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CONVERSATION IS THE ANTIDOTE TO BAD AI: FLIPPING DIGITAL LOGIC TO ANALOG IXD

PAUL PANGARO
PROFESSOR AT PRACTICE at
CARNEGIE MELLON UNIVERSITY

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CONFERÊNCIA
BOTS BRASIL
2021

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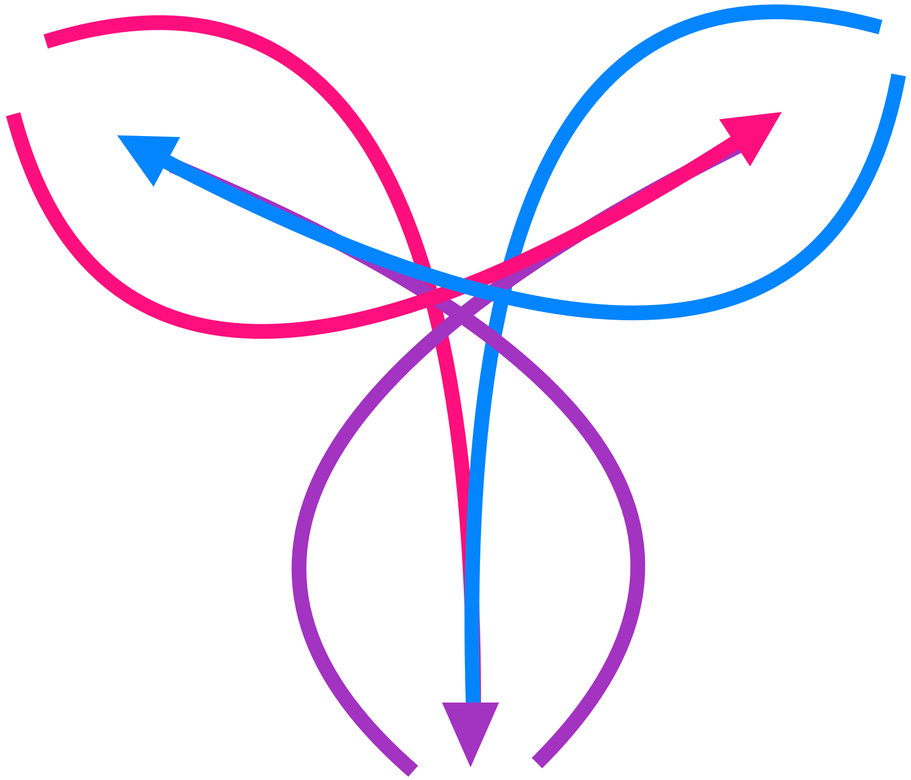

CONFERÊNCIA
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2018

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17 NOV · SÃO PAULO

Making Chatbots Humane: Adopting the Technology of Human Conversation

Paul Pangaro, PhD

November 2018

Conversation is the Antidote to Bad AI: Flipping Digital Logic to Analog IxD

Bots Brasil
October 2021

Paul Pangaro, PhD

President, American Society for Cybernetics &
Professor of Practice, Human-Computer Interaction Institute,
Carnegie Mellon University
ppangaro@cmu.edu

pangaro.com/bots2021/ @NewMacyMeetings

Conversation is the Antidote to Bad AI

Pandemics

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

Conversation is the Antidote to Bad AI

Pandemics

The word "pandemic" comes from "all" and “people"—
something negative that affects everyone in our community.
The Internet and digital devices connect to 4 billion people.
"Today’s AI" is inside technology we touch every day.

Conversation is the Antidote to Bad AI

Pandemic of "Today's AI"

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Today's AI foments polarization, pushes irrelevant products,
spreads social bias, and surveils our lives.

Conversation is the Antidote to Bad AI

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Today's AI foments polarization, pushes irrelevant products,
spreads social bias, and surveils our lives.
Its impact on our daily living is growing every day.

Pandemic of "Today's AI"

Facebook & Instagram

Google & Youtube

Amazon

Twitter

TikTok...

Artificial Intelligence Inside (™)

Artificial Intelligence Inside (™)

Facebook & Instagram

Google & Youtube

Amazon

Twitter

TikTok

CODE =

AUTOMATION =

CODIFICATION

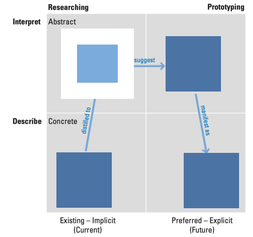
Conversation is the Antidote to Bad AI

Pandemic of "Today's AI" = "Bad AI"

- Manipulation of attention by Internet platforms
- Manipulation of sentiment in politics & elections
- Loss of privacy through "surveillance capitalism"
- 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.

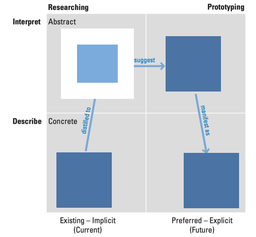
Premise—It’s the "Digital Culture"



Digital technology forges a culture focused primarily on what computers can easily do. Most often for profit.

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

Assumptions from Digital Culture



Digital Culture assumes:

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

So it "it becomes true" 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

EXAMPLES

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

CODE = CODIFICATION

- Lack of Transparent Intent
  You cannot learn why choices were offered
- Asymmetry of Control of Focus
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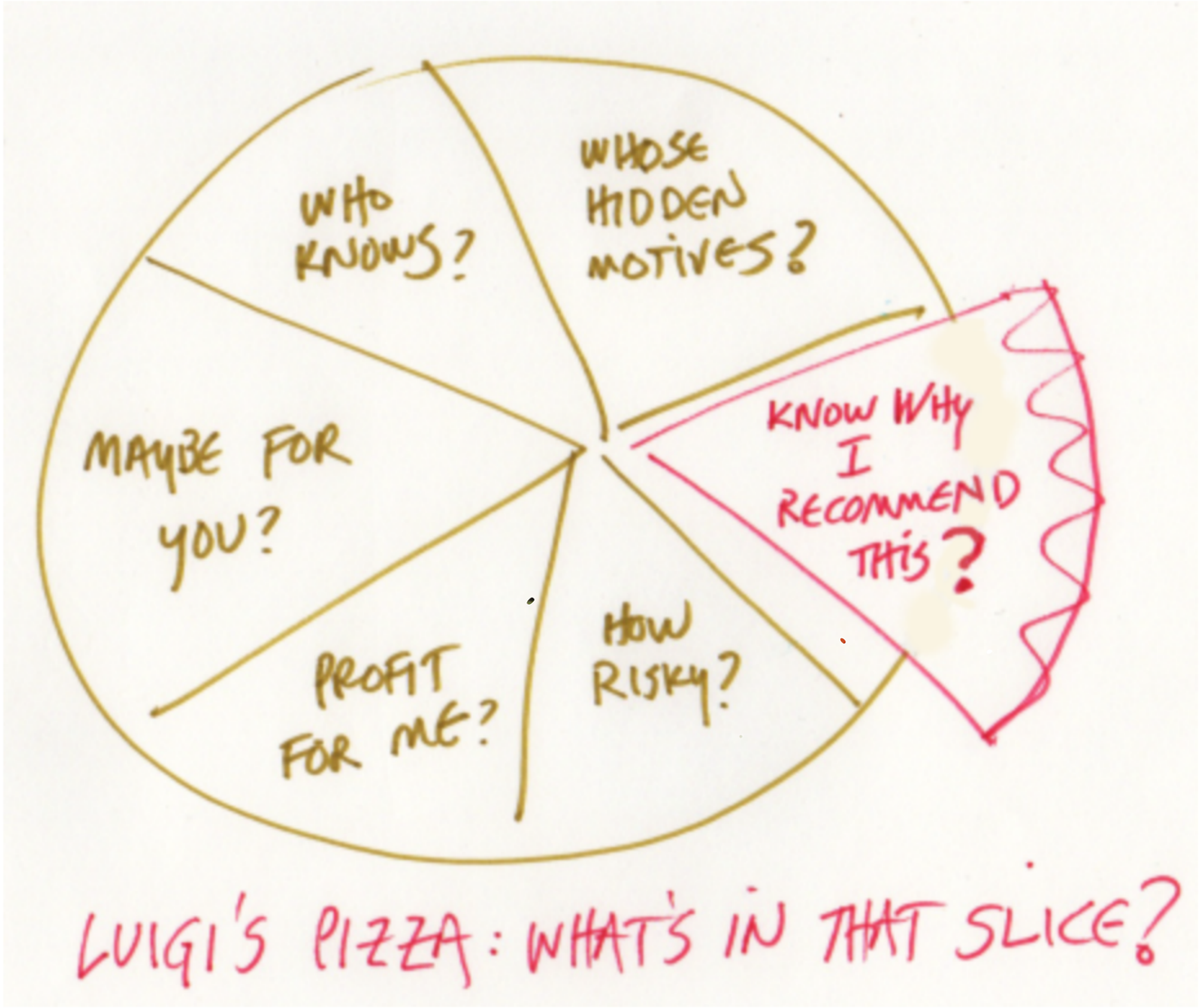
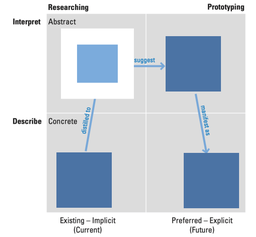
CODIFICATION enshrines values that control outcomes

The Parable of Luigi's Pizza



More about Luigi's Pizza

Premise—It's not Technology—not AI itself



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.

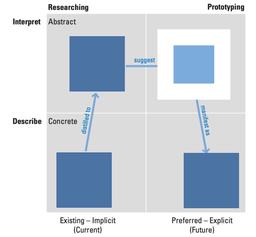
Novelty and choice, transparency and conversation can become the new core principles of Today's AI.

Premise—There are other ways to write code

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

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

Countering with analog frameworks



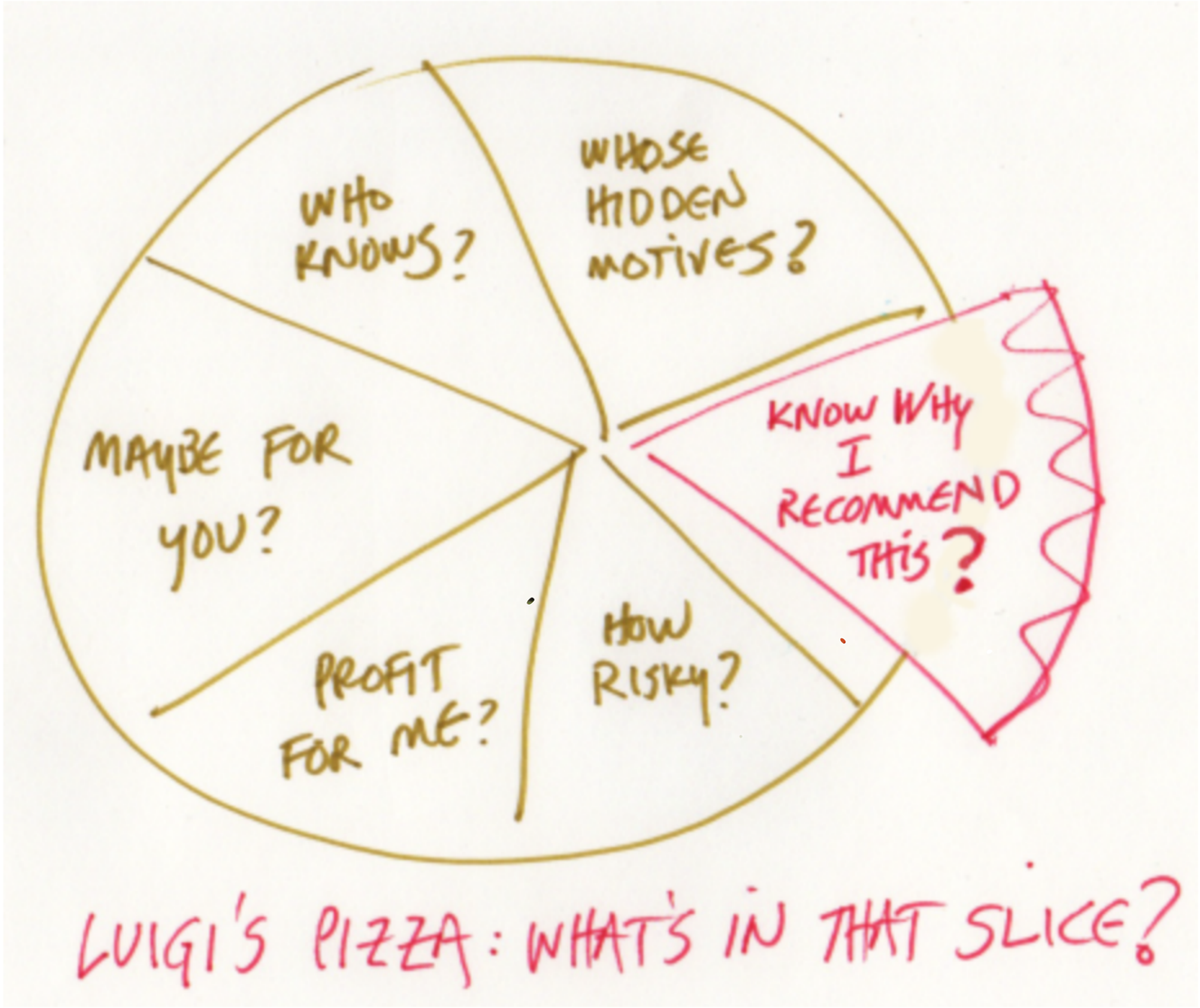
Digital Culture assumes:

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

"Analog frameworks" means:

- 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.

The Parable of Luigi's Pizza



More about Luigi's Pizza

CODE = CODIFICATION = DIGITAL

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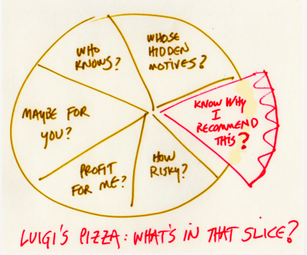
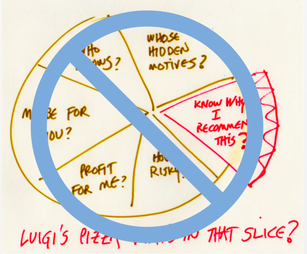


CODE = CODIFICATION = ANALOG

- ~~Lack of~~ Transparent Intent

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



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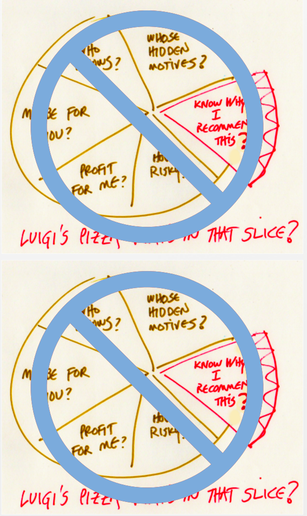
CODE = CODIFICATION = ANALOG

- ~~Lack of~~ Transparent Intent

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

- ~~Asymmetry of~~ Collaborative Focus

  "Does Luigi's serve gluten-free pizza?"



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CODE = CODIFICATION = ANALOG

- ~~Lack of~~ Transparent Intent

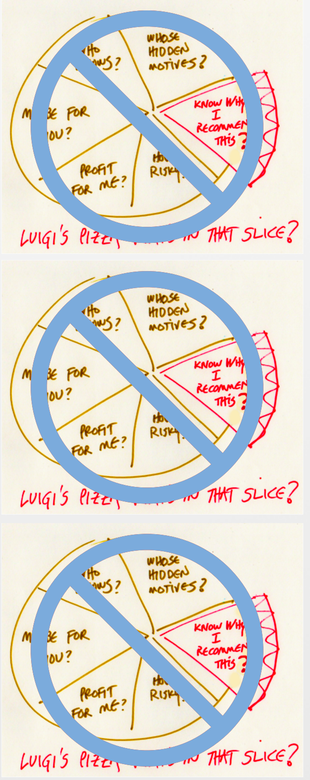
  "Why is Luigi's Pizza the best pizza?"

- ~~Asymmetry of~~ Collaborative Focus

  "Does Luigi's serve gluten-free pizza?"

- ~~Lack of~~ Coordinated Choice

  "Why might I like this new dish?"



CODE = CODIFICATION = ANALOG

- Transparent Intent

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

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CODE = CODIFICATION = ANALOG

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= CONVERSATION = ANALOG

CODE = CONVERSATION = ANALOG

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  "Why is Luigi's Pizza the best pizza?"
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Novelty and choice, transparency and conversation would become the new core principles of interaction.

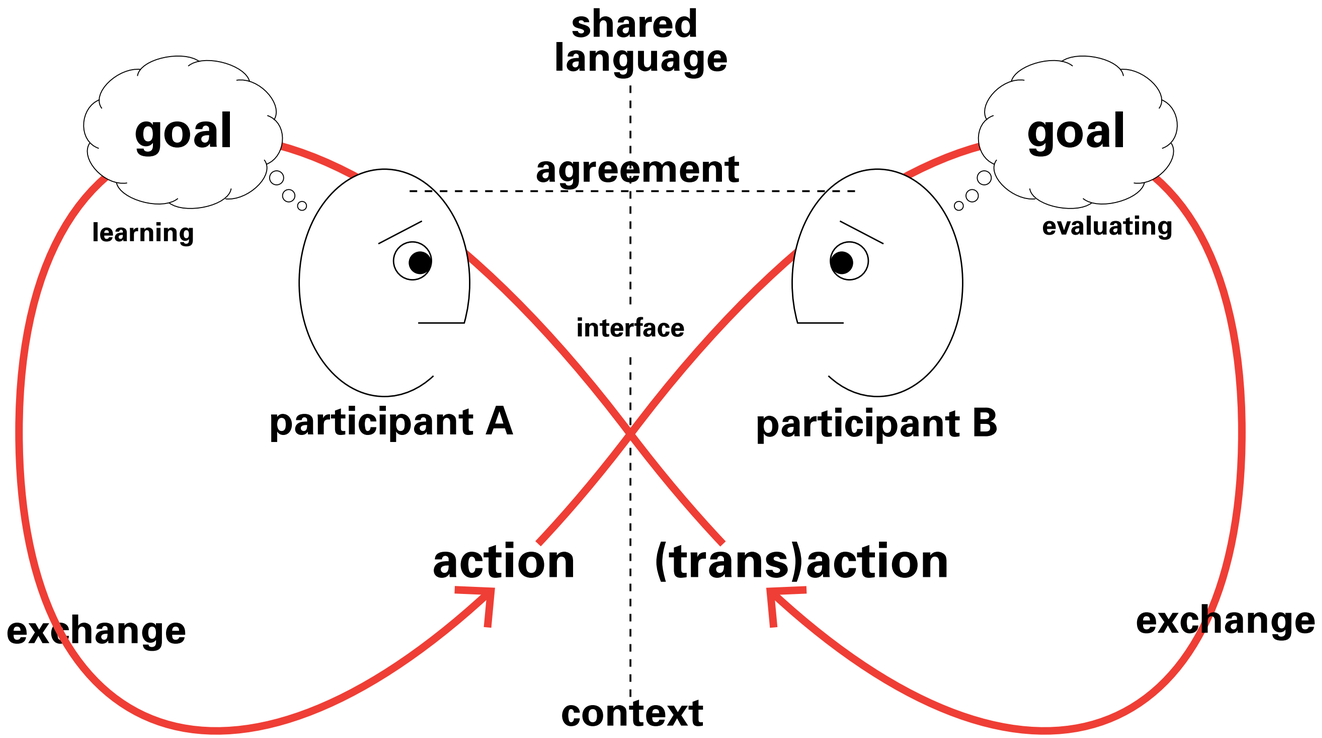
Making Chatbots Humane: Adopting the Technology of Human Conversation

Paul Pangaro, PhD

November 2018

Making Chatbots Humane
Bots Brasil 2018

Conversation Model



Click for Abstract and Slides
See also Economy of Insight

Making Chatbots Humane

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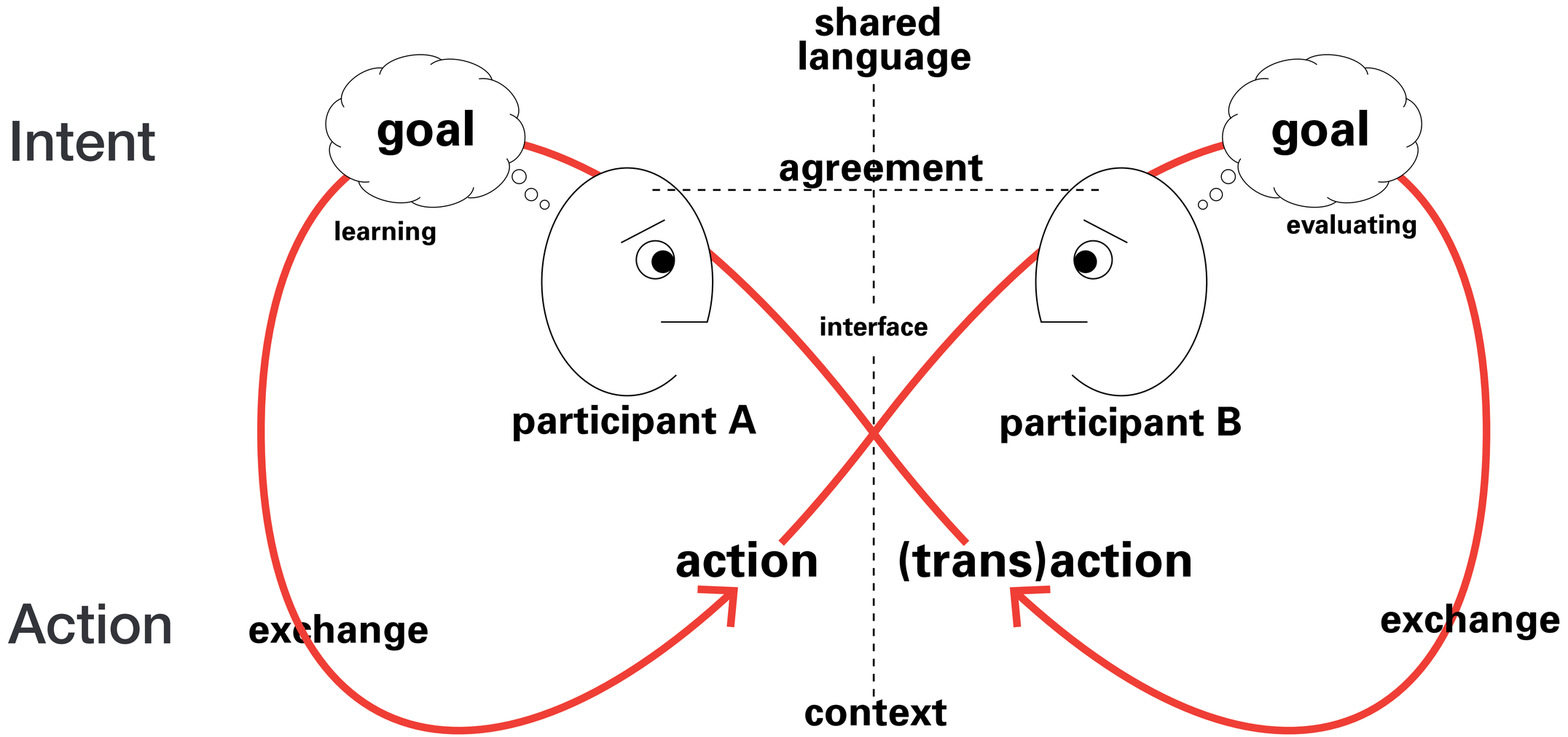

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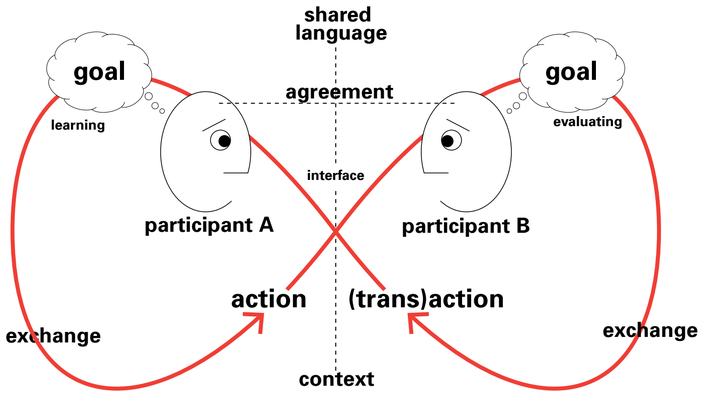
What may follow from conversation?

- ***shared history***
- ***relationship***
- ***trust***
- ***respect***
- ***unity.***

All these require conversation.

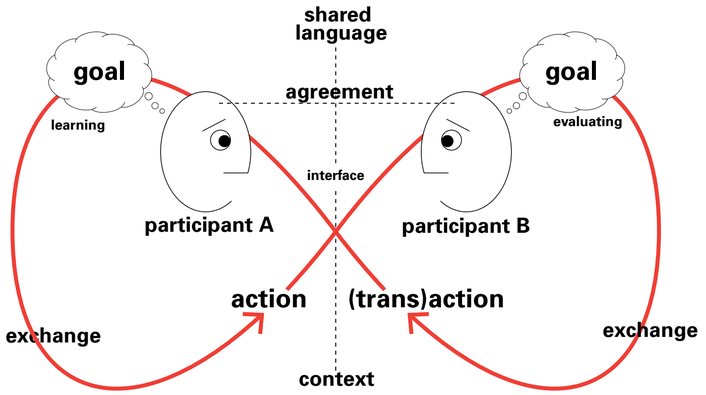


Making Chatbots Humane
Bots Brasil 2018

What does conversation enable?

- ***community***
- ***commerce***
- ***culture***
- ***government***
- ***society.***

All these **demand** conversation.



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Novelty and choice, transparency and conversation would become the new core principles of interaction.

A preferred future rich with novelty and choice

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.

… based in Conversation

Bringing about a preferred future
Flipping Digital Logic to Analog IxD

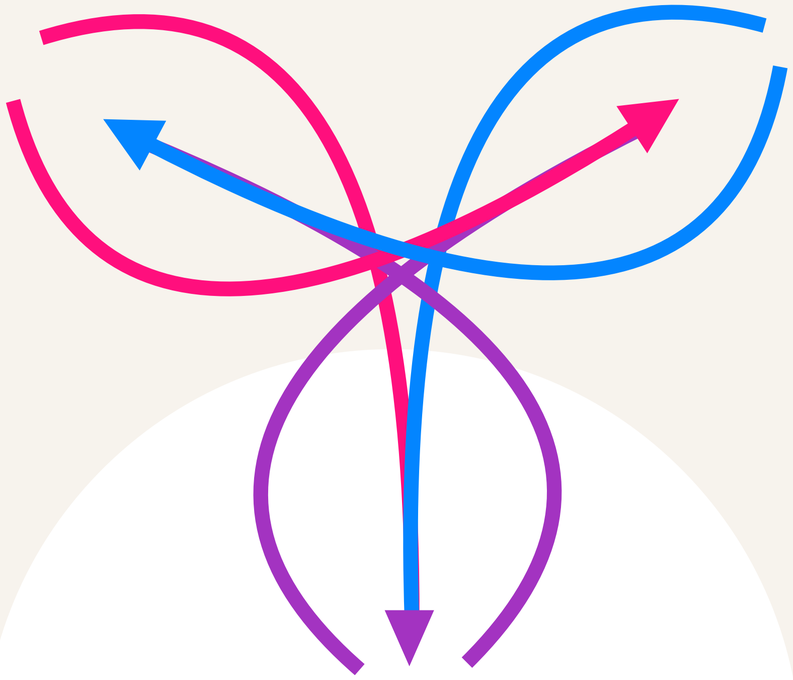
Our goal is to design and integrate new classes of interactional systems with today's AI and digital technologies to create and promote a new category of analog interactional frameworks.

… where Conversation is primary

Bilingual Synthesis — Alternatives to Today's AI

DATA-ANIMATED

binary
discrete
deterministic
artificial
representational
specific
predictive
transactional



SOCIALLY-ANIMATED

biological
fluid
open-ended
organic
resonant
ambiguous
uncertain
conversational

Cybernetics

bilingual sensibility

Digital **Analog**

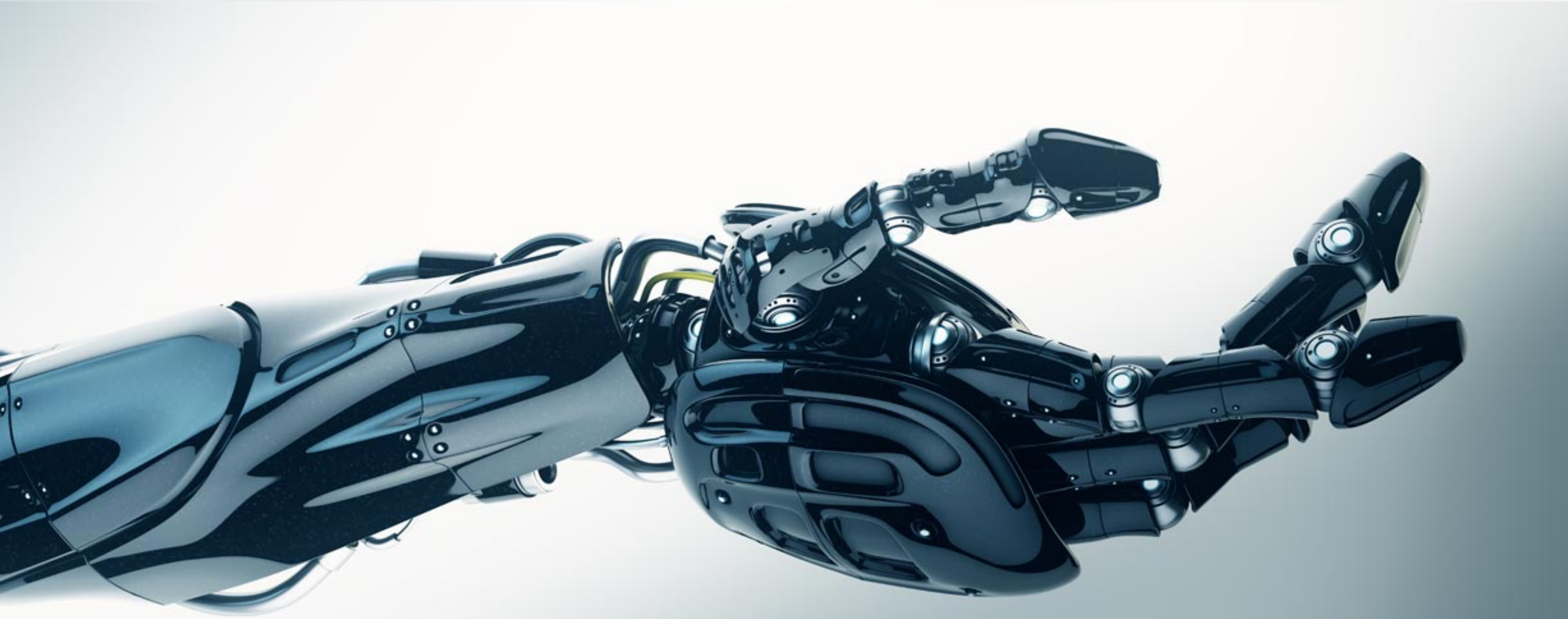
Cybernetics

Why is Cybernetics "bilingual"?
How can it help create analog interactional frameworks?

Cybernetics is not Robotics

https://en.wikipedia.org/wiki/Forbidden_Planet

Cybernetics is not Biomechatronics



https://carleton.ca/mechatronics/

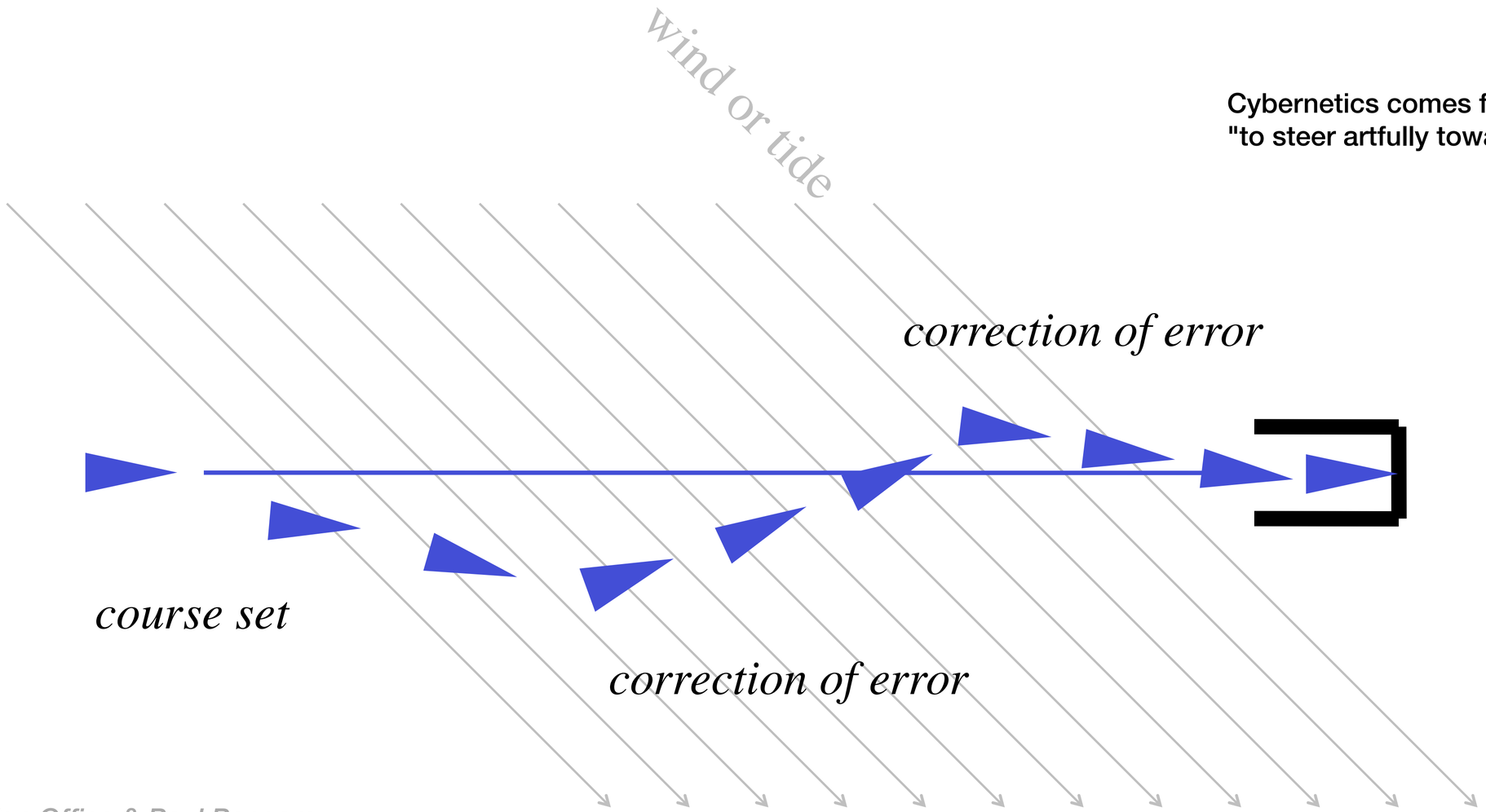
Cybernetics is not AI

Annapurna Pictures

Cybernetics is not AI
Cybernetics is not Biomechatronics
Cybernetics is not Robotics
Cybernetics is not Chips in Your Brain
… and Cybernetics is not Freezing Dead People!

Cybernetics is "the art of steering"

Cybernetics comes from the Greek,
"to steer artfully toward a goal."



Dubberly Design Office & Paul Pangaro

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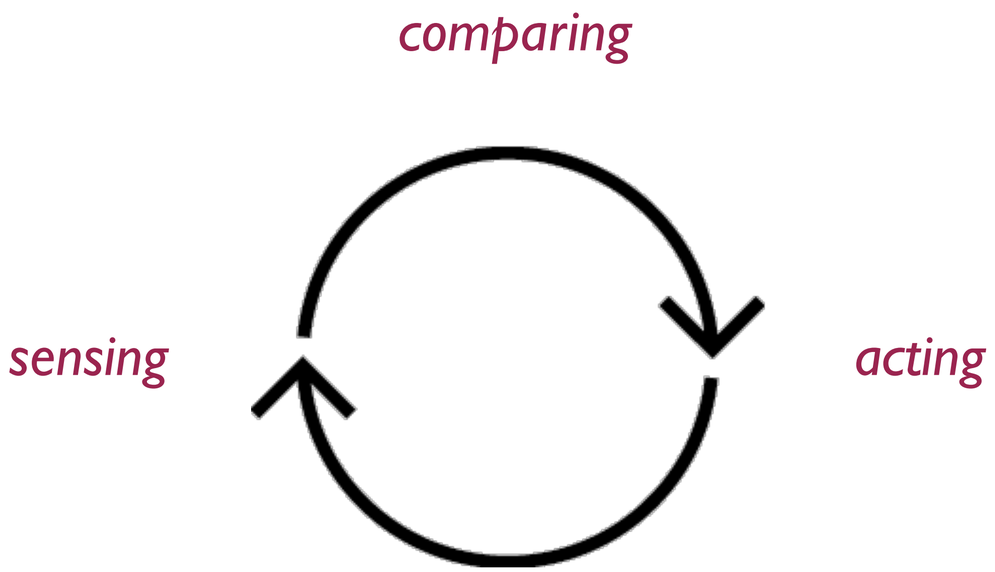
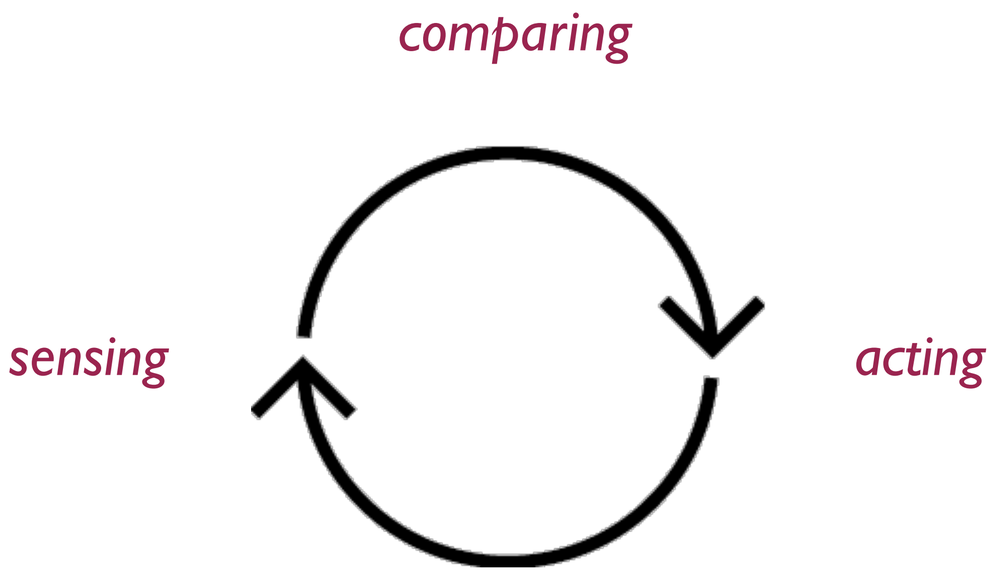


Cybernetics comes from the Greek, "to steer artfully toward a goal."

Cybernetics is the art and science of feedback and goals.

Dubberly Design Office & Paul Pangaro

Cybernetics is about systems with purpose



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Dubberly Design Office & Paul Pangaro

Cybernetics = Origin of Neural Nets & AI

1940s Cyberneticians invent Neural Nets

1960s AI = Symbolic AI (not Neural Nets)

1980s AI = Expert Systems (not Neural Nets)

2010s AI = Neural Nets + Big Data + Massive Compute

2020s "Today's AI" = AI everywhere in our lives

But Cybernetics is very different from AI

Cybernetics | "Today's AI"

Why & how 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
- brings an ethical imperative to human action
- founded as transdisciplinary / antidisciplinary *
- applies across siloed disciplines
- embraces the unknowable and the unpredictable

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

Analogic Frameworks — Alternatives to Today's AI

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binary
discrete
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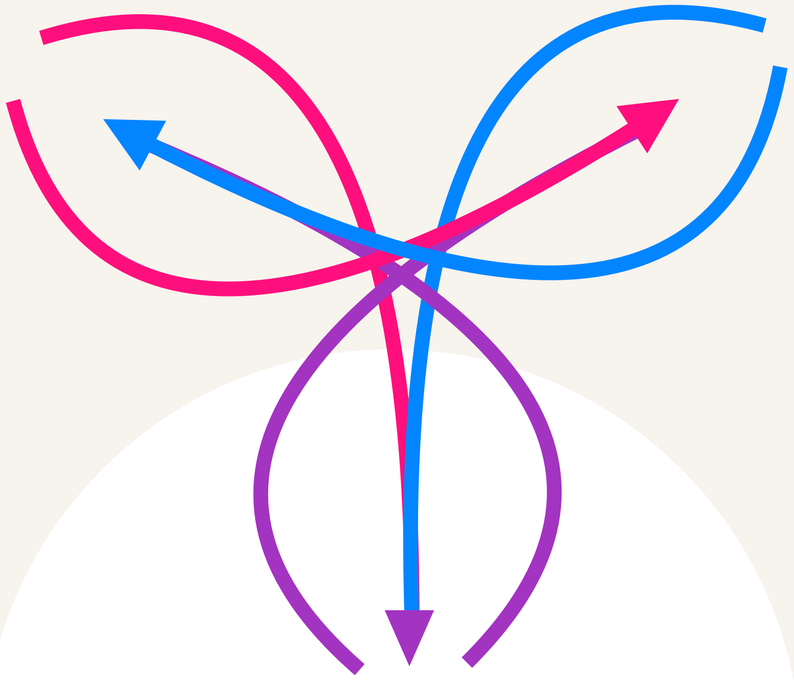

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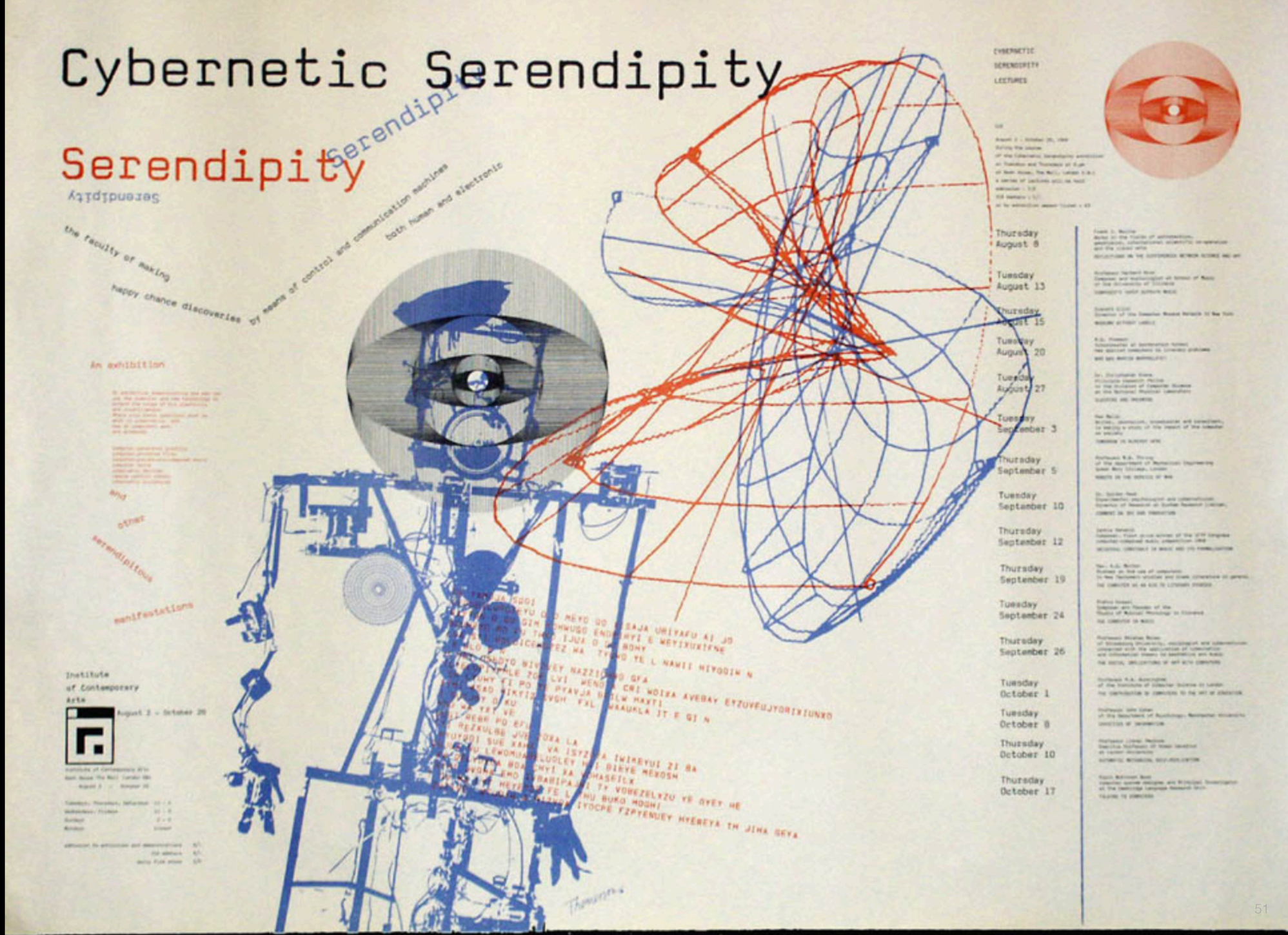

Exhibition poster by
Franciszka Themerson

Photo: Mediakunst
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Cybernetic Serendipity
Institute for Contemporary Arts
London 1968

Photo: Mediakunst
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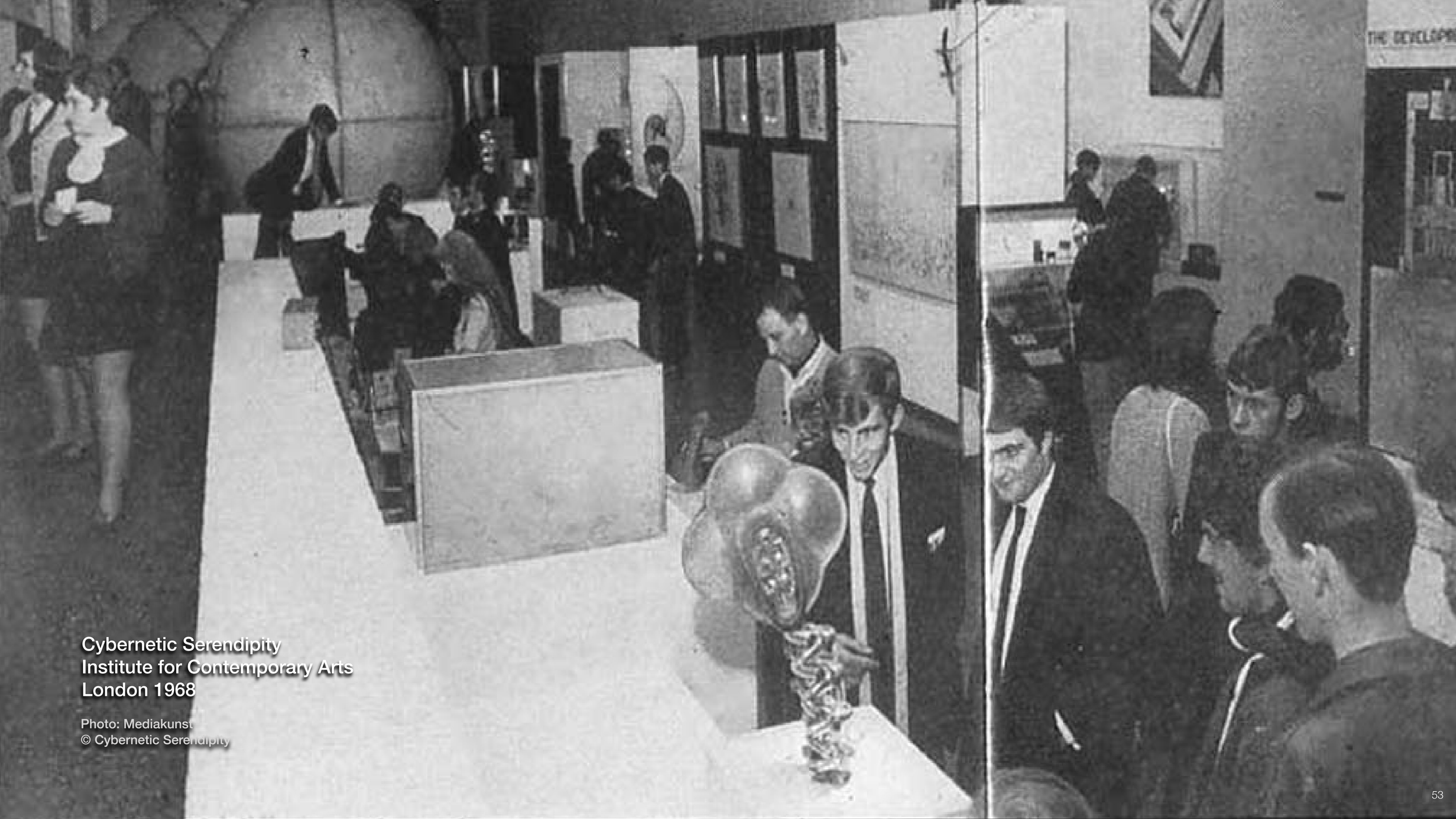

Cybernetic Serendipity
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London 1968

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Gordon Pask's
Colloquy of Mobiles

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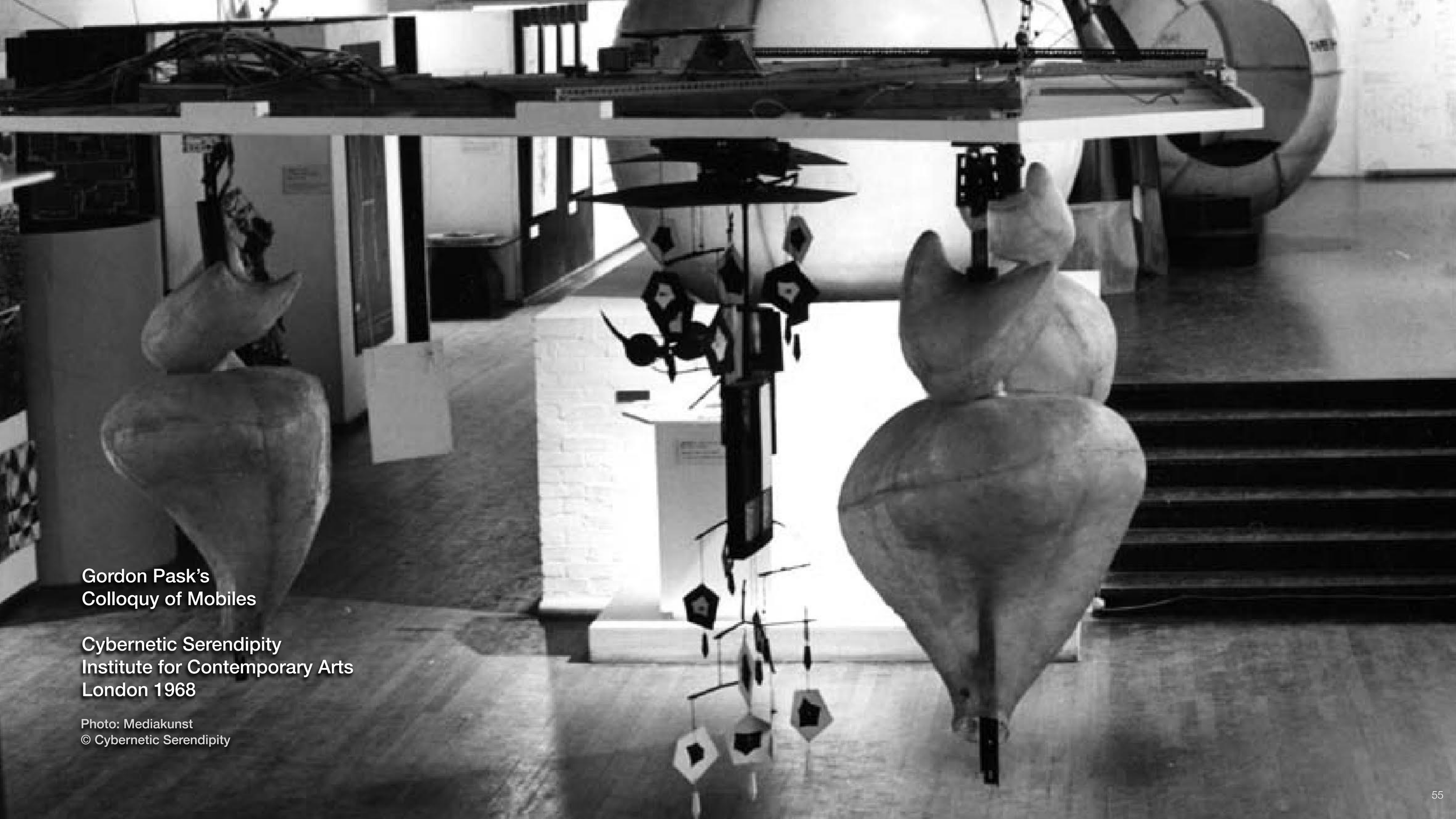

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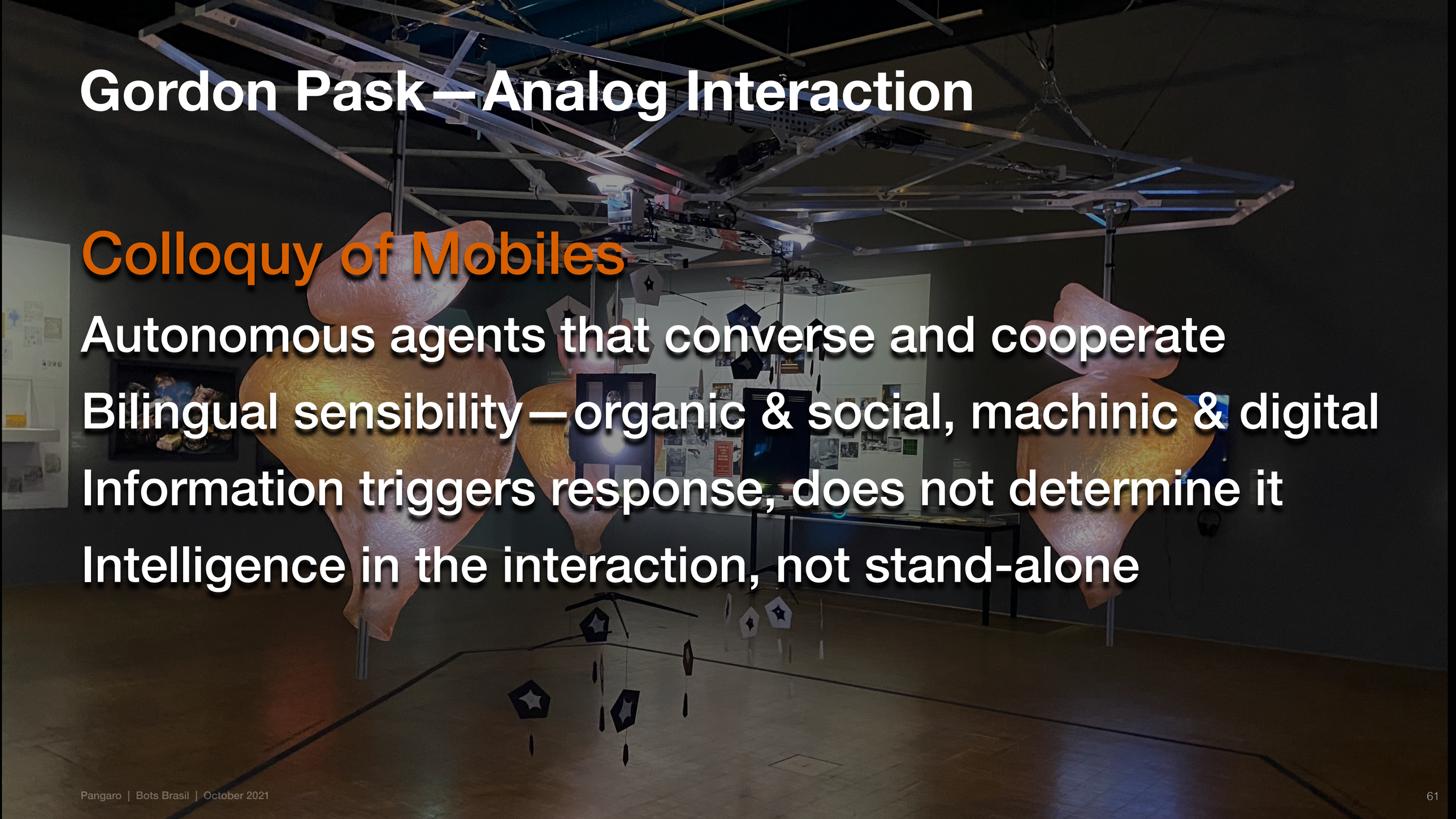
Colloquy of Mobiles
Centre Pompidou
Paris 2020

Gordon Pask—Analog Interaction



Colloquy of Mobiles

Autonomous agents that converse and cooperate

Bilingual sensibility—organic & social, machinic & digital

Information triggers response, does not determine it

Intelligence in the interaction, not stand-alone

Gordon Pask

Goals of Conversation Theory

To rigorously understand what makes conversation work—
and to make machines conversant like humans.

To rigorously understand how systems learn—
and to makes machines that learn like humans.

Analogic Frameworks — Alternatives to Today's AI

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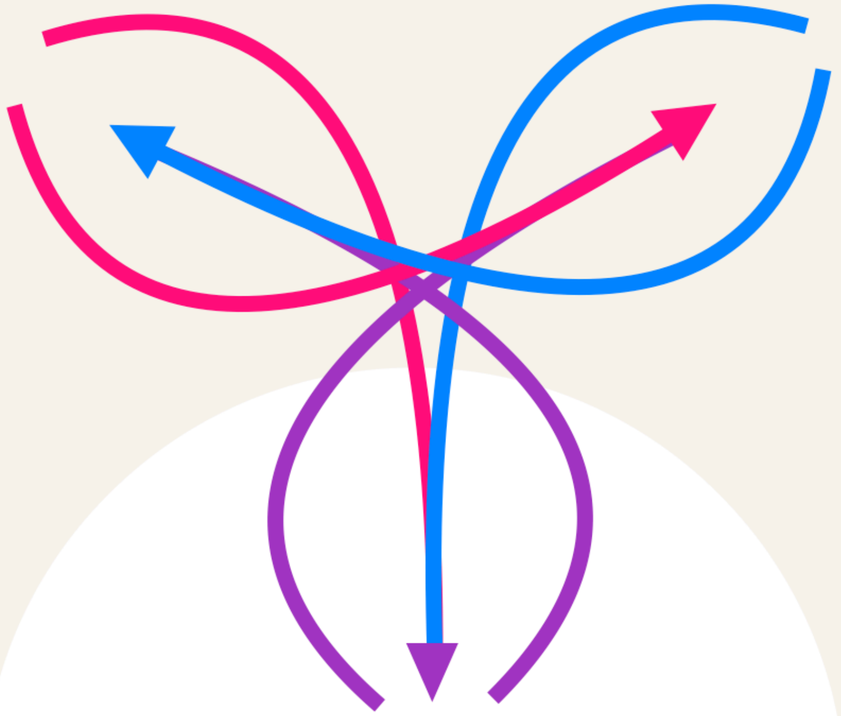

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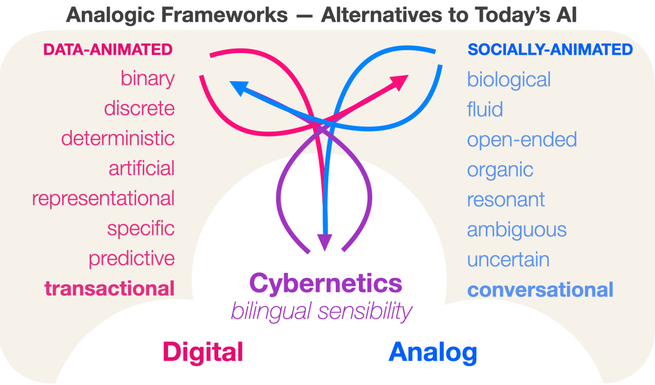
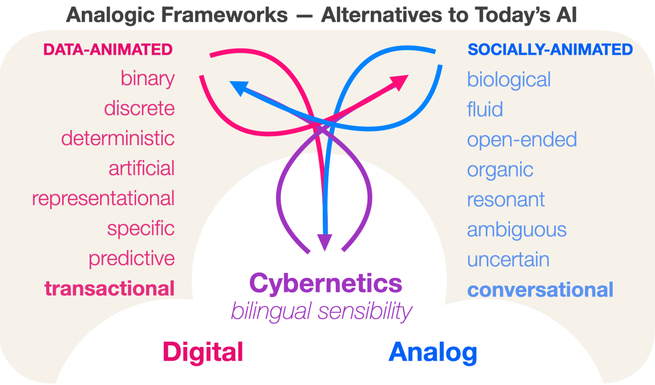
Flipping Digital Logic to Analog IxD



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
New Prototypes

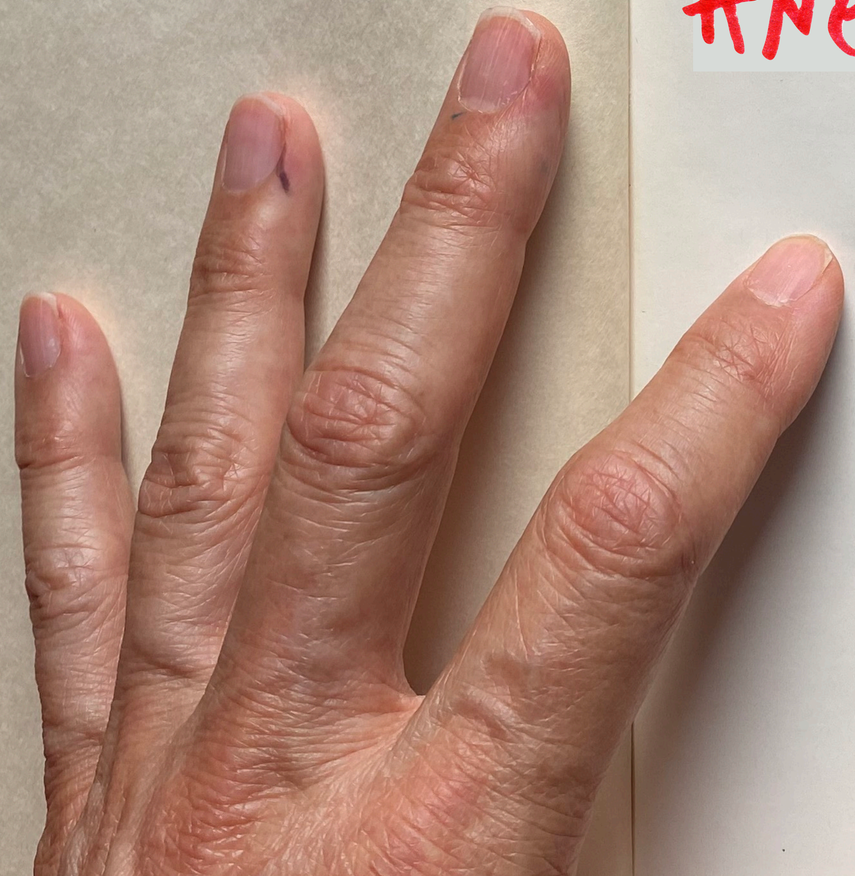


"What if an AI system could facilitate conversations among human participants across distances and times in a way that generates a continually changing configuration of ideas?

"These ideas could then be sources for conversations that could provide new input to the system…

"Perhaps it would better embody the emancipatory and participative epistemology that cybernetics has come to embrace."

— Dr Larry Richards



CYBERNETICS

CIRCULAR CAUSAL AND FEEDBACK MECHANISMS IN BIOLOGICAL AND SOCIAL SYSTEMS

#NEW MACY MEETINGS

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Cybernetics & Macy Meetings

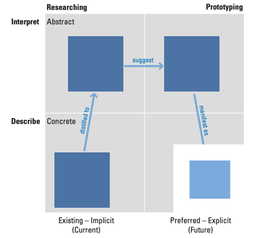
Original Macy Meetings
1943 – 1955

- 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

Bringing about a preferred future
#NewMacy in the 21st Century



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…

#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, October 2020
- #NewMacy Meeting Experiment #1, October 2020
- Presentation at AIAgora at TU Delft, December 2020
- Manifesto document, March 2021
- Responding to the Pandemic of "Today's AI" evolving draft
- #NewMacy Meeting #2: "Urgent Questions" in response to "Today's AI", ASC Series Event, October 2021

What's next

- Advancing the plan to respond to Today's AI
- Formulating Conversations for October 2021
- Interactive Session at RSD10 held at TU Delft
- Designing for variety in #NewMacy Conversations
- 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
- Deborah Forster / USA
- 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

Conversation is the Antidote to Bad AI: Flipping Digital Logic to Analog IxD

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
#NewMacy in the 21st Century

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 Meeting #3

October 16, 2021 @12.00 EDT

Email for details
Paul Pangaro
ppangaro@cmu.edu

#NewMacy Network + #NewMacy Meetings

Thank you.

Special thanks to:
Caio Calado & Bots Brasil
Karen Kornblum
Deborah Forster
Andy Pickering
Larry Richards
Bernard C.E. Scott
Andrew Schmookler
Mark Sullivan
Ben Sweeting
Claudia Westermann

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pangaro.com/bots2021/

"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

Conversation is the Antidote to Bad AI: Flipping Digital Logic to Analog IxD

Thank you.

Links

#NewMacy-Related Links

#NewMacyMeeting #1

Cybernetics, AI, and Ethical Conversations

Pickering, "The Next Macy Conference"

Pickering, "Ontology and Antidisciplinarity"

Wiener 1949, NYTimes article by John Markoff

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