

Why this stuff is hard

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Or: Why we'll never stop
having outages

Or: You aren't actually
doing it wrong

Our journey together

1. The adaptive universe
2. Complexity forever
3. Local nature of perspective
4. Coordination
5. OK, so what?

I. The adaptive universe and its consequences





Dr. David Woods

1. Resources are finite

2. Change never stops

An hourglass is the central focus, with dark sand falling from the upper bulb into the lower bulb. The background is a warm, golden-brown color with a blurred pattern of light and dark spots, possibly representing a sunset or a textured surface. The text "Finite resources" is written in a white, hand-drawn font across the middle of the hourglass.

Finite resources

There's never enough time

There's never enough people

The law of stretched systems

It's really, really hard to
build up capacity

Production pressure!

Deliver on those features...

...but don't break anything!

Double bind

Hard to find time to do
reflection

Planning vs reviewing



Unceasing change

Keep the system up in the
face of change

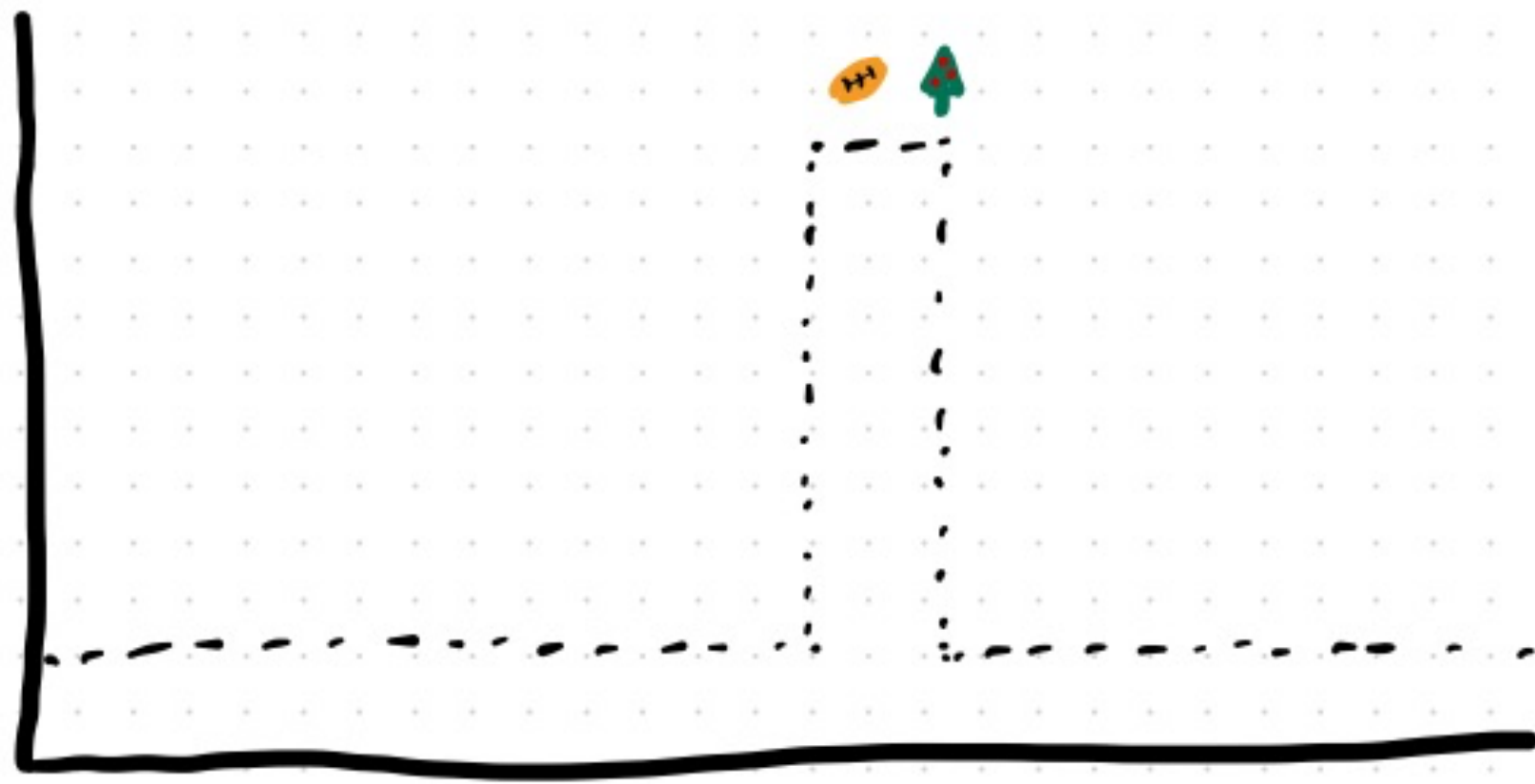
Code freezes

Cost



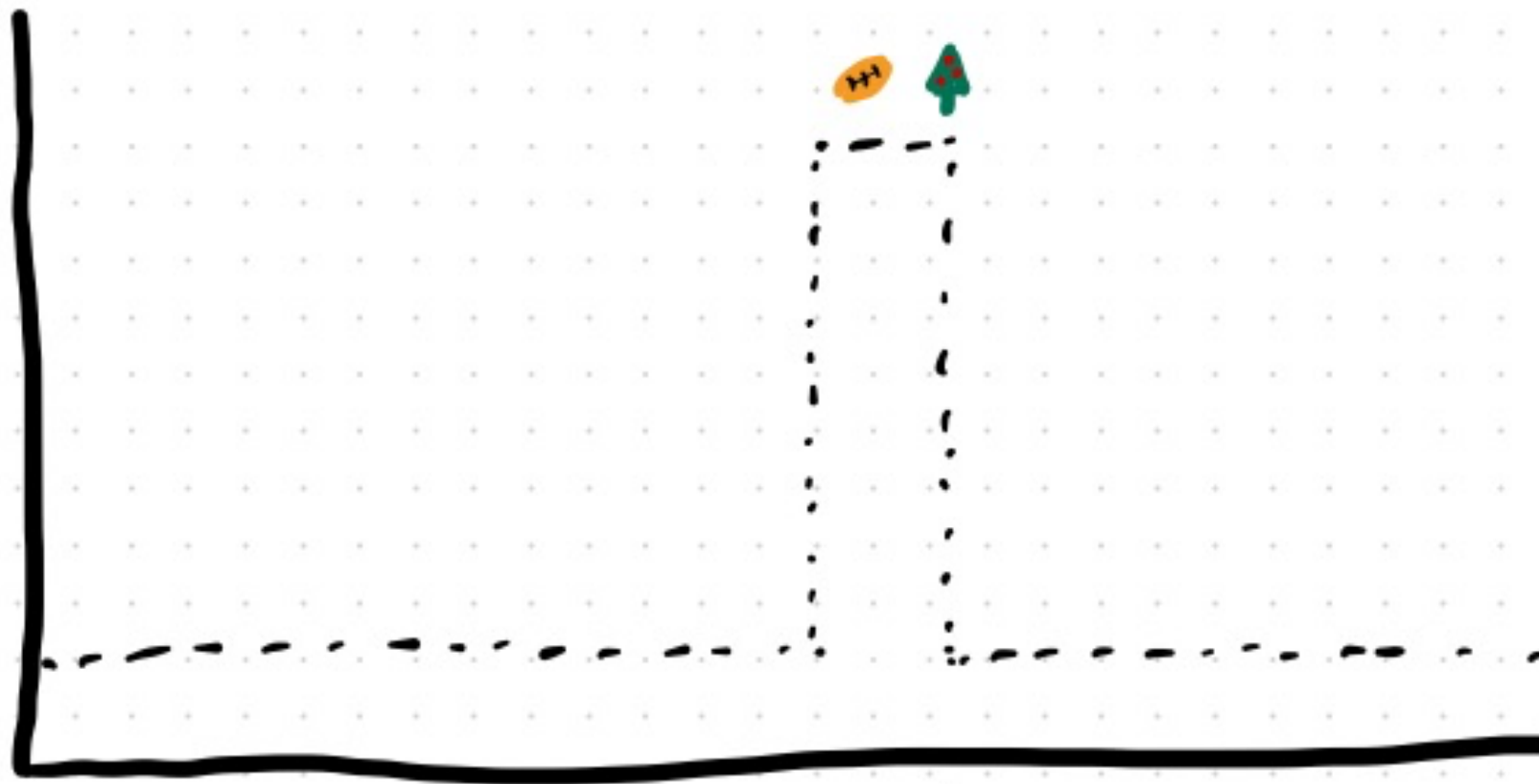
Time

Cost



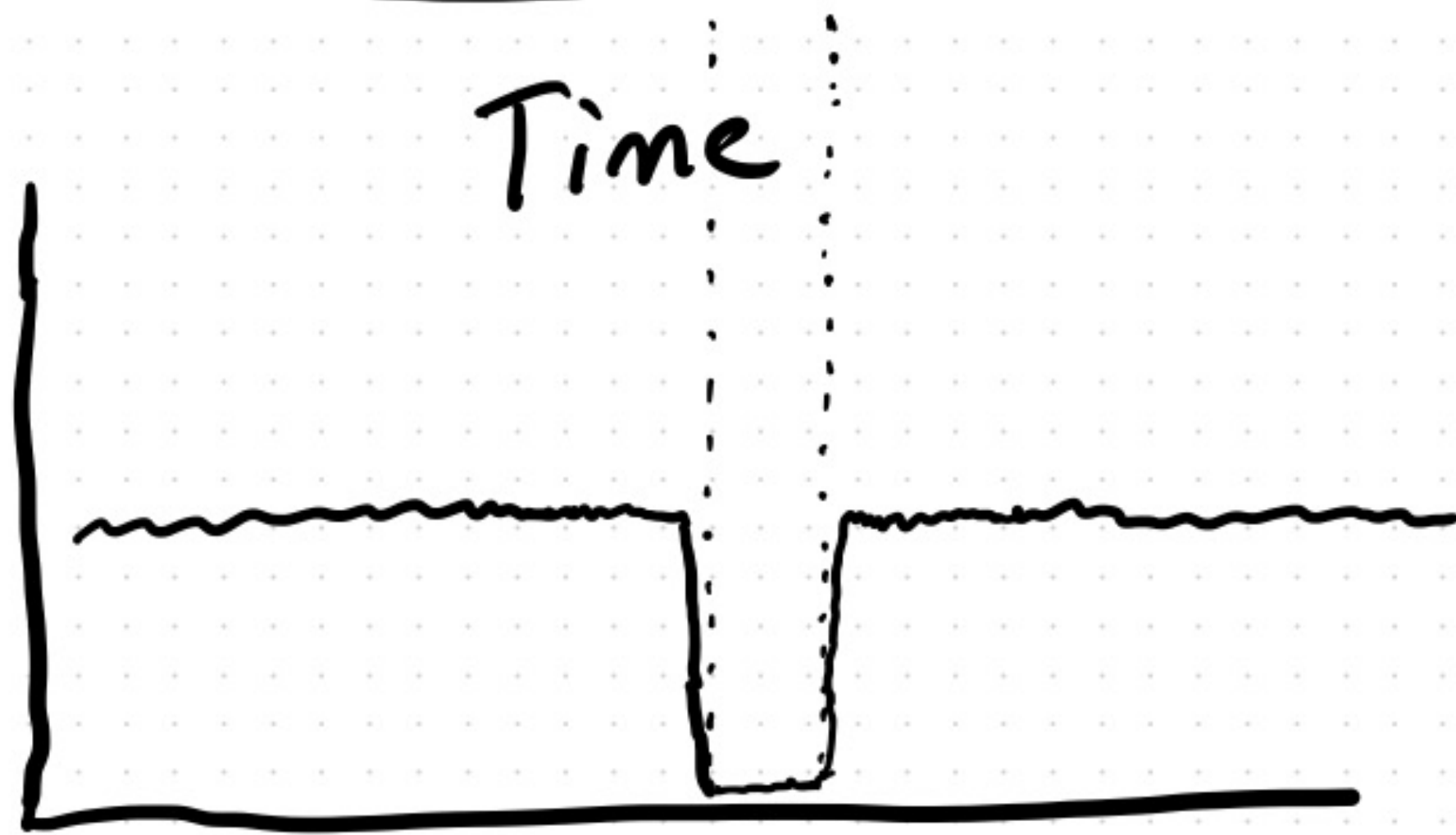
Time

Cost

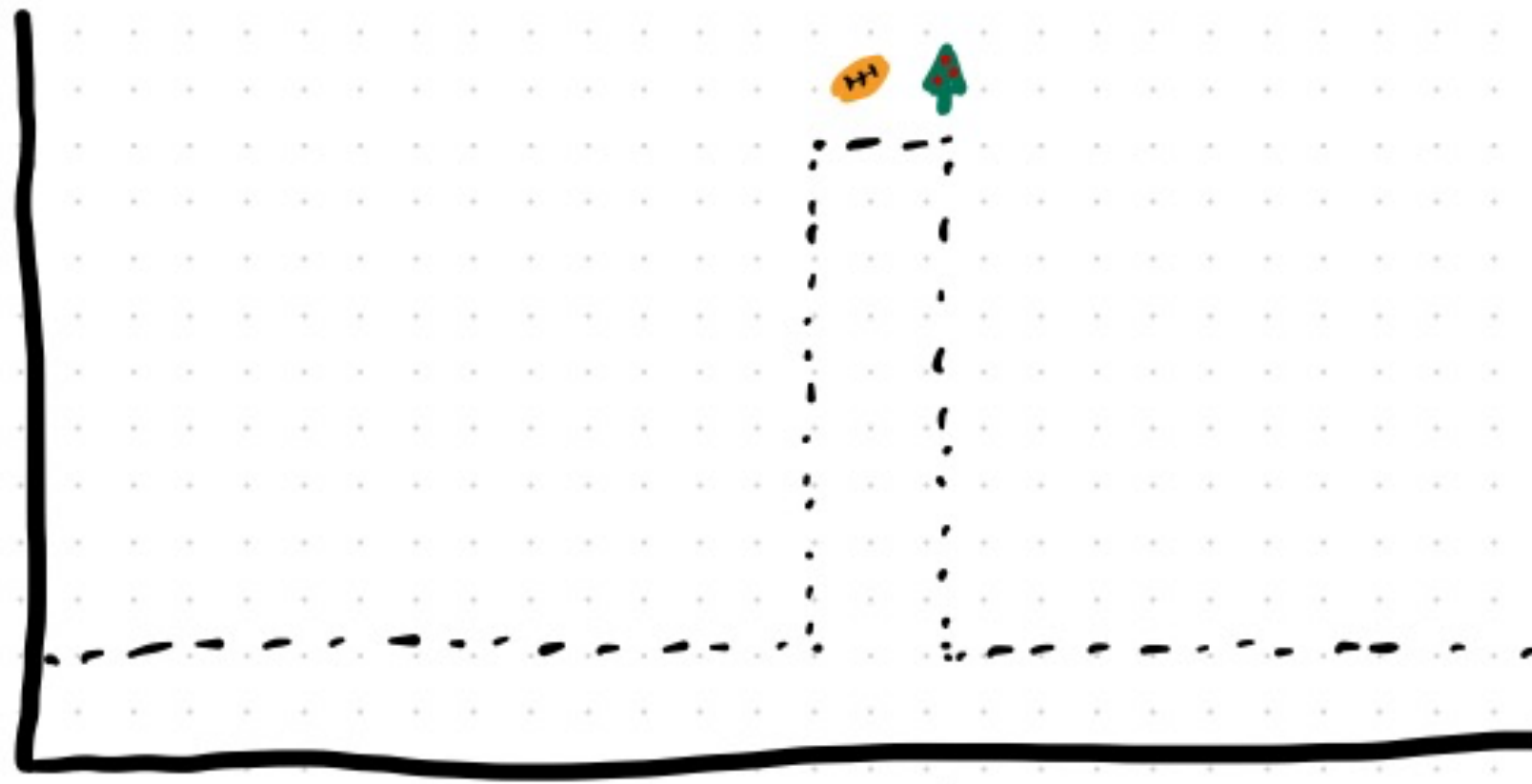


Time

Charge

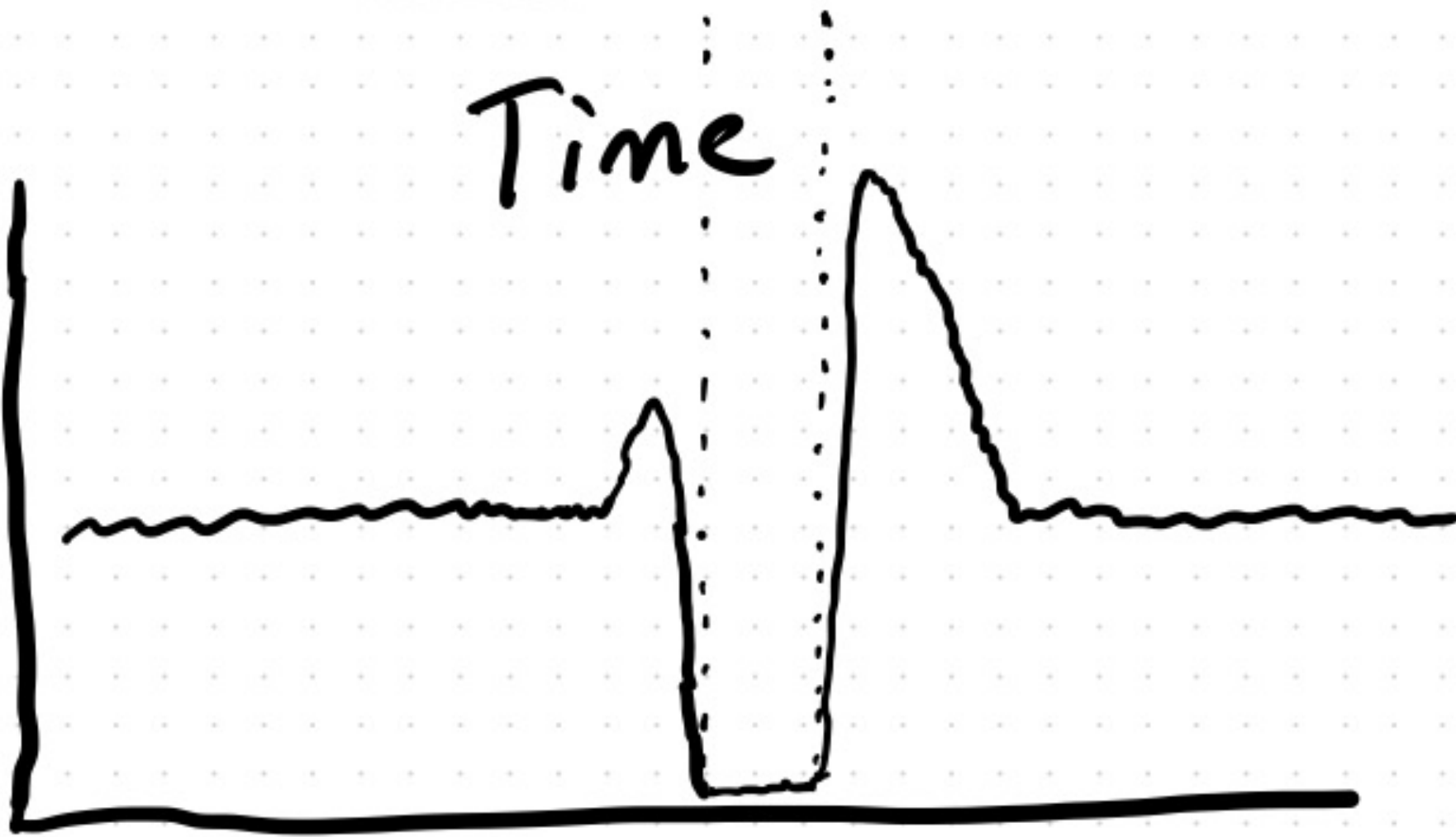


Cost

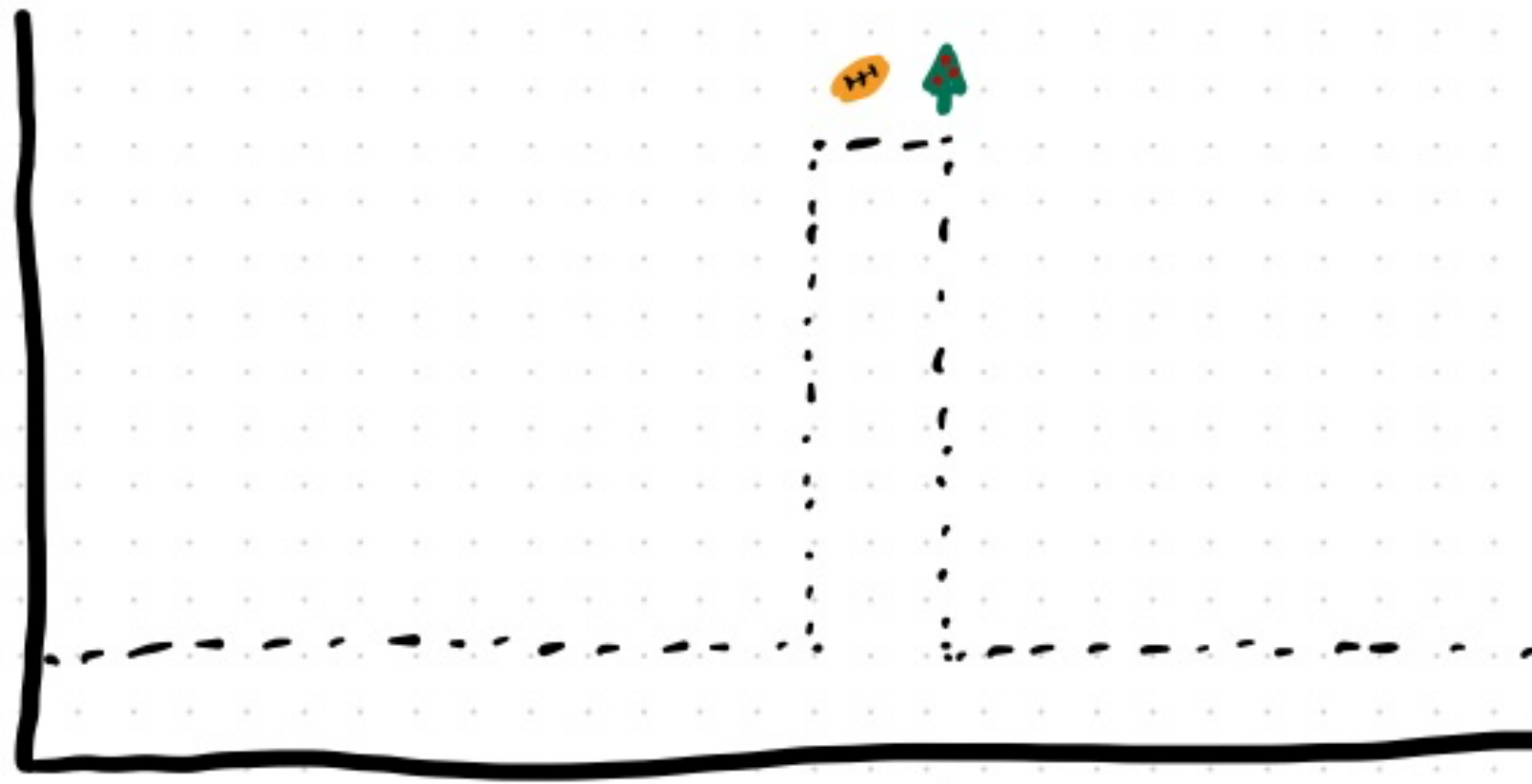


Time

Charge

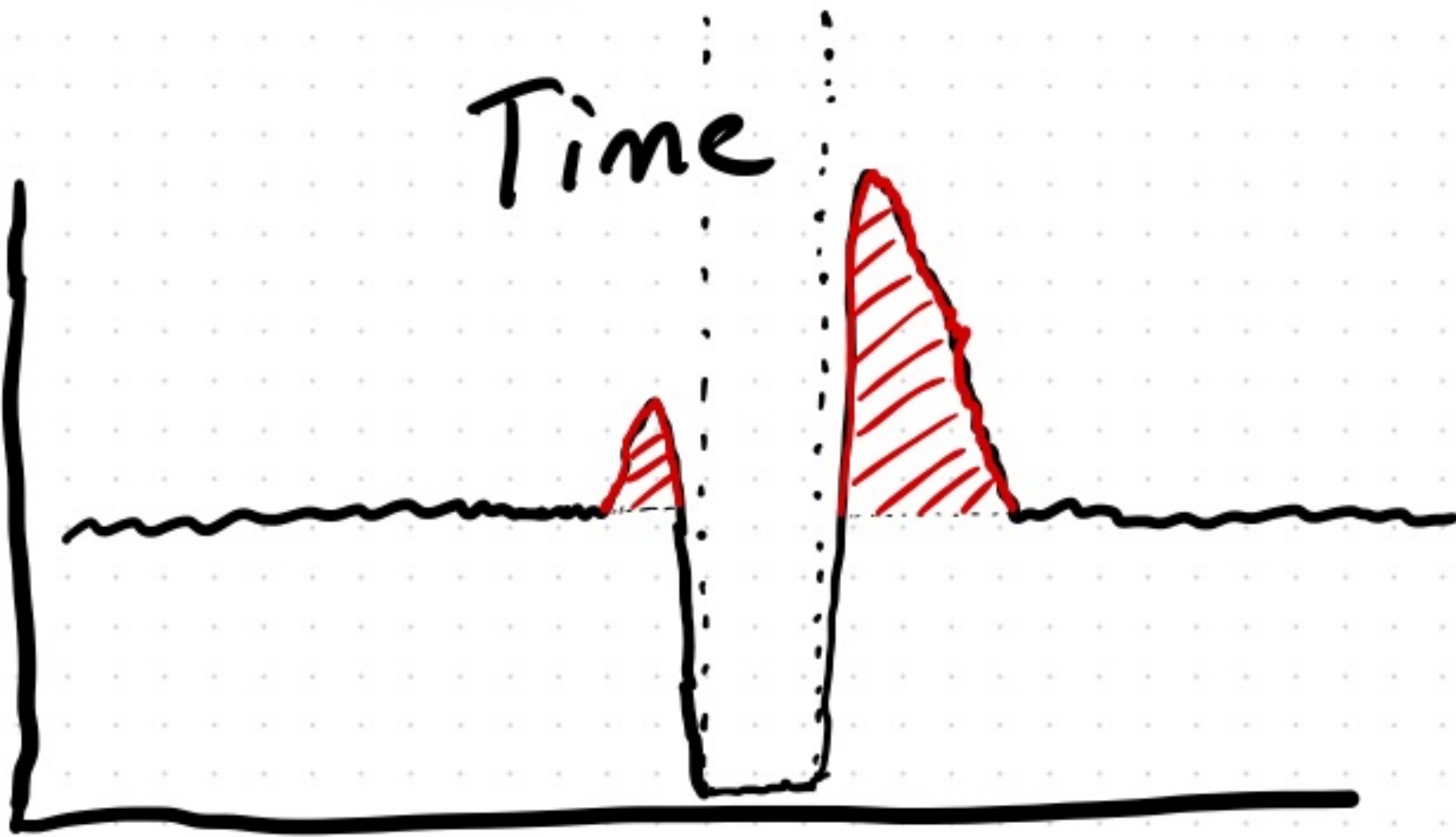


Cost



Time

Charge





"on a hunch decided to look
at..."

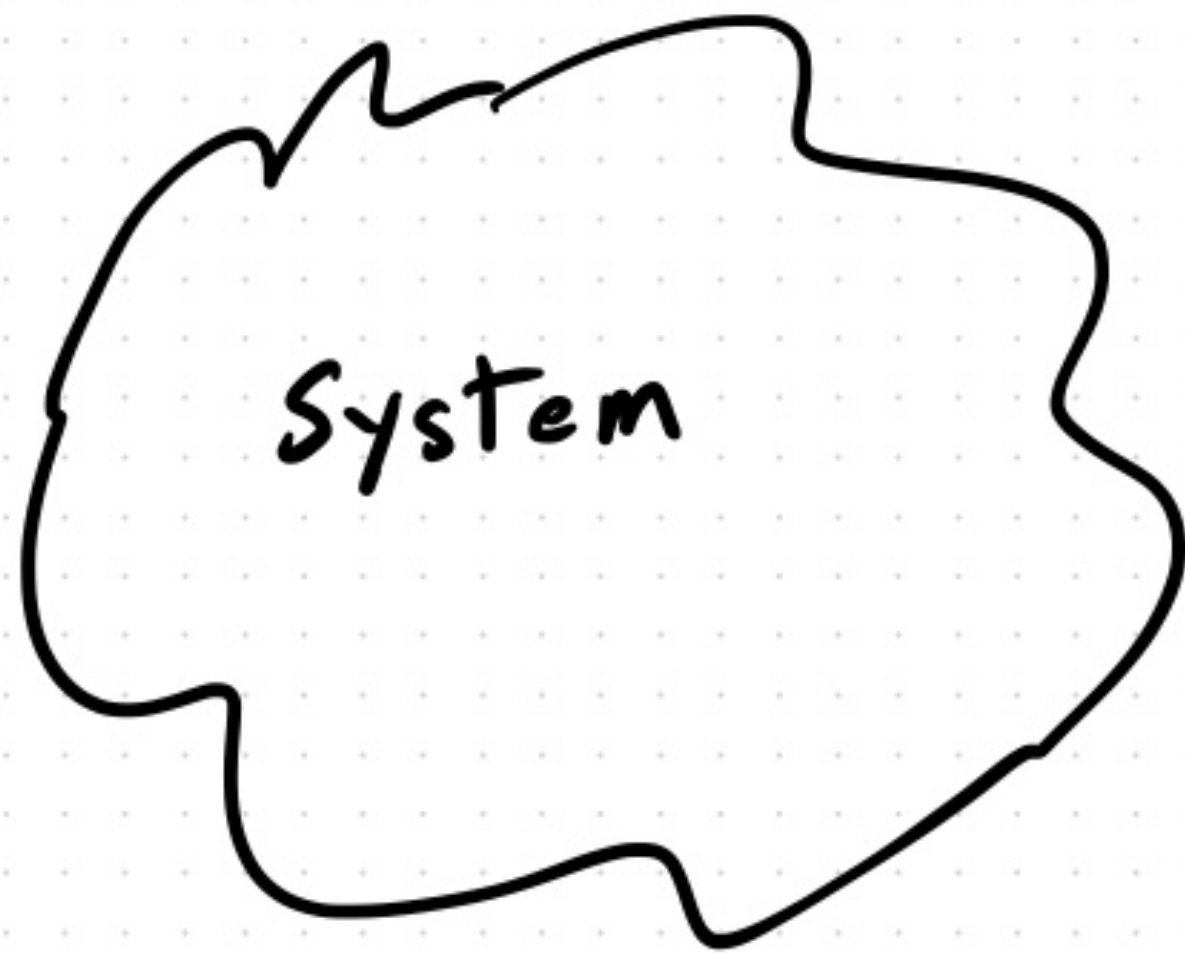
~ 4:00 PM PST

"What changed?"

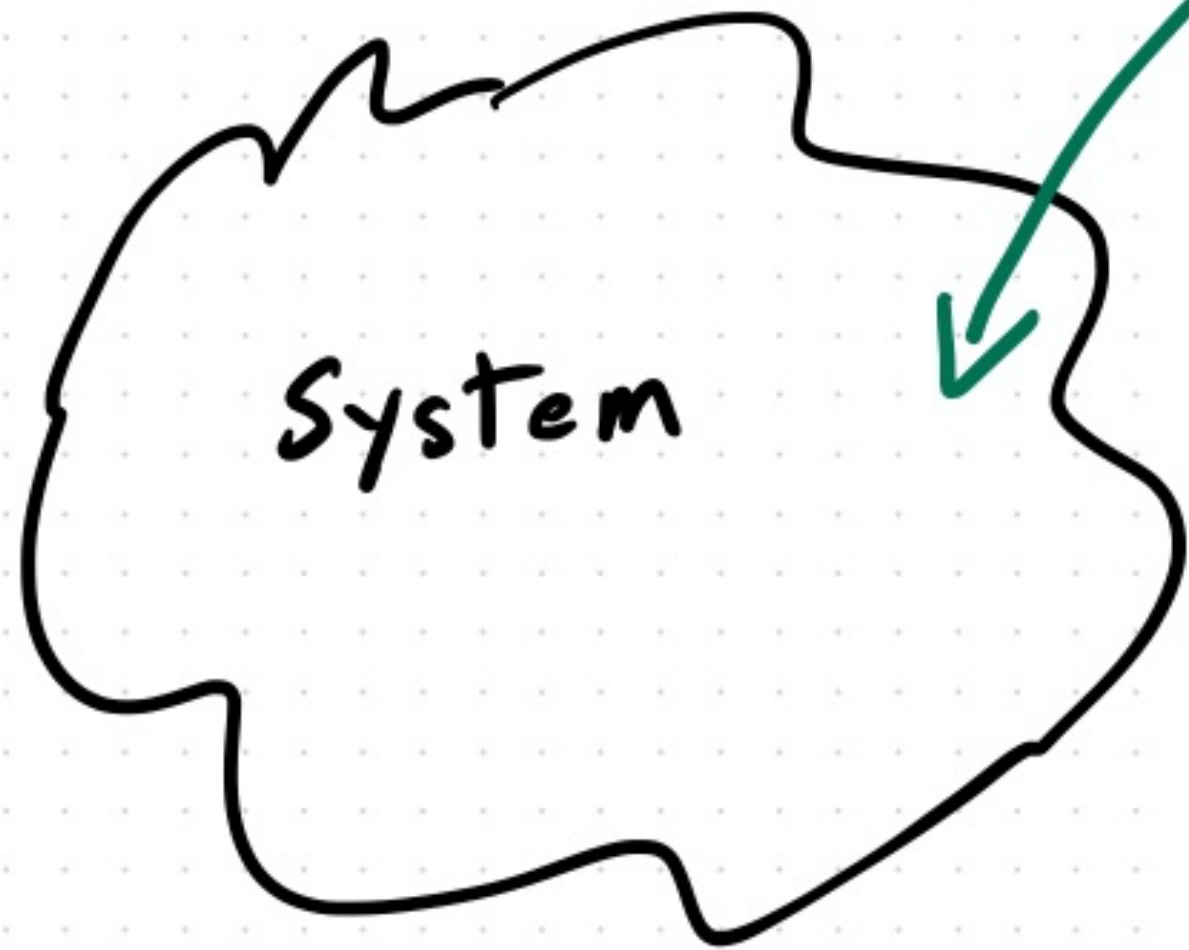
The world changes around
US

We can't stop change

Environment



Environment

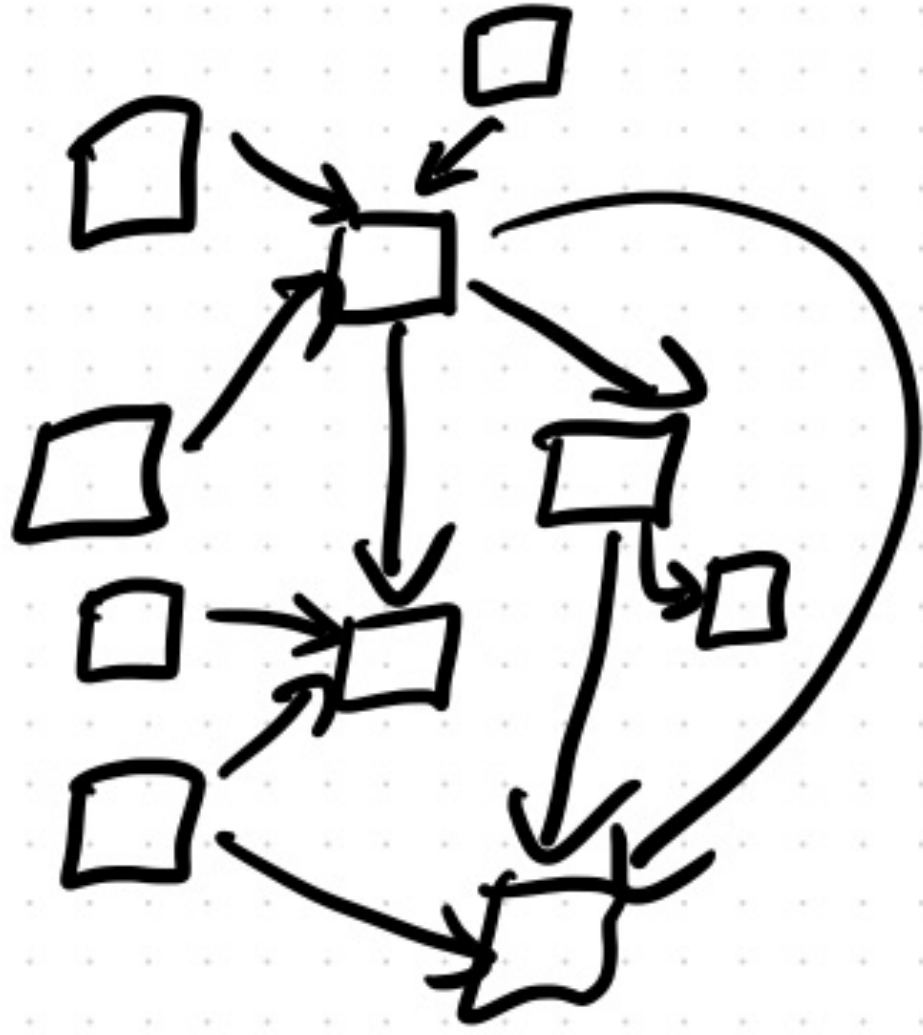


stuff we
can control

If you think the future is
scary, try the past!

We are prisoners of
history

II. The inevitability of complexity



We eliminate failure modes
by adding complexity

We're in the control
systems business

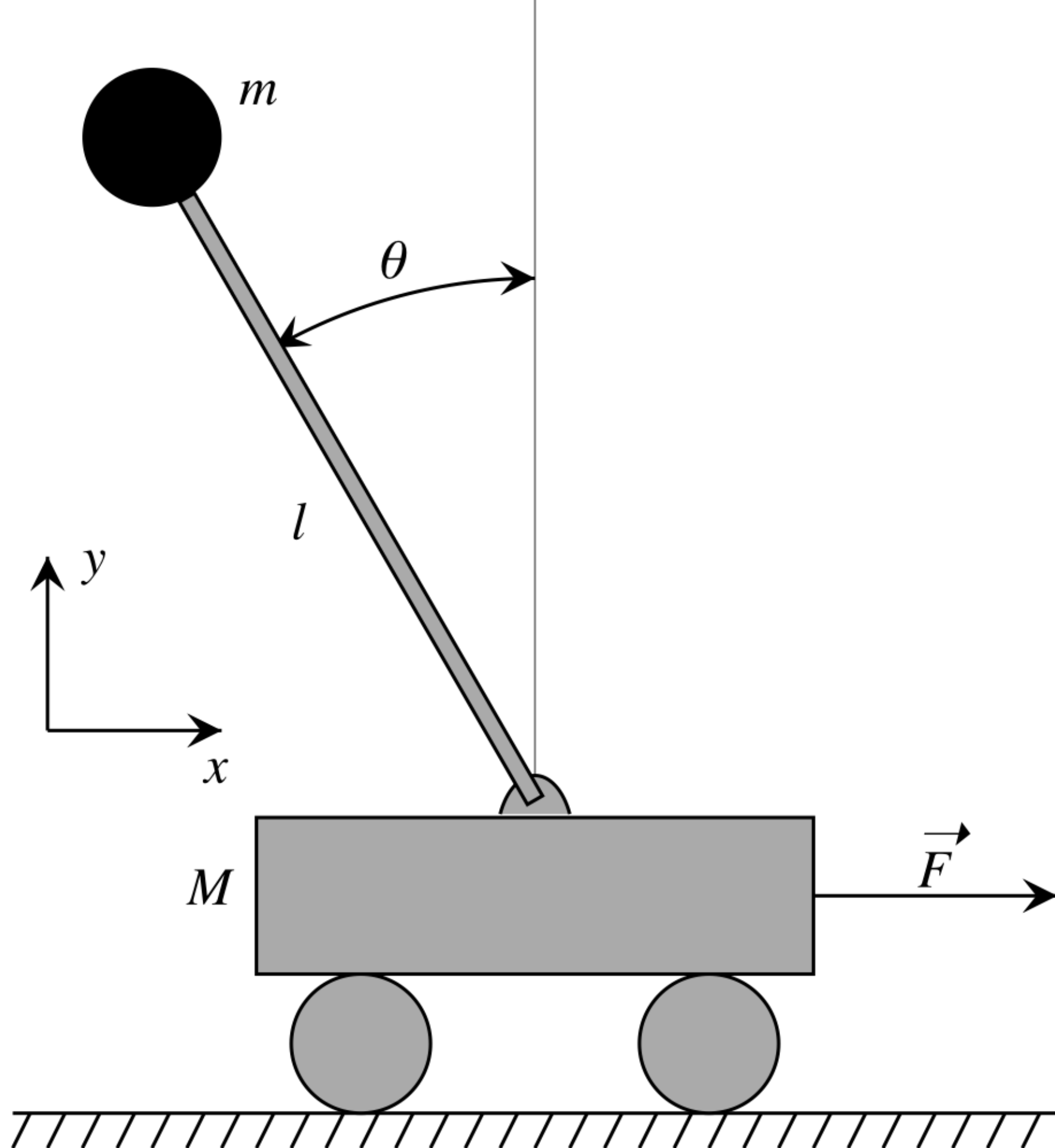




Dr. W. Ross Ashby

Ashby's Law of Requisite Variety

"Only variety can destroy
variety"

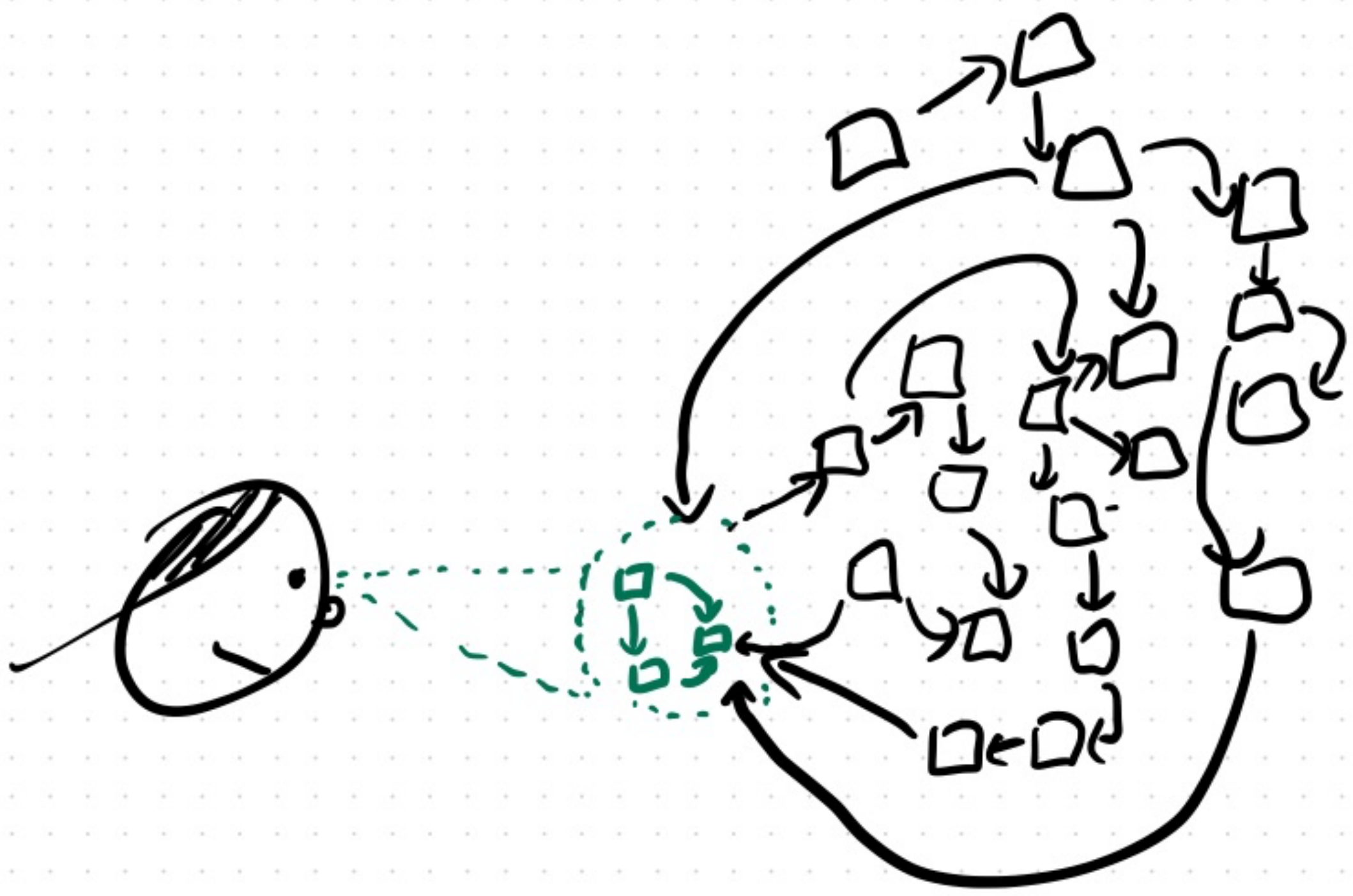


Better control means a
more complex model

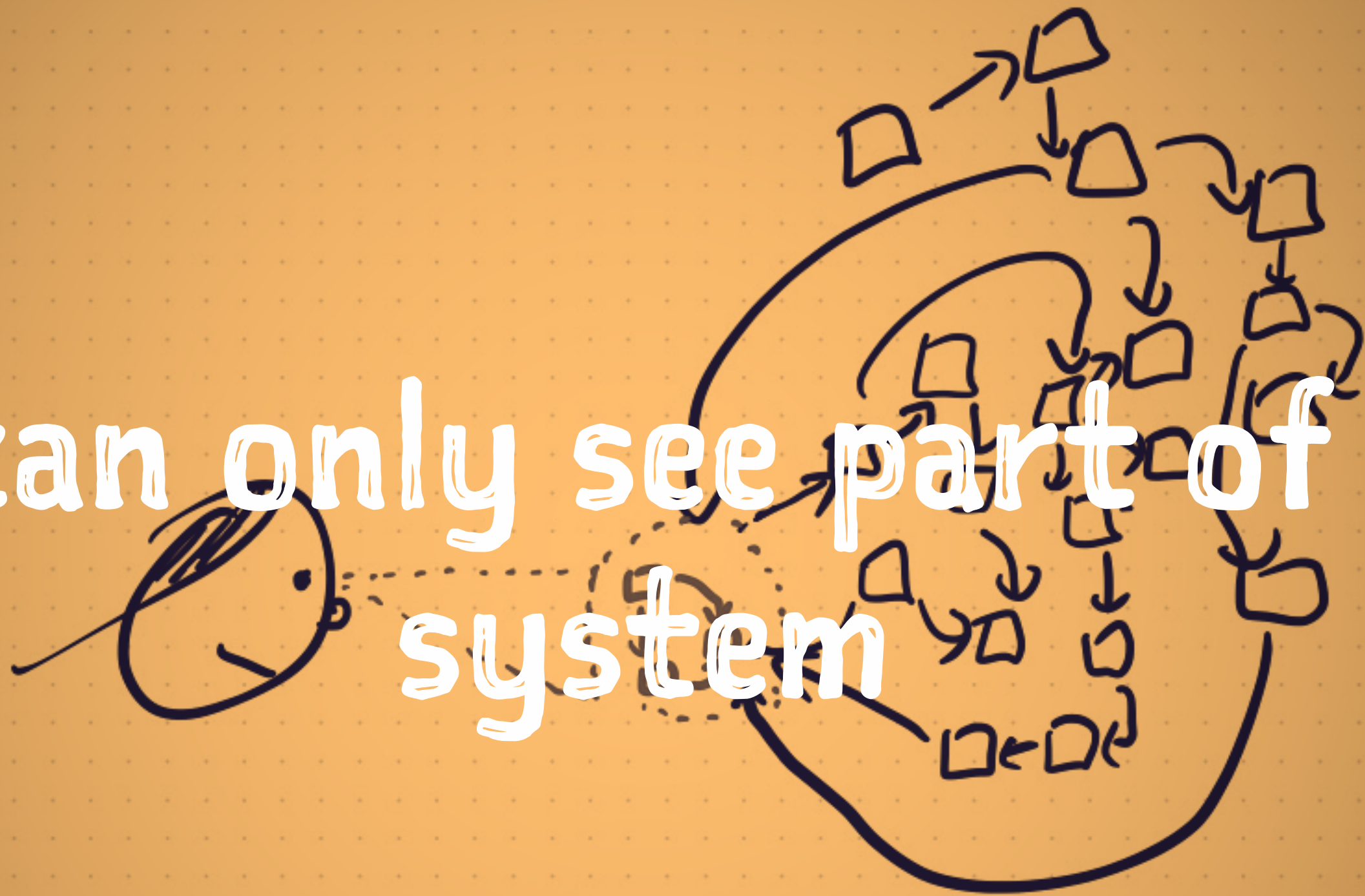
Q: But, what about
reducing accidental
complexity?

A: Finite resources

III. The local nature of perspective



We can only see part of the system



Our understanding is
always partial

Can't see the interactions
by looking at the
components

"Dark debt"

We have local rationality

Something somebody didn't
know

Getting the info into the
heads of the people who
need it

The moment an action is
performed, it ceases to
exist.

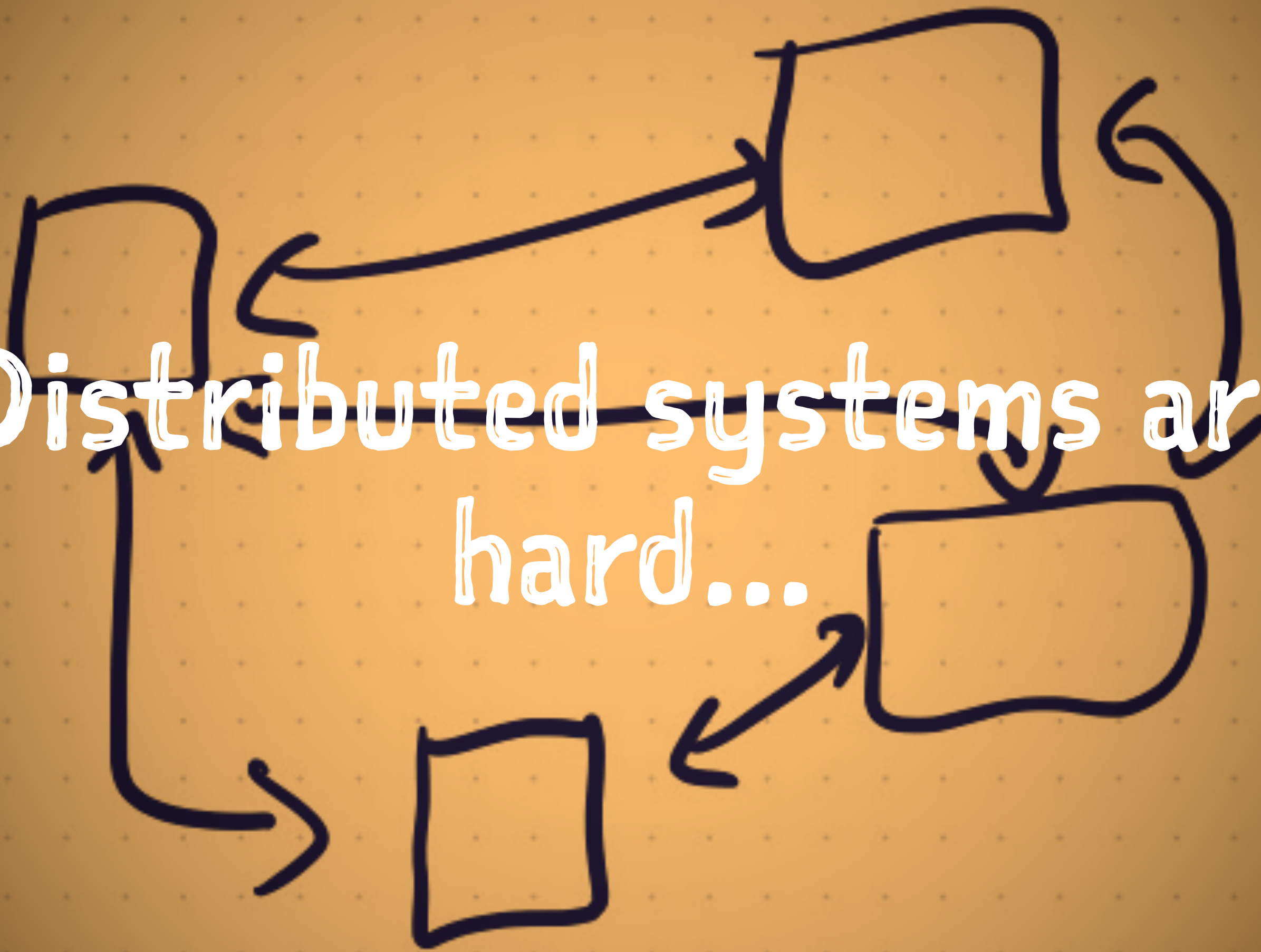


Dr. Karl Weick, Sensemaking in Organizations

Work is invisible

It's hard to watch experts
in action

IV. Communication and coordination



Distributed systems are
hard...

The diagram shows four hand-drawn rectangular nodes on a grid background. The nodes are arranged in a roughly square pattern. Bidirectional arrows connect the nodes: a horizontal arrow between the top-left and top-right nodes, a vertical arrow between the top-left and bottom-left nodes, a diagonal arrow between the top-right and bottom-right nodes, and a diagonal arrow between the bottom-left and bottom-right nodes. The text 'Distributed systems are hard...' is written in white, stylized font across the center of the diagram.



Incident response is a team
sport

Communication is hard

Especially in a remote/
hybrid world

"Anyway... we're dead in the water until this figures itself out."



A portrait of a woman with long, wavy brown hair, smiling slightly. She is wearing a dark, sleeveless top. The background is a brick wall. The image has a warm, sepia-toned filter. The text "Dr. Laura Maguire" is overlaid in a white, stylized font across the center of the image.

Dr. Laura Maguire

V. OK, so what?

1. We can't escape the
adaptive universe

2. We can't reduce complexity in the long run

3. We can't step outside
our own local perspective

4. We can't do it alone

These are all constraints

We can get better at
navigating them

That means treating skills
as first class

A person is surfing on a wave at sunset. The sky is a mix of orange and yellow, and the water is dark. The surfer is in the center, riding the crest of the wave. The text is overlaid on the image in a white, hand-drawn style font.

You can't stop the waves,
but you can learn how to
surf.

Dr. Jon Kabat-Zinn

Image credits

- <https://www.pexels.com/photo/photo-of-pathway-surrounded-by-fir-trees-1578750/>
- [https://en.wikipedia.org/wiki/W._Ross_Ashby#/media/File:W._Ross_Ashby_\(1948\).jpg](https://en.wikipedia.org/wiki/W._Ross_Ashby#/media/File:W._Ross_Ashby_(1948).jpg)
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