Countering Code with Code: Responding to the Pandemic of "Today's AI"

"Moreover, if we move in the direction
of making machines which learn
and whose behavior is modified by experience,
we must face the fact that
every degree of independence we give the machine
is a degree of possible defiance of our wishes."

—Norbert Wiener 1949

Countering Code with Code: Responding to the Pandemic of "Today's AI"

Paul Pangaro, PhD
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Professor of Practice, Human-Computer Interaction Institute,
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ISSS 2021 Online
pangaro.com/isss2021/

Countering Code with Code:
Responding to the Pandemic of "Today's AI"

The word "pandemic" comes from "all" and "people"—
something negative that affects everyone in our community.

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Its impact on our daily living is growing every day.

Countering Code with Code:
Pandemic of "Today's AI"

- Manipulation of attention by Internet platforms
- Manipulation of sentiment in politics & elections
- Loss of privacy through "surveillance capitalism"
- "Dark Patterns" & "Deep Fakes"
- Bias in law enforcement algorithms
- Facial recognition leading to social control
- Overpowering of human capacity & "Human Downgrading"

—AI is making the world we see and the world we live in.
—Human purpose is lost.

Countering Code with Code:

Pandemic of "Today's AI"

Facebook & Instagram

Google & Youtube

Amazon

Twitter

...

CODE

+

CODIFICATION

Artificial Intelligence Inside (™)

Artificial Intelligence Inside (™)

Facebook & Instagram

Google & Youtube

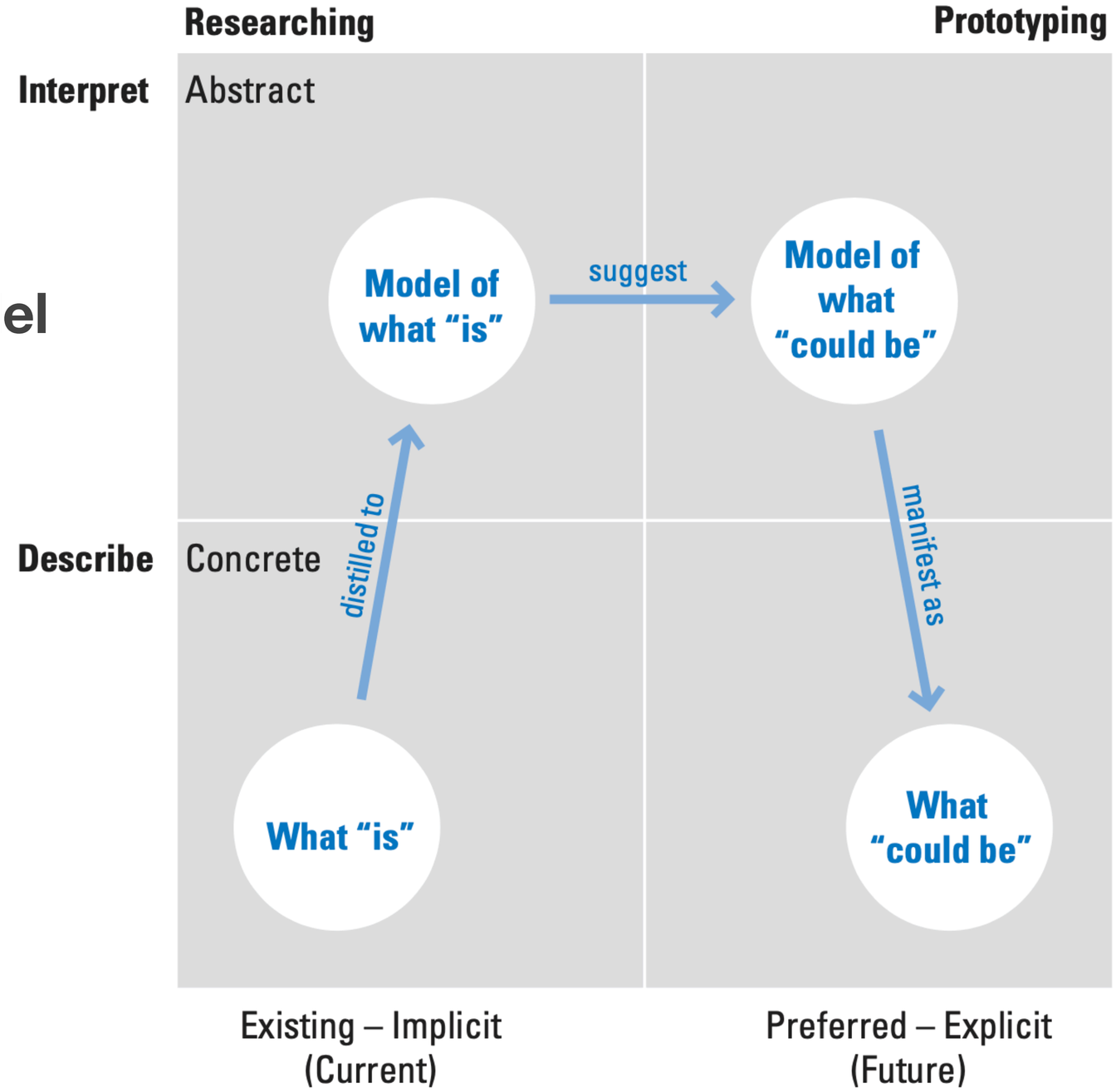
Amazon

Twitter

...

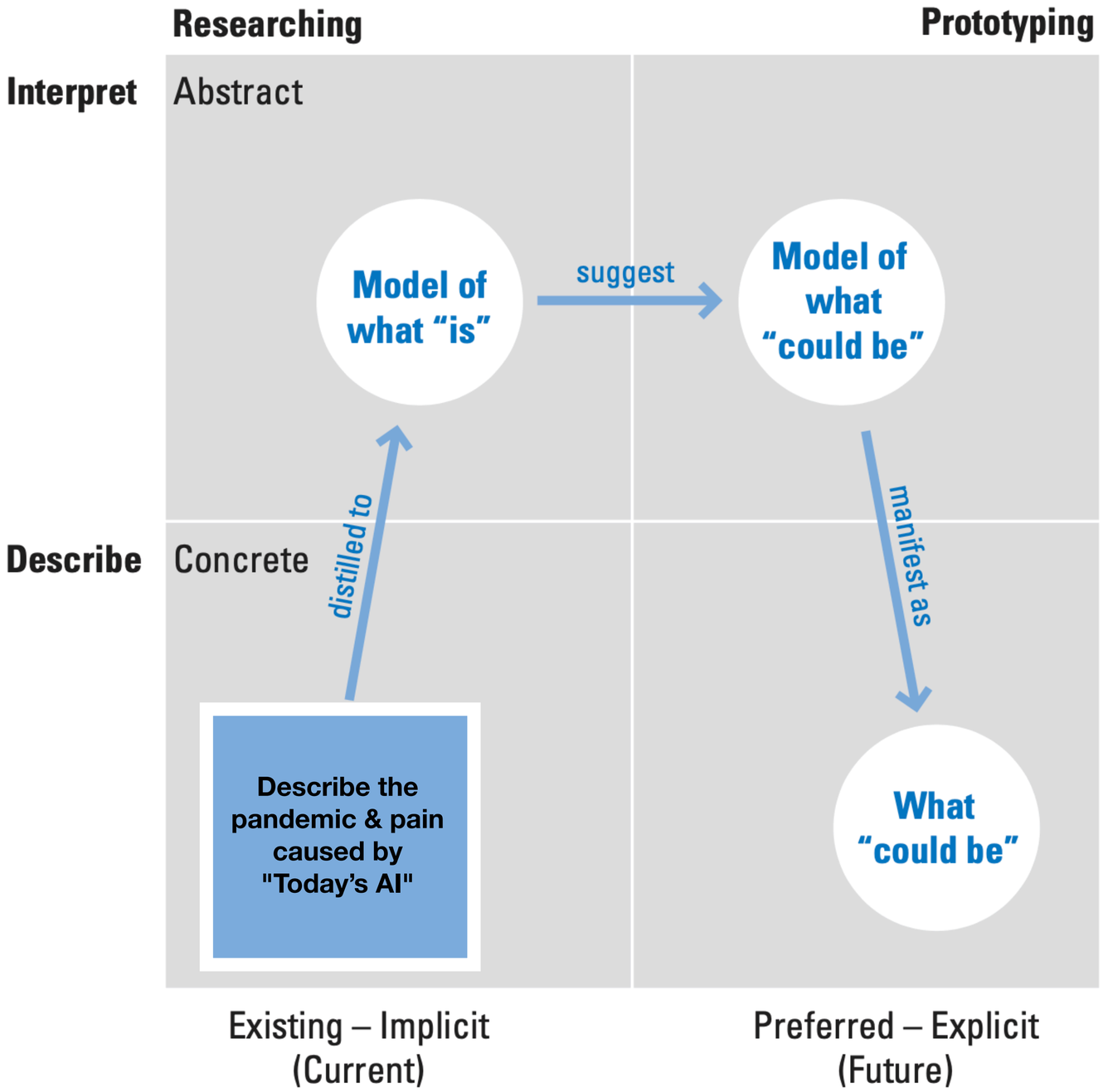
A Path Forward

Analysis-Synthesis Bridge Model



Dubberly, Evenson, and Robinson, Interactions Magazine,
Volume XV.2, March + April 2008

Describe



Dubberly, Evenson, and Robinson, Interactions Magazine,
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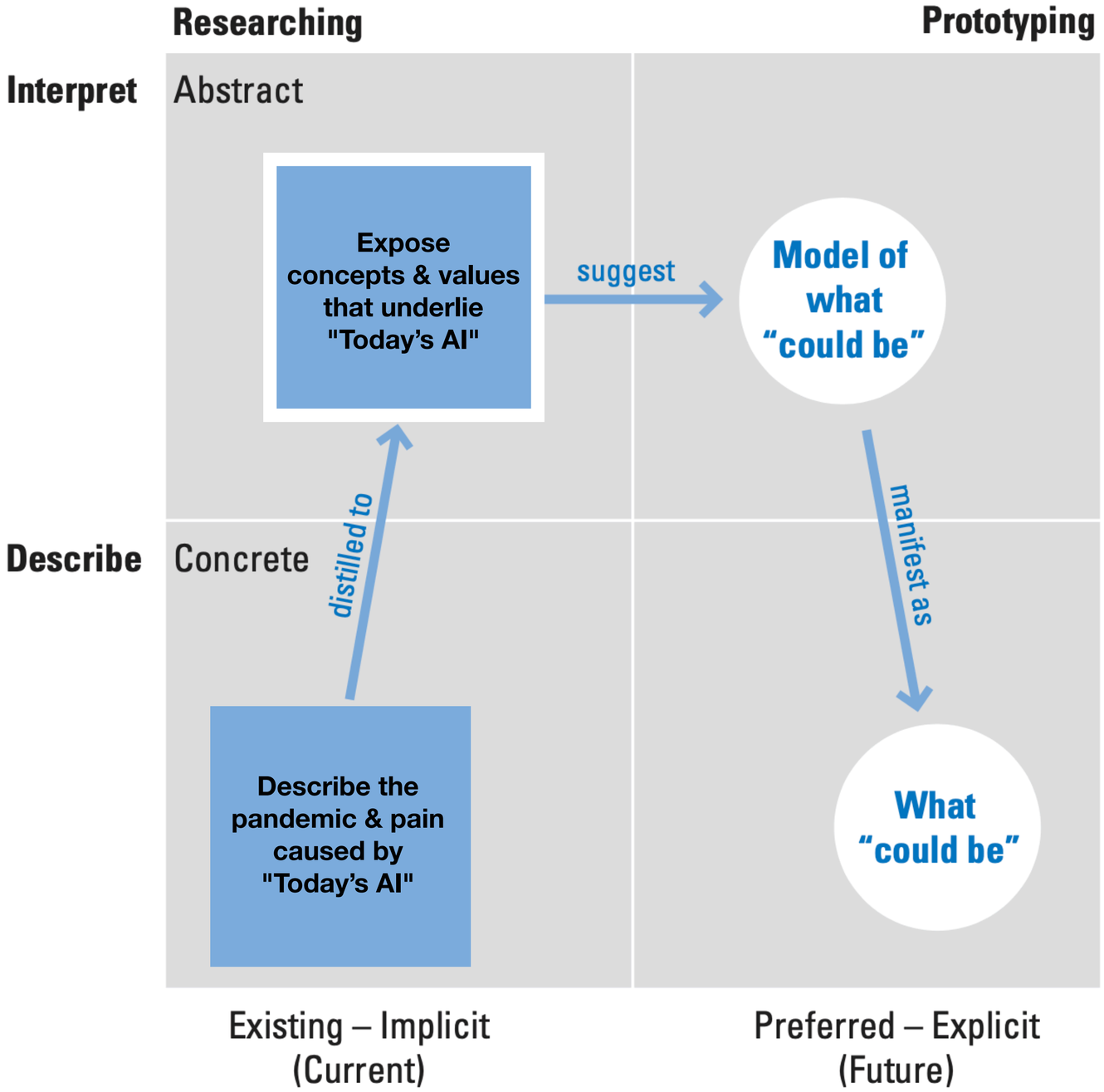
Expose



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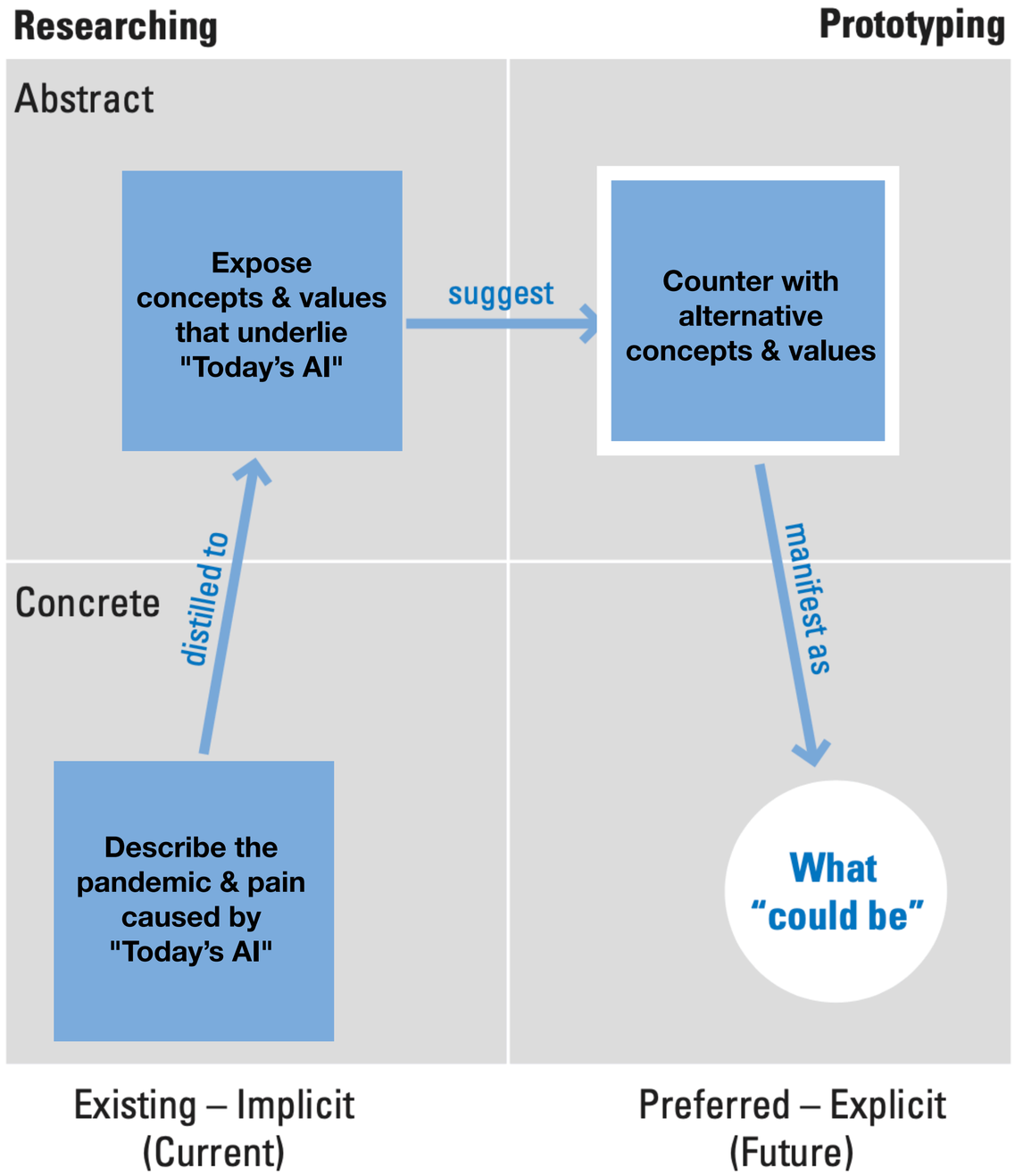
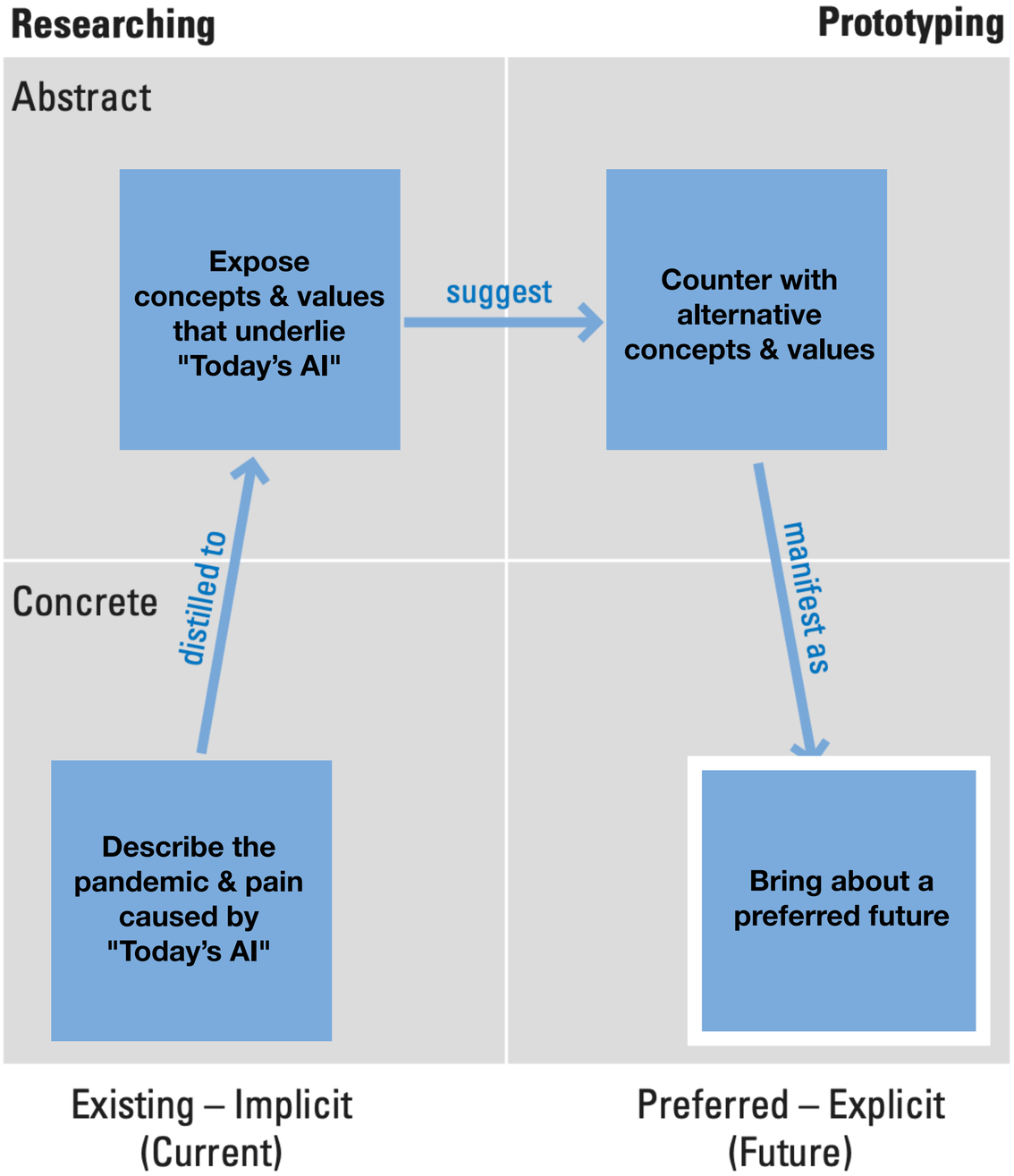
Counter



Dubberly, Evenson, and Robinson, Interactions Magazine,
Volume XV.2, March + April 2008

Improve



Dubberly, Evenson, and Robinson, Interactions Magazine,
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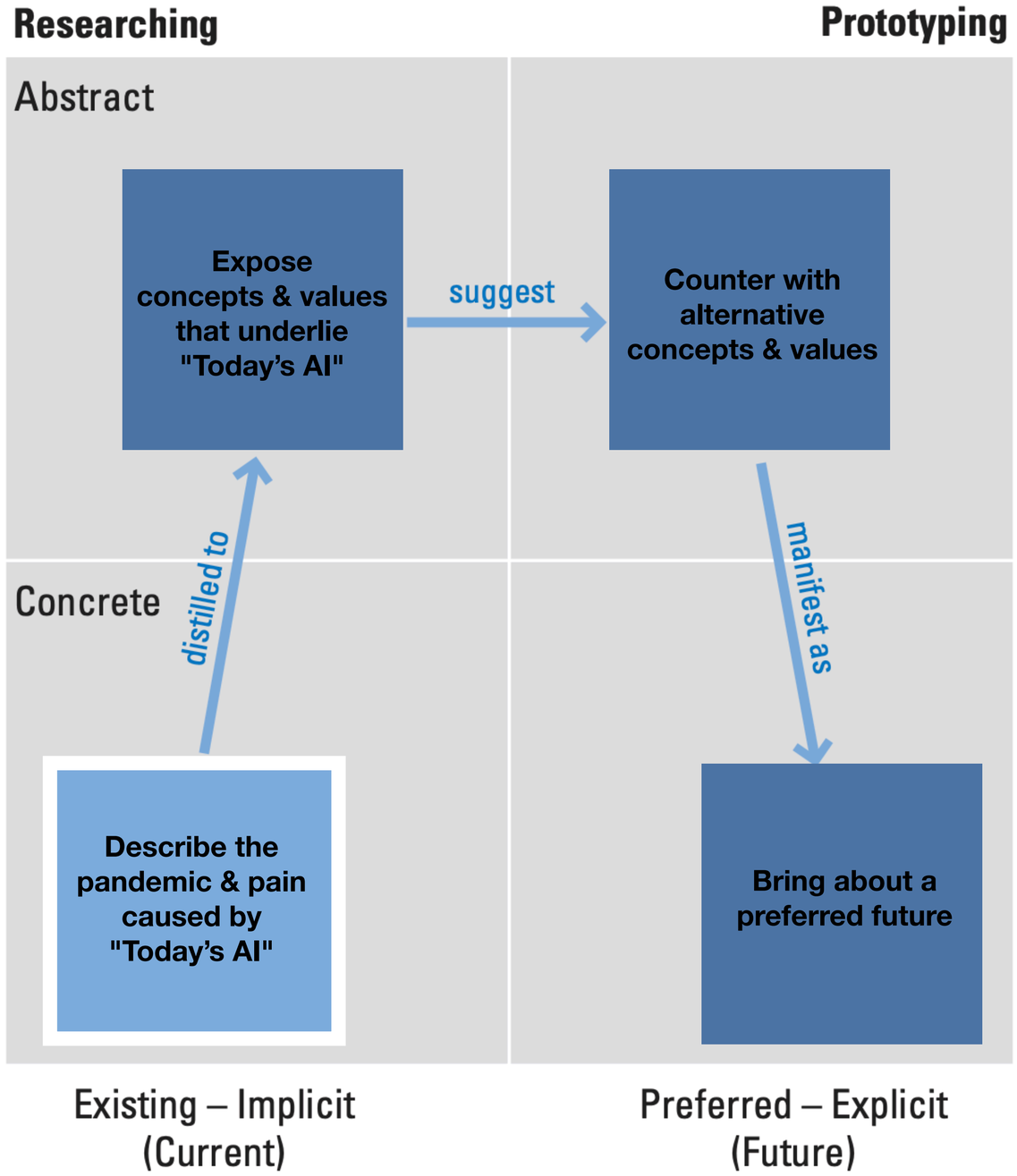

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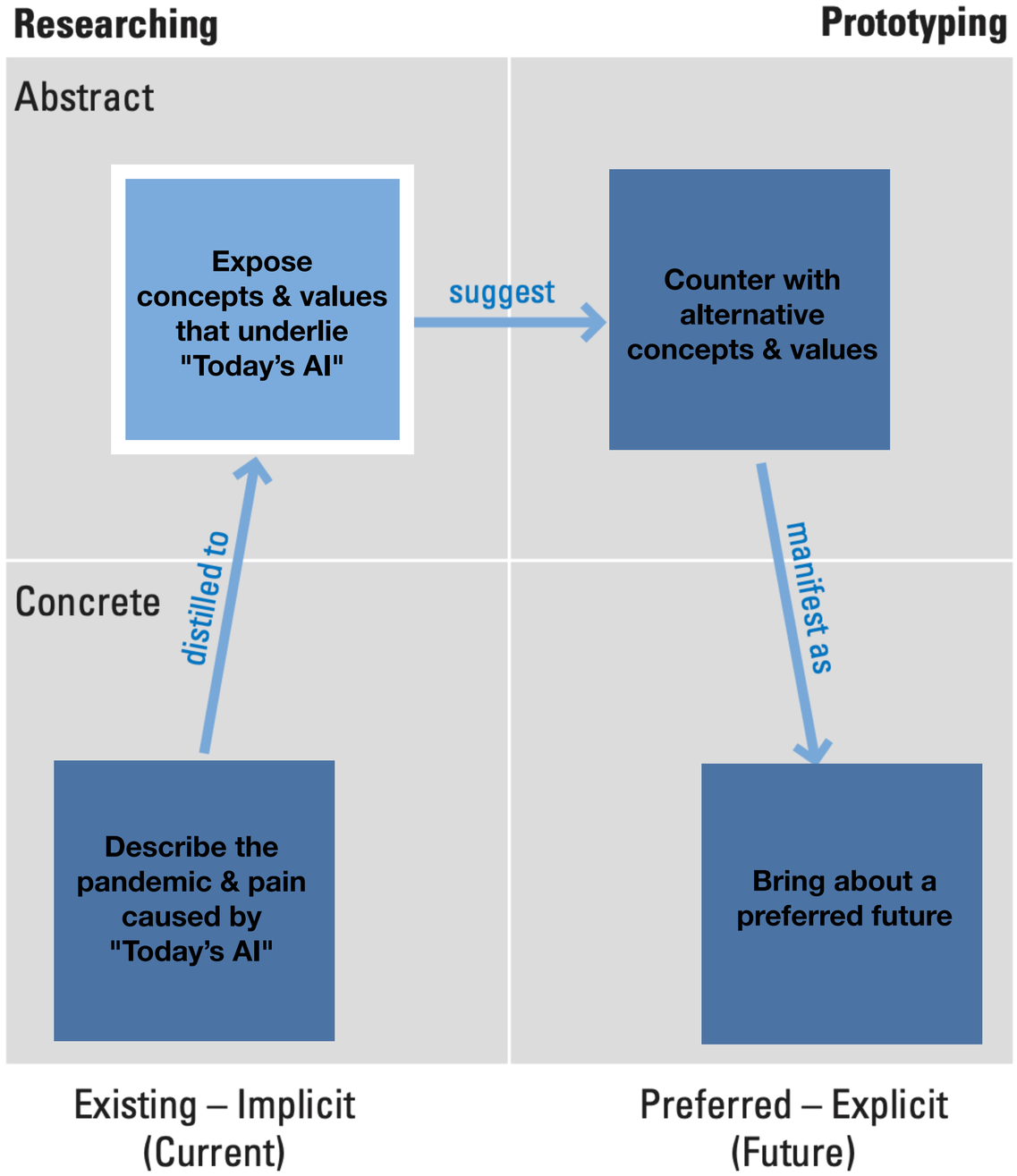
Expose

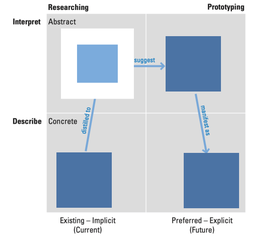
Digital technology creates a culture focused on whatever computers can easily do.

Values inherent in the code of Today's AI are so often at odds with being human.



Dubberly, Evenson, and Robinson, Interactions Magazine, Volume XV.2, March + April 2008

Premise—It’s the "Digital Culture"



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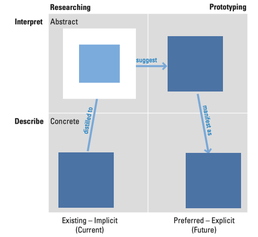
Assumptions from Digital Culture



Digital Culture assumes that:

- interaction is mechanistic
- information is objective
- intelligence is a process that sits inside a person or computer

So it is assumed* that:

- human behavior can be generalized and accurately predicted
- the same option offered at an interface has the same meaning for everyone
- machine prediction is intelligent—so the machine's selection need not be questioned or tested by the human

*** btw—who is doing the assuming?**

EXAMPLES

- Google "Page Rank" — Lack of Transparency of Intent
  You cannot learn why choices were offered
- Youtube "Up Next" — Asymmetry of Control of Focus
  You cannot question or redirect choices offered
- Facebook "News Feed" — Lack of Control of Choice
  You can decline options but not define them

CODE = CODIFICATION

- Lack of Transparency of Intent
  You cannot learn why choices were offered
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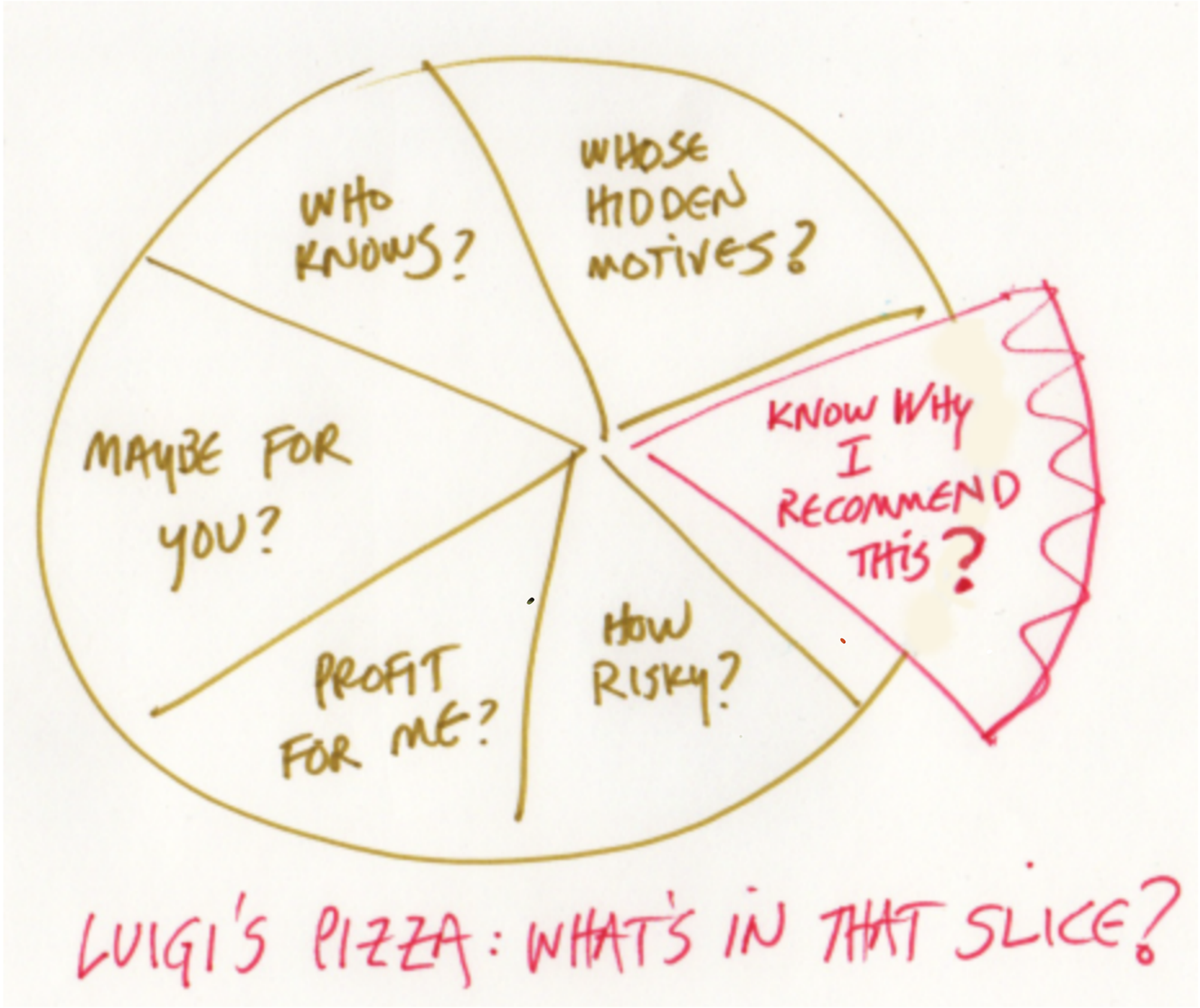
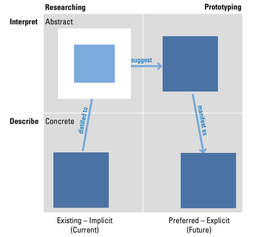
CODIFICATION enshrines values that control outcomes

The Parable of Luigi's Pizza



More about Luigi's Pizza

Premise—It's not Technology



Technology itself is not at fault—it is how we fashion it and the traits we embed in it.

In pursuit of profit, we build engines that dazzle our brains and addict us to our human & biological vulnerabilities.

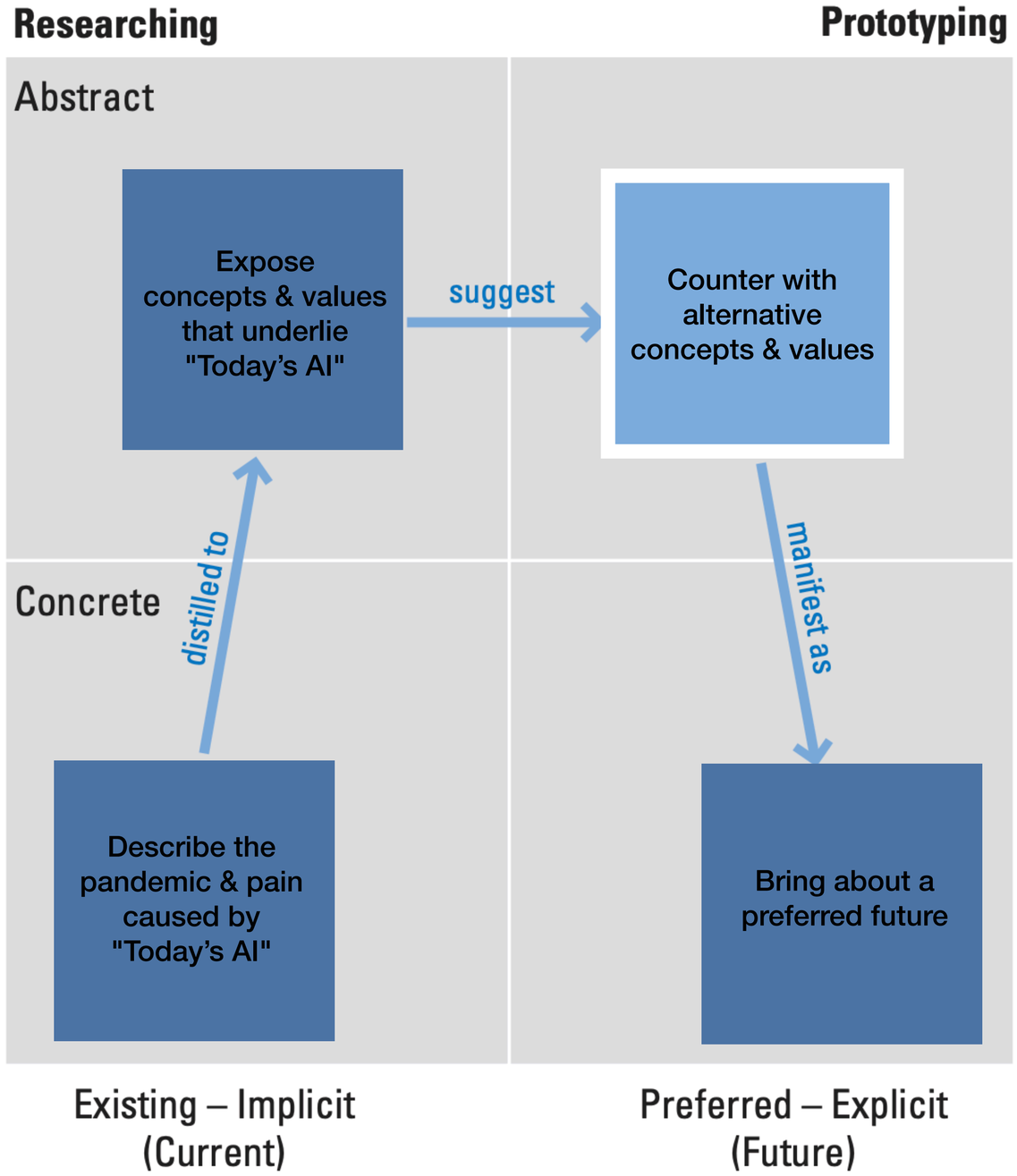
This is not the only option.

We can shift technology from digital assumptions and swing back toward our analog roots—our physical, organic, biological selves.

Novelty and choice, transparency and conversation can become the new core principles of Today's AI.

Counter

To upset the dominance of the pernicious algorithms of AI, we must design and propagate a set of humane, organic, and analog interactional frameworks.



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Countering Culture with Culture

Digital Culture ≠ **Analog Culture**

binary → inert → inflexible → mechanistic → TRANSACTIONS

biological → fluid → maleable → humane → CONVERSATIONS

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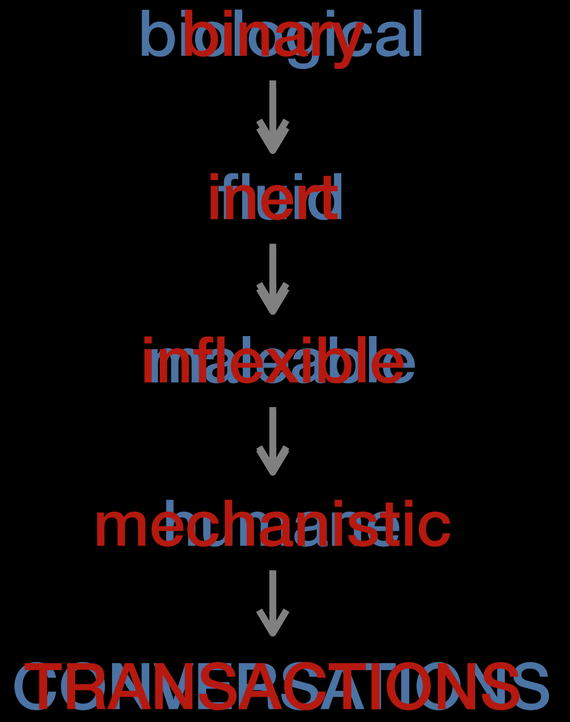

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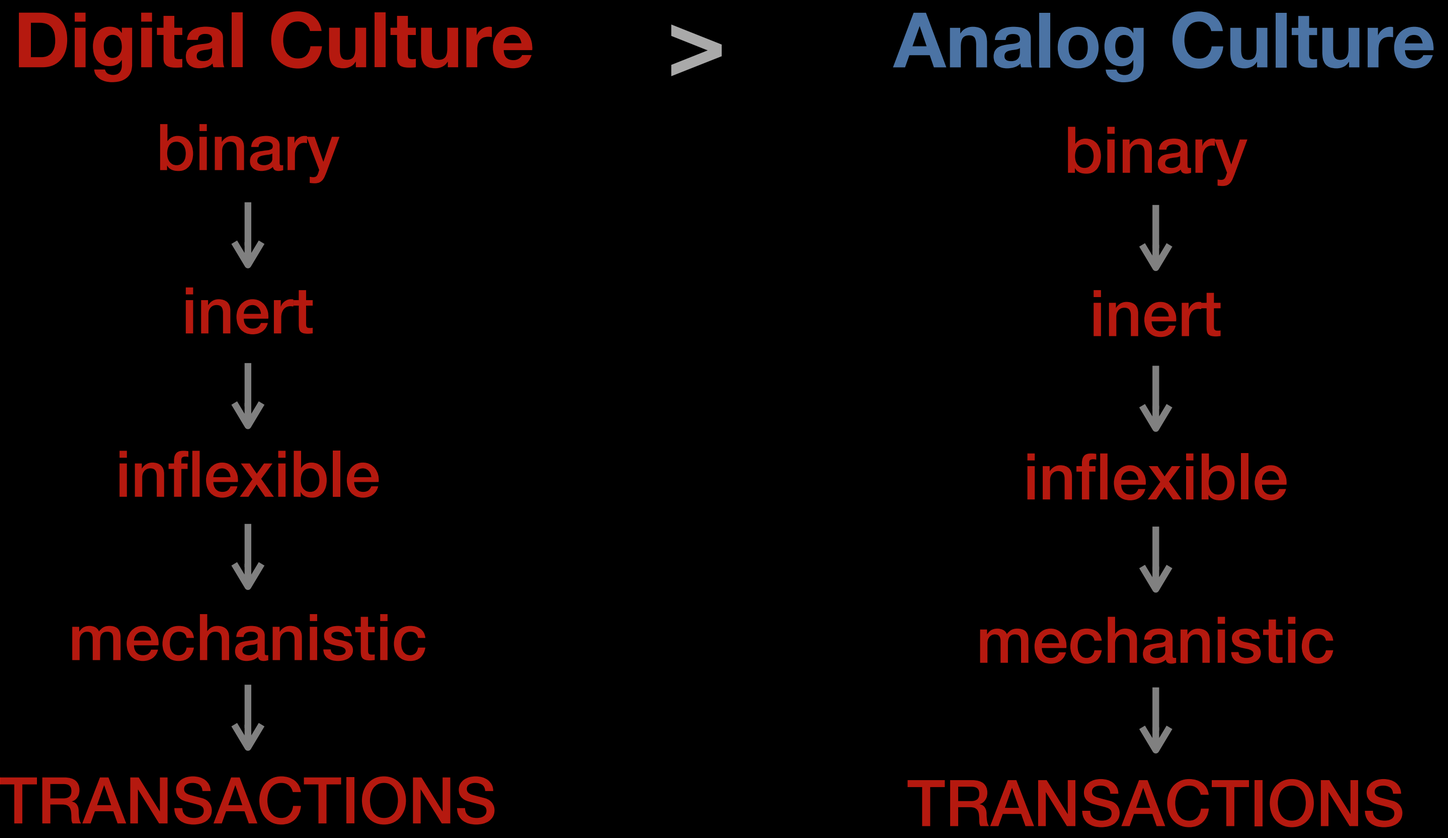

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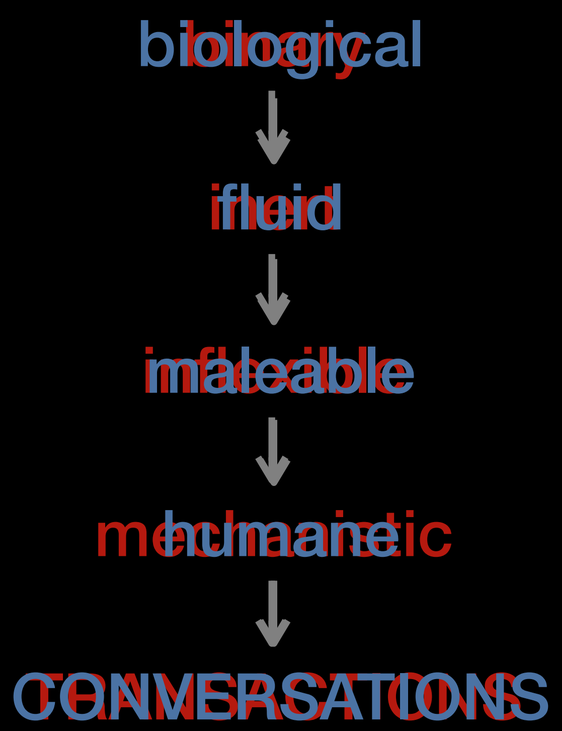

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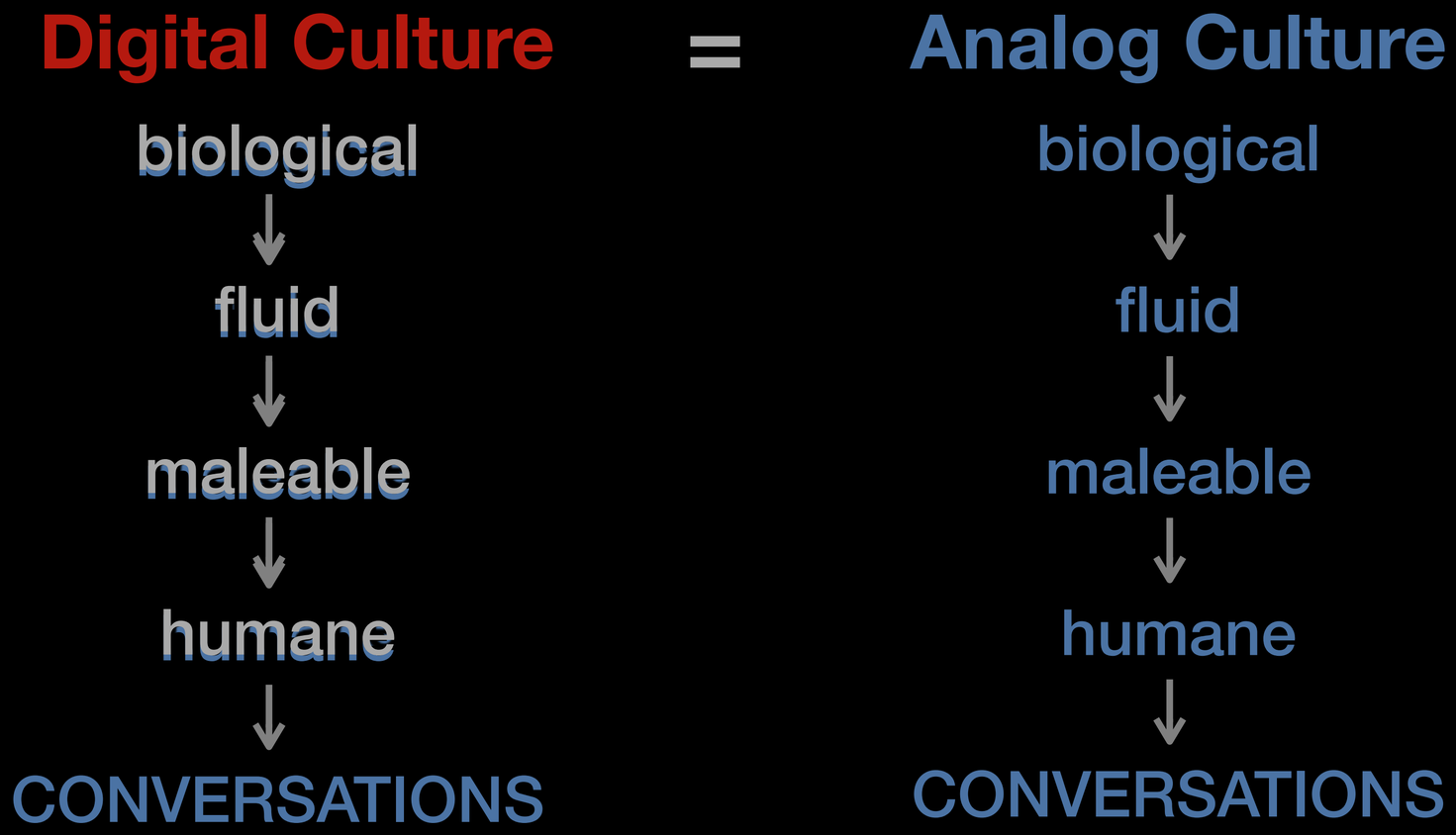

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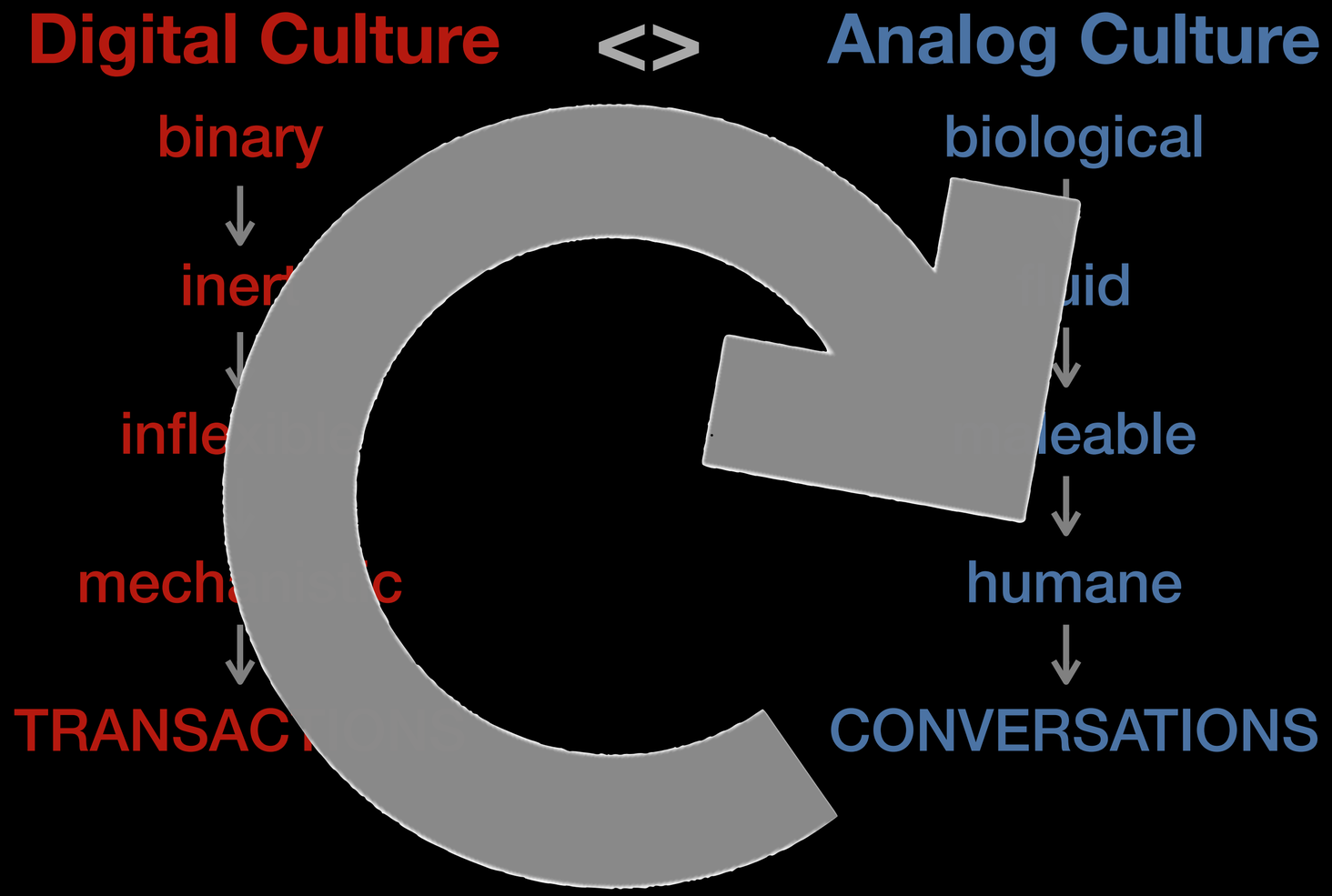
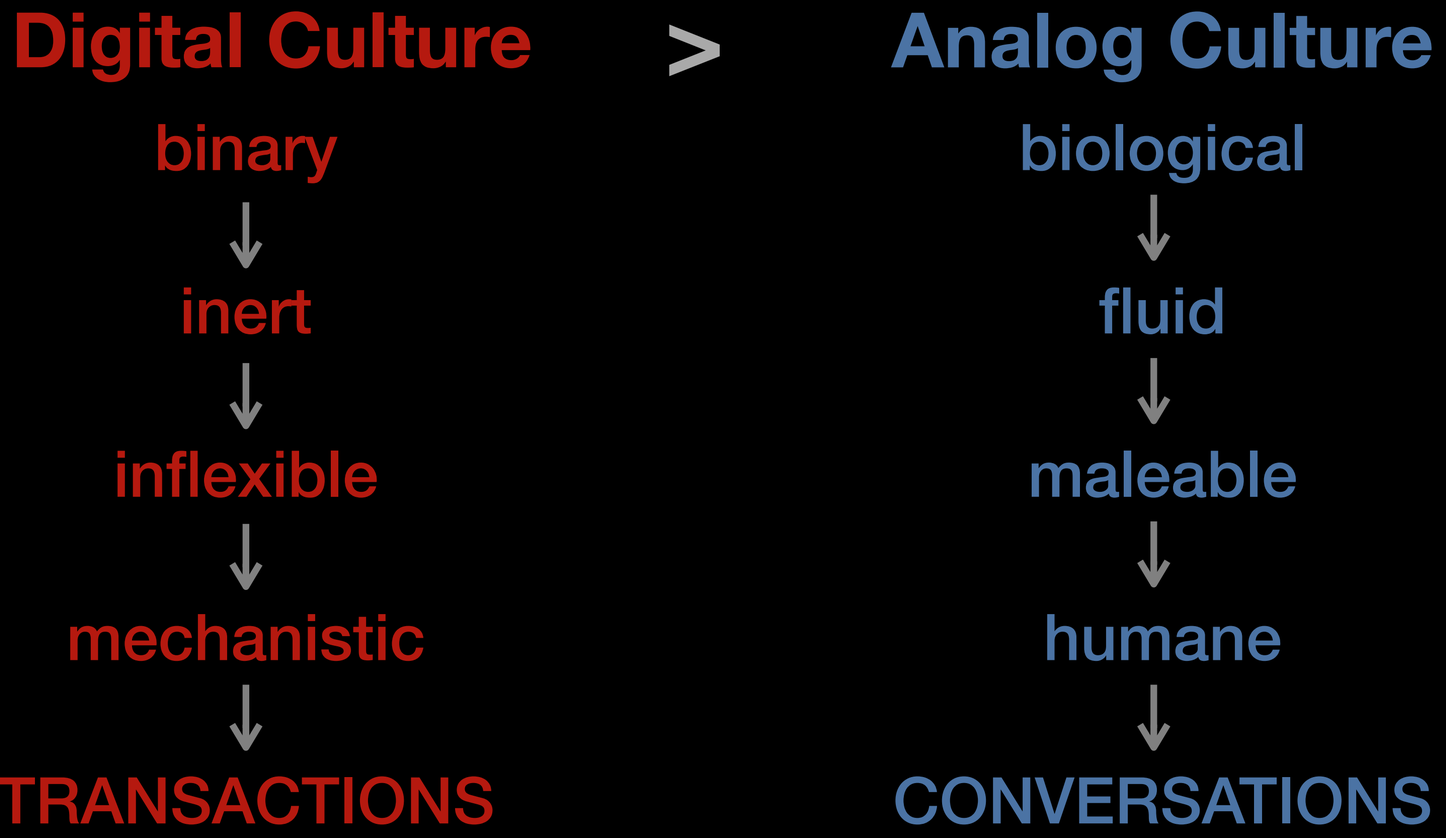


Countering Culture with Culture



How? Starting where?

Cybernetics

Why? Why Cybernetics?

Cybernetics | Neural Nets | AI

McCulloch-Pitts neurons	1943	- "Neural Nets" are born
Macy Meetings on Circularity	1946-1953	- swarms the *Zeitgeist*
Cybernetics by Wiener	1948	- influences generations
Dartmouth AI Conference	1956	- *contra* Cybernetics
Symbolic AI rises	1956-1980	- AI swarms the zeitgeist
Perceptrons kills neural nets	1969	- Minsky denies von Foerster
Cybernetics languishes	1956-2010	- AI influences generations
Hinton brings back neural nets	1980s	- Expert Systems come & go
Internet brings Big Data	2000s	- NN swarm the *Zeitgeist*
"Surveillance Capitalism"	2000s-2020s	- "Wicked Problems" prevail

Cybernetics = Origin of Neural Nets & AI

1940s **Cybernetics + Neural Nets**

1960s **Symbolic AI**

1980s **Expert Systems**

2010s **Neural Nets + Big Data + Massive Compute**

2020s **"Today's AI"—AI everywhere in our lives**

But Cybernetics is very different from AI

Cybernetics | "Wicked Problems"

How / Why does Cybernetics move us forward?

- developed before AI—and was AI's foundation
- embodies "the art and science" of purposive systems
- offers detailed models of regulation in complex adaptive systems
- embraces the unknowable and the unpredictable
- brings an ethical imperative to human action
- founded as transdisciplinary / antidisciplinary*
- applies across siloed disciplines

* Andrew Pickering coined "antidisciplinarity" in "Ontology and Antidisciplinarity", 2010

Artificial Intelligence Inside (™)

Facebook & Instagram

Google & Youtube

Amazon

Twitter

...

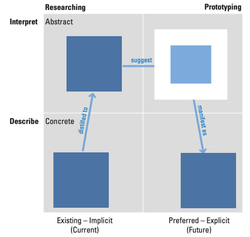
PANDEMICS are "Wicked Problems"

Are there alternatives to Cybernetics?

Science has failed to tame wicked problems.
Governance has failed.
Socio-technical systems have failed.
Today's AI has failed.
Engineering has failed.
Psychology has failed…

—Will society fail?

Counter

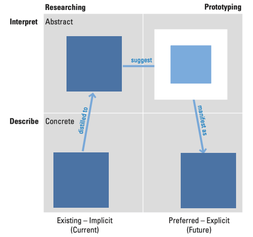


To upset the dominance of the pernicious algorithms of AI, we must design and propagate a set of humane, organic, and analog interactional frameworks.

If we bring forth replacements for the algorithms of Today's AI, we can begin to have a positive effect and better serve our social fabric.

We can start from Cybernetics

Countering



Digital Culture assumes that:

- interaction is mechanistic
- information is objective
- intelligence is a process that sits inside a person or computer

Cybernetics offers that:

- interaction can be conversational — inviting interpretation & responses from other contexts & understandings
- information can mean the triggering of ideas and reactions—the opening of new possibilities, ideas, & actions
- intelligence can be relational— an attribute of an interaction and not something inside a person or a box.

A preferred future

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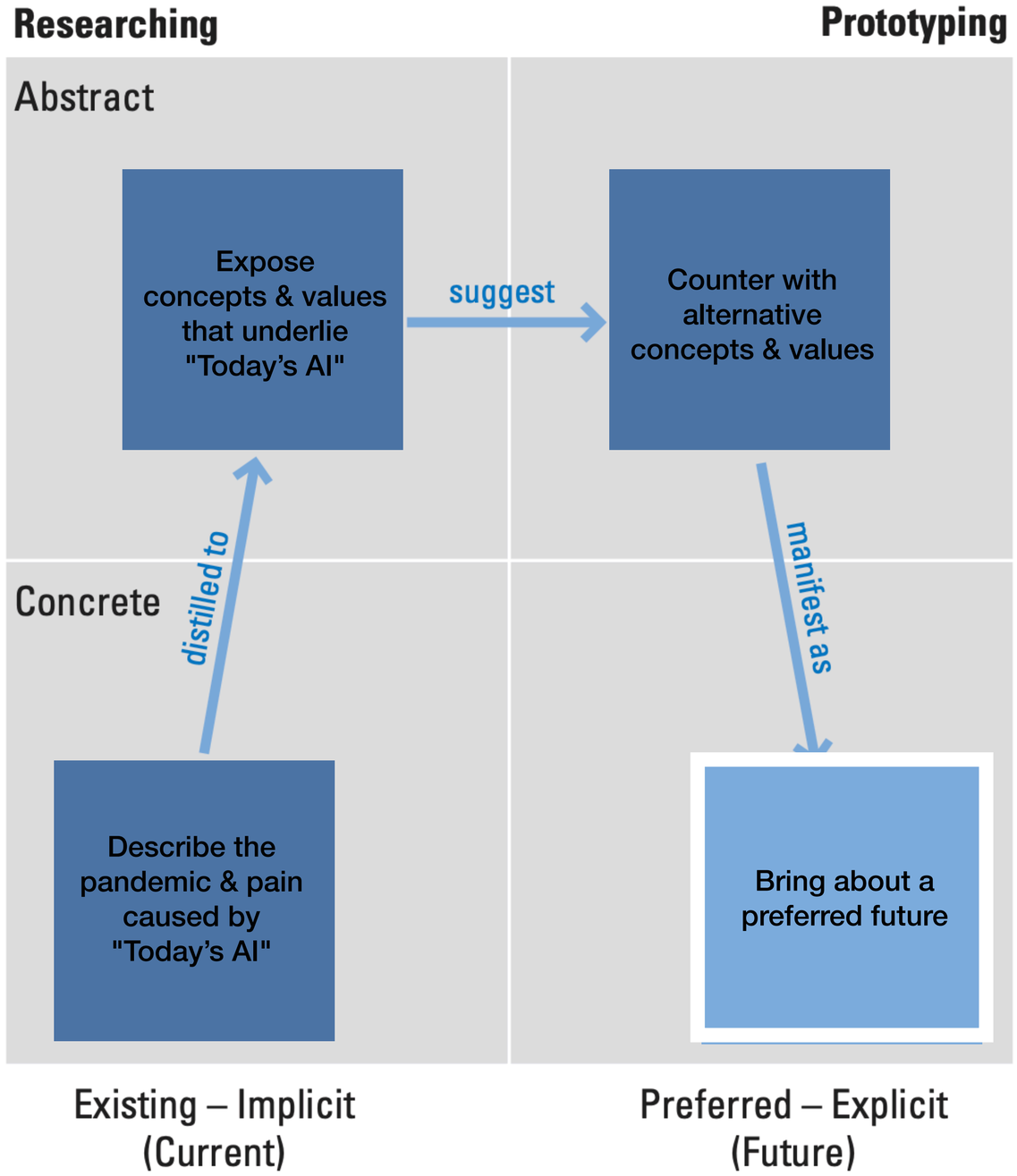

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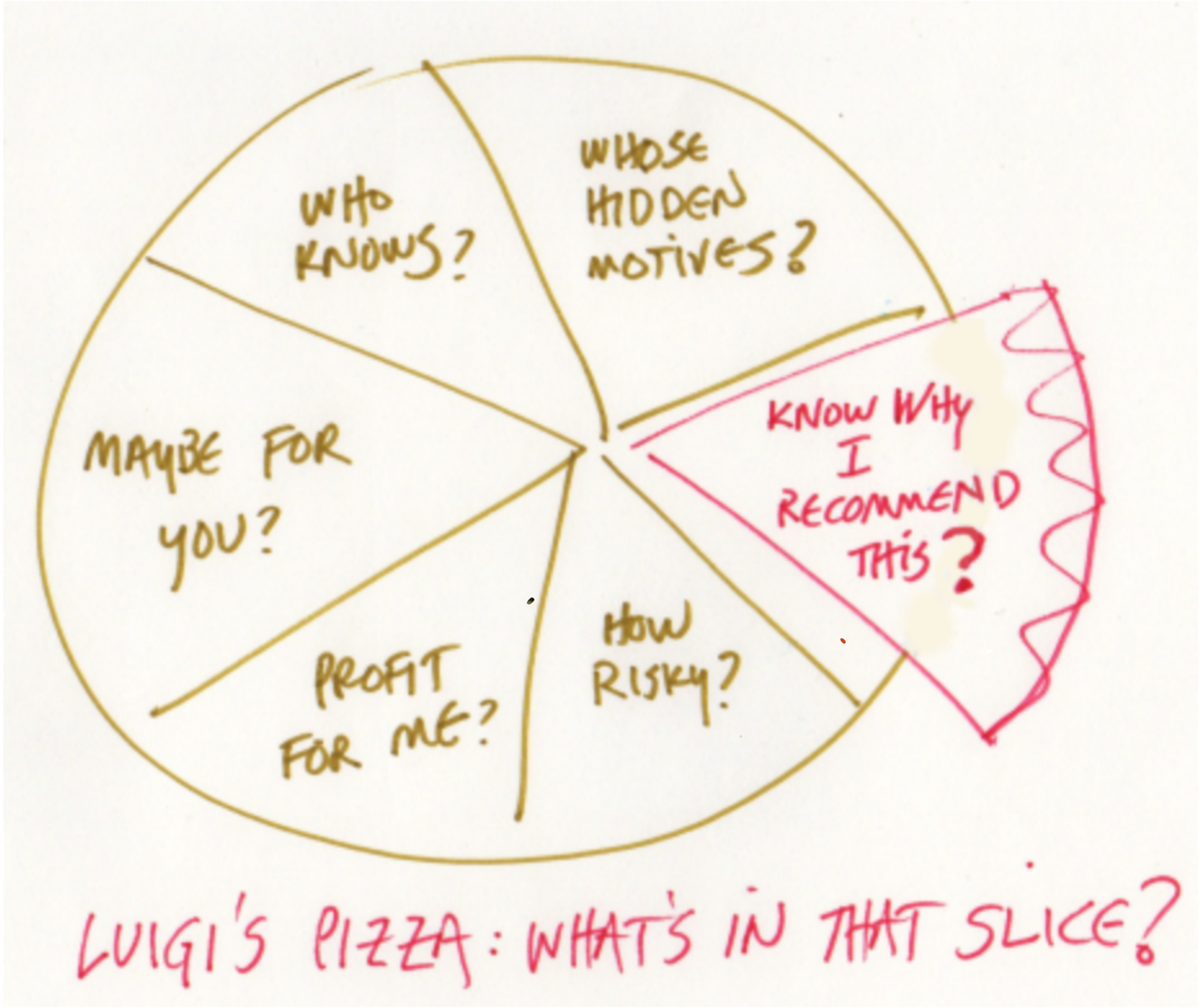
The Parable of Luigi's Pizza



More about Luigi's Pizza

CODE = CODIFICATION = DIGITAL

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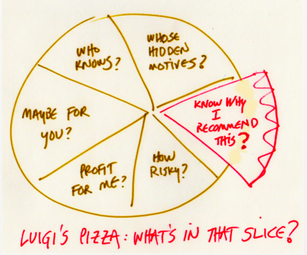
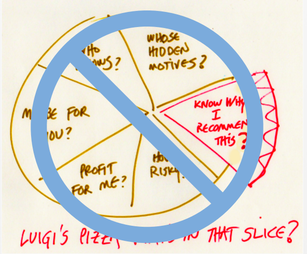


CODE = CODIFICATION = ANALOG

- ~~Lack of~~ Transparency of Intent
  "Why is Luigi's Pizza the best pizza?"



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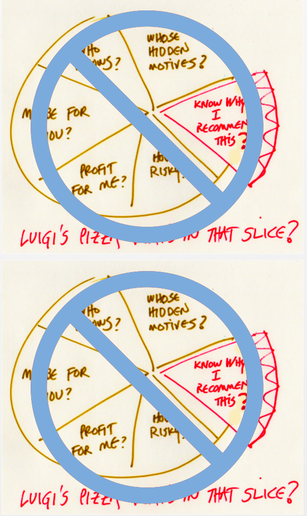
CODE = CODIFICATION = ANALOG

- ~~Lack of~~ Transparency of Intent
  "Why is Luigi's Pizza the best pizza?"
- ~~Asymmetry of~~ Control of Focus
  "Does Luigi's serve gluten-free pizza?"
- Lack of Control of Choice
  You can decline options but not define them



CODE = CODIFICATION = ANALOG

- ~~Lack of~~ Transparency of Intent

  "Why is Luigi's Pizza the best pizza?"

- ~~Asymmetry of~~ Control of Focus

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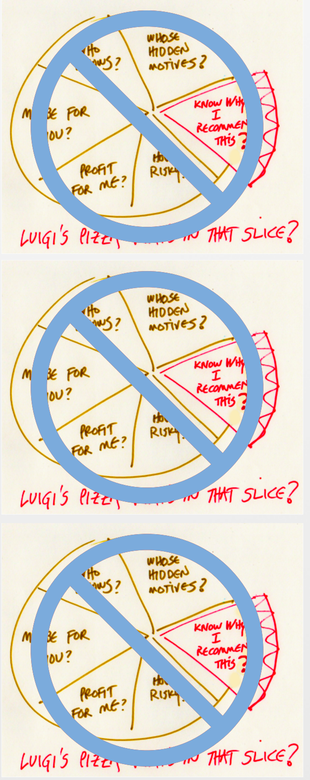
- ~~Lack of~~ Control of Choice

  "What new dish might I like?"



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- Transparency of Intent

  "Why is Luigi's Pizza the best pizza?"

- Control of Focus

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= CONVERSATION = ANALOG

CODE = CONVERSATION = ANALOG

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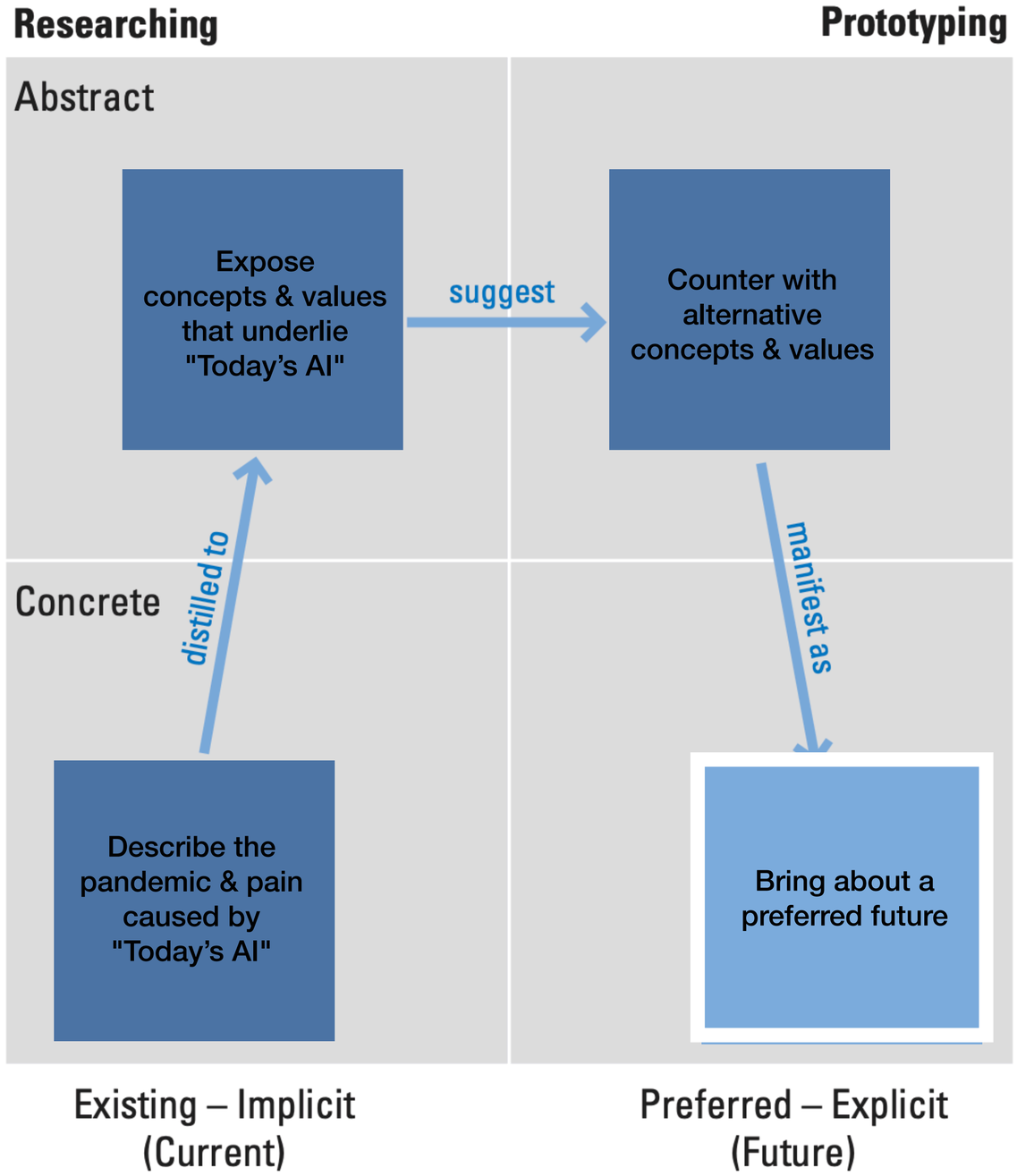
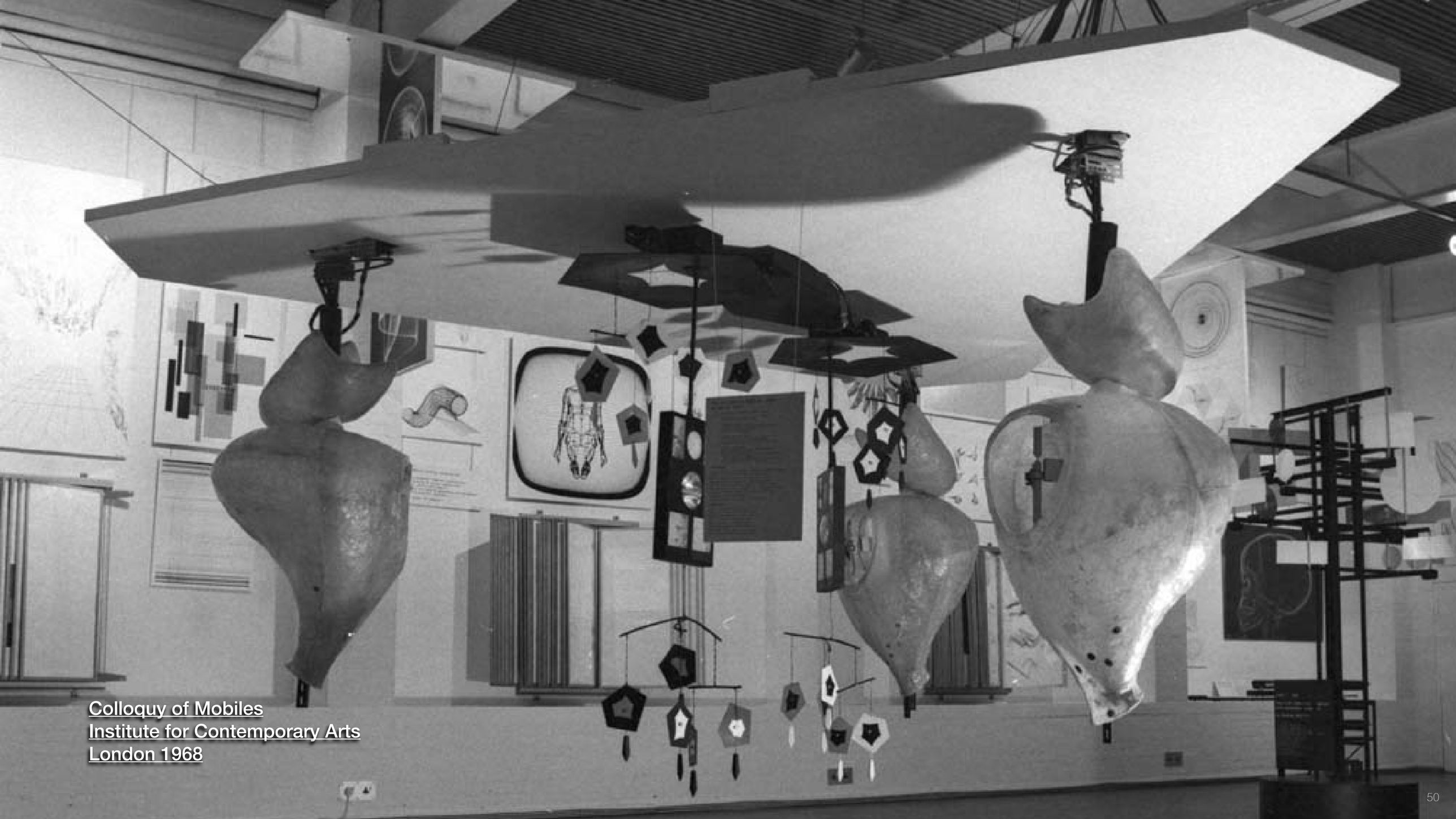
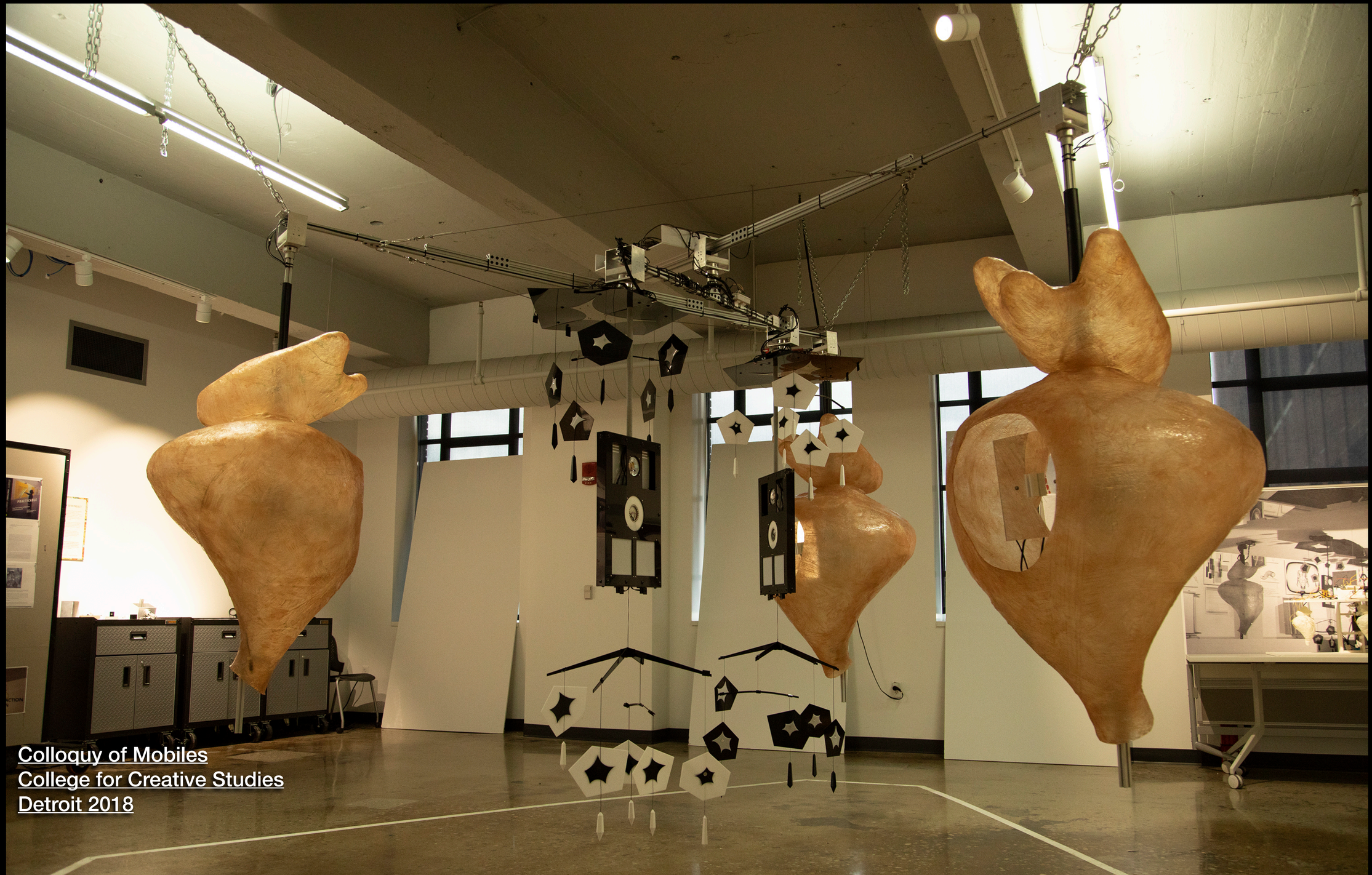
Where to begin?





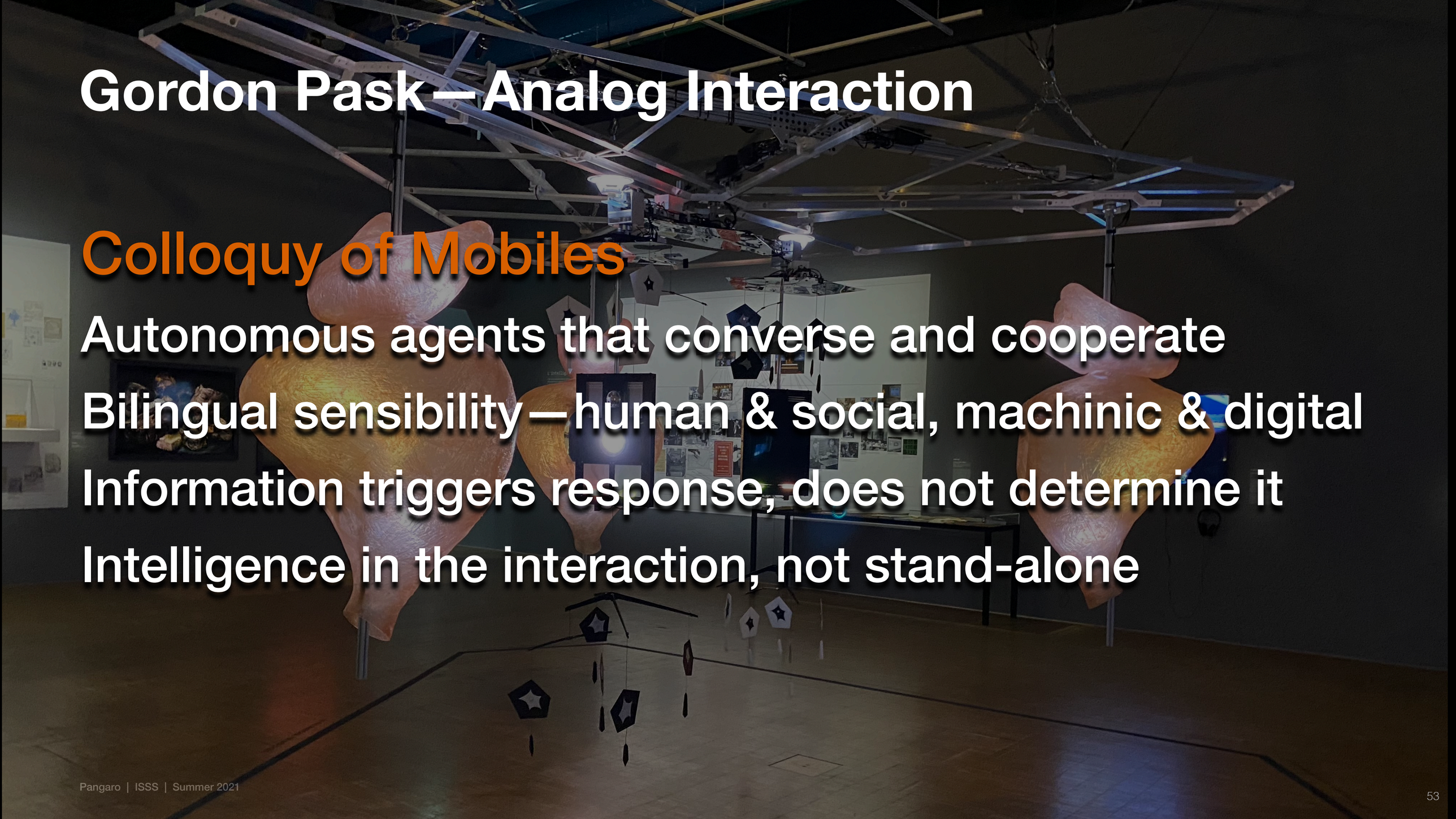
Colloquy of Mobiles
Institute for Contemporary Arts
London 1968



Colloquy of Mobiles
College for Creative Studies
Detroit 2018

Colloquy of Mobiles
Centre Pompidou
Paris 2020

Gordon Pask—Analog Interaction



Colloquy of Mobiles

Autonomous agents that converse and cooperate

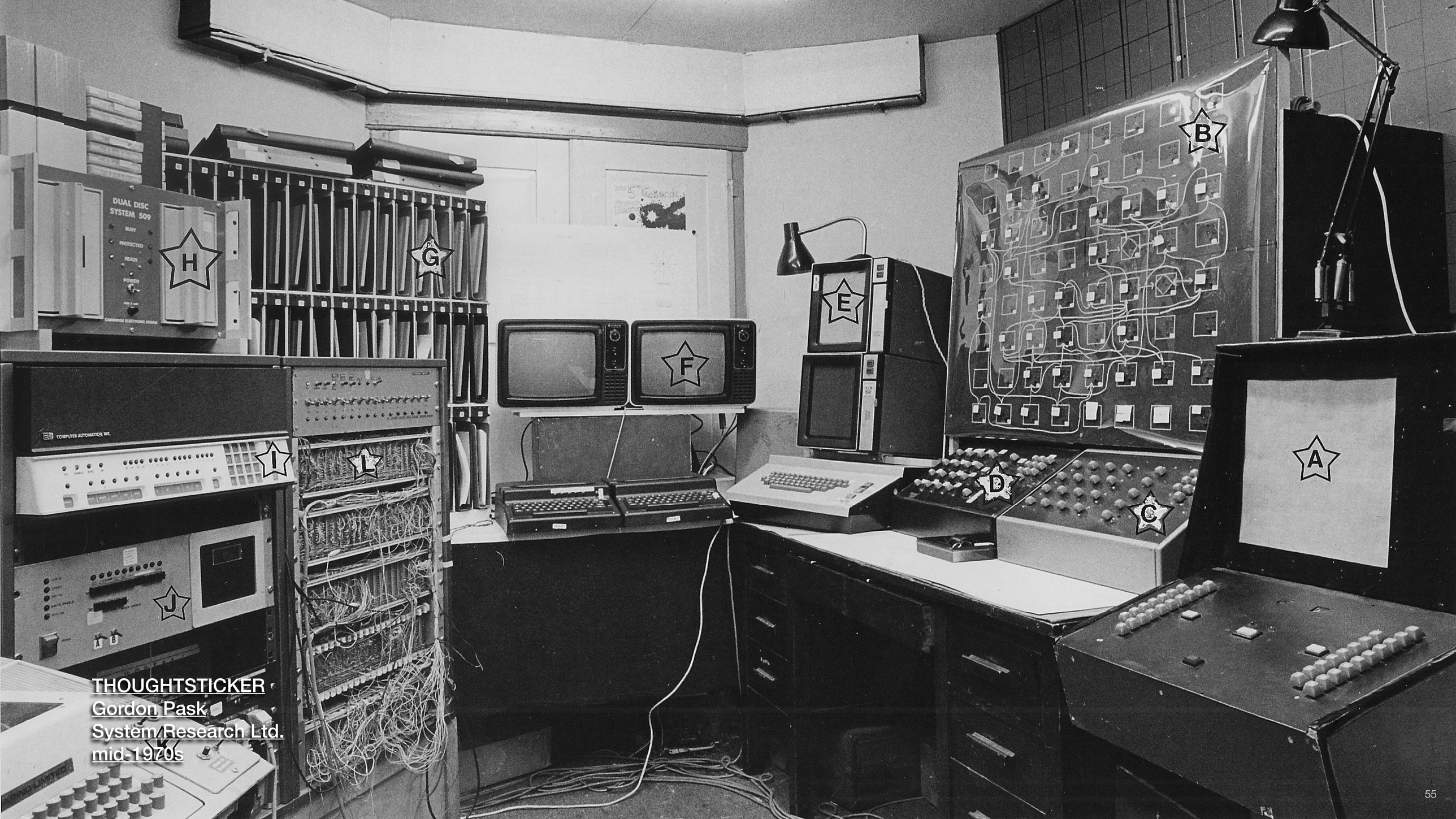
Bilingual sensibility—human & social, machinic & digital

Information triggers response, does not determine it

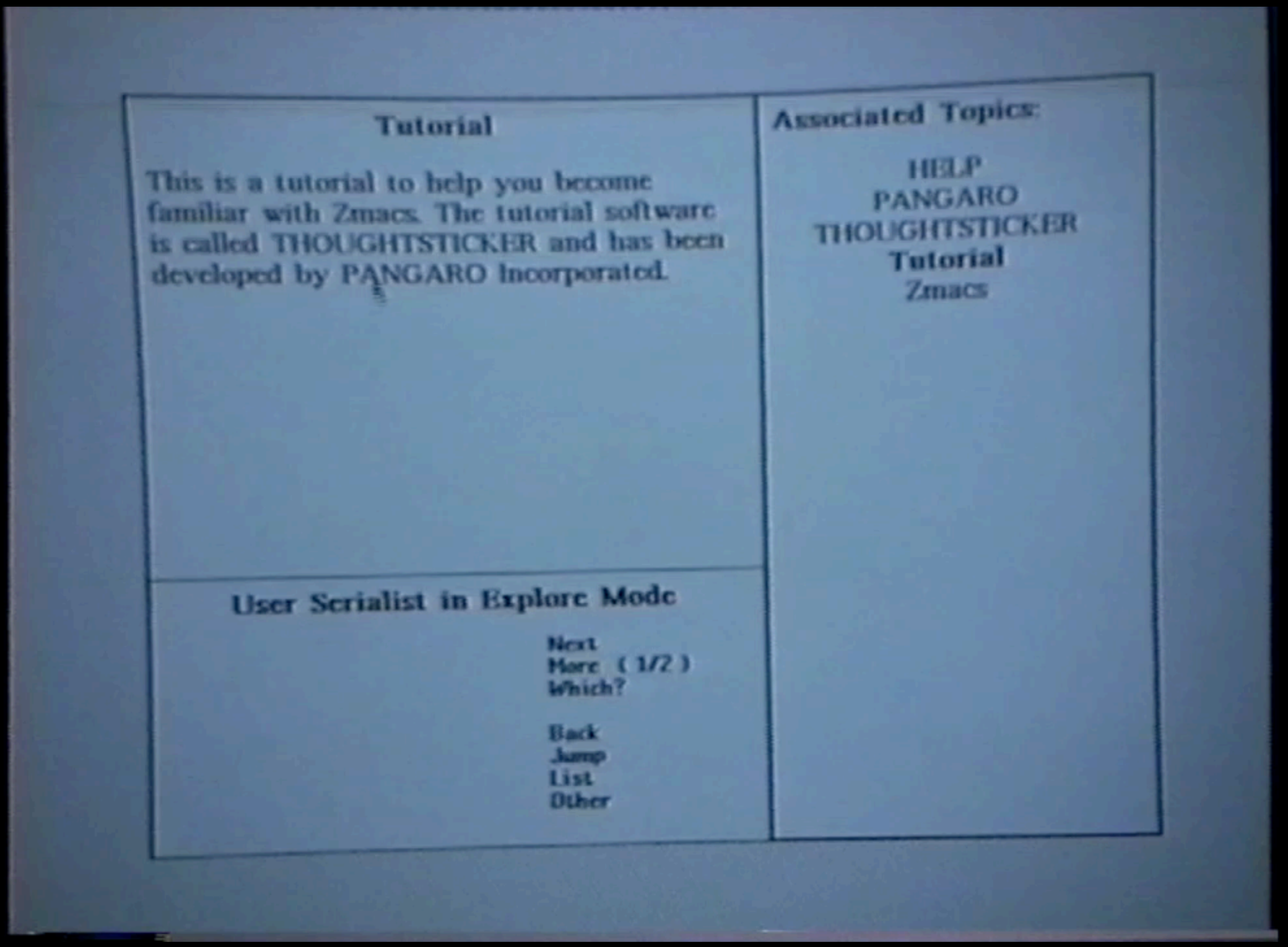
Intelligence in the interaction, not stand-alone

Colloquy of Mobiles
ZKM
Karlsruhe 2020

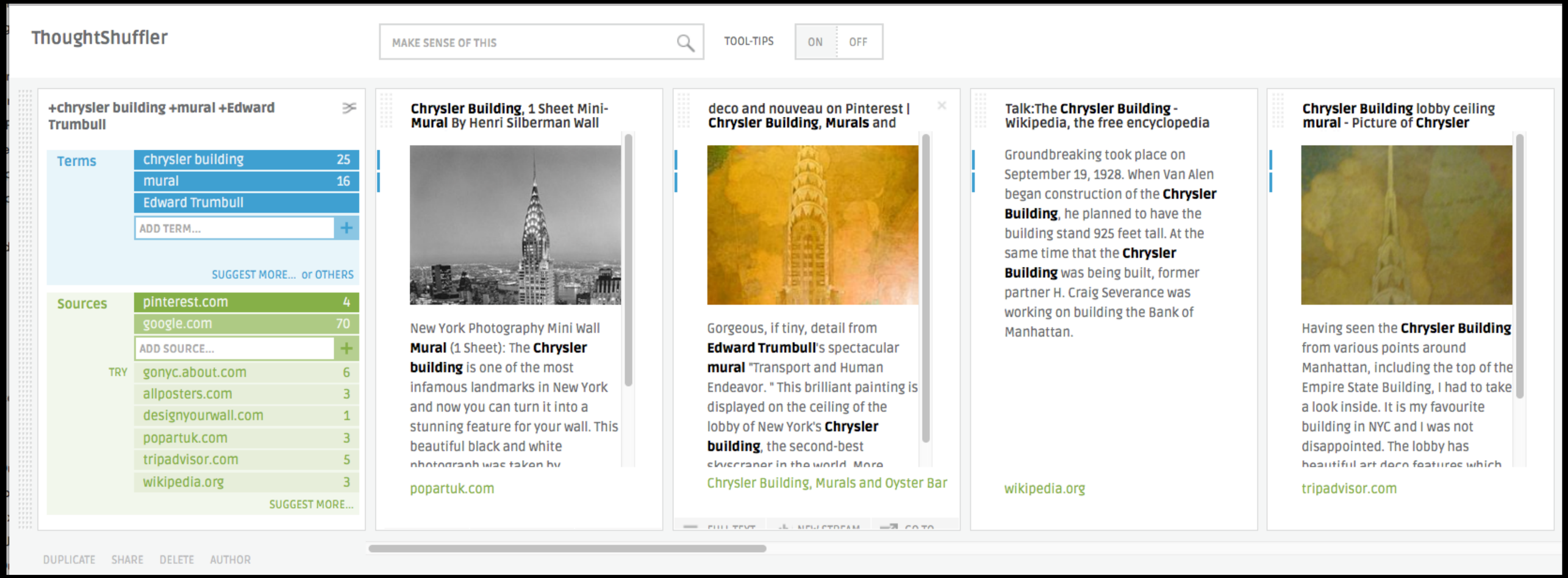
Photo by Morgane Stricot, ZKM



THOUGHTSTICKER
Gordon Pask
System Research Ltd.
mid-1970s



THOUGHTSTICKER
Ph.D. Dissertation
Paul Pangaro
1987



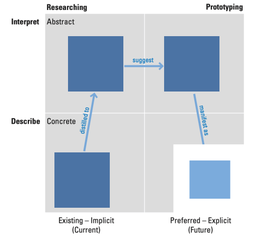
ThoughtShuffler v2
UX by See-ming Lee
Concept & heuristics by Paul Pangaro
2013

Bringing about a preferred future

Responding to the Pandemic of "Today's AI"

Our goal is to design and integrate new classes of interactional systems with today's AI and digital technologies to create and promote a new category of analog interactional frameworks.

Bringing about a preferred future
Responding to the Pandemic of "Today's AI"



Create and promote analog interactional frameworks

a. Identify participants & examples
- find current examples
- characterize their qualities
- fan out to find related efforts
- develop database
- share openly and seek critique

b. Characterize contexts where AI is now influential or prevalent
- gather types of AI algorithms
- deconstruct search, recommenders, social…
- build models of today's AI algorithmic types
- share openly and seek critique

c. Establish a new paradigm of analog interactional systems
- match AI contexts to new frameworks
- prioritize for impact & importance
- gather experts to evolve the frameworks
- share openly and seek critique
- produce and distribute outcomes as design patterns, toolkits, and workshops

d. Code new systems & disseminate
- prototype these alternatives as open source
- critique with sociologists, economists, MBAs…
- add to curricula for designers, coders…

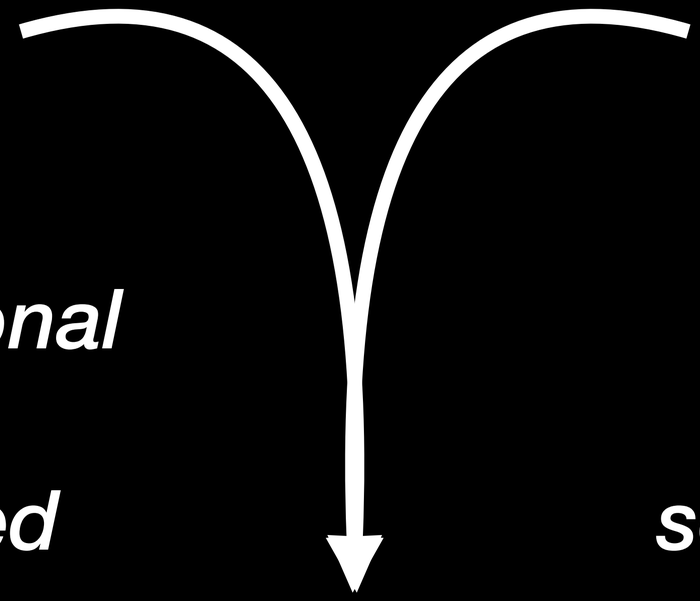
How does all this go together?

Today's AI

-machinic
-digital
-representational
-predictive
-data-animated

Conversation

human-
organic-
resonant-
emergent-
socially-animated-

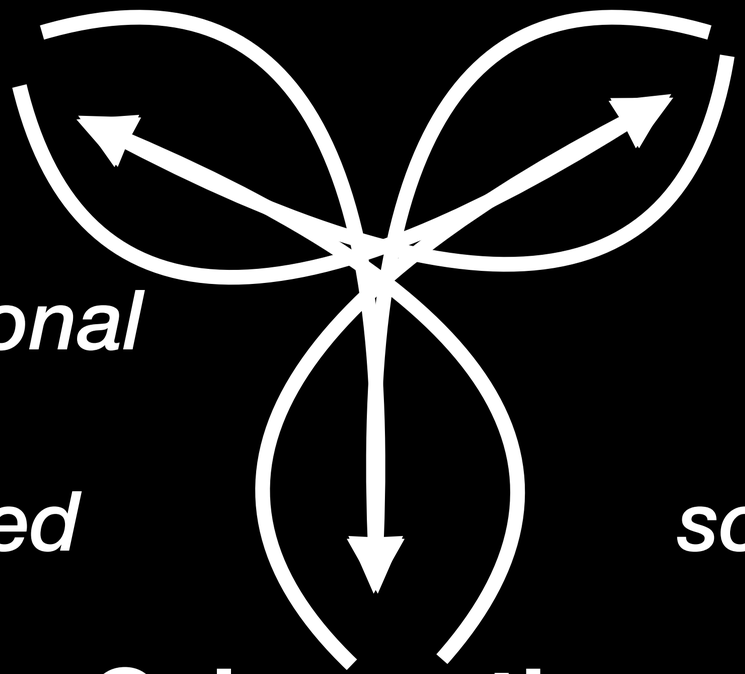


Cybernetics

bilingual sensibility

How does all this go together?

Today's AI
-machinic
-digital
-representational
-predictive
-data-animated



Conversation
human-
organic-
resonant-
emergent-
socially-animated-

Cybernetics
bilingual sensibility

Conversation | Cybernetics | Today's AI
But—how do we get this done?

"Today's AI" is a "wicked problem".

Wicked problems cut across complex adaptive systems, so we need deep conversations across all domains.

So, we need a new generation of Macy Meetings — now global & virtual, with Cybernetics as the glue, bridging humans and machines, societies and networks.

CYBERNETICS

CIRCULAR CAUSAL AND FEEDBACK MECHANISMS IN BIOLOGICAL AND SOCIAL SYSTEMS

Transactions of the Tenth Conference
April 22, 23, and 24, 1953, Princeton, N. J.

Edited by
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NEW YORK, N. Y.

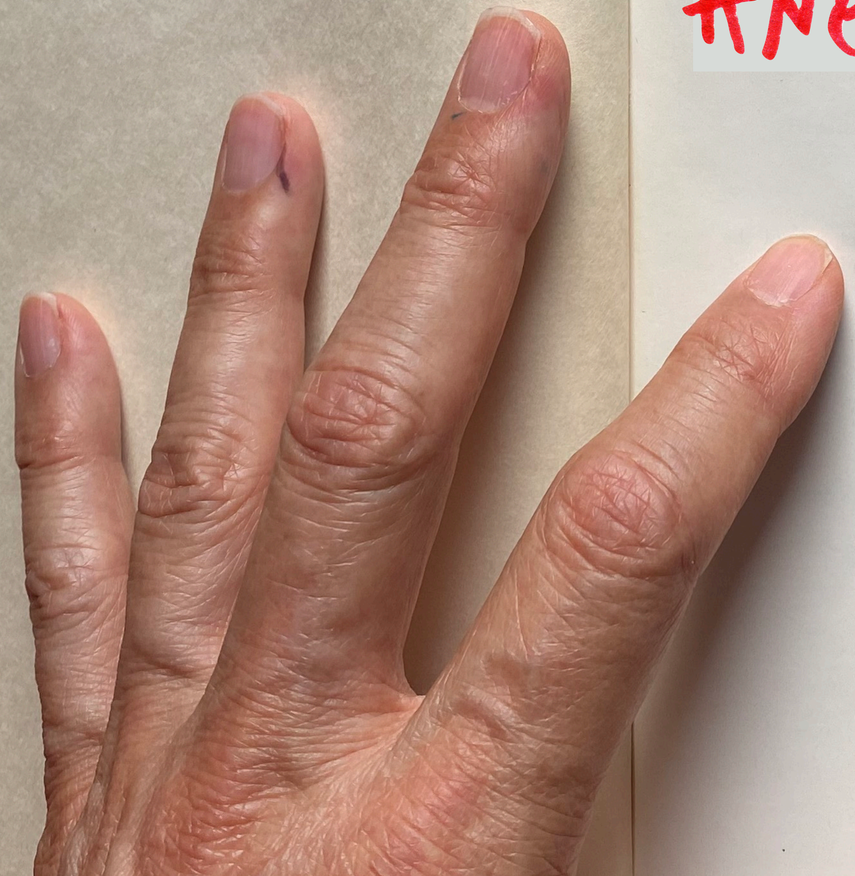
Cybernetics + Macy Meetings

In the 1940s and 1950s, a series of small conferences were funded by the Josiah Macy Jr Foundation.

Experts from a vast range of disciplines focused on **purpose** in understanding and designing complex systems. They created a new way of thinking and acting in the world and started a revolution.

They called this new field **cybernetics** from a Greek word meaning the art of steering toward a goal—acting with purpose.

These original **Macy Meetings** changed the worlds of science, engineering, and humanities.



CYBERNETICS

CIRCULAR CAUSAL AND FEEDBACK MECHANISMS IN BIOLOGICAL AND SOCIAL SYSTEMS

#NEW MACY MEETINGS

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These original **Macy Meetings** changed the worlds of science, engineering, and humanities. We need such a revolution again to tame today's "wicked problems"—**#NewMacy Meetings**.

Cybernetics & Macy Meetings

Original Macy Meetings
1943 – 1955

- post-WWII "world order"
- digital rising
- circular causal & feedback mechanisms
- closed selection of participants
- transdisciplinary

#NewMacy Meetings
2020 –

- post-COVID "wicked problems"
- digital supreme
- … + socio-technical entanglements
- open network of collaborators
- transdisciplinary
  transglobal
  transgenerational

#NewMacy Conversations

Summary of activities

- Launched at Seminar at Carnegie Mellon, March 2020
- On-going conversations in association with the American Society for Cybernetics, from April 2020
- Cybernetics and Designing for Action, September 2020
- #NewMacy Meeting Experiment #1, September 2020
- Presentation at AIAgora at TU Delft, December 2020
- Manifesto document, March 2021
- Responding to the Pandemic of "Today's AI" evolving draft

Where we are now

- Advancing the plan to respond to Today's AI
- Designing for variety in #NewMacy Conversations
- Formulating #NewMacy Meetings for Fall 2021
- Reaching GenZ (18 to 25 year-olds) to represent their worldview and values on upcoming generations
- Seeking #NewMacy Network organizations
- Seeking #NewMacy Network individual participants
- Continuing to build #NewMacy Advisory Council

#NewMacy Advisory Council

Confirmed Members

- Philip Beesley / U of Waterloo – Toronto
- Hugh Dubberly / San Francisco
- Omar Kahn / Carnegie Mellon – USA
- Guilherme Kujawski / São Paolo
- Innocent Ndubuisi-Obi, Jr / USA
- Nga Nguyen / New York
- Despina Papadopoulos / New York
- Andy Pickering / UK
- Bernard Scott / UK
- Delia Pembrey MacNamara / Australia
- Renee V. Wallace / Detroit

More to follow

Countering Code with Code:
Responding to the Pandemic of "Today's AI"

Today I have argued that:

- Digital culture contributes to the Pandemic of "Today's AI."
- Human experiences of interaction, information, and intelligence are compromised.
- Analog interactional frameworks can be organic, conversational, and humane.
- Cybernetics offers bilingual sensibility to bridge the analog & the digital.
- Promoting new design patterns & working prototypes can bring positive change.
- Urgency of the need and scale of the challenge requires that we convene #NewMacy Conversations in a Network of #NewMacy Meetings.

#NewMacy Network + #NewMacy Meetings
Responding to the Pandemic of "Today's AI"

Let us bring about a rich mesh of collaborations
among individuals and organizations—
across disciplines, geographies, and generations.

We will be deliberate about what we wish to conserve
as analog, biological, social beings—
and then use technology to serve our principles.

We are excited to see what can emerge.

Please join us.

#NewMacy Network + #NewMacy Meetings

Thank you.

Special thanks to:
Delia Pembrey MacNamara
& Jennifer Makar
Karen Kornblum
Deborah Forster
Andrew Pickering
Larry Richards
Andrew Schmookler
Bernard C.E. Scott
Mark Sullivan
Ben Sweeting

Countering Code with Code:
Responding to the Pandemic of "Today's AI"

"Moreover, if we move in the direction
of making machines which learn
and whose behavior is modified by experience,
we must face the fact that
every degree of independence we give the machine
is a degree of possible defiance of our wishes."

—Norbert Wiener 1949

Countering Code with Code: Responding to the Pandemic of "Today's AI"

Thank you.

Links

Appendices

Keynote Materials

#NewMacyMeeting #1

Cybernetics, AI, and Ethical Conversations

Pickering: "The Next Macy Conference"

Pickering: "Ontology and Antidisciplinarity"

Wiener: Quoted by John Markoff

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