

Can we design machines to be more humane?

HCI Seminar Series
Newell-Simon Hall
Carnegie Mellon University
January 19, 2018



**Human-
Computer
Interaction
Institute**

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MFA Interaction Design

MFA Interaction Design

Can we design machines to be more humane?

design

“Everyone designs

“Everyone designs who devises courses of action”

***“Everyone designs who devises courses of action aimed at changing existing situations*”**

“Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.”

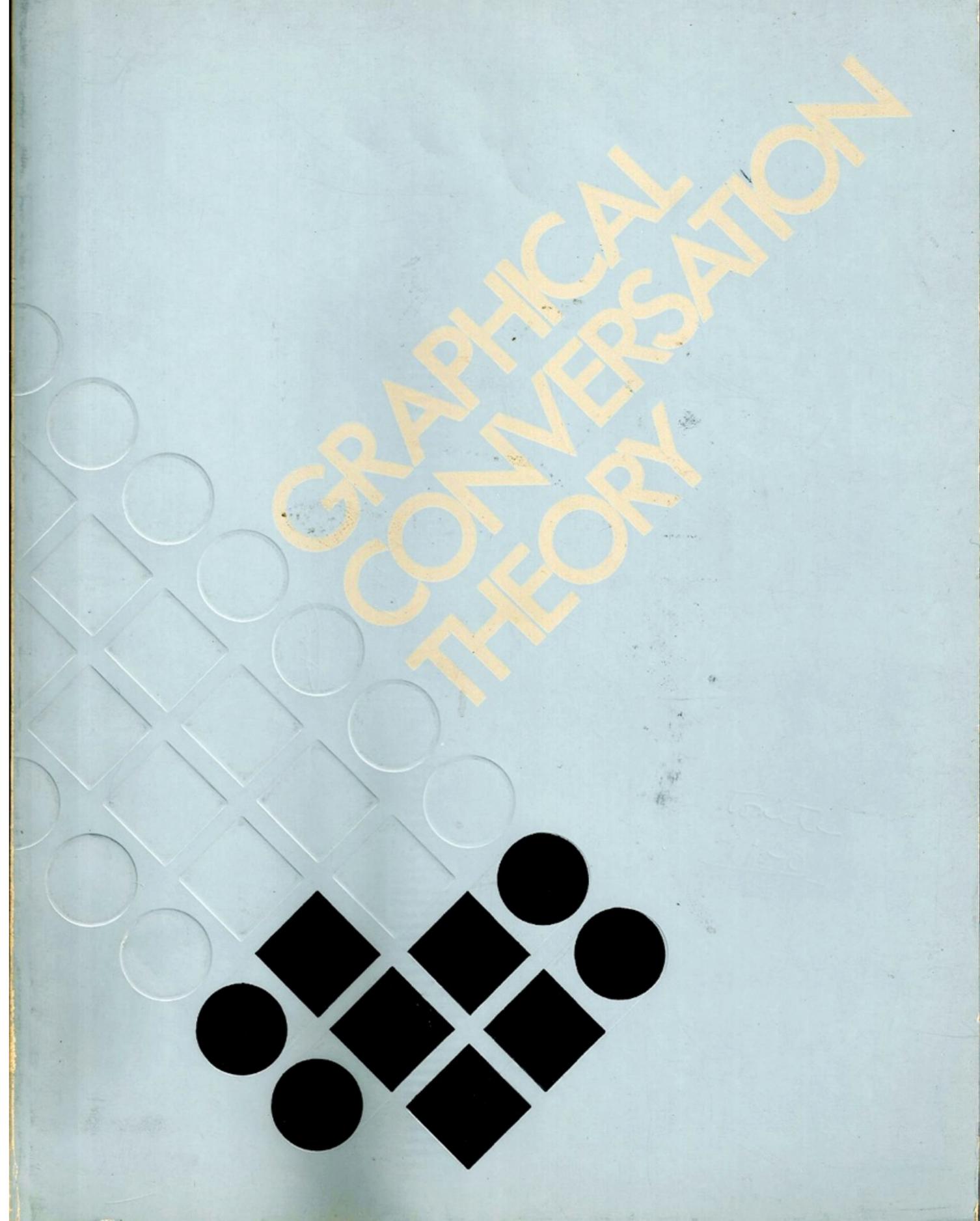
— Herbert Simon

Can we design machines to be more humane?

more humane?

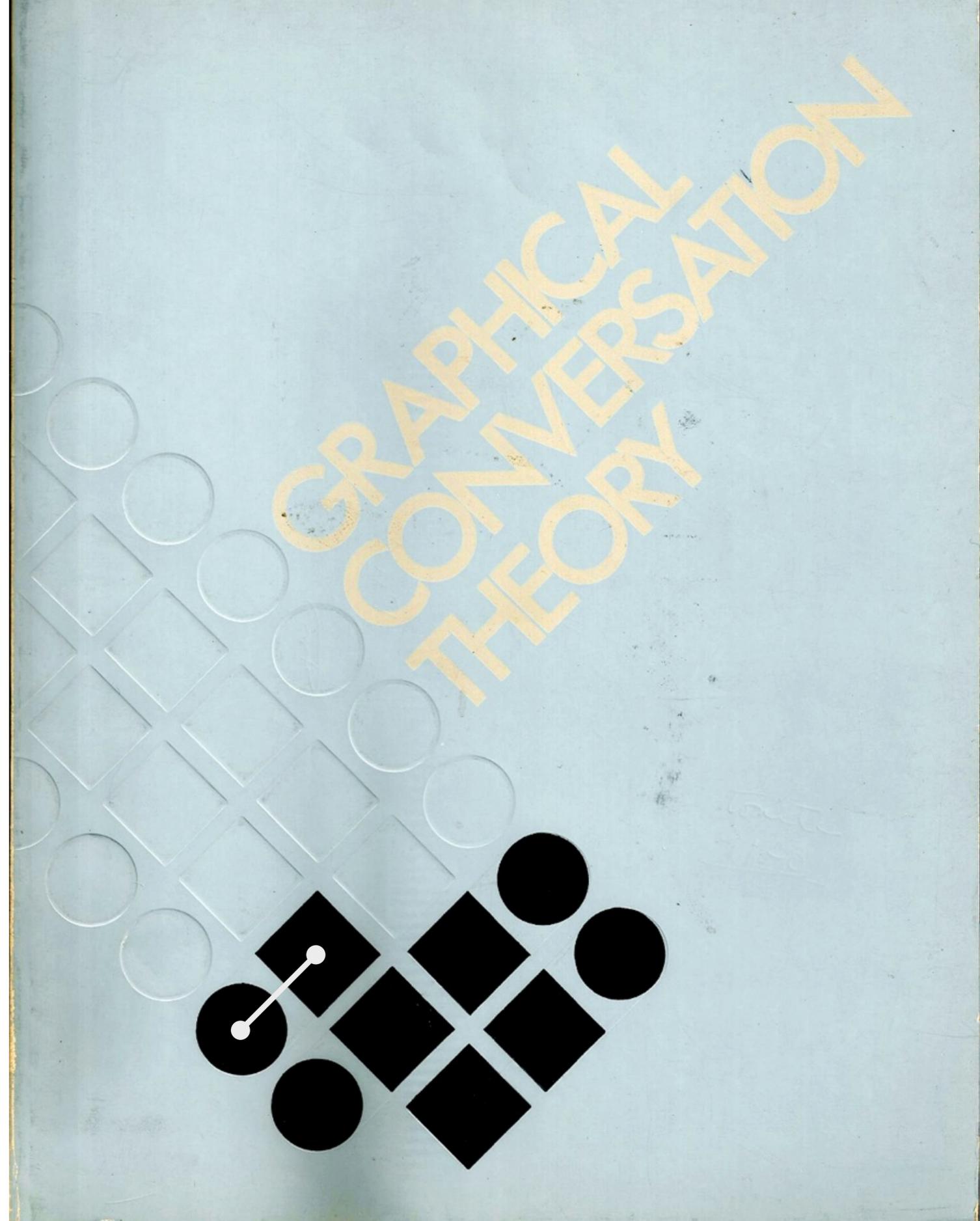
NSF Proposal

Architecture Machine Group
1976



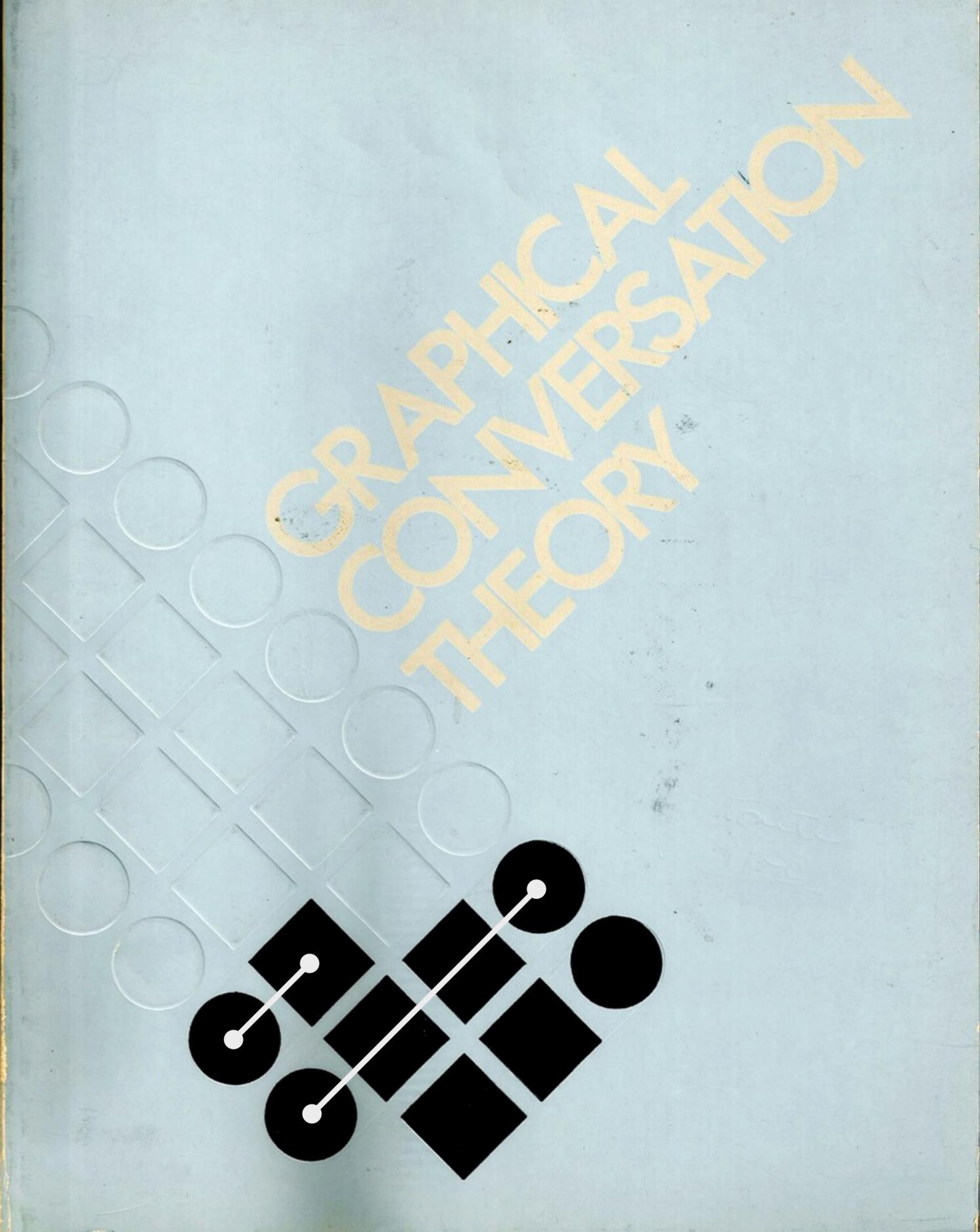
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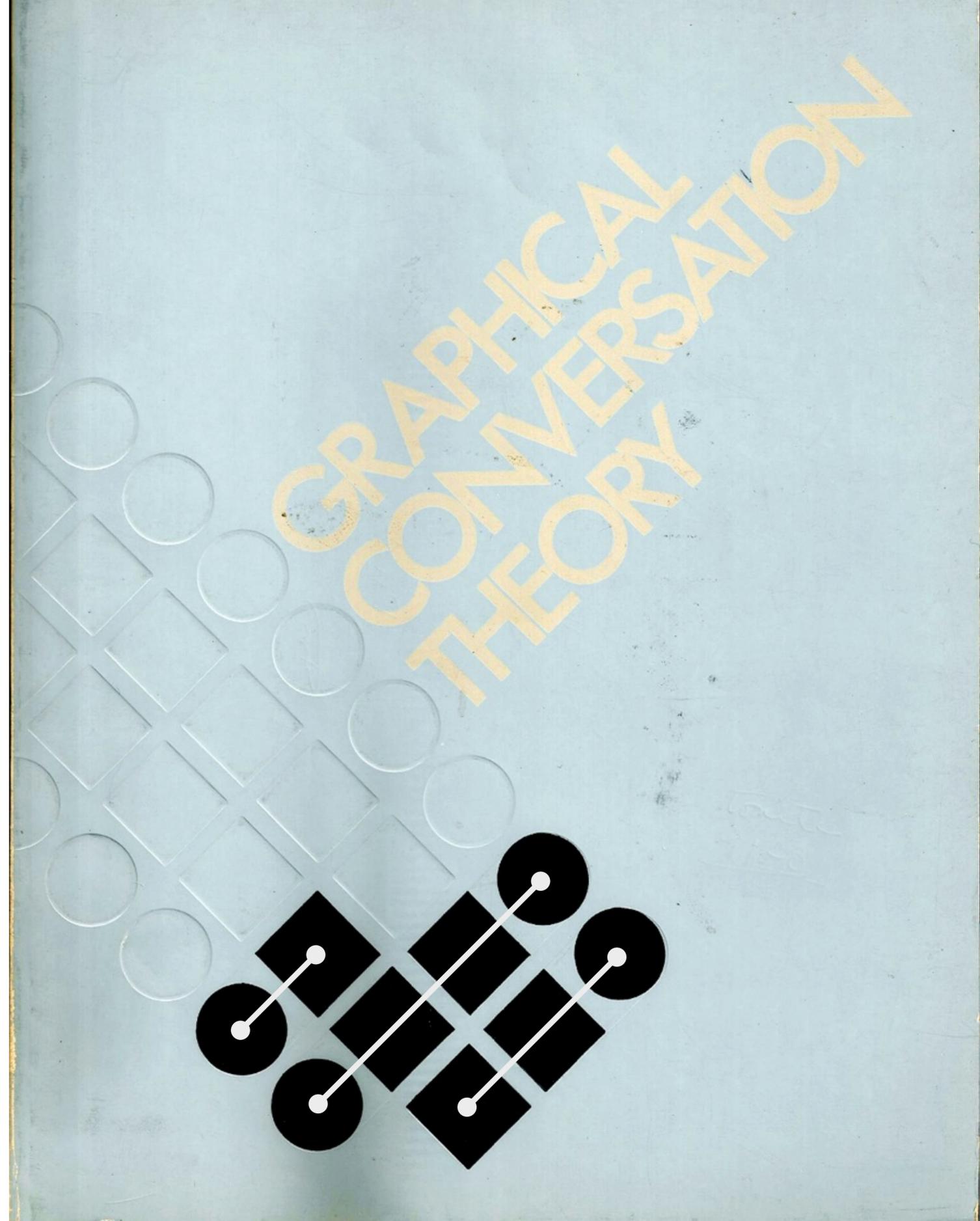
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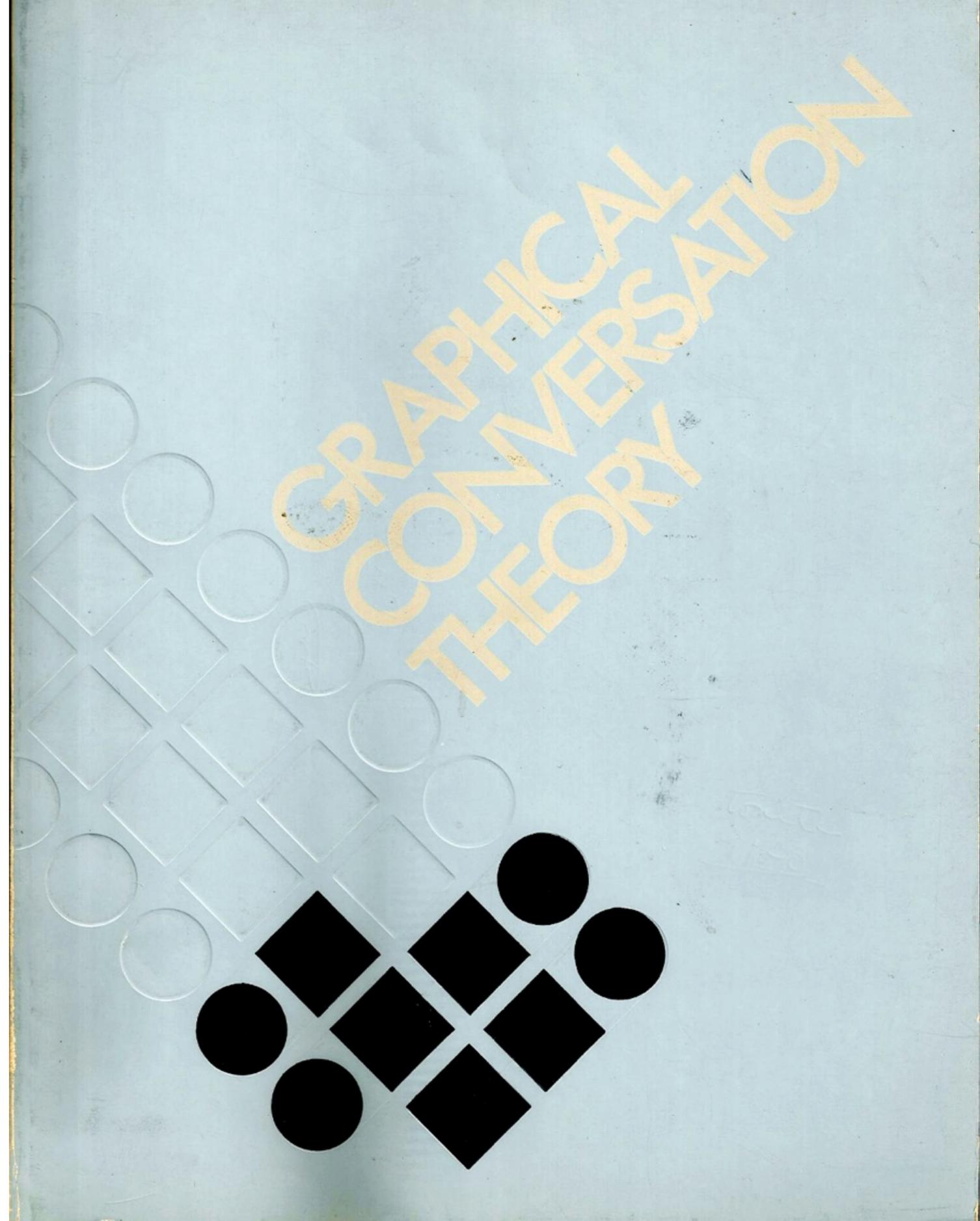
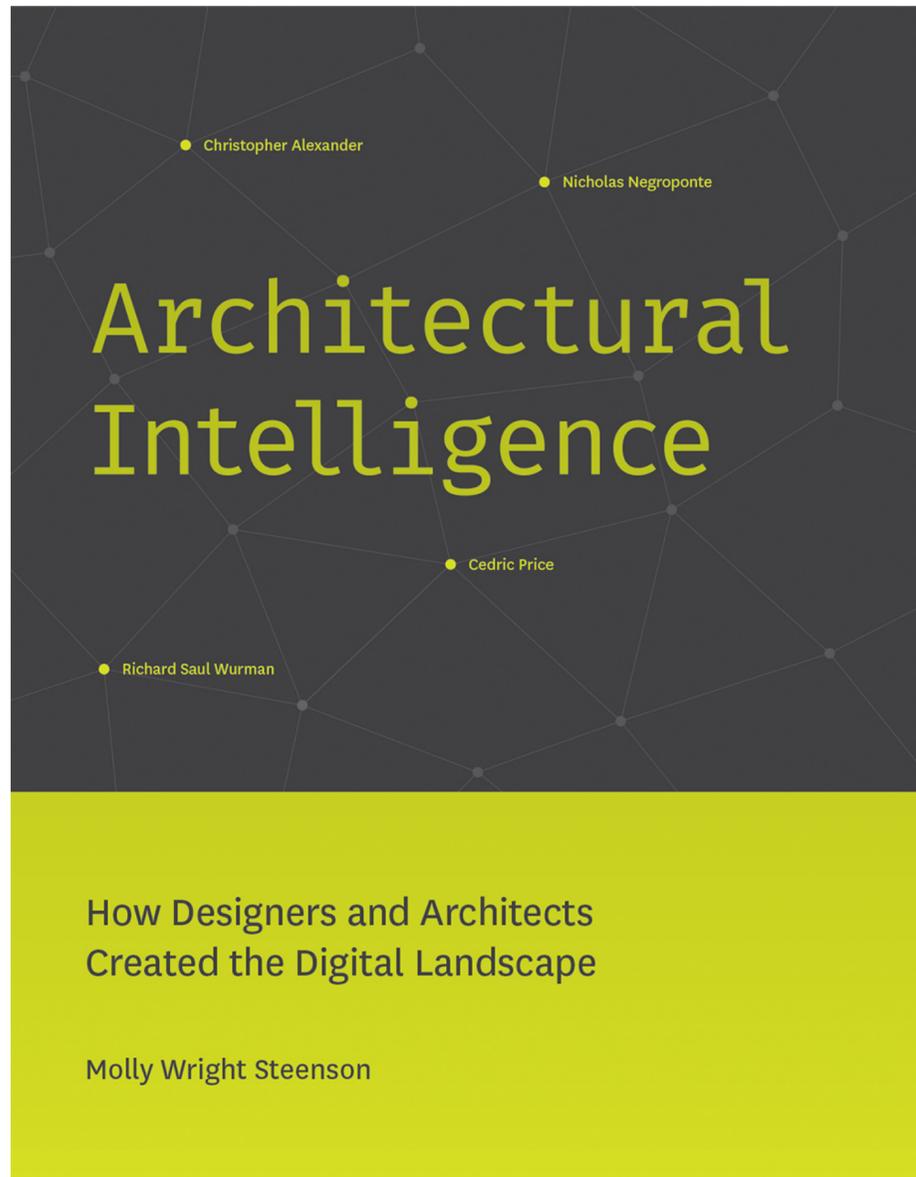
NSF Proposal

Architecture Machine Group
1976



NSF Proposal

Architecture Machine Group
1976



STANFORD HCI GROUP

Cybernetics and Design 2000 – 2007
Human-Computer Interaction Program
Stanford University

with Hugh Dubberly



Introduction to Cybernetics and the Foundations of Systems Design

This course presents frameworks for modeling interaction in terms of structure and context, augmenting traditional discussions of form and syntax. We will collaboratively address questions that are fundamental to design practice: What is a system, and what are the different types? How do we interact with systems, and what are the different types of interaction? Systems may act independently, interact with other systems, learn, and even converse. What do such systems have in common, and how can we describe them? How can we measure their limitations? The course explores the integral structures and coherent processes for the design of effective artifacts, communications, collaborations, and services. Students will apply frameworks for steering design processes and/or design outcomes based on their own interests, encompassing domains as broad as education, health and wellness, and sustainability.

INSTRUCTOR

Paul Pangaro, Ph.D.

Interaction Design MFA

- Overview
- Student Work
- Department Videos
- Faculty
- Alumni Profiles
- Curriculum
- News & Events



Amirhossein Nouri – CCS MFA IxD – 2016

empower
/em'pou(a)r/ verb
give authority or power to do something

design by users
GROUPS SYSTEM INDIVIDUALS

wireframes
The wireframe app is an attempt to build a design system that is flexible, modular, and easy to use.

NEW
REQUEST FORM
HELP NEEDED LIST
REQUEST FORM
USE A TASK
I CAN HELP
CHOOSE A TASK
CALL

Map view
Schedule list view
Dec. 11, 2017
9:20 Economics II
11:30 Lunch with Mike
12:15 Localization
15:30 Research III
18:30 Grocery (Shampoo)
Dec. 12, 2017

Updated info helps with decision-making
STILL GO

wellness
Amihossain Nouri
Jenna Rich
Paul Lopes
Sarah King
Emily Boil



When the driver's condition is abnormal
Healthy issues, overstressed, drunk, fatigue etc.

Camera notices something is wrong

SHARING LABOUR

NOTIFY
PAYMENT
FINISH THE TASK
CERTIFIED PROVIDER



Frameworks for Interaction and Conversation

June 13, 2016

Learn the Cybernetics of Interaction Design

IxD 601A — Fall 2016
Frameworks for Interaction & Conversation
MFA Elective open to all MFAs and BFA Seniors

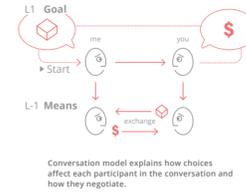
A pragmatic systems approach to understanding, communicating about, and collaborating on designs that enable interactions & conversations in service of human needs

[Click image to view](#)

In the Fall 2016 Semester, CCS MFA Interaction Design is introducing a new elective, Frameworks for Interaction and Conversation. It's an in-depth course that explores cybernetic models of effective action that apply to design of software, services, products, entertainment, or organizations.

CYBERNETIC MODELS IN INTERNATIONAL NEGOTIATION

Cybernetics is a discipline for understanding how actions may lead to achieving goals. In the first semester at CCS, four different cybernetic models were introduced to students: first-order cybernetic loops (feedback), requisite variety (limitations), second-order loops (regulation) and conversation (collaboration). For certain systems, it is especially important to model interactions that express choices for each participant in the same conversation. Two models were combined to express the complicity of an international negotiation: the Injustice Settlement of Korean Comfort Women.



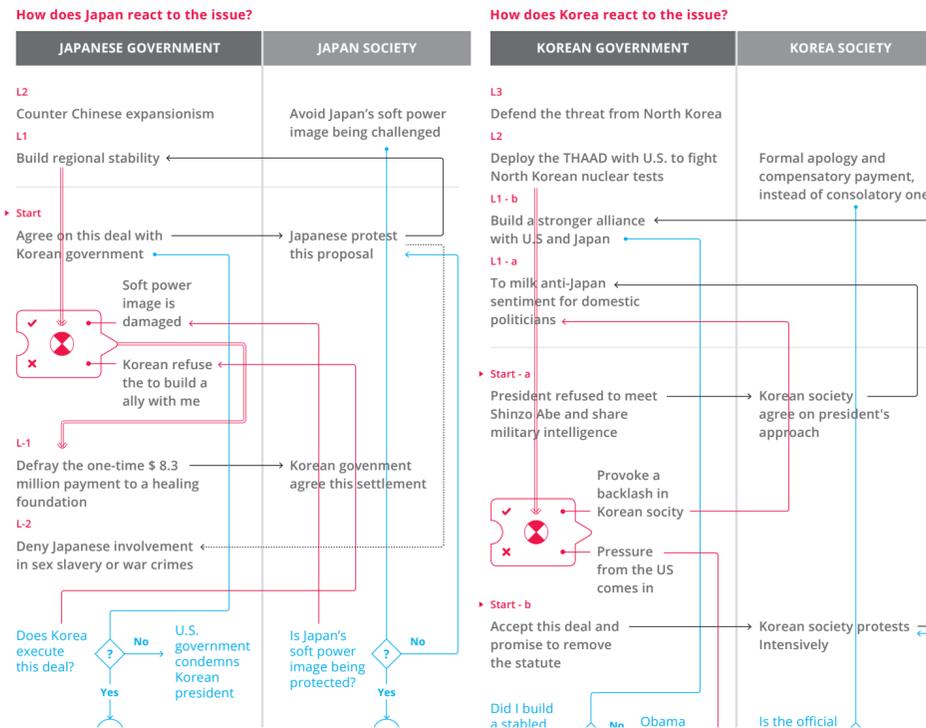
Final and irreversible resolution

70 years after the end of World War II, South Korea and Japan reached a dispute agreement over wartime comfort women



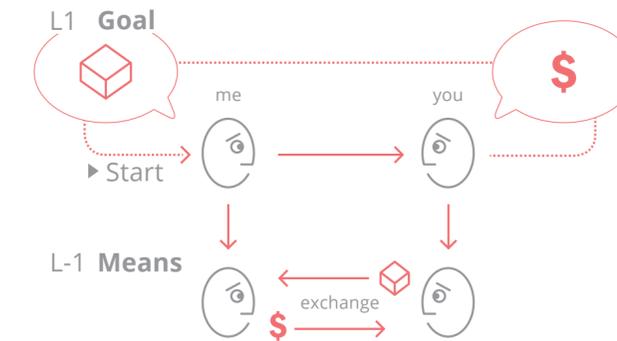
Victims of politics

Everyone has their own priorities. Where are the comfort women in this picture?



CYBERNETIC MODELS IN INTERNATIONAL NEGOTIATION

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Conversation model explains how choices affect each participant in the conversation and how they negotiate.

Final and irreversible resolution

70 years after the end of World War II, South Korea and Japan reached a dispute agreement over wartime comfort women

America needs to deploy



THAAD system to fight North Korea and China

Japan promises they will provide

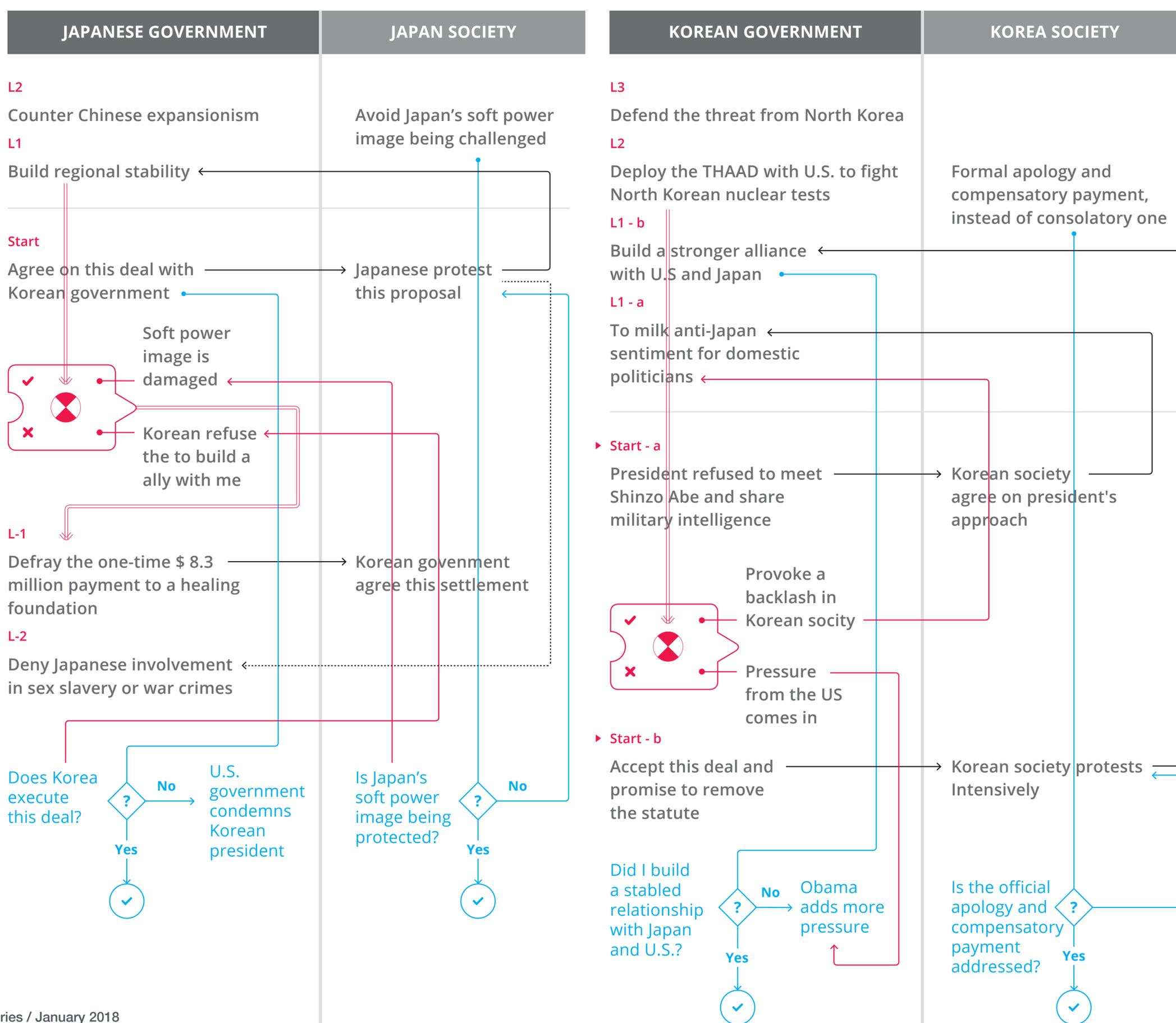


\$ 8.3 million one-time payment
Non-official apology of Prime Minister

South Korea agrees they will



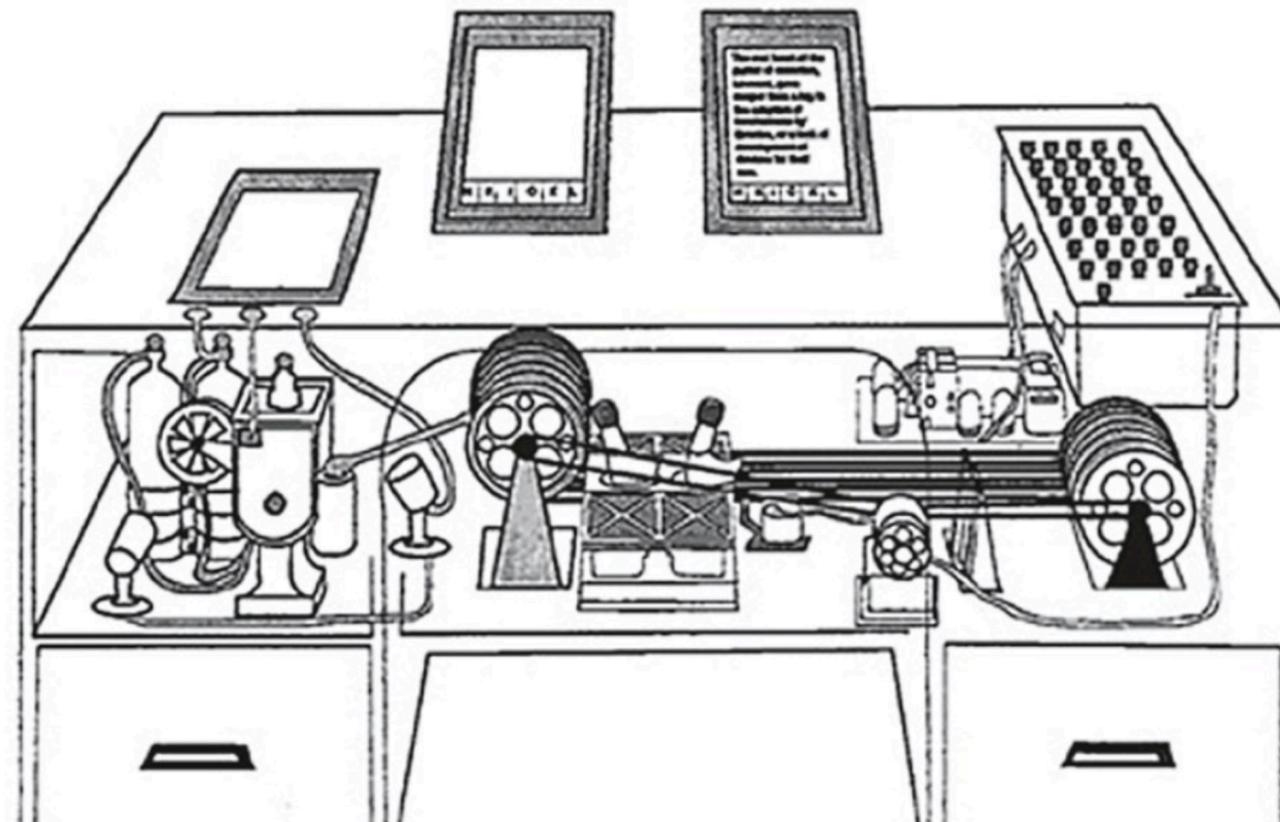
Stop fighting the issue forever
Agree to remove the comfort women statue



Be Part of the Evolution of Interaction Design

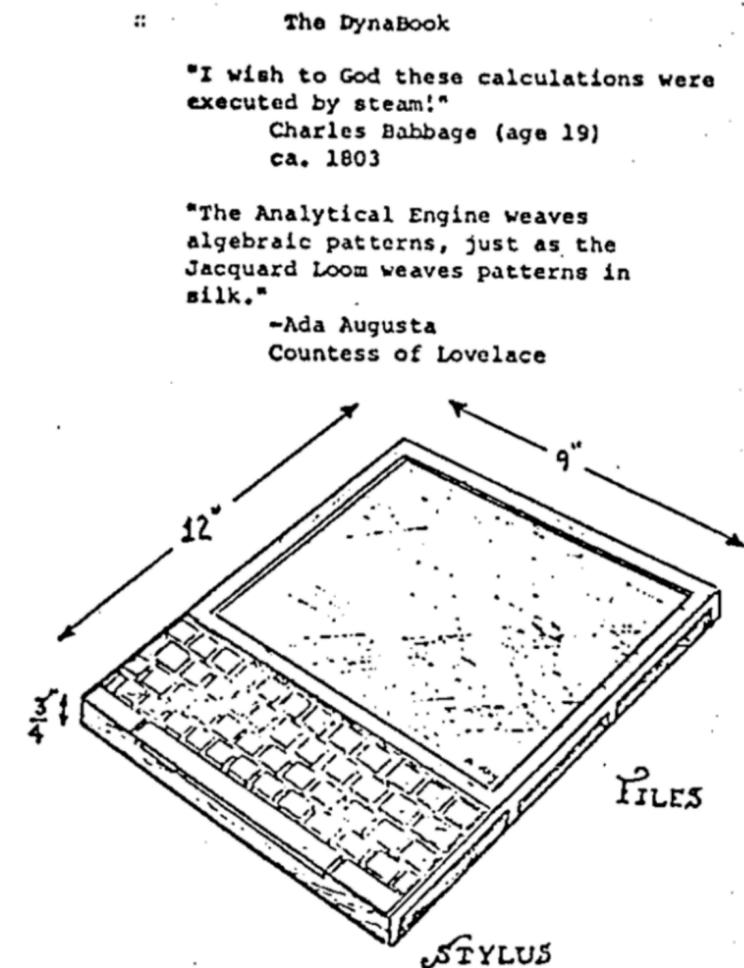
March 26, 2017

In Fall 2017, the [MFA program at CCS](#) is introducing a new studio course called “Interaction Design Evolution.” The course invites students to riff on prior innovations in the history of interaction design and then to invent their own. Seriously.



Alan Kay gives lecture to CCS IxD

October 1, 2017



It would be [tl;dr](#) for a blogpost to explain the originality and contributions that [Alan Kay](#) has made to interaction design. We're fortunate that he delivered [an extended real-time lecture by video](#) on October 9, 2017, to grad and undergrad students, hosted by the [Interaction Design Evolution](#) course, a.k.a. Studio III in the [MFA Interaction Design](#) program at [CCS](#).

Alan has been deeply influencing interaction design from the time he conceived what we now call the iPad—though his concept went much further and was explicitly a learning tool. And he named it more descriptively: the [Dynabook \(1968-1972\)](#). He had a relationship with Steve Jobs and famously said that he thought the original Mac from 1984 was “the first

Click to view

CARS AS A MEDIUM TO ENCOURAGE CONVERSATION BETWEEN PEOPLE





23 HOURS average parking time in the US per day.



25% OF DRIVERS have gotten into an argument over a parking space.



30% OF TRAFFIC in a city is caused by drivers searching for a parking spot.



\$20 BILLION Parking ticket revenue in the US.

How do people deal with **an annoying parked car?**



call the parker



honk the horn



leave a note



wait for the parker



try to get out



move the car



call police



get revenge

*I got a note on my car saying:
- First-day parking?
It really upset me for the whole day.*
Rina from **Boston**

*The cost of being towed, tickets
and all. It costs a lot. Pretty much
like buying a used car.*
Janine from **Detroit**

*In New York, it takes at least a day
to resolve the issue [being towed],
because of bureaucracy.*
Tracy from **NY**

*I didn't like to call the police, but I
had to do it after I'd spent half an
hour looking for him.*
Sara from **LA**

Findings

➤ It's what it is!

New Yorkers set aside a ticket budget, expecting to pay fees.

➤ Co-understanding

People tend to solve the problem rather than punishing the offender and getting revenge.

➤ Victims of cities policy

People feel cities make money from parking fines.

➤ Open a channel

People prefer to solve the problem with the offender rather than engaging a third party like police.

Insight

CAR OWNER'S COSTS MAY LOWERED BY CONVERSATION

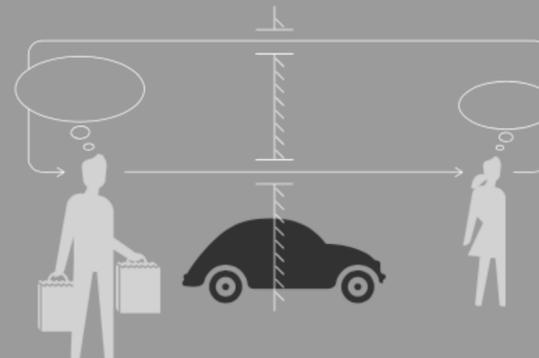
Problem

Car owners are not reachable when they are away from their cars



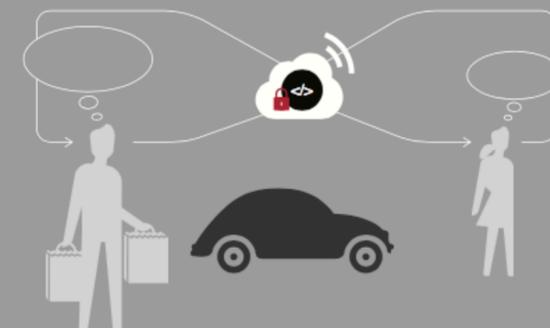
Need

A channel to reach car owners when they are away from their cars



Solution

Providing a safe and secure way of connecting with car owners



Persona & Scenario

Emma Anderson

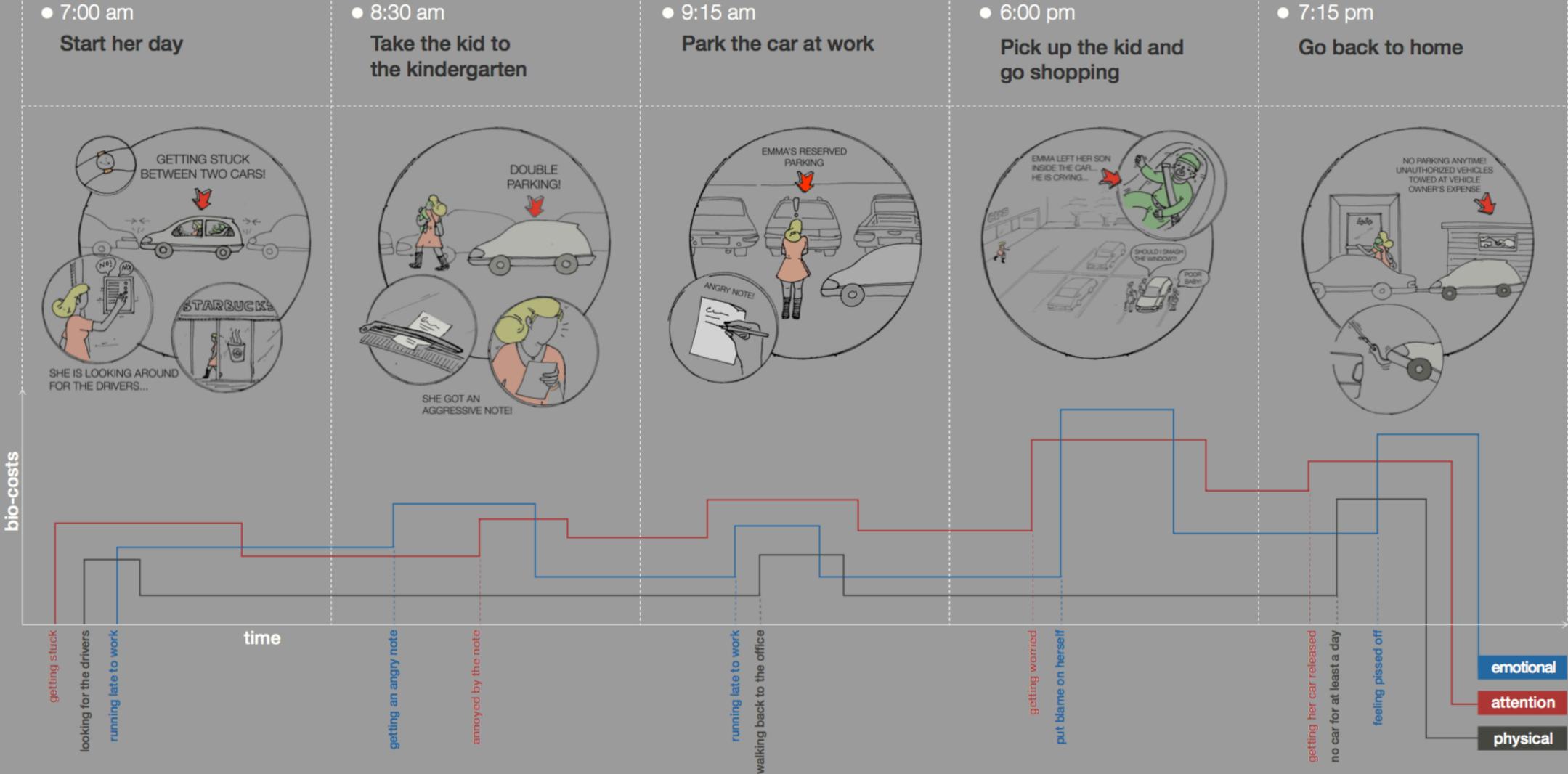
Age: 37
 Mother of a 3-year-old
 Career: Accountant manager
 Lives in New York, Brooklyn
 Car: Ford Fiesta

Goals

Primary: Making life for her family as smooth as possible
Secondary: Reducing the cost of car ownership in New York

Challenges

Primary: Getting everything done by end of each day with a peace of mind
Secondary: Using her car every day without major tension and worries



Concept statement

A SOCIAL APPLICATION THAT HELPS LOCAL USERS TO CONTACT CAR OWNERS, IN A FAST SECURE WAY, WHEN THEY ARE AWAY FROM THEIR CAR.

Benefits

THE CAR OWNER IS REACHABLE

THE PROBLEM IS SOLVED IN A SHORTER AMOUNT OF TIME

IT REDUCES FINANCIAL AND EMOTIONAL COSTS

IT HELPS WITH OTHER PROBLEMS RELATED TO THE PARKED CAR AS WELL

What are the new opportunities?

The CarChat opens a channel for sharing the ownership experience such as where to go for repairs.

Anonymized data mining will be valuable for car manufacturers and city government.

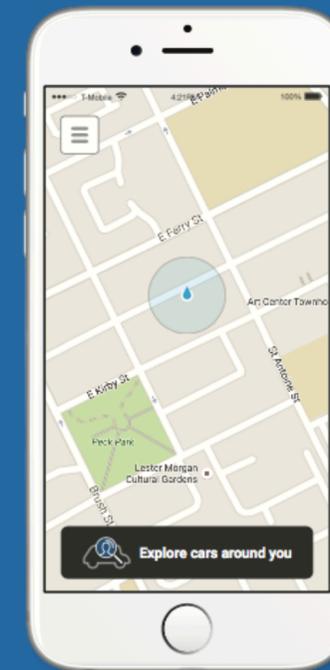
There are wide range of unforeseen opportunities that can become possible by re-conceiving the role of a parked car by converting it to a connected device. A connected parked car has the potential to use the car as an agent to encourage a social conversation.



CarChat

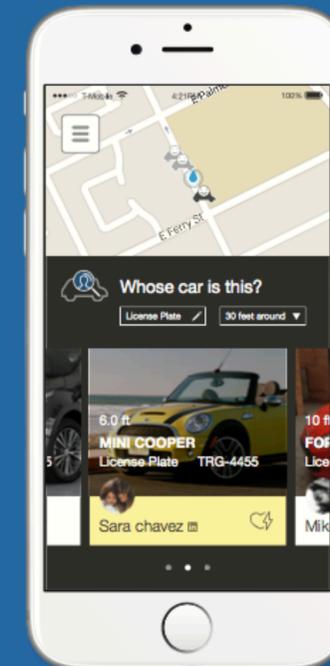
> Explore cars around you

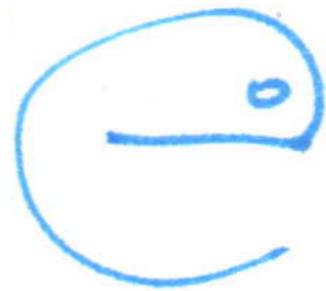
Map shows cars around which have the application

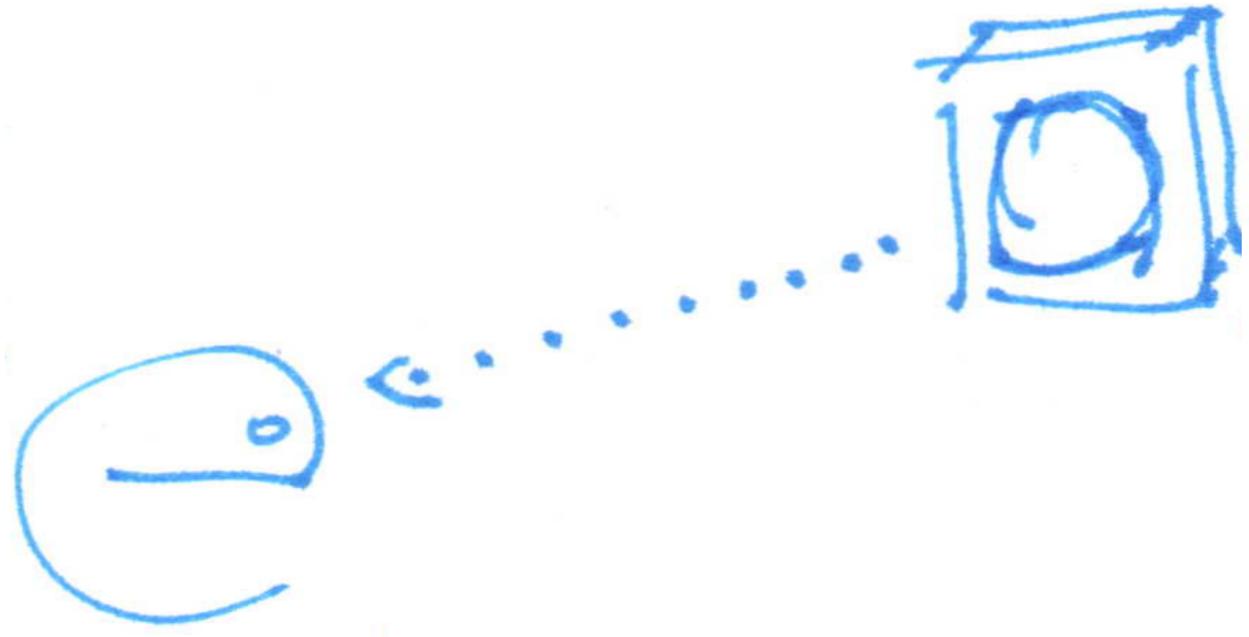


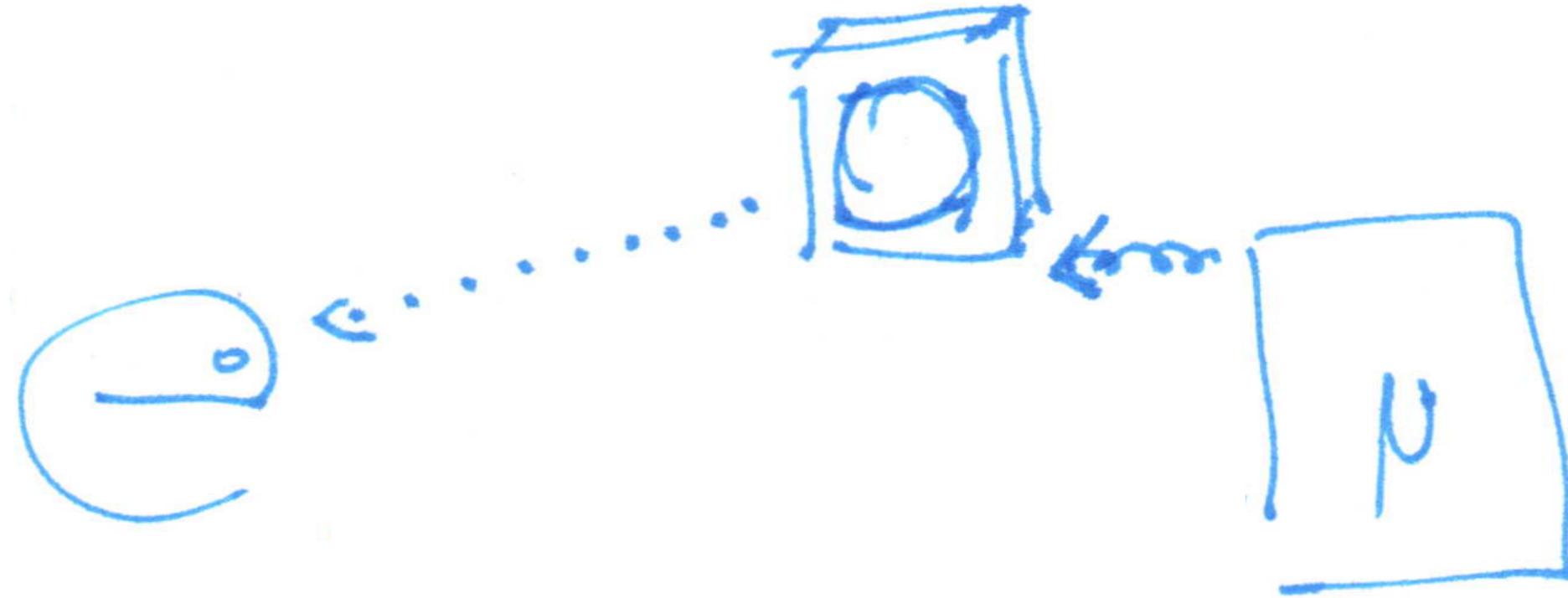
> Find out whose car is this

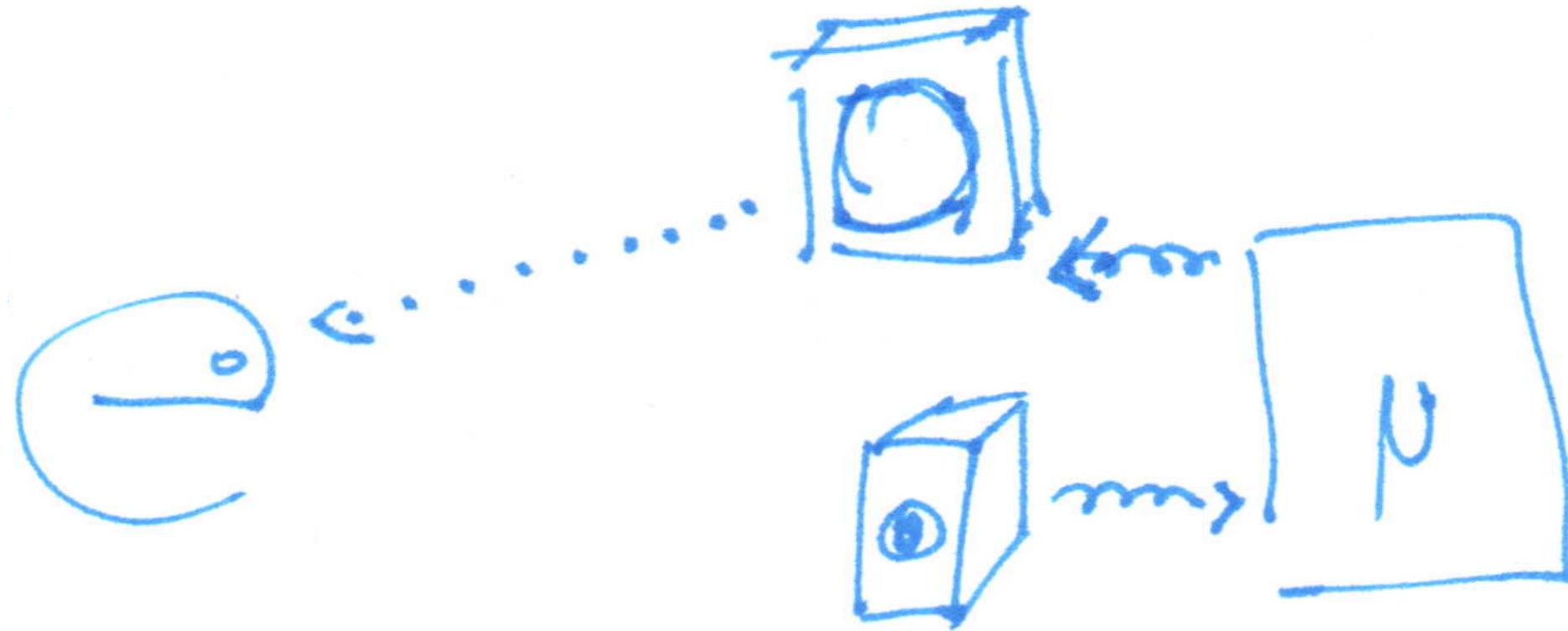
By selecting each car, you can get the information about the car and car owner

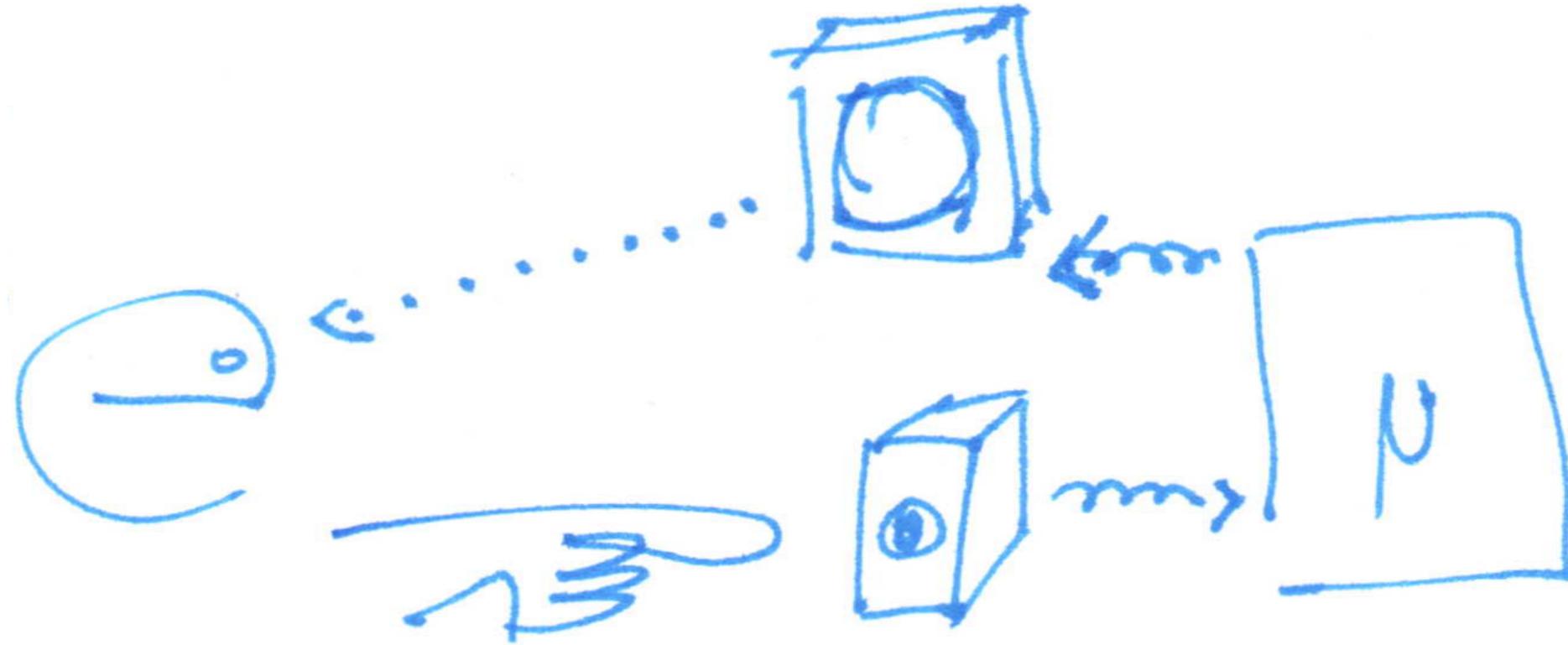




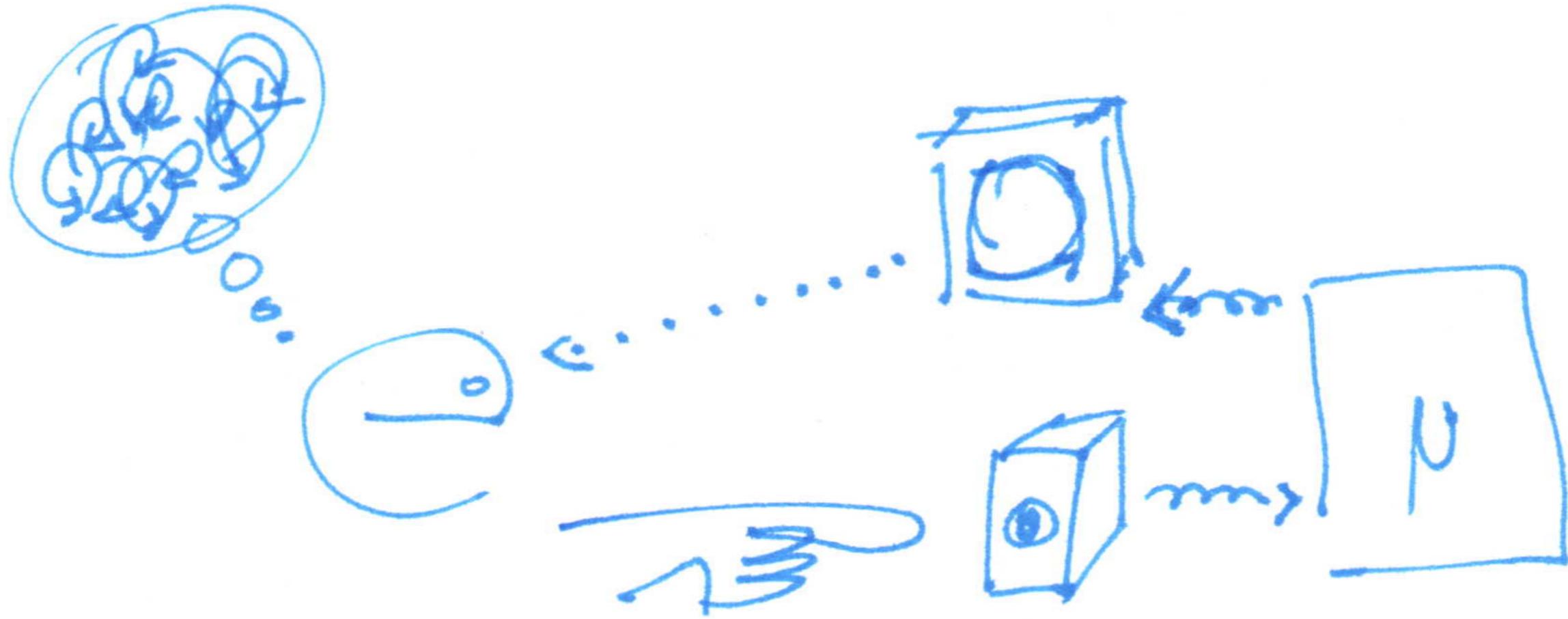


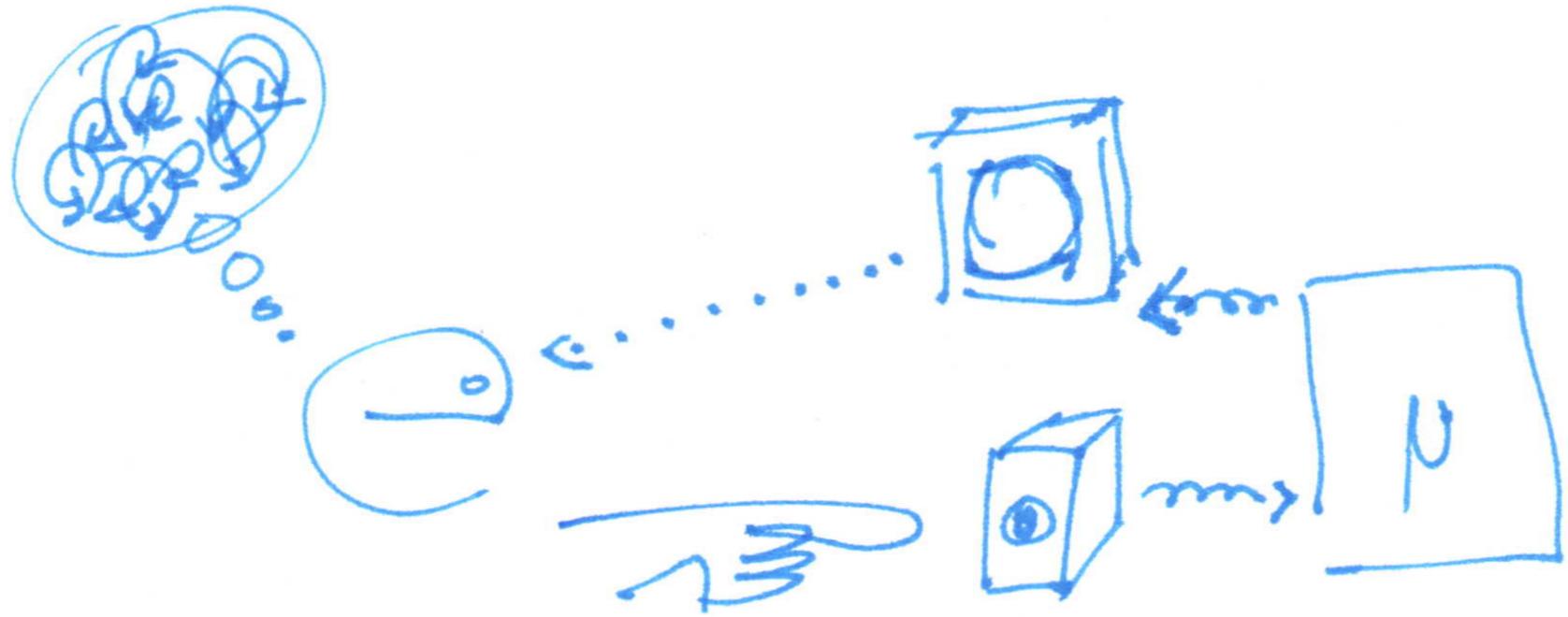


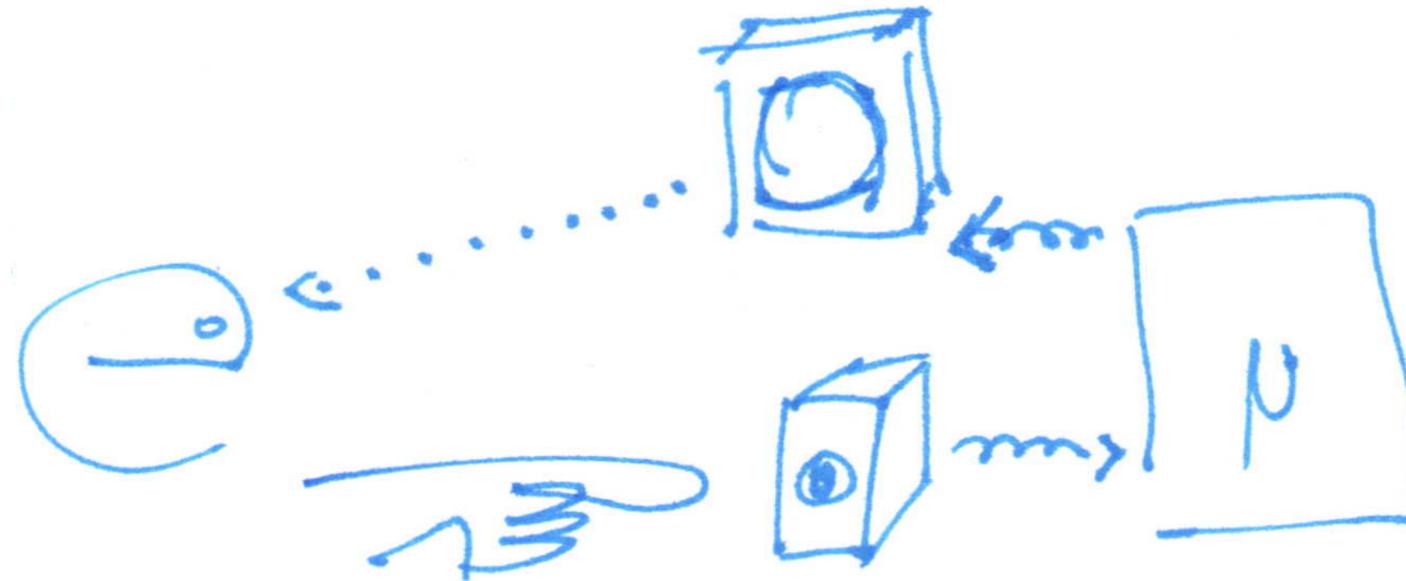
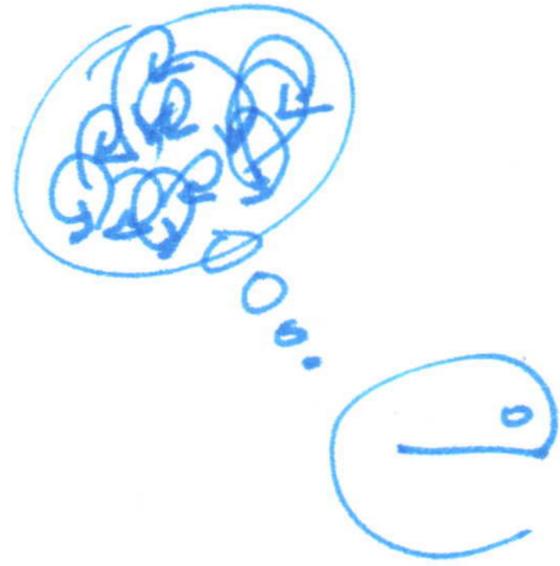


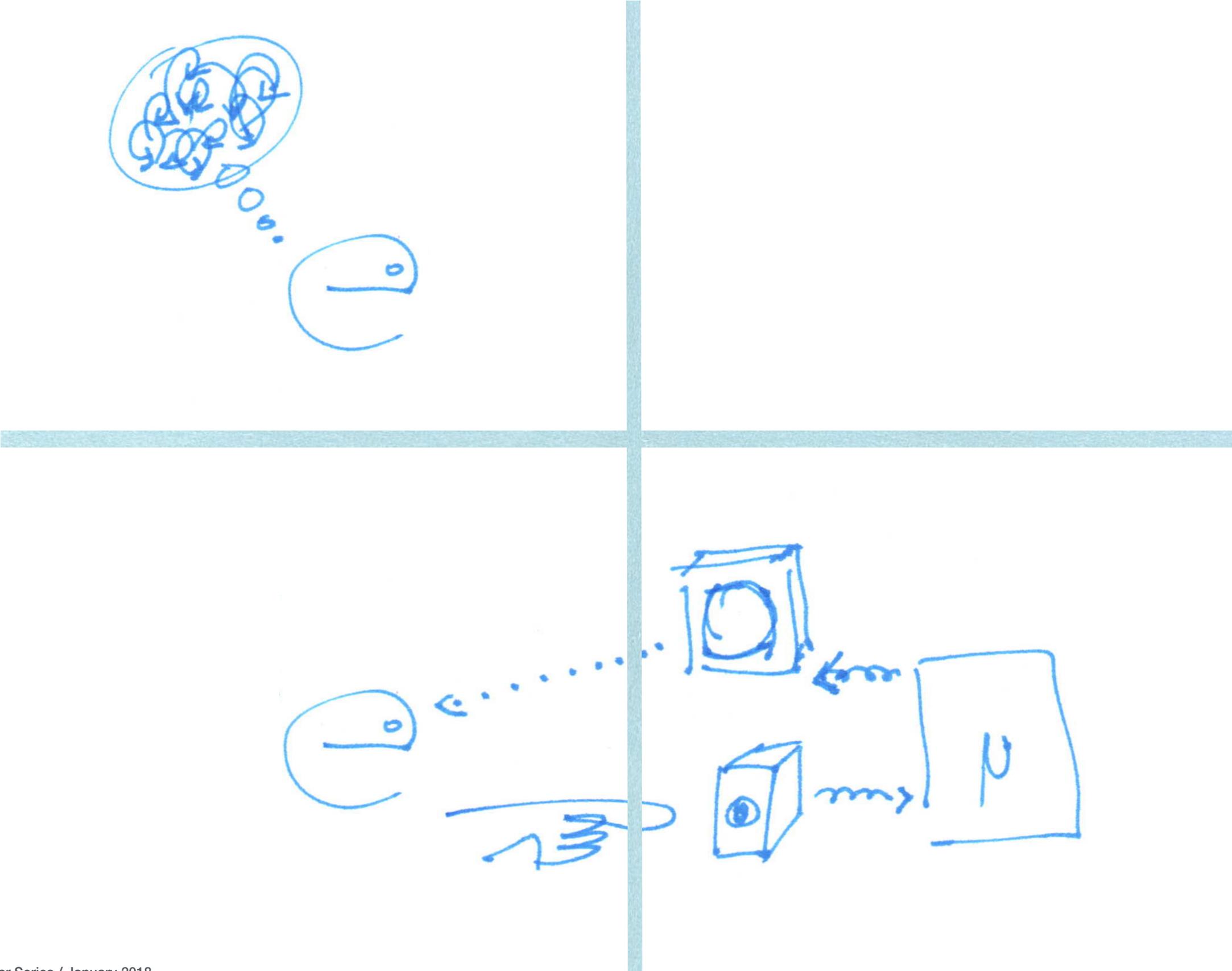


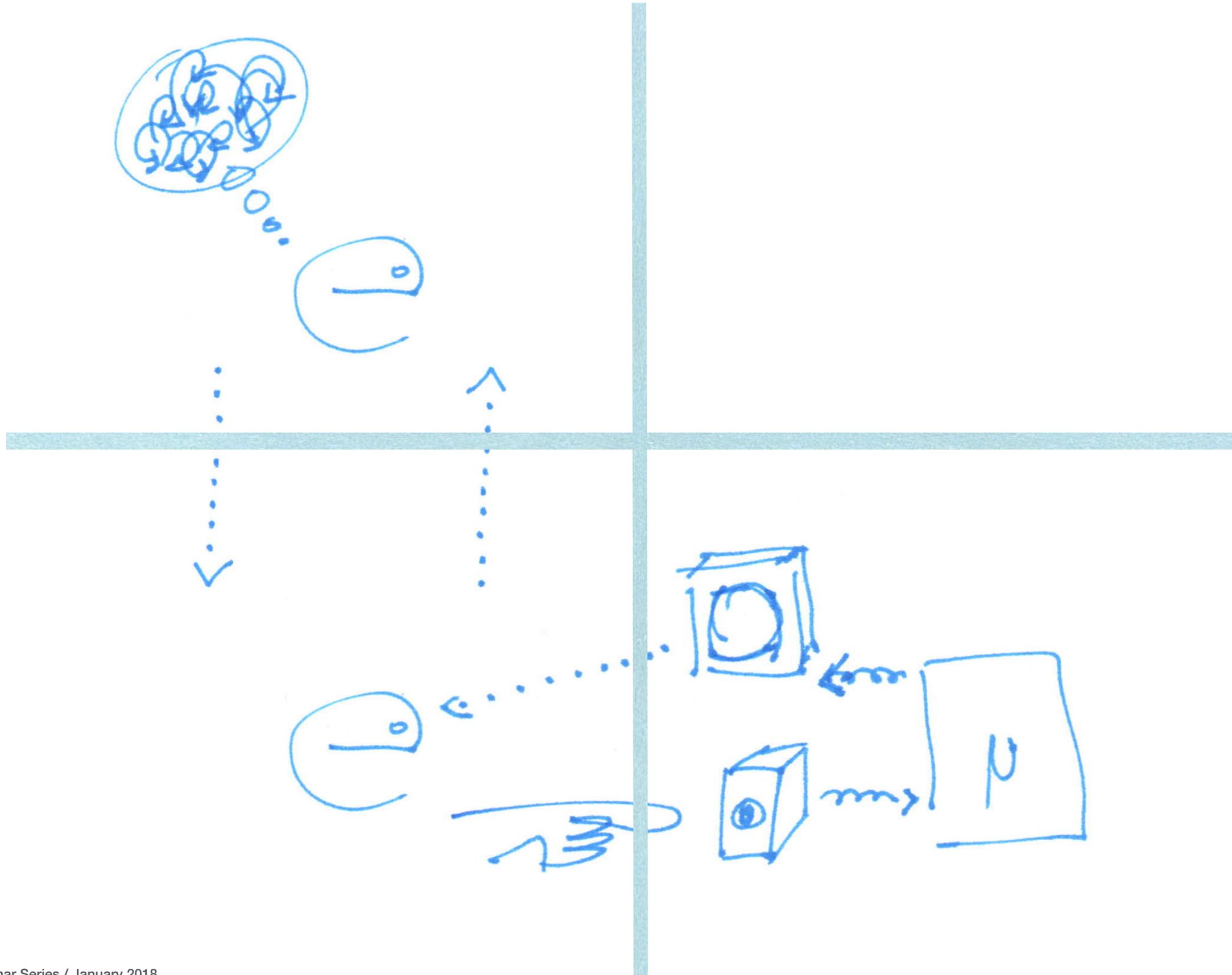


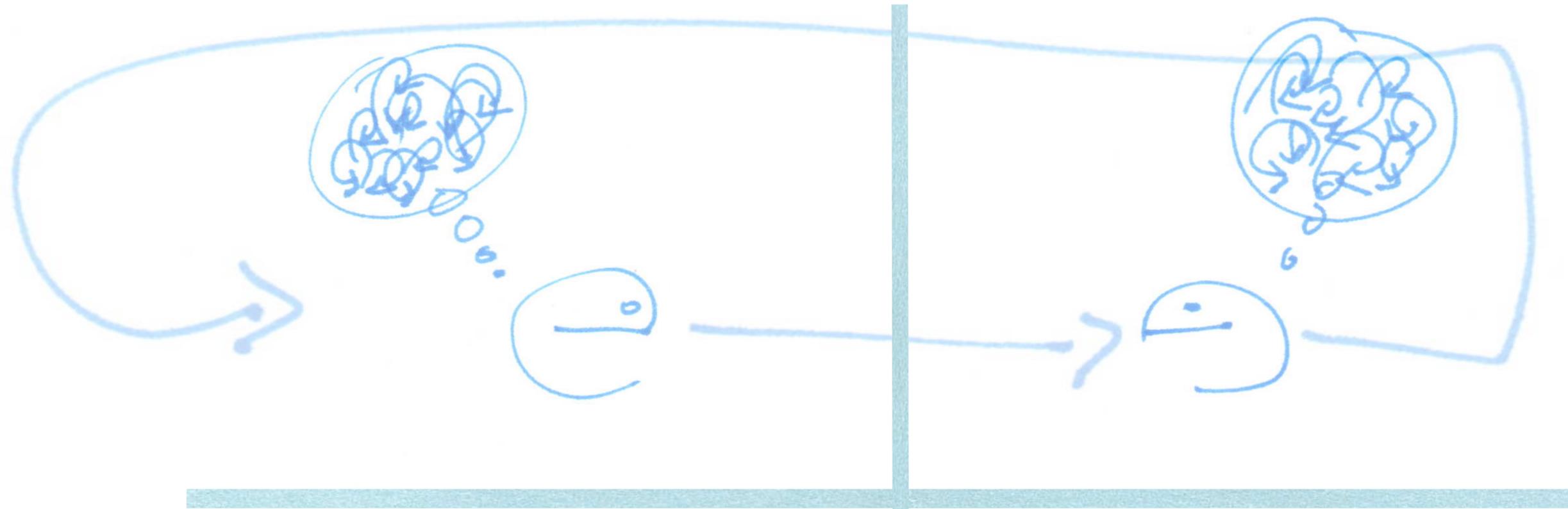


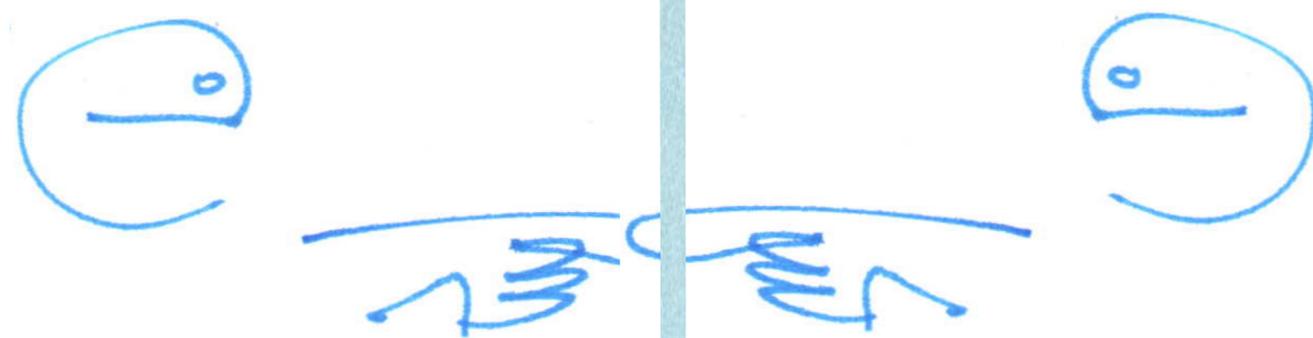
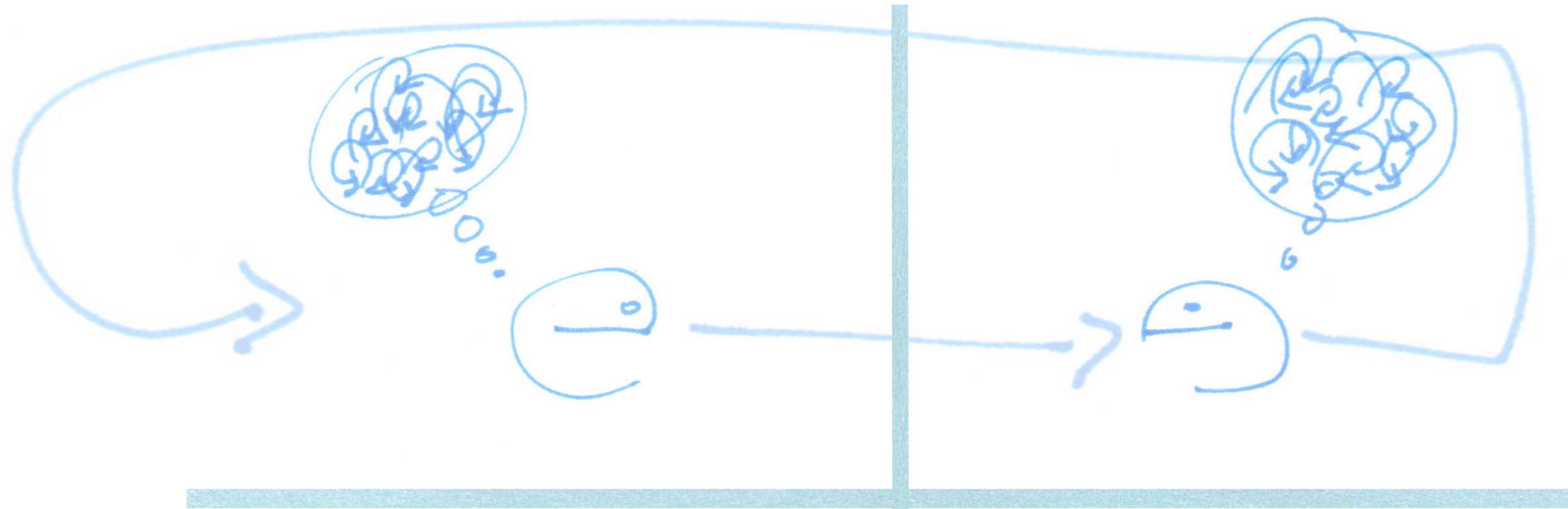


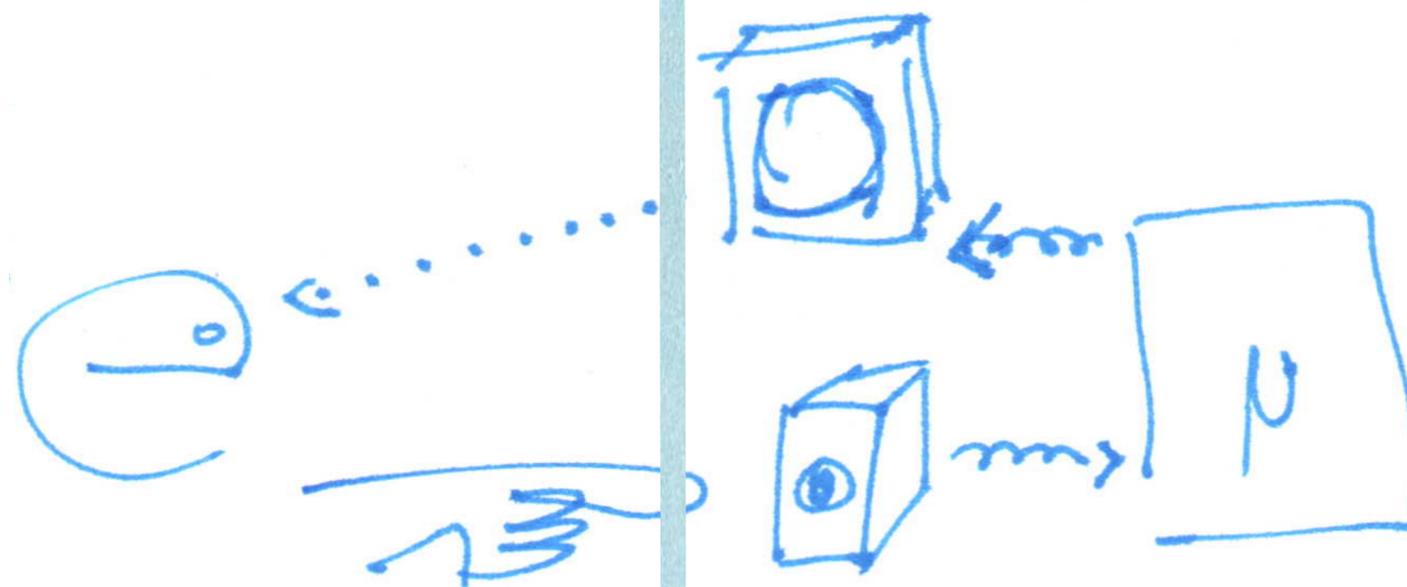
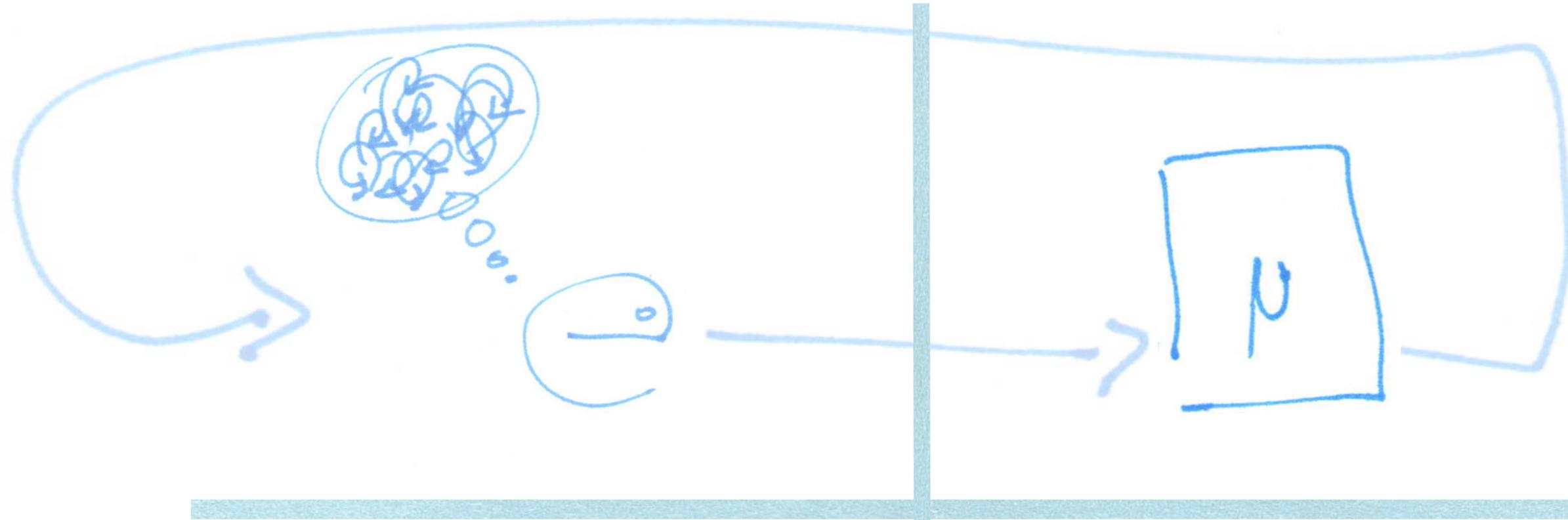






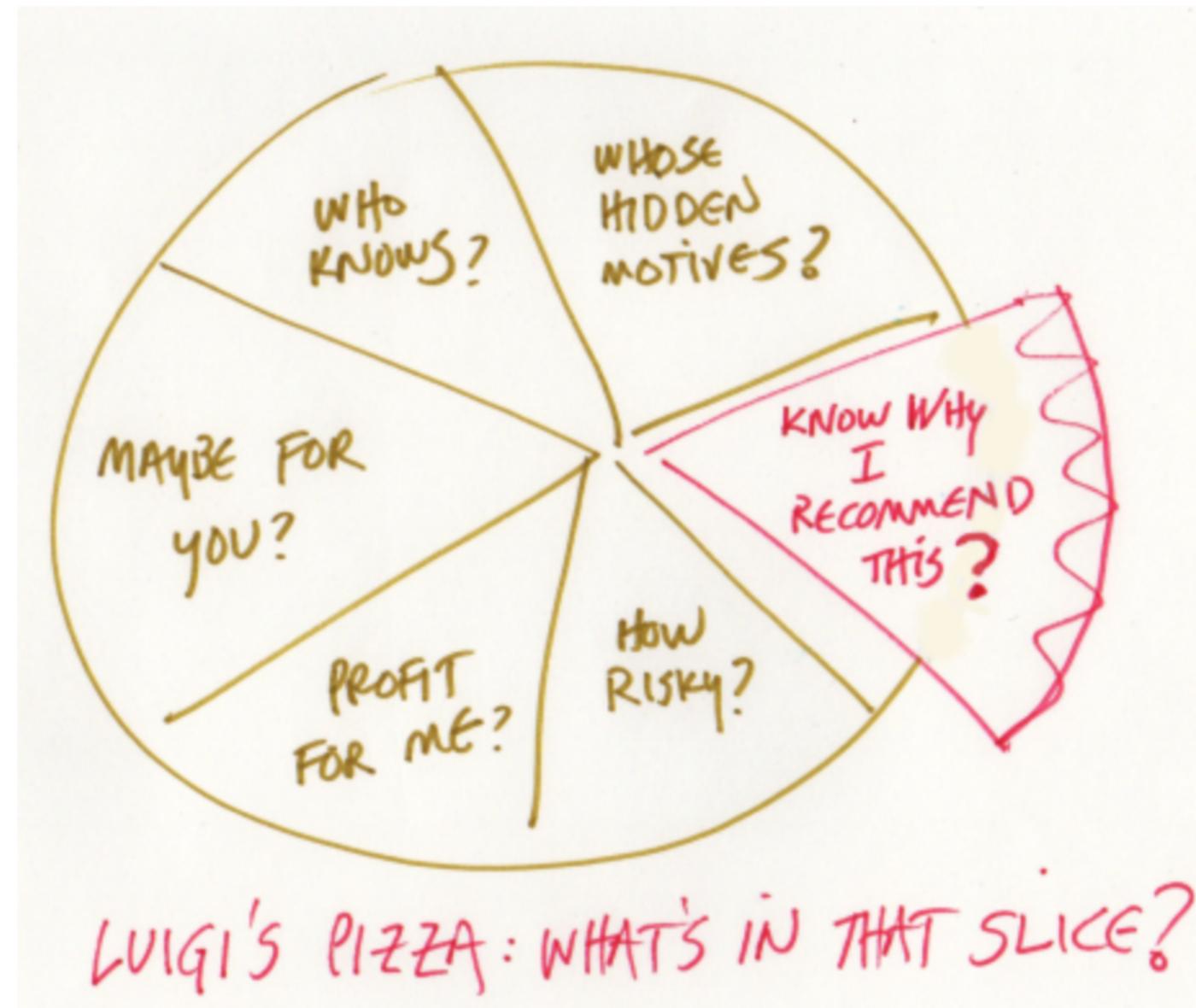




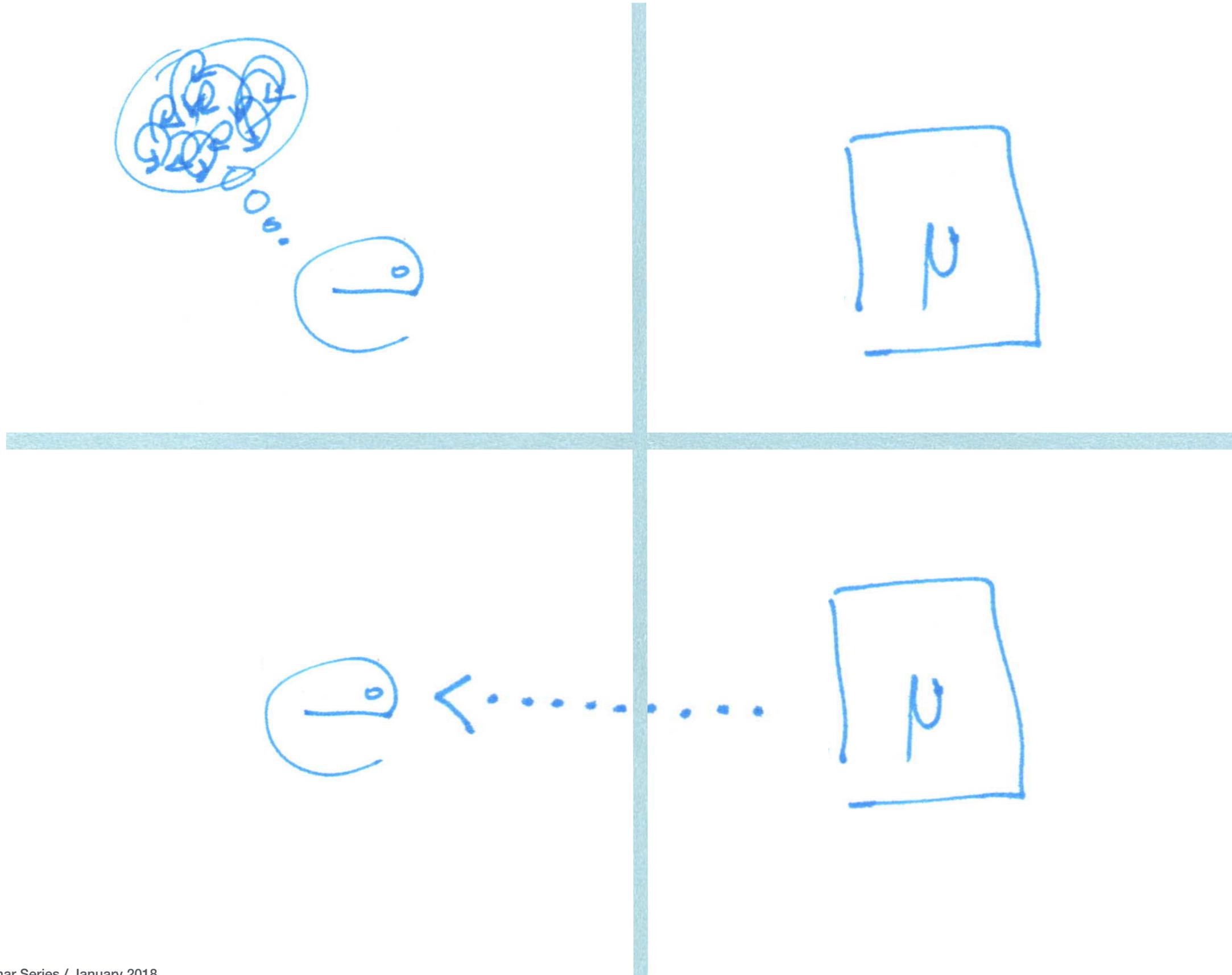


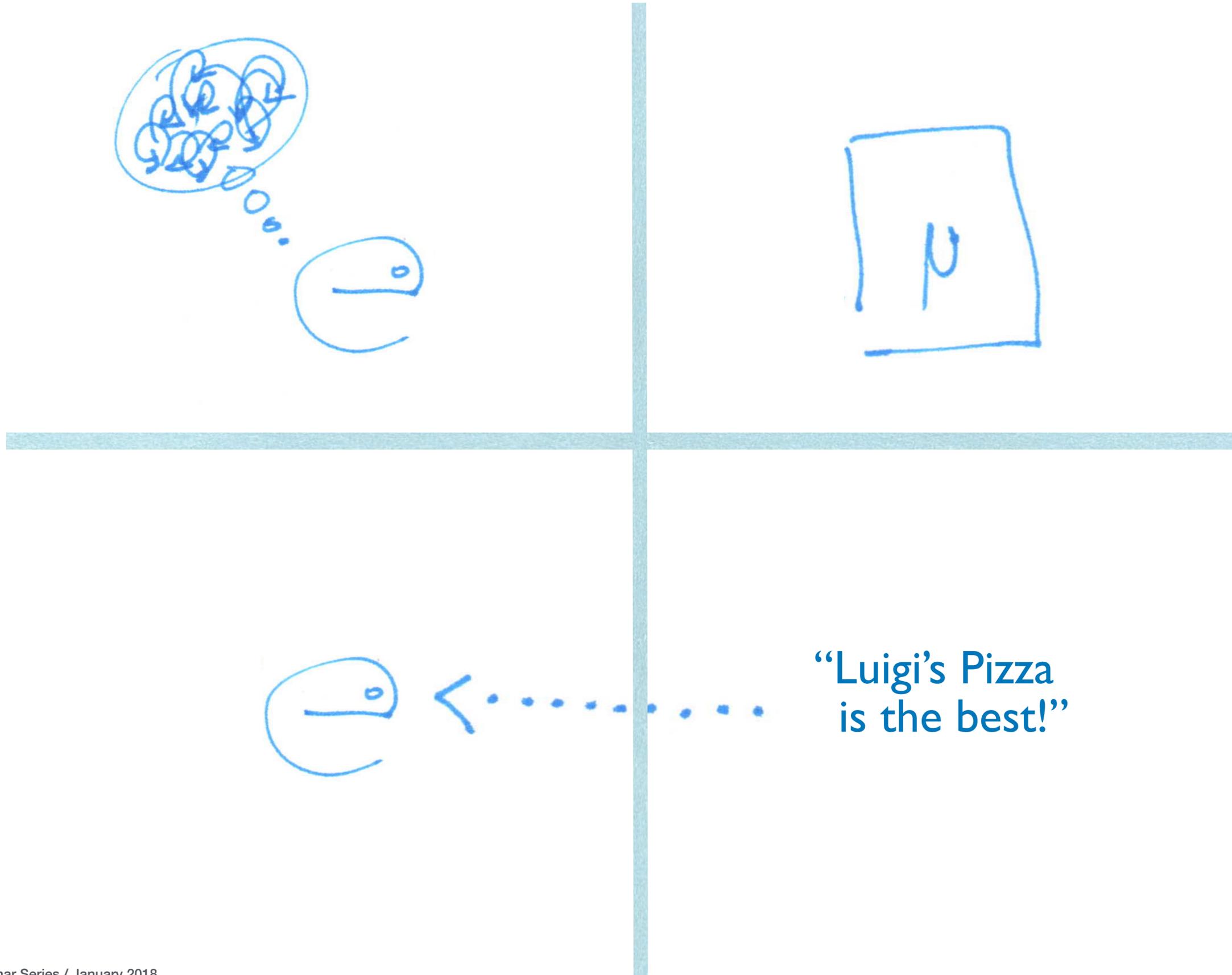
Luigi's Pizza: A Parable

November 8, 2016



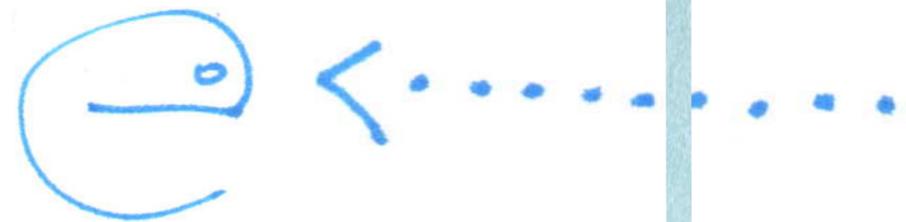
Say you want to eat somewhere and you ask for my recommendation. I say, "Sure, I've got the best place for you: Luigi's Pizza, on the corner of First & Commerce."



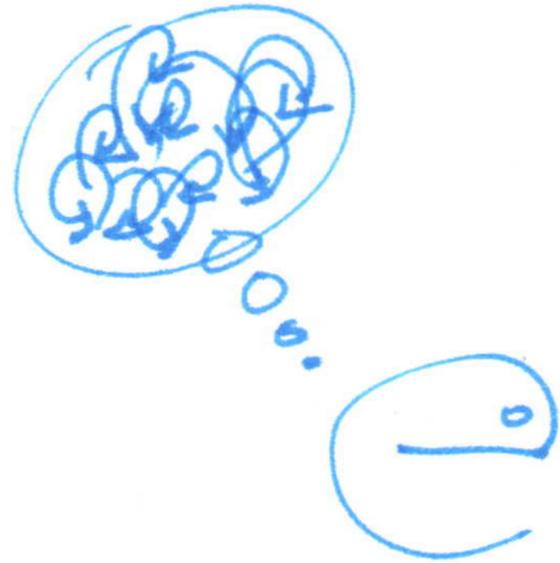




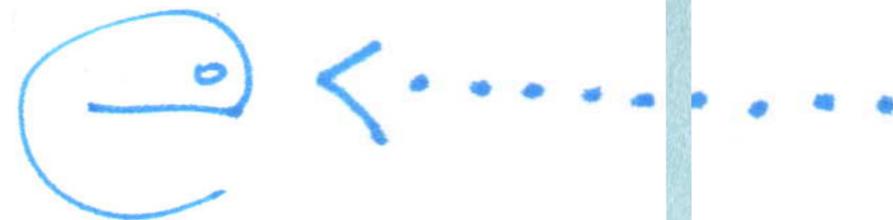
“Screw you!...
I’m not going
to tell you why!”



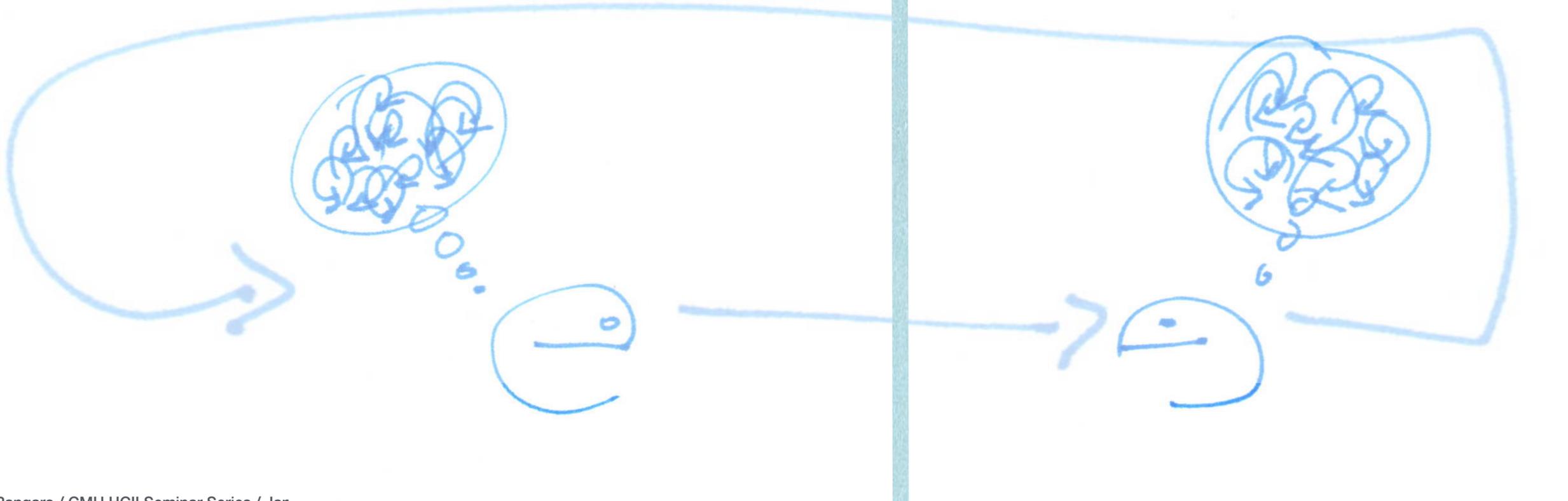
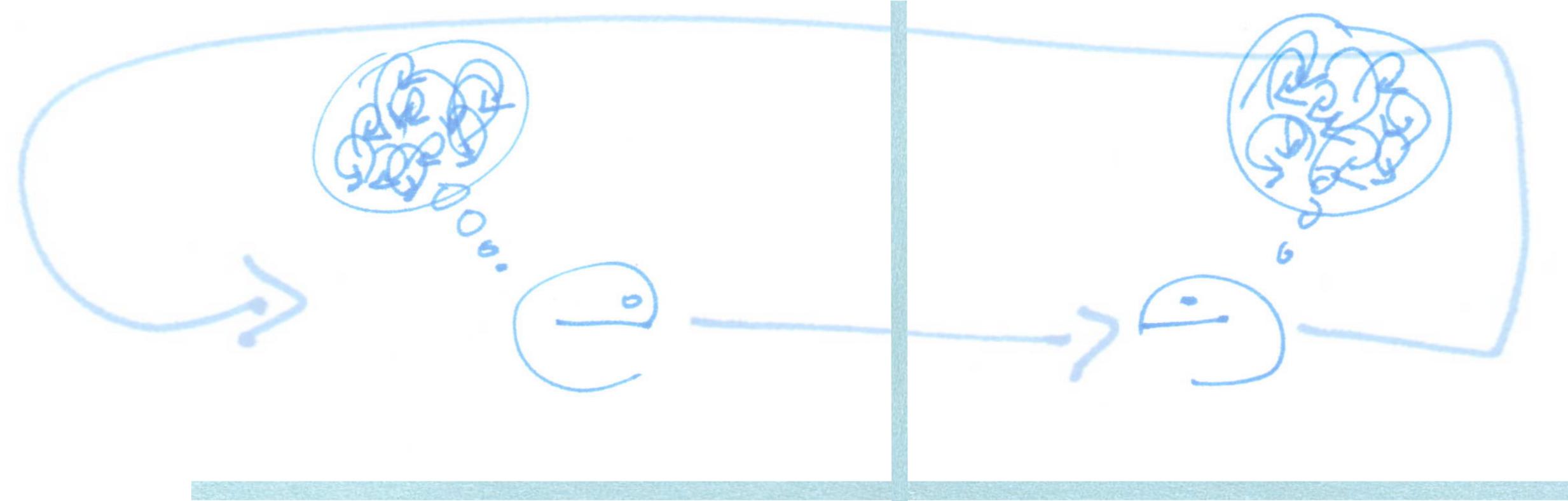
“Luigi’s Pizza
is the best!”

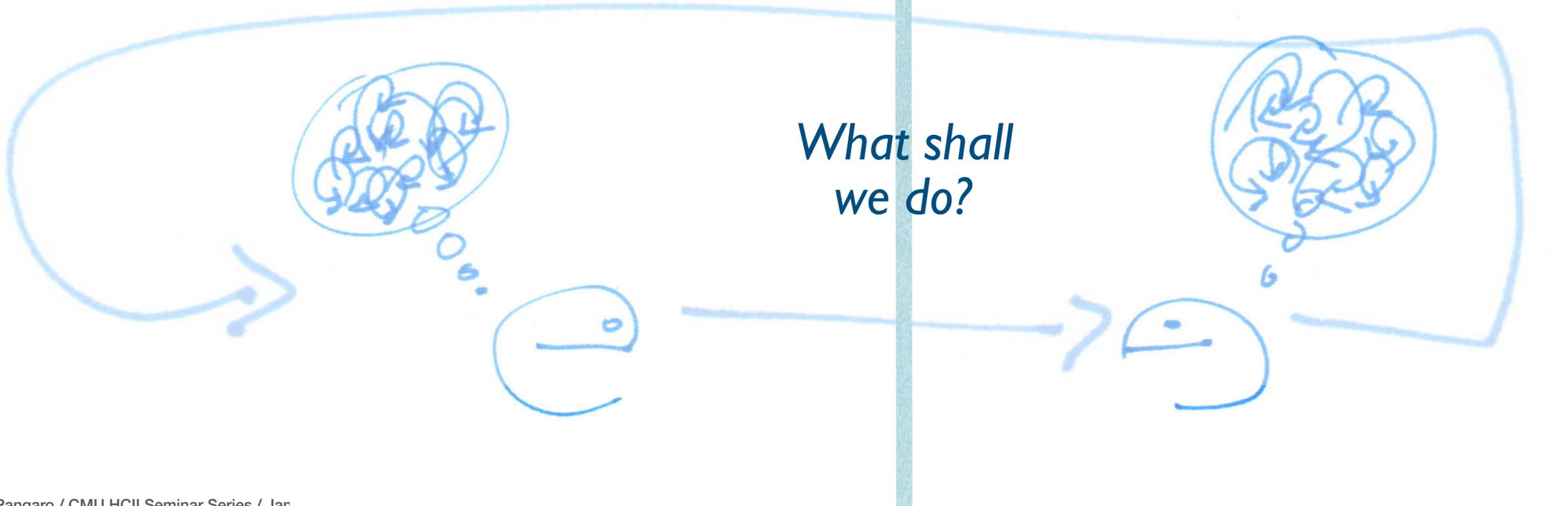
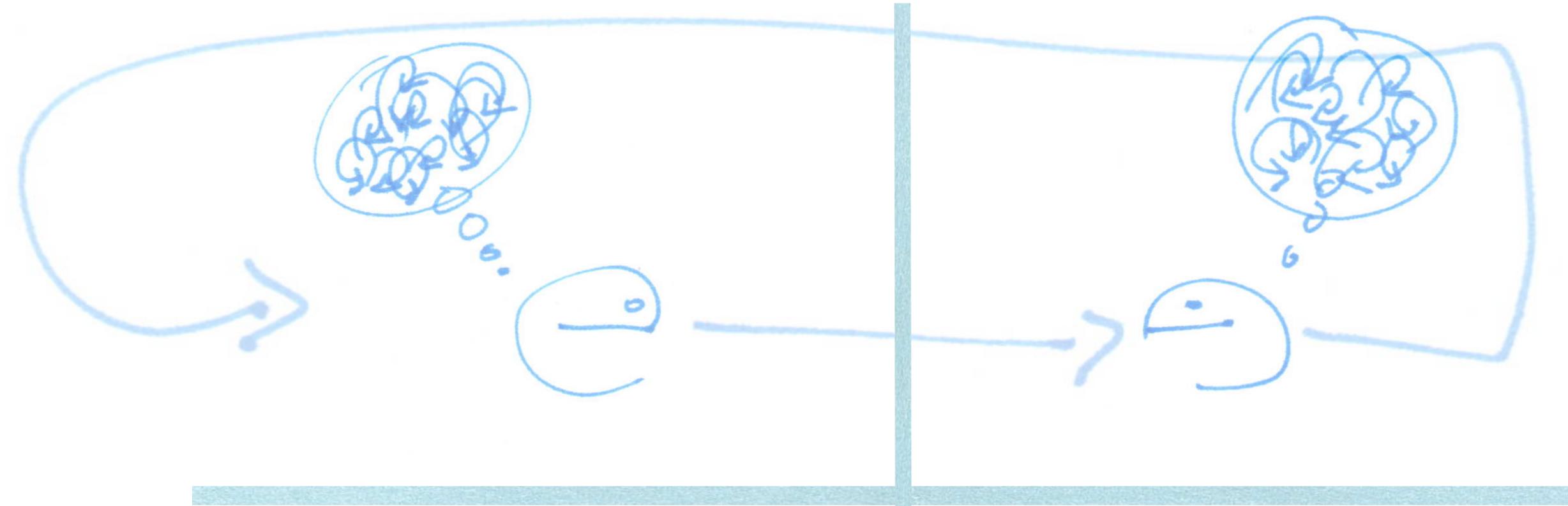


“It matches your preferences, it’s reliable and fairly priced, they use local sourcing, sustainable practices...”

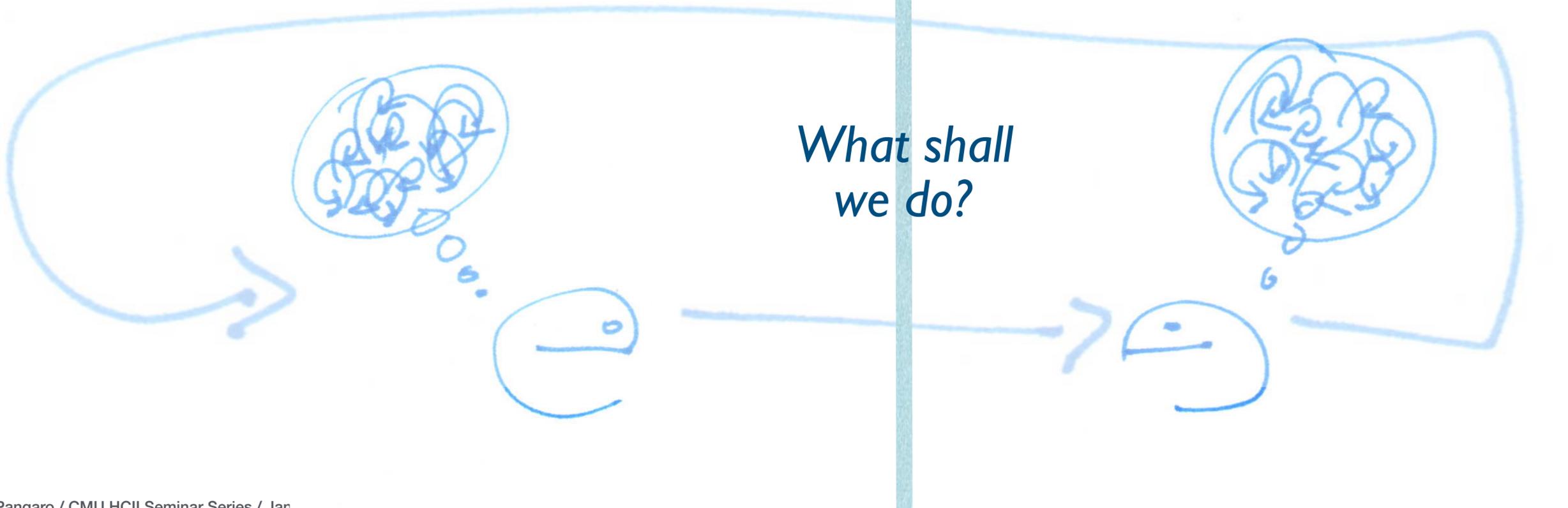
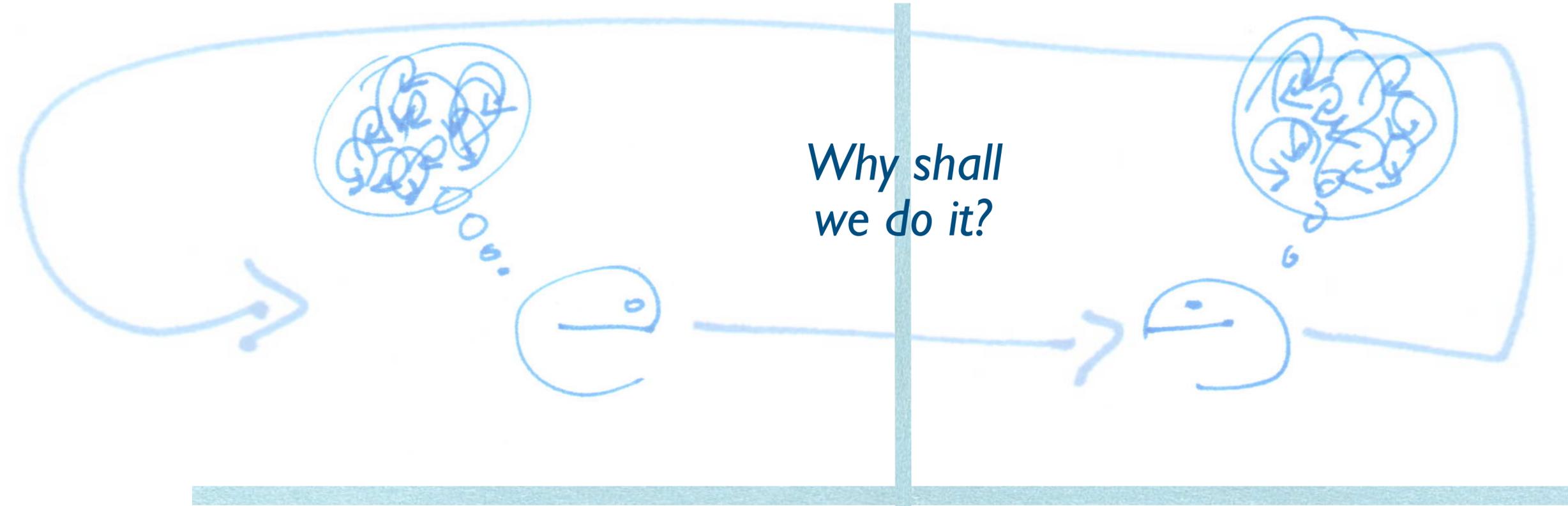


“Luigi’s Pizza is the best!”

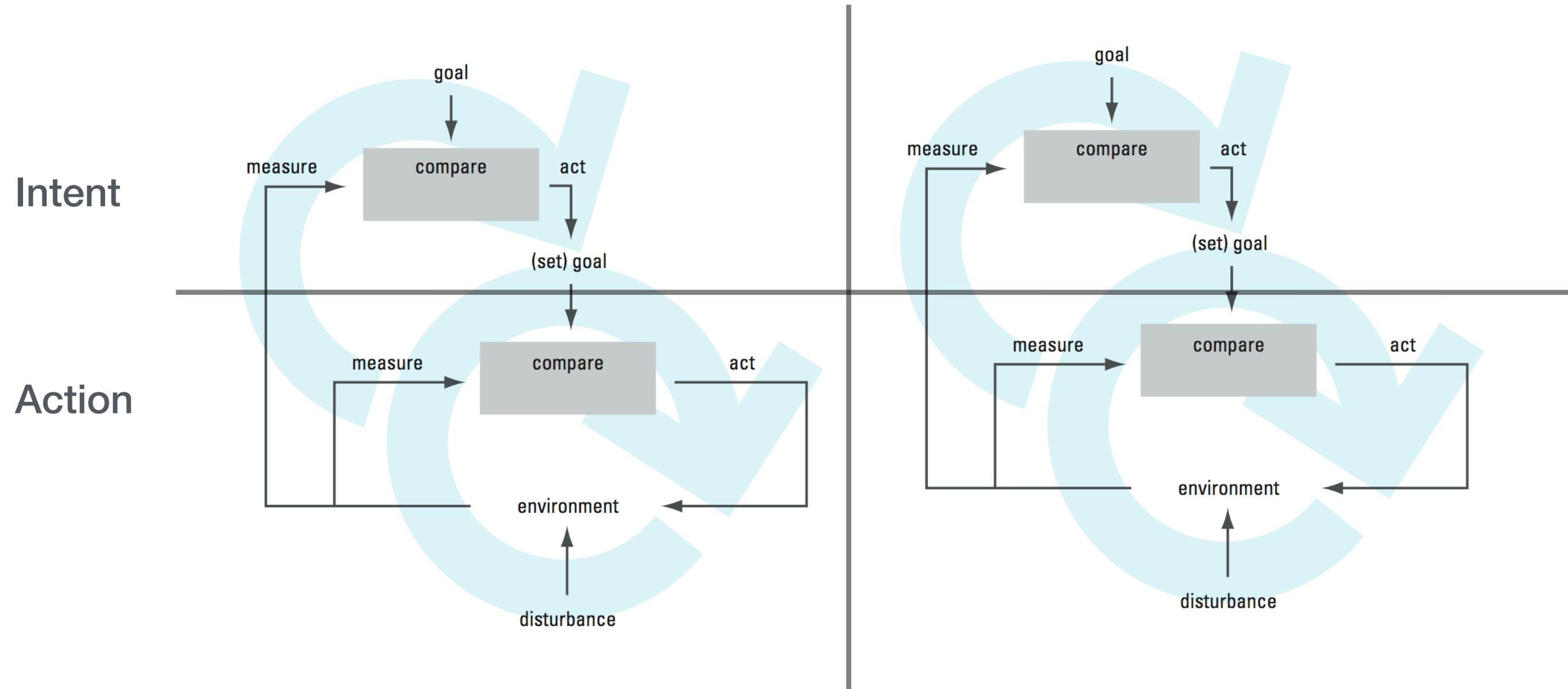


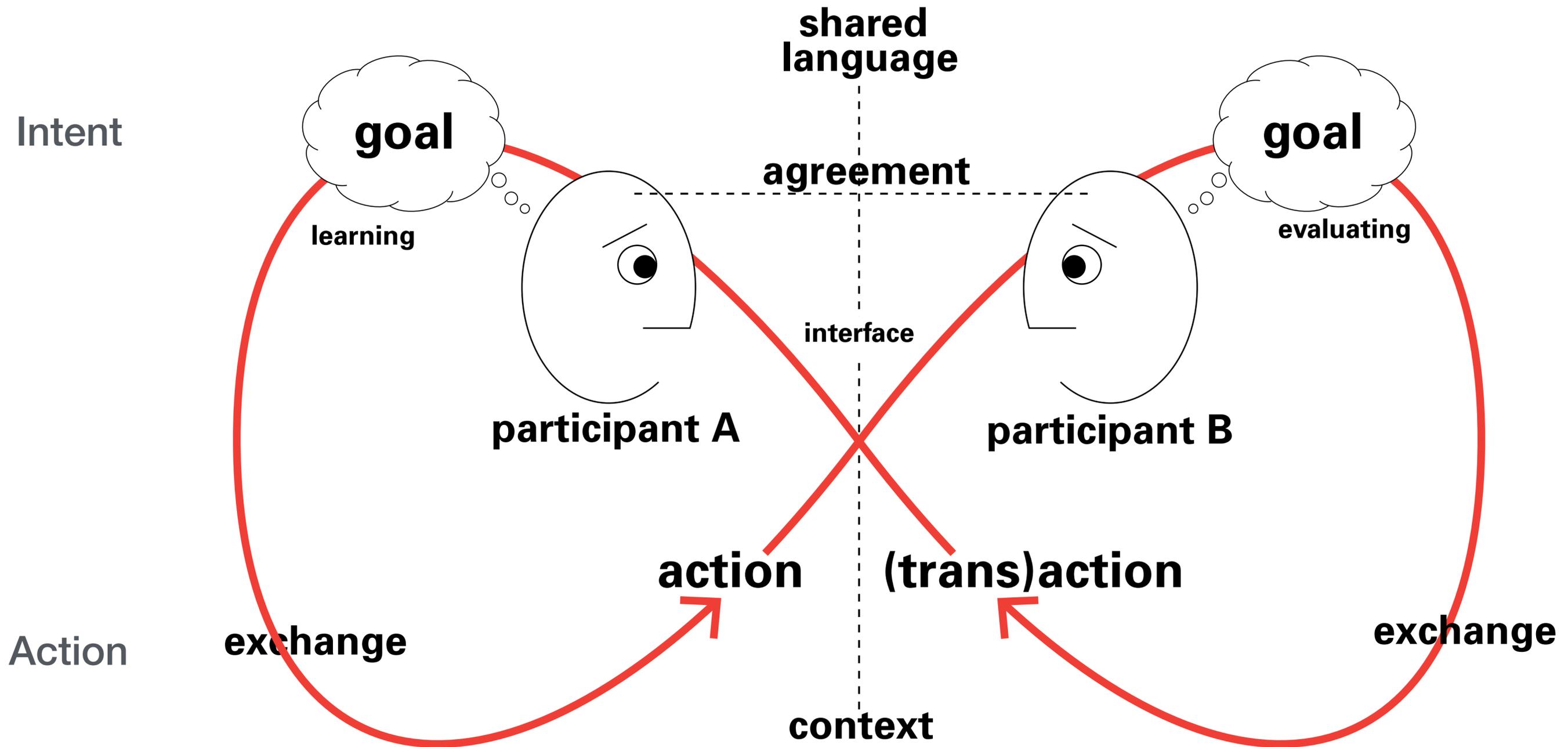


What shall
we do?



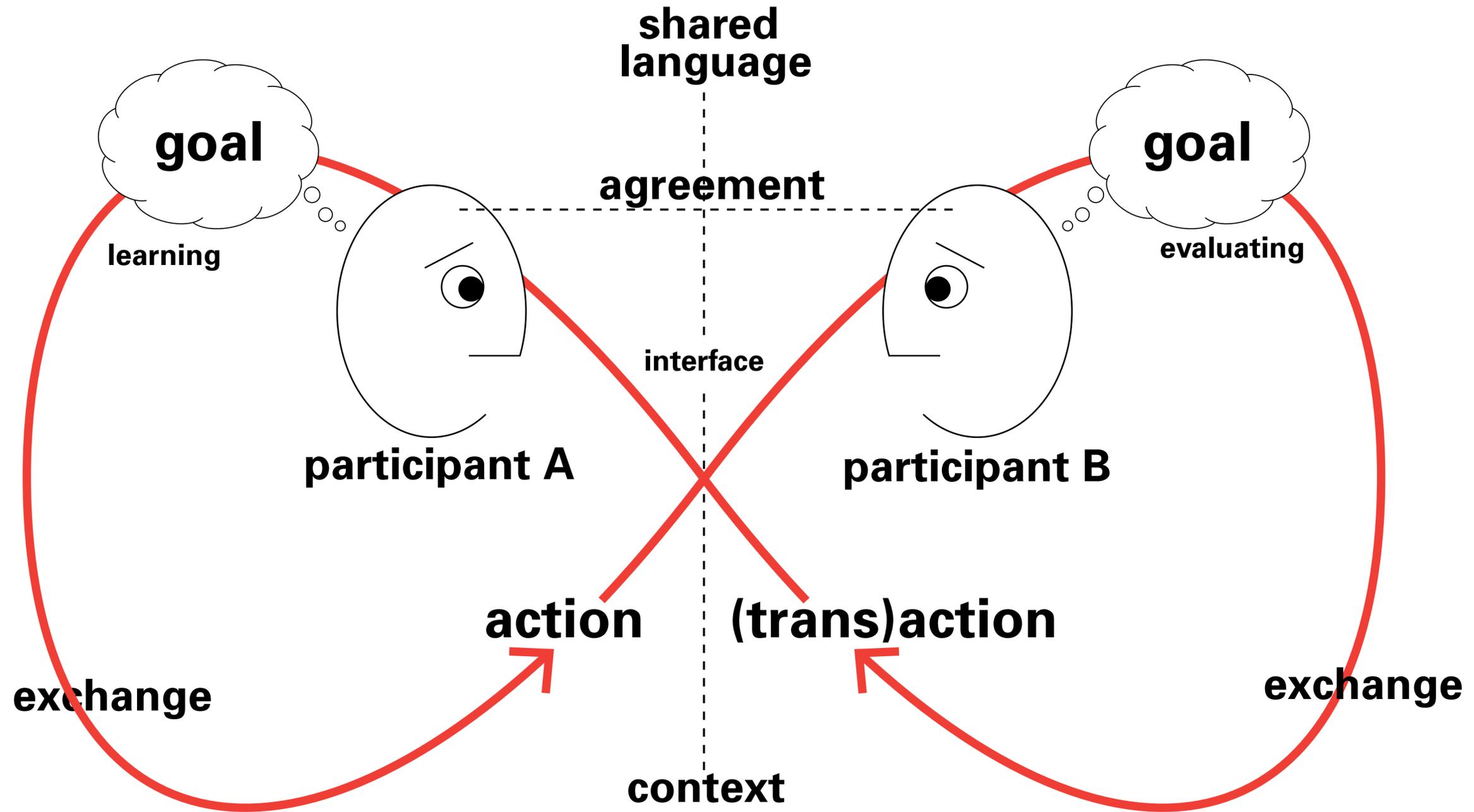
Architecture for Conversation

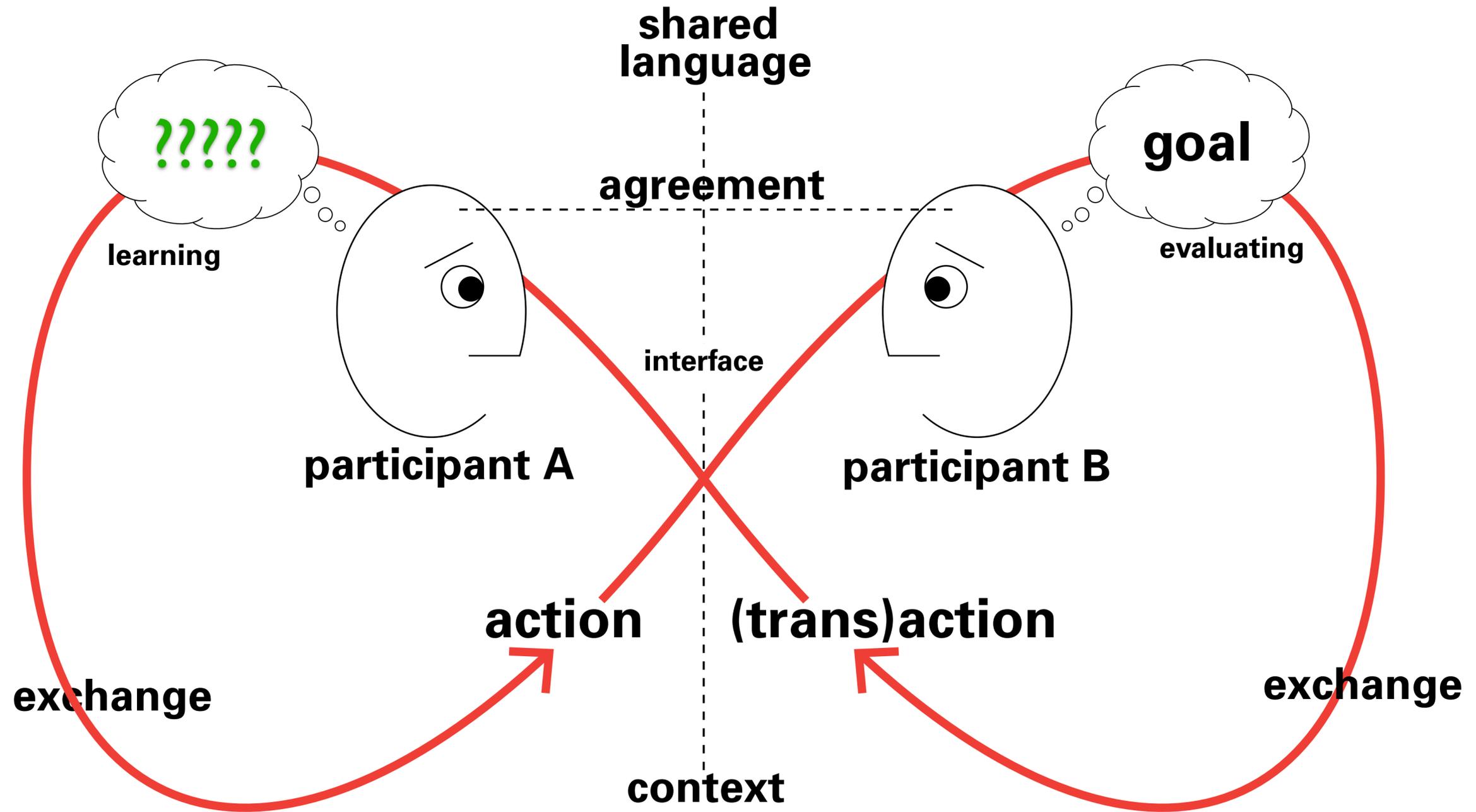


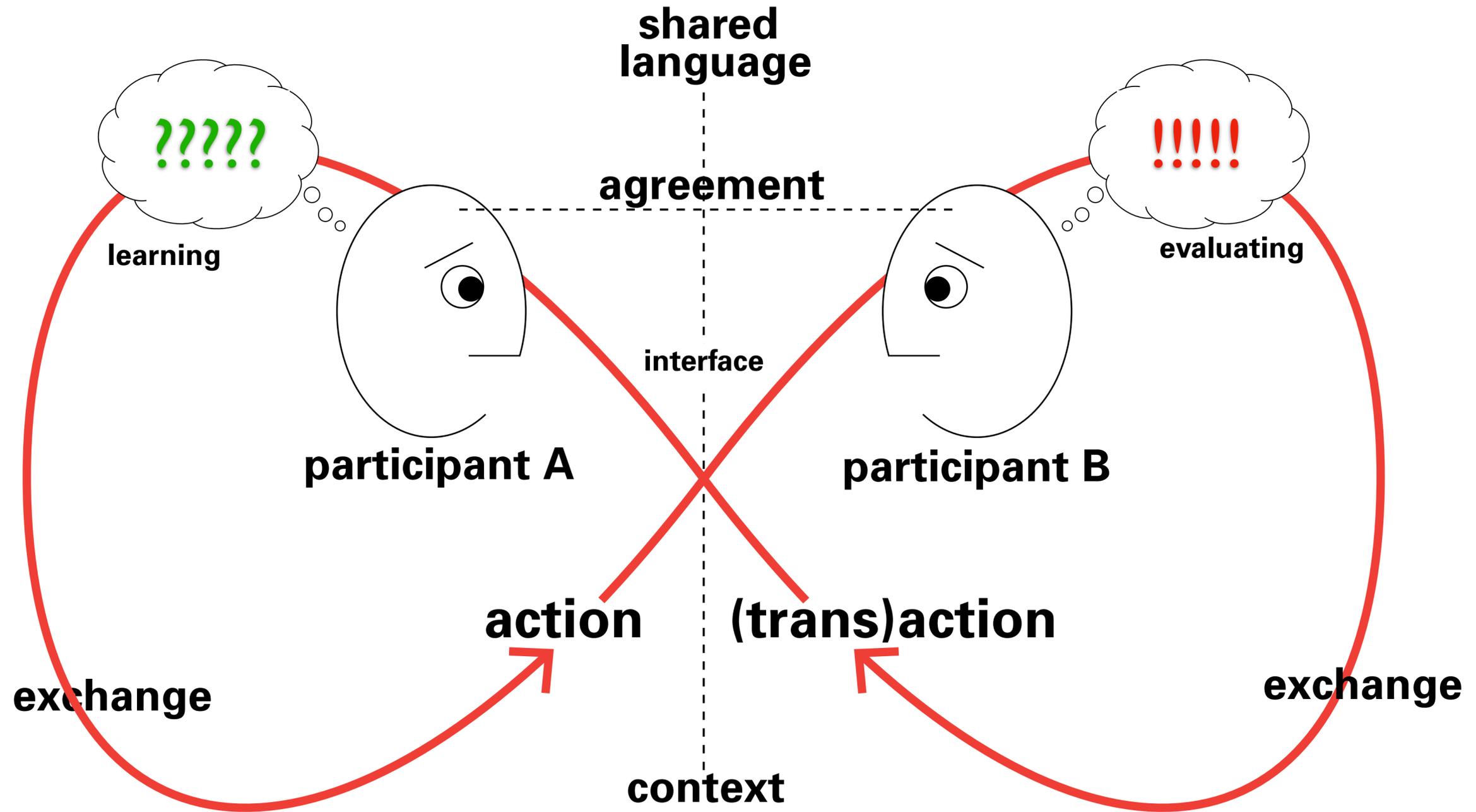


Axiom #1

Conversation is the minimal **ethical interface**, where conversation is defined as reliable transparency of action & intent — what + why — via the interface.







Why does conversation matter?



Why does conversation matter?

- *to act together, we must reach agreement*

Why does conversation matter?

- *to act together, we must reach agreement*
- *to reach agreement, we must have an exchange*

Why does conversation matter?

- *to act together, we must reach agreement*
- *to reach agreement, we must have an exchange*
- *to hold an exchange, we must have shared language.*

Why does conversation matter?

- *to act together, we must reach agreement*
- *to reach agreement, we must have an exchange*
- *to hold an exchange, we must have shared language.*

To cooperate and collaborate requires conversation

What may follow from conversation?



What may follow from conversation?

- *shared history*
- *relationship*
- *trust*
- *unity*

What does conversation enable?



What does conversation enable?

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

Axiom #2

Conversation is the minimal **humane interface**, where conversation involves an evolution of understanding or action by one or more participants, such that trust and collaboration may arise.

What's a “good conversation”?

- *stays sensitive to context*
- *avoids repetition while offering something novel*
- *maintains continuity*
- *raises great questions*
- *helps you be what you want to be... or to become.*

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Why can't AI + Conversation Interfaces do these things?

Examples of Conversational Software

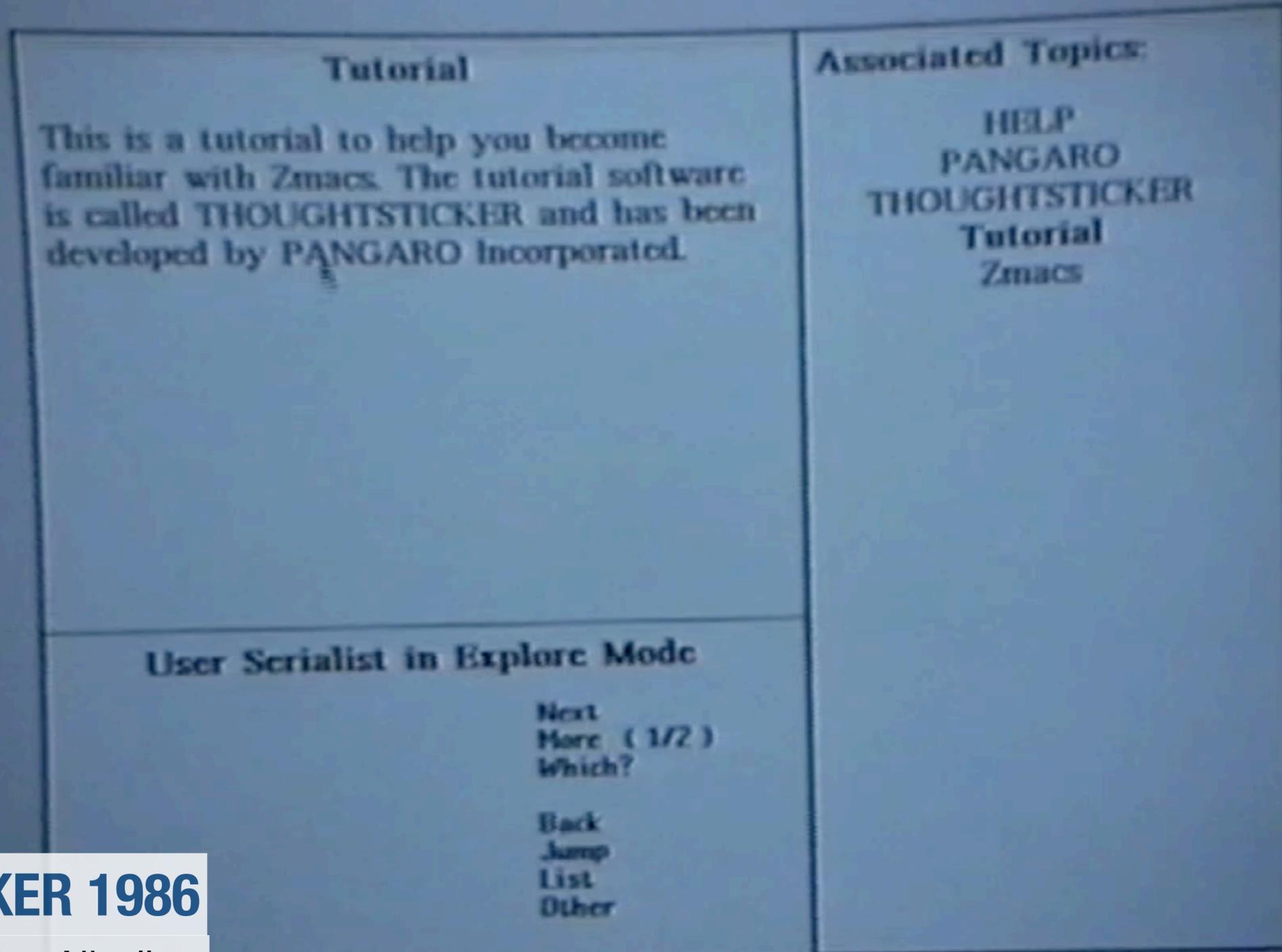
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THOUGHTSTICKER

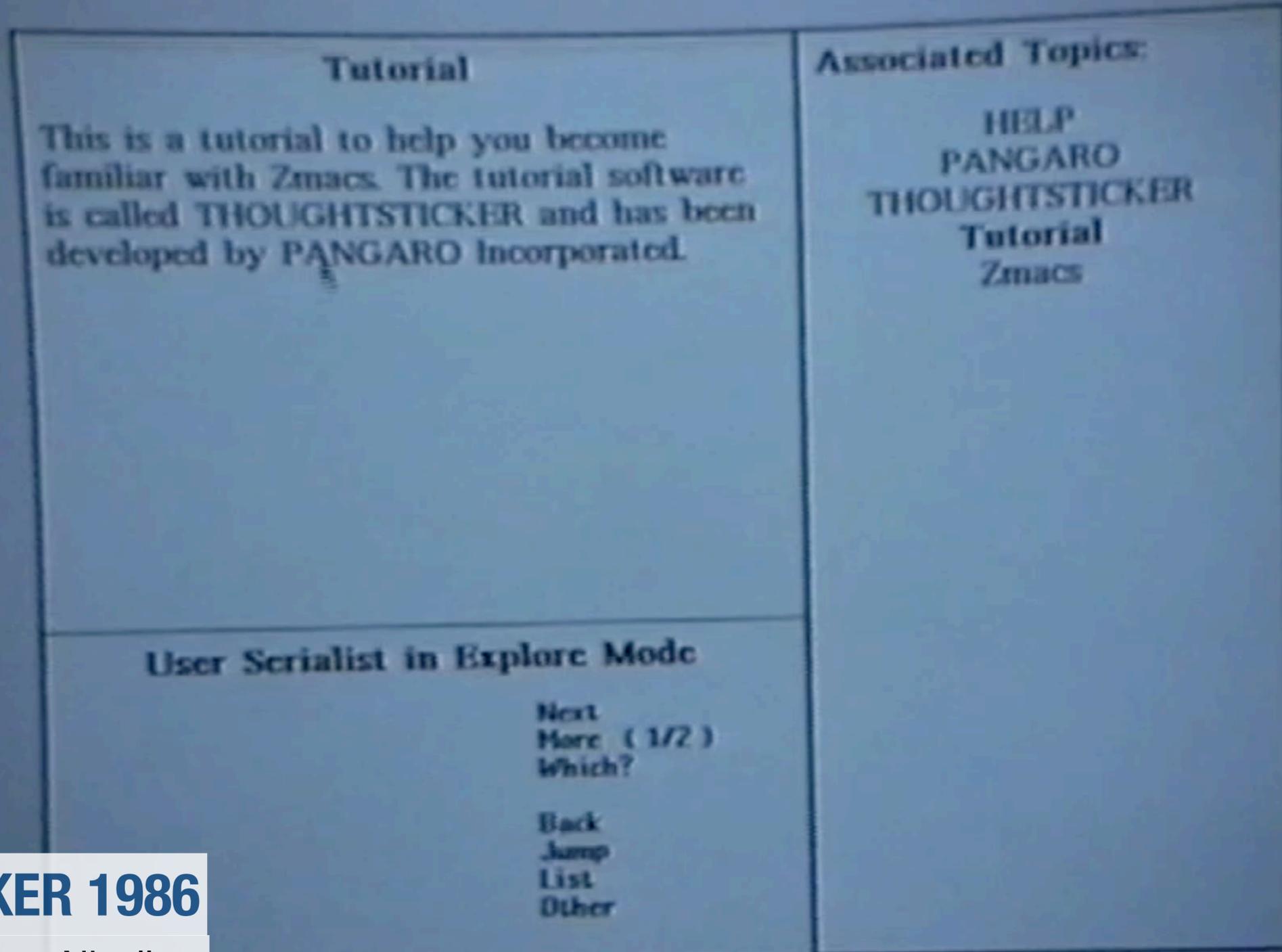
System Research Ltd 1979



THOUGHTSTICKER 1986

Data schema by Jeffrey Nicoll
UI coding & UX by Paul Pangaro

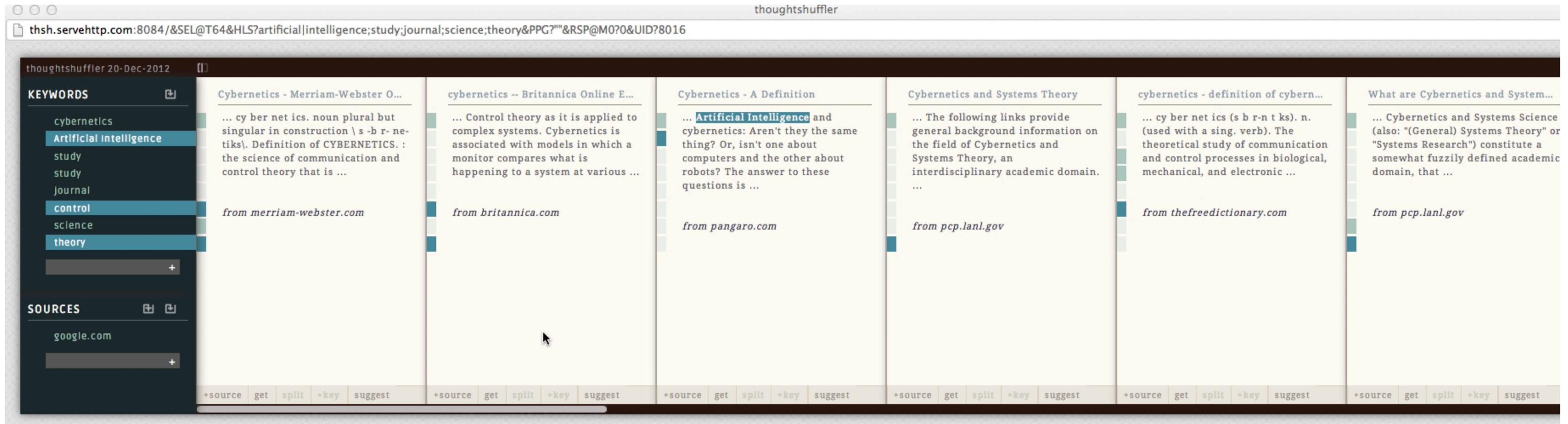
Click to play



THOUGHTSTICKER 1986

Data schema by Jeffrey Nicoll
UI coding & UX by Paul Pangaro

Click to play



THOUGHTSHUFFLER 2014

UI design and coding by Jeremy Scott Diamond
UX & heuristics by Paul Pangaro

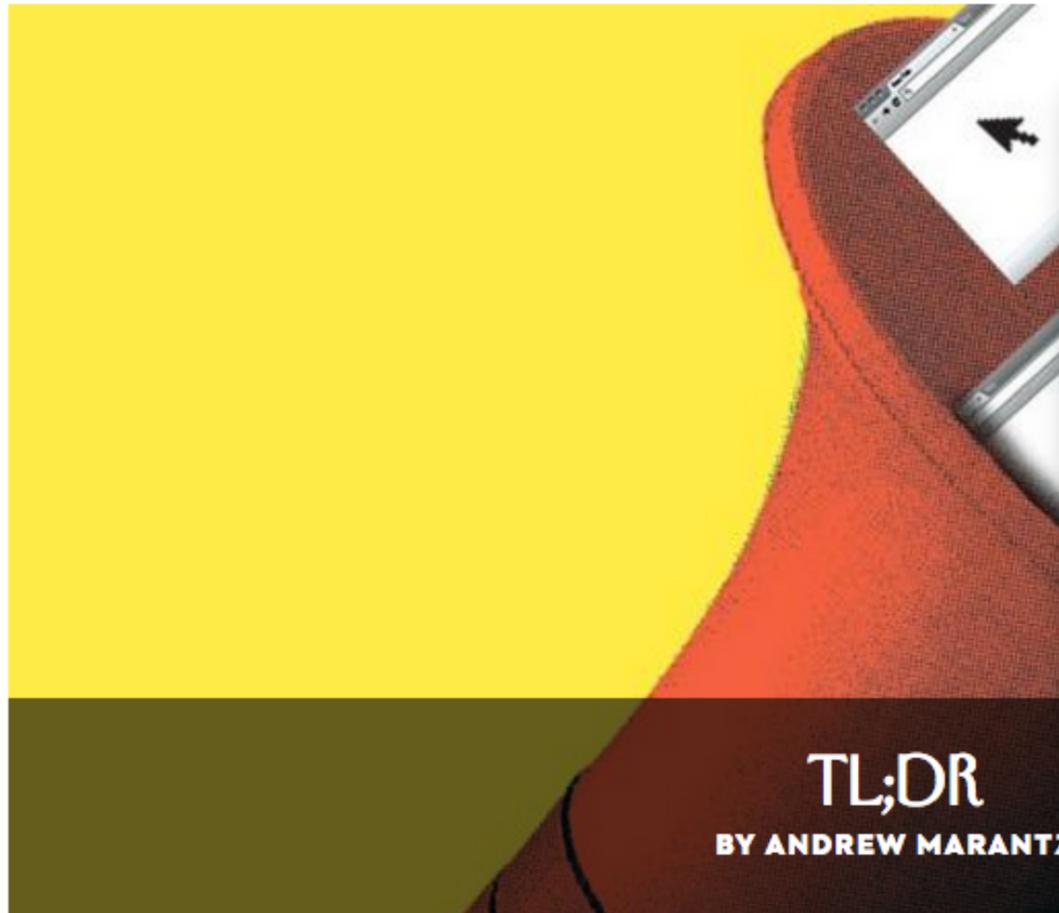
Click to play

Paul Pangaro / CMU HCII Seminar Series / January 2018

NEW YORKER
 READ SOMETHING THAT MEANS SOMETHING.
 \$1 A WEEK >
 SUBSCRIBE
 RENEW
 GIVE A GIFT
 NON-U.S. ORDERS



THE NEW YORKER



🔍 KING OF CLICKBAIT

- The ability to make things go viral felt like the closest that we could get to having a human superpower.

He offered practical tips: “Facebook should be eighty per cent of your effort, if you’re focussed on social media”; “Try to change every comma to a period”; “Use lists whenever possible. Lists just hijack the brain’s neural circuitry.” Behind me, two women in their fifties took notes on legal pads.

RELATED

Facebook: The World’s Biggest Direct-Market...
 In a conference call after the release of this week’s earnings, she gave a couple of examples of how it is gradually displacing

Can Benefit Corporations Work?
 Yet the desire to balance profit and purpose is arguably a return to the model that many American companies once followed. Henry

STREAMFULLY 2014

UI by Barbara de Wilde & John Katagawa

UI coding by John Katagawa

UX & heuristics by Paul Pangaro

THOUGHTSTUFFLER iOS 2013

UX by Miriam Simun

UI by See-ming Lee

concept & heuristics by Paul Pangaro

Click to play

Paul Pangaro / CMU HCII Seminar Series / January 2018



Examples of Conversational Systems Design

Project Velocity

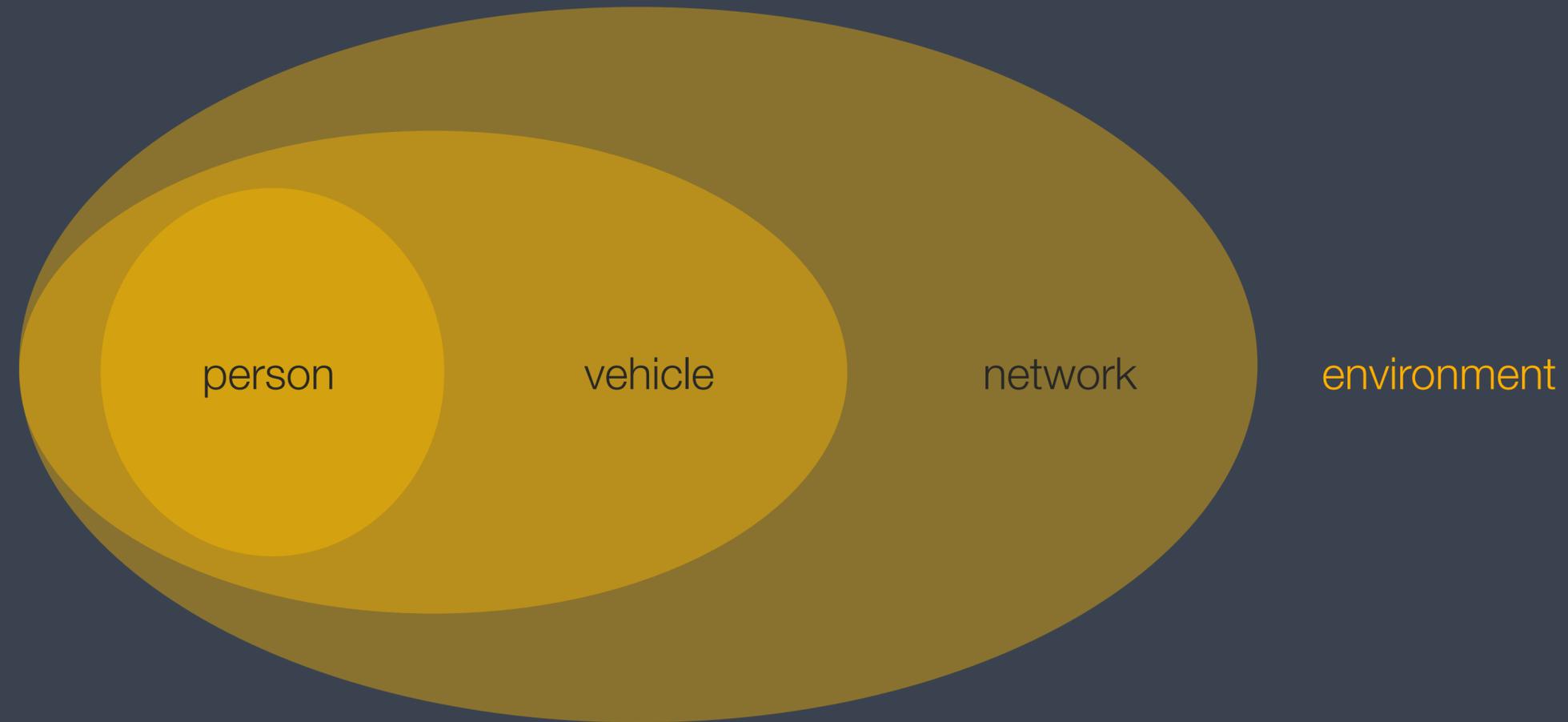


Paul Pangaro
Rob Murray

Growth Ventures
Citi
September 2008

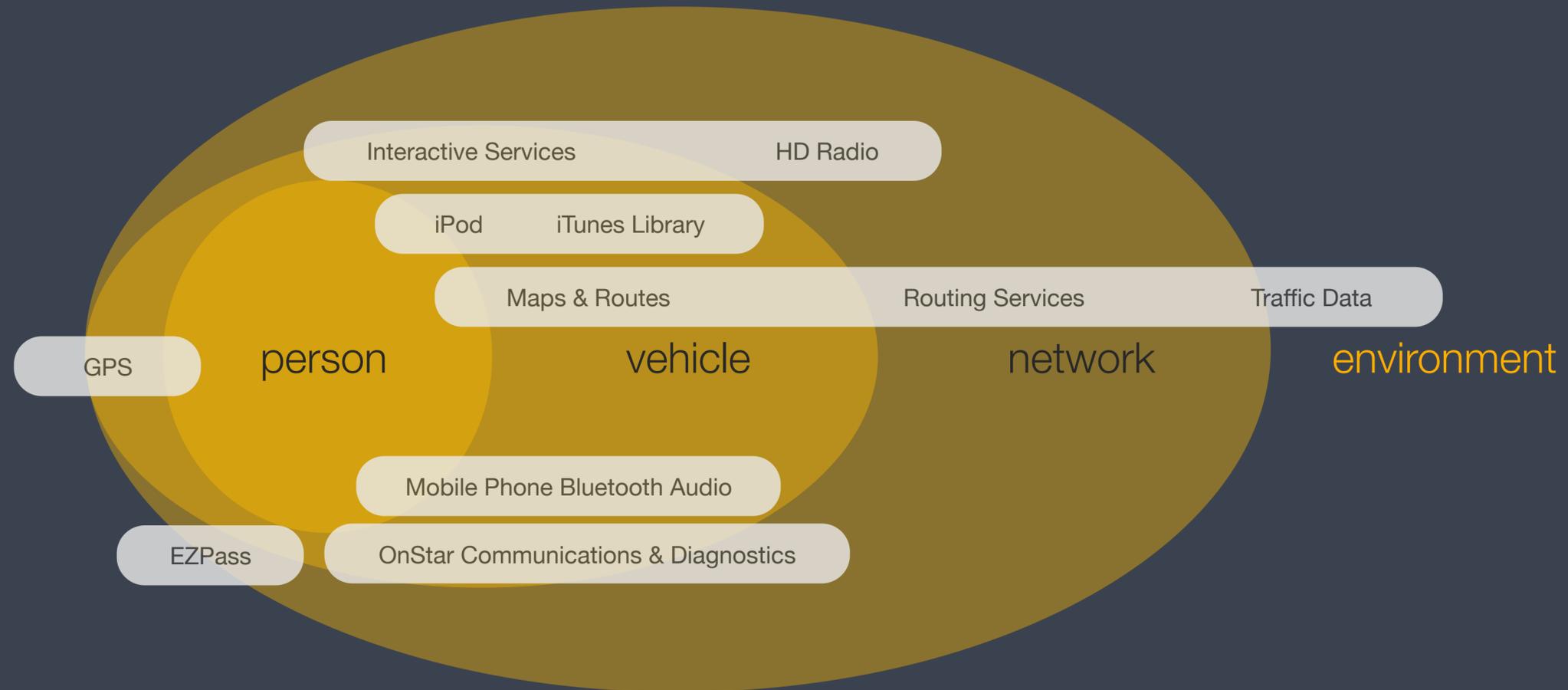
a new business at the intersection of cars,
money and making life easier

Today's networked car*



*2008

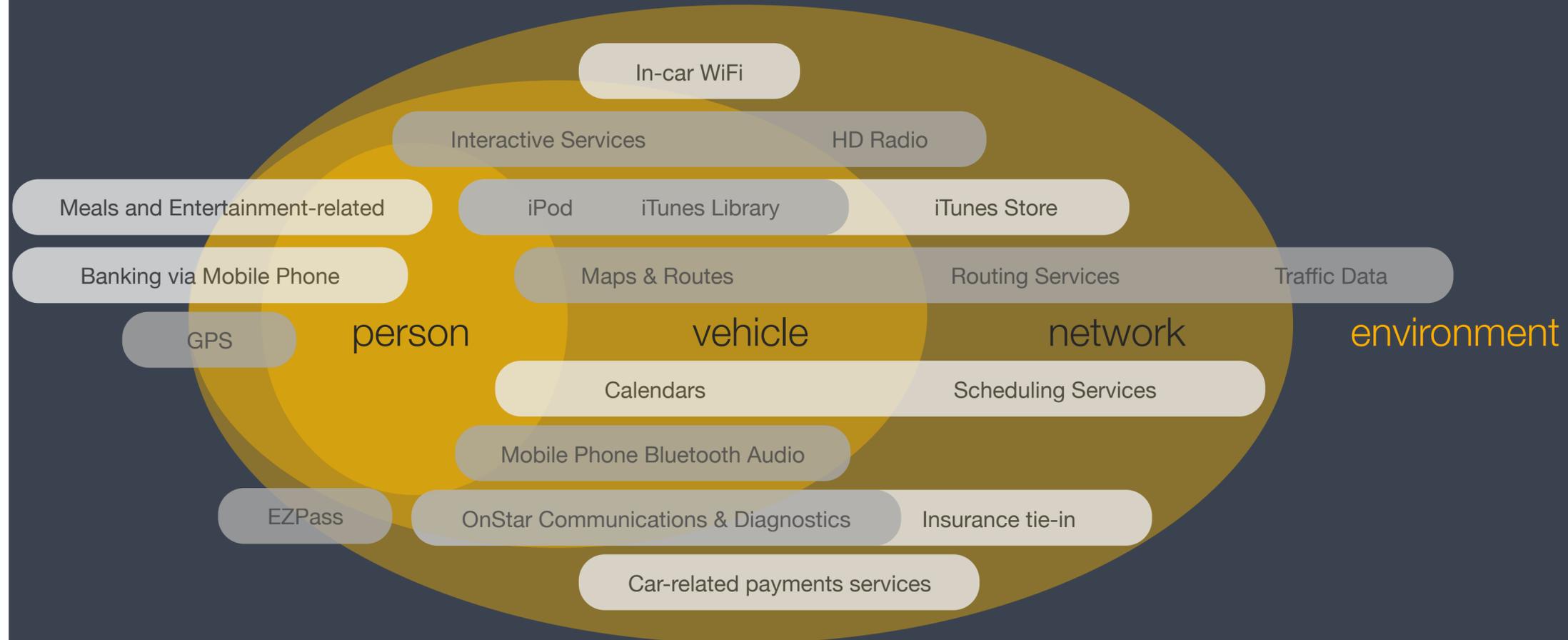
Today's networked car*



currently available in-car systems

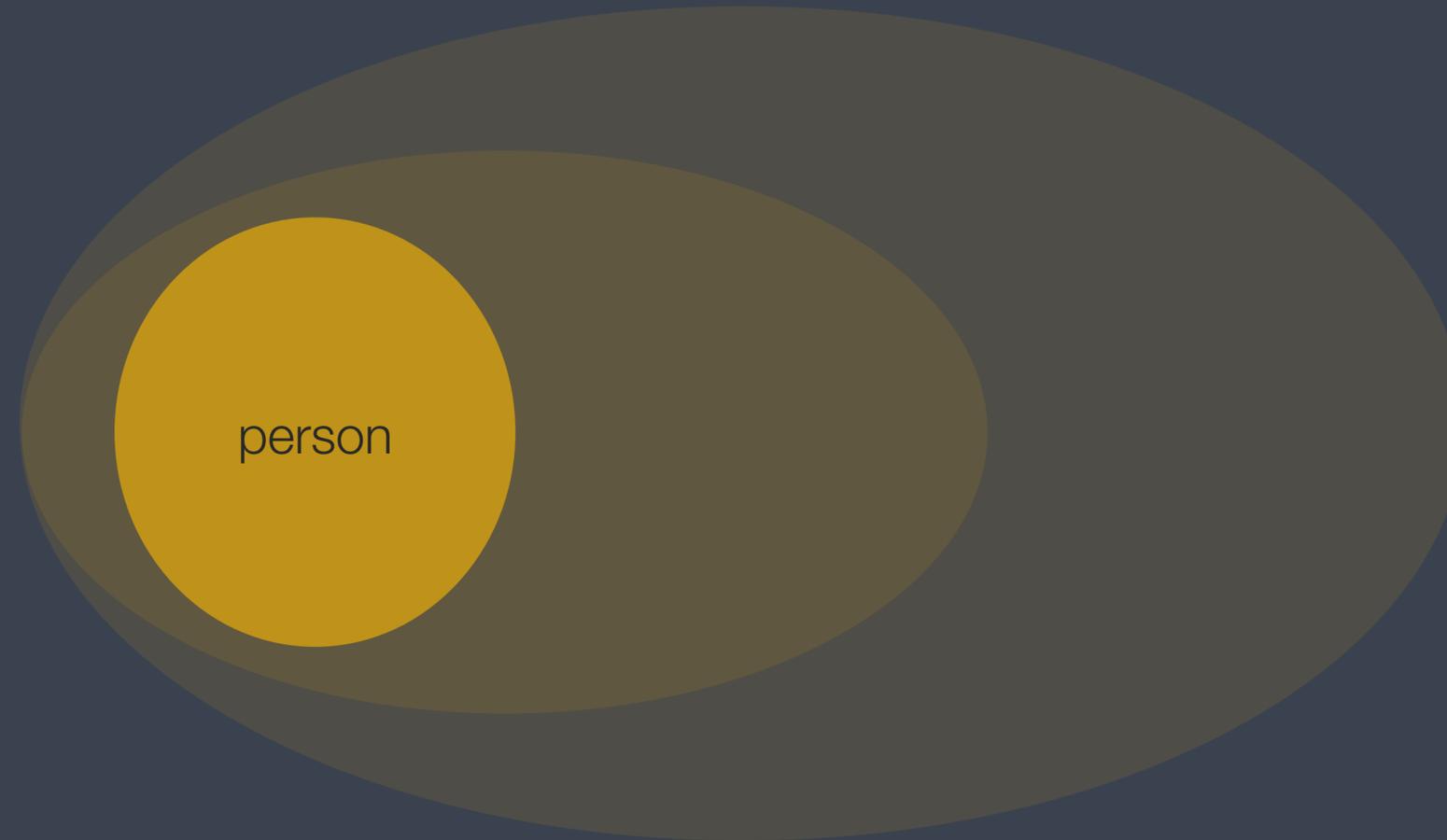
*2008

Increasingly disjointed experience

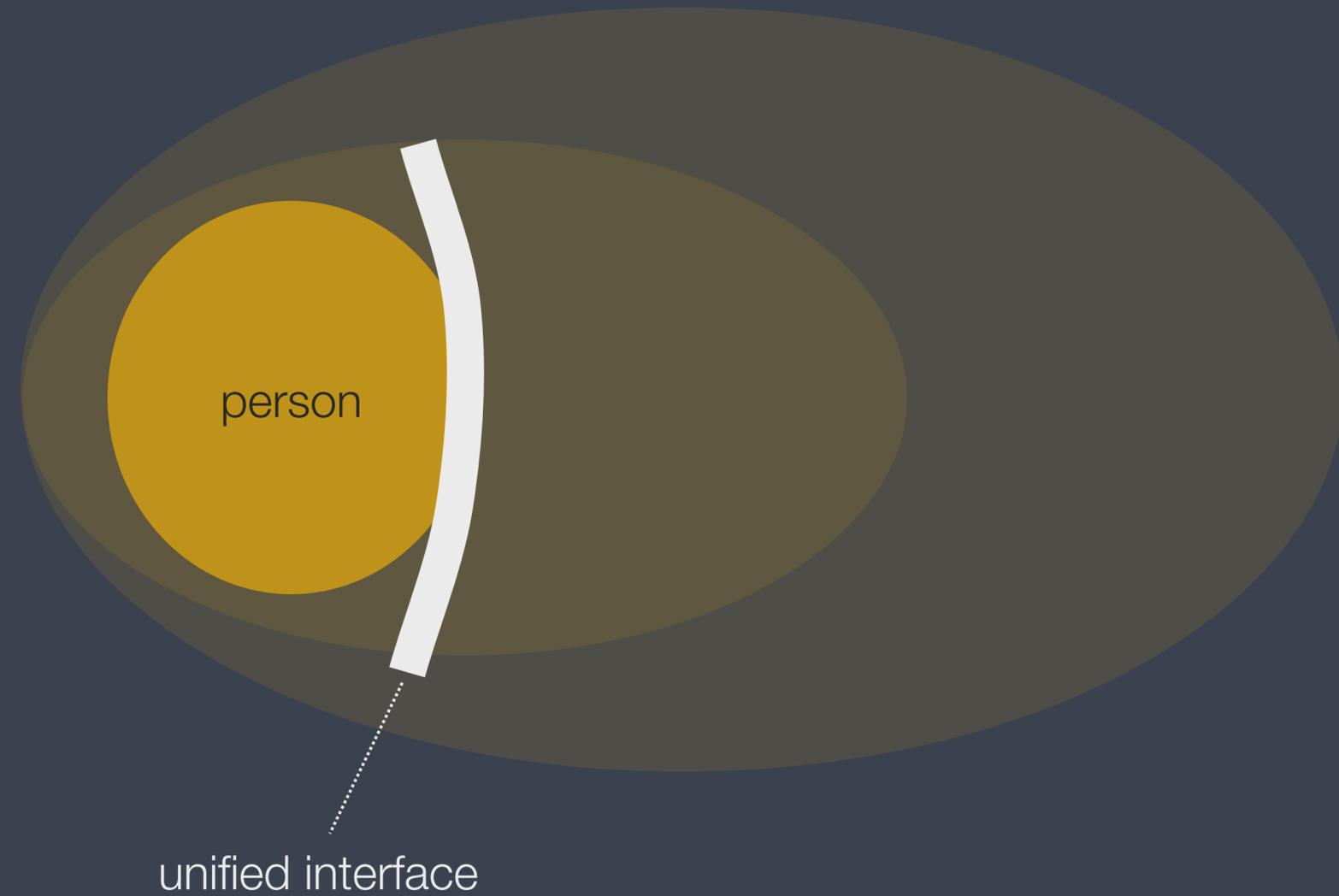


separate user interfaces — separate systems — separate payments

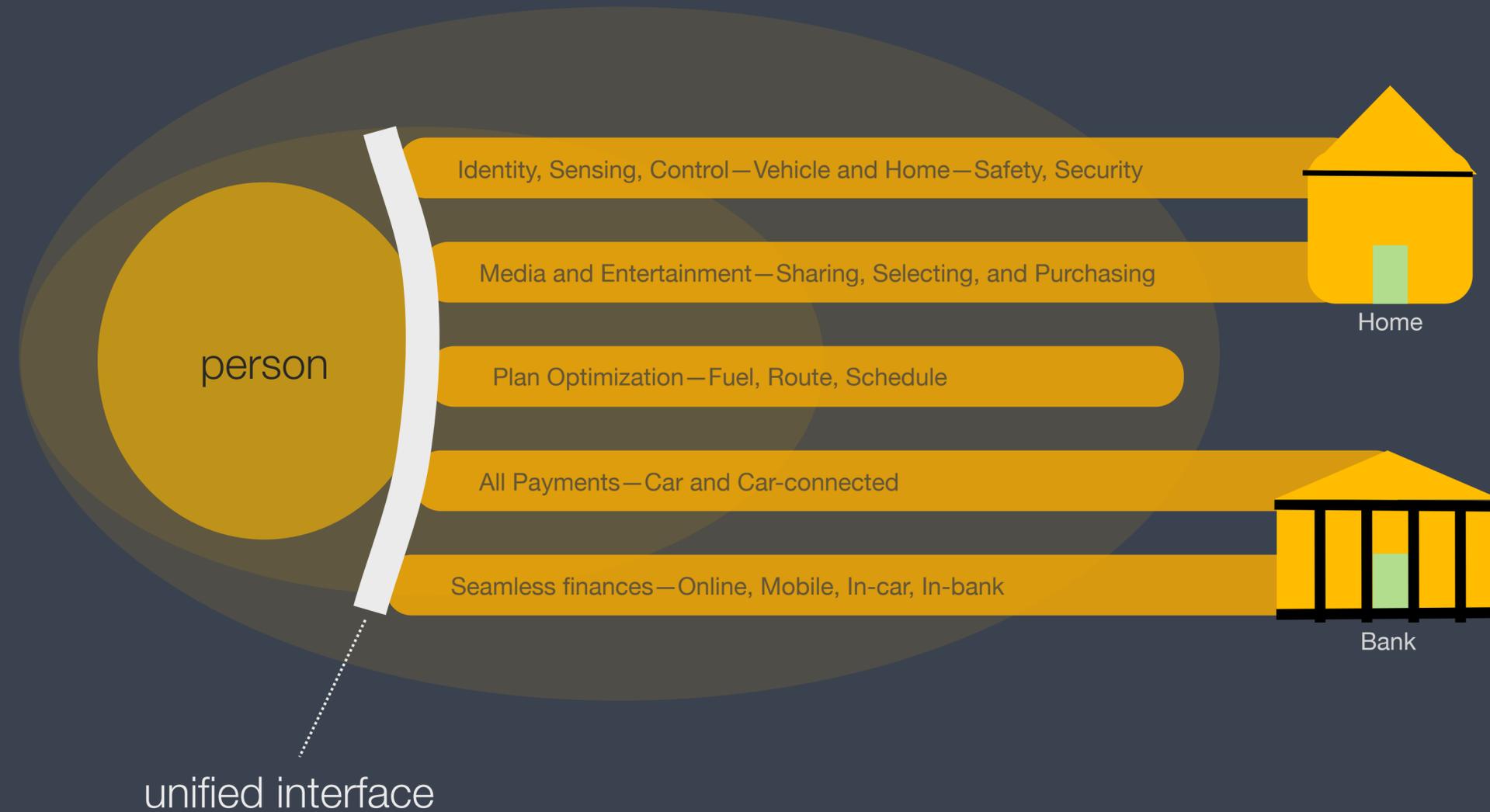
Tomorrow's integrated experience



Tomorrow's integrated experience



Tomorrow's integrated experience

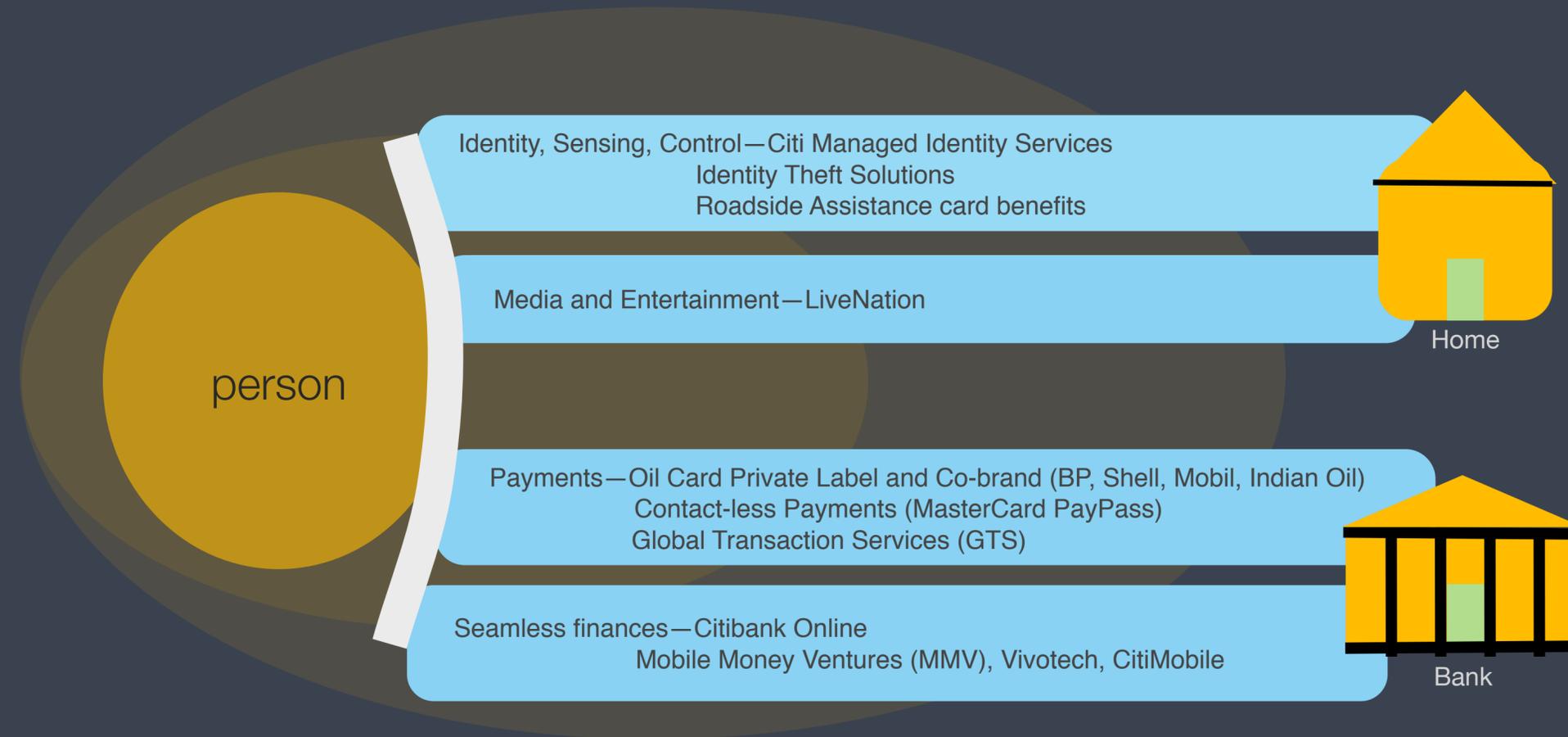


Tomorrow's integrated experience



unified interface — federated system — unified payment

Citi is already participating



Citi is well positioned to leverage its existing capabilities, to forge new partnerships, and to create compelling, integrated experiences.

CCS MFA Co-op Projects

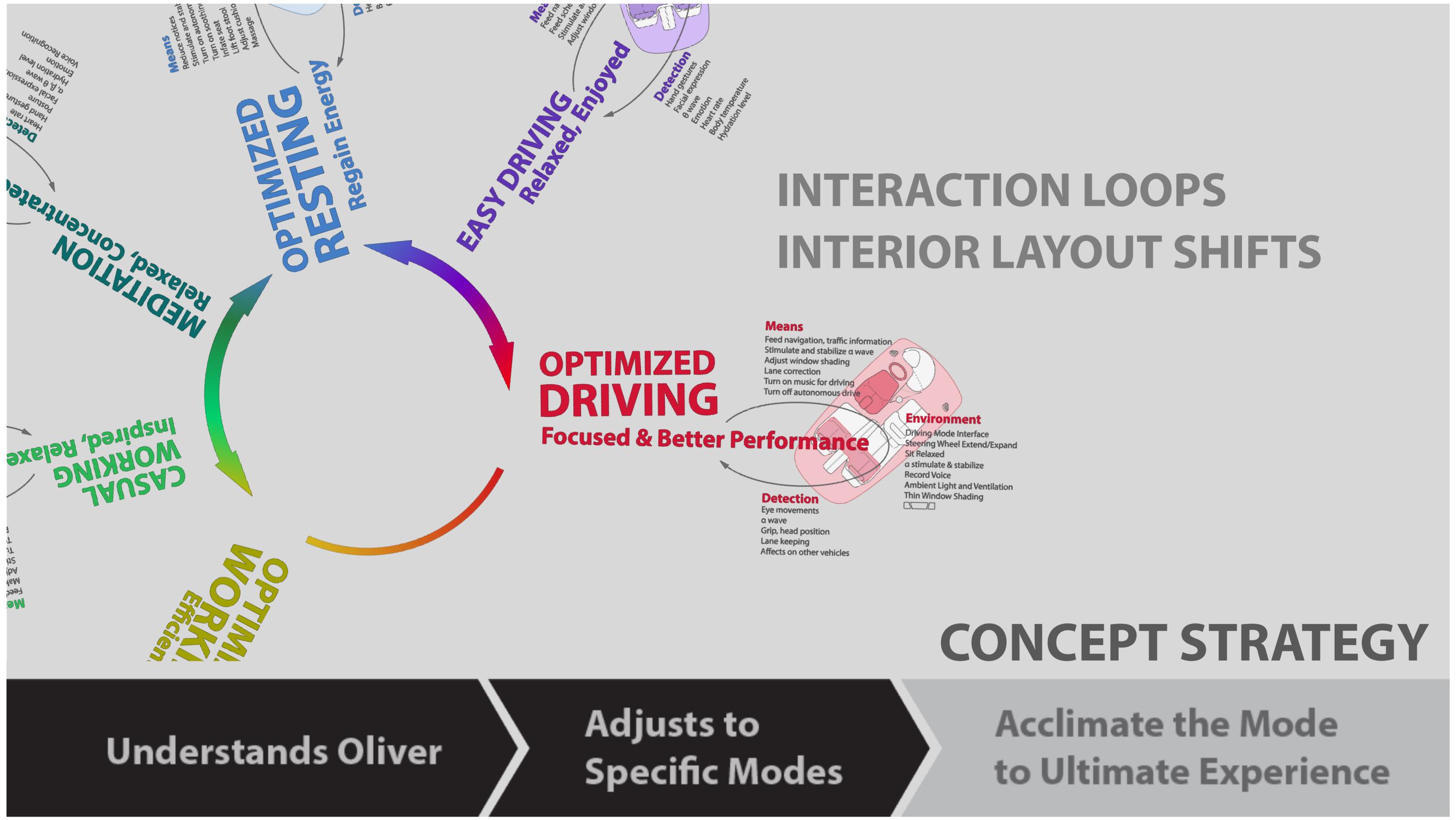


Technology for the Future – College for Creative Studies

DURA

Innovation inspired by **PERFORMANCE**

Engineers at our worldwide technology centers are focused on delivering new approaches to improve the performance of your next vehicle application.





For Solitude Atmosphere
The Surrounding Environment Tightens to
Create the Sense of Safety and look Sports

OPTIMIZED DRIVING

Focused & Better Performance

Means

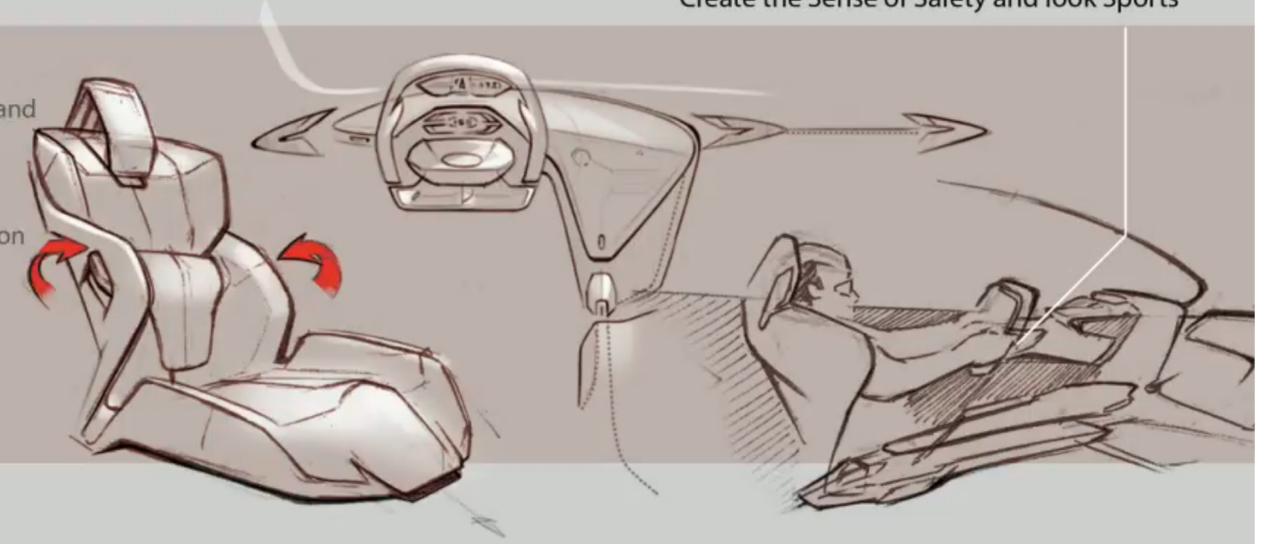
- Feed navigation, traffic information
- Stimulate and stabilize a wave
- Adjust window shading
- Lane correction
- Turn on music for driving
- Turn off autonomous drive

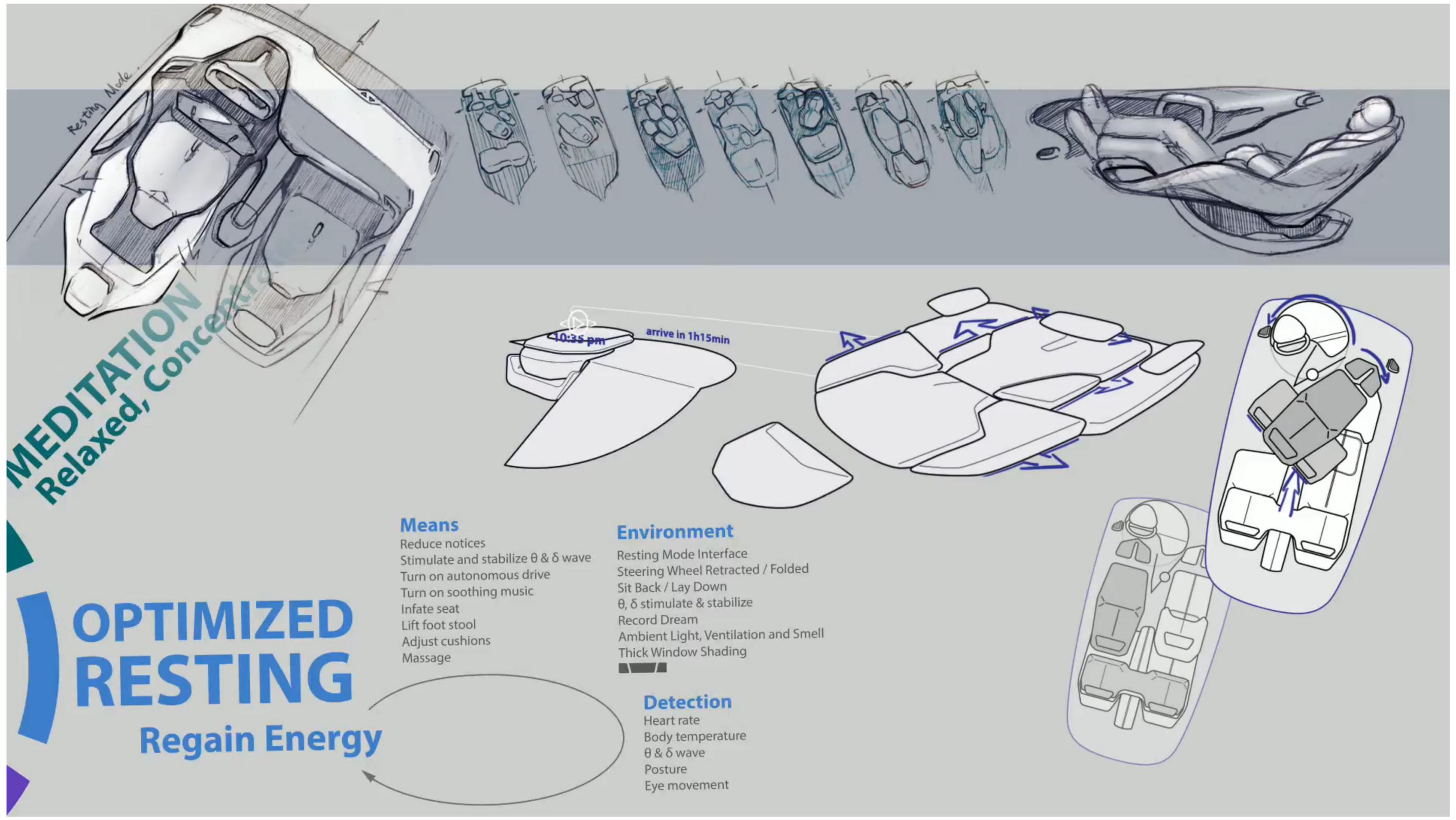
Environment

- Driving Mode Interface
- Steering Wheel Extend/Expand
- Sit Relaxed
- stimulate & stabilize
- Record Voice
- Ambient Light and Ventilation
- Thin Window Shading

Detection

- Eye movements
- stimulate & stabilize
- Grip, head position
- Lane keeping
- Affects on other vehicles





MEDITATION
Relaxed, Concentrated

OPTIMIZED RESTING
Regain Energy

Means

- Reduce notices
- Stimulate and stabilize θ & δ wave
- Turn on autonomous drive
- Turn on soothing music
- Inflate seat
- Lift foot stool
- Adjust cushions
- Massage

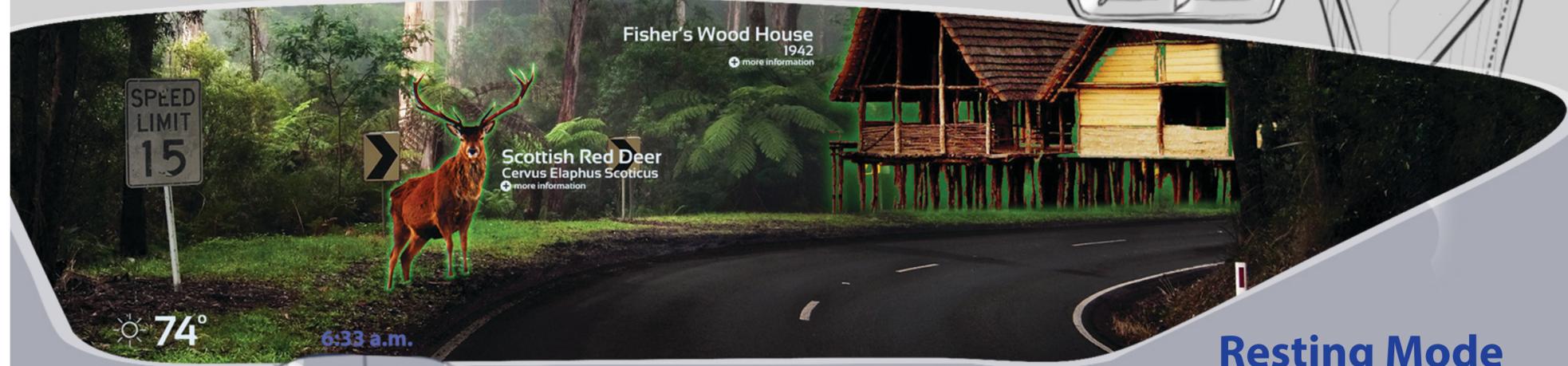
Environment

- Resting Mode Interface
- Steering Wheel Retracted / Folded
- Sit Back / Lay Down
- θ , δ stimulate & stabilize
- Record Dream
- Ambient Light, Ventilation and Smell
- Thick Window Shading

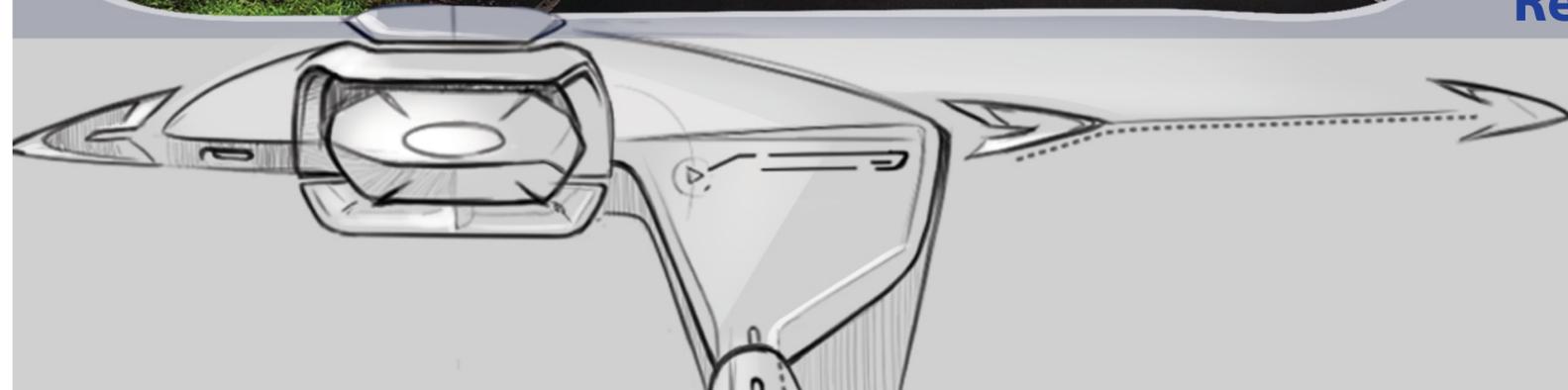
Detection

- Heart rate
- Body temperature
- θ & δ wave
- Posture
- Eye movement

Driving Mode



Resting Mode



WINDSHIELD

PERSONA

Commander-in-Chief



Kirk Peterson
Environmental Engineer

Persona

IDX models

Key concepts

Final Renderings

TIME-FRAME



PERSONA

Commander-in-Chief



Kirk Peterson
Environmental Engineer

Persona

IDX models

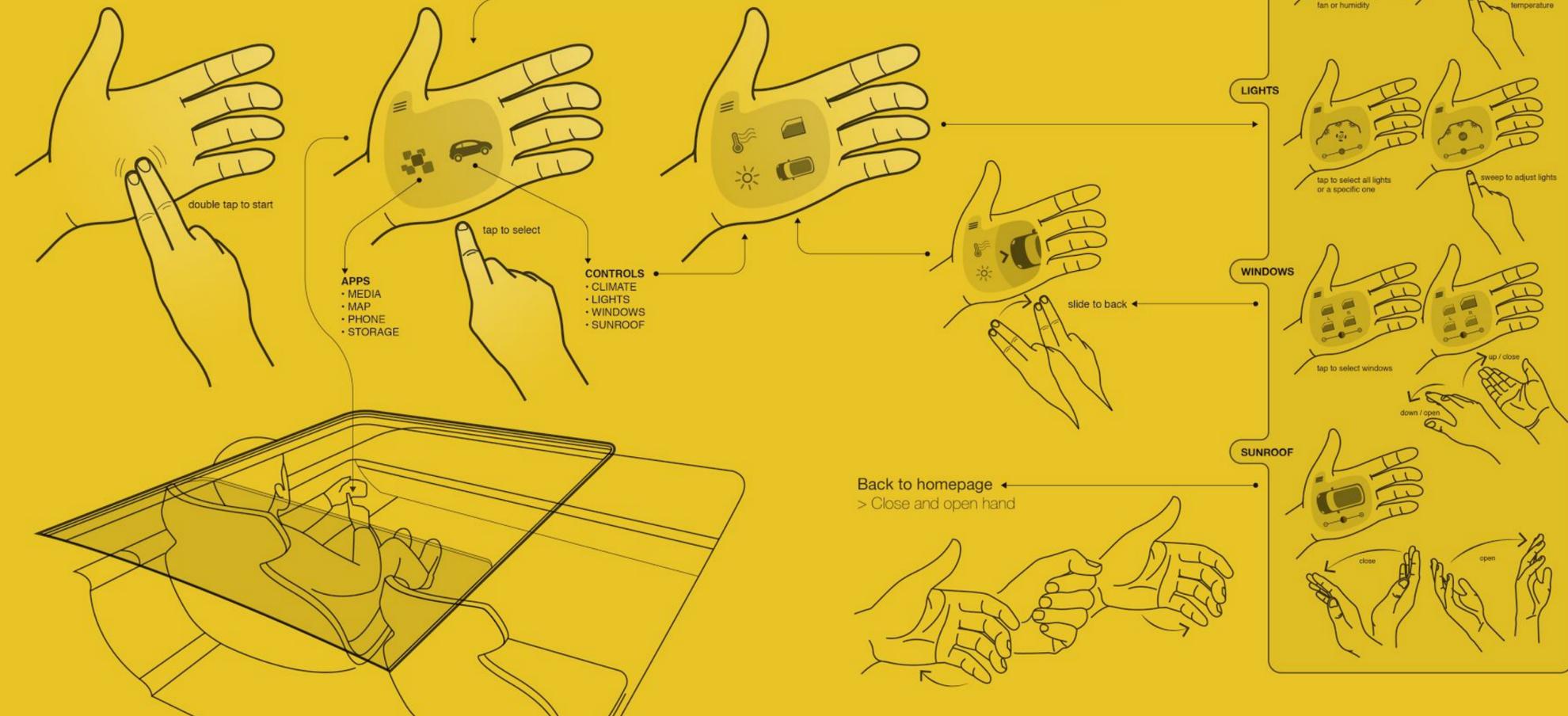
Key concepts

Final Renderings

INTERACTION DESIGN FOR CAR INTERIOR

Kirk is a **commander-in-chief**
He wants to take control of gadgets with his hands

On-hand menu
Provides a new way for control and interaction inside the car



PERSONA

Commander-in-Chief



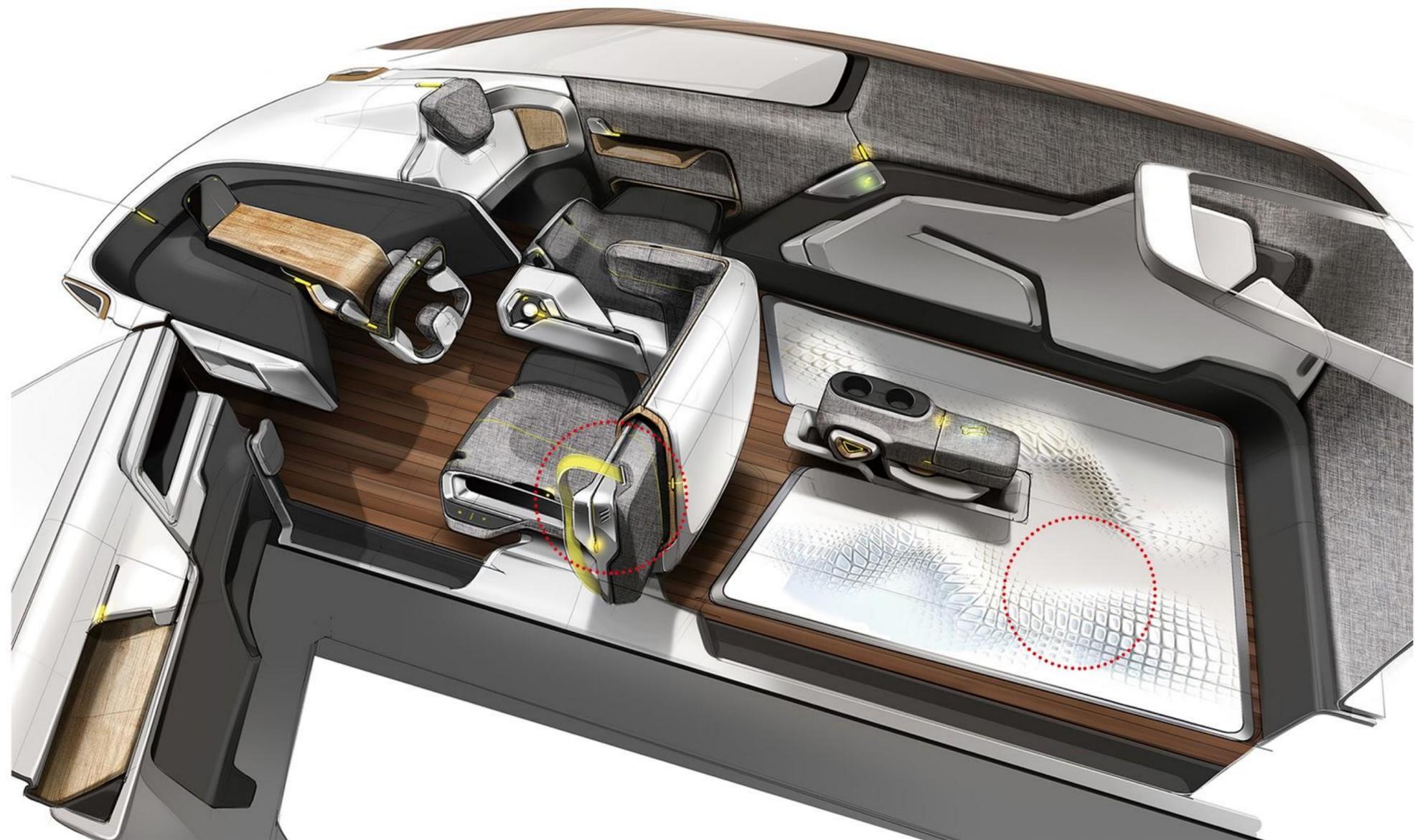
Kirk Peterson
Environmental Engineer

PERSONA

Autopilot



Clara Hong
Food Academy Instructor





SymptomChecker

Experiencing symptoms but not sure what they mean?

Use our Symptom Checker to help determine possible causes and treatments, and when to see a doctor.

Go

[Give me symptoms to choose from >>](#)



Assess Your Symptoms

Want to know what's causing your aches, pain, or rashes? We can identify conditions related to your symptoms.



Learn About Possible Causes

Get a better understanding of a condition: Discover if you're at risk, how it's diagnosed, and what you can do about it.



Explore Treatments

Weigh your treatment options, from traditional medicine to alternative therapies, and decide which is right to you.

Most Common Symptoms

- Diarrhea
- Knee pain
- Sore throat
- Sleep paralysis
- Insomnia
- Erectile dysfunction
- Blood in urine
- Conjunctivitis
- Heel pain
- Back pain
- Night sweats
- Abdominal pain
- Chest pain
- Foot pain
- Neck pain
- Vaginal discharge
- Morning sickness
- Anemia
- Constipation
- Vaginal itching

Advertisement

BOTOX Full Product Information including Boxed Warning and Medication Guide.
onabotulinumtoxinA injection

Ask a BOTOX[®] Specialist about Chronic Migraine and BOTOX[®].

Find one today:

Please scroll for Indication, Important Limitations, and Important Safety Information, including Boxed Warning. injected to prevent headaches in adults with chronic migraine who have 15 or more days each month with headache lasting 4 or more hours each day in people 18 years or older.

It is not known whether BOTOX[®] is safe or effective to prevent headaches in patients with migraine who have 14 or fewer headache days

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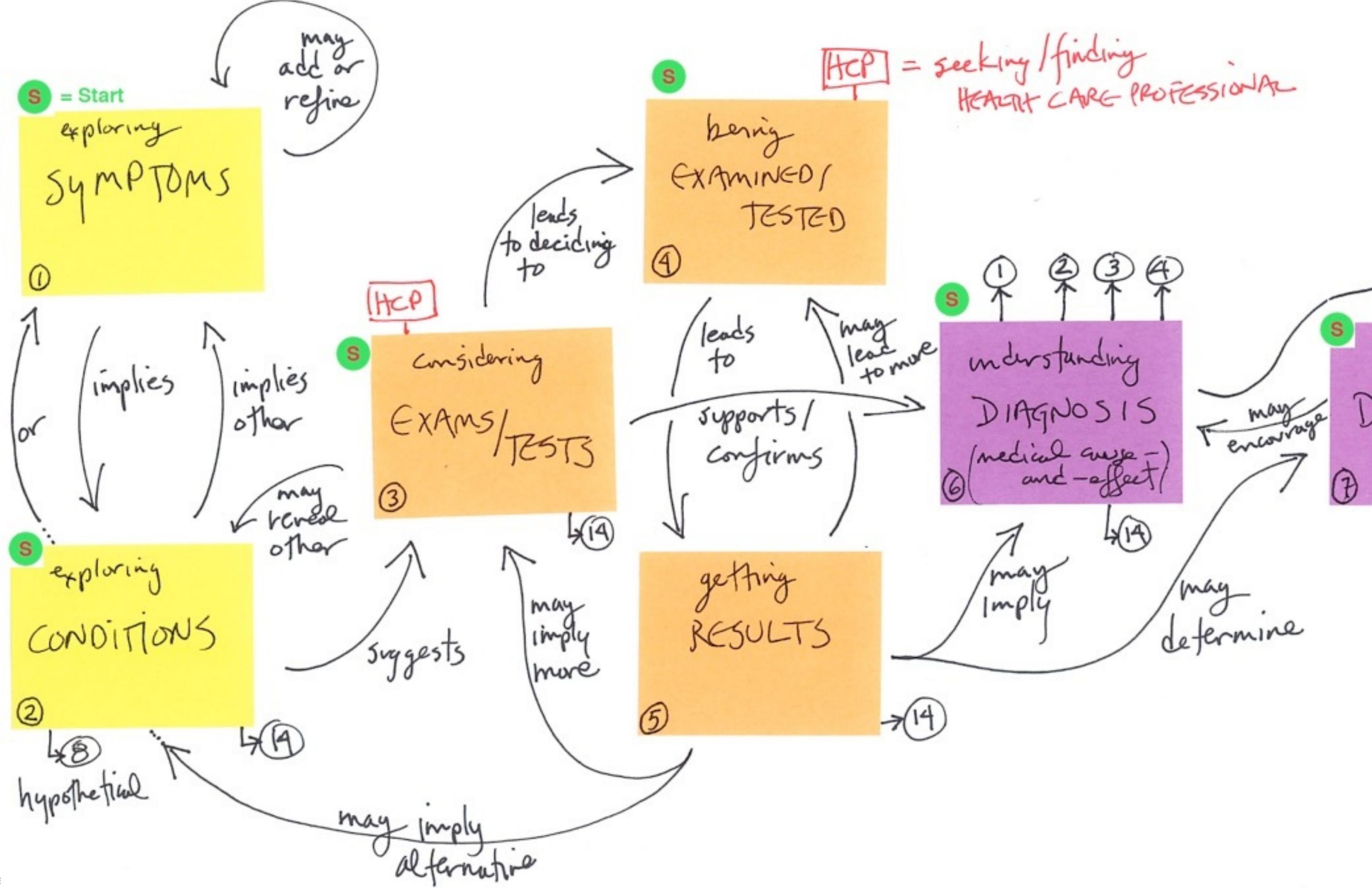
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[Health Blogs](#)

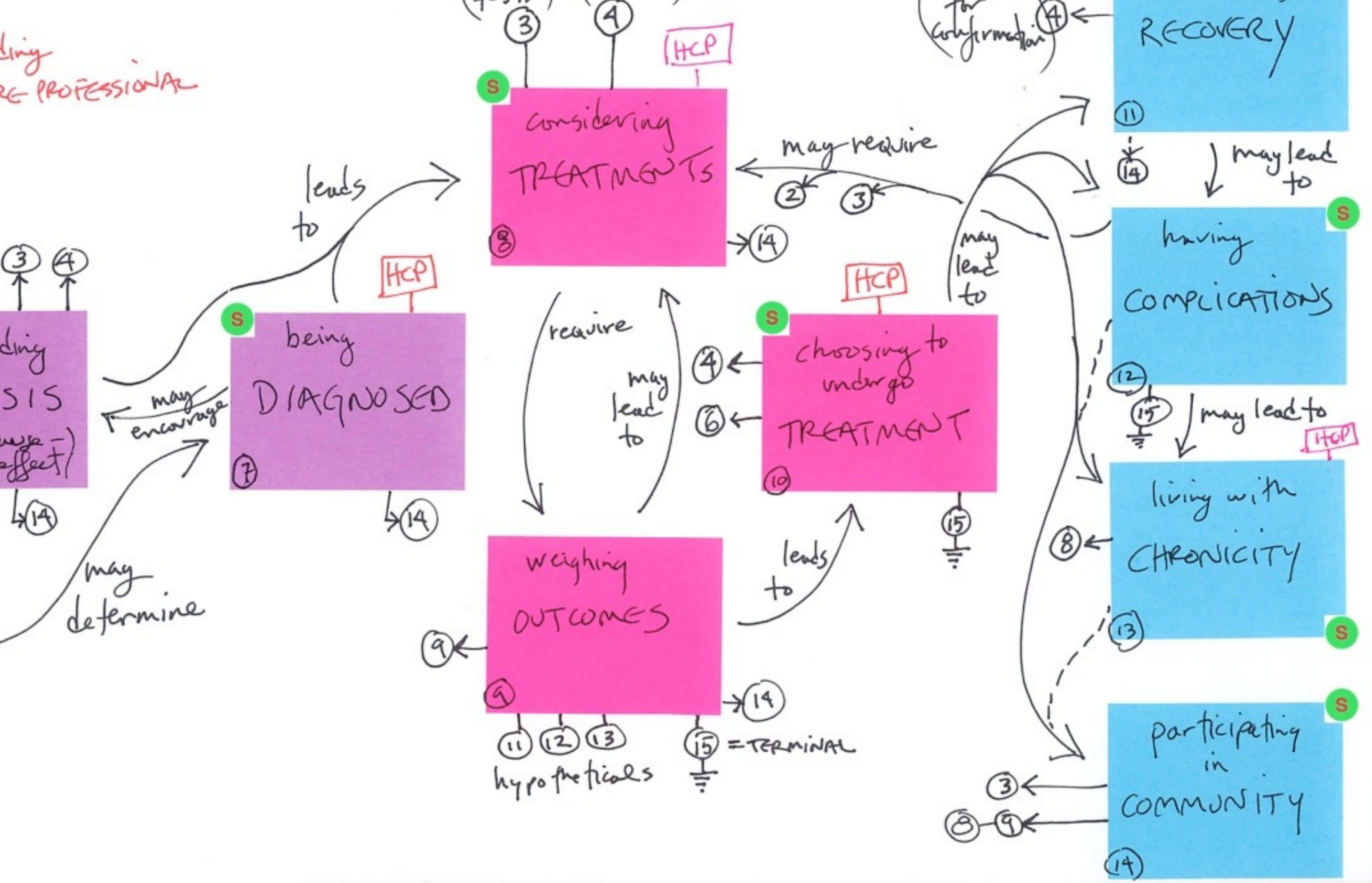
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Consumer Health Portal



being
RE PROFESSIONAL

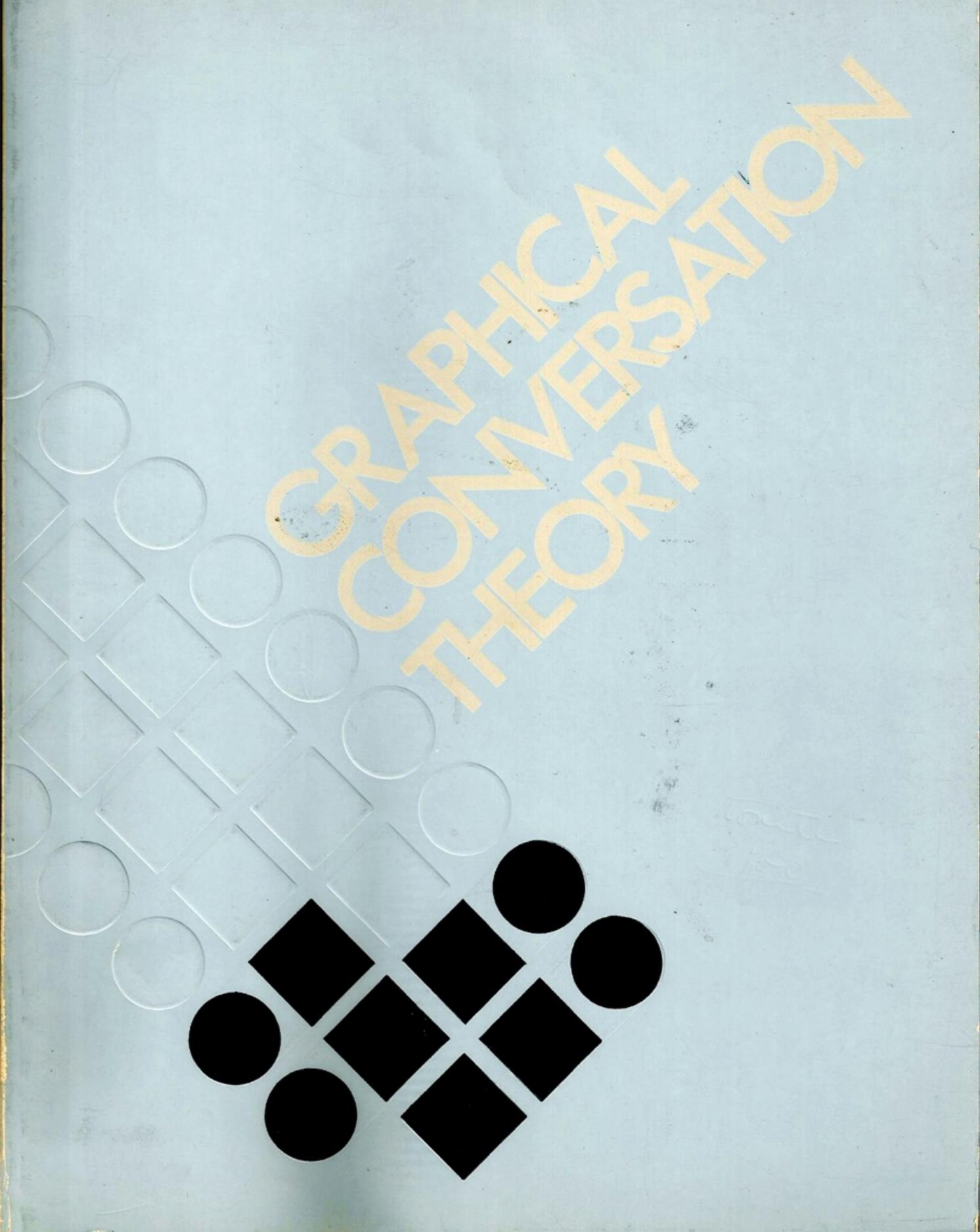


**Will we design machines
that are more conversational?**

Will technology allow us to design machines that are more conversational?

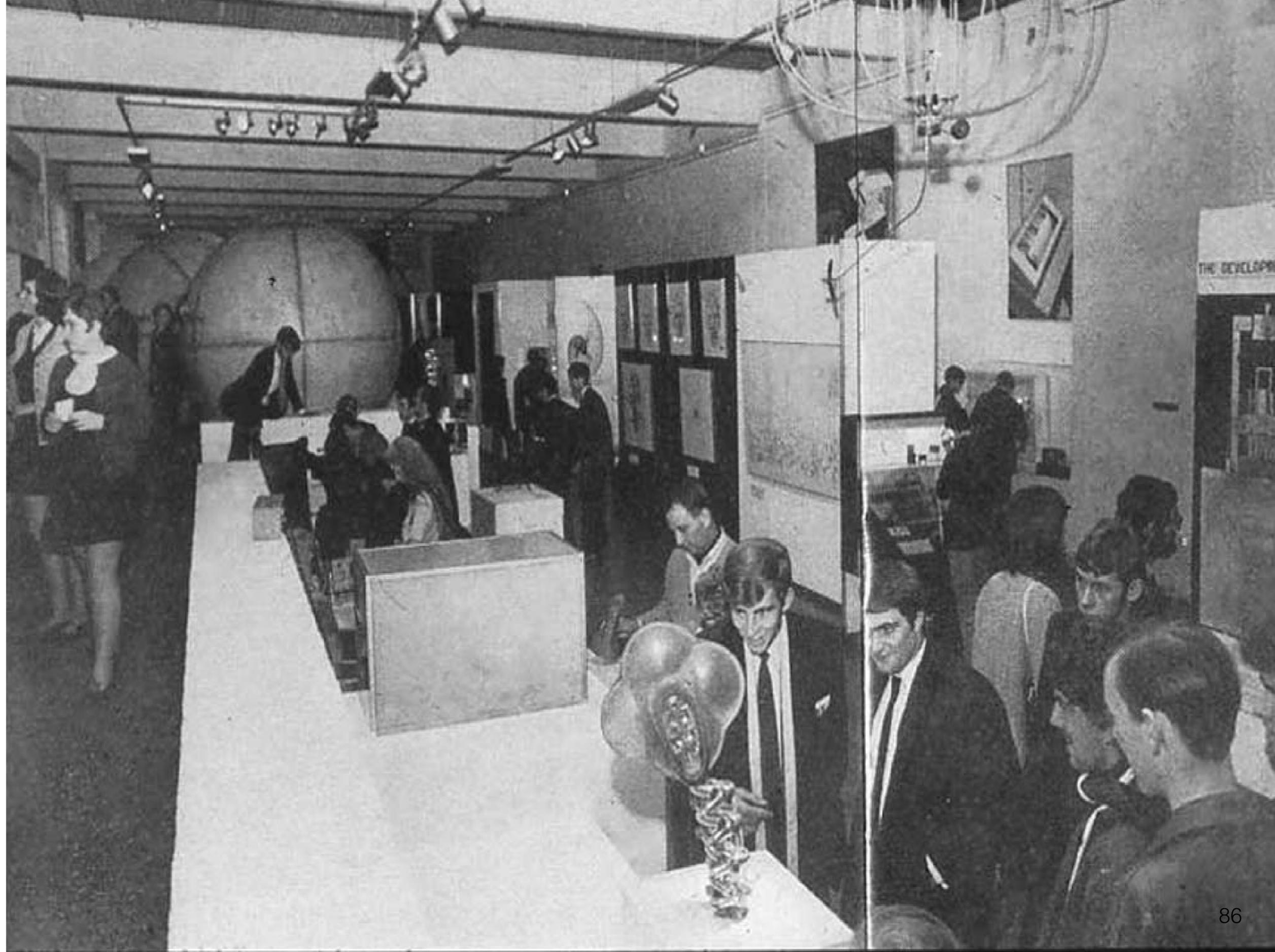
NSF Proposal

Architecture Machine Group
1976



Cybernetic Serendipity Exhibition

London 1968



Cybernetic Serendipity Exhibition

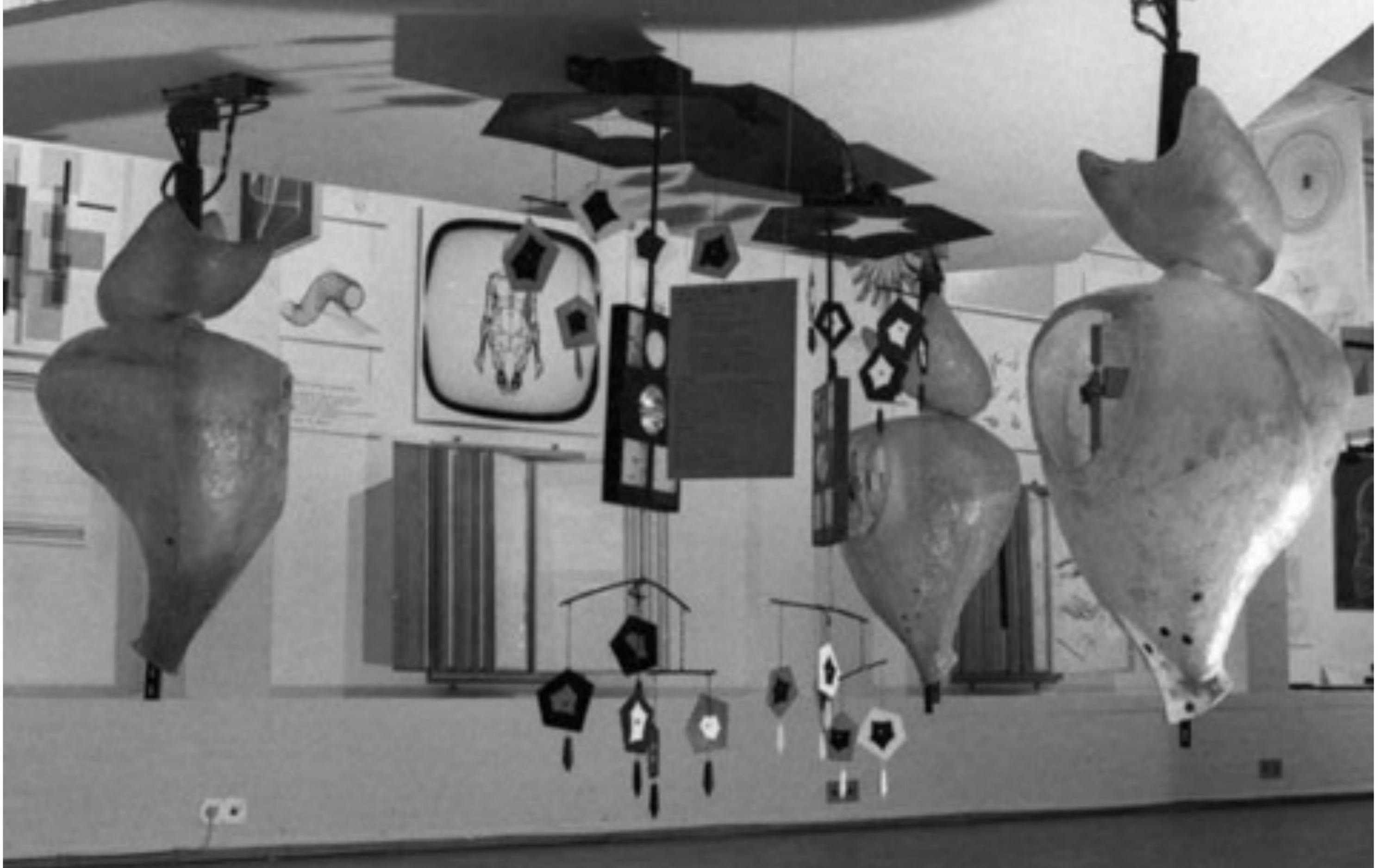


Cybernetic Serendipity Exhibition



COLLOQUY OF MOBILES
Gordon Pask
1968



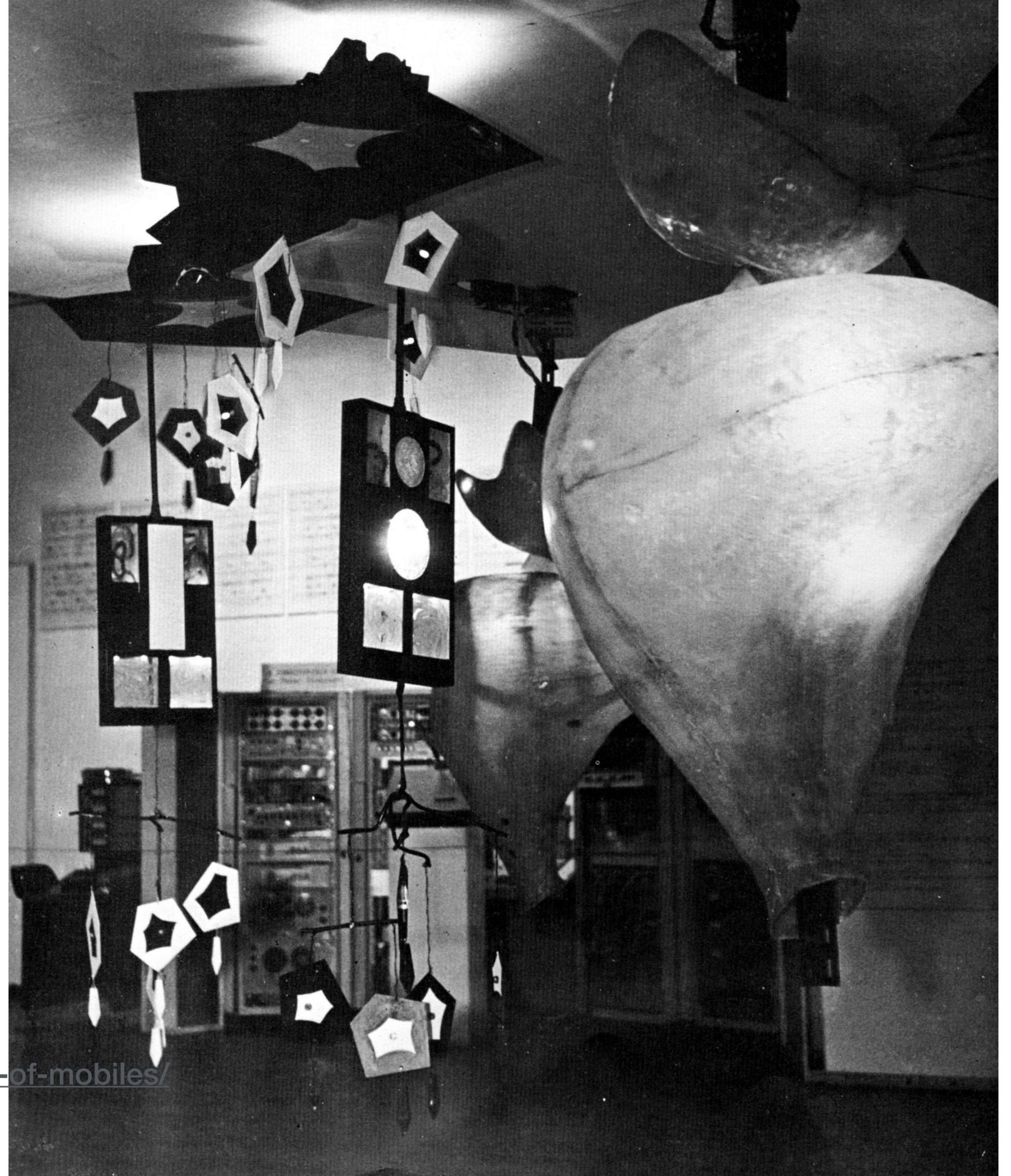


COLLOQUY OF MOBILES

2018 Project

Images from
www.medienkunstnetz.de/works/colloquy-of-mobiles/

For more information
ccsmfa.wordpress.com/2018/01/14/remaking-pasks-colloquy-of-mobiles/

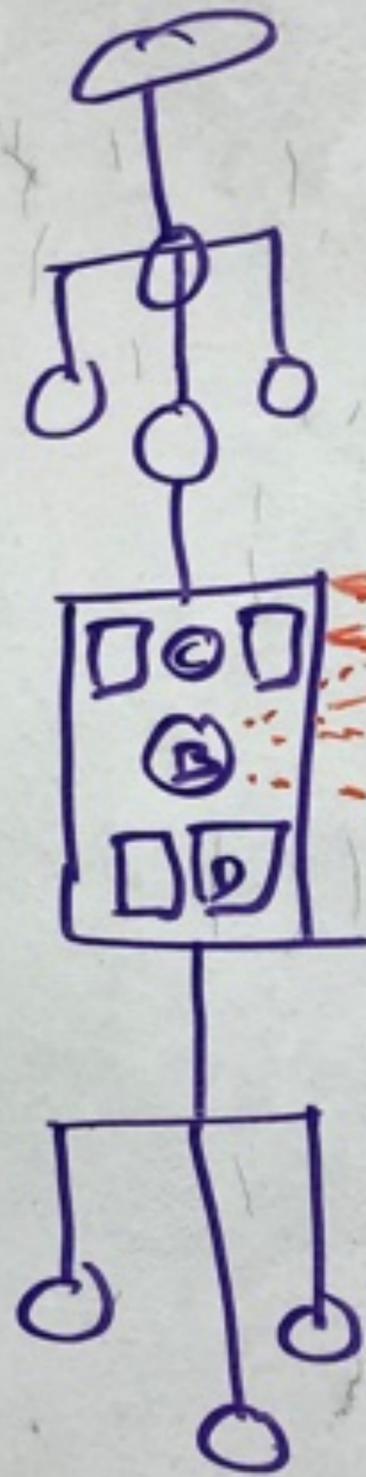
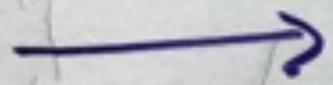
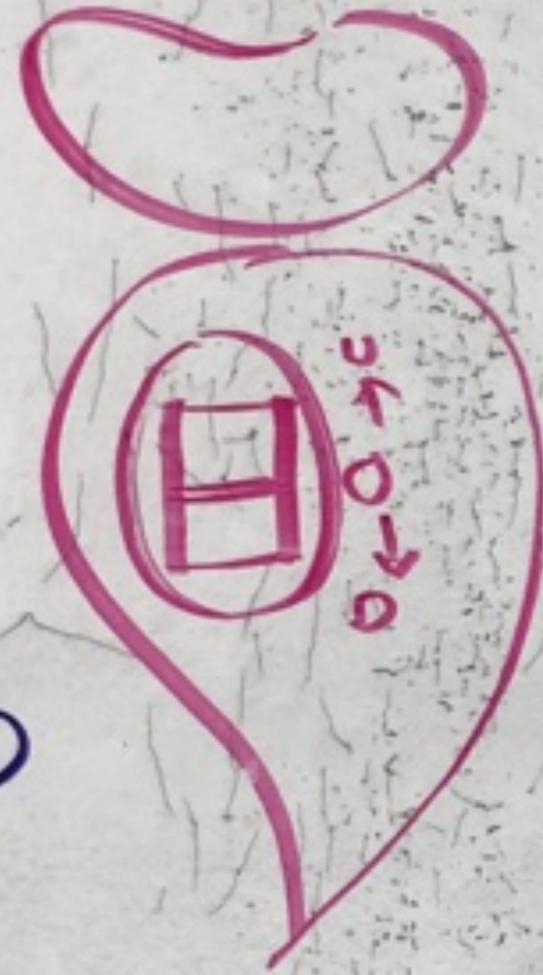


(wait for 1 second)

④

YES
ORANGE

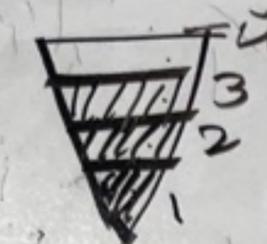
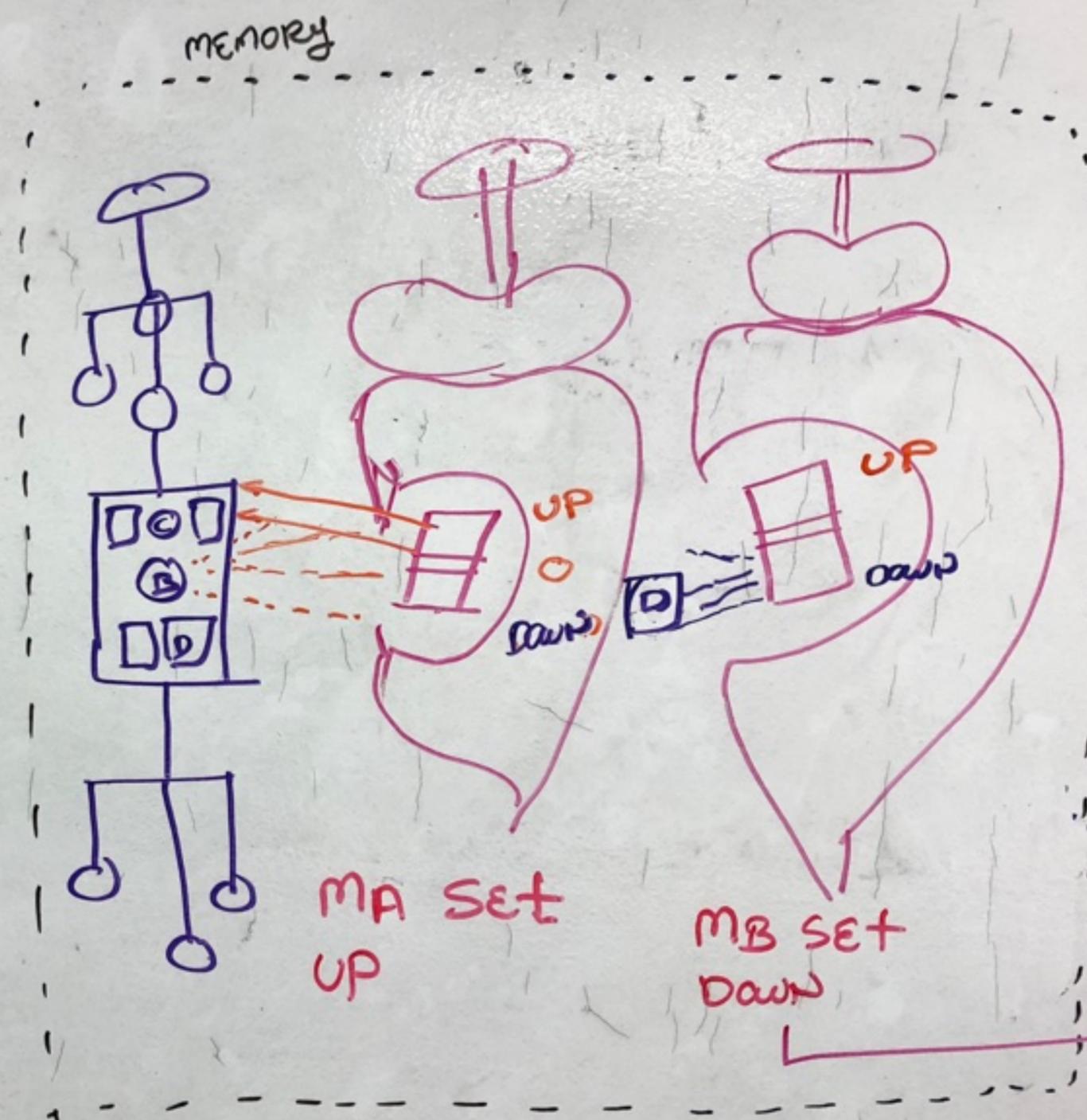
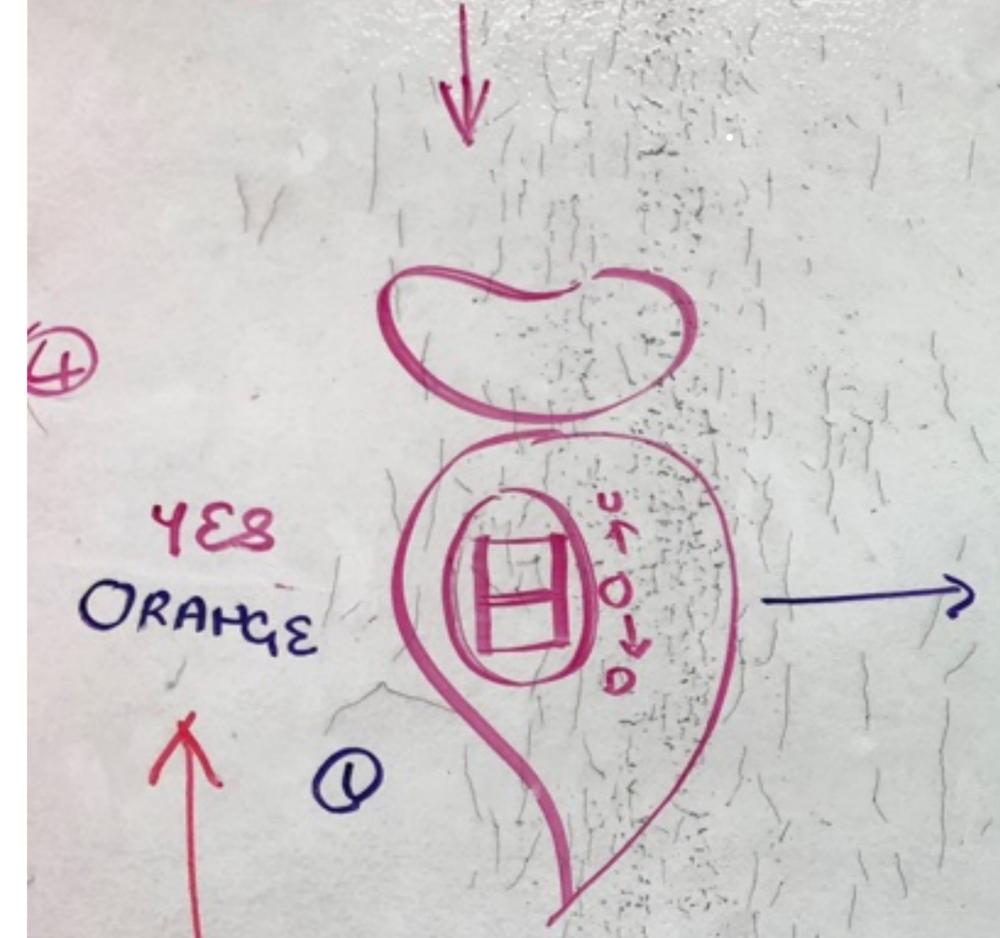
①



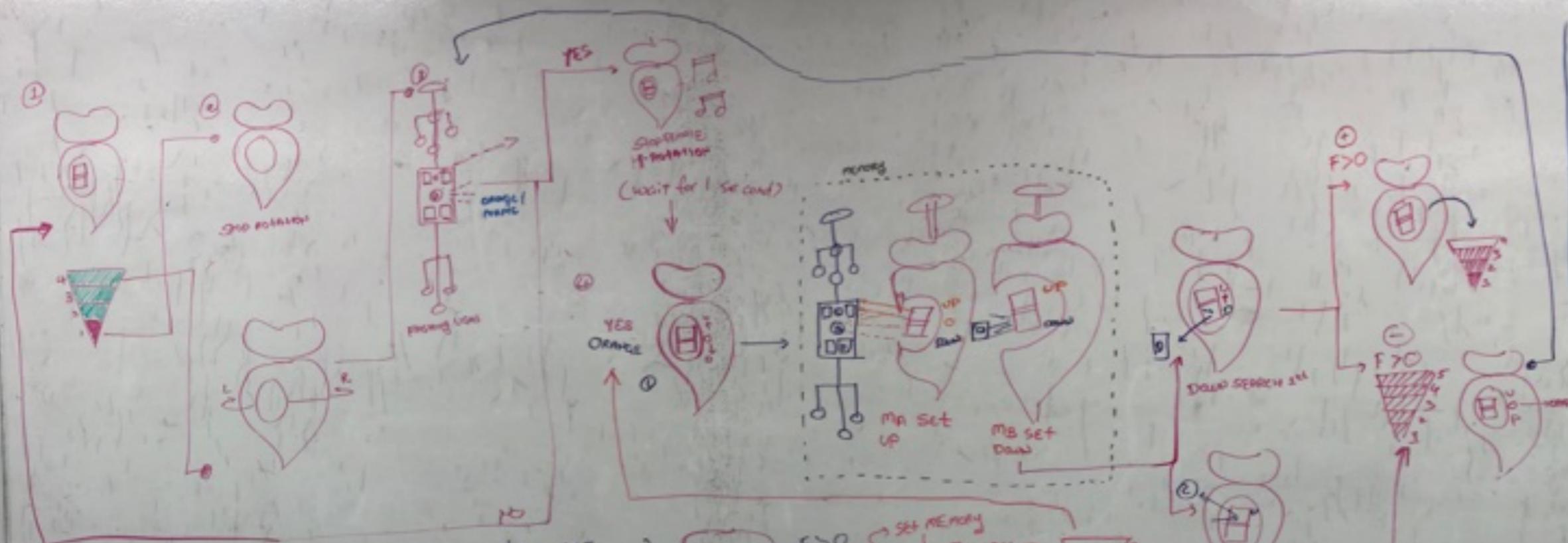
MA SET
UP

ME
DA

STOP FEMALE
H-ROTATION
(wait for 1 second)

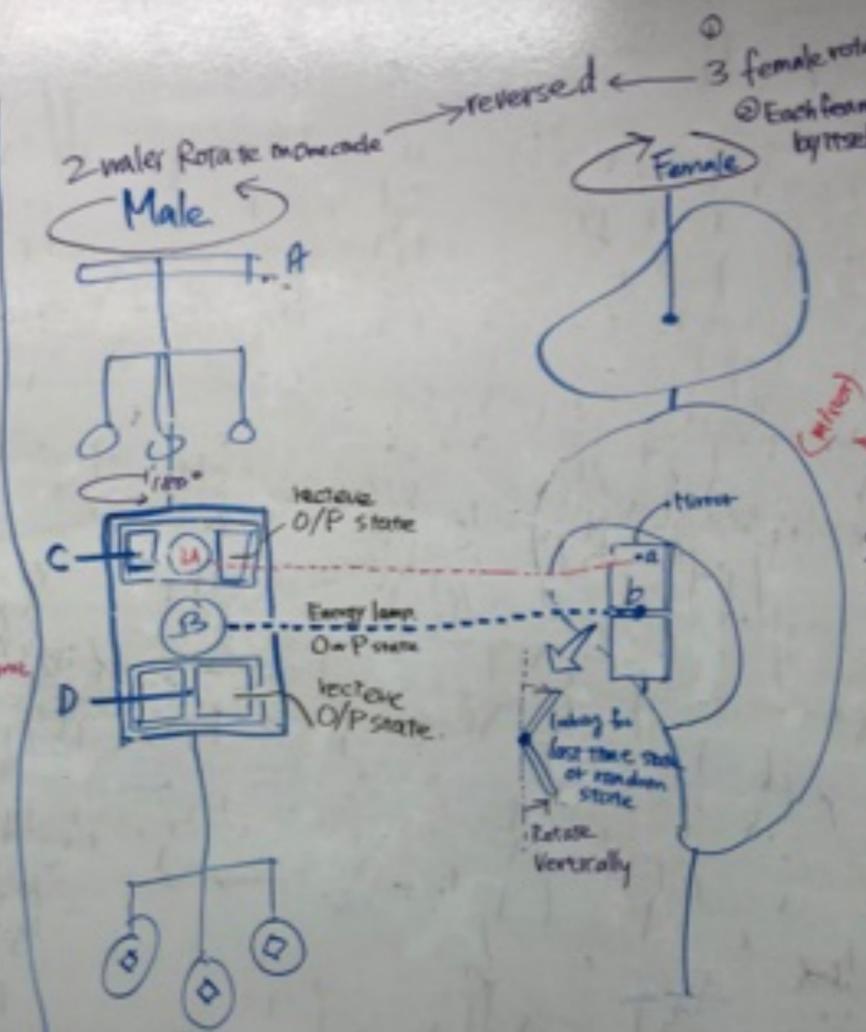
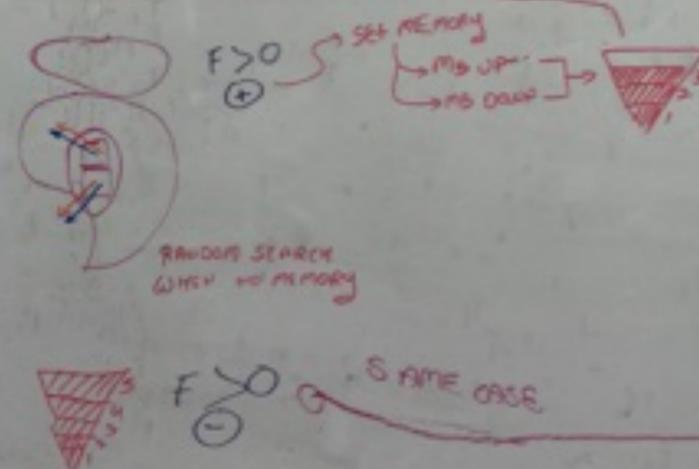



→ SET MEMORY



Male
 ① λ → non dominating state
 η → dominating
 Male
 ② λ → drive variables (0 or p)
 η → internal state variable (Male 1 vs 2)

λ_A, λ_B, MI
 Z
 Represents levels 1-5

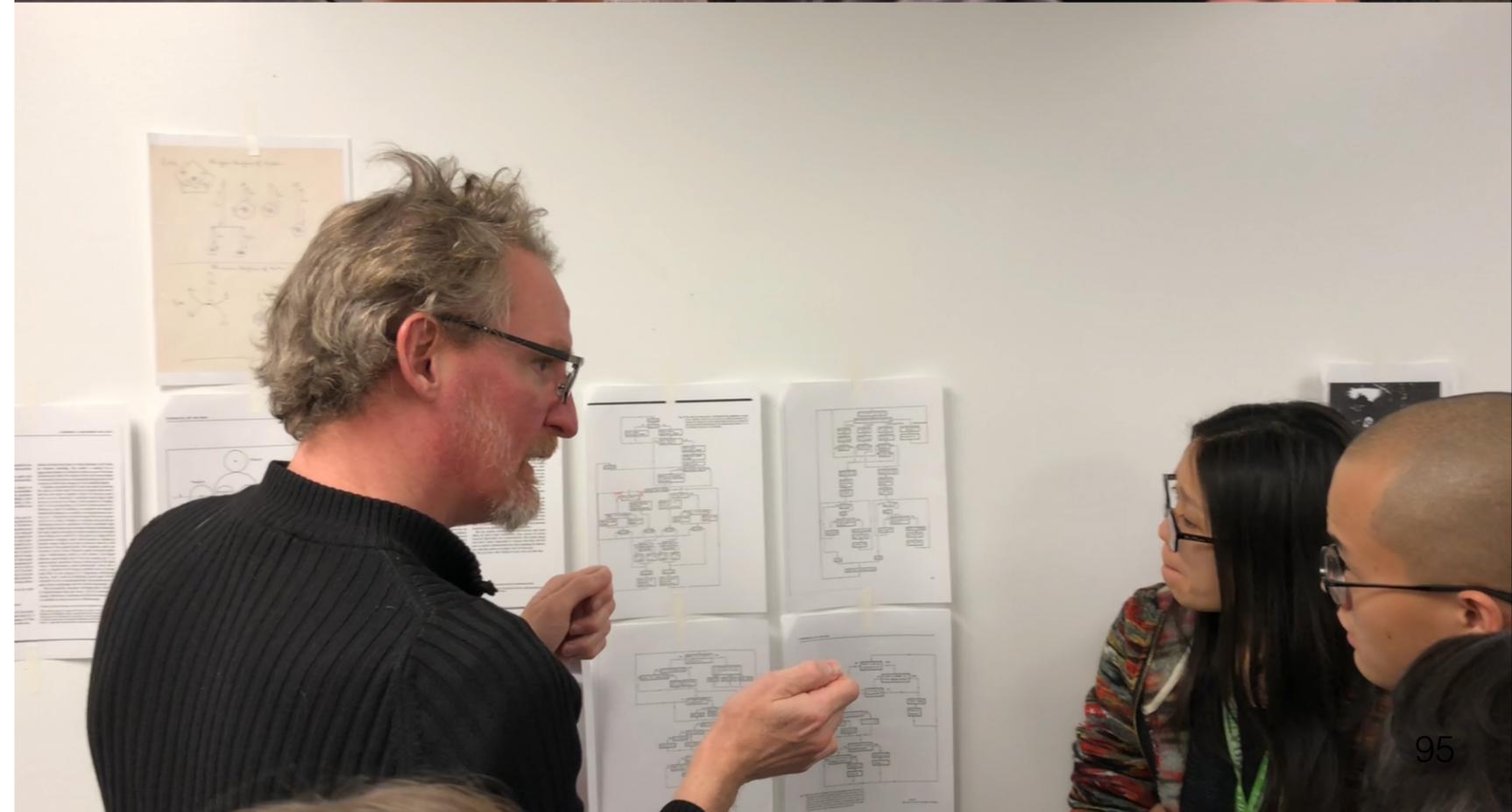
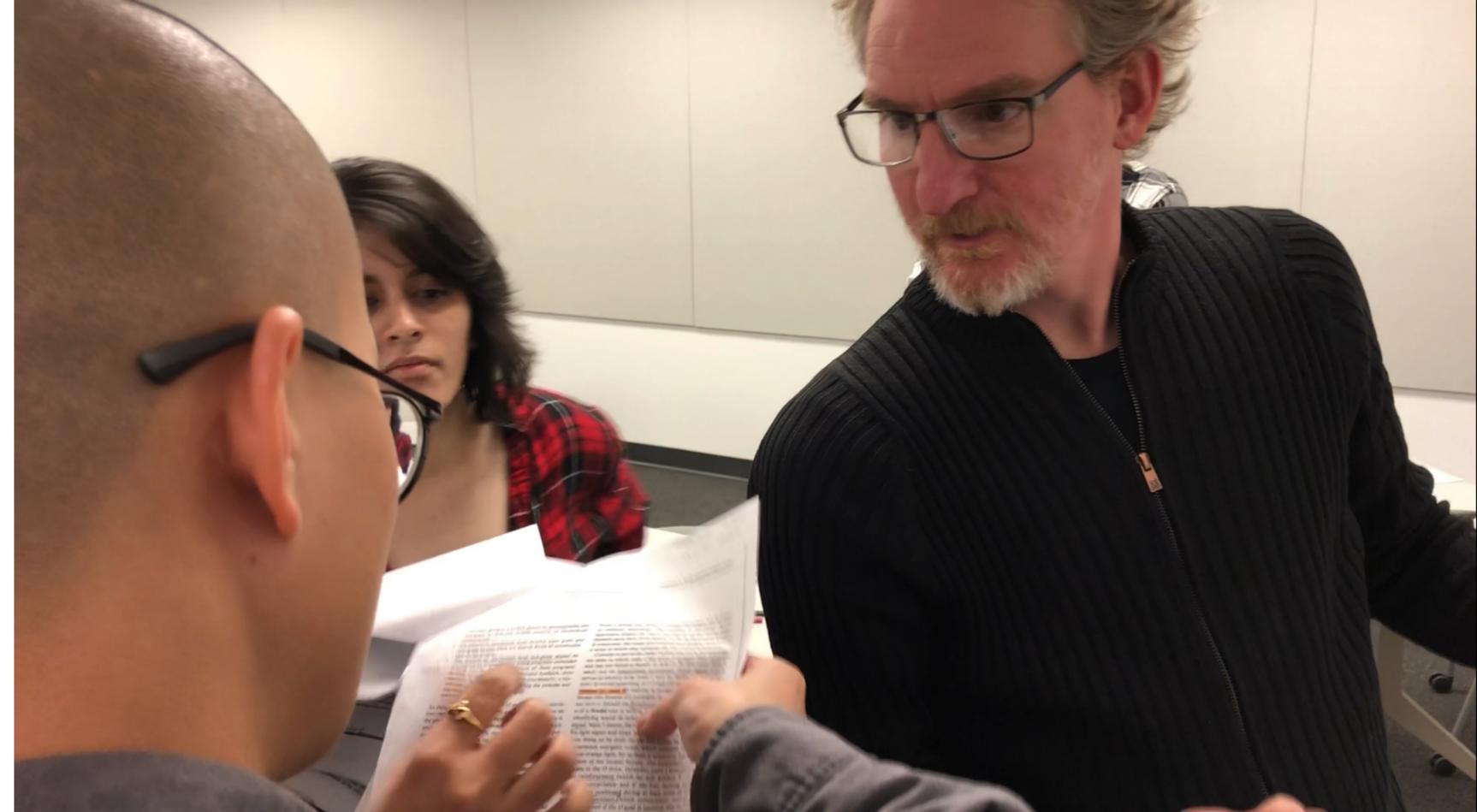


COLLOQUY OF MOBILES

2018 Project

CCS MFA IxD Studios II & IV

TJ McLeish, Architect/Master Fabricator



Thank you.

See pangaro.com/cmu2018/ for slides and references.

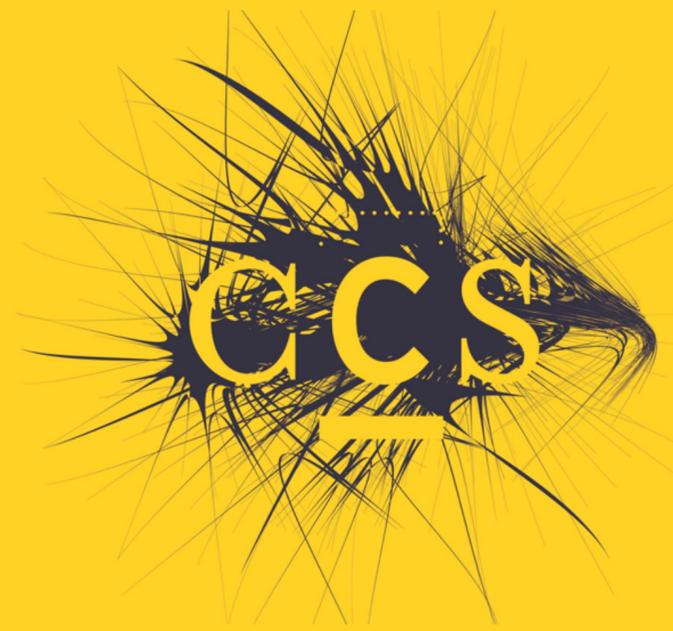
Special Thanks to:

Karen Berntsen

Jessica Stanley

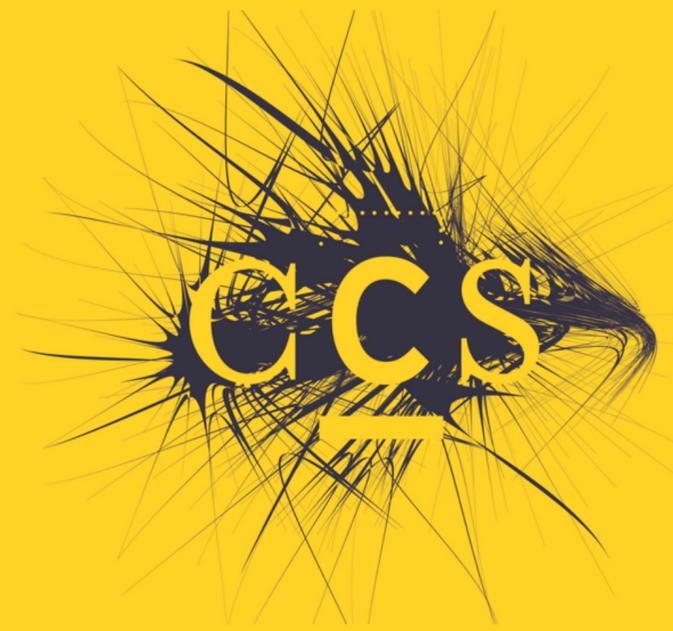
Pooja Upadhyay

Paul Pangaro, Ph.D.
Chair and Associate Professor
MFA Interaction Design Program
College for Creative Studies, Detroit
paul@pangaro.com



Appendices

Paul Pangaro, Ph.D.
Chair and Associate Professor
MFA Interaction Design Program
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paul@pangaro.com



Applying C-L-E-A-T

Questions for Designing for Conversation

From “What is Conversation?”
Dubberly & Pangaro 2009

[http://www.dubberly.com/articles/
what-is-conversation.html](http://www.dubberly.com/articles/what-is-conversation.html)

Applying C-L-E-A-T

Questions for Designing for Conversation

- What channel is being opened to begin the conversation?
Is the interruption reasonable in how and when it intrudes?
What is the bio-cost of the intrusion relative to its benefit?
Are there better ways to interrupt?
- Is the first message clear?
Does it offer something to the recipient?
- Does the exchange convey the potential benefits in continuing?
Is there learning or delight? Is curiosity or interest stimulated?
- Is meaning easily understood—
do the messages speak in the language of the participants?
Are messages sensitive to others' context, needs, interests, values?
How can messages be made more efficient or clear?

From “What is Conversation?”
Dubberly & Pangaro 2009

[http://www.dubberly.com/articles/
what-is-conversation.html](http://www.dubberly.com/articles/what-is-conversation.html)

Why can't AI + Conversation Interfaces do all this?

Applying C-L-E-A-T

Questions for Designing “Conversation Interfaces”

From “What is Conversation?”
Dubberly & Pangaro 2009

[http://www.dubberly.com/articles/
what-is-conversation.html](http://www.dubberly.com/articles/what-is-conversation.html)

99

Applying C-L-E-A-T

Questions for Designing “Conversation Interfaces”

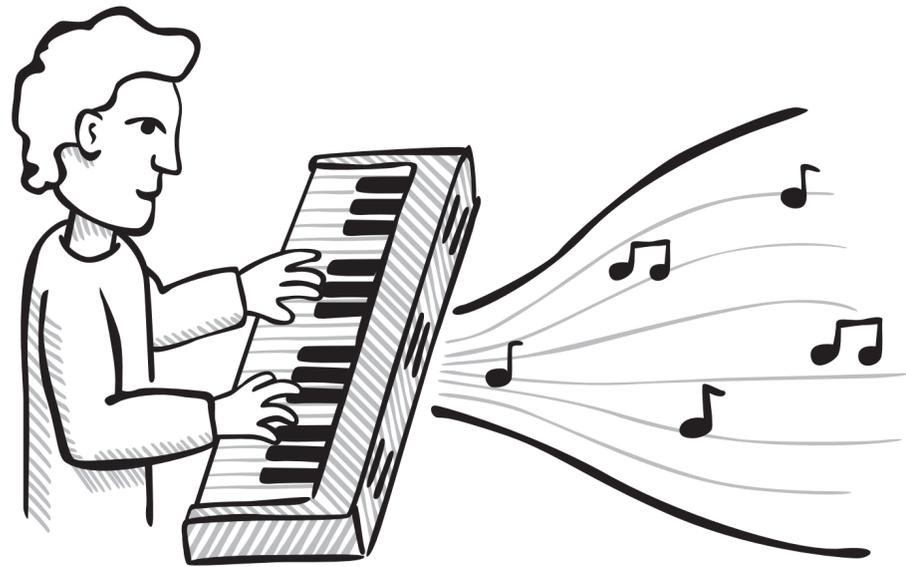
- What does the Conversation Interface (CUI) know about the user’s context— what more can it know, automatically or by input from the user?
- How can a user convey intention *to* the software— can the CUI be open to the user’s goals, values, preferences?
- Does the CUI evolve during the engagement— in addition to understanding the user, can it build new knowledge?
- When should the CUI be confident it understands the user— and when should it double-check?
- Can the CUI’s capabilities build a relationship of trust— what does that take?

From “What is Conversation?”
Dubberly & Pangaro 2009

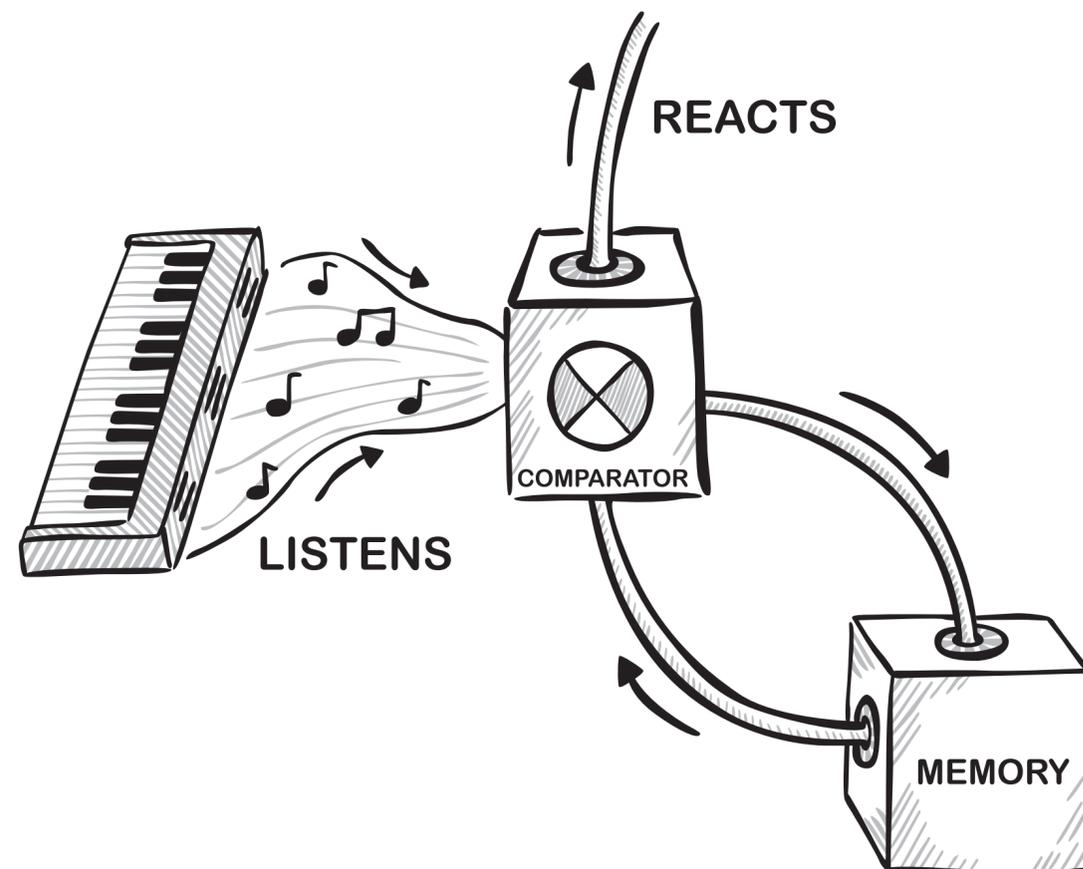
[http://www.dubberly.com/articles/
what-is-conversation.html](http://www.dubberly.com/articles/what-is-conversation.html)

99

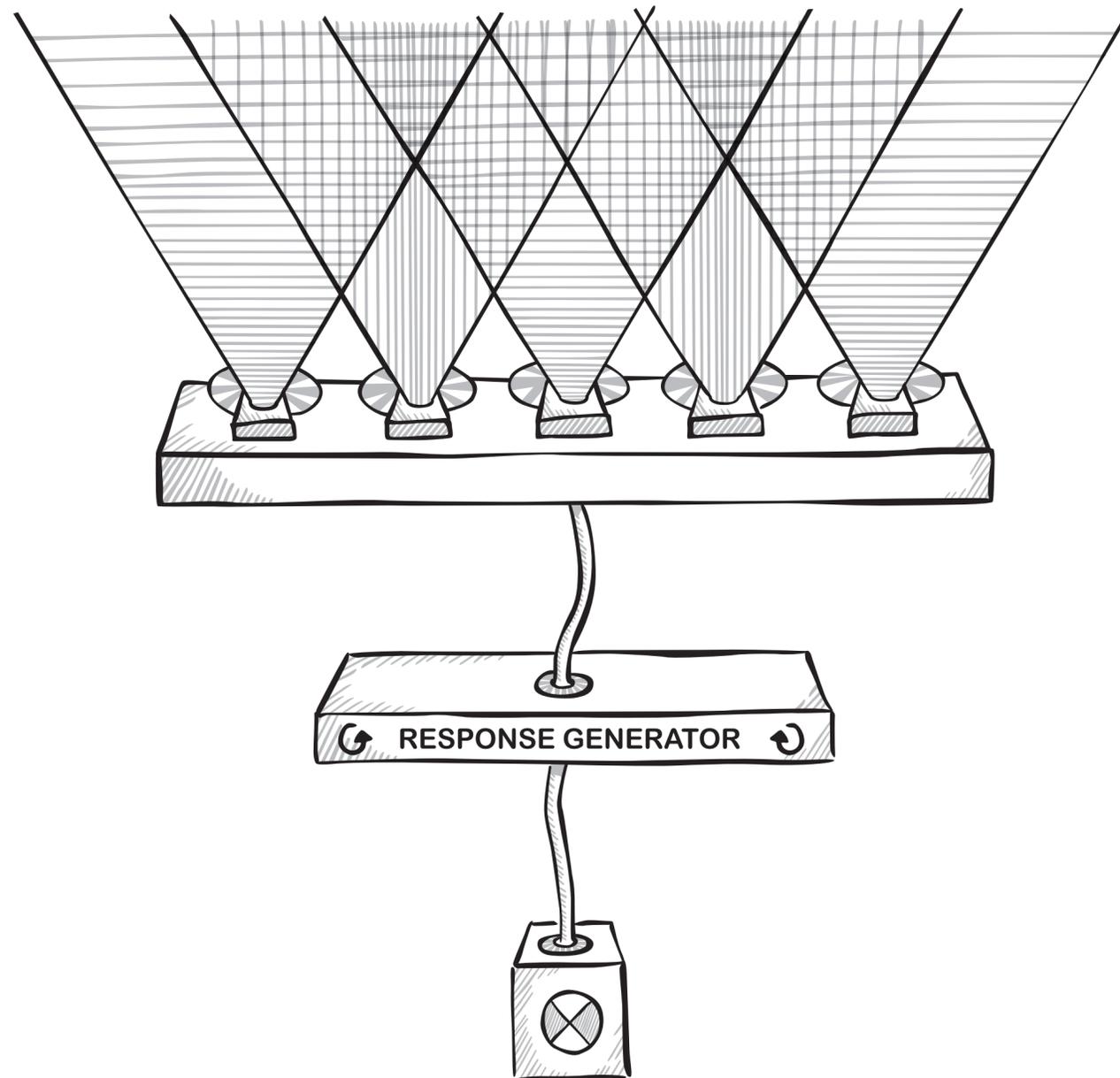
When will Conversation Interfaces do all this?



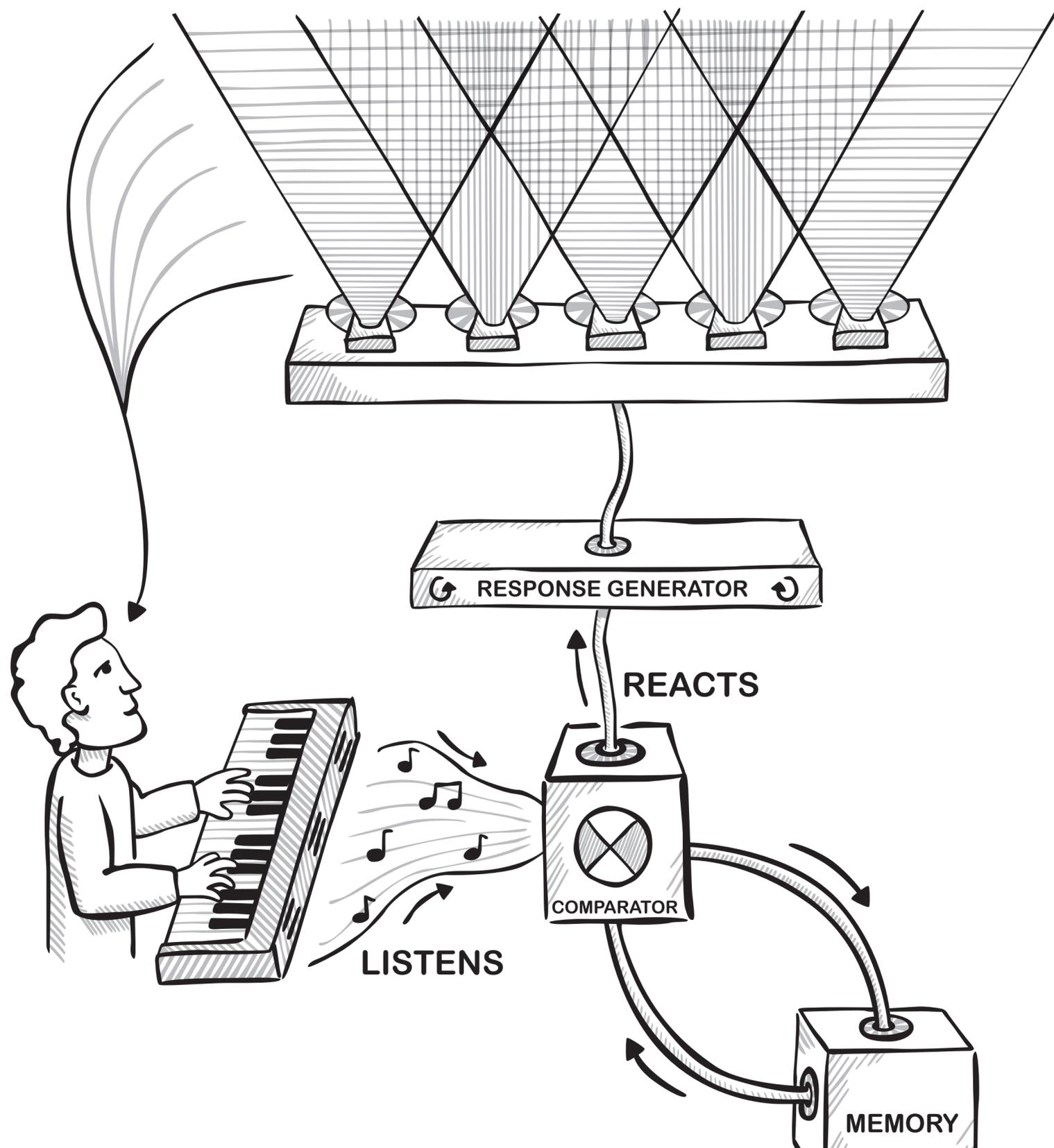
Gordon Pask's Musiccolour From mid-1950s



Gordon Pask's Musicolour From mid-1950s



Gordon Pask's Musicolour From mid-1950s

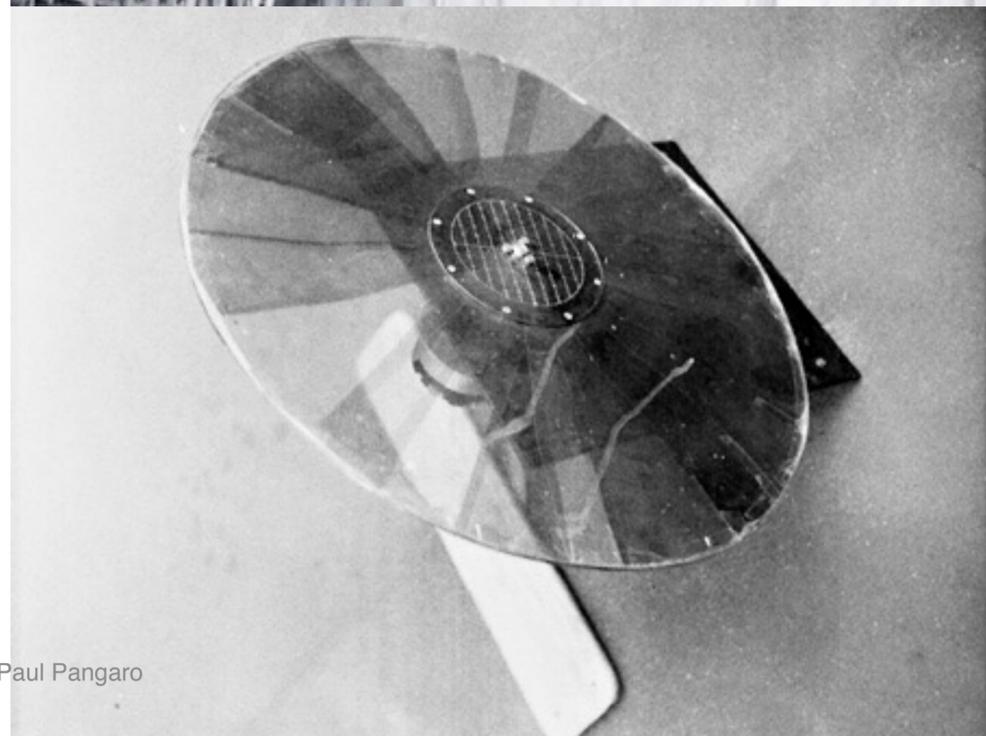


Gordon Pask's Musicolour From mid-1950s



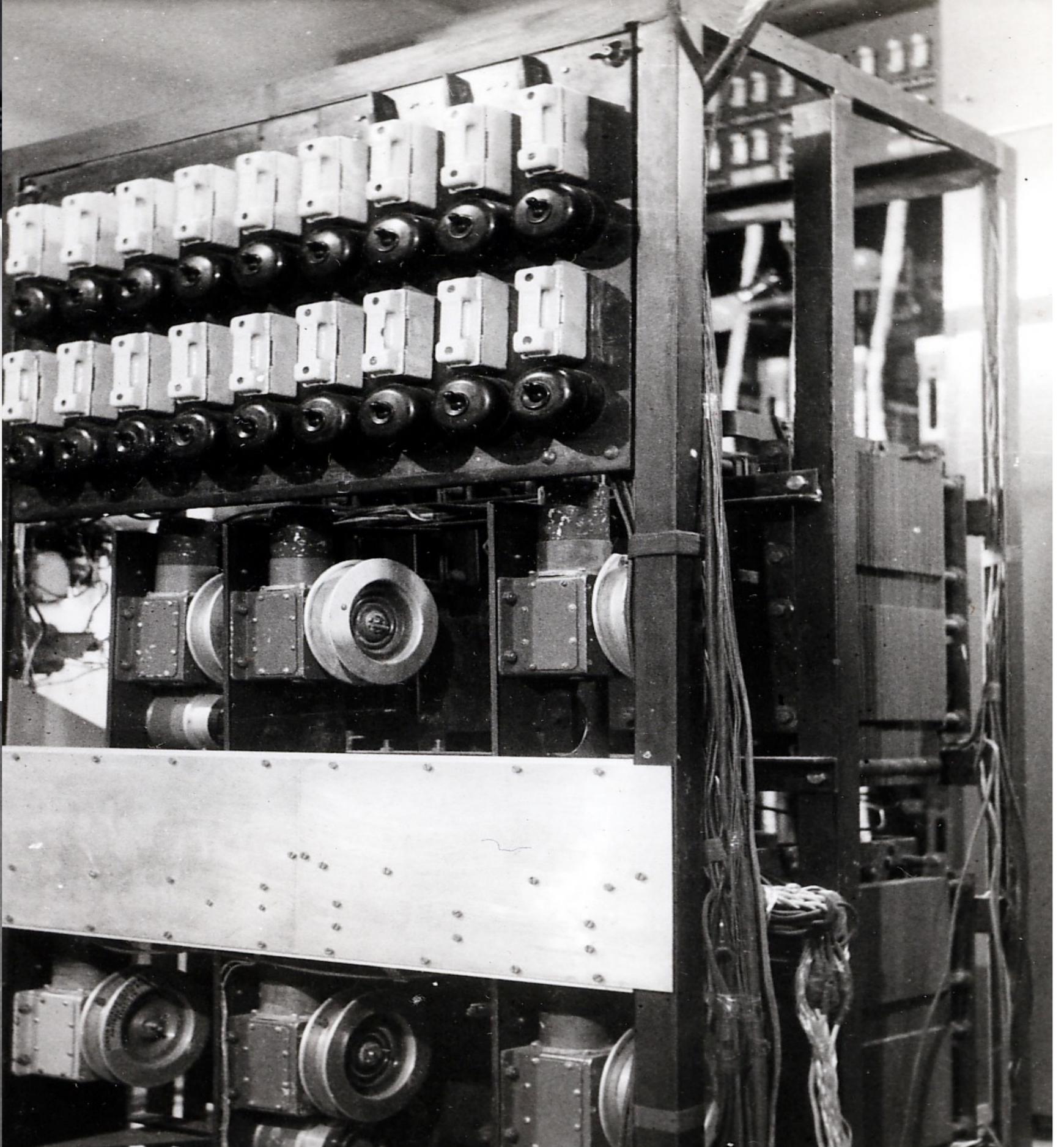
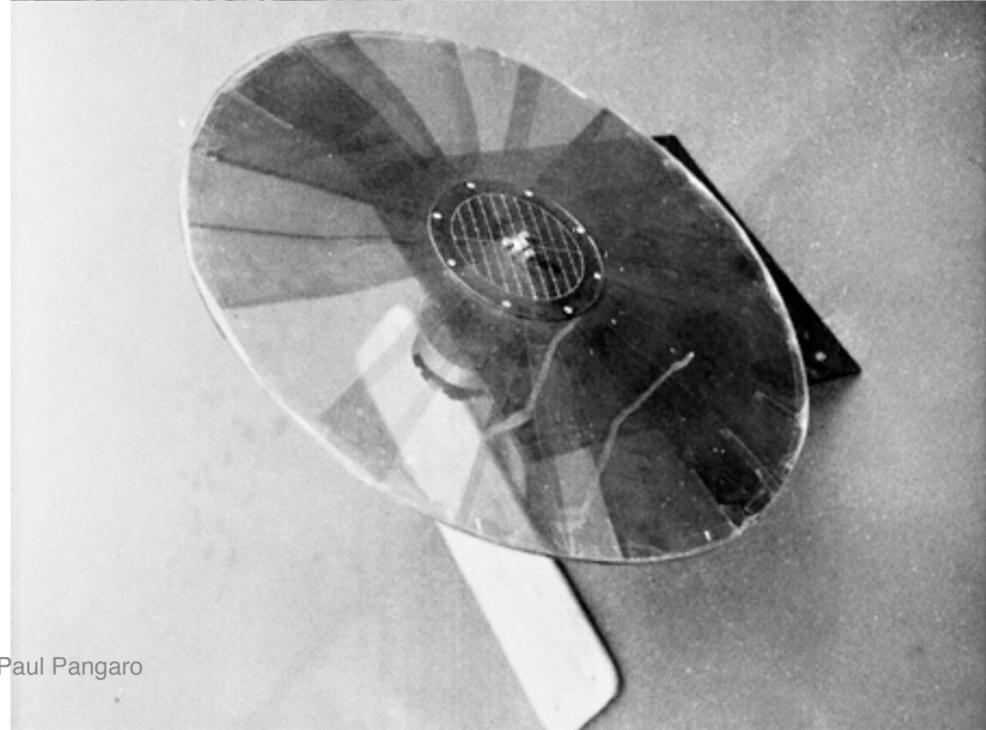
Gordon Pask's Musiccolour From mid-1950s

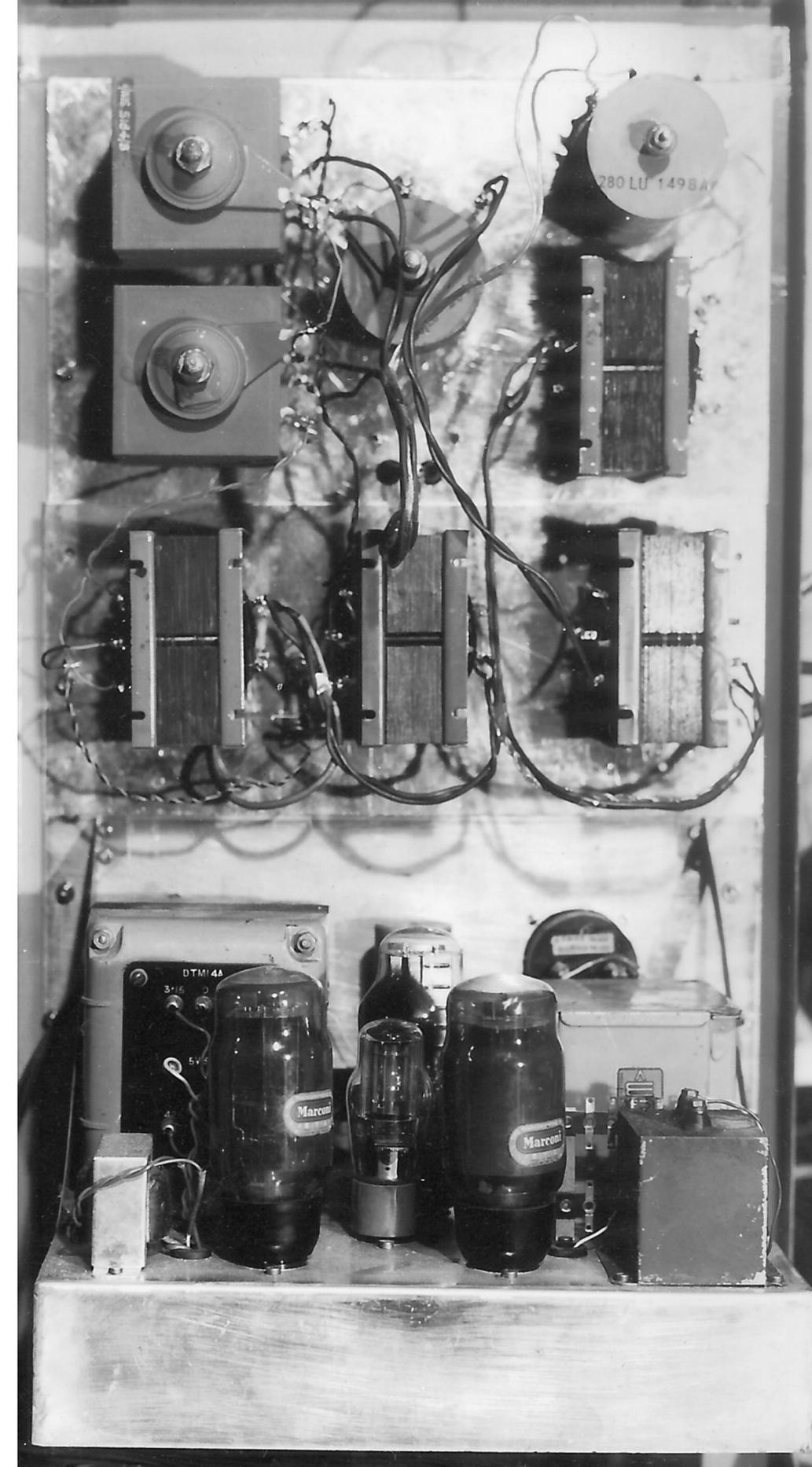
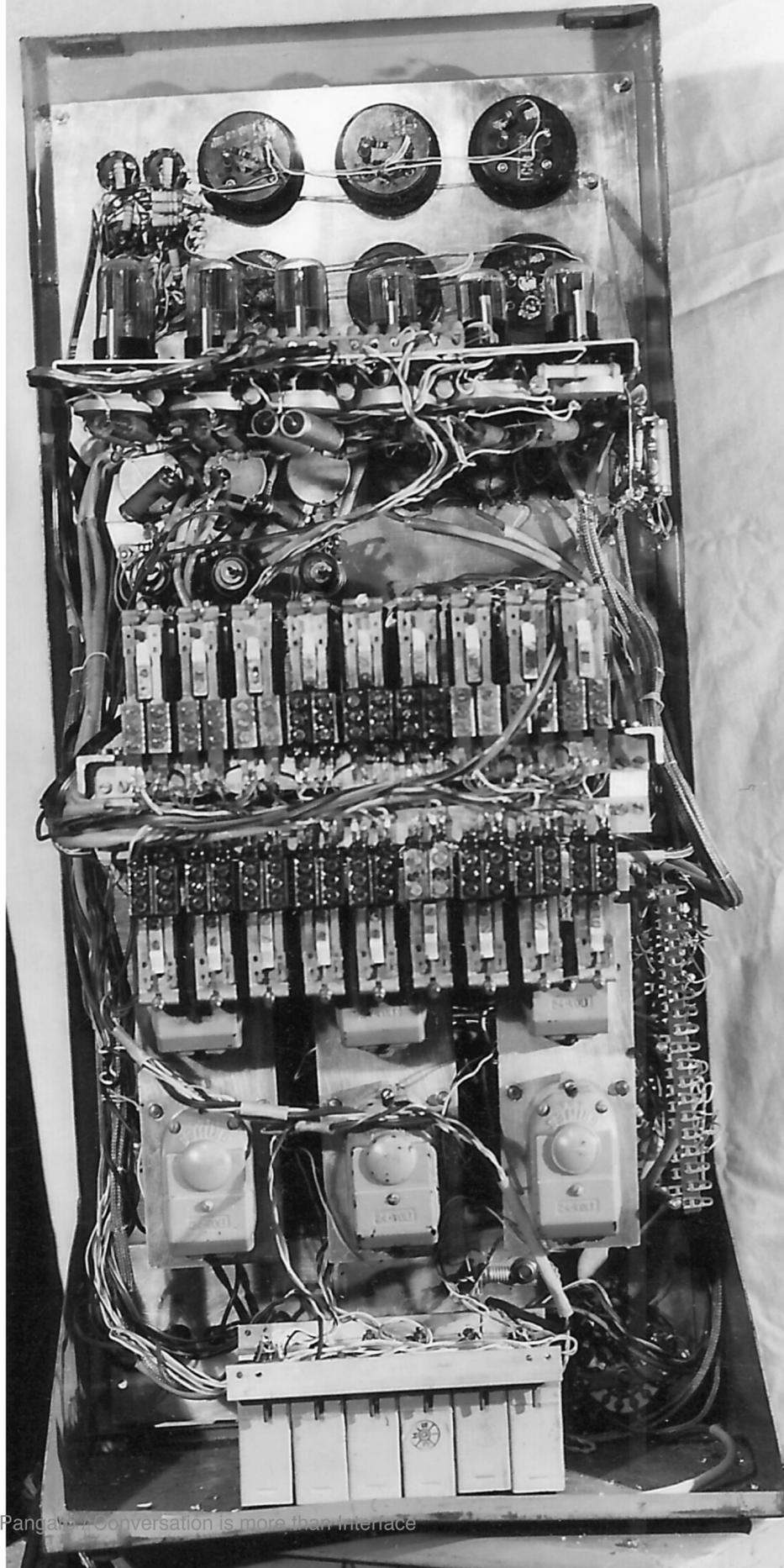
Discussed in Pickering 2009
See also Pangaro 1993

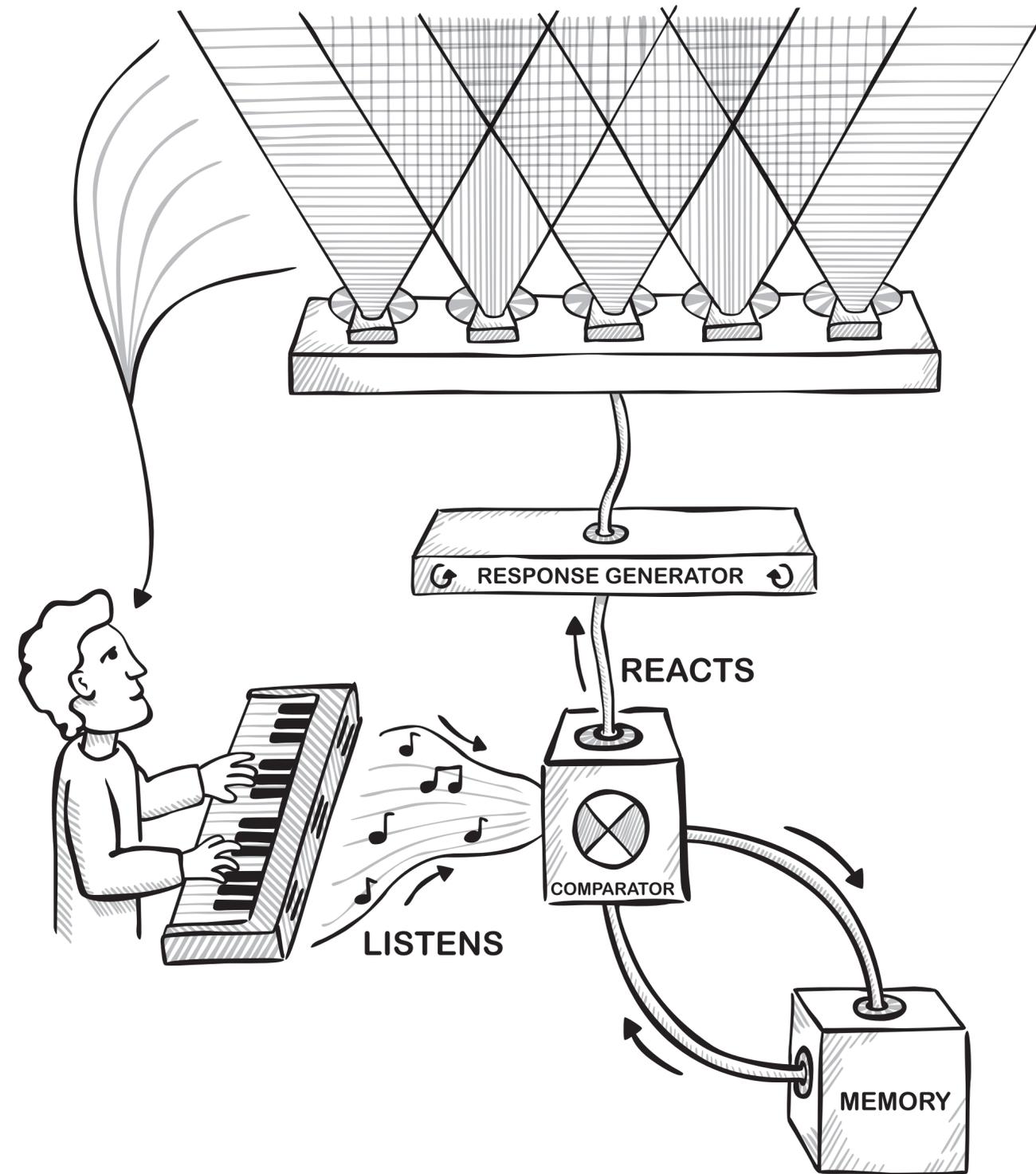


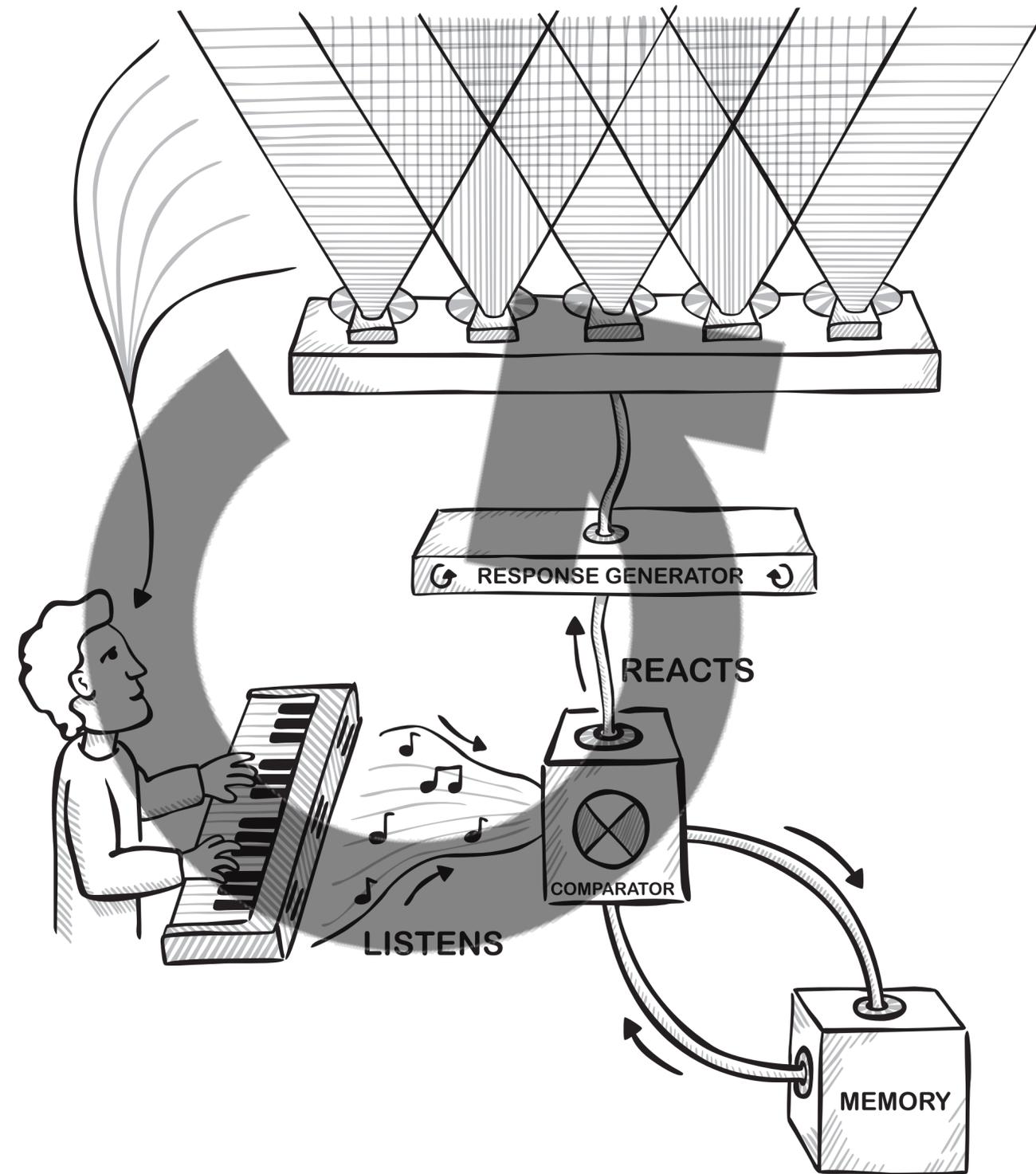
Gordon Pask's Musiccolour From mid-1950s

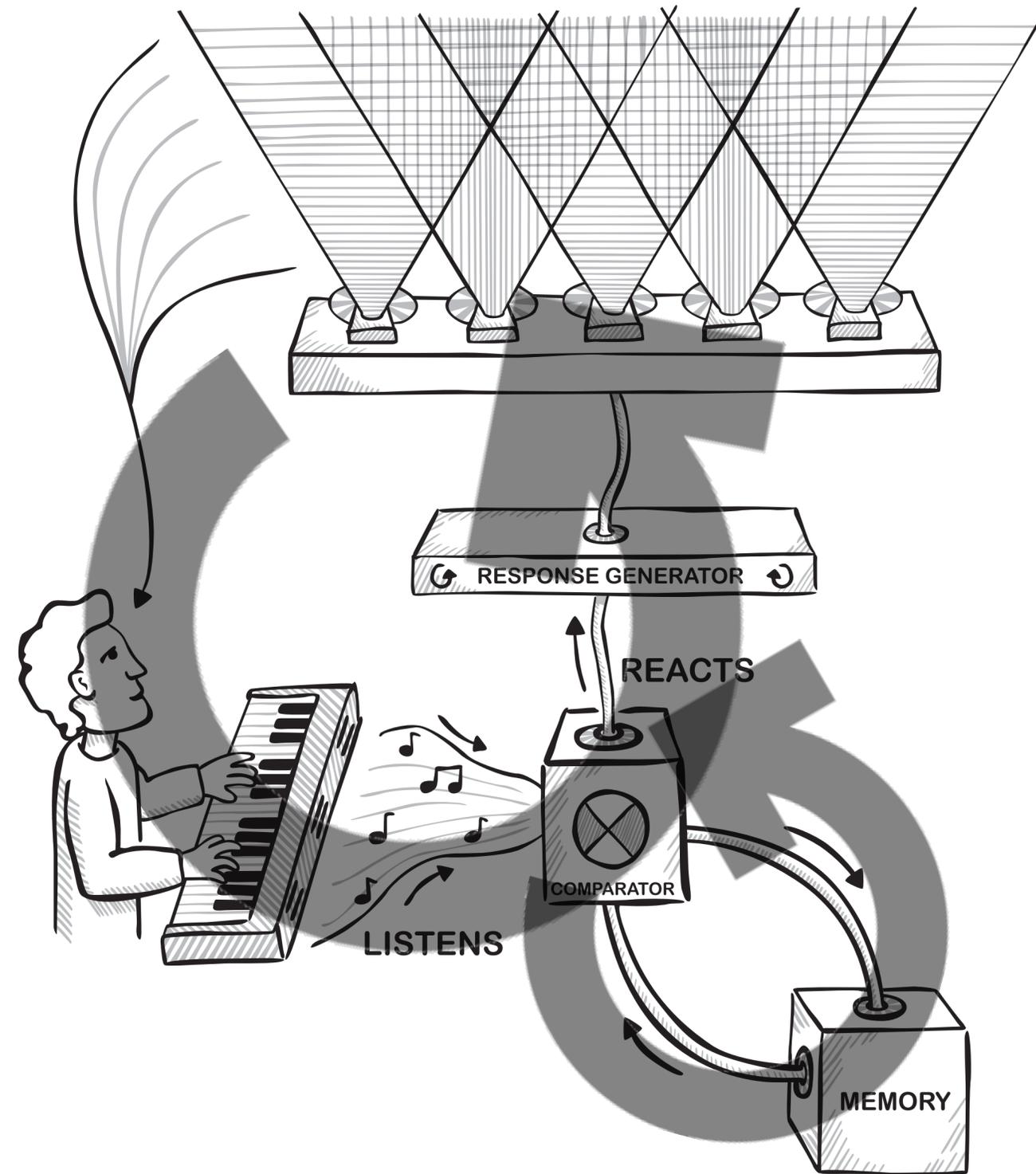
Discussed in Pickering 2009
See also Pangaro 1993





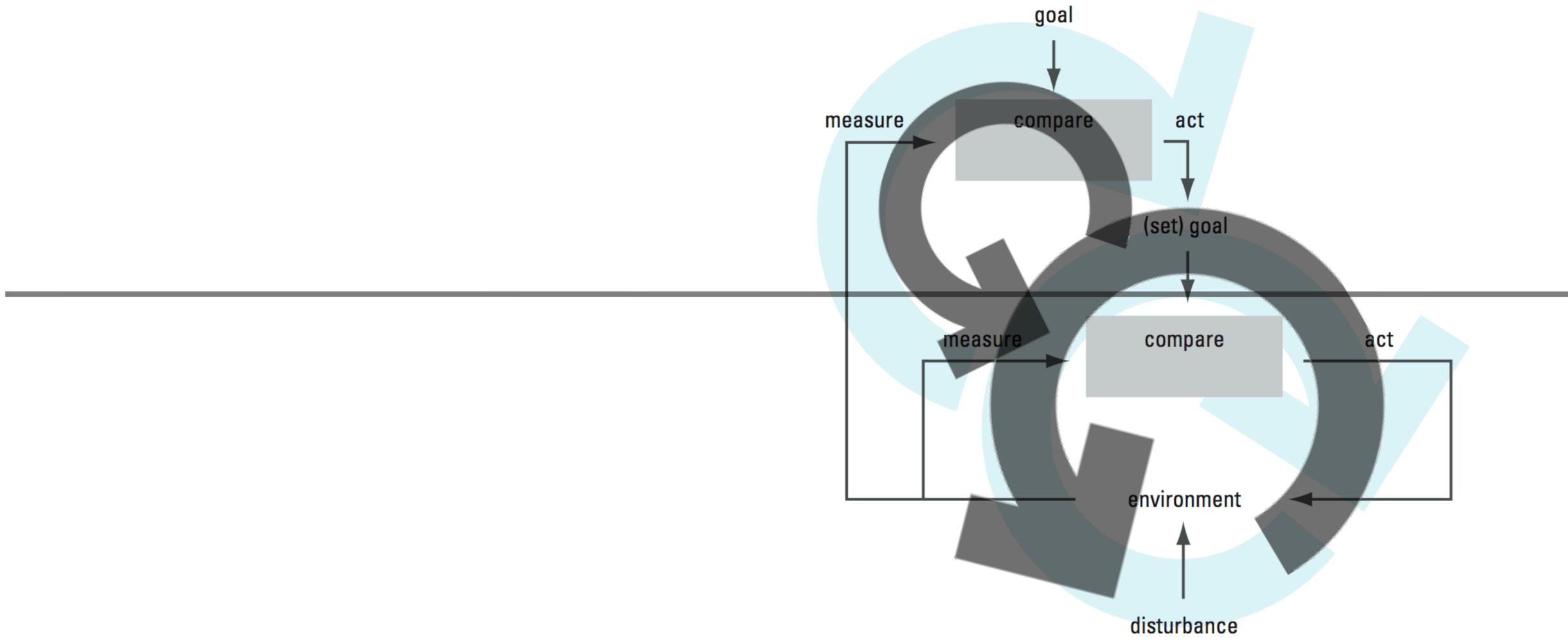


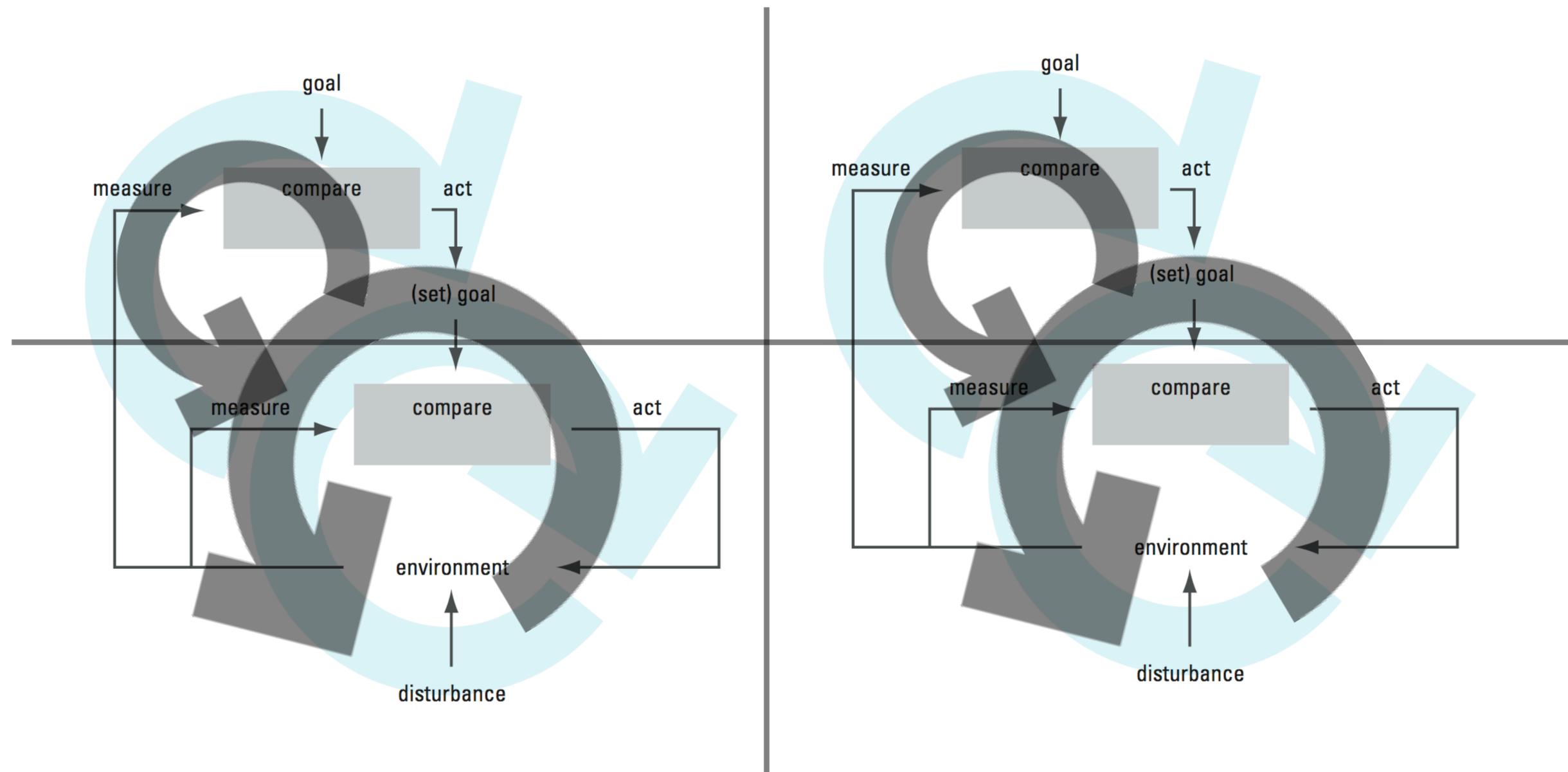




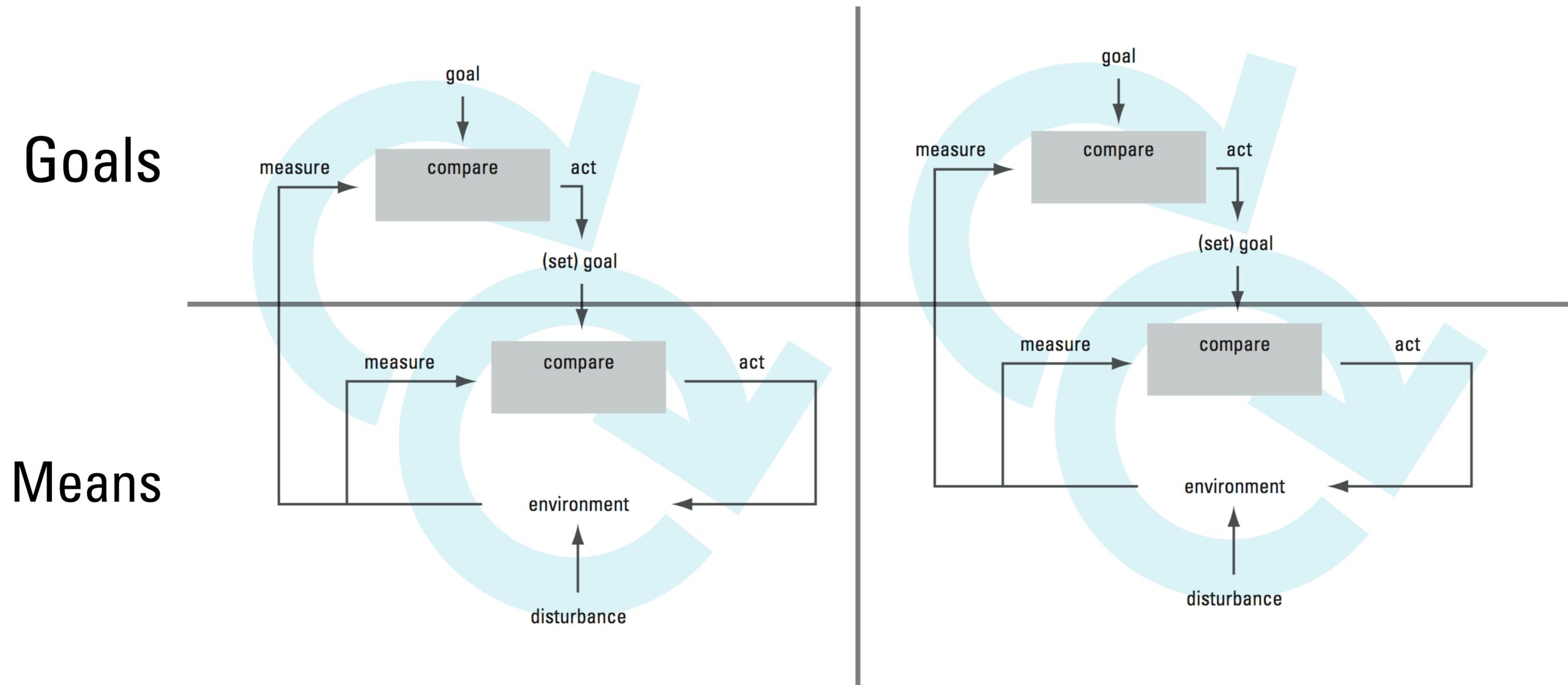








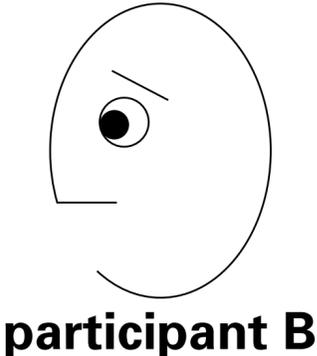
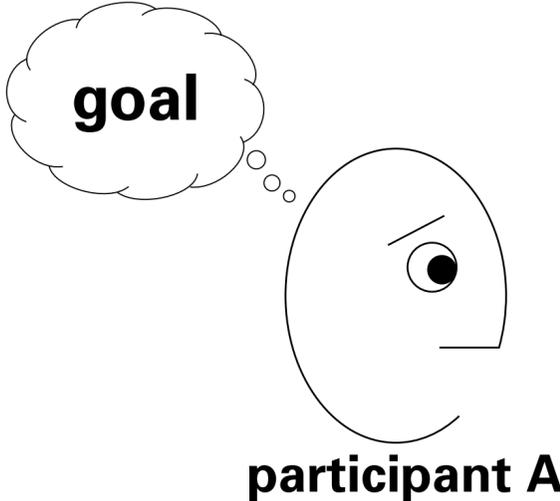
Architecture for Conversation



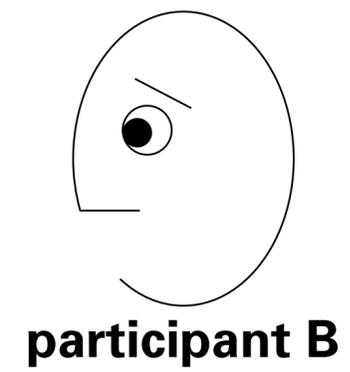
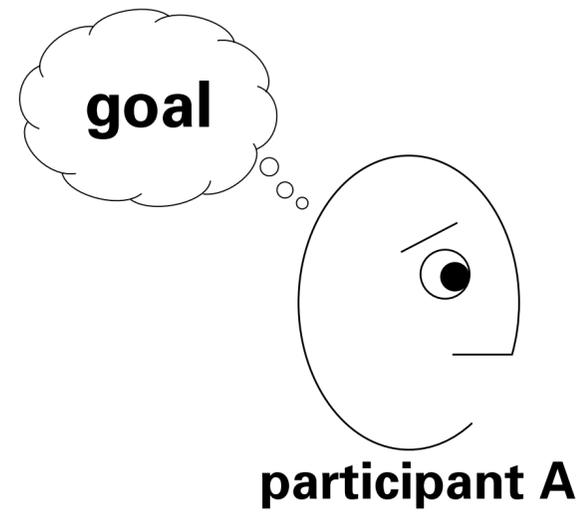
Alexa, can you please acquire the skill of conversation

Alexa, can you please acquire the skill of conversation
Alexa, what is “conversation”?

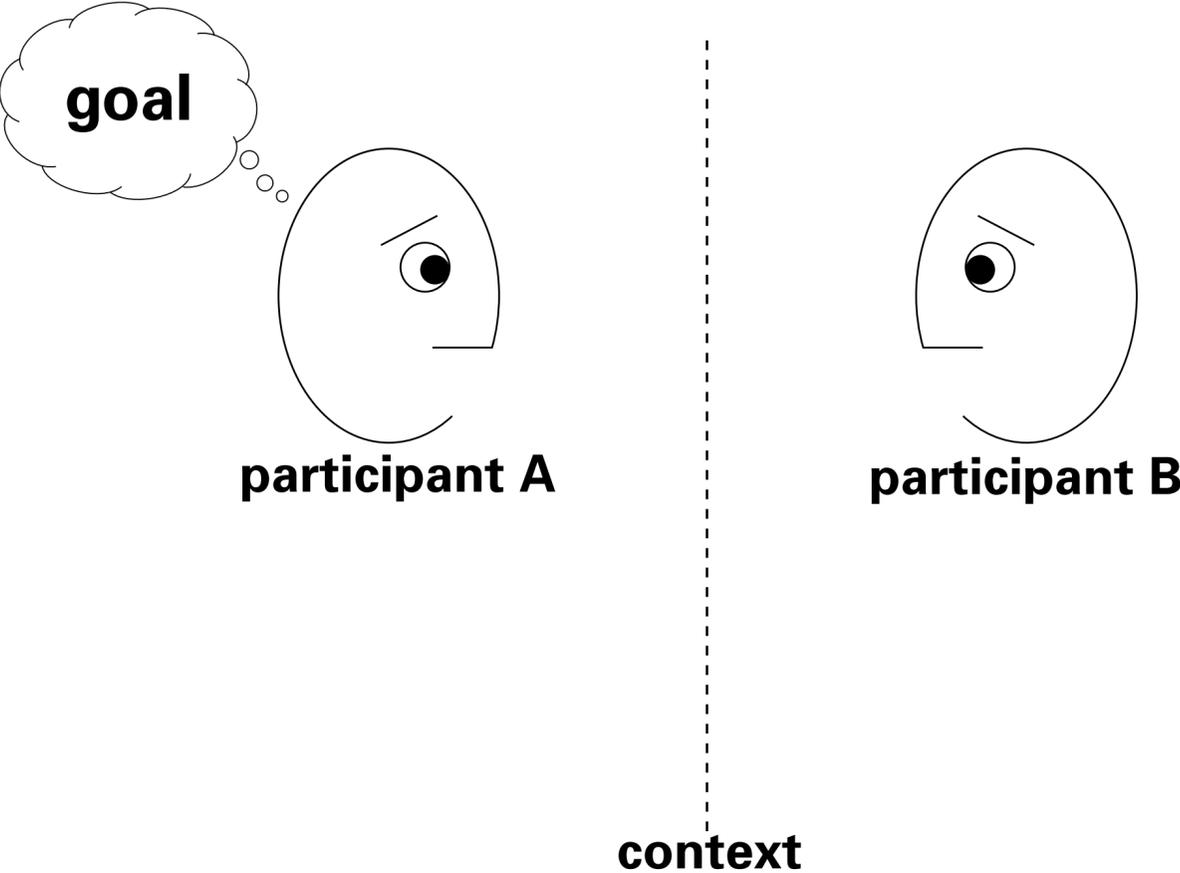
Conversational Frame



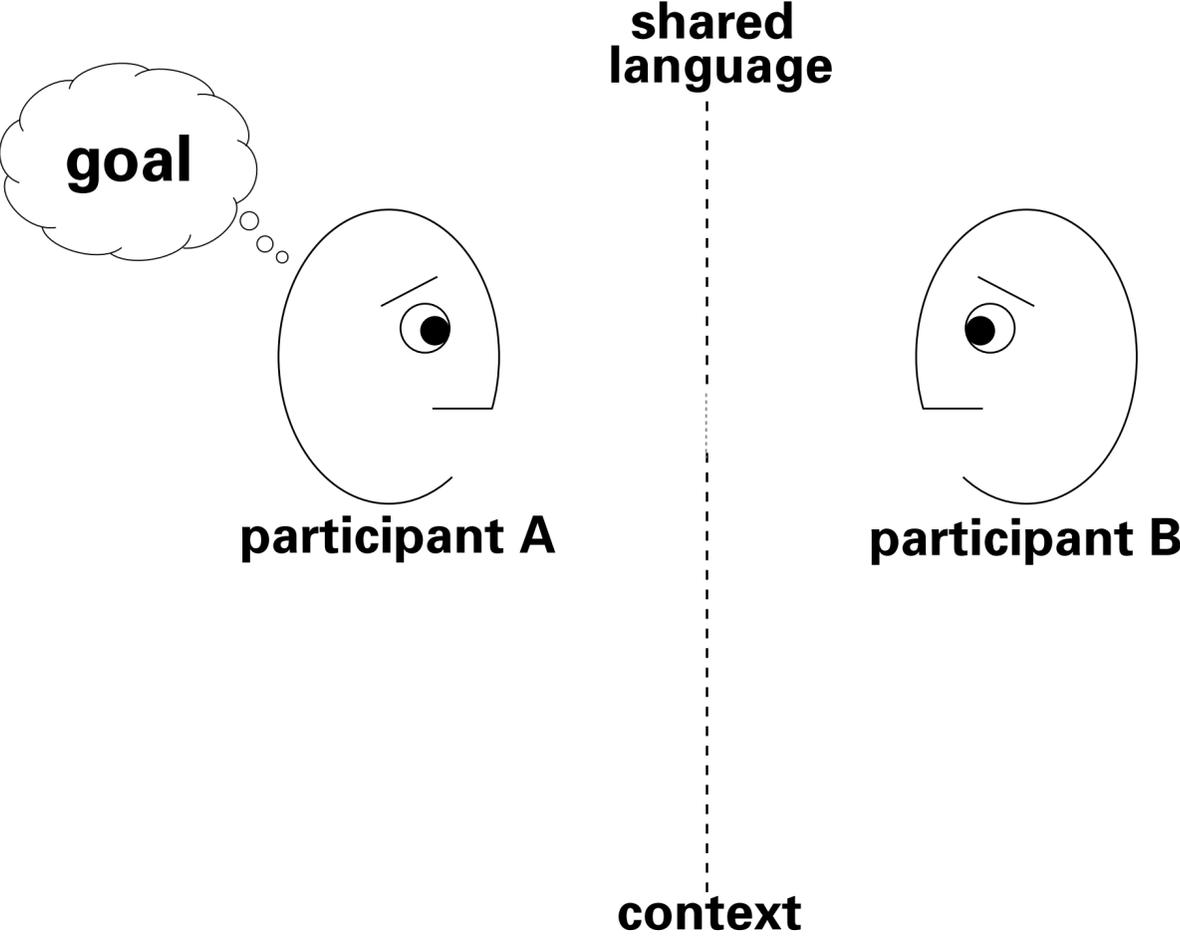
A participant has a goal.



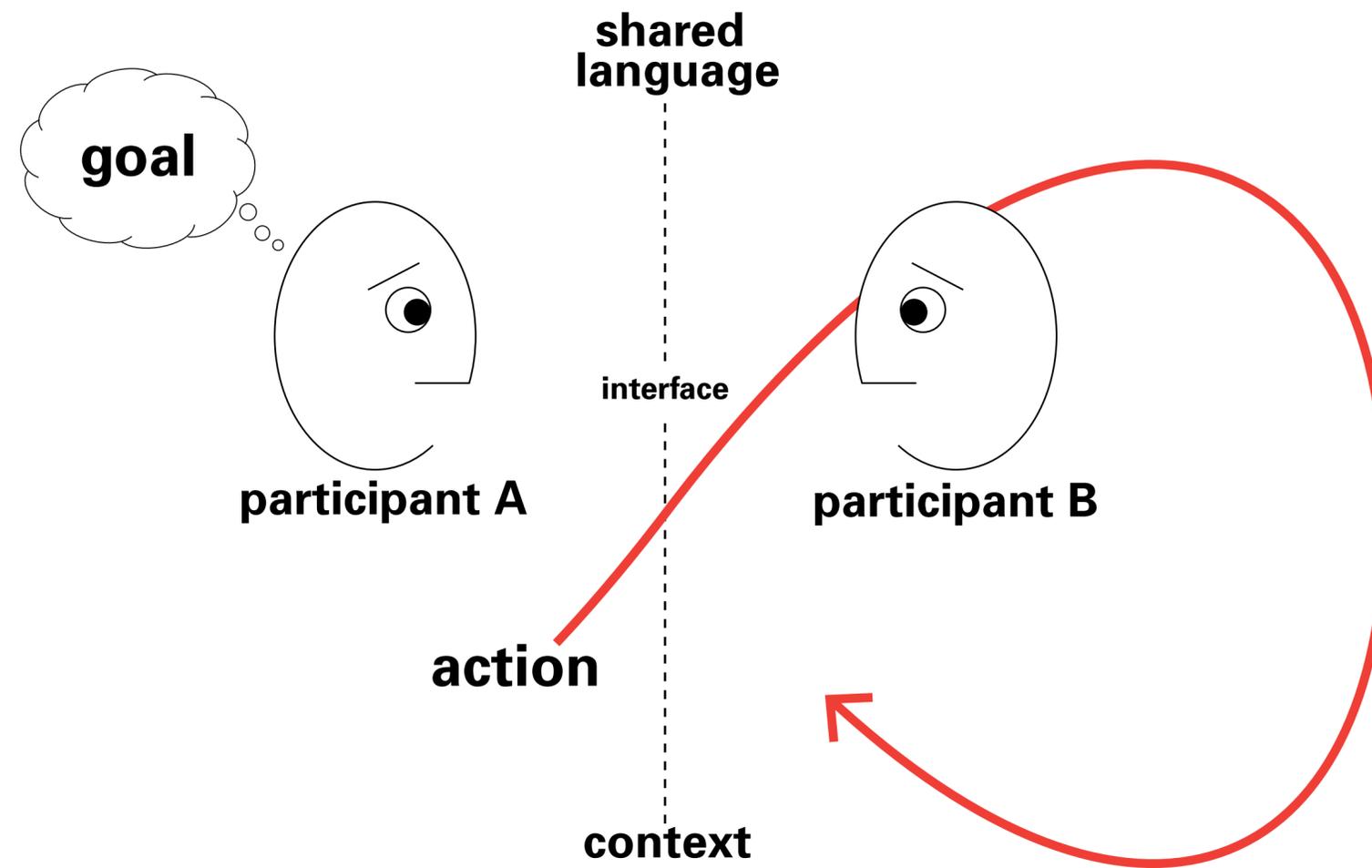
Chooses a context.



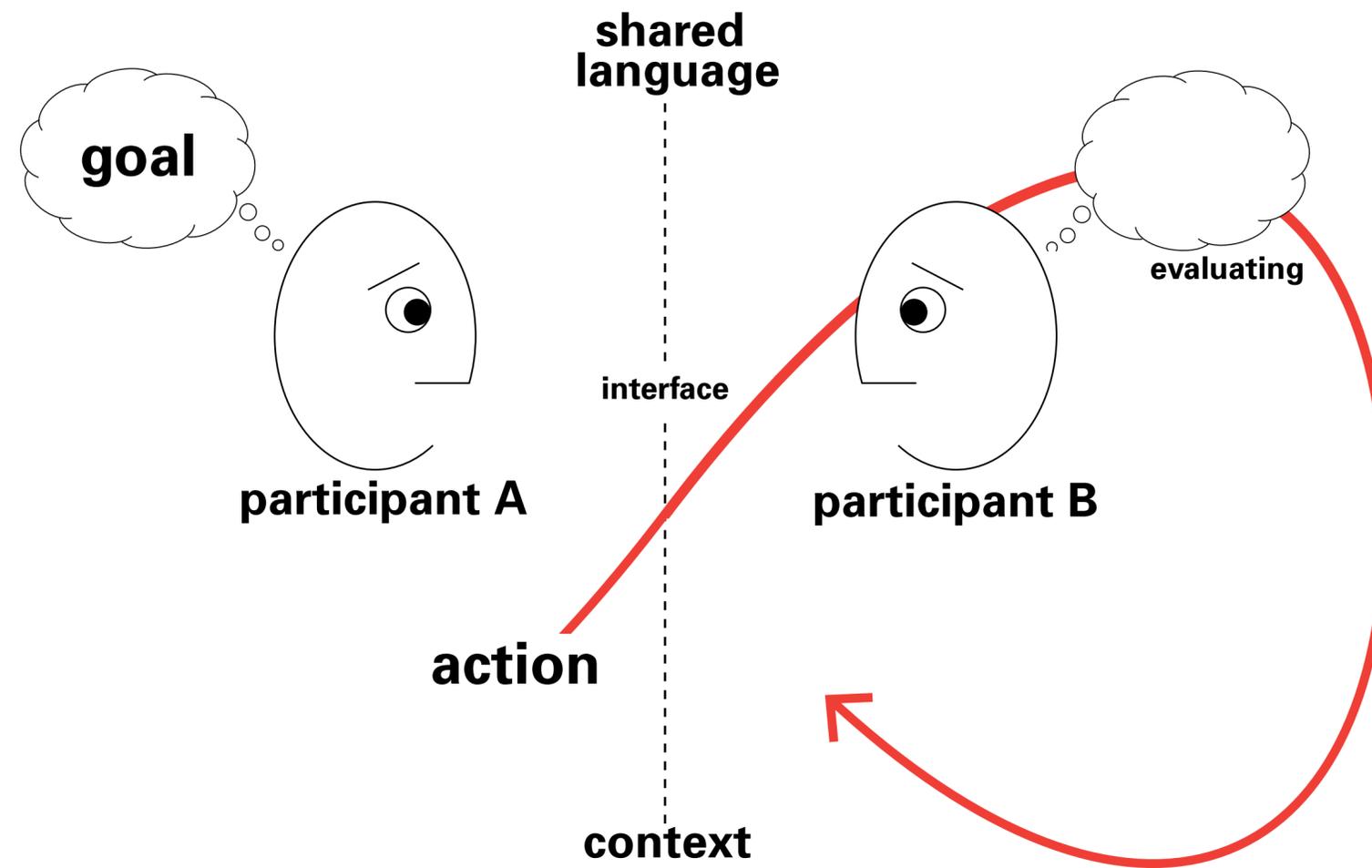
Chooses a language.



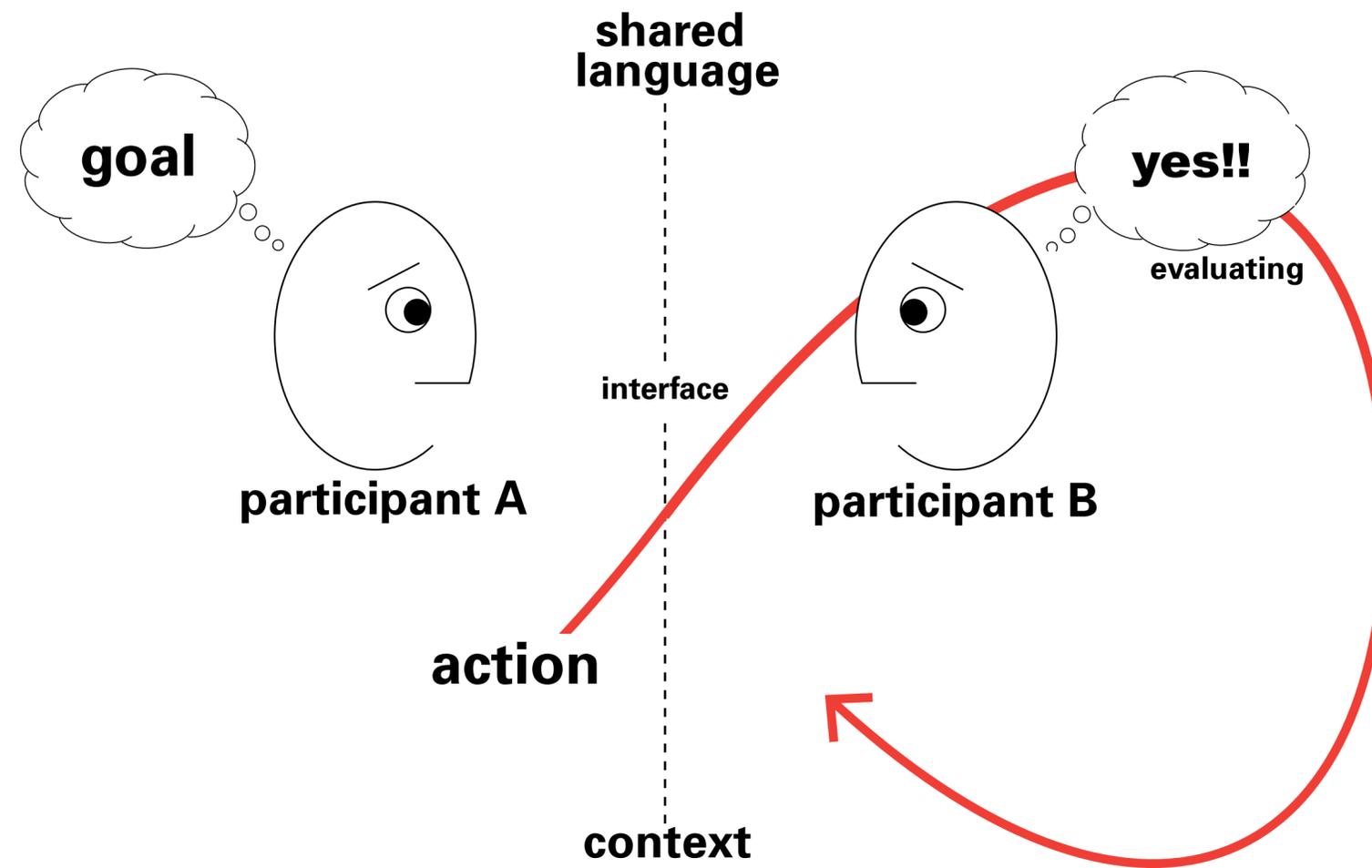
Begins an exchange.



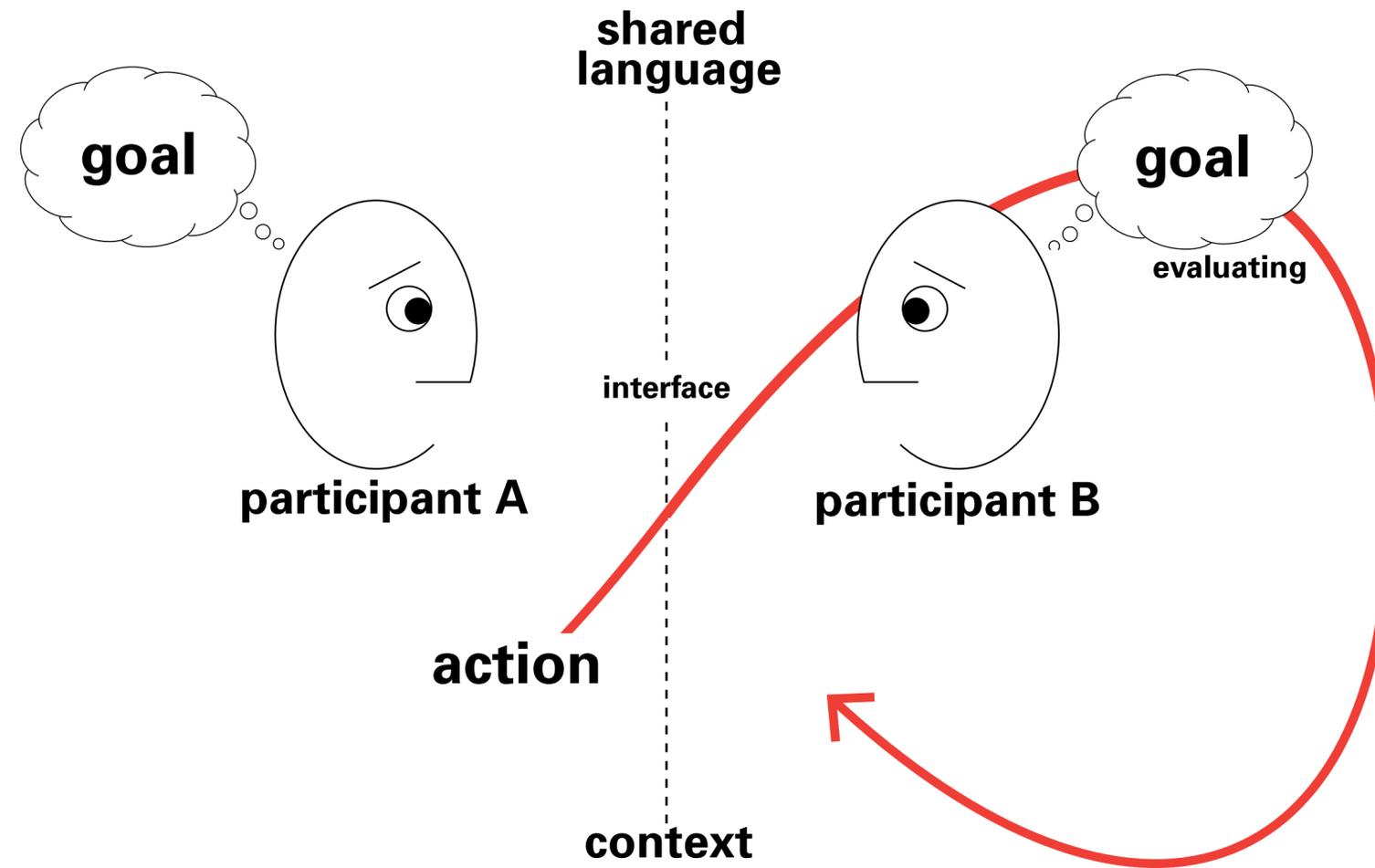
May evoke a response...



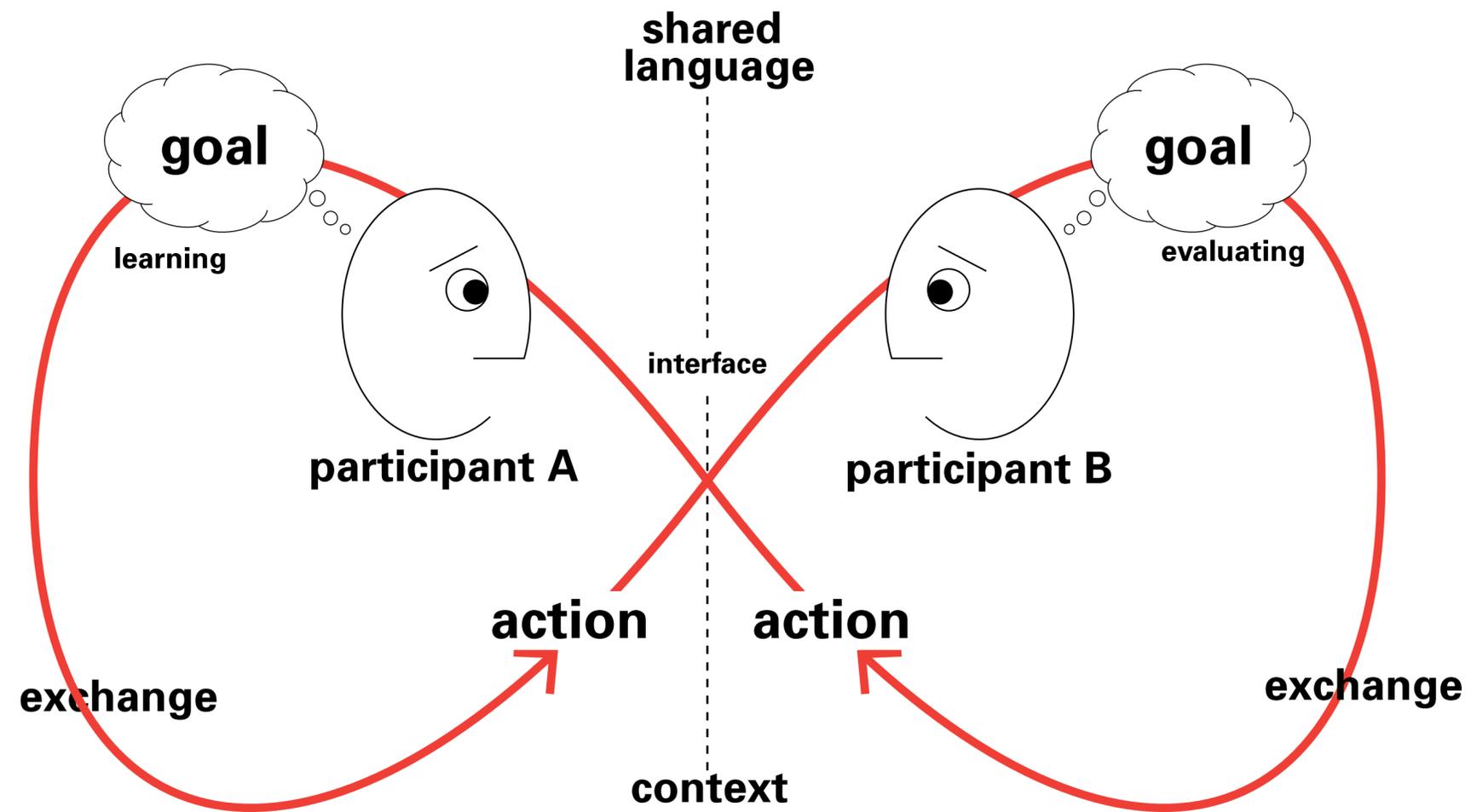
May evoke a response...



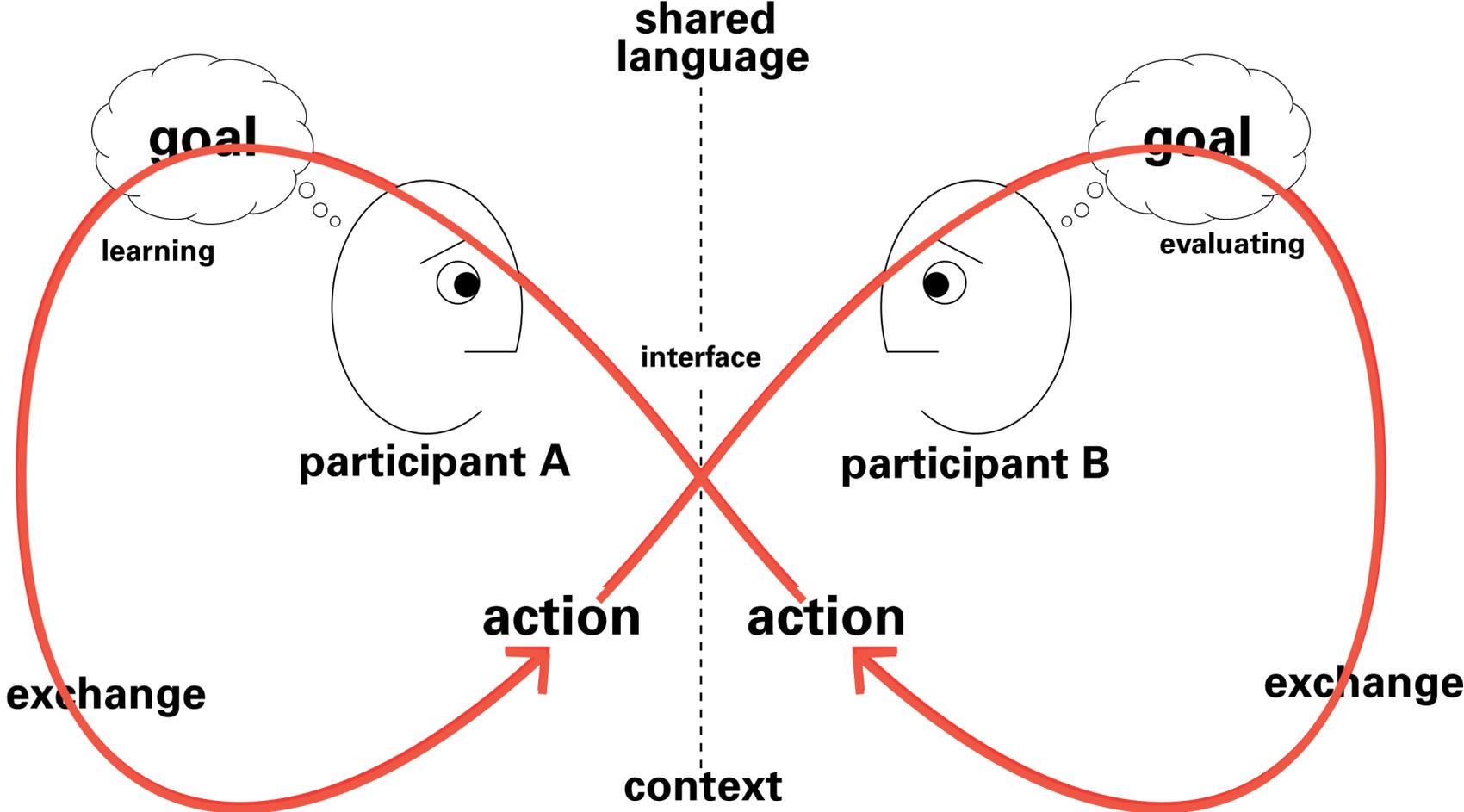
May evoke a response...



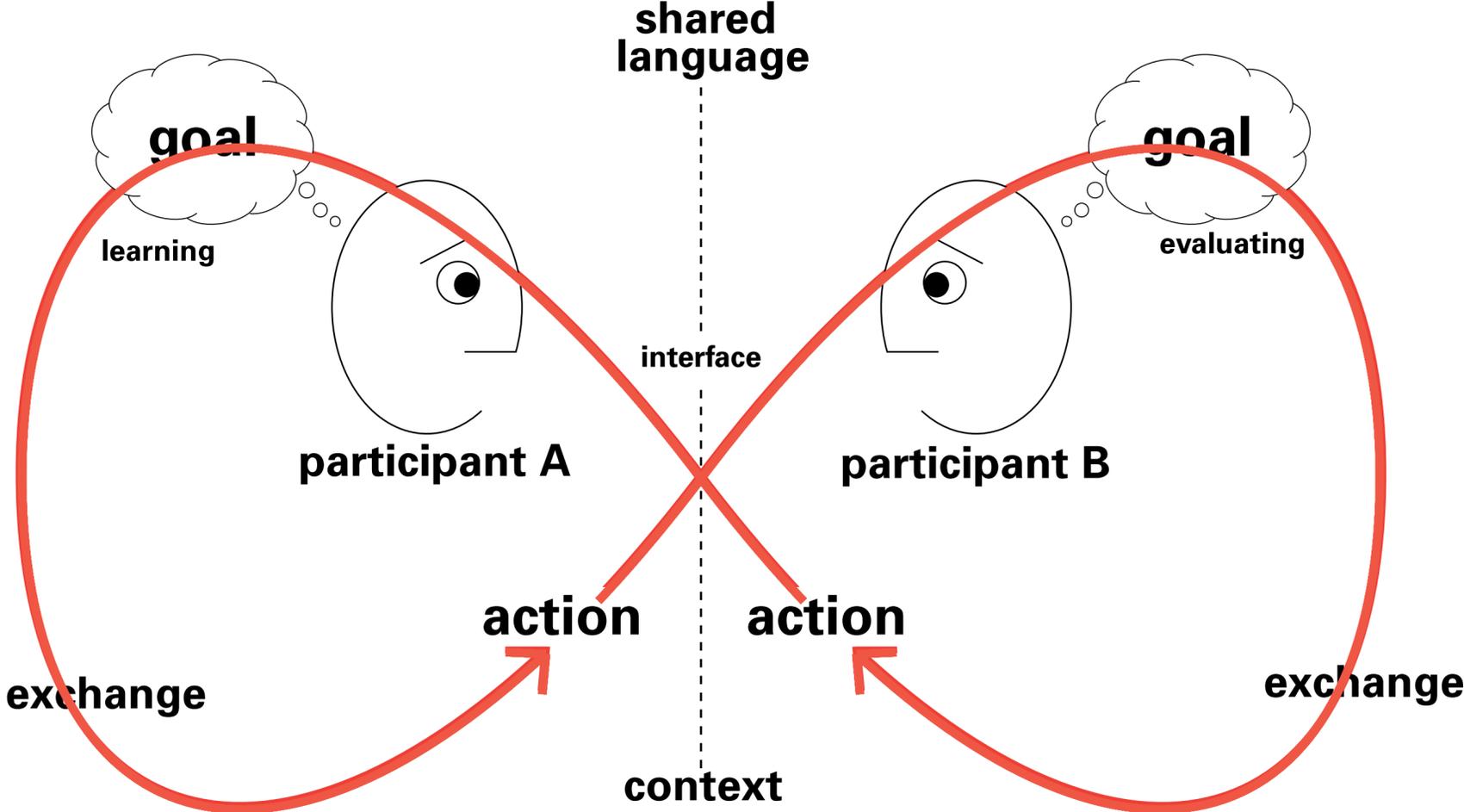
... and a reaction that evokes a reaction...



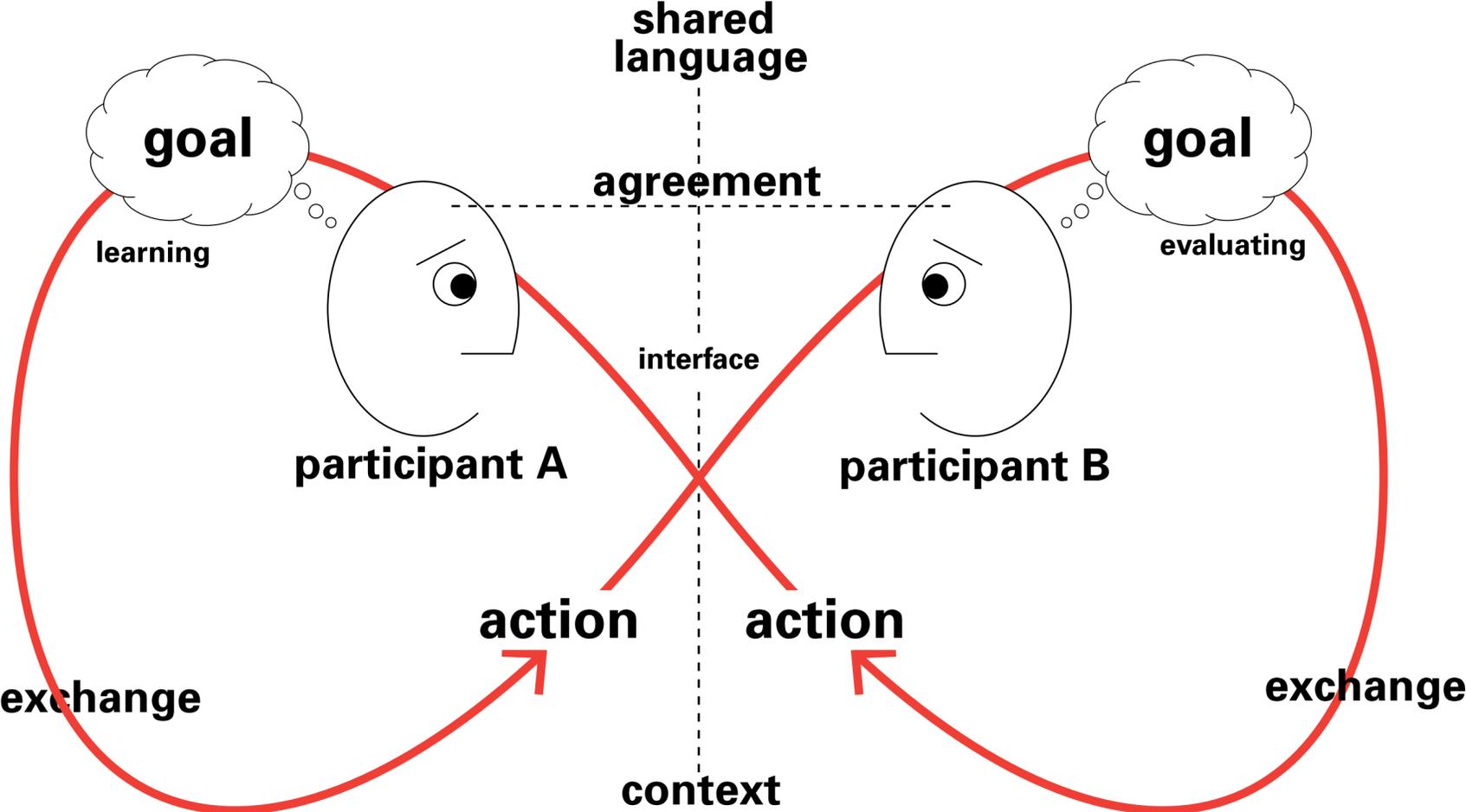
The engagement may continue.



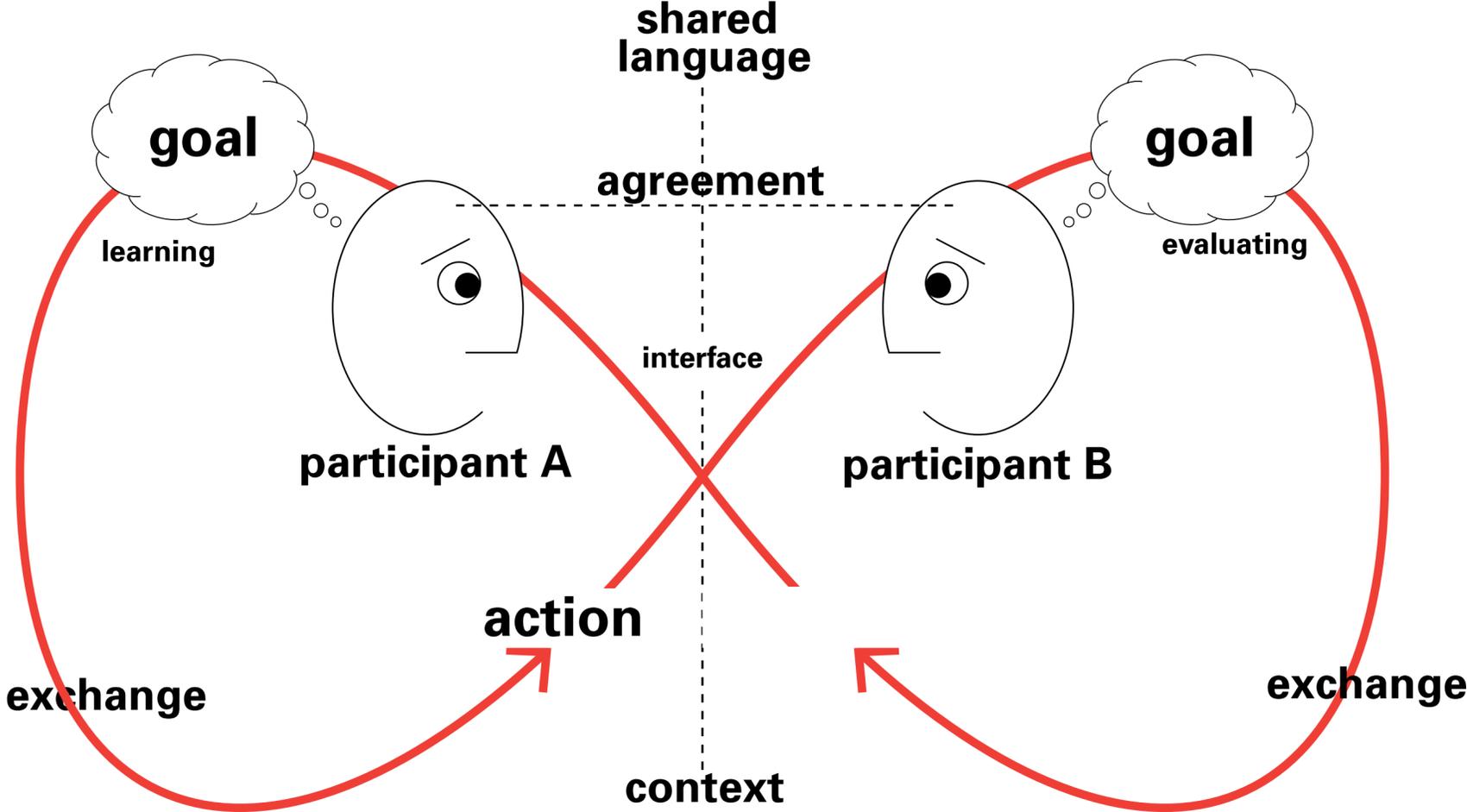
The engagement may continue.



An agreement may be reached.

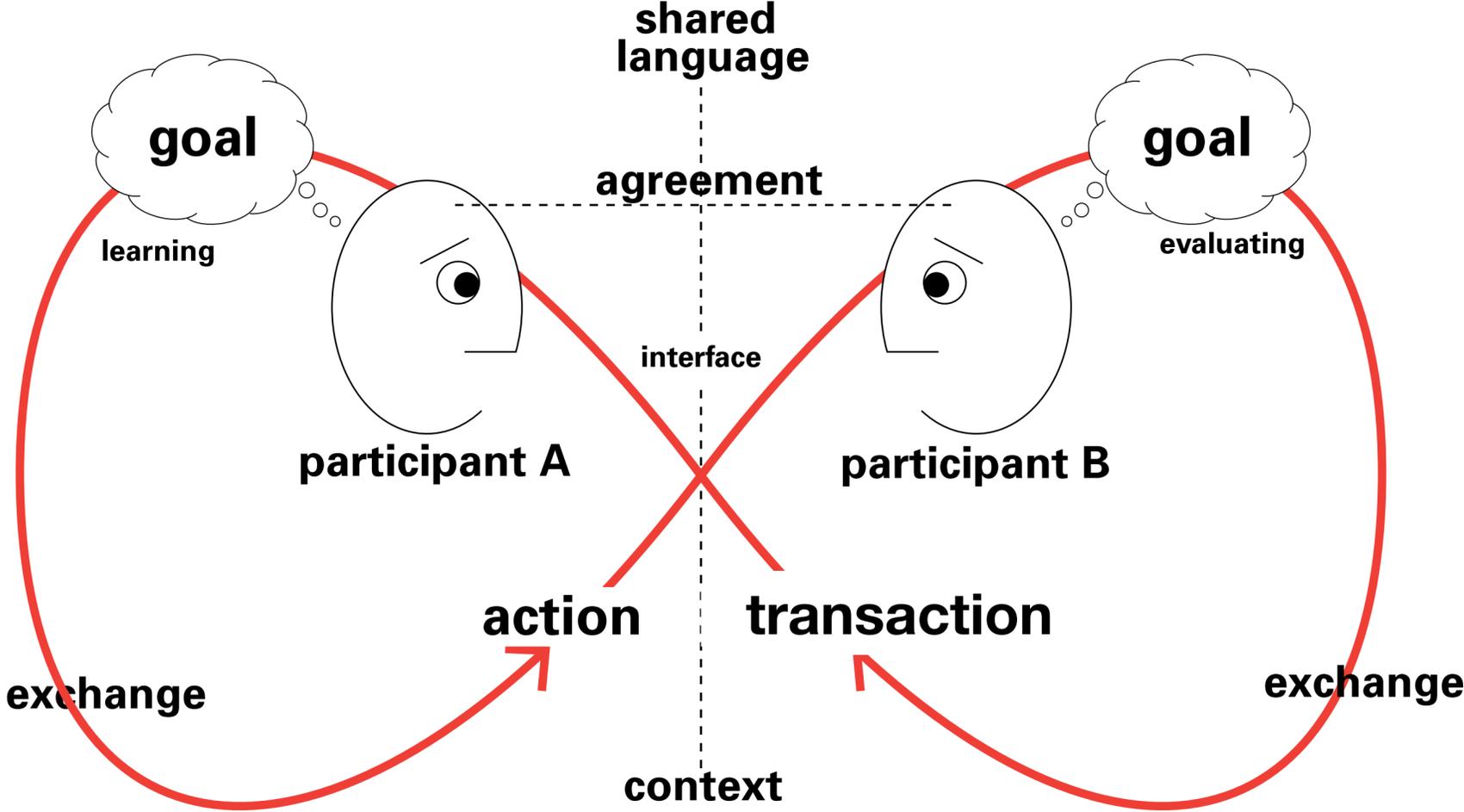


A transaction may occur.



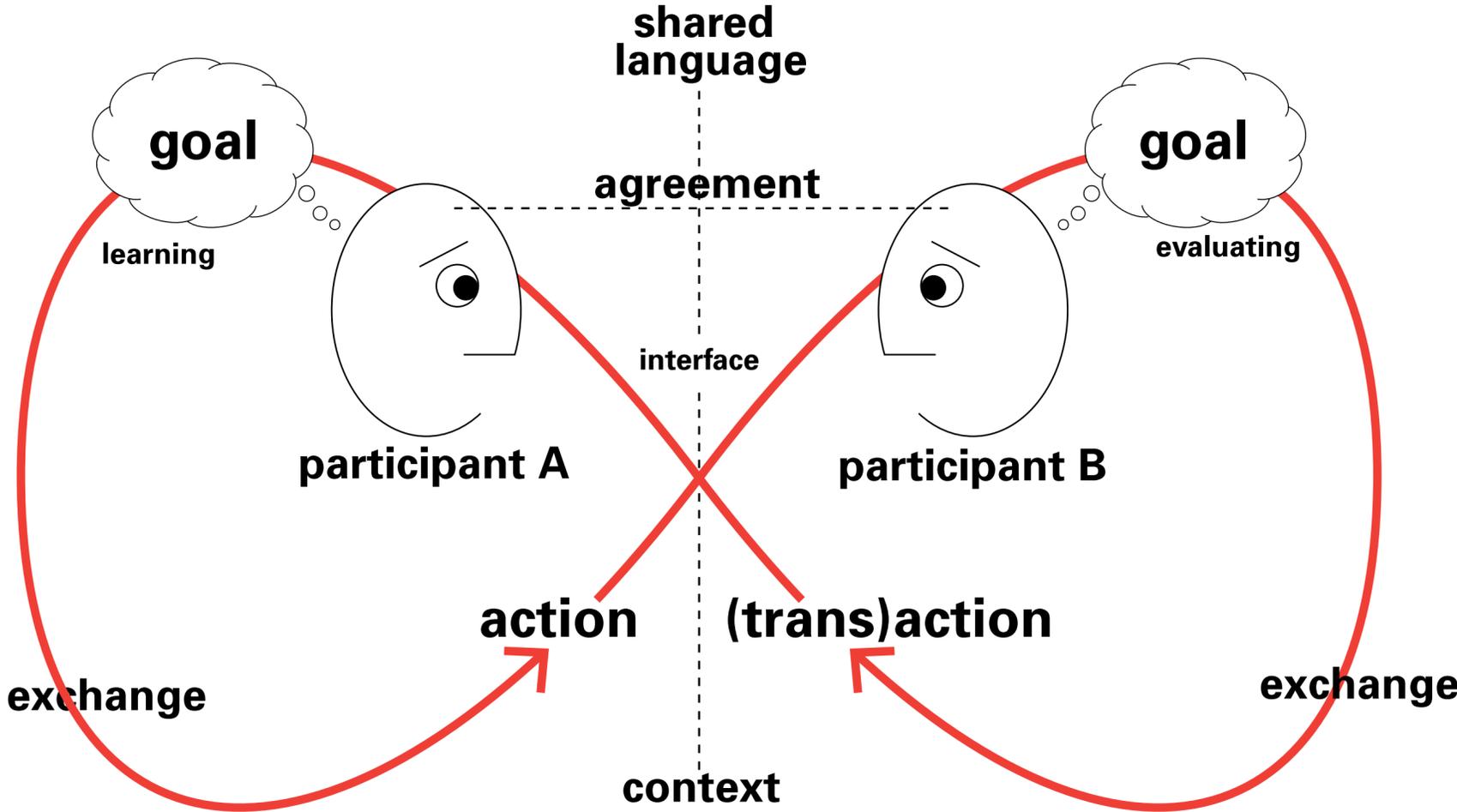
after Dubberly Design Office 2008

A transaction may occur.



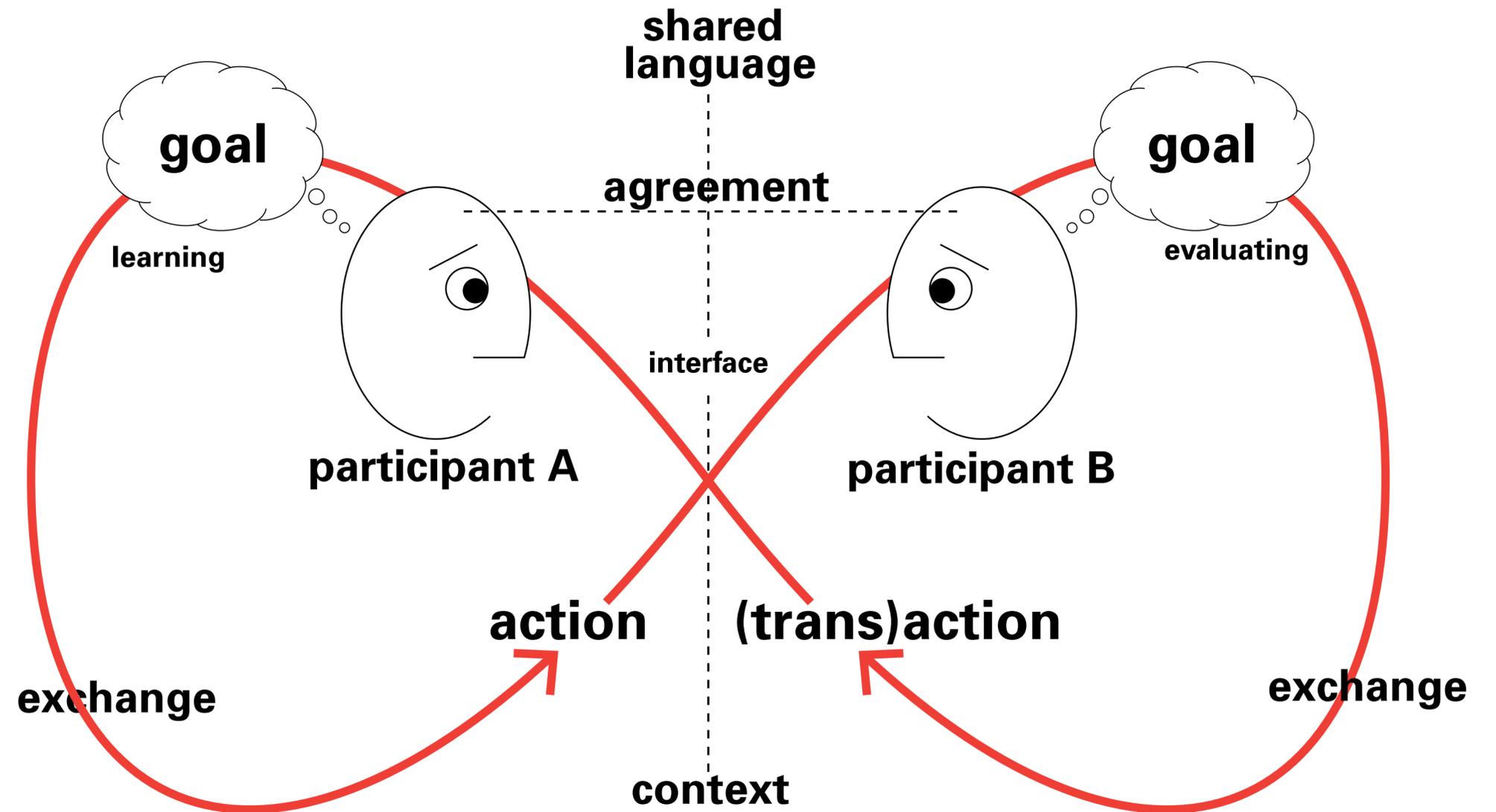
after Dubberly Design Office 2008

Conversation Redux



Conversation Redux — C-L-E-A-T

C – Context
L – Language
E – Engagement
A – Agreement
T – Transaction



Applying C-L-E-A-T

Why does conversation matter?

- to coordinate action, you must reach agreement
- to reach agreement, you must have engagement
- to begin an exchange, you must have shared language

Cooperation and Collaboration require Conversation

Consequences of C-L-E-A-T

What may follow from conversation?

- shared history
- relationship
- trust
- unity

Consequences of C-L-E-A-T

Conversation is the foundation for:

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

Applying C-L-E-A-T

Questions for Designing for Conversation

“What is Conversation?”

Dubberly & Pangaro

2009

[http://www.dubberly.com/articles/
what-is-conversation.html](http://www.dubberly.com/articles/what-is-conversation.html)

Applying C-L-E-A-T

Questions for Designing for Conversation

- What channel is being opened to begin the conversation?
Is the interruption reasonable in how and when it intrudes?
What is the bio-cost of the intrusion relative to its benefit?
Are there better ways to interrupt?
- Is the first message clear?
Does it offer something to the recipient?
- Does the exchange convey the potential benefits in continuing?
Is there learning or delight? Is curiosity or interest stimulated?
- Is meaning easily understood—
do the messages speak in the language of the participants?
Are messages sensitive to others' context, needs, interests, values?
How can messages be made more efficient or clear?

“What is Conversation?”

Dubberly & Pangaro
2009

[http://www.dubberly.com/articles/
what-is-conversation.html](http://www.dubberly.com/articles/what-is-conversation.html)

Applying C-L-E-A-T

Questions for Designing “CUIs”

“What is Conversation?”
Dubberly & Pangaro
2009

[http://www.dubberly.com/articles/
what-is-conversation.html](http://www.dubberly.com/articles/what-is-conversation.html)

Applying C-L-E-A-T

Questions for Designing “CUIs”

- What does the CUI know about the user’s context—
what more can it know, automatically or by input from the user?
- How can a user convey intention *to* the software—
can the CUI be open to the user’s goals, values, preferences?
- Does the CUI evolve during the engagement—
in addition to understanding the user, can it build new knowledge?
- When should the CUI be confident it understands the user—
and when should it double-check?
- Can the CUI’s capabilities build a relationship of trust—
what does that take?

When will CUI’s do all this?

“What is Conversation?”

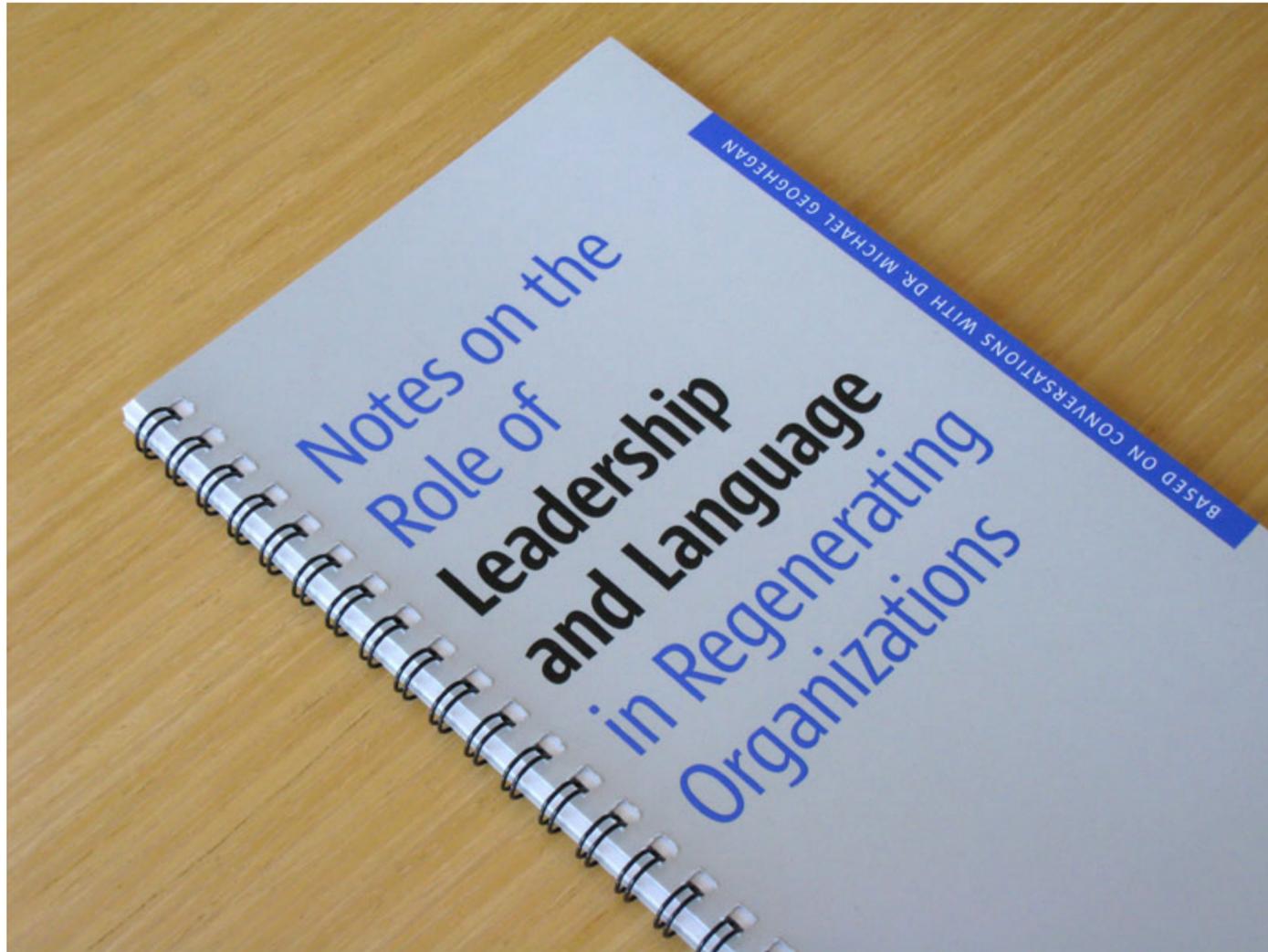
Dubberly & Pangaro
2009

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Applying Conversation Theory by Gordon Pask – Part 2

What is the foundational structure of conversation?

What is an “architecture” for conversation?



An organization is its language.

Ultimately,
an organization consists of conversations:
who talks to whom, about what.

Each conversation
is recognized, selected, and amplified
(or ignored) by the system.
Decisions, actions, and a sense of valid purpose
grow out of these conversations.

Conversation leads to agreement.
Agreement leads to transaction.

Narrowing language increases efficiency.

Organizations create their own internal language to solve specific problems.

This language serves as a kind of shorthand: Managers use it every day, knowing they will be clearly understood.

Over time, this internal language grows increasingly specialized — and narrow.

Narrowing language also increases ignorance.

The organization's internal language is designed to help managers facilitate present-day business — not look beyond it.

Using the internal language, managers increase efficiencies, but cannot recognize new fields of research, new discoveries, new approaches.

Past language limits future vision.

Managers understand the organization's past behavior.
But this knowledge,
and the language that accompanies it,
limit their vision
of the organization's potential future state.

Using the language of the past,
managers may try to provide a vision for the future.
But it is an old future —
a memory of what the future could be.

Managers may strive for fundamental change,
but their language prevents them from achieving it.

Expanding **language** increases opportunity.

The conversations necessary
for generating new opportunities
come from outside the system.

For an organization to survive,
it must be able to acquire
new, relevant language domains.

To regenerate, an organization creates a new **language**.

To support an organization's future viability, effective decision makers actively introduce change into the system.

They do so by generating new language that appropriate groups in the organization come to understand and embrace.

This new language does not overtly challenge the pre-existing, efficient system, but rather creates new distinctions and supportive relationships.

The Machine Revolution

	Industrial Revolution (1750–1850)	Computer Revolution (1955–1995)	Conversation Revolution (2015–?)
Role of machines...			
Extend and enhance...	...muscles	...nervous system	...muscles and nervous system
Create value by lowering the cost of...	...performing physical labor	...performing cognitive tasks	...collaborating

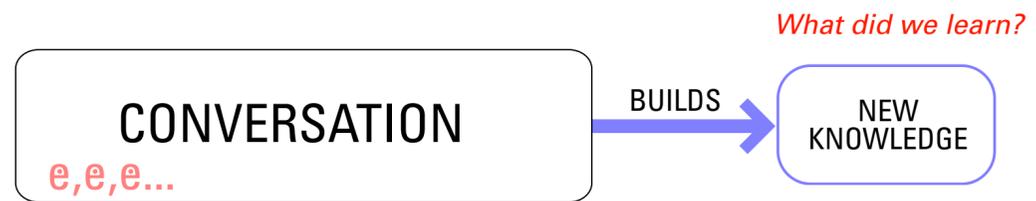
CONVERSATION
e,e,e...

Re-Designing Client Engagement 2006
Ogilvy & Mather

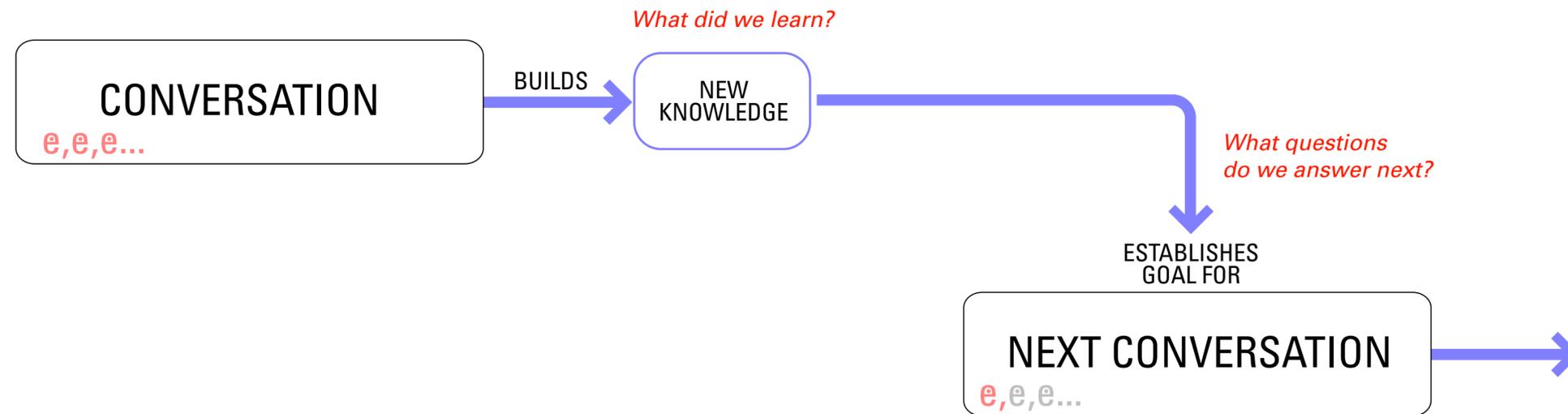
skip

CONVERSATION
e,e,e...

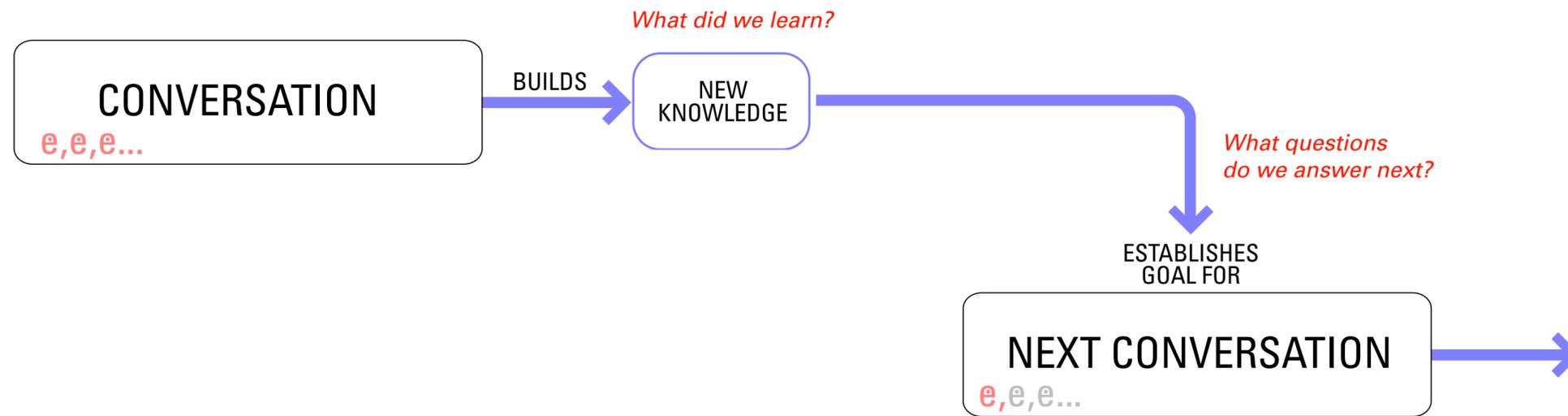
A client engagement—any team process—begins with conversation.
Every conversation involves participants.



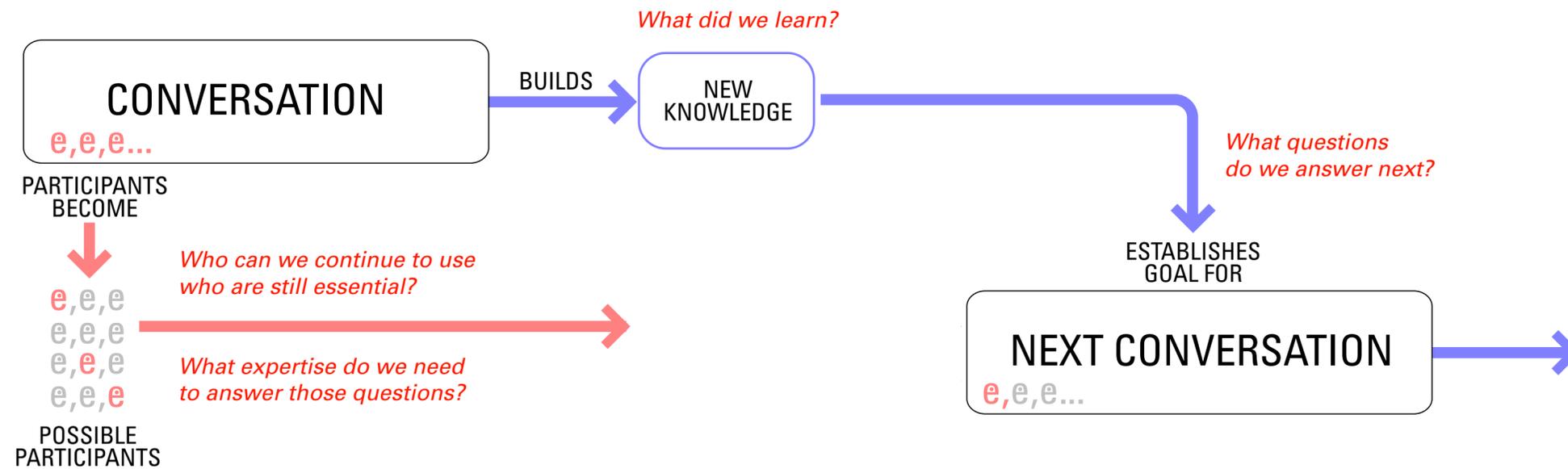
Each conversation should build new knowledge.



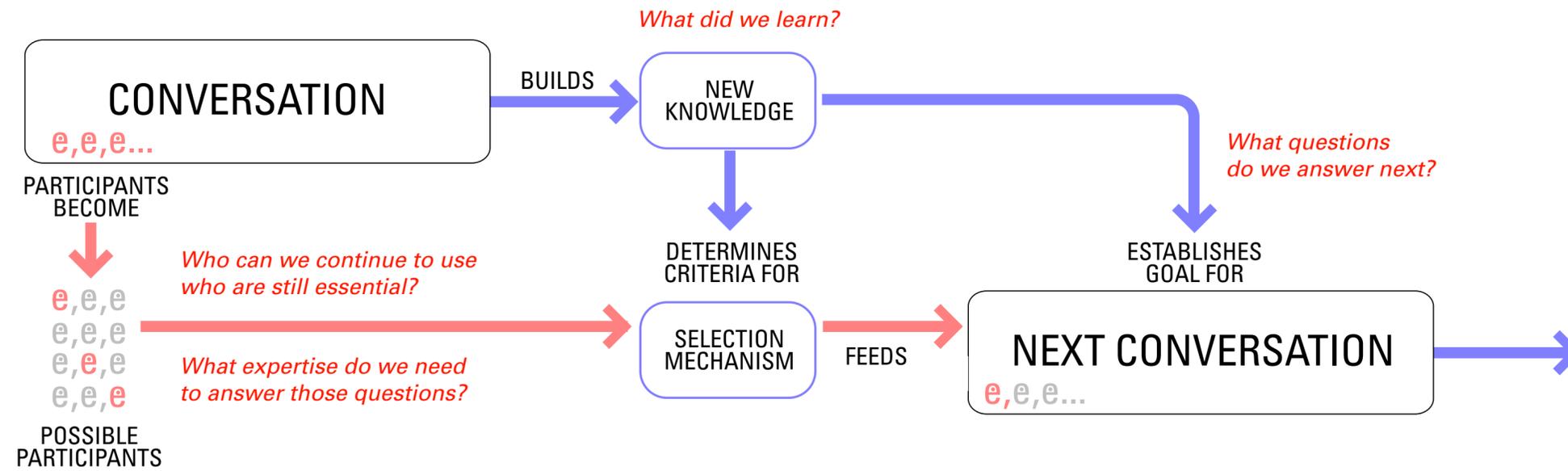
Each conversation establishes a goal for the next conversation, which includes the same participants by default – but are those participants the right ones?



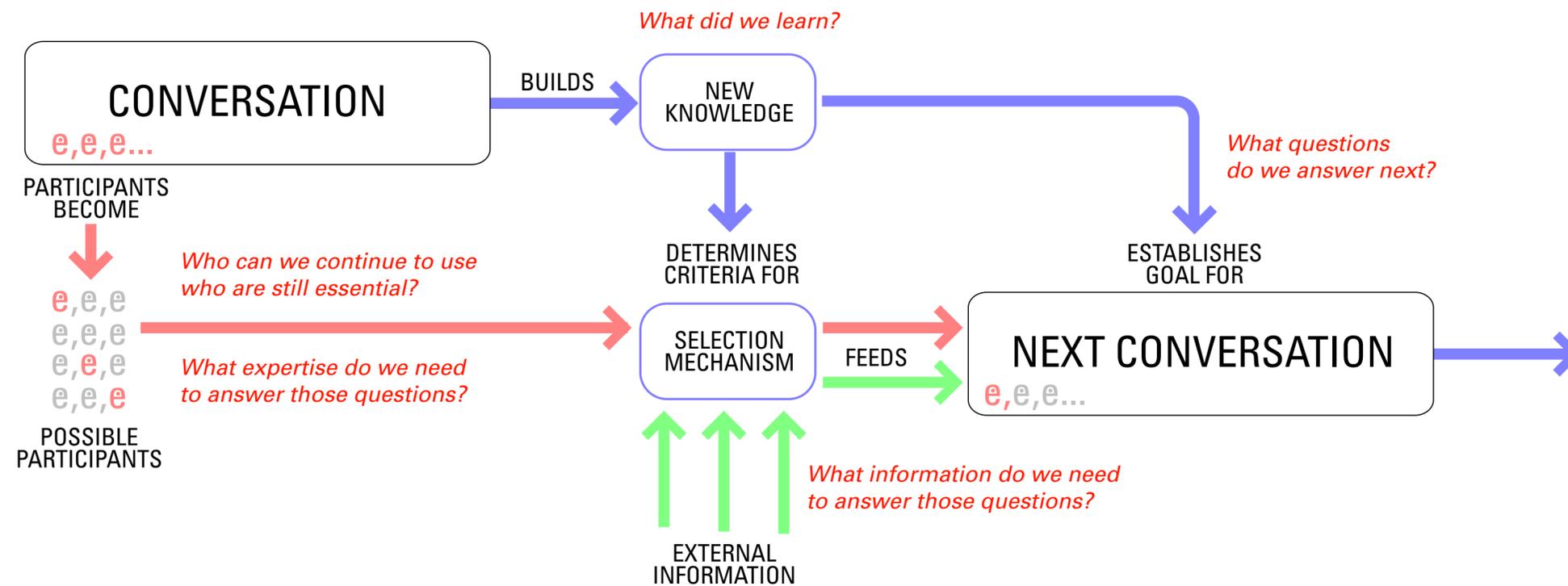
Why don't we design the next conversation *explicitly*?



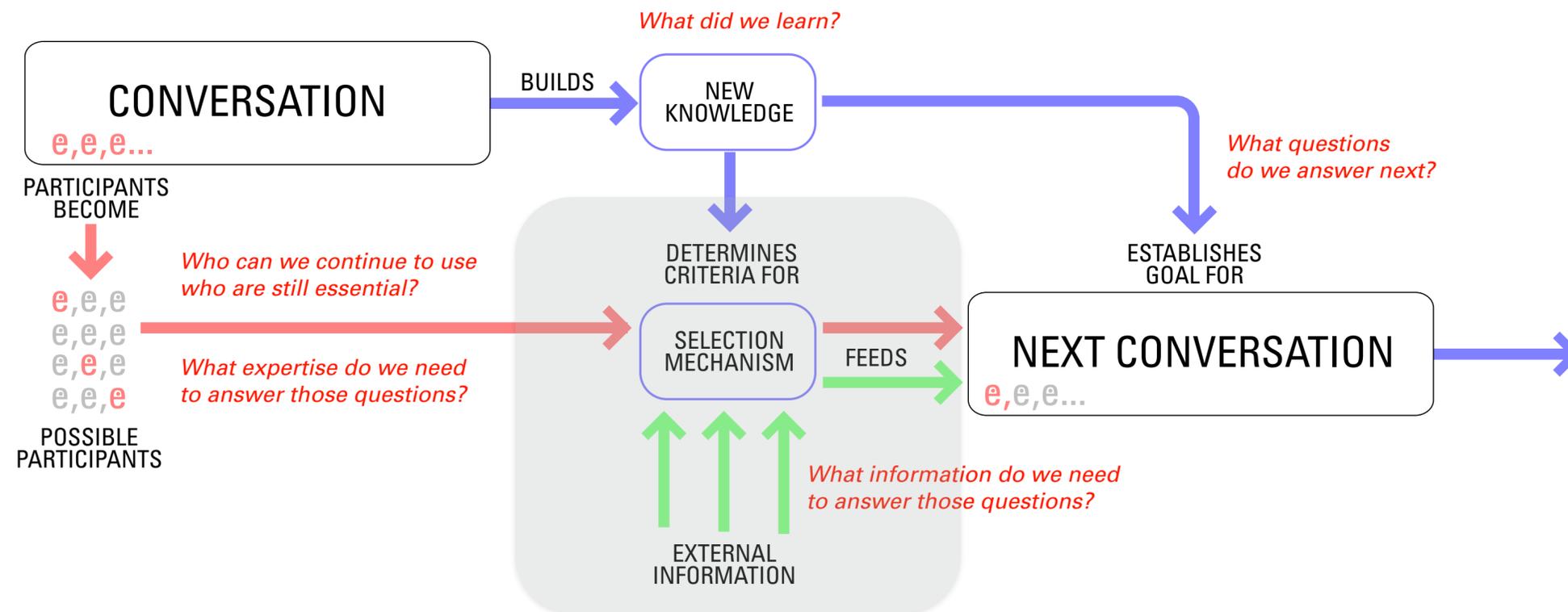
Based on goals for the next conversation, what if we ask, who is still needed and what new expertise is missing?



What we learned from the prior conversation—our new knowledge—determines the criteria for selecting new participants.

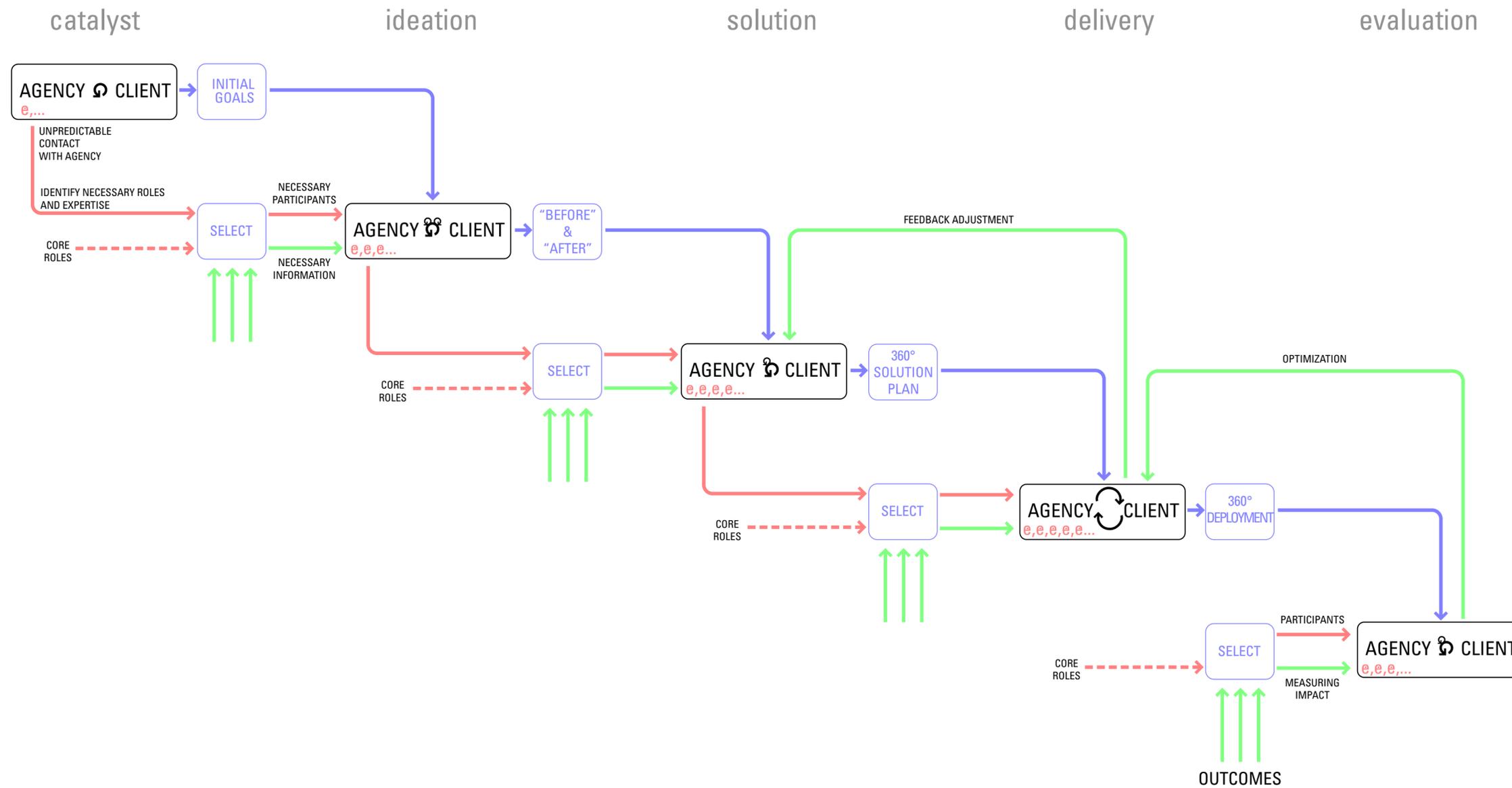


We will likely require new information in the next conversation in order to fulfill our goal... also framed by our new knowledge.



By focusing on the cadence of conversations, each conversation is more efficient and effective.

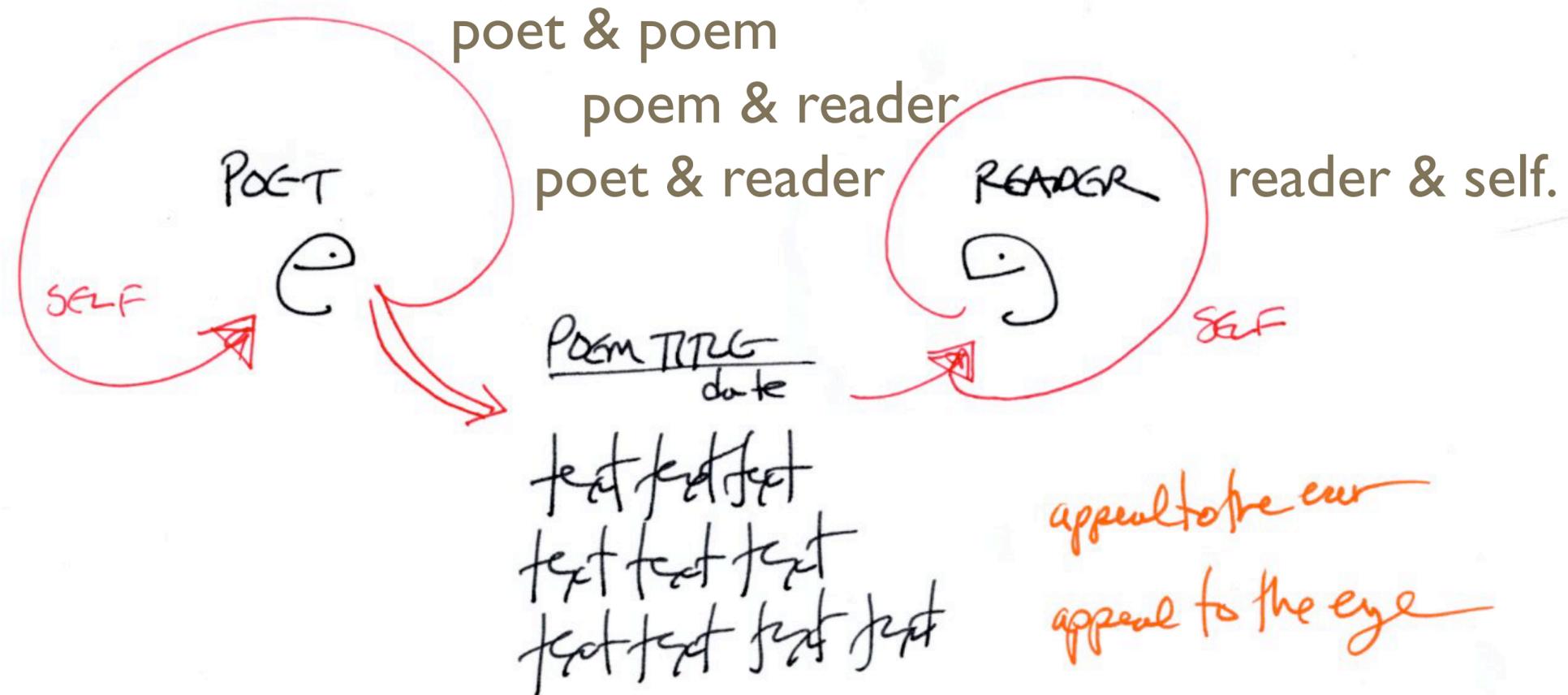
Don't design the team. Design the conversations.



The cadence applies to every phase of the engagement, resulting in better outcomes at lower cost.

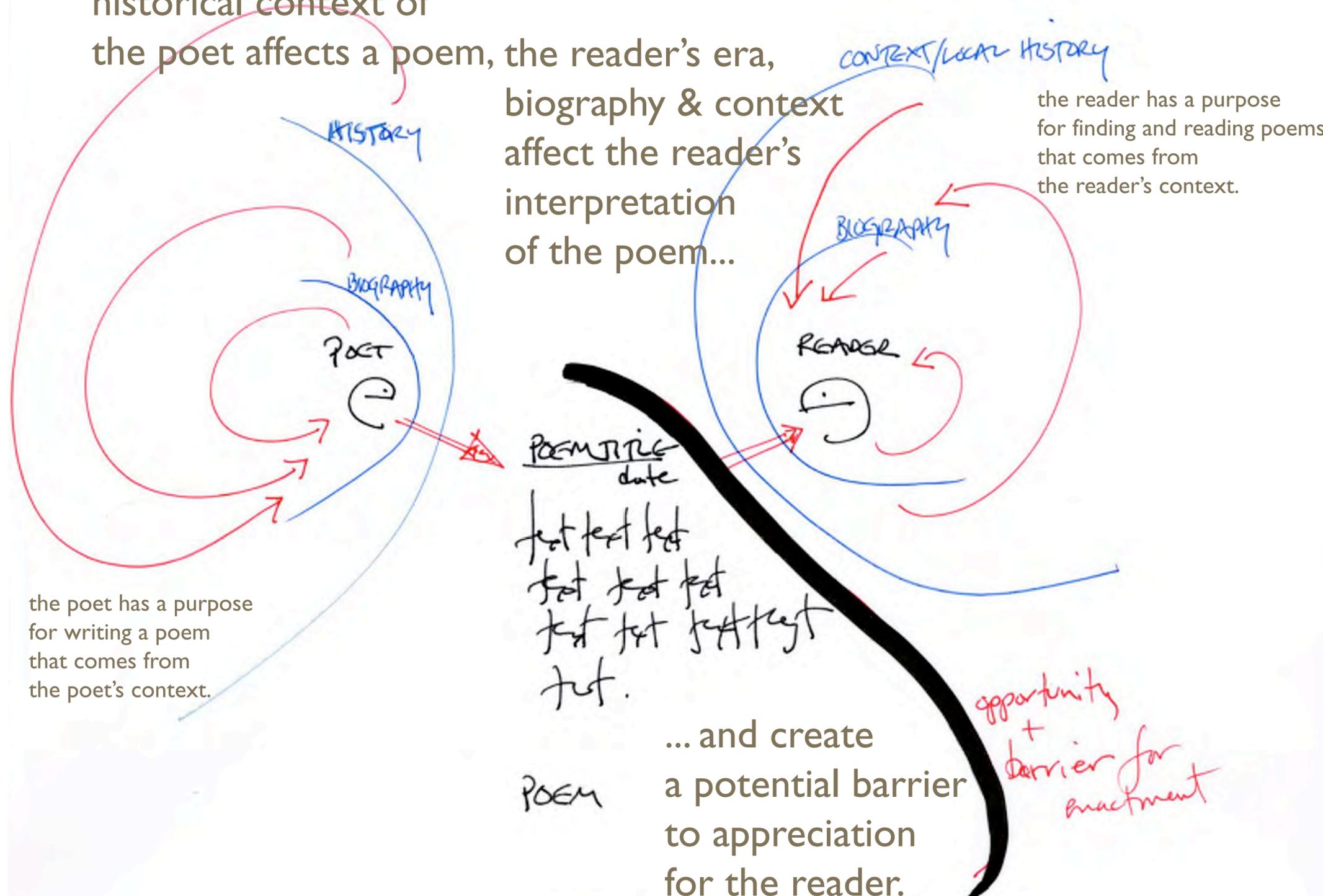
Don't design the team. Design the conversations.

poetry is essentially dialog. dialog is a dynamic relationship.
poetrymachine's purpose is to enact dialog between
poet & self



Design for a Poetry Machine 2007
PoetryFoundation.org

just as the biography & historical context of the poet affects a poem, the reader's era, biography & context affect the reader's interpretation of the poem...



the poet has a purpose for writing a poem that comes from the poet's context.

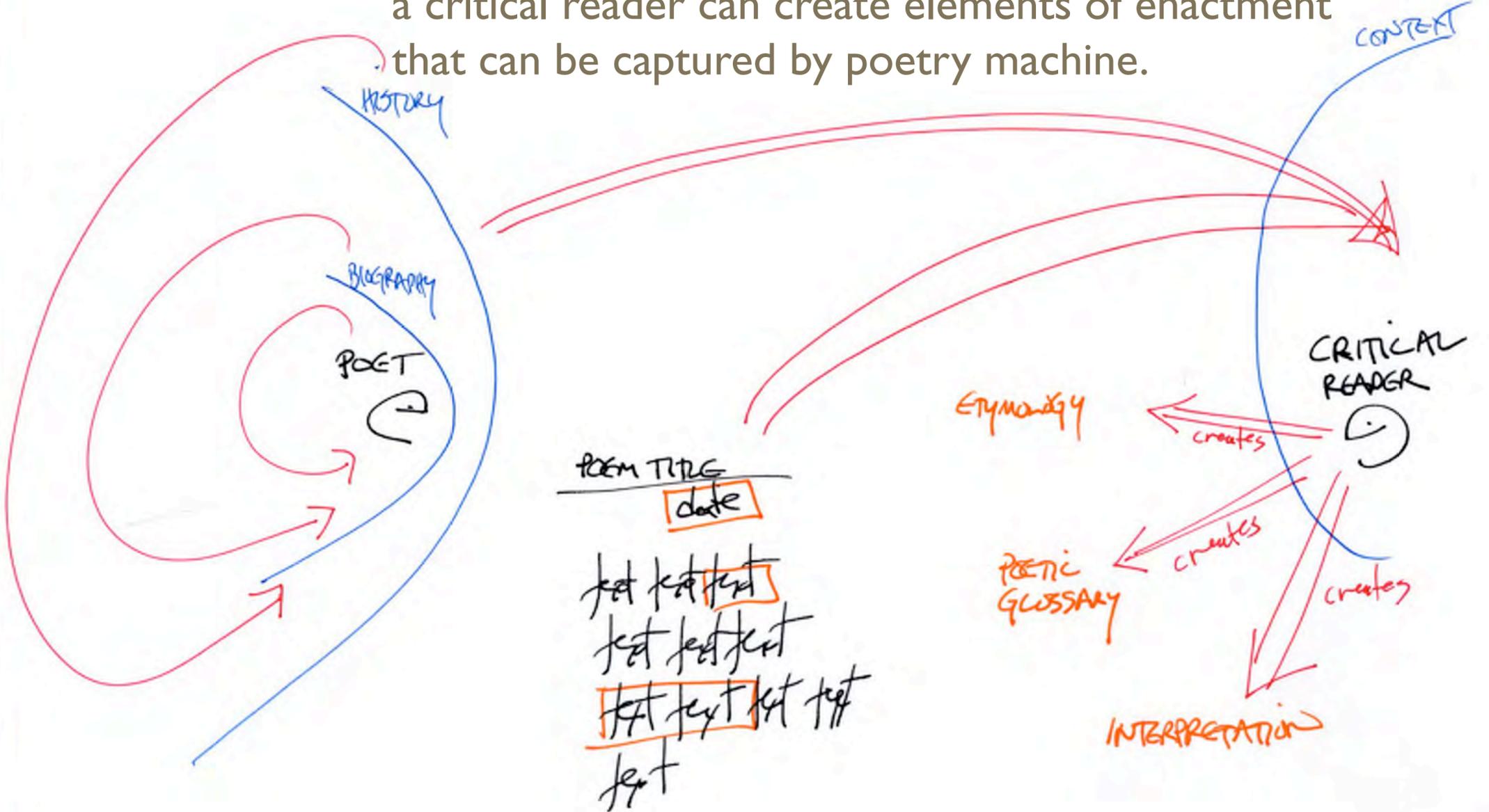
the reader has a purpose for finding and reading poems that comes from the reader's context.

POEM TITLE
date
 test test test
 test test test
 test test test test
 test.

POEM ... and create a potential barrier to appreciation for the reader.

opportunity + barrier for enactment

from an understanding of the poet's biography, historical context, and the poem itself, a critical reader can create elements of enactment that can be captured by poetry machine.



many readers could provide these perspectives, giving poetry machine a rich storehouse of enactments.

poetrymachine's storehouse of enactments creates a dynamic software interface.

if poetrymachine knows a little about a reader's context and biography—level of experience with poetry, purpose in seeking poetry, or prior poems read, for example—it can create a personalized enactment layer by choosing specific elements of enactment to present to that specific reader.

the enactment layer enables a dialog that connects poem & reader, poet & reader, reader & self.

