system of interest. Different organs in the body have high or low leverage in influencing how the overall organism works. The heart, for example, has very high leverage – it provides blood to organs all over the body, and if it is damaged, the organism may die. On the other hand, a little finger, whilst useful, can be damaged and not impede the functioning of the other organs. That said, even damage to a little finger can have unexpected consequences on the body’s mobility.

In the last chapter, we mapped out what we know about a situation of interest from a chosen stakeholder’s perspective, and then analysed what we thought and felt worked well and less well in that system. We then also imagined future iterations of that system – how it could evolve.

In this chapter, we will explore how different actions or strategies could influence the system of interest, using the concept of leverage points as places to intervene in a system. We are not advocating necessarily taking all these actions, or assuming that these actions need to be taken by us, but the exercise will help us imagine how different interventions could have different impacts.

Words of caution

Sometimes leverage points are invoked as a “magic bullet” to solve complex problems. We therefore remind ourselves to be humble and realise that leverage points are a theoretical concept, but in reality, we cannot control or predict how an intervention will change the system. We thus invoke another principle from resilience and complexity thinking, that of ‘diversity’. Our work is embedded within the wider system. We are part of a web of change agents, who may be addressing several parts
of the system at once and may even be pushing in different directions. There are many reinforcing and counter-balancing forces, which have shaped the current situation, and the more pathways at work to improve the situation, the more resilient the system is likely to be.

Learning objectives

• Understand the concept of leverage points in a system, including lower and higher leverage

• Practise brainstorming about leverage points in your system of interest

• Imagine how selected actions/strategies could work as leverage points to influence the system of interest

Activities

1. Introductory reading about leverage points.

The classic essay ‘Leverage Points: Places to Intervene in a System’ by Donella Meadows provides a profound entry point to thinking about leverage points. Amongst a number of the editorial team members of this workbook, we felt that reading the essay was a turning point in our thinking about systems. Read it at least twice!
The following image also helps give a visual picture of leverage points:

2 Leverage points and mapping.

i First, we will brainstorm a range of different actions or interventions that could be taken on the system. Draw a table with two columns, one column for actions which could make it better, and another column for actions which could make it worse.

- Think back to your earlier discussion when you imagined how the situation could evolve for the better or for the worse.

- Now start brainstorming. It is often easiest to start with “lower level” leverage points. We like to think of these as “technical fixes” – they do not have deep leverage, but they may have impact in the short term, or be important for calming public opinion. Technical fixes can be things like: changing quantitative targets or changing policy rules. Sometimes it is not clear whether interventions are lower or higher level – such as changing language/terms used – are these technical fixes, or part of paradigm change? For our purposes now it does not really matter – just try and think of all sorts of interventions.

- It is important to look at both columns. It will help us build the habit when strategizing, of imagining the possible positive and negative consequences of our own actions, and of thinking about how external factors and other actors will also influence the situation. For example, self-interested actions
by other parties could negatively influence the system from your, or your chosen stakeholder’s, perspective.

ii Next, brainstorm about the higher-level leverage points of the system (what may be called the “design” of the system, [Abson et al. 2017]), and add these to your list. Try and spend more time on this part than the others.

o What kind of system rules, and system goals, might be more healthy and acceptable for this system?

o What kind of narrative or vision would make such alternative goals compelling to different types of stakeholders in the system?

o Stick with the discussion on design and intent. Play around with these ideas. Explore them by imagining alternative scenarios.

o You could try imagining conversations between actors in the future system, describing how the future system works – what is it that made things change?

o As you work, you may choose to start drawing in important interventions/leverage points on your map to show the places and people you would want to work with.

o Can you see relationships between the different leverage points you identified? What are they?

The following paragraph might help us with the exercise:

“…most high profile work on food security has focused on issues of food production (e.g. Foley et al. 2011). Such a focus emphasises material flows and buffer stocks, rather than deeper issues such as the rules, structures, values and goals that shape food systems. Because more is known about material interventions, it is easier to design interventions at these shallower levels. However, questions such as ‘is the global food system oriented to provide food security for all?’ and ‘if not, how can its intent be changed?’ have rarely been asked by scientists. Yet it is these questions that address the more fundamental challenges, and provide input to thinking about deeper leverage points.” (Abson et al. 2017)

iii Debrief. Moving away from the lists and mapping, have a discussion (or personal reflection/journaling if you are on your own) with the following questions:

o What you are noticing about the behaviours of the system in place, and those of the desired system?

o What kinds of patterns, relationships and structures lead to the behaviours of the current system?

o Where do we see the possibility for new patterns to emerge?
- How could we re-imagine our paradigms to tackle these underlying levels?
- How can different types of interventions lead to unintended consequences?

Background information

Should you wish to explore the concepts of leverage points and relationships in more detail, it can be enlightening to think more about positive feedback and negative feedback in a system. Here are two introductory references:

Reinforcing feedback loops: https://systemsandus.com/foundations/why-you-should-think-like-a-modeler/reinforcing-loops

Balancing feedback loops: https://systemsandus.com/foundations/why-you-should-think-like-a-modeler/balancing-loops
CHAPTER 5. COLLECTIVE STORY HARVESTING

Introduction to the topic

In the above exercises, we described a situation of interest through mapping people, entities and relationships, and explored how selected stakeholders may influence and be affected by a situation. Sometimes, in our efforts to understand the world, we emphasise technical ways of perceiving our environment. To help us build our skills of empathy and of holistic thinking, it can be helpful to approach facts, events, opinions and experiences as part of a story. People by nature love stories, and storytelling is part of what makes us human.

Furthermore, good stories can encapsulate many principles of systems thinking. Stories can, for example, include multiple themes at once, and show different perspectives: right and wrong is not always clear, because what is right for one person in a story may not be the same for another. What happens in a later part of a story depends necessarily on what happened before, and different time and space scales can coexist. Stories can convey the complexity of social life.

Story harvesting

A powerful approach to uncovering insights contained in stories has been developed by the Art of Hosting community as “collective story harvesting”. The term “harvesting” refers to a process of documenting the results of collective listening.

Story harvesting can be done at the early stages of a process to gather knowledge and information, or at a later stage to contribute to analysis and evaluation. You may like to link this activity directly to the topic of your collective mapping, by having storytellers choose stories related to the theme. For example, if you are discussing the global food system, you could share stories about your experience of farming, of shopping at the supermarket, of a time when you had a positive experience of food production or consumption etc.

Story harvesting could be a wonderful contribution to project scoping and community consultation, to get a sense of different stakeholders’ experiences. It could also play a valuable role in monitoring and evaluation, inviting stakeholders to share their experiences of a project.

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2 Art of Hosting is a global community, and a suite of techniques, for facilitating group process and group conversations “using personal practice, dialogue, facilitation and the co-creation of innovation to address complex challenges”. http://www.artofhosting.org.
Learning objectives

- Learn and practise how to share and listen to stories through different framings, in order to collectively build insights from a storyteller’s experience
- Explore how collective story harvesting could contribute to your work by providing practical ways of thinking systemically

Activities

Collective story harvesting.

The basic steps involve a storyteller who recounts a story to the group. The account should include some kind of turning point or learning, but does not have to be a success story. The story listeners (or ‘story harvesters’) each listen to the story with a particular perspective or theme in mind. The important thing is to make sure the stories are personal and important to the people telling them.

If you would like a more detailed description of how to do collective story harvesting, you can refer to facilitator Amanda Fenton’s 7-page guide: http://amandafenton.com/wp-content/uploads/2013/01/Collective-Story-Harvest-To-Go.pdf

1. Identify the key elements: storyteller, story and arcs.
   - Identify who wants to tell a (real life) story, one, which has a turning point – a moment or process by which things changed. Allow the storyteller some time to prepare their story (maybe a few days’ notice). It can be a nice exercise for someone who wants to practise telling their story.
   - The rest of the group will be “story harvesters”. Each harvester should have one theme or “story arc” to which they pay special attention as you listen to the story. You can choose your own arcs, but here are a few suggestions of story arcs, which are linked to systems thinking skills.
   - The story arcs you choose will help you tap into different aspects of the system(s) being described in the story. We particularly like some of the following story arcs:
   - Key events/pivotal points – a traditional aspect of story, moments when one event or confluence of events changes things in important ways.
• Patterns and trends – practising seeing patterns and trends over time will help us get better at seeing system structures and working on the root causes of problems.

• Connections and relationships – between different time scales, places, networks or hubs... how are different actors and stakeholders influencing each other?

• Questions – what questions arise from this story that we could ask of any system?

• Learnings – what can we learn from this story that we can apply to other similar situations?

2 Storytelling.

• The storyteller is now given time to tell their story without interruption (10–20 mins).

• Practise deep listening. Notice how deep listening helps us better “listen” to and perceive the system.

• All harvesters listen attentively and take particular note of the points in the story, which relate to their arc.

3 Story harvesting.

• After the story, each harvester shares with the group what they noticed through the lens or “framing” of their story arc.

• The storyteller can then share what resonated for them as they heard the harvest. Allow adequate time (at least one hour) for the harvesting.

4 Debrief.

• What have we learned about systems thinking by working with story?

• How does this apply to our current work or problem at hand?

• How can we practise and develop what is fruitful in this practice?
CHAPTER 6. REFLECTIVE PRACTICES

Introduction to the topic

“In my opinion the most important task in this moment is to generate a base of people who are eager to practise perceiving the complexity and interdependency in every aspect of their lives.” (Bateson 2018)

In this chapter we will practise being and observing ourselves and others in the system. When we are passionate about a cause, or deeply involved in something, it can be helpful to step outside of our place in the system.

Sometimes, looking at the situation from a more holistic perspective can feel overwhelming. We can end up feeling like we are a tiny part of the system, that there are so many elements interacting that nothing we do can make a difference. This can seem especially difficult when we acknowledge that we cannot control how the system will act and change.

And yet, it can also be empowering to take a systems perspective. Rather than succumbing to a sense of crisis and urgency, and thinking that everything relies on us to change things, it allows us to take a step back and see the big picture. We may realise that there are a multitude of actors doing wonderful things, or that those who look like the “enemy” may have common interests, or that the actions we thought were important are actually just a small part of the issue, and the important leverage points for change lie somewhere else. These are all insights we can gain by taking the time to observe the system of interest.

Our focus here is therefore to explore a few ways to build the habit of stepping outside the system through reflective or contemplative practice.

Contemplative practice

Contemplative practices such as mindfulness practices, slow breathing, meditation etc., are some of the many ways we can develop a higher level of consciousness about who we are and how we are connected with the world.

Contemplative practices can help us learn how to take time to observe a situation before rushing into action. They can also help us see the big picture, building a larger view of what’s going on and who is involved. And finally, they can help us get a better sense of our own place in the system.

If these are new to you, we suggest engaging with one or two types of contemplative practice and trying them regularly, even if it is only for a few minutes each time, and experimenting to find what best suits your temperament and needs. Or if you are familiar with such practices, continuing them and drawing insight from them as you practise systems thinking.
The Thich Nhat Hanh Foundation describes mindfulness as follows:

“Mindfulness is the energy of being aware and awake to the present moment. It is the continuous practice of touching life deeply in every moment of daily life. To be mindful is to be truly alive, present and at one with those around you and with what you are doing.”

**Learning objectives**

- Explore reflective or contemplative practices
- Experiment using these practices in order to build habits of ‘stepping outside of the system’
- Experience a guided visualisation as a way of experiencing empathy and tapping into our intuitive and emotional connection with a situation

**Activities**

1. **Contemplative practice.**

   There are many possible contemplative practices one can follow. We suggest that you experiment with a few that attract you and stick with the one/s which suit you. The image below gives you various suggestions, and the resources in the links below offer guided practices which may be helpful. You may also want to read Chapter Six: ‘Re.imagining ourselves as activists’ from the *Re.imagining Activism* guide.

   Explanations of the different contemplative practices from the image below: [http://www.contemplativemind.org/practices/tree](http://www.contemplativemind.org/practices/tree)

   Descriptions of simple daily mindfulness practices: [https://plumvillage.org/mindfulness-practice](https://plumvillage.org/mindfulness-practice)

   Audio recordings (podcasts) for guided meditations: [http://www.contemplativemind.org/practices/recordings](http://www.contemplativemind.org/practices/recordings)
2 Guided Visualisation (for group setting).

The focus of this visualisation will be exploring our relationship with someone in a difficult situation. It may involve difficult feelings, and it is important to create a safe space where participants feel comfortable and able to relax, and that there is time after the visualisation for participants to get back into the present moment and let go of the emotions brought up during the exercise.

The facilitator will guide this visualisation for the group, and we suggest that the details of each person’s visualisation do not need to be shared with each other, but rather, that it be a private exercise for each person. This should be explained clearly beforehand. That said, it may be valuable to have a group debrief after the experience on more general aspects.

Preparation

- Invite participants to think about a situation in which they are involved that is important to them, where there is a challenging relationship. It could be something happening now, or something past. It could be personal or
professional. More likely than not, it involves different actors (people, institutions, things) who have different stakes (needs, interests) and are in a process of negotiating those needs or desires, whether consciously or not.

Suggested script (adapt this as needed) – read slowly and calmly, leaving time between each point:

- Sit comfortably and close your eyes. Relax your body. Feel your muscles relax – in your arms, your legs, your chest, your back, your neck.
- Breathe. Notice how you are breathing, slow or fast, deep or shallow. Let your breathing be normal.
- Breathe with your heart. Let your mind rest and allow your heart to lead. Don’t judge yourself, just observe what is.
- Now recall a situation that is important to you, where you have strong feelings about what is happening and who is involved. You can visualise the people and how they are connected.
- What feelings come up when you think of the situation? Where do you feel it in your body?
- Imagine you are explaining the situation to a group of neutral observers, from your point of view.
  - How do you feel about the situation?
  - How does that affect how you are behaving in the situation?
  - What would you like to happen?
  - Who are you most concerned about, who are you watching out for?
- Now imagine you are a completely different stakeholder in the situation. Imagine how you would describe the situation and answer these same questions:
  - How do you feel about the situation?
  - How does that affect how you are behaving in the situation?
  - What would you like to happen?
  - Who are you most concerned about, who are you watching out for?
- Now go back to being you. Re-centre. Breathe as yourself. Reconnect with your body, your heart, your mind.
- What happened inside you as you re-lived this situation in your mind?
- How would you like this situation to evolve?
• What can you do, as you, to behave in a way, which would help this situation to evolve how you would like it to?

• When you are ready, stop the visualisation. Stretch, open your eyes. Take a few moments to come back fully to the room.

• Keep these images and insights with you as you continue to work through your situation. You may want to write down the main ideas, images, words and insights that came up. You may want to return to this visualisation again on your own.

• Debrief. We do not need to share the details of our visualisation, but we will take some time to share some more general lessons learned. You are welcome to participate or not.
  o What images, senses, colours, came up during your visualisation?
  o What were the most powerful impressions?
  o Looking at the whole picture, what emerges as important?
  o Did you see or gain new insights about the situation?
CHAPTER 7. ACTION RESEARCH

Introduction to the topic

In this final chapter, we delve into how we can integrate an ongoing practice of systems thinking in the way we work within a ‘project-based’ environment.

As already noted above, there are many tools and approaches which have been developed for systems thinking and action. Our emphasis here remains carrying through a reflective, deeper, integrated way of thinking into our work.

We first spend some time on general reflections, reviewing what we have learnt and how we would like to further develop our practice. We then introduce action research as a methodology. Without going into the theoretical details, we suggest that action research is an approach to acting in the world which allows for a reflective, systemic practice. We explained in the preface that one of the motives for writing this workbook, was to help build a bridge between knowing about systems thinking, and doing it. We hope that action research will help be a bridge. Action research incorporates many aspects of systems thinking: it is iterative, focused on learning and adaptation, participatory and exploratory. It therefore allows us to challenge some of our traditional institutional ways of working (e.g., working to expected results, prioritising short-term efficiency over long-term quality etc.). Whether or not you choose to carry out a full-fledged action research project, or simply inspire yourself from the general approach, we suggest a few steps to help get started.

Learning objectives

- Review your learning from the workbook and identify how you would like to further develop your thinking
- Learn about action research
- Experiment using an action research approach in your work
Activities

1 General reflections and Debrief for the workbook exercises.

We have covered a wide range of ideas, approaches and tools in this workbook, and it is only the tip of the iceberg! Hopefully this has helped you (and your team or collaborators) to take steps in your journey to working with the reality of our complex world, and practising ways of thinking which help integrate that complexity. There are a myriad of ways in which you could move forward from here, from doing further reading or courses, to regularly trying out these approaches, to talking about it with others and finding communities of practice.

Let’s take some time to reflect on our lessons learned, aspirations and questions. You may want to write down your responses individually, and then share in pairs or with your wider group. You could also use this as a basis for an action plan for your team or organisation. **Debrief:**

- Think back to how you defined system at the beginning of this workbook, and what you understand now about systems thinking. What has changed?
- What has been frustrating and difficult? How can we accept the inherent frustrations and limitations that become visible to us when thinking systemically, and still find insight and guidance from this way of thinking?
- What has most excited, challenged and inspired you? How would you like to continue exploring these ideas?
- How could you share these ideas with others? How would you explain the ideas that you have found most interesting?
- Think about the kind of tasks, objectives and work styles in which your organisation currently puts most of its energy. How well does that suit the mission at hand? How could we spend our time and energy?
- So how would you like to spend your time and energy now?

2 Action Research.

i Reading

Read the text below as an introduction to action research.
**Action Experiment Principles: a summary adapted from Coleman's *Action Research in Practice: A Beginner's Guide***

In an action experiment, we are looking to find out about something and create new knowledge about effective strategies (research), as well as to create practical positive change (action).

**Practical** – The ultimate aim of a project of this kind is to support the people involved to improve what they are doing. This embeds the work in a very practical mindset.

**Participative** – The team should be selected on the basis of the views, knowledge, and roles of the individuals of which it consists. Each person therefore has a valid and useful contribution to the work. We recognise and listen to each member of the group.

**Emergent / Experimental** – It is not possible to say at the start of the project where we will end up. We will set objectives, but the steps to reach these will depend on the iterative processes taken during our time working together, through a continuous process of analysis, action and reflection.

**Progressive** – There is an inherent normative assumption in this work in that we aim to make change for the better. In this sense, the work is progressive.

**Exploratory** – Work of this nature deals with multiple ways of knowing. Current academic work emphasises rationality and thought as the most valid form of knowledge. This work may sometimes deliberately push at this boundary, following the rationale of the dancer Isadora Duncan who, when asked what the meaning of her dance was, replied “if I could tell you that, I wouldn’t need to dance it”.

**Multi-layered** – Working on this project will raise issues that are relevant to the personal level, me; the interpersonal level, us; and the organisational, system level, them. These are all interconnected such that it will not be possible to work at any one level without working at every level (although the focus will be different depending on what issue we are dealing with).

Coleman also suggests some ideas for how we personally can “develop an attitude of enquiry”:

**Slow Down** – emphasise noticing everything around you for a small part of each day; meditation, active listening and mindfulness are all part of this. If practised regularly, this can spill over into the work we do and help us to look more closely / deeply at the impact it might have.

**Get Curious** – ask good questions; admit not knowing something you think you should know; learn.

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3 Summary from the Smart CSOs Lab. All quotations in this section are taken from Coleman’s book.
**Practice being non-judgemental** – remove the words *should* and *ought* from your vocabulary. “The critical part of you is the enemy of curiosity.”

**Find friends** – “To do action research is to stand for principles that matter to you and against the conventional way of doing things.” This can be difficult to maintain over time, especially as you will likely encounter criticism. Friendly voices will be important to support you.

**Award yourself the title of researcher** – “The act of researching is a simple one: the educationist Laurence Stenhouse called it ‘systematic and sustained enquiry made public’ (1983: 185). Action research has a long tradition of *people’s researchers* seizing the opportunity to make sense of and communicate their findings about their own lives. You have that right too.”

### ii Preparing for action research

- Note that doing action research is not easy. It is harder than not doing it. It challenges peoples’ ways of working, and makes them question what they think they know, in the same way systems thinking does! Make sure you have people’s agreement and willingness, and be sensitive to everyone’s needs.

- Identify a current project, work plan or strategy on which you are already working or which is going to start, and in which you have some autonomy to influence the way things will be done.

- Identify a few of the key stakeholders (colleagues, partners, beneficiaries etc.) with whom you have a trusting relationship, and propose framing or re-framing your work together along the lines of an action research approach.

- With your action research team, work through some of the steps of this workbook which seem most relevant.

- For example:
  - Develop a systems map of your project (system of interest) and review stakeholders and perspectives
  - Identify relationships between nodes and describe what types of relationships exist
  - Explore what kind of leverage points might exist at different system levels, and which ones might be more influential
  - Imagine the system from other stakeholders’ point of view and revisit the leverage points
  - Practise telling a story about the situation with your group using Collective Story Harvesting

### iii Re-framing. Now we are ready for acting with a more holistic mindset and attitude of enquiry. With your team, work on re-framing your project based on your new insights about the system of interest.
o Where are the most relevant points of intervention from where you are situated?

o Who else do you need to work with in order to approach the system from its different entry points?

o Review the timescales at which you are working. What is reasonable to aim for in the short, medium and long term?

o What efforts might you make to work on changing patterns (the prevailing culture and attitudes) without necessarily focusing on obvious and visible parameters?

iv With this re-framing, work out how you can allow for iterative learning cycles in your project.

o How will you check in at different levels to see how things are going, what is being learnt, what is working well and what isn’t?

o Should certain aspects of the project be dropped, and others further developed?

o How will you integrate your learning into meaningfully influencing the work – through better documentation, sharing of knowledge, for re-motivating stakeholders and colleagues etc.?

o What else do you need to start an action research approach?

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**Background information**

**Resources to help inform action research**


Glossary

Leverage points: Places in the system where a small change could lead to a large shift in behaviour (Meadows 1997).

Stakeholders: Groups of people, types of people, or entities, that have common interests and concerns in a situation

System:
1. “A system is an assembly of components connected together in an organised way.
2. The components are affected by being in the system and the behaviour of the system is changed if they leave it.
3. This organised assembly of components does something.
4. This assembly as a whole has been identified by someone who is interested in it.” (OpenLearn)

Wicked Problem: A problem that is difficult or impossible to solve because of incomplete, contradictory and changing requirements that are often difficult to recognize. There is no single solution to the problem. Because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems.

References


