Bicycle Bubble Diagram

- What parts?
- How are they related?

If you pick the best parts, do you get the best bicycle?

Structure

- Abstract and easy to draw; frees to focus on what parts
- Cover various cases (road bike, mountain bike, etc.)

Tame your inner critic

Our mental models are incomplete and flawed. We need to get them out where we can see them.

Relationships

"start looking for the interconnections, the relationships that hold the elements together." (Donella Meadows) Relationships include flows and signals

Bicycle Sketch

Mike English

- What are the relationships among the parts?
- How does it function?
- What makes it distinct?

System

"a system must consist of three kinds of things: elements, interconnections, and a function or purpose." — Donella Meadows

Identity and purpose

"The essential property of [a bicycle] is it can carry you from one place to another. No part of [a bicycle] can do that. The wheel can't. The [pedals] can't. The seat can't. The [gears] can't. The [gears] can't even carry [themselves] from one place to another. But the [bicycle] can." ~ Russel Ackoff [adapted]

The identity and purpose of "bicycle" acts back on the parts, inducing and constraining what parts are fit – a bicycle has two wheels (its so defining its in the name). They are light (hence spokes) because it is person* powered.

Context Changes Everything

Bicycle in Context Bubble Diagram

- What larger systems are bicycles part of?
- What is their influence?

Contexts

The existence of bicycles changes their contexts, and their contexts act on the use, design, provision, repair, recycling of bicycles

Interacting, co-evolving

"Always design a thing by considering it in its next larger context—a chair in a room, a room in a house, a house in an environment, an environment in a city plan." — Eliel Saarinen

"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 [or be impacted by] it. That is not a formula for success. To fit my system into 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"

Mutually impacting

Drawn by @mmby

Org 3 Ways

(Social) System

- Structure , power and formal communication
- Informal communication
- Responsibilities and interactions
- Work flow and dependencies

"Understanding of complex systems is distributed"
— Chris McDermott

Integrity and Cohesion

"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 [..] 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)
*Scaling decision making is *impossible* without a shared context to build alignment off of." — Hazel Weakly*

See different parts of the elephant

Actively build/repair common ground

Sociotechnical Systems

This organization structure, combined with the global-ish nature of JavaScript in the browser, has made us build the desktop client UI out of many small, self-contained web apps called *Spotlets*. They all run inside Chromium Embedded Framework, each Dapp living within their own little iframe, which gives squads the ability to work with whatever frameworks they need, without the need to coordinate tooling and dependencies with other squads. While this approach has the disadvantage that we have many duplicate instances of different versions of libraries, increasing the size of the app, but it offers the *massive* advantage that introducing a library is a discussion between a few people instead of decision that involves ~100 people and their various needs. Not only would such a big discussion extremely time-consuming and hard, it would also force us to use a least-common-denominator approach to picking libraries, instead of picking the ones specifically tailored to the problem domain of each squad. Considering the size of a single song compared to the size of a JavaScript library, this trade-off is a no-brainer for us.

Mattias Petter Johansson, on Quora (2017)

We might think of this as a technical decision, but it is an organizational decision too. And has implications for downstream and future consistency, agility, security, user app download costs, etc.

Decisions entail tradeoffs and tradeoffs don't stay in their lane ¯_(ツ)_/¯

understand the interactions

As we're making a decision, and then as part of conveying it, we want to understand (and convey) what has substantive bearing on the decision. This means characterizing the situation in terms that are relevant to the decision.

Force Field

stability and change

Adapted from: Gamestorming.com, by Dave Gray, et al

Kurt Lewin:

$$B = f(P, E)$$

B is behavior, P is person, and E is the environment.

Force field analysis (Kurt Lewin) is useful in the context of organizational change, but can also help visualize forces that any decision balances across.

The design space is multidimensional. We want to surface not just options, but assumptions about forces in play

forces and emergence

"We're trying to find habitable zones in a large multidimensional space, in which we're forced to make regrettable, but necessary, tradeoffs."
— Robert Smallshire

Co-evolving Sociotechnical Systems

Image from Merrelyn Emery, "Self management of the self managing organization: an update"

Mutually adapting

" 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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Adventures in Systems

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