# A Month of SYSTEM SEEING

Daily System Journal Prompts

*Ruth Malan*

January 1, 2025

## *Introduction*

What's the Big Idea behind these prompts? A daily journal focused on the systems that we work within and influence, is a "Good Idea." But habits are hard to start, to "rut in" to daily practice, so some company and mutual encouragement, and some structure, can help.

What we're seeking to do, is allow the situation, and the ecology of systems within it, to be our guide and teacher (which, of course, is a lot about becoming more aware — including aware of the perceptual and interpretational traps we fall into⋯). And sure, we're still going to be stuck in tunnels of our own perception, if we don't explore the system *with* others — who have different experiences and vantage points from which to perceive the (eco)system (of socio-technical systems), etc. This work can help with convening and guiding the attention of that work.

The prompts follow some general patterns:

- explore the situation, zooming out to the broader context — the ecosystem (e.g. relationships; value flows and transformations) and strategic context, and history and how the context is evolving;
- understand the system of interest in context (of use, of development, of operation, etc.);
- understand the system, its (internal) structure and dynamics; etc.

With just enough mixing it up to discourage linear movement. We need to surprise ourselves. Too.

**Note**: keep to 15 -20 minutes for each prompt. Expect to accept "good enough" so the exercise can be "done" in that time.

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*"My 2023 goal is to not focus on immediate solutions but to think about systems and the bigger picture."*

*"And then there's the analysis of the whole system, even things outside of my control, and work to influence and support enough people in that system that have similar goals and perspectives that we can make broader shifts together over time*
*If I'm only working on directly what's in front of me, I'm reactive. Not making a difference. I'm also not taking opportunities that I might have that others don't, to make wider and more lasting change.*
*My resolution to myself is to try to think as broadly as I can next year."*

*— Sarah Drasner, on mastodon in December 2022*

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*"What we care about is the productive life, and the first test of the productive power of the collective life is its nourishment of the individual. The second test is whether the contributions of individuals can be fruitfully united"*

*— Mary Parker Follett*

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# *Table of Contents*



*"The map is not the territory," Snicket's chaperon advises him. "That's an expression which means the world does not match the picture in our heads."*

*— Lemony Snicket, Who Could That Be at This Hour?*

## *Draw a Bicycle*

1. Draw a *Bubble Diagram* of a bicycle. Use labelled bubbles (circles) to express the key concepts of a bicycle; use placement and size to convey relationships.
2. Now draw a bicycle.
3. What do we notice (more)? Jot down some notes/observations about drawing to see, to think, ⋯

This is a warm-up exercise. As warm-up exercises go, what are we warming up for? A daily practice of noticing (what we don't notice, too). Of using a journal to probe deeper. A daily practice of doing just enough, just good enough to learn something. Where we will use different perceptual and conceptual tools, and follow prompts that are open (so ambiguous) enough that people in very different contexts can do something meaningful.

Stop. Do the exercise. Reflect. Then read what follows; spoilers ahead.

Despite our differences in comfort with drawing, doing so helps us notice what we have *and have not* noticed about bicycles. We ask questions about the relationships, say, between seat and pedals. We can notice what we're missing (brakes?). And ask what kind of bike: electric? Mountain? Road? Cargo or passenger capable? Could we build it? Would it work? We might assume, given everyday familiarity, that we have a pretty good notion of what a bike is composed of, but when we need to draw the relationships among the parts, our knowledge of those relationships, generally speaking, is more fuzzy than we might have expected. And that part is not about drawing skill! Sure, if we ride a lot, and maintain our own bikes, we have more of a sense of the structure and key relationships and essential parts than if we don't. But even then, it's surprising to a lot of everyday cyclists, that there are various relationships among structures and mechanisms they aren't really that sure about when they come to draw a bicycle. That's why it's so important to do the exercise, and not just imagine doing it.

*Bubble Diagrams* are used in building architecture, but are useful in mapping more conceptual spaces too. Variations include Bubble Maps and Concept Models.

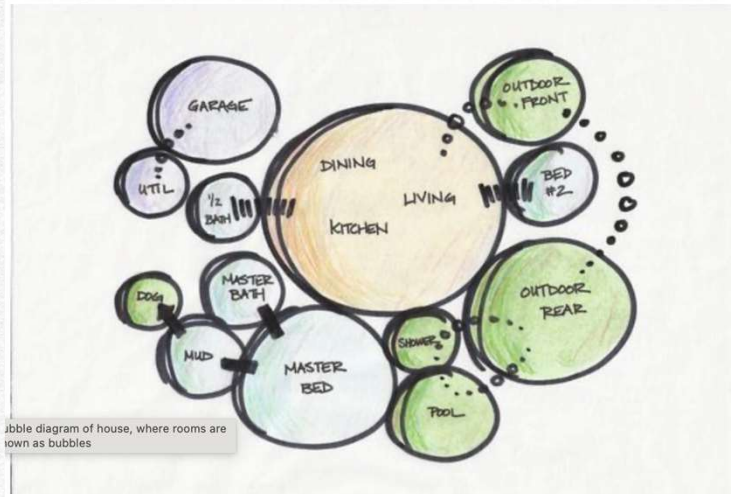


Image Source: https://illustrarch.com/articles/8702-bubble-diagram-in-architecture.html

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*"The world is its own memory." — Kevin O'Regan*

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Image Source: Nick Sousanis, *Unflattening* (composite)

## *Draw Your Org*

1. Draw your organization* at least 3 different ways.

* pick one of interest—this might be where you work, community organization, family

2. Jot down reflections on what you learned about your org. What do these different views illuminate? What do you learn looking across them?

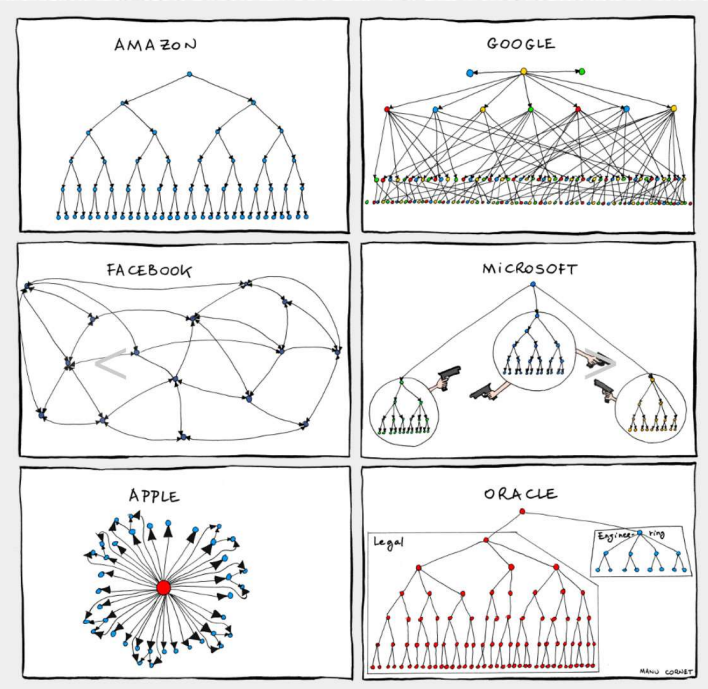
Now "go meta" and think about the views you drew:

3. What first occurred to you to draw? What do our customary views of organizations suggest? What views are helpful? Why?

Especially when getting started, have fun with it⋯ do the obvious, the playful, etc.

Once you've run out of your own ideas, flip the page to see what others came up with.

Of course, the classic, as org structure doodles (all grown up into a comic) go, is Manu Cornet's! (Which manages to be an "org structure chart" that is about power, communication, and org culture.)

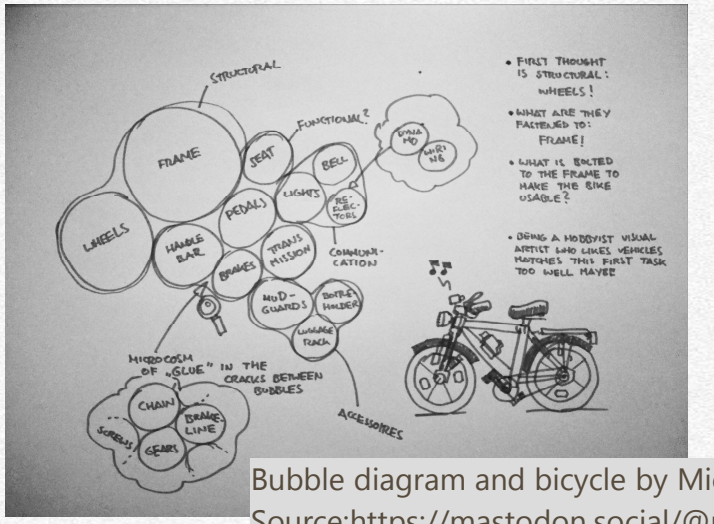



Organization charts cartoon by Manu Corbet.
Source: https://bonkersworld.net/organizational-charts

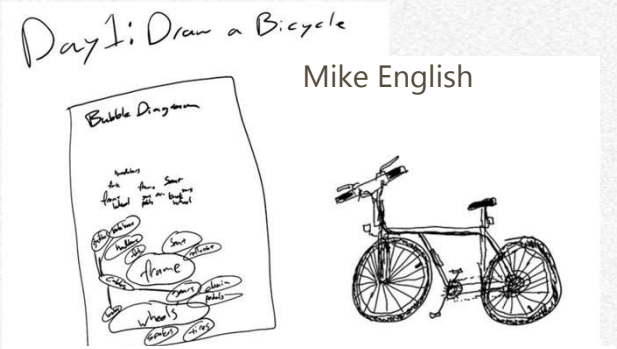
*"One of the hardest and most valuable things you can do as a company is the following:*
*1. Have a fully up to date org chart*
*2. Have a diagram that is not the org chart that accurately reflects how work flows through the company*
*3. Have an up to date and accurate diagram and explanation of what the company does and how it does it (architecture, revenue funnels, business value streams, code-bases)"*

*— Hazel Weakly, https://hachyderm.io/@hazelweakly/110979361948302539*

# *Some Examples Shared during the Advent of System Seeing (2024)*




Bubble diagram and bicycle by Michael (mmby)
Source:https://mastodon.social/@mmby/113582296020057579




Mike English

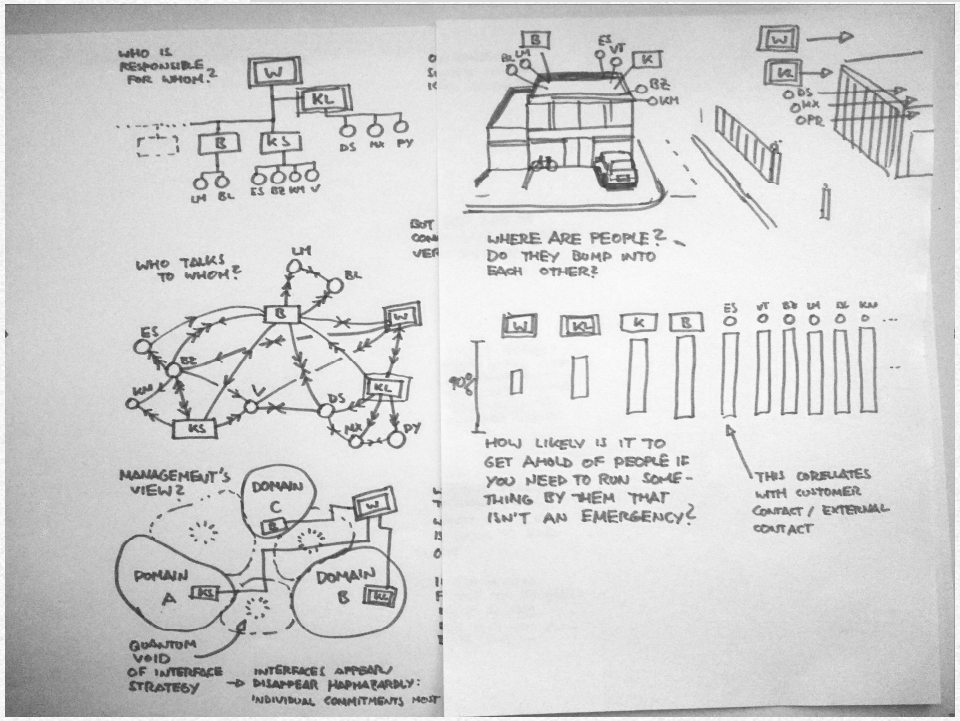
https://bsky.app/profile/englishm.bsky.social/post/3lck25oiahc2b

**Damien**
@cforthecurious.com

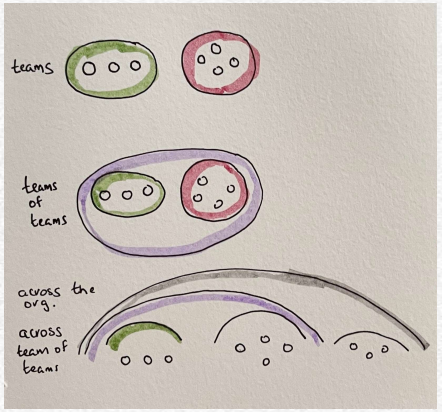
A summary of my insights:
- There are many ways to look at the same system.
- Changing component and relationship kinds can yield dramatically different structures (but sometimes they overlap)
- My views are all static, but real systems change
- Views are useful if they help answer a question

> **Ruth Malan** @ruthmalan.... · 1mo
> Day 2 #AdventOfSystemSeeing

https://bsky.app/profile/cforthecurious.com/post/3lcfpq2pye222




Different drawings of the same organization by Michael (mmby)
Source: https://mastodon.social/@mmby/113593683042174104




My sketch of teams, teams-of-teams, and "across" the subsystem and system (and hence teams) roles, like tech leads and architects

## *Intermezzo: Drawing to see*

*"Sketching is conducted both to clarify existing ideas and to develop new ones. In the early stages, the artist may wish to preserve many visual options, restricting [..] imagery to global structures, or using notes and signs that implicate multiple alternatives. Paper sketching uses denotation systems that include tolerances and indeterminacies in ways that can amplify the artist's ability to perceive or imagine many options."*

*— Jonathan Fish and Stephen Scrivener, Amplifying the Mind's Eye: Sketching and Visual Cognition*

*"And I really think, as I play with these things, I'm way smarter than I am. [..]The page teaches me what to do. I make marks and I look at them and I start thinking and things happen."*

*— Nick Sousanis, https://www.ohiochannel.org/video/grae-nick-sousanis*

*"Sketches are a way of externalizing ideas, of turning internal thoughts public, of making fleeting thoughts more permanent. Of course, written language can do the same [.] Sketches can also convey abstract ideas metaphorically, using elements and spatial relations on paper to express abstract elements and relations. Expressing ideas in a visuospatial medium makes comprehension and inference easier"*

*— Barbara Tversky, What do Sketches say about Thinking?*

*"Just as texts constructed by words are rhetorical so are texts constructed by pictures. And just as word-as-text is not innocent, neither is image-as-text" — Mary Rosner*

*"Drawing [isn't] just for "artists" [..]. Think of it as a way of observing the world and learning" — Anne Quito*

*"All thinking begins with seeing"*

*— Susanne K Langer, Philosophy in a New Key*

*"All perceiving is also thinking, all reasoning is also intuition, all observation is also invention."*

*— Rudolf Arnheim, Art and Visual Perception*

*"Visual thinking consists of a series of acts of attention, driving eye movements and tuning our pattern finding circuits."*
*"Seeing is all about attention."*

*— Colin Ware, Visual Thinking for Design*

*"We know that the affordances of our senses and the capacities of cognition together construct the impression of the visual world. The world we see is a world made by our cognitive ability."*

*— Johanna Drucker, Graphesis*

*"The perception of facts, our "attention," is determined by our needs or desires.' — Mary Parker Follett, Creative Experience*

## *Explore System Concepts*

1. Spend several minutes brainstorming system concepts (boundary, parts, etc.). Create a list, mind-map, concept map, or whatever you find generative, to get your ideas about systems out where you can see them.

If you still have time (in your 15-20 minute allotment):

2. Draw a rounded rectangle roughly 1.5"H x3"W (about the size of a business card), or do a crafty thing and cut out cards. These are the "cards" for step 3

3. Create one or more (as time permits) concept cards with the concept name, an evocative doodle or icon that visually represents it, and some words (or a quote) that get the idea of the concept (as it relates to systems) across.

The size of the card is an intentional constraint.

The key is to not overthink it; we're just getting ideas out. If you like the idea of concept cards (or any other tool we use in these dailies), you can return to them with more time later.

What are the cards for? If one did create a collection of them? Like any "stimulus" activity (like Oblique Strategies) you can use them to direct questions at your system (under design/evolution) — like, what's our system boundary? How are we thinking about it? How are we maintaining it? But creating the cards is already useful — we might go from "emergent properties" to observability" to "stigmergy" to "boundary object" and we've collected a bunch of useful (understanding generating) ideas.

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*"Honor thy error as hidden intention"*
*— Brian Eno and Peter Schmidt, Oblique Strategies*

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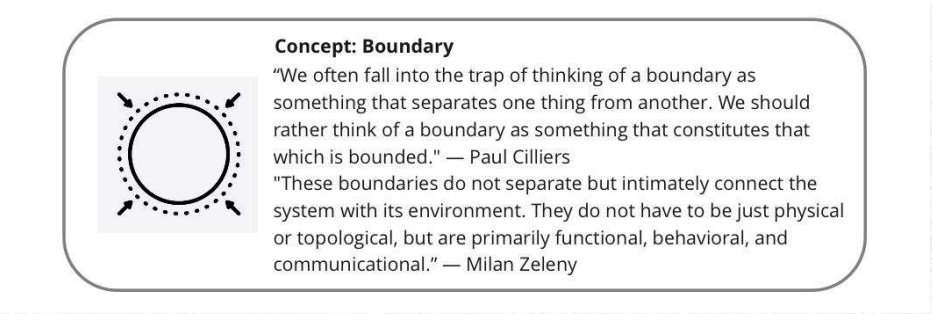
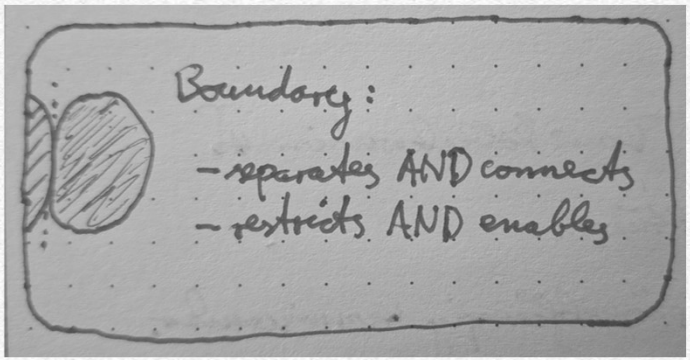
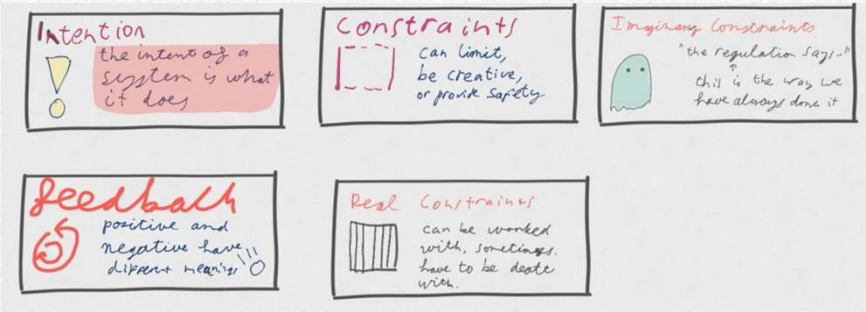



Boundary Concept Card by Sebastian Hans
https://hachyderm.io/@sebhans/113588728561593924




Concept Cards by Willem Van den Ende
https://mastodon.social/@mostalive/113611062857916622

## *Ackoff on Systems*

Watch and sketchnote: If Russ Ackoff had given a Ted talk

It's roughly 10 minutes and he gets a lot done, and the concepts and illustrations/stories are useful to have in one's repertoire for explaining systems ideas.

[CW: limb loss thought experiment mentioned around minute 4:44-4:53]

https://m.youtube.com/watch?v=OqEeIG8aPPk&t=91s

How does Ackoff define systems? What other distinctions would you add?

What insights do you draw out, and how do those relate to the systems in the situation you're exploring?


If Russ Ackoff had given a TED Talk...

*"First what's a system? A system as a whole, that consists of parts, each of which can affect its behavior or its properties. You for example are a biological system called an organism, and you consist the parts — your heart, your lungs, your stomach, pancreas, and so on — each of which can affect your behavior or your properties. The second requirement is that each part of the system, when it affects the system, is dependent for its effect on some other part. In other words, the parts are interdependent. No part of a system, or collection of parts of a system, has an independent effect on it. Therefore the way the heart affects you depends on what the lungs are doing, in the brain is doing. The parts are all interconnected. Therefore a system as a whole cannot be divided into independent parts.*

*Now that has some very, very important implications that are generally overlooked. First the essential or defining properties of any system are properties of the whole which none of its parts have. For example, a very elementary system you are familiar with is an automobile. The essential property of an automobile is it can carry you from one place to another. No part of an automobile can do that. The wheel can't. The axle can't. The seat can't. The motor can't. The motor can't even carry itself from one place to another. But the automobile can.*

*You have certain characteristics. The most important of which is life. None of your parts live. You have life. You can write. Your hand can't write. .."*

*— Russell Ackoff, "If Russ Ackoff has given a TED talk"*

## *Intermezzo: Systems*

*"A system is defined as a set of components that act together as a whole to achieve some common goal, objective, or end. Complex systems exhibit emergent behaviors, i.e. behaviors that arise from the interactions of its components, and are often counter-intuitive, have phase shifts and are prone no non-linear effects."*

*— Bruno Felix*

*"Systems are of three types: mechanical, organismic, and social.' A mechanical system is one that operates with a regularity dictated by its internal structure and the causal laws of nature, for example, a clock or an automobile. Because mechanical systems can display no choice, they can have no purposes of their own; nor can their parts. However, a mechanical system can have a function"*

*— Russ Ackoff, Systems thinking and thinking systems*

*'Considering enterprises as "open socio-technical systems" helps to provide a more realistic picture of how they are both influenced by and able to act back on their environment.'*

*— Emery & Trist, The Socio-technical System as a Source Concept*

*"3. A statement of system principle (mission or goals) is a short-hand way of referring to the special forms of interdependence that exist between the system and its environment.*

*4. Thus, 'a system can only be properly characterized if we also characterize its environment' and, conversely, an environment can only be characterizing the kinds of systems it provides support to."*

*— Fred Emery, On Defining Systems*

*"We find structure on all scales. In order to see how difficult it is to grasp these structures, it is necessary to look at the boundaries of complex systems, and to the role of hierarchies within them."*

*— Paul Cilliers, Boundaries, Hierarchies and Networks in Complex Systems*

*"Any system of consequence is structured from smaller subsystems which are interconnected. A description of a system, if it is to describe what goes on inside that system, must describe the system's connections to the outside world, and it must delineate each of the subsystems and how they are interconnected. Dropping down one level, we can say the same for each of the subsystems, viewing it as a system. This reduction in scope can continue until we are down to a system which is simple enough to be understood"*

*— Melvin Conway, How Do Committees Invent?*

*"I have technological systems at my literal fingertips. These are infrastructure utilities: energy, fuel, electricity, water, sewage, telecommunications, the supply chains behind that. These are the systems that make my life, as I know it, possible. And on that typical night, they're basically invisible, at least invisible to me."*

*— Deb Chachra, The Invisible Networks Shaping Your Everyday Life, TED*

## *Attending (more) Closely*

Study this page (alongside) from *Unflattening*, by Nick Sousanis, and write notes — on the page if you have access to a printer (and size the image to give margin). Take the full 15-20 minutes, so you push yourself to notice more and then more. Focus on the meaning. The systems. The interactions. How it is communicated and conveyed. How it draws your attention. What you notice and become interested in.

This exercise is inspired by Nick Sousanis. Follow this link for illustration and inspiration: https://spinweaveandcut.com/visual-analysis-examples/

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*"We tend to think about observing as we think of reading: like it was but quick consumption. Like it was not a skill you could improve and hone your whole life."*

*— Romeu Moura (twitter)*

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*"Observing sounds simple — almost like doing nothing but looking around. In fact, it is hard work requires practice & skill."*

*— Esther Derby (twitter)*

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*"Training in observation follows the same principles as training in any activity. At first one must do things consciously and laboriously, but with practice the activities gradually become automatic and unconscious and a habit is established."*

*— WIB Beveridge, The Art of Scientific Investigation*

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Page to study, from *Unflattening*, by Nick Sousanis
Available here:
https://spinweaveandcut.com/did-it-flow-connectedness-in-joyce/

## *Describe Focal Situation*

Think of a situation you'd like to explore with a systems lens as we practice various systems approaches and views. It's good (since these 15-20 minutes of daily journaling add up) if it's something that matters to you to explore and understand, and begin to shape responses to.

Write a few paragraphs describing the situation.

We've been doing "warm-up" workouts in systems and seeing (observing, noticing, seeing more deeply), and now we're shifting to applying system lenses and practices to a situation of personal interest.

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*"An open problem is one where the system border is not clear, or where it is permeable. It is important to realize that normally when we start out solving a problem we draw a mental circle, nominating things to to think about and what to leave out.*

*Anything beyond the circle we call "context," and that will play a part in our thinking about the problem. Yet in some cases now, we find situations where it is very unclear where this circle is to be drawn"*

*— Kees Dorst, Frame Innovation: Create New Thinking by Design*

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*"problems do not present themselves to practitioners as givens. They must be constructed from the materials of problematic situations that are puzzling, troubling, and uncertain. In order to convert a problematic situation to a problem, a practitioner must do a certain kind of work. He [sic] must make sense of an uncertain situation that initially makes no sense."*

*— Donald Schön, The Reflective Practitioner*

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*"It is hard to overestimate the significance of putting thought in the world." — Barbara Tversky, Mind in Motion*

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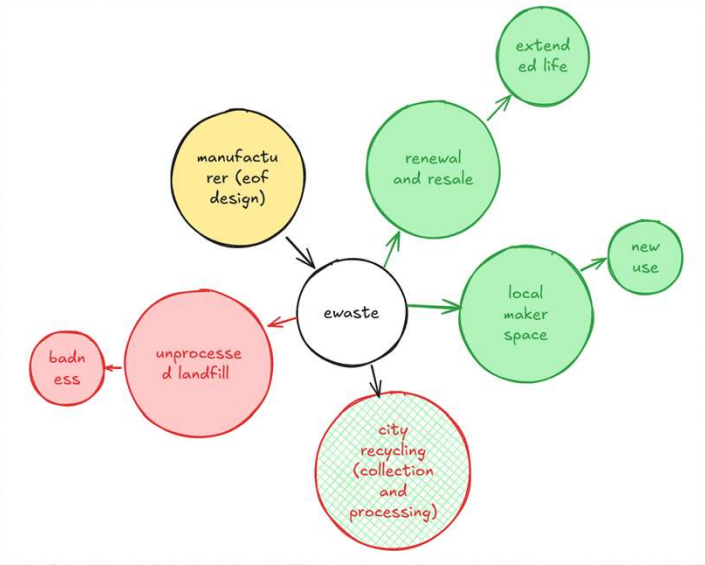
## *Context Scan*

Consider the broader context of the situation you identified (in the previous activity).

One way to make this visual: Put your situation in a circle (named abstraction) at the center of your page. What's around it? What is the "context" for this situation?

What other entities and systems, etc.  interact with this situation? What impinges on it (as constraint or forces, or flows and exchanges, etc.)? What benefits from this situation (and sustains it)? Etc. Draw these as (named) bubbles or clouds, with arrows or links and annotations as useful. (Yes, a bubble diagram is good enough.)




*"We fail more often not because we fail to solve the problem we face but because we fail to face the right problem."*
*— Russell Ackoff (via Jamshid Gharajedaghi in Systems Thinking*

*"2. CONNECTEDNESS*
*What does all this have to do with systems? Just this, that if I design a system with no regard for the universe that surrounds it, I will have scanty knowledge of what can impact it. That is not a formula for success. To fit my system in to the larger system of systems around it, I must go to the next higher level of recursion"*
*—John Gall, How to Use Conscious Purpose Without Wrecking Everything*

*"Everything, as they say, is connected to everything else, and not neatly. There is no clearly determinable boundary between the sea and the land, between sociology and anthropology, between an automobile's exhaust and your nose. There are only boundaries of word, thought, perception, and social agreement—artificial, mental-model boundaries."*
*— Donella Meadows, Thinking in Systems*

## *Sketch the Situation*

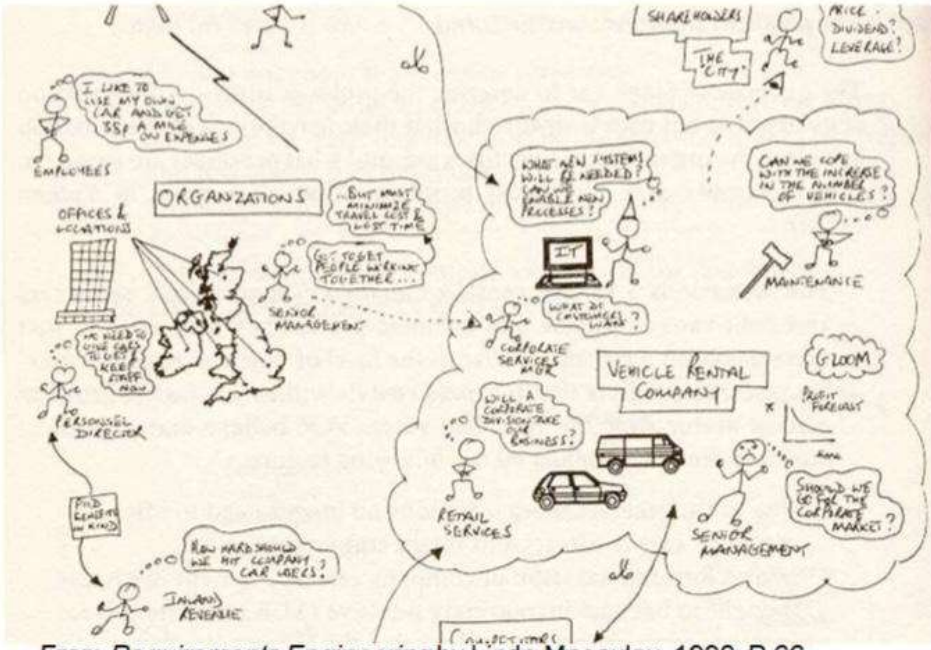
Continue exploring the situation you described. Draw the situation, using words and images, but keep it informal and sketchy.

The situation sets the general frame (so we aren't bringing the whole world into our picture).

I like *Rich Pictures* (example alongside) for this: we identify who (people, organizations, systems in the landscape of this frame) is involved in this situation, how they interact, (annotating to add what their purpose and role is as it relates to this situation, what they care about, their concerns, and so forth). Stick figures and block buildings are fine! The key is to have fun.

Add interactions among them to your sketch (using arrows), and annotate with their concerns (thought bubbles).

Continue adding to your picture, using judgment not to over-clutter, but to draw in people, groups, organizations, systems and their interactions and roles and concerns, as they seem significant to you, to understand the situation.



From *Requirements Engineering* by Linda Macaulay, 1996. P.66

*"Rich pictures are situation summaries. They attempt to encapsulate the real situation through a no holds barred, cartoon representation of things that you perceive in the situation - objects, layout, connections, relationships, influences, cause and effect, structures, processes, issues, arguments, and so on. They should also, as far as possible, depict subjective elements, such as character and characteristics, the different points of view, prejudices, and spirit of those involved"*

*— open.edu*

*"Listen to the wisdom of the system."*

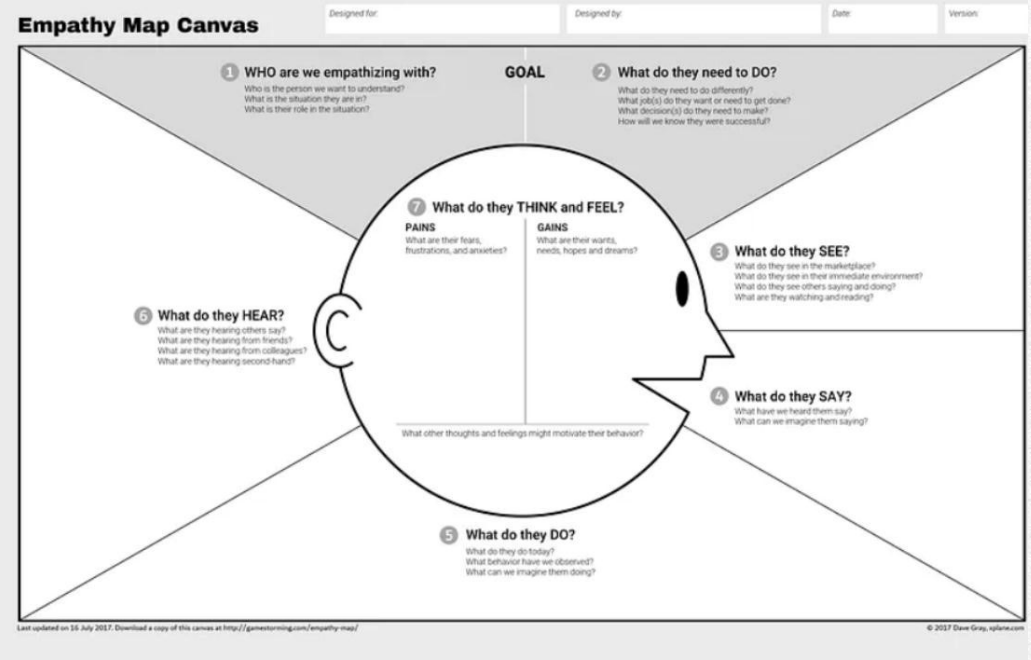
*— Donella Meadows*

*'And so I cry sometimes when I'm lying in bed*
*Just to get it all out, what's in my head*
*And I, I am feeling a little peculiar*
*And so I wake in the morning and I step outside*
*And I take a deep breath and I get real high*
*And I scream from the top of my lungs*
*"What's going on?"'*

*— 4 Non Blondes, "What's Up" lyrics*

## *Practice Empathy*

Pick one of the people in your situation sketch (*Rich Picture*, if you did that in the previous activity), and explore their experience of this situation, using an Empathy Map (see instructions on the image.)




Empathy Map Template, by Dave Gray,
https://medium.com/@davegray/updated-empathy-map-canvas-46df22df3c8a

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*"We suffer from Spatial Blindness.*
*We see our part of the system*
*but not the whole;*
*we see what is happening with us*
*but not what is happening elsewhere;*
*we don't see what others' worlds are like,*
*the issues they are dealing with,*
*the stresses they are experiencing;*
*we don't see how our world impacts theirs*
*and how theirs impacts ours;*
*we don't see how all the parts influence one another."*

*— Barry Oshry, Seeing Systems*

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*"Get the beat.*
*Before you disturb the system in any way, watch how it behaves. If it's a piece of music or a whitewater rapid or a fluctuation in a commodity price, study its beat. If it's a social system, watch it work"*

*— Donella Meadows, Dancing With Systems, https://donellameadows.org/archives/dancing-with-systems/*

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## *Circle of Cares and Concerns*

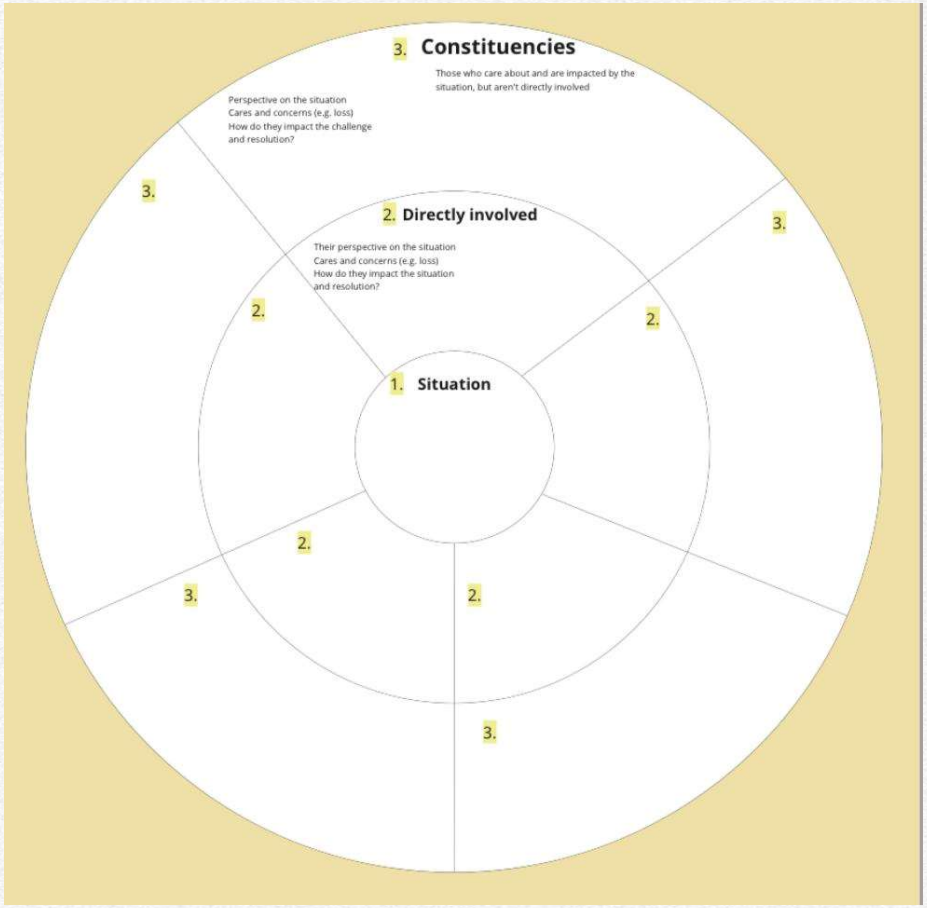
Explore the concerns and orientations of various people or groups ("stakeholders") who impact, and are impacted by, this situation you're exploring.

The template gives some structure to this exploration.

1. Put the situation at the center.

2. Identify stakeholders who are directly involved, and why and how they care about the situation, and impact its unfolding. (There are 5 areas for stakeholders, but add space for other stakeholders if needed.) Describe their perspective on the situation (how they see/understand it, and orient to it). Identify their cares and concerns as they relate to the situation, and how they impact it.

3. Move out a level to who else cares, and consider how they are related to (and influence) directly involved stakeholders. What are their cares and concerns (as relevant to the situation)?




This is about developing our awareness and understanding of others' concerns — a decentering of ourselves, without ignoring our concerns and views. We're taking inspiration from Jabe Bloom, as one does, and we need to expand the circle beyond people too.

Source: Jabe Bloom https://twitter.com/cyetain/status/855420176577290244

*"Conflict situations are situations where you face conflicting values and where you don't have a technical problem to solve, because you must make the values consistent before you can solve such a problem."*

*— Donald A Schön at Iowa State University*

Source: https://hiredthought.com/2021/02/24/donald-a-schon-at-iowa-state-university-talk-transcript/

## *Intermezzo: Sensemaking and Framing*

*"In a situation of uncertainty. The problem that you face is the problem of constructing a problem because you don't know what the problem is. And the problem of constructing a problem is not a technical problem. In fact, the opposite is true, you have to construct the problem before you can carry out any technical activity."*

*— Donald A Schön at Iowa State University**

*"John Dewey (1930) [..] challenged this notion and argued that decision makers have to extract problems from the situations in which they find themselves. They do so, he said, by analyzing the situation. Hence problems are products of thought acting on environments; they are elements of problematic situations that are abstracted from these situations by analysis. What we experience, therefore, are problematic situations, not problems, which, [..] are conceptual constructs"*

*— Russ Ackoff*

*"A solution is a thing you make (an output) and knowing the problem is solved is its effect (an outcome). You need to understand what outcomes you want before you develop the outputs."*

*— Pavel A Samsonov*

* Source: https://hiredthought.com/2021/02/24/donald-a-schon-at-iowa-state-university-talk-transcript/

*"The richer this context, the more chance that fruitful avenues can be found to move forward."*

*— Kees Dorst, Frame Innovation: Create New Thinking by Design*

*'Sensemaking is the ability or attempt to make sense of an ambiguous situation. More exactly, sensemaking is the process of creating situational awareness and understanding in situations of high complexity or uncertainty in order to make decisions. It is "a motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively."'*

*— Gary Klein, Brian Moon and Robert Hoffman, Making Sense of Sensemaking*

*"understanding of complex systems is distributed"*

*— Chris McDermott*

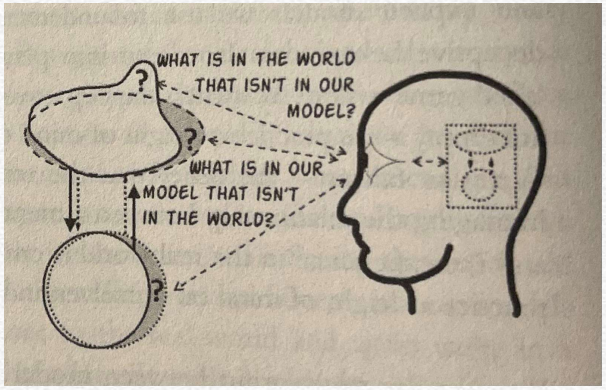



Illustration Source: "The Grammar of Systems" by Patrick Hoverstadt

## *Narrative History: Unwinding Threads*

*Pick up a thread in the situation* (in your verbal or visual narrative, or in your experience of it), and write a few paragraphs exploring how it came to.

What were the various paths of influence and unfolding? What are some stories of the history that you were there for, or have heard others tell? While you have time (in the 15-20 minute window), pick up other threads and explore those and notice interconnections.

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*'Realized that the word "context" is shorthand for the cumulative effect of all the past decisions that we cannot change now. Decisions about what business we're in, which clients we serve, what compromises we made, where we've invested time and effort, and where we didn't. All of it adds up.*

*And here and now we are deciding things that will become tomorrow's context.'*

*— Elisabeth Hendrickson*

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*"Complex systems have a history. Not only do they evolve through time, but their past is co-responsible for their present behaviour. Any analysis of a complex system that ignores the dimension of time is incomplete"*

*— Paul Cilliers, Complexity and Postmodernism: Understanding Complex Systems*

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*"An important aspect of complex systems, one which certainly complicates our understanding and modeling of such systems, is their temporal nature. Complex systems unfold in time, they have a history which co-determines present behavior and they anticipate the future. [..] as we know at least since the work of Prigogine, the behavior of complex systems are not symmetrical in time. They have a past and a future which are not interchangeable"*

*— Paul Cilliers, On the Importance of a Certain Slowness*

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*"The more I look around, the more the engineering world, once you go back more than a few years, looks like subterranean New York City. A mass of strange engineering feats humming away out of sight, produced by long-forgotten ancient peoples, leaving only fragmentary maps and diagrams."*

*— an engineer, Institutional memory and reverse smuggling**

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* Preserved by Rob Landley, https://landley.net/history/mirror/institutional_memory.html

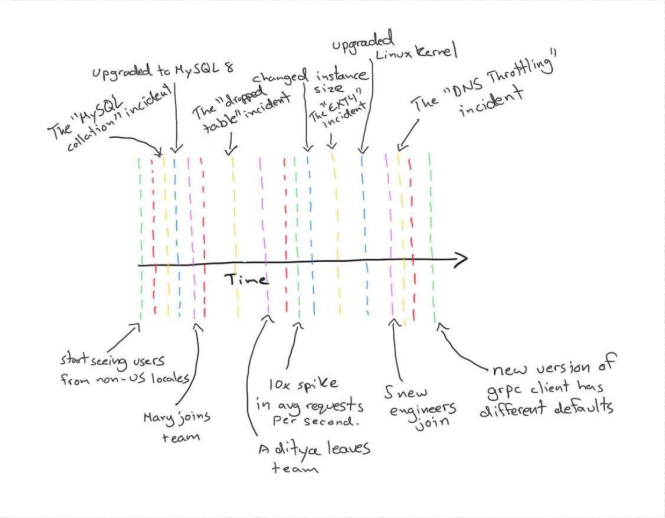
## *Graphical History: How We Got Here*

Continue exploring the history, but with a visual "lens" — in particular, draw the unfolding over time, identifying major events and their rippling consequences. Consider going back (somewhat) further than you think is "the beginning."

Place key events (changes in the landscape such as competitor entry, new technology; project start and product launch; scale points, major incidents, etc), people/org changes (changes in senior or influential people and teams, etc), strategic shifts, etc, on the timeline.

Some places to go for ideas:

- this post by Paul Osman (source of image below; draw a timeline with deploy markers, changes to infrastructure, user behavior, and team changes): https://paulosman.me/2021/10/02/sociotechnical-lenses-into-software-systems/




- the layout from the Graphic History template in David Sibbet's books, and The Grove: https://grovetools-inc.com/collections/graphic-history

Yes, this is great to do with others, but good to do alone too — to learn from doing this and to gain confidence that we do learn from doing this! And to notice that we've only seen part of the history... and have...questions...

Go back in time, but perhaps not quite this far: xkcd.com/1732/
More to inspire (with awe and wonder):
https://xkcd.com/657/
http://www.radicalcartography.net/index.html?fisk

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*"The significance of a new invention lies in how it fits into and changes this network. Many innovations are minor — they simply improve some aspect of the network without altering its structure. The automatic trans-mission made automobiles easier to use, but did not change their role. Other inventions, such as the computer, are radical innovations that cannot be understood in terms of the previously existing network. As the use of a new technology changes human practices, our ways of speaking about that technology change our language and our understanding. This new way of speaking in turn creates changes in the world we construct."*

*"Design serves simultaneously to bring forth and to transform the objects, relations, and regularities of the world of our concerns"*

*— Terry Winograd and Fernando Flores*

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*We're not just exploring how the situation has evolved through time, but the co-evolution:*
*"Take a situation made by credit conditions, customers' demand, output facilities, and workers' attitude. They all together make a certain situation, but they constitute that situation through their relation to one another. If you change one, usually some, if not all, of the others are changed."*

*— Mary Parker Follett, The Illusion of Final Authority*

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## *Intermezzo: Some Notes on History*

*"Since a system's prior experience constrains its behavior, that history, too, is embodied in its ontogenetic landscape."*

*— Alicia Juarrero, Dynamics in Action*

*"The changed texture of the environment was not recognized by an able but traditional management until it was too late. They failed entirely to appreciate that a number of outside events were becoming connected with each other in a way that was leading up to irreversible general change."*

*— Fred Emery and Eric Trist, The Causal Texture of Organizational Environments,*

*'let us say, for the sake of simplicity, a fence or gate erected across a road. The more modern type of reformer goes gaily up to it and says, "I don't see the use of this; let us clear it away." To which the more intelligent type of reformer will do well to answer: "If you don't see the use of it, I certainly won't let you clear it away. Go away and think. Then, when you can come back and tell me that you do see the use of it, I may allow you to destroy it."'*

*— G. K. Chesterton, The Thing*

*"We suffer from Temporal Blindness.*
*We see the present*
*but not the past;*
*we know what we are experiencing now*
*but not what has led to these experiences;*
*[..]*
*All of this we experience in the present*
*but we don't see the history of the present,*
*the story of our system that has brought us to this point in time.*
*In our temporal blindness,*
*we misdiagnose the current situation,*
*and in our efforts to solve system problems*
*we fix what doesn't need to be fixed*
*and fail to fix what does*

*— Barry Oshry, Seeing Systems*

*'Listen to the wisdom of the system.*
*Aid and encourage the forces and structures that help the system run itself. Don't be an unthinking intervener and destroy the system's own self-maintenance capacities. Before you charge in to make things better, pay attention to the value of what's already there."*

*— Donella Meadows, Dancing with Systems, https://donellameadows.org/archives/dancing-with-systems/*

*Foresight is hindsight looking the other way?*

## *Name the Moves*

1. Look back over the work we have done so far, and name the system seeing moves (or habits or practices) we have used so far. For example,

    Day 1, Draw a Bicycle: Part-Whole

    Day 7, Context Scan: Zoom Out

This is more to see patterns, than to be "right" about the naming.

2. What would be most helpful to do next? Name your (next system seeing) move (habit, practice, ..).

3. Do that!

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*From Derek and Laura Cabrera:*

- *Is/Is Not Move*
- *Zoom in/Zoom Out Move*
- *Part Party! Move*
- *RDS (Relation, Distinction, System) Barbell Move*
- *P-Circle Move (Perspective Circle)*

*And earlier work: Derek Cabrera's "patterns of thinking" (Wikipedia, DSRP):*

*"Making **D**istinctions – which consist of an identity and an other*

*Organizing **S**ystems – which consist of part and whole*

*Recognizing **R**elationships – which consist of action and reaction*

*Taking **P**erspectives – which consist of point and view"*

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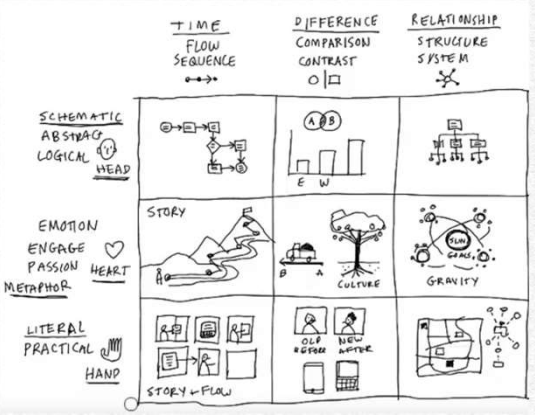


Dave Gray's "How to draw" framework is also a set of useful distinctions

Source: https://www.youtube.com/watch?v=K8stNyqp6ts

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*"The way a question is asked limits and disposes the ways in which any answer to it [..] may be given."*

*"the questions make the frame [..]They make more than the frame; they give the angle of perspective, the palette, the style"*

*"Such assumptions appear so obvious that people do not know what they are assuming because no other way of putting things has ever occurred to them. With these assumptions a certain limited number of types of [..] systems are possible"*

*—Susanne Langer, Philosophy in a New Key*

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*"Thought happens not only inside the skull but out in the world, too; it's an act of continuous assembly and reassembly that draws on resources external to the brain. For another: the kinds of materials available to "think with" affect the nature and quality of the thought that can be produced."*

*—Annie Murphy Paul*

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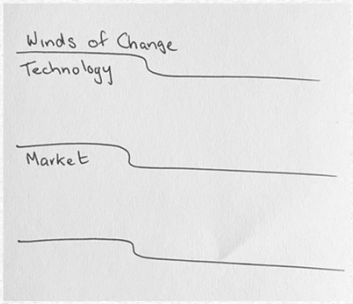
## *What's Changing?*

Draw out what is bringing change to this space (your focal situation that you are exploring).

Two ideas to do this: Winds of Change or Change Radar.

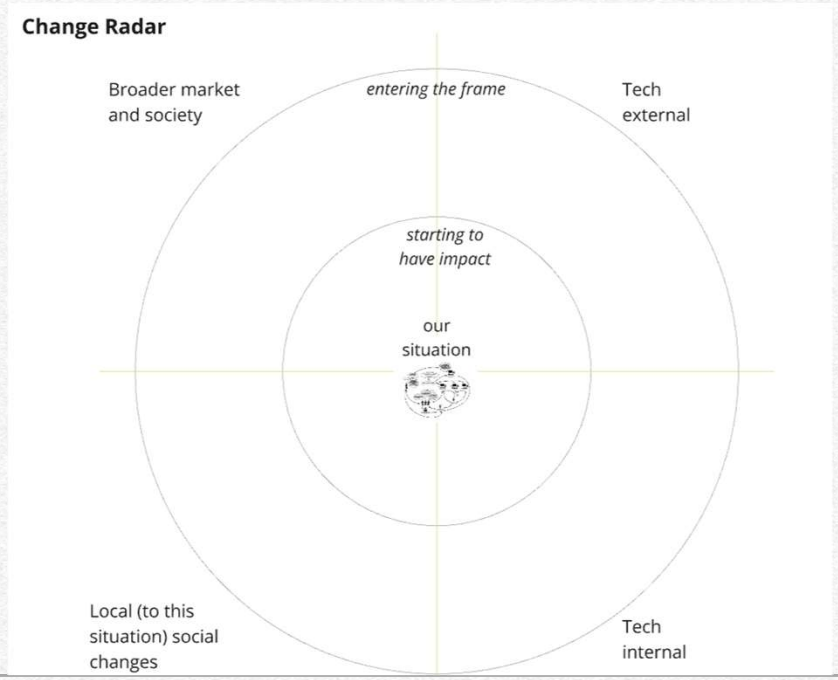
Winds of Change:




- Identify market and societal changes that are relevant to this situation
- Identify technology changes that could impact this situation

Change Radar:

- Explore changes in social:market context, on the one hand, and technology changes on the other. Distinguish between changes that are just entering our field of view, and those that are already having impact. Also distinguish broad societal changes (eg climate uncertainty) and local (to our situation) changes (eg team changes). Notice good changes and opportunities, but also possible threats.




*"I didn't make up the problems," I pointed out. 'All I did was look around at the problems we're neglecting now and give them about 30 years to grow into full-fledged disasters.'*
*— Octavia Butler, A Few Rules For Predicting The Future by Octavia E. Butler, May 2000*

*"the kind of insight which is also foresight is essential to leadership. This doesn't mean that only the president needs it. Foresight is necessary for foreman or head of department; the only difference is that in their case the range about which foresight is necessary is narrower. But no leader of however small a group can forget, without disastrous consequences, that the activities of each group have to be fitted into a whole which is constantly changing"*
*— Mary Follett, Dynamic Administration*

*"By flying to these heights, swifts [..] can also use the wind itself to assess the possible future courses of these systems. What they are doing is forecasting the weather"*
*— Helen Macdonald*

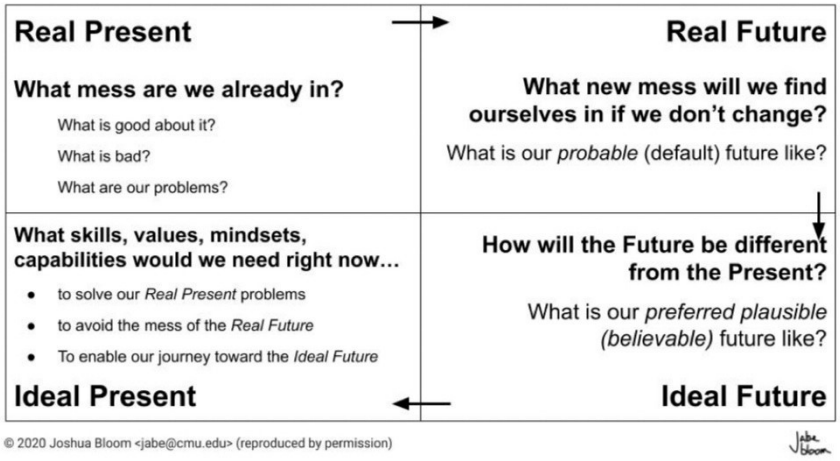
*"You have to apply what you discover. That is the way that you reach out and snatch a bit of the future and bring it back to the present: You grab it and use it." — Douglas Engelbart*

*"The future is already here — it's just not evenly distributed yet." — William Gibson*
*https://quoteinvestigator.com/2012/01/24/future-has-arrived/*

## *What if you do nothing?*

Divide the page into 2 columns. In the 1st (headed Current Situation): Jot down characteristics of the current state of things (around your situation/challenge from day 1), and in the 2nd column (headed Default Future Situation): what is likely, if you (your team/org/etc.) do nothing different (the default). What's good, that likely remains true? What does inertia and entropy and trends suggest is likely?

You might notice, if you are familiar with Jabe Bloom's *Ideal Present Canvas*, that we are doing the top row of the canvas. Continue to your preferred future, as time permits.




The Ideal Present Canvas

*"Reality leaves a lot to the imagination."*
*~ John Lennon (apocryphal?)*

*"The fundamental job of the imagination in ordinary life, then, is to produce, out of the society we have to live in, a vision of the society we want to live in."*
*— Northrop Frye*

*"past (the time of memory), present (the time of conscious awareness), and future (the time of anticipation)"*
*— David Scott, Omens of Adversity: Tragedy, Time, Memory, Justice*

*"Knowing what to keep is just as important as knowing what to change."*
*— Esther Derby*

*"Alicia Juarerro reminded us of the importance of time in complex systems. She highlighted the difference between Chronos (chronological or sequential) and Kairos (opportune) time. Chronological time is agnostic of context as it inexorably moves along. Kairos time, defined as right, critical, or opportune moments, is inherently linked to context. For each unique context, there will be unique Kairos moments."*
*— Sonja Blignaut, Flowing Through Time*

## *Co-Evolution*

*"Design involves assumptions about the future of the object designed, and the more that future resembles the past the more accurate the assumptions are likely to be. But designed objects themselves change the future into which they will age."*

*— Petroski, To Engineer is Human*

*"the Law of Stretched Systems:*
*every system is stretched to operate at its capacity; as soon as there is some improvement, for example in the form of new technology, it will be exploited to achieve a new intensity and tempo of activity."*

*— David Woods and Sidney Dekker, Anticipating the Effects of technological change, 2000*

*"resilience is about what a system can do—including its capacity:*
*• to anticipate—seeing developing signs of trouble ahead to begin to adapt early and reduce the risk of decompensation*
*• to synchronize—adjusting how different roles at different levels coordinate their activities to keep pace with tempo of events and reduce the risk of working at cross purposes [.]*
*• to respond—developing deployable and mobilizable response capabilities in advance of surprises"*

*— David Woods, Resilience is a Verb*

*"we should remember that we can never wholly separate the human and the mechanical problem. This would seem too obvious to mention if we did not so often see that separation made. [..] The engineering part of transportation is not the larger part. Please note that I do not say it is a small part. It is a large part, and it is the dramatic part, and it is the part we have done well, and yet the chief part of transportation is the personal things"*

*— Mary Parker Follett, Dynamic Administration*

*"We can never understand the total situation without taking into account the evolving situation. And when a situation changes we have not a new variation under the old fact, but a new fact."*

*— Mary Parker Follett, Creative Experience, 1924*

*"in the ways in which designers design, the ways in which design is ontological, even at a human product scale, because it creates worlds, habits, dispositions. A designer is never [..] just designing a product: they are reinforcing particular models of the human"*

*— Cameron Tonkinwise*

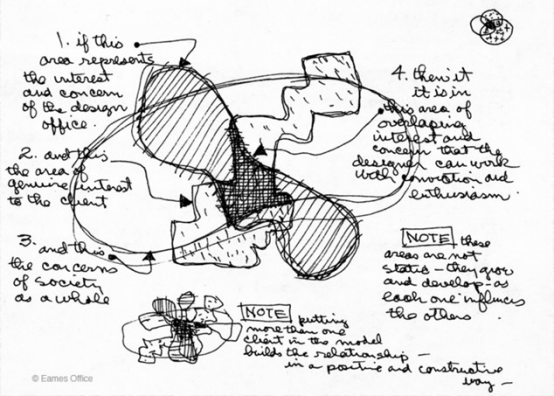
## *Systems and Boundaries*

Again, considering the situation you're exploring: *identify systems. List them, or draw them interacting in ecologies of systems.*

Some things to think about: what larger systems are the systems we name, part of? This is about noticing systems (so boundaries), and relationships (and the nature of those relationships) among systems.

For example, patient onboarding is part of an Urgent Care system and Urgent Care is part of the regional healthcare system (which is part of the social infrastructure of the region, along with education, city services like sanitation, etc.?). Any software system we're design-evolving, is part of the sociotechnical system developing it, as well as the system-in-use by users, and their larger system of work or other parts of life.

How far out do we zoom? What heuristics do you use?




Design contexts diagram (from Ray and Charles Eames) is used here to *suggest* rough sketch and overlaps, etc.

*"There are no separate systems. The world is a continuum. Where to draw a boundary around a system depends on the purpose of the discussion." [..] "They mark the boundary of the system diagram. They rarely mark a real boundary, because systems rarely have real boundaries. Everything, as they say, is connected to everything else, and not neatly."*

*Donella Meadows, Thinking in Systems*

*"In order to be recognisable as such, a system must be bounded in some way. However, as soon as one tries to be specific about the boundaries of a system, a number of difficulties become apparent. For example, it seems uncontroversial to claim that one has to be able to recognise what belongs to a specific system, and what does not. But complex systems are open systems where the relationships amongst the components of the system are usually more important than the components themselves. Since there are also relationships with the environment, specifying clearly where a boundary could be, is not obvious."*

*— Paul Cilliers, Boundaries, Hierarchies and Networks in Complex Systems*

*"Boundaries are simultaneously a function of the activity of the system itself, and a product of the strategy of description involved. In other words, we frame the system by describing it in a certain way (for a certain reason), but we are constrained in where the frame can be drawn."*

*— Paul Cilliers, Knowledge, limits and boundaries*

*"All social systems, and thus all living systems, create, maintain, and degrade their own boundaries. These boundaries do not separate but intimately connect the system with its environment. They do not have to be just physical or topological, but are primarily functional, behavioral, and communicational. They are not 'perimeters' but functional constitutive components of a given system."*

*— Milan Zeleny, On The Social Nature Of Autopoietic Systems (In Evolution, Order and Complexity)*

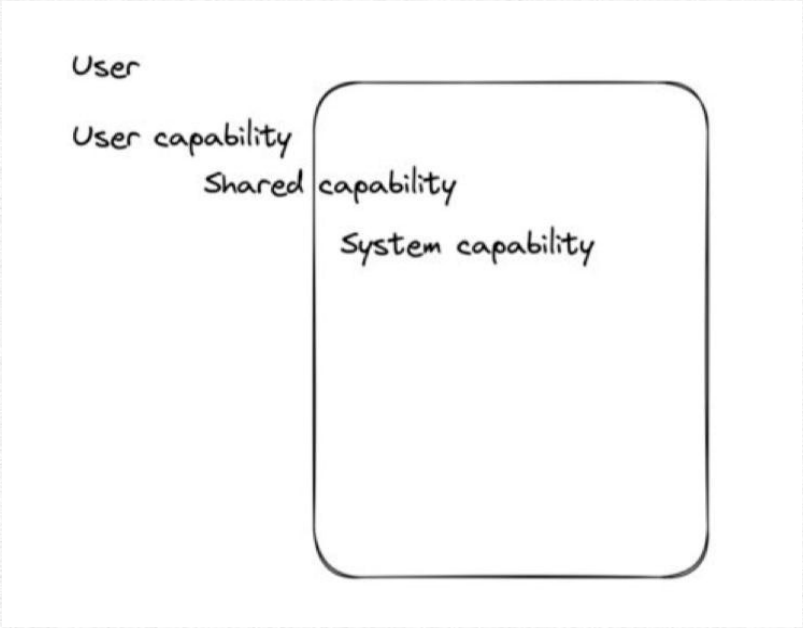
## *System Purpose and Capabilities*

Consider a (socio)technical system of interest. What is its primary purpose (or defining identity). Explore the capabilities it offers, shares, and relies on, to fulfill this purpose.

One way to do this: draw a box to represent the (technical:software, etc.) system. Put users interacting with the system on the outside (on the left, like a use case diagram) and other systems this system interacts with on the outside (right). Put capabilities shared by user and system, or system and other systems, across the boundary; capabilities provided by the system inside the boundary; capabilities of users (not taken and shared by the technical system) outside the boundary.

The idea is to draw out and explore how capabilities are being created, and moved across boundaries, and raise the need for other (new/altered) capabilities (you might find yourself needing to add other actors like operators)⋯

If you're exploring, say, a highly social situation not supported by tech, do something similar to explore capabilities of a focal system, and the collaboration across boundaries.




*"As we design a system, we need to consider that it will reshape contexts — whether we take this into account or not, we're reshaping containing/collaborating systems. So we ought to take it into account! In use, the system takes on capabilities on behalf of users, and extends or augments their capabilities in some way; it places demands on them, while offering something in turn. It changes supply chains and value flows."*

*https://www.bredemeyer.com/howto.htm*

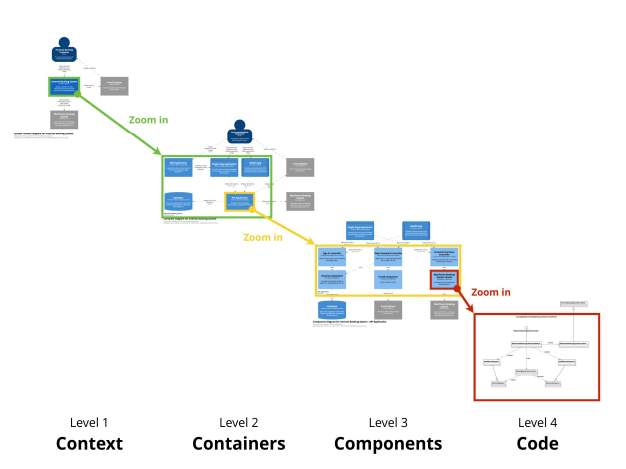
*"System design is contextual design — it is inherently about boundaries (what's in, what's out, what spans, what moves between), and about tradeoffs. It reshapes what is outside, just as it shapes what is inside."*

## *System Structure: moving inwards*

For the system of focal interest to you, sketch its significant constituent structures (named components or parts for a technical system, or teams and other groupings for a social system; add a few words about each part's role in the system,⋯), and interrelationships — that is, draw boxes and lines or nodes and connectors. For areas of the system that are fuzzy (more distant from the parts of the system you understand), write down some questions and notice over the next week, if you're discovering more about those areas of the system.

If you haven't seen it (in a while), Ray and Charles Eames *Powers of Ten* (short) (1977) film is worth a watch: First it goes out in powers of ten to see wider and wider context, and then it reverses direction (around minute 5:54) and goes inwards. It's dated, but still very cool. Here: https://m.youtube.com/watch?v=0fKBhvDjuy0

This may recall to mind Simon Brown's C4: Context, Containers, Components, and Code, (see image below, from https://c4model.com/). "[C4 is] a way to create maps of your code, at various levels of detail, in the same way you would use something like Google Maps to zoom in and out of an area you are interested in."

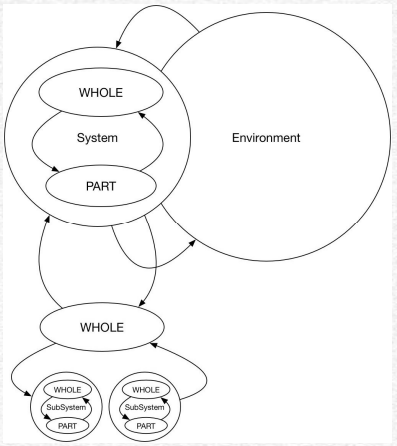



*"I have been saying that the whole is determined not only by its constituents, but by their relation to one another. I now say that the whole is determined also by the relation of whole and parts."*

*— Mary Parker Follett, Dynamic Administration*

*Jabe Bloom ( @cyetain ) referencing and illustrating Alicia Juarrero:*

*"(Explanatory primacy) moves up & down levels, from wholes to parts, from inside to outside and vice versa"*




*Source: Jabe Bloom, https://twitter.com/cyetain/status/904800025*

## *Walk a Story through the System*

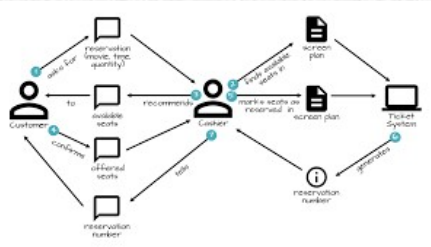
*Pick a capability and explore how that capability is co-created by parts of the system.*

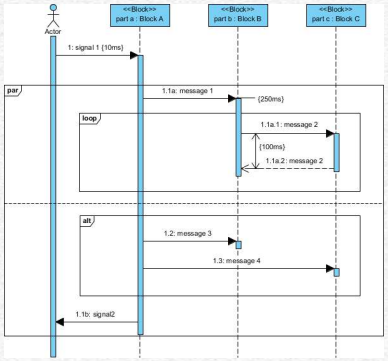
If you are exploring a social system (and, say, the work flows to build a service), you might like to use an informal diagram, Rich Picture or Domain Story, Activity Diagram, Journey Map, etc.. For a software system, Sequence Diagrams are great for exploring interactions among components.

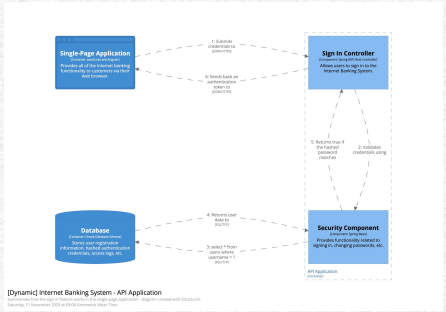
Images:
Domain Story from https://domainstorytelling.org/quick-start-guide

Sequence Diagram from: https://www.visual-paradigm.com/guide/sysml/modeling-scenarios-with-sequence-diagram/

Dynamic Diagram from: https://c4model.com/




*"Since the nature of a complex organization is determined by the interaction between its members, relationships are fundamental. [..]The point is merely that things happen during interaction, not in isolation."*

*— Paul Cilliers*

*"The necessity to sketch arises from the need to foresee the results of the synthesis or manipulation of objects without actually executing such operations. The use of words, pictures or models to stand for objects, scenes or events not physically present enormously increases the mind's ability to visualise."*

*— Jonathan Fish, Amplifying the Mind's Eye: Sketching and Visual Cognition*

## *Finding Dragons and Elephants*

Look over your situation map (Day 8; p 15) or Systems Map (Day 16; p 26) for "here be dragons" (they might be friendly dragons, once we understand them) and here be "elephants" (elephants are things we are avoiding having direct and real conversations about). Describe the dragons (these might be challenges, resistance, etc.) and elephants, and how you orient to them.

This prompt took inspiration from Christian Nold's work (with children) on mapping sensory journeys (note secure) http://sensoryjourneys.net


*"all systems are what emerges over its history of adaptation to stressors"*

*— David Woods*

*"getting people to write down the organizational socio-political context is hard"*

*— Michael McCliment*

*"The lack of corrective feedback which would make their models more true is a feature, not a bug"*

*— Shauna Gordon-McKeon*

## *I Have a Theory About This!*

Pick some area of this situation you want to explore in terms of your "working theory." *Describe your theory (a system of ideas about what matters, and what's going on, and explanations), using diagrams and words.*

We're getting our understandings of what matters, and how we're approaching what matters, out where we can see them and interact with them, to probe and test our theory.

Alternately put, we're forming mental models of the situation and system, and how these mutually interact and influence.

Mental models may be connecting in your mind — to Richard Cook's diagram in the STELLA report? (Here: https://snafucatchers.github.io/) In particular, the "above the line/below the line" diagram and (David Woods') description.

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*"a person who has or possesses a theory in this sense knows how to do certain things and in addition can support the actual doing with explanations, justifications, and answers to queries, about the activity of concern."*

*"what has to be built by the programmer is a theory of how certain affairs of the world will be handled by, or supported by, a computer program."*

*— Peter Naur, Programming as Theory Building, 1985*

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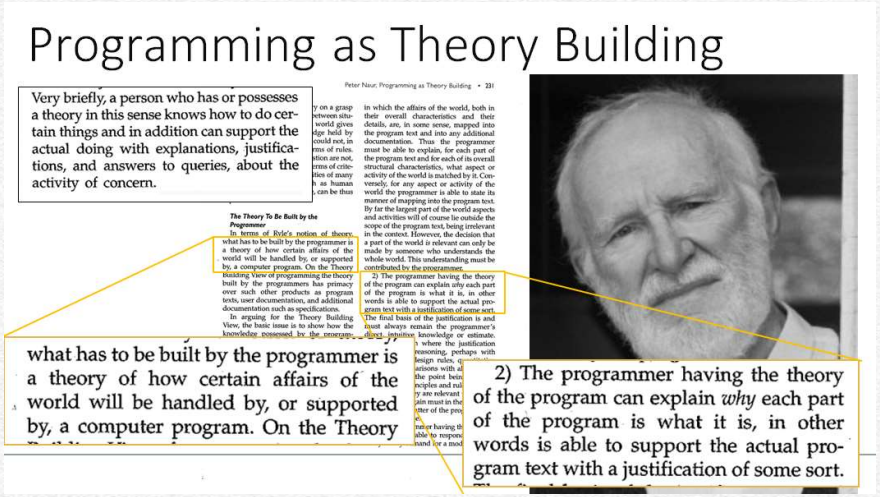


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*'A key here is to run multiple simultaneous probes… this is a special property of abductive rationality… you can have multiple equally "good" guesses about the nature of a system.'*

*— Jabe Bloom*

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*"people got their opinions*
*where do they come from?*
*each day seems like a natural fact*
*and what we think changes how we act."*

*— Why Theory?*
*Gang of Four lyrics*

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## *Constraints and Forces*

Identify an area (in your situation) where you want to *do something* (nontrivial) and want to explore further what you'll encounter and what it will take.

One way to do this, is with a "mind map" that lends itself to starting with some structure, and amending as needed.

Start with a brief characterization of the problem you're focusing on here. Explore the constraints you (your team, org, etc.) will need to be aware of and work under.

Identify forces (e.g., points of resistance but also goals and other attractors, time and cost pressures if not already identified as constraints, etc.).

Identify several approaches to resolving/addressing the problem (including “do nothing”), and explore how well they do (or don’t) address the forces, and fit within the constraints.

Add assumptions as you surface/discover them.

Yes, we’re surfacing trade-offs. And⋯ Discovering what we are trading off, is messy. Hard (difficult, organizationally/socio-politically, and technically). Work. True — it’s good to do this work collaboratively. And it’s good to leverage the kind of thinking we do alone — with the page and pen(cil) (or whatever). Collaboratively, to get other perspectives, and build common ground. Alone, to probe what we think and value.

## *Consequence Scanning*

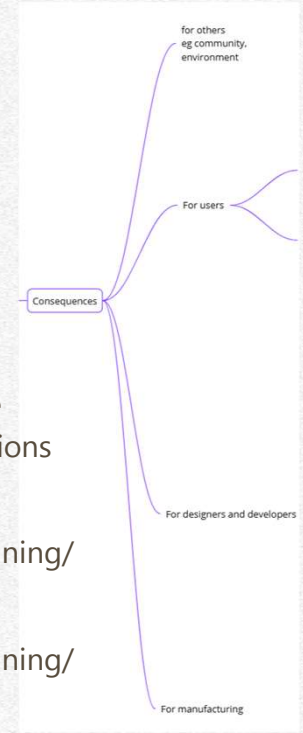
Given your exploration in the previous exercise, what action/approach are you considering? How will the situation be different? That is, consider the likely consequences (intended and not; direct and indirect effects; positive and negative externalities).

• Who is impacted? If you're using a mindmap, add branches for impacted groups, environment, etc

• From each impacted group, add branches to explore positive and negative consequences, risks and mitigations

See also: Consequence Scanning:
https://doteveryone.org.uk/project/consequence-scanning/

Guidance, case studies, etc.:
https://doteveryone.org.uk/project/consequence-scanning/




*"the wish [or intention] confronts an environment as altered by the wish; the environment confronts a wish as altered by the environment"*

*— Mary Parker Follett, Creative Experience, 1924*

*"Responsible computing is loosely [defined] as designing computing artifacts that need to take society into consideration. Not doing so can lead to harm in society, even if the harm was unintended."*

*—Teaching Responsible Computing Playbook, https://foundation.mozilla.org/en/what-we-fund/awards/teaching-responsible-computing-playbook/*

*"Consequence Scanning [..] is a way for organisations to consider the potential consequences of their product or service on people, communities and the planet. This practice is an innovation tool that also provides an opportunity to mitigate or address potential harms or disasters before they happen."*

*— doteveryone*

*Decisions have different timespans until we see their effects (there are differences in the timespan of feedback loops).*

*John Cutler made a related point:*
*"One (of many) ways to think of product work is to imagine a series of interlocking and related sense and respond orbits....it is all happening NOW, but the orbits range in terms of length...*

*Companies are built in 1-3 decade bets*

*Someone comes to work and places a 1-3h bet"*
*https://twitter.com/johncutlefish/stat*


Watterson, Bill. *There's Treasure Everywhere: A Calvin and Hobbes Collection*. Kansas City Andrews and McMeel, 1996. Print.

## *Care and Repair*

"What we really need to study is how the world gets put back together." — Shannon Mattern

Find where repair is happening in this situation you're exploring, and draw it out, to understand and appreciate and learn from it.

Again, we're encouraging each other to literally draw, creating visual narrative to support seeing repair interactions and mechanisms, but also allowing ourselves the freedom, and discipline, of adding text narrative.

There is hope in the work we do, to sustain and maintain and mend.

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*"Steven Jackson's now-classic essay "Rethinking Repair," written in the before-time — way back in 2014 — proposes that we "take erosion, breakdown, and decay, rather than novelty, growth, and progress, as our starting points" in considering relations between society and technology. His sober exercise in "broken world thinking" is matched with "deep wonder and appreciation for the ongoing activities by which stability … is maintained, the subtle arts of repair by which rich and robust lives are sustained against the weight of centrifugal odds."*

*— Shannon Mattern, Maintenance and Care*

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*"[It requires] continuing effort to sustain, extend, and repair common ground."*

*— Richard Cook*

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*"It is only when a breakdown occurs that we become aware of the fact that 'things' in our world exist"*

*— T. Winograd and F. Flores*

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*"The normally invisible quality of working infrastructure becomes visible when it breaks: the server is down, the bridge washes out, there is a power blackout. Even when there are back-up mechanisms or procedures, their existence further highlights the now-visible infrastructure."*

*— Susan Leigh Star, The Ethnography of Infrastructure*

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*" 1. People can have unexpressed ambivalence toward shared understanding, and that makes building it take longer.*
*2. Building shared understanding isn't linear.*
*3. Shared understanding takes a lot of maintaining, and we are both bad at and not incentivized toward maintenance."*

*— Yyvonne Z Lam*

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*"Organizations can decide to notice when people do glue work and to take it as a manifestation of leadership skills, abilities, and interests, just like they can decide learning many programming languages or whatever is a sign of engineering talent."*

*— Yvonne Z Lam*

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## *Noticing "the Left Column"*

*Think of a recent conversation and trace what was said and what happened internally*

We're going to use Argyris and Schon's left column exercise, related to the situation you're exploring, where you think of a difficult or troubling recent conversation and write what you actually said and what the other person said, in the right column, and what you heard (in your mind; interpretations; internal responses) and felt, in the left column.

## *Left hand Column*

Exercise developed by Chris Argyris and Donald Schon:

Pick an important conversation you've recently had, and

- Draw a line down the center of a sheet of paper.
- In the right column reconstruct the conversation to the best of your ability - e.g. I said this, then they said this, then I said this etc.
- In the left column jot down what you were thinking and feeling at the moment that each thing was being said.
- Review both columns. Are there differences between your external dialogue and internal thoughts and feelings?
- If so, how can you begin to productively raise some of your left hand column thoughts?

| What I Thought | What Was Said |
|---|---|
| | |

*"In every collaborative modelling session YOU are part of the model: your biases will affect the flow and the outcome too. Better be aware of yours"*

*— Alberto Brandolini*

*"The propensity among professionals to behave defensively helps shed light on the 2nd mistake that companies make about learning. The common assumption is that getting people to learn is largely a matter of motivation [..]*
*But effective double-loop learning is not simply a function of how people feel. It is a reflection of how they think—that is, the cognitive rules or reasoning they use"*
*"What happened? The professionals began to feel embarrassed. They were threatened by the prospect of critically examining their own role in the organization. [..]*
*Far from being a catalyst for real change, such feelings caused most to react defensively. They projected the blame for any problems away from themselves and onto what they said were unclear goals, insensitive and unfair leaders, and stupid clients."*

*— Chris Argyris, "Teaching Smart People How to Learn"*
*https://hbr.org/1991/05/teaching-smart*

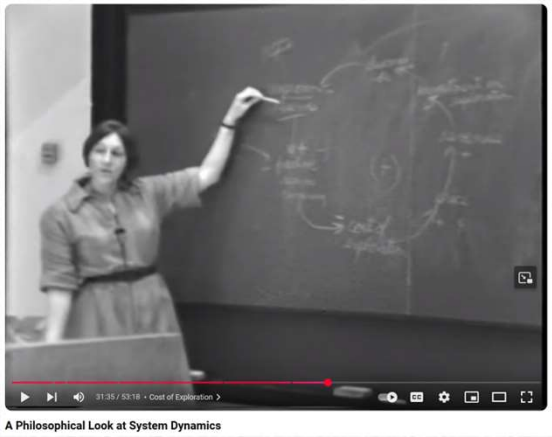
*'Rick Ross notes: "You can't live your life without adding meaning or drawing conclusions. It would be an inefficient, tedious way to live. But you can improve your communications…by using the ladder of inference in three ways:*
*Becoming more aware of your thinking and reasoning (reflection);*
*Making your thinking and reasoning more visible to others (advocacy);*
*Inquiring into others' thinking and reasoning (inquiry).'"*

*— Ed Bastista, Racing up the ladder of inference*

## *Donella Meadows and System Dynamics*

Take sketch notes as you watch Donella Meadows' (1977 — it's a classic!) lecture on causal loop diagrams; the whole lecture is great, but to keep to 15 minutes, start at minute 18:59  (And stop after 15 to 20 minutes.)

Donella Meadows: A Philosophical Look at System Dynamics, https://m.youtube.com/watch?v=XL_lOoomRTA&t=1139s



A Philosophical Look at System Dynamics

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*Nicky Case (creator of Loopy) on Seeing Whole Systems: https://longnow.org/seminars/02017/aug/07/seeing-whole-systems/*
*"Using examples and stories such as the viciousness of the board game Monopoly and the miracle of self-organizing starlings, Case laid out the visual basics of finessing complex systems. A reinforcing loop is like a ball on the top of a hill, ready to accelerate downhill when set in motion. A balancing loop is like a ball in a valley, always returning to the bottom of the valley when perturbed."*

*— Stewart Brand*

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*"We have also come to realize that no problem ever exists in complete isolation. Every problem interacts with other problems and is therefore part of a set of interrelated problems, a system of problems"*

*"English does not contain a suitable word for "system of problems. Therefore, have had to coin one. I choose to call such a system a **mess**."*

*— Russell L. Ackoff, Redesigning the future, 1974*

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*And more Meadows:*
*"What we try to do, is build a model that makes our mental understanding of the system, so much better [..]That is, what we are really trying to do, is increase our intuition, our understanding"*

*https://m.youtube.com/watch?v=f9g4-5-GKBc&feature=youtu.be*

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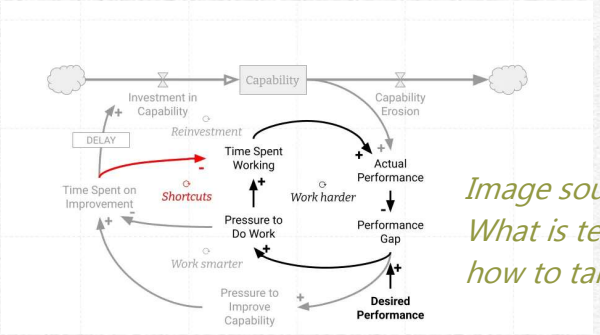


*Image source: Xavier Briand, What is technical debt? And how to talk about it?*

## *Explore dynamics (with causal loop diagrams)*

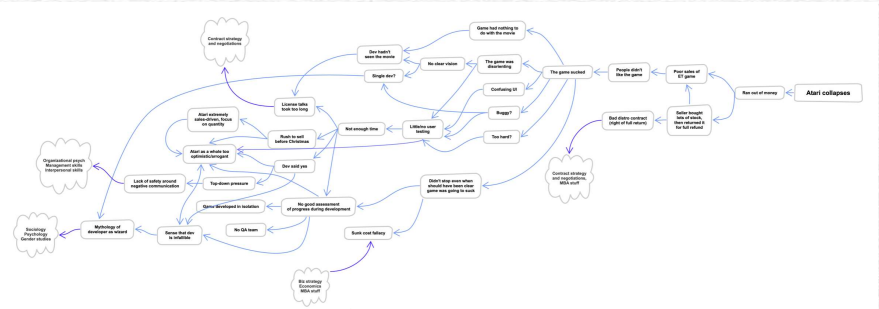
Follow up on yesterday's Donella Meadows lecture, with some practice: Explore the dynamics (and feedback loops), in some part of the situation you're exploring with a causal loop diagram (CLD).

If you haven't done CLDs before, the more important thing is to give it a try. Once you get going, then worry about getting the model more correct, and some guidance is helpful. This might help with that: "Fine-Tuning Your Causal Loop Diagrams — Part I", by John Sterman, https://thesystemsthinker.com/fine-tuning-your-causal-loop-diagrams-part-i/

Alternatively, use an influence diagram like @johncutlefish (John Cutler's) WIP diagram (or at least give it a look over, for ideas from our product/software dev contexts): https://mobile.twitter.com/johncutlefish/status/1544719466507907072 John talks through it here: https://www.loom.com/share/5efceb288b634a449041918bdba08202

For inspiration! A Causal Loop Diagram — by 11 year olds early in the pandemic (April 2020): https://twitter.com/KateRaworth/status/1254344048216887296

This (more kids doing CLDs) shows how useful a simple causal loop diagram (CLD) can be: https://m.youtube.com/watch?v=wI03wmG9Ghk




*Or, just pull on threads of "why"; image source: Paul Cantrell, https://hachyderm.io/@inthehands/109378117775642584*

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*"We might have to take an approach inspired by Donna Haraway and [..] see what happens when we grab hold of one thread in the tangle and mess and pull it."*

*— Marisa Leavitt Cohn, Keeping Software Present, https://digitalsts.net/essays/keeping-software-present/*

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*The environment changes the system; the system changes the environment (immediate/task and global) — the diagram is from "Self managing management of the self managing organization: an update"*

*by Merrelyn Emery, Self managing management of the self managing organization: an update, 2018*

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*"My response is not to a crystallized product of the past, static for the moment of meeting; *while* I am behaving, the environment is changing because of my behaving, and my behavior is a response to the new situation which I, in part, have created."*

*— Mary Parker Follett, Creative Experience, 1924*

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*"This takes some disentangling, and time and thought [..]*
*The big problem is this:*
*you are not determining absolute facts;*
*you are establishing a set of conventions.*
*So remember:*
*a model is neither true nor false;*
*it is more or less useful"*
*— Stafford Beer, Diagnosing the System for Organizations, 1985*

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## *Gather Stories*

This situation or system has stories — tales of how it came into being, what shaped it, challenges faced, incidents, ⋯ If you know some of the stories write them down. Or write questions, so you can gather stories from someone who was involved before you. Or, if you're envisioning some initiative, what is the story there? How would you like the story to be told?

*"common ground is what makes joint activity and coordination work (although each joint action, in turn. serves to change common ground)"*
*— Gary Klein, Paul Feltovich, Jeffrey Bradshaw and David Woods*
*Importantly:*
*"requires continuing effort to sustain, extend, and repair common ground."*
*— Richard Cook*

*What stories we tell, matters.*

*"some of us out here in the wild oats, amid the alien corn, think we'd better start telling another one, which maybe people can go on with when the old one's finished. The trouble is, we've all let ourselves become part of the killer story, and so we may get finished along with it. Hence it is with a certain feeling of urgency that I seek the nature, subject, words of the other story, the untold one, the life story"*

*"the Hero has frequently taken it over, that being his imperial nature and uncontrollable impulse, to take everything over and run it while making stern decrees and laws to control his uncontrollable impulse to kill it. [..]*

*I differ with all of this. I would go so far as to say that the natural, proper, fitting shape of the novel might be that of a sack, a bag. A book holds words. Words hold things. They bear meanings. A novel is a medicine bundle, holding things in a [.] powerful relation"*

*— Ursula K. Le Guin, The Carrier Bag Theory of Fiction*

*"We might have to take an approach inspired by Donna Haraway and [..] see what happens when we grab hold of one thread in the tangle and mess and pull it."*

*— Marisa Leavitt Cohn, Keeping Software Present, https://digitalsts.net/essays/keeping-software-present/*

## *Insights and Reflections*

Jot down notes about how your thinking is evolving, and what you are noticing. What questions are emerging, that will help guide your next steps in system seeing/exploring and learning?

What will be useful to explore next, and how?

Or, as Dawn Ahukanna put it (on mastodon), "not so much big questions, more "courageous curiosity" question." What questions invite us to learn and explore and probe, further?

*"As we work together to restore hope to the future, we need to include a new and strange ally—our willingness to be disturbed. Our willingness to have our beliefs and ideas challenged by what others think. No one person or perspective can give us the answers we need to the problems of today. Paradoxically, we can only find those answers by admitting we don't know. We have to be willing to let go of our certainty and expect ourselves to be confused for a time."*

*— Margaret Wheatley, turning to one another*

*"I try actively to question myself and my certainties"*
*— Jérémie Zimmerman*

*"The way a question is asked limits and disposes the ways in which any answer to it [..] may be given."*

*"the questions make the frame [..] They make more than the frame; they give the angle of perspective, the palette, the style"*

*"Such assumptions appear so obvious that people do not know what they are assuming because no other way of putting things has ever occurred to them. With these assumptions a certain limited number of types of [..] systems are possible"*

*— Susanne Langer, Philosophy in a New Key*

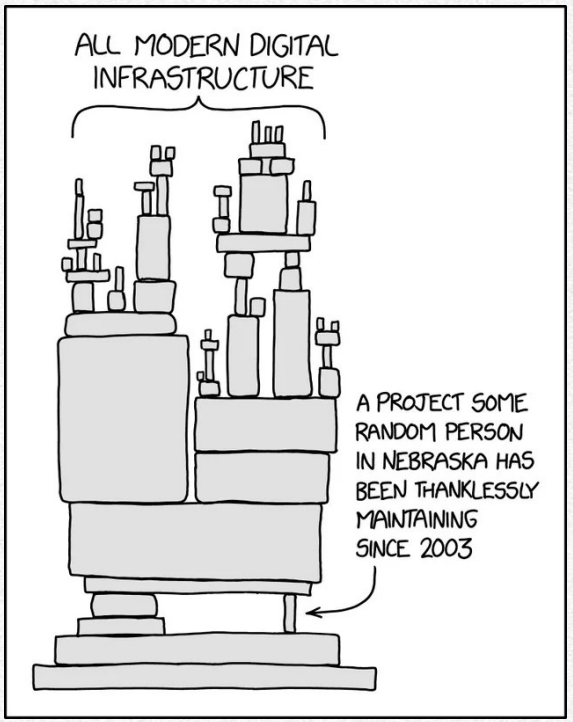
## *Cover Design*

*Design a sticker (doodle) for the cover of your System Seeing Journal*

The Big Idea here is to doodle around what is representative or what concept "glimmers" with what this journal is shaping up to be, for you. What makes this work meaningful? Go back to your visual language doodles from earlier, if that helps. It is another chance to play with images and what draws you.

Play with visual ideas that might offer metaphors or analogies relating to this situation you've been paying attention to, in this advent(ture) in systems journaling.  Or doodle what wants to be expressed, but hasn't yet, like feelings. Or doodle on a theme, like "cultivate response-ability"... Let your doodles draw you. (Draw you along, draw you out, draw you in.)

For inspiration: xkcd 2347: Dependency




Source: Randall Munroe, https://xkcd.com/2347/

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*"insides make their way to outsides"*

*— Barbara Tversky, Mind in Motion*

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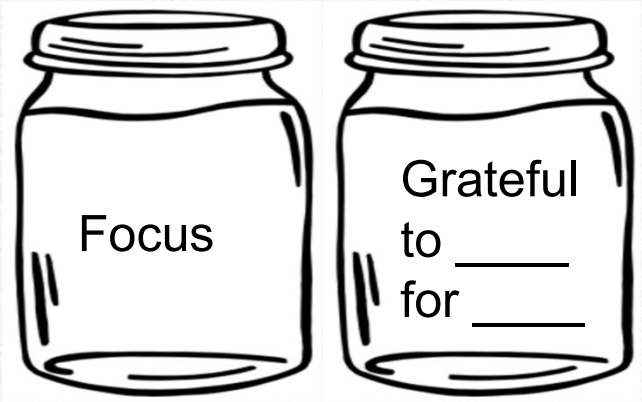
## *Gratitude*

*Noticing and appreciating*

Spend some time noticing what you appreciate in this situation you've been exploring, and who. The attention it takes to notice and appreciate what others contribute, is a gift. It weaves us together, and fosters belonging.

One idea: put what I am focusing on in the focus jar, and for each area of focus, add to the gratitude jar: "who I am grateful for and why?"




*Gratitude jars are an old idea; focus jar idea from: https://www.linkedin.com/posts/jasonmesut_whatwherehow-are-you-focusing-on-this-week-activity-7264224116423933952-xmqu*

*"Thank-yous aren't only expressions of gratitude; they are crucial belonging cues that generate a contagious sense of safety, connection, and motivation."*

*via Amy Edmondson*

*"Intersection of empathy and humility: Desire to understand."*

*— Amy Edmondson*

*"our roles as leaders is to steward the socio-technical system as a whole."*

*– Amy Tobey*

*"I am because we are, and since we are therefore I am"*

*— John Mbiti*

*"We know from everyday experience that a person is partly forged in the crucible of community."*

*— Abeba Birhane, Descartes was wrong: 'a person is a person through other persons', 2017*

# Thank you for joining us for a month in System Seeing!

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