

# “It Depends On Whom I’m With”

EXPOSED Lecture Series—Sponsored by UArts & AIGA  
University of the Arts  
March 2017

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**What is interaction?**

**What is interaction design?**

**... “It Depends On Whom I’m With”**

MFA Interaction Design Program



**What is interaction?**

**What is interaction design?**

**What is interaction vs. conversation?**

MFA Interaction Design Program



# Alexa, Google, Siri, Cortana: 24.5M Voice-first Devices Will Ship This Year



**John Koetsier**, CONTRIBUTOR

Journalist. Analyst. Futurist. Dreamer. [FULL BIO](#) ✓

Opinions expressed by Forbes Contributors are their own.



Amazon Echo. (Credit: AP Photo/Mark Lennihan)

We are entering the age of the CUI, the conversational user interface. Already, there are 8.2 million voice-first devices in homes, mostly Amazon Echos.



*Amazon Echo. (Credit: AP Photo/Mark Lennihan)*

**We are entering the age of the CUI, the conversational user interface. Already, there are 8.2 million voice-first devices in homes, mostly Amazon Echos.**

Register free for 3 free articles per month, commenting privileges and free updates.

# Why the Human Voice Is the Year's Most Important Technology

Frontiers • Blog • January 20, 2017 • Reading Time: 2 min  
Paul Michelman

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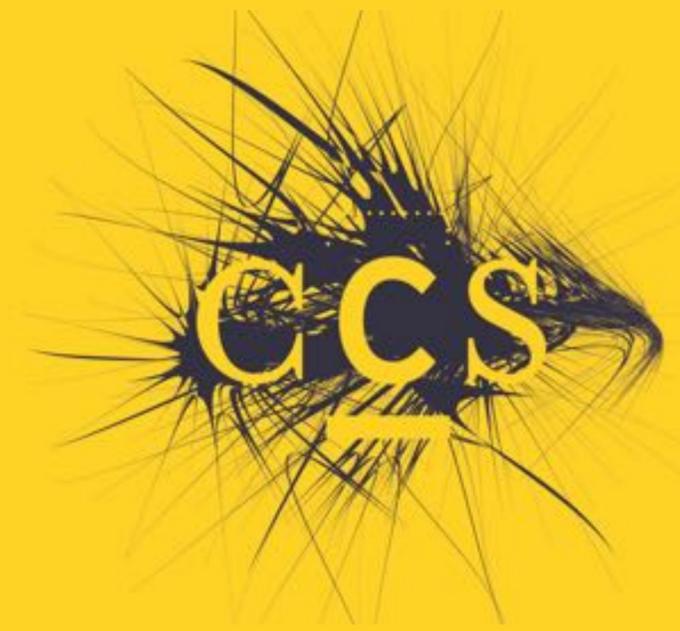
The shrinking role of big screens heralds a change in how we communicate with our devices and each other.

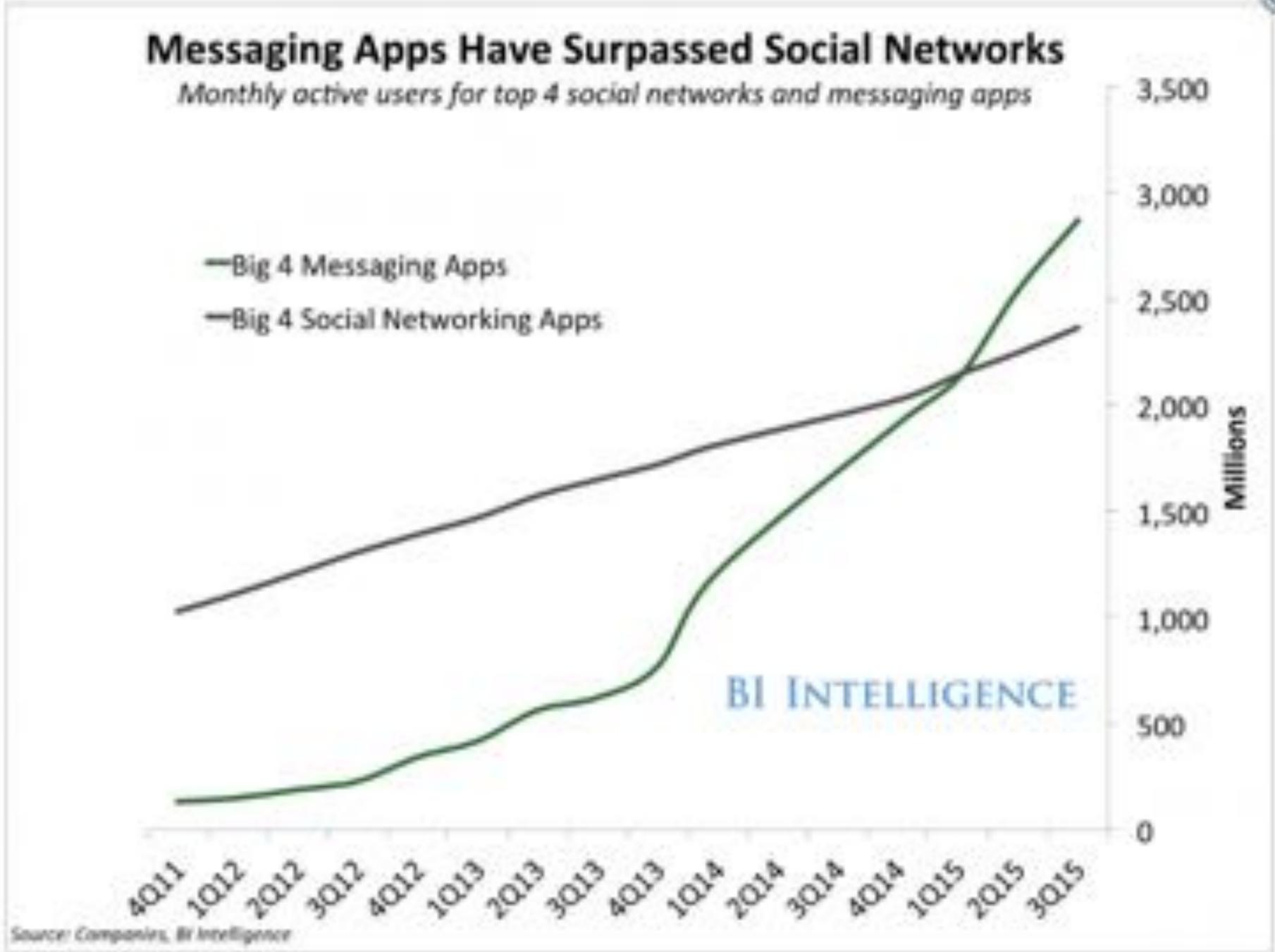


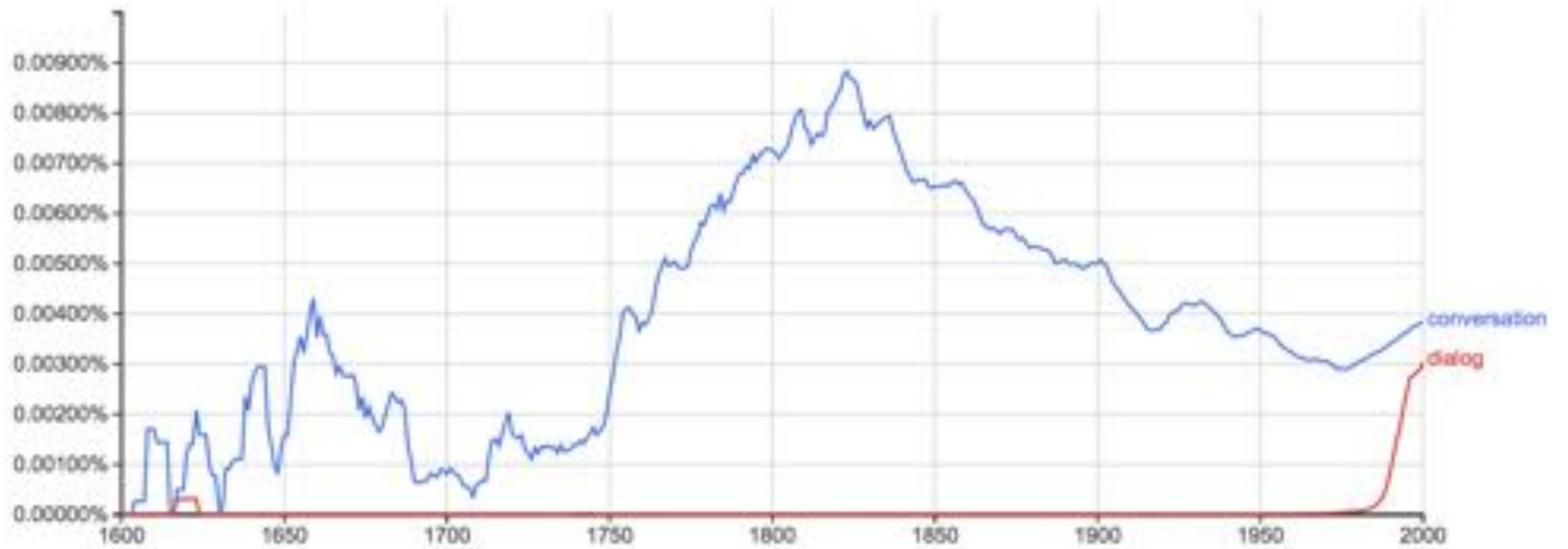
# Conversation is more than Interface

**Conversation is more than Interface...isn't it?**

# Is conversation important? When? Why?







# Why does conversation matter?

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

**Cooperation and Collaboration require Conversation**

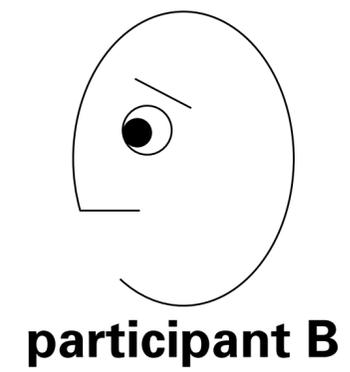
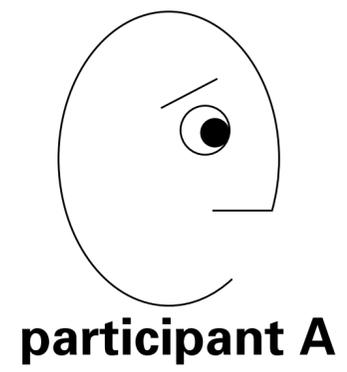
# What may follow from conversation?

- shared history
- relationship
- trust
- unity

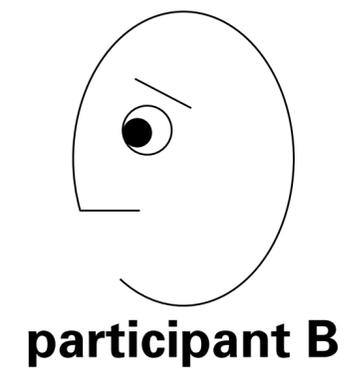
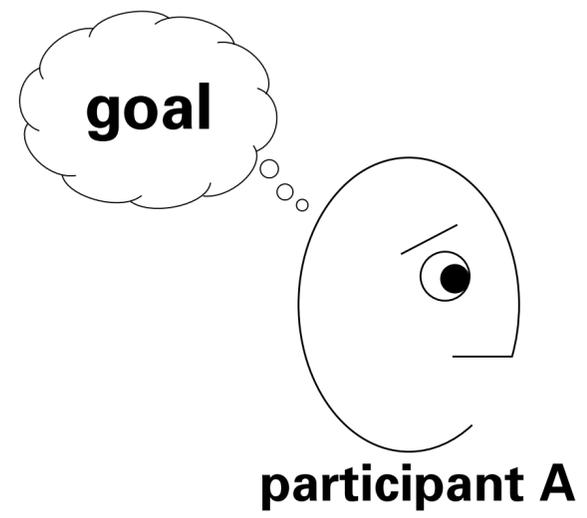
# Conversation is the foundation for:

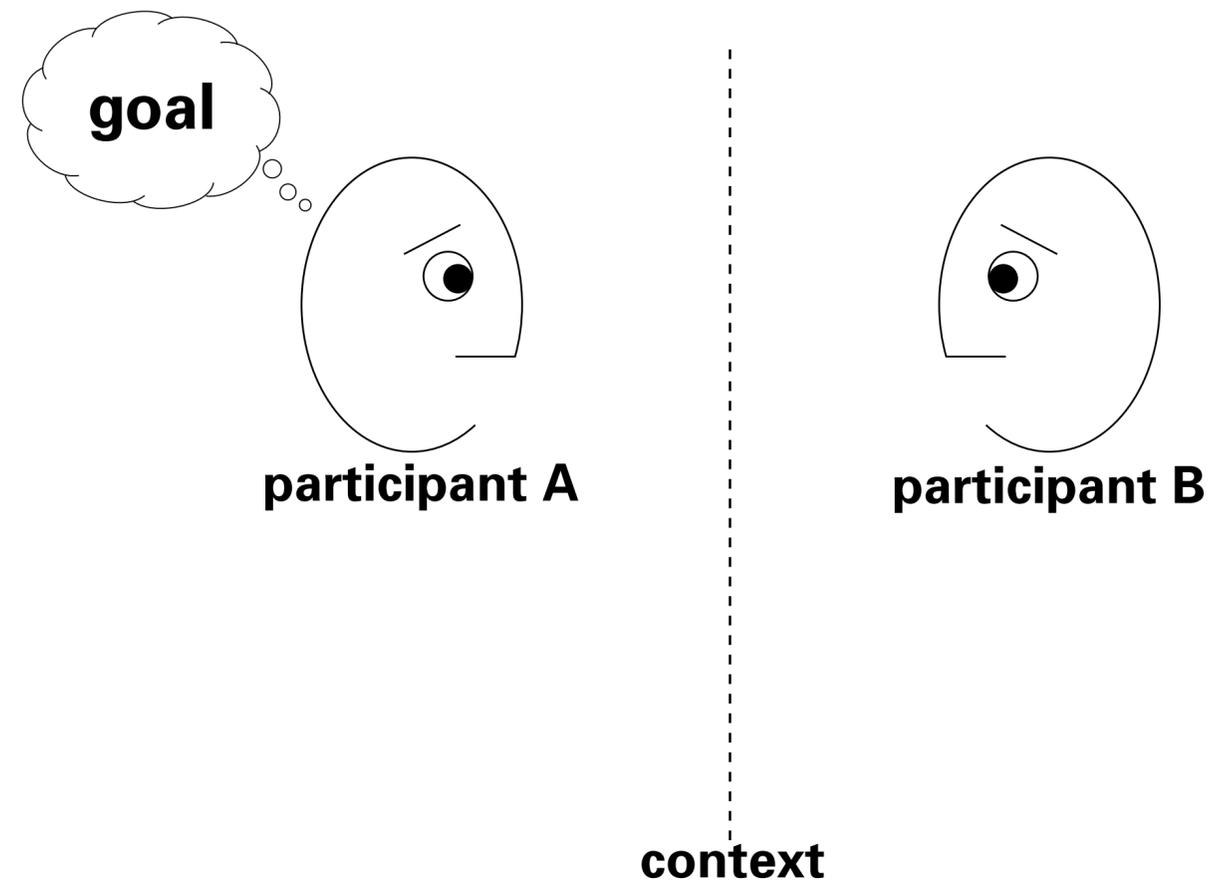
- **community**
- **commerce**
- **culture**
- **government**
- **society**

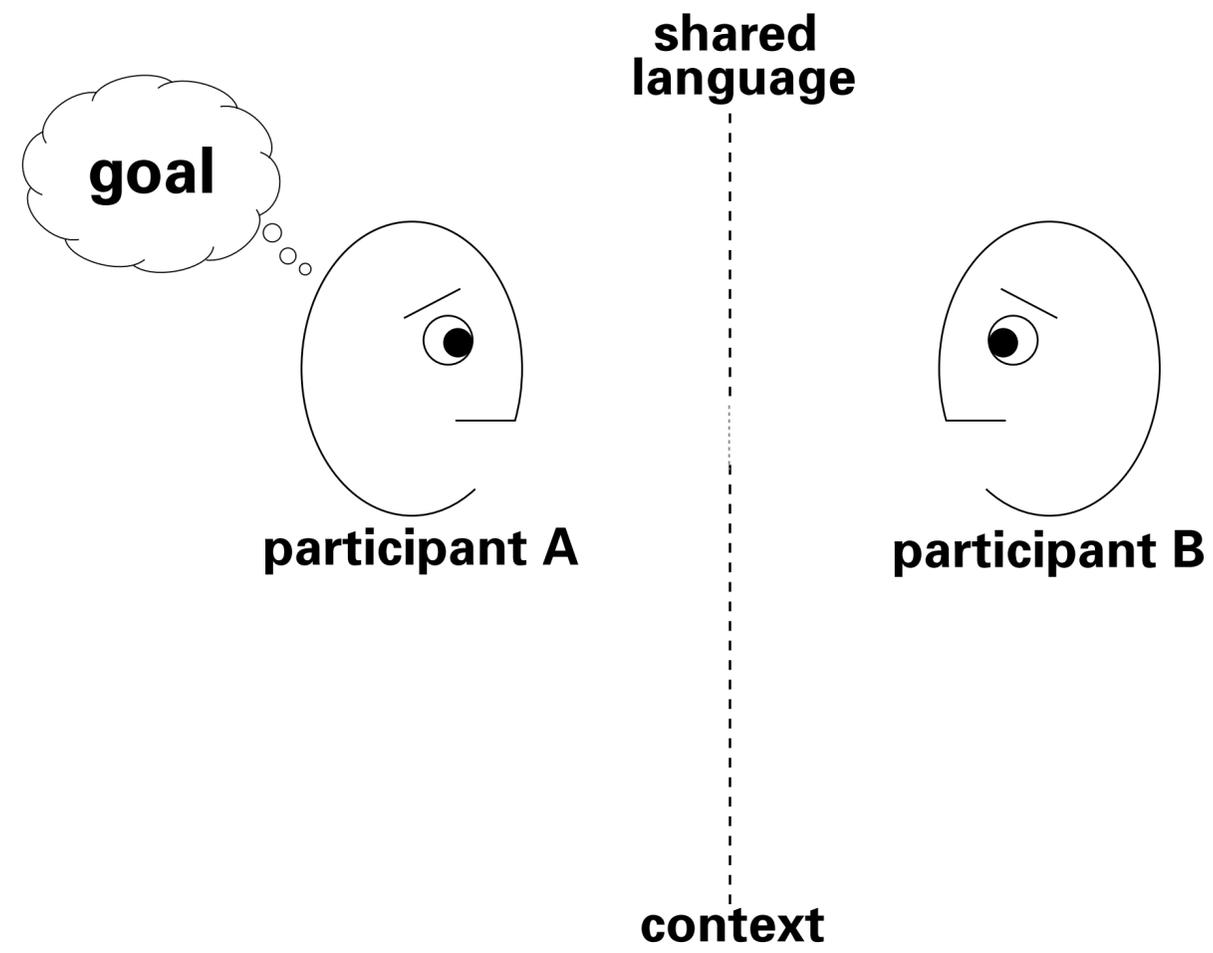
**Alexa, can you please acquire the skill of conversation?  
Alexa, what is “conversation”?**

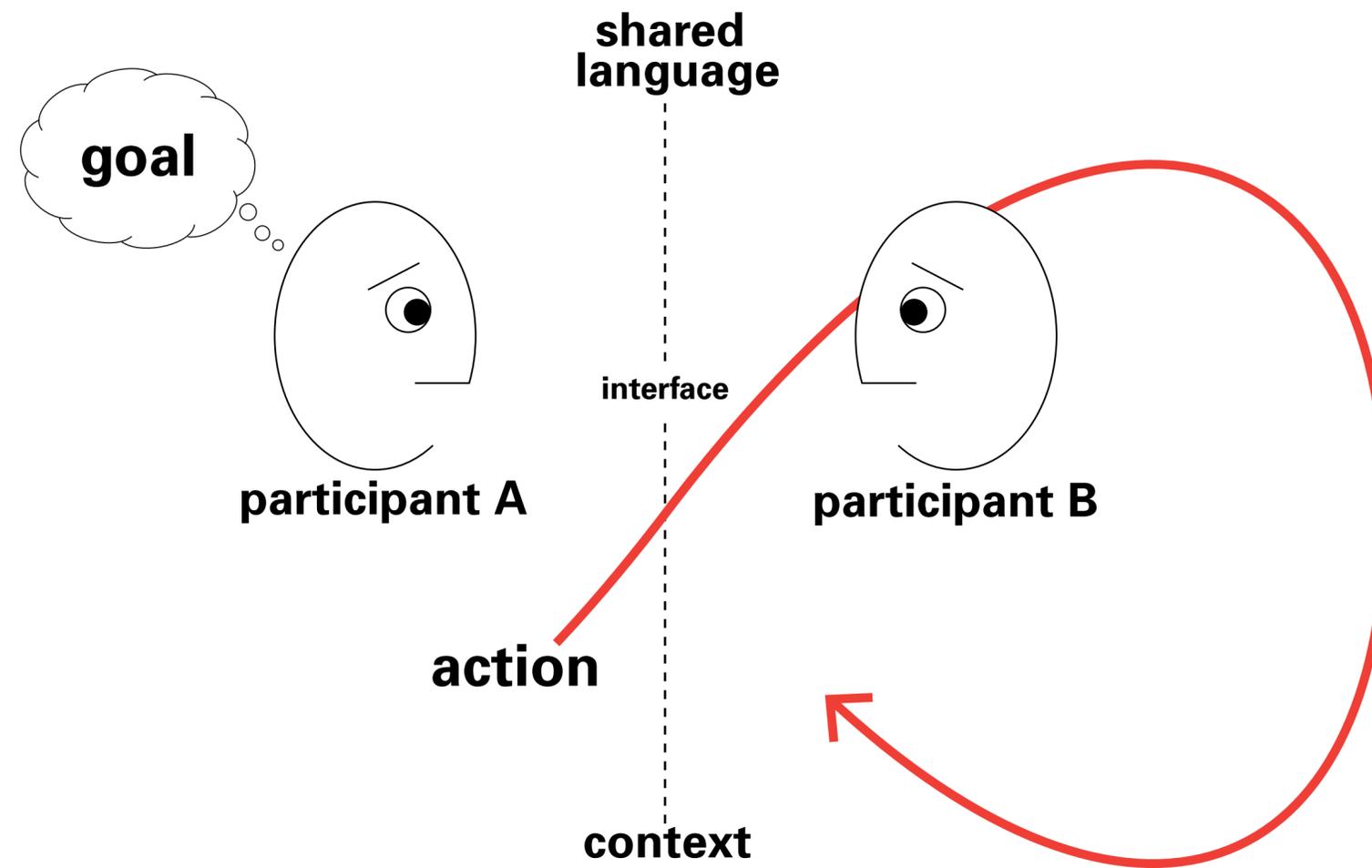


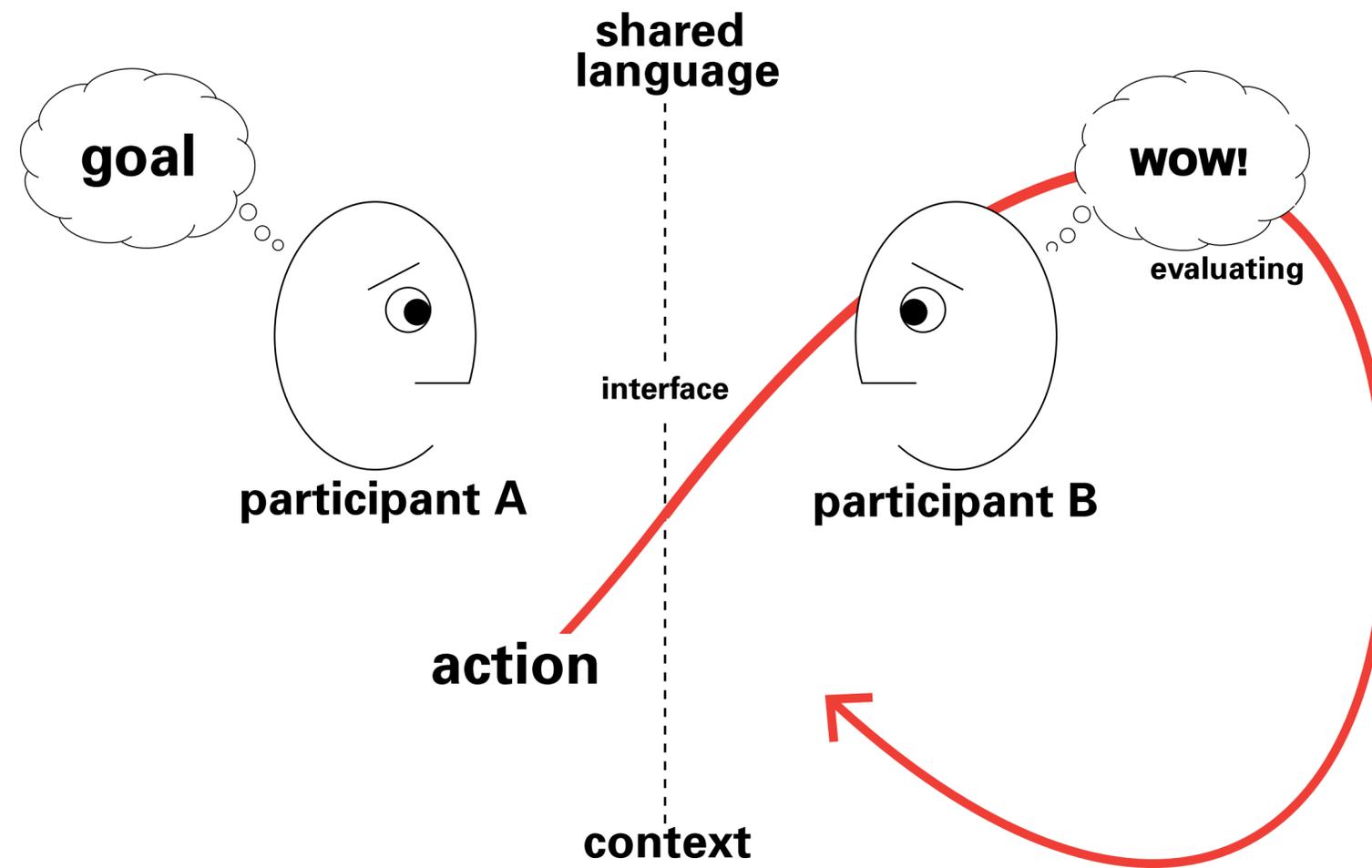
— after Dubberly Design Office 2008  
after Paul Pangaro  
after Gordon Pask

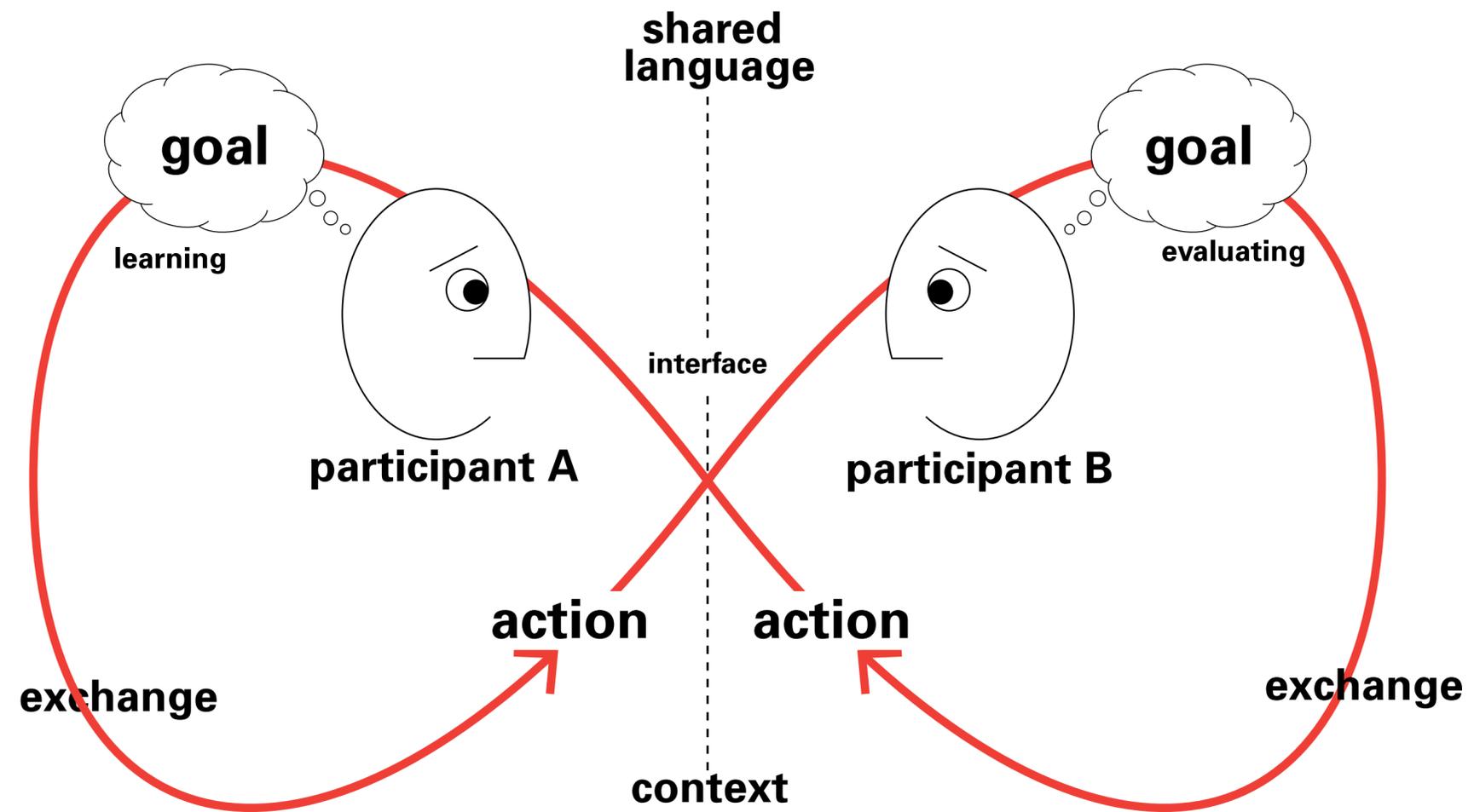


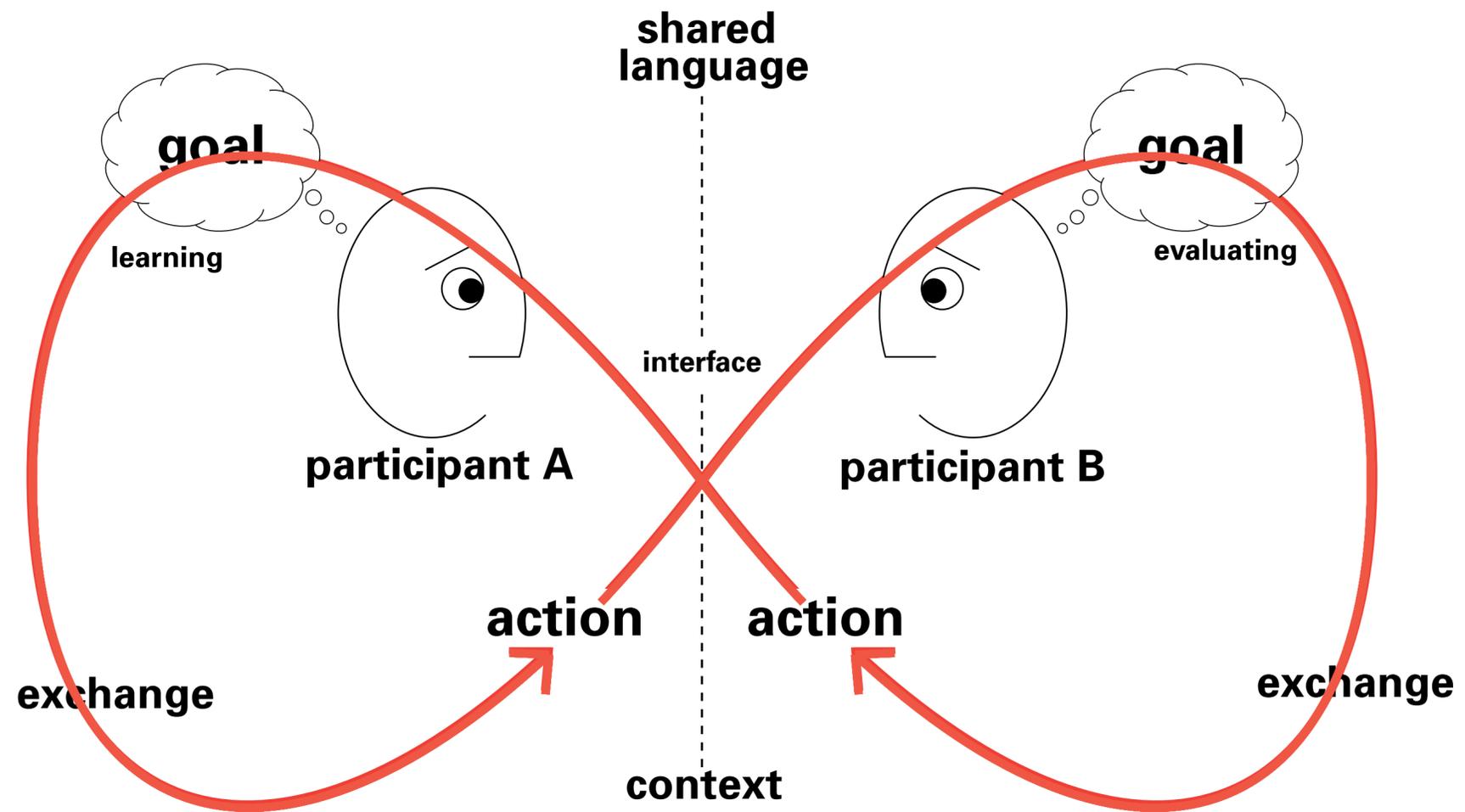


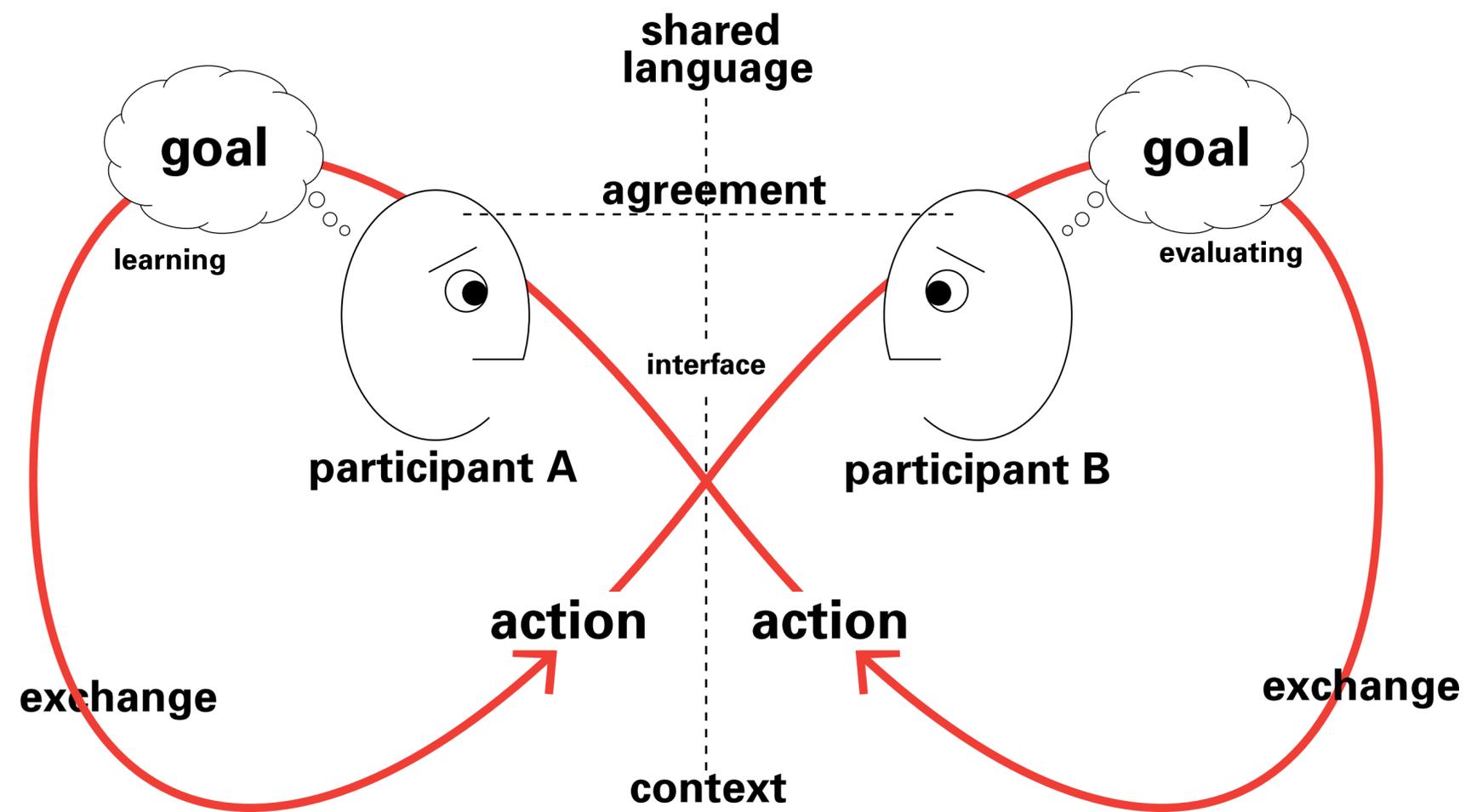


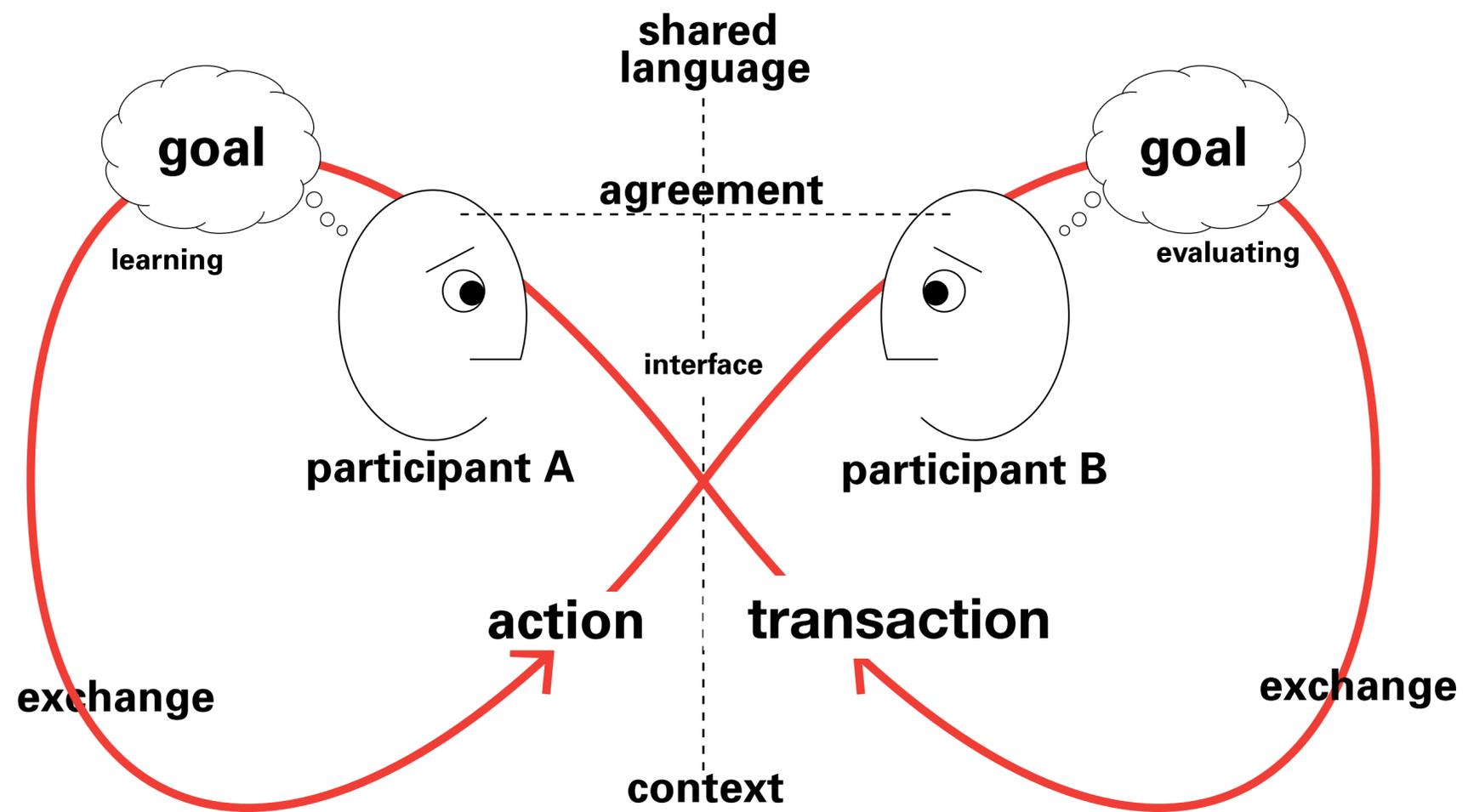




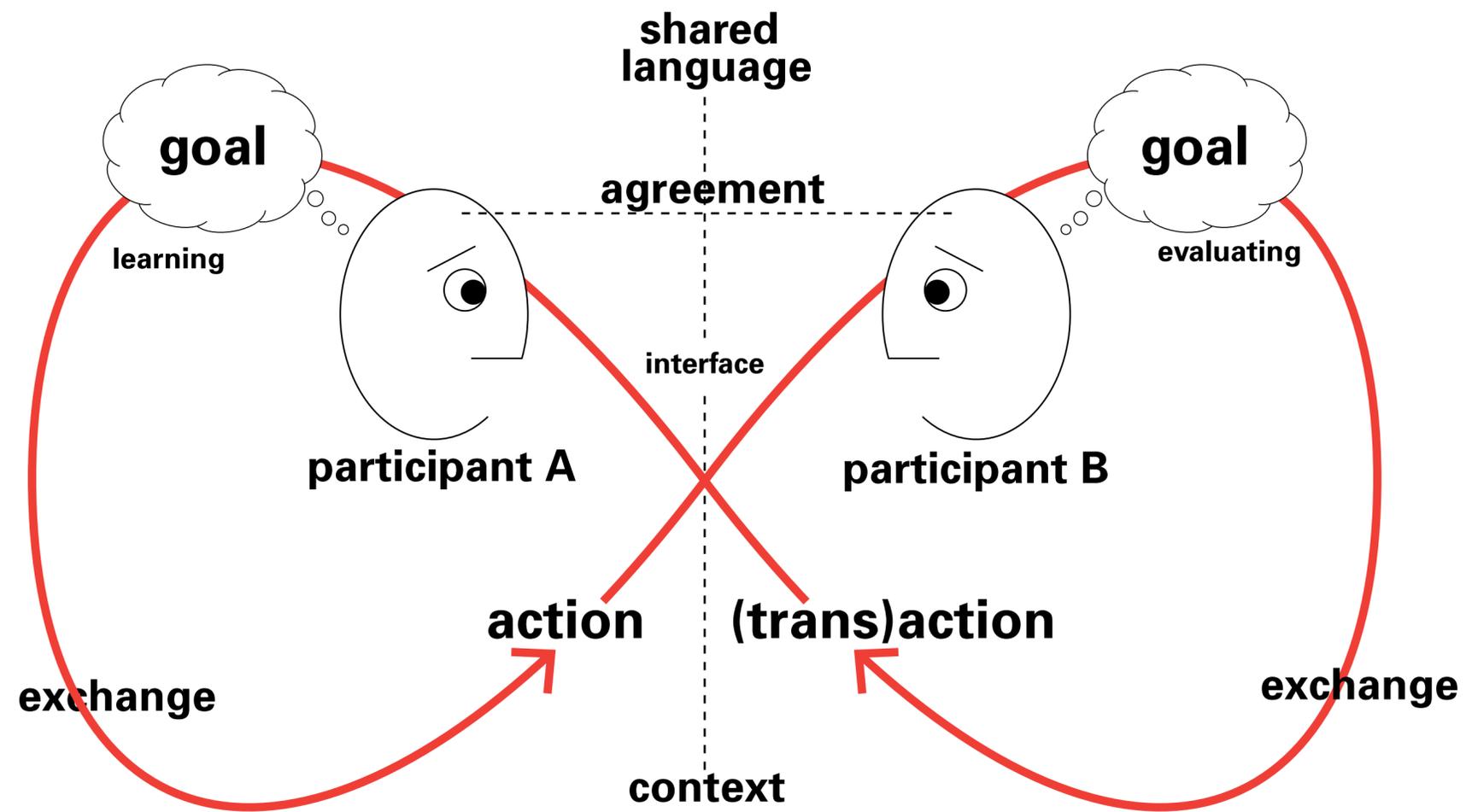








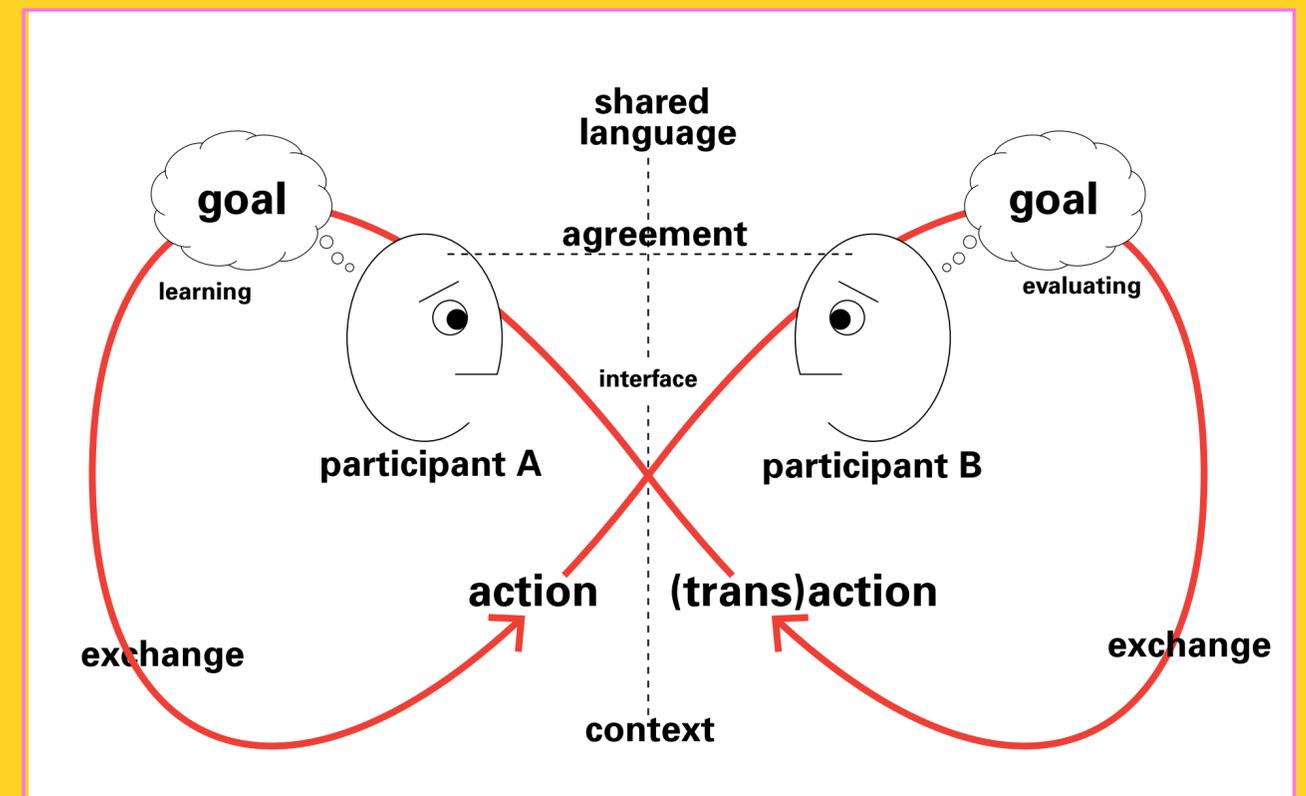
after Dubberly Design Office 2008



# Applying Conversation Theory by Gordon Pask — Part 1

## Conversation... What is it?

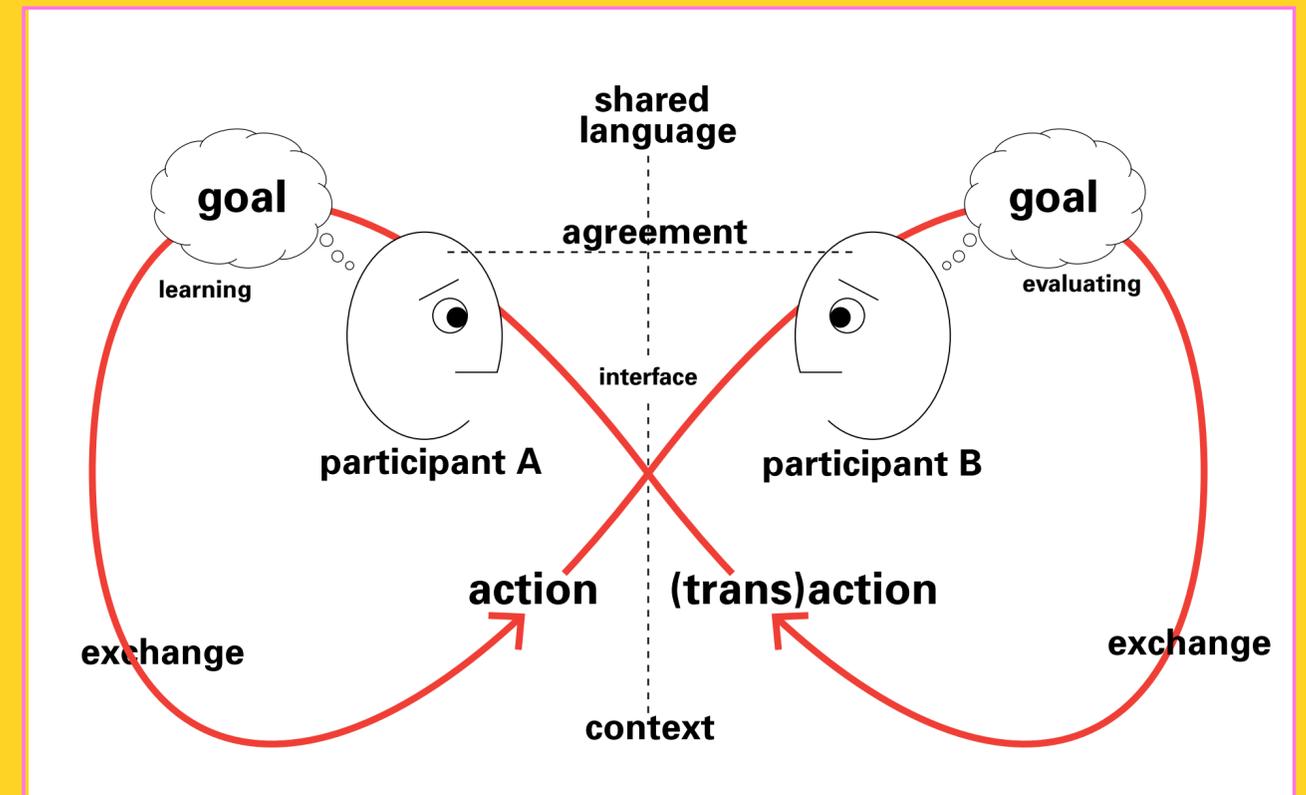
- Context
- Language (Shared)
- Engagement or Exchange
- Agreement
- Transaction or Action



# Applying Conversation Theory by Gordon Pask — Part 1

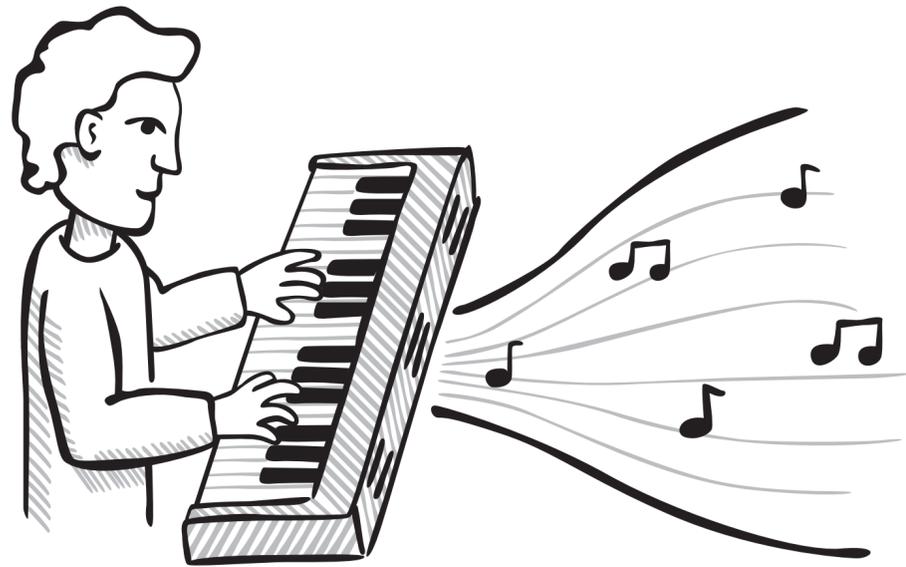
Conversation = **C-L-E-A-T**

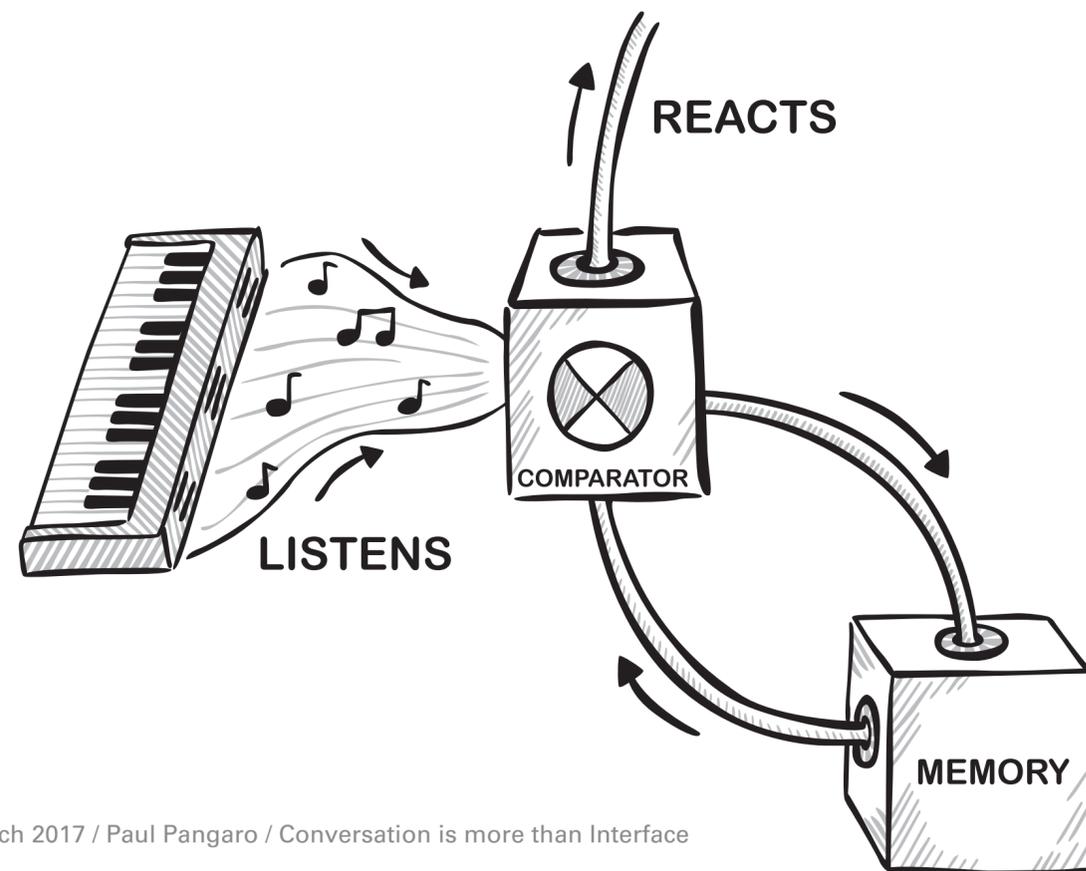
- **C**ontext
- **L**anguage (Shared)
- **E**ngagement or Exchange
- **A**greement
- **T**ransaction or Action

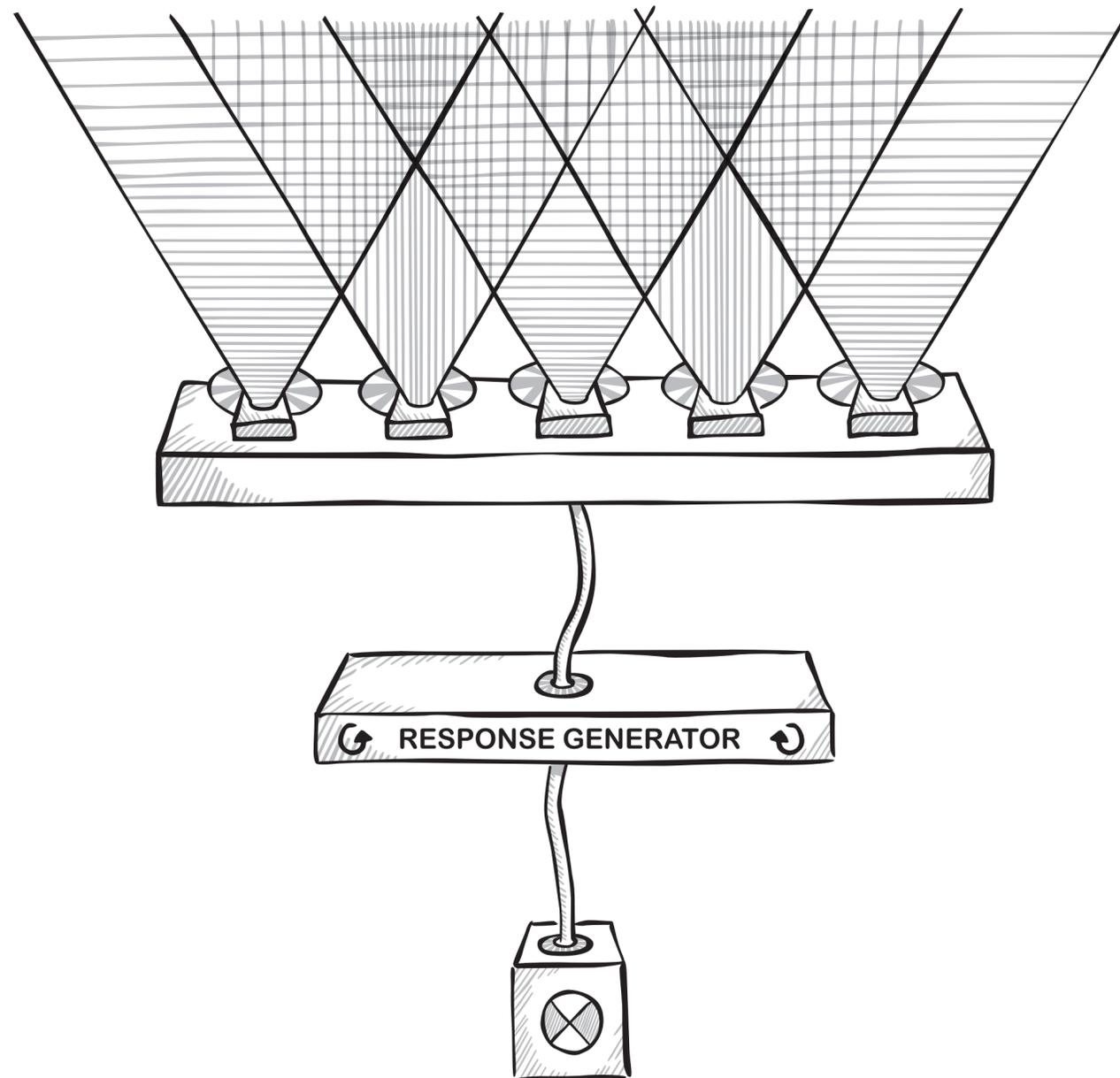


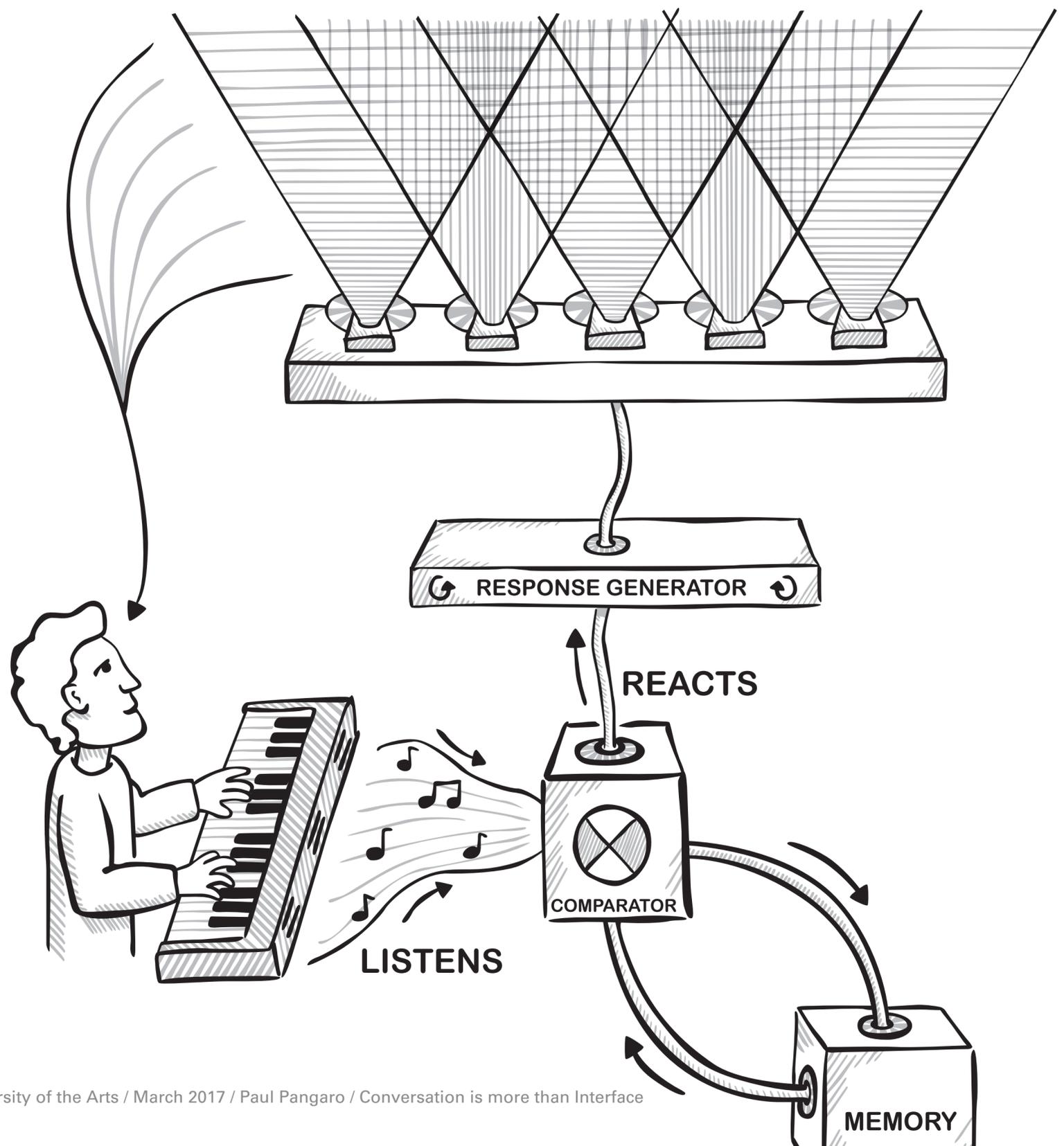
**Can humans converse with machines?  
Doesn't that require AI?**













## Gordon Pask's Musicolour From mid-1950s

Discussed in Pickering 2009

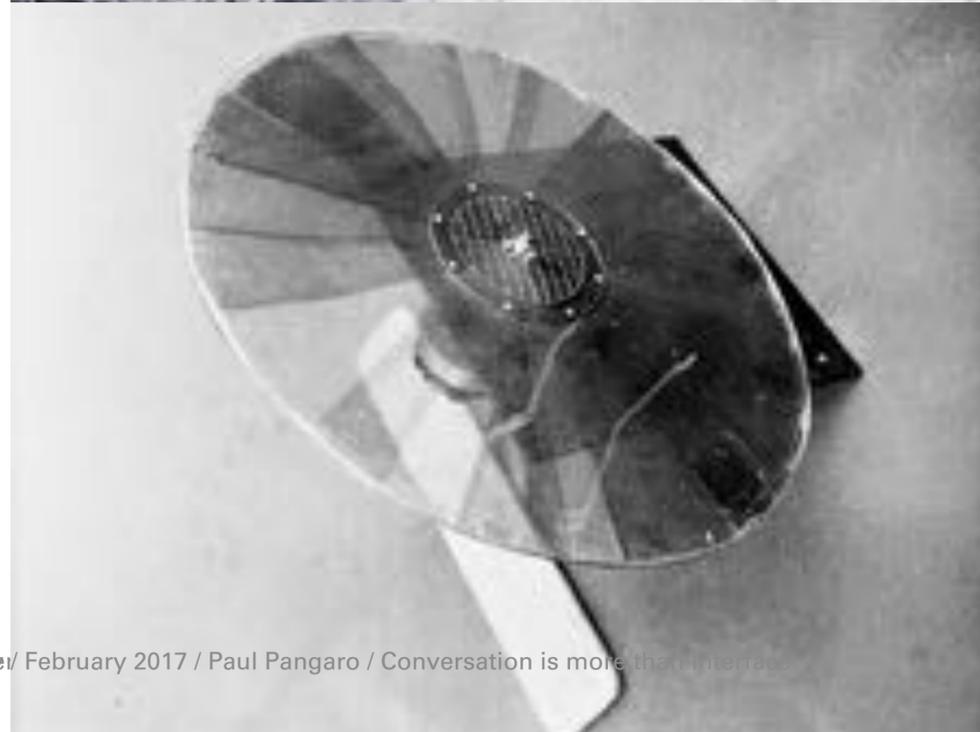
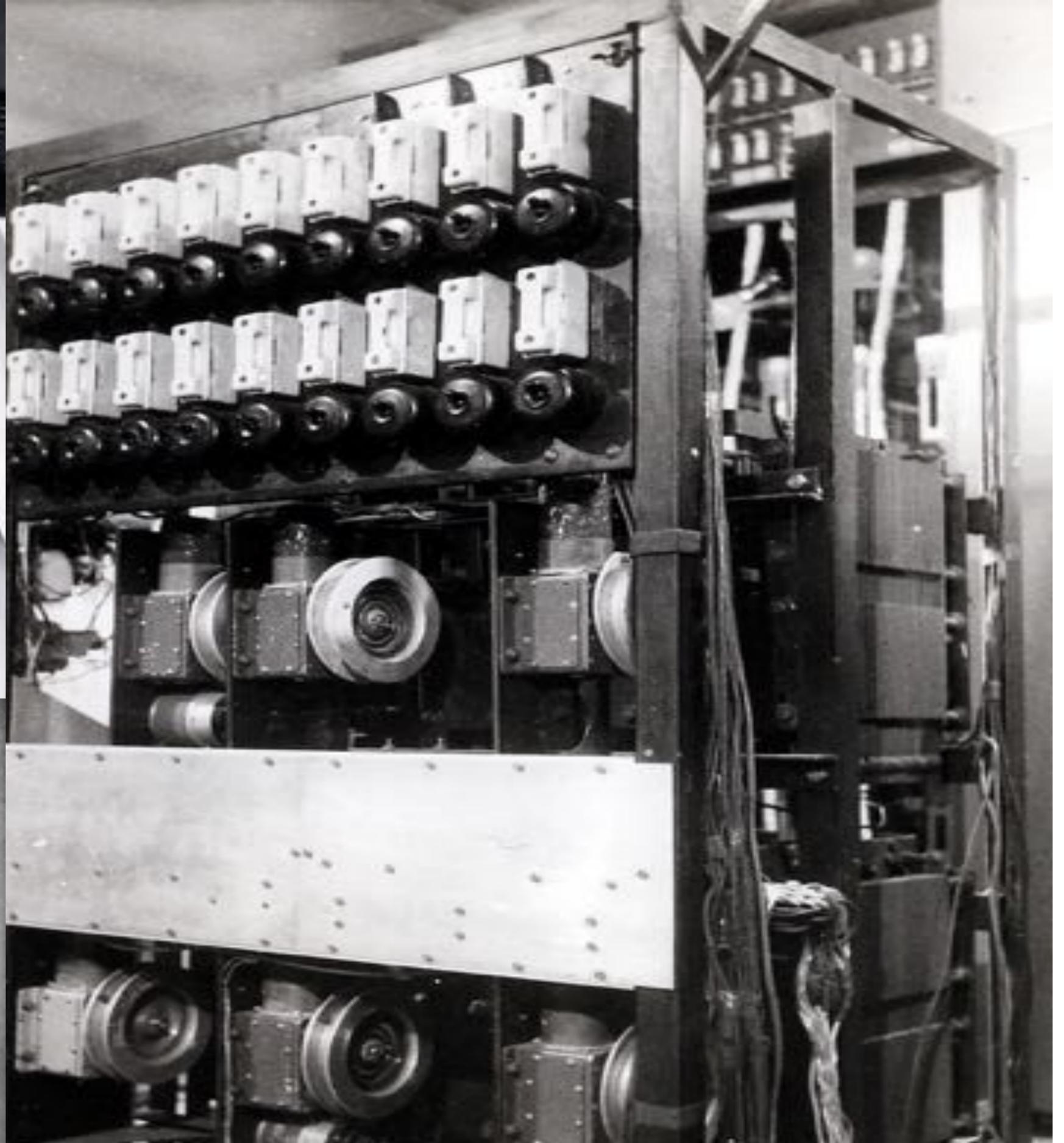
See also Pangaro 1993

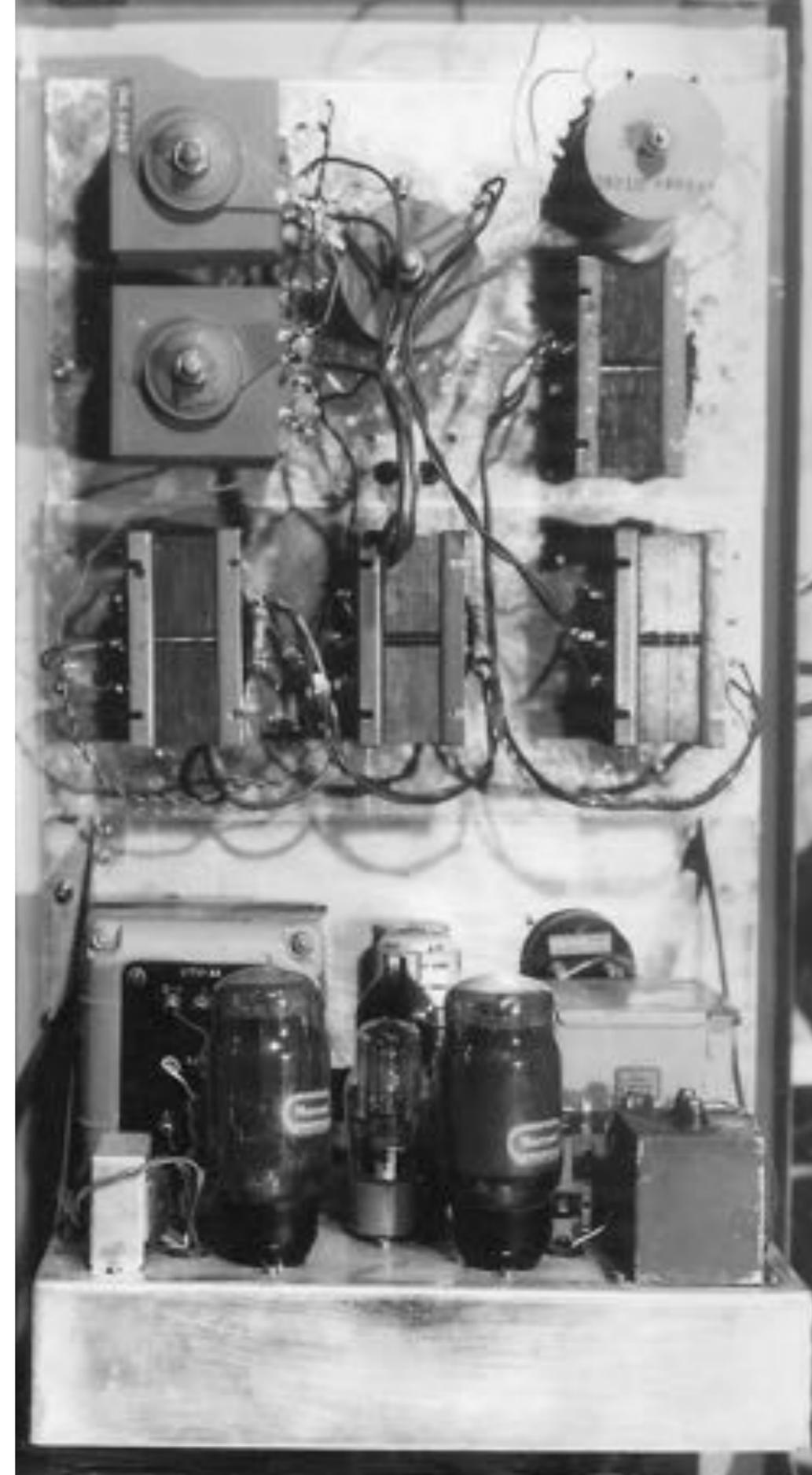
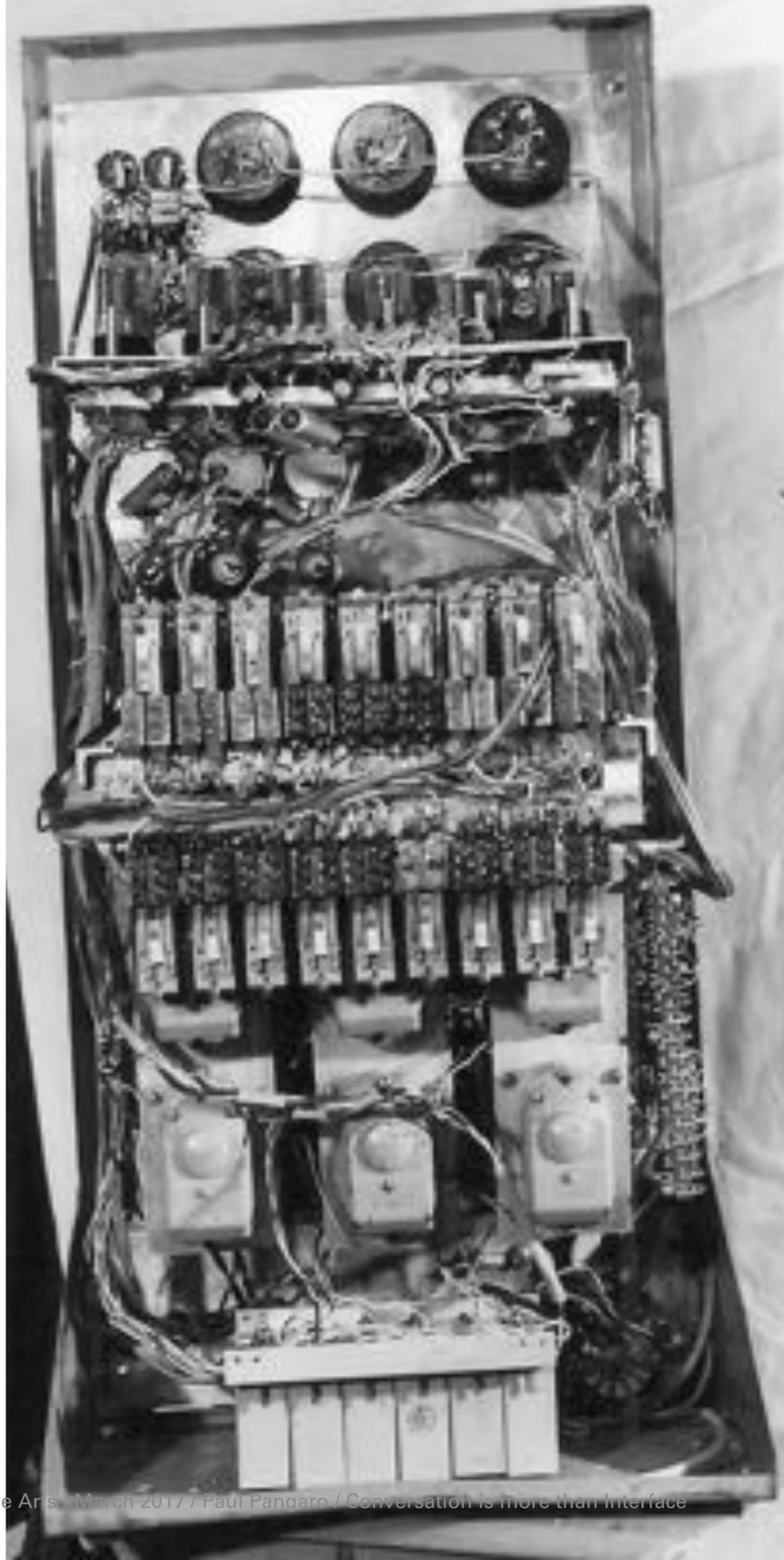


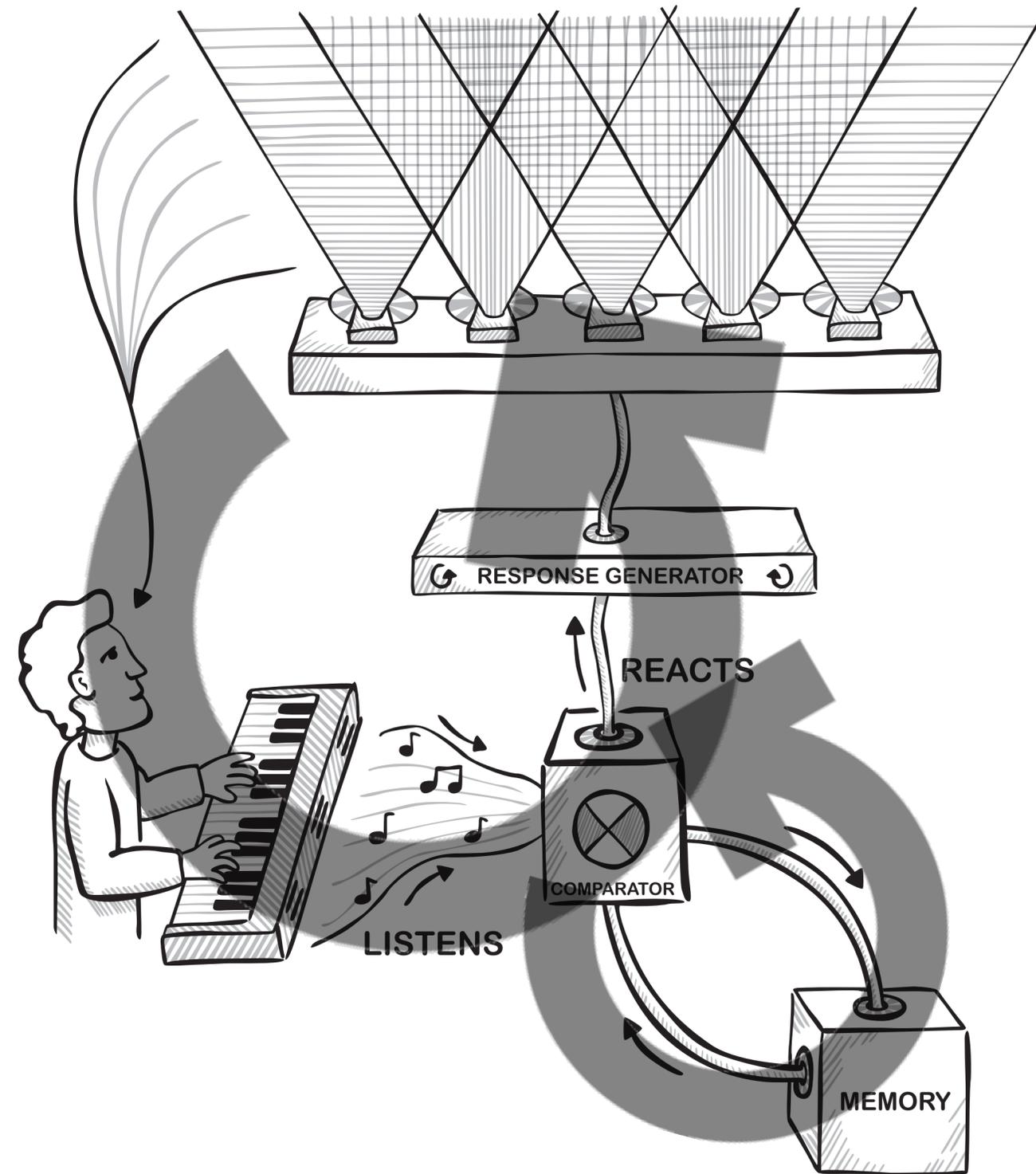
## Gordon Pask's Musicolour From mid-1950s

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See also Pangaro 1993



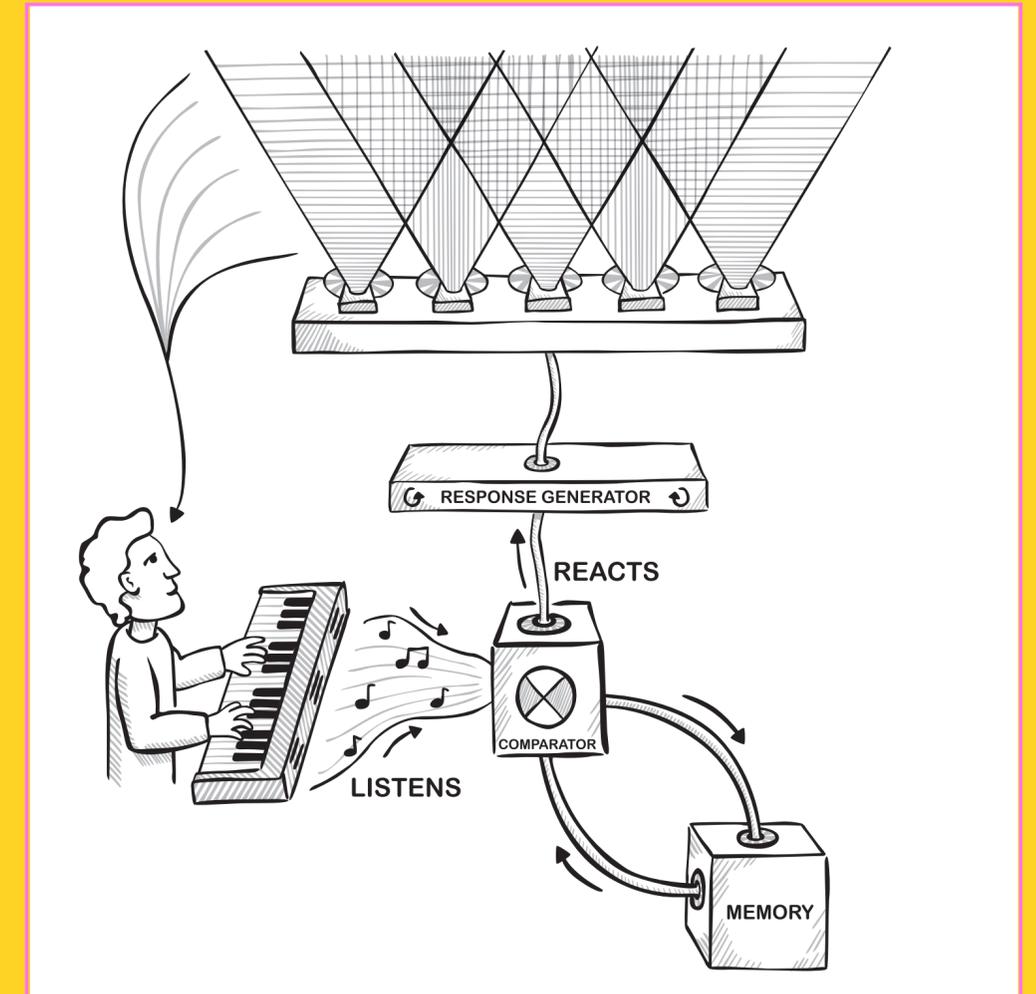


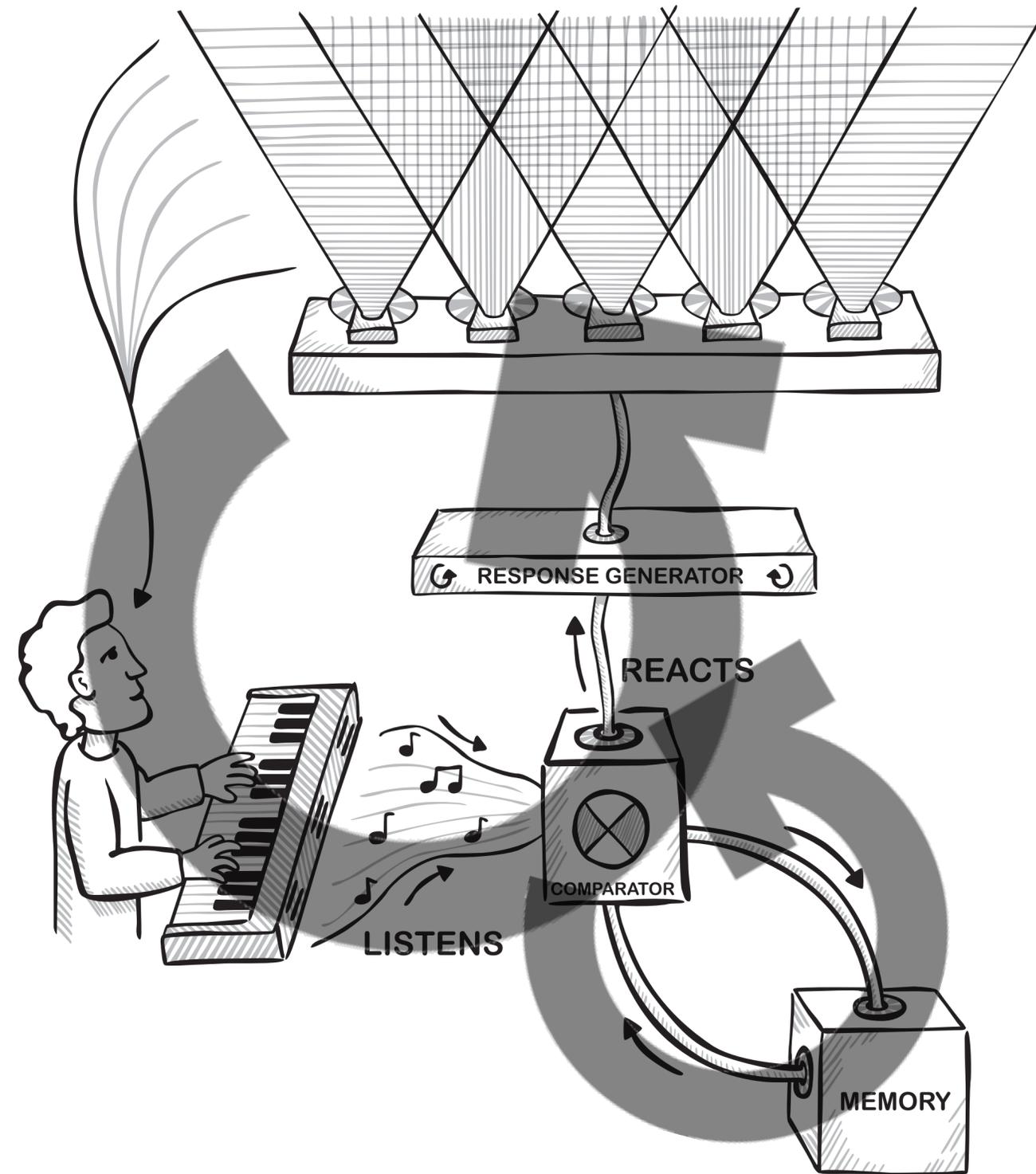


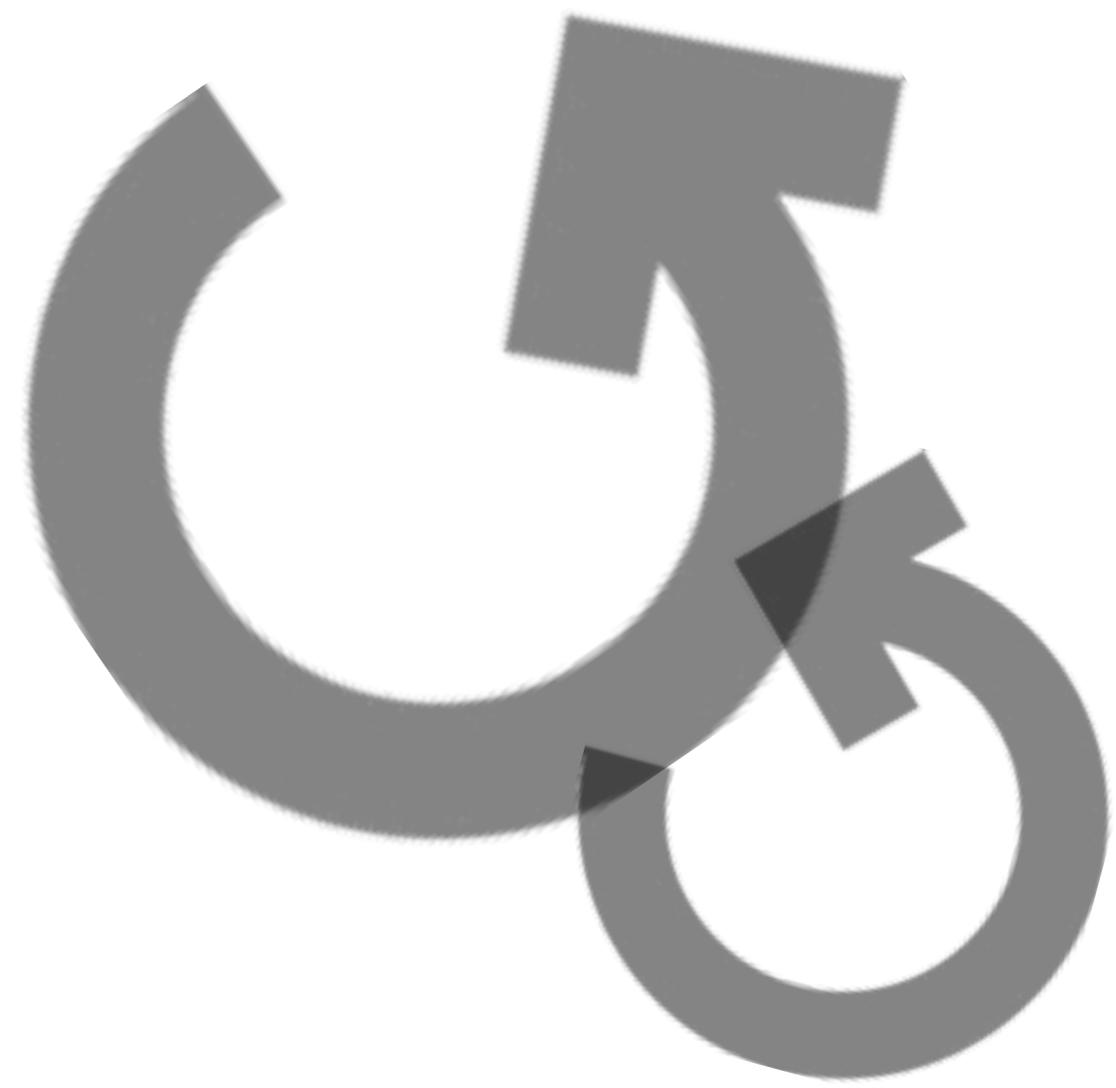
## Conversation with Musicolour

### What's a "good conversation"?

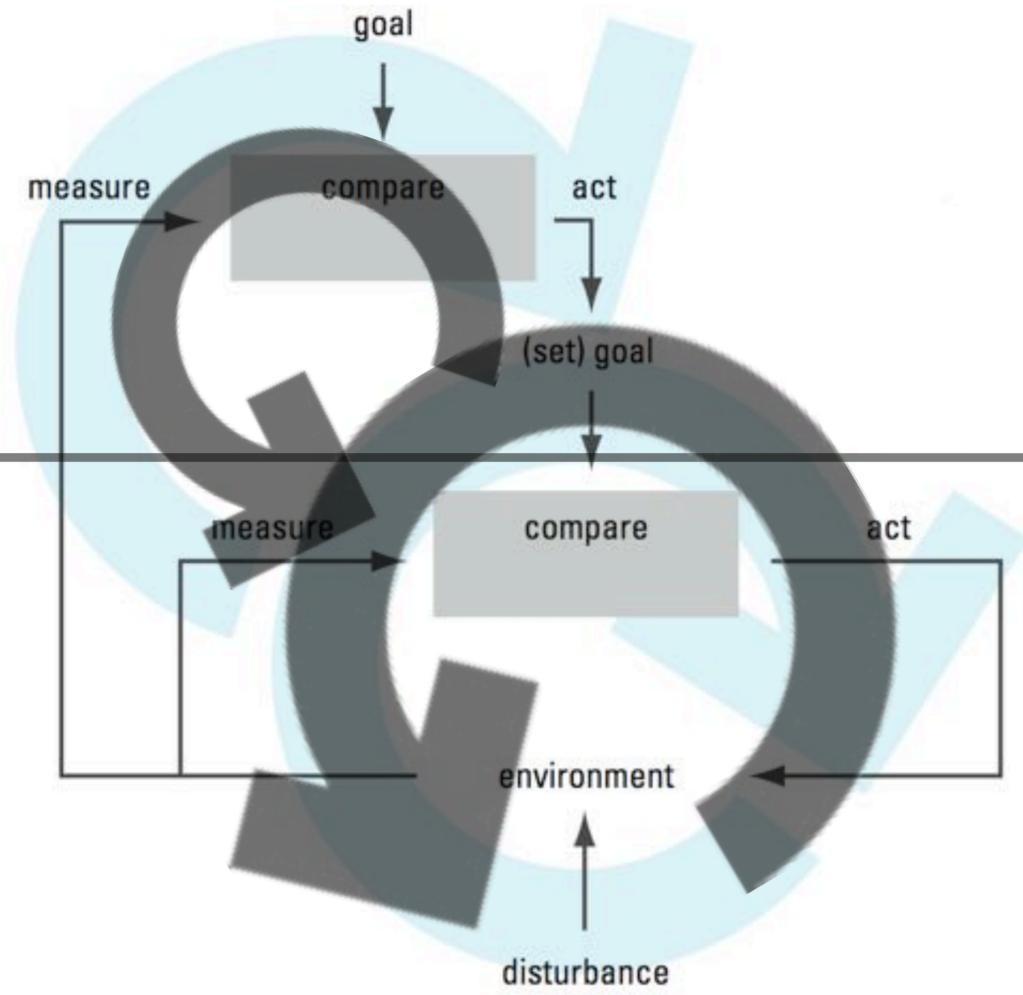
- avoids repetition
- continually offers something novel
- ... while maintaining continuity

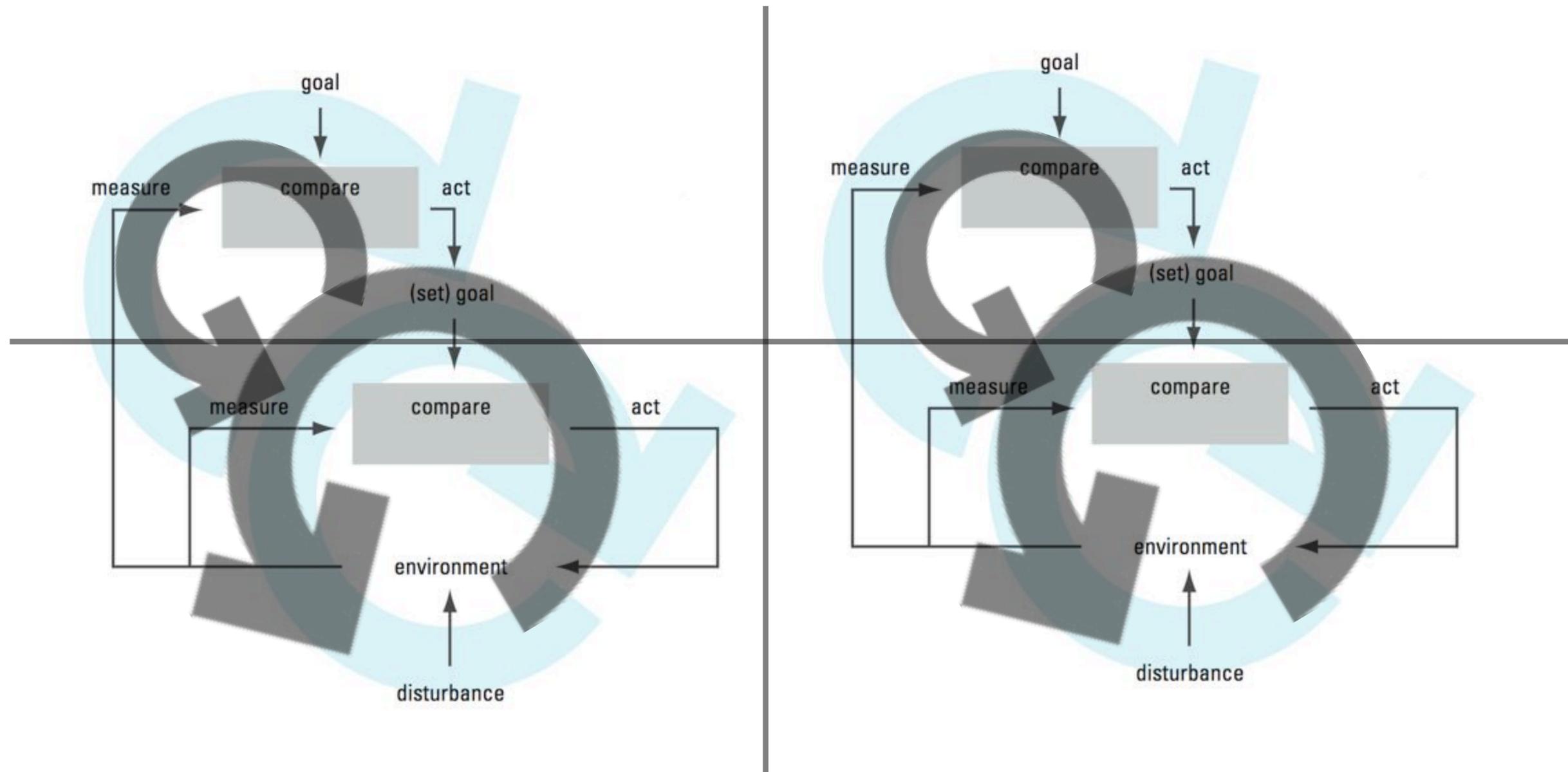








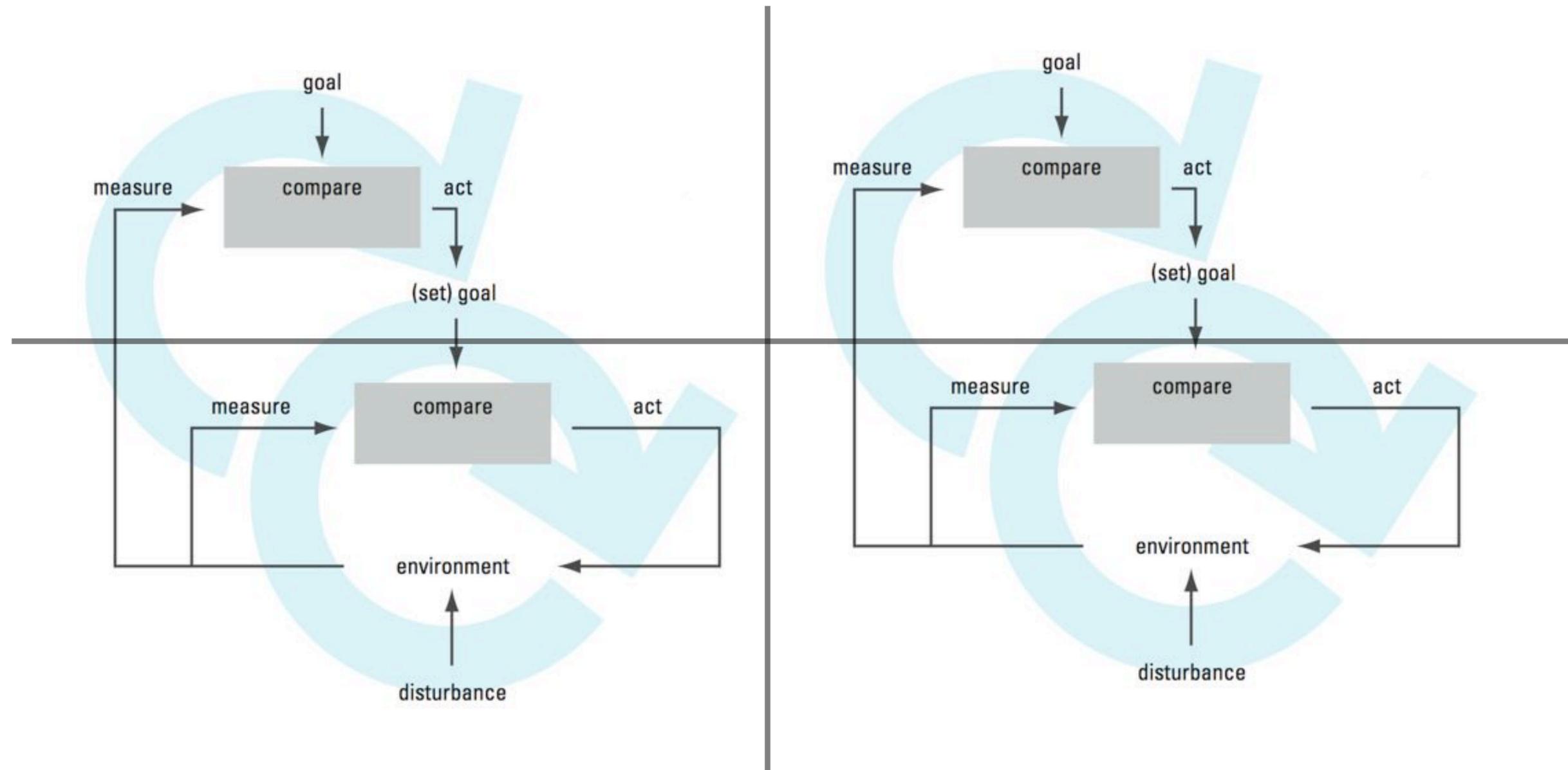




# Architecture for Conversation

Goals

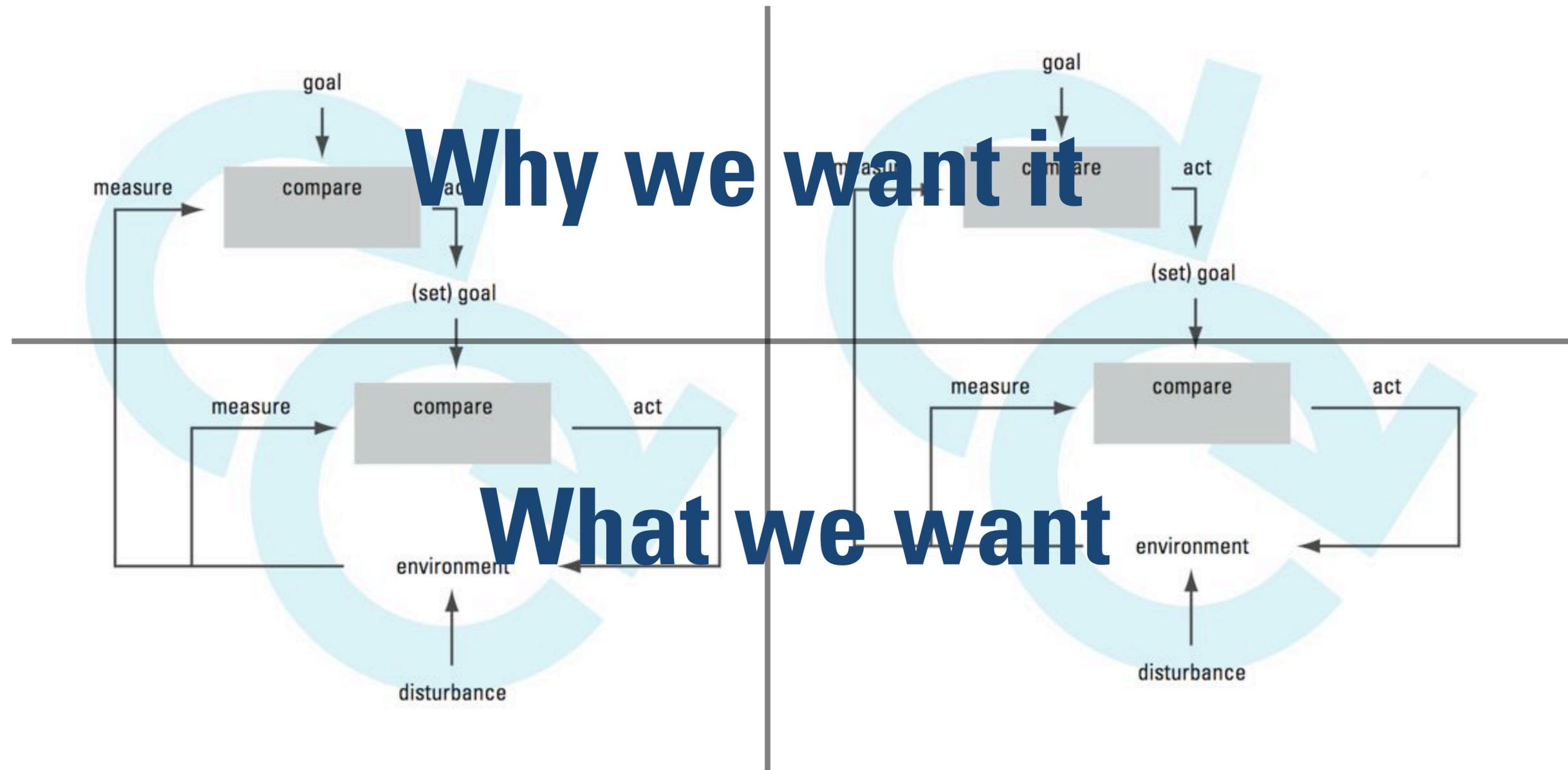
Means



# Architecture for Conversation

Goals

Means



## Conversation with Content

### What's a “good conversation”?

- avoids repetition
- continually offers something novel
- ... while maintaining continuity

# thoughtshuffler iOS 2013

UX by Miriam Simun

UI by See-ming Lee

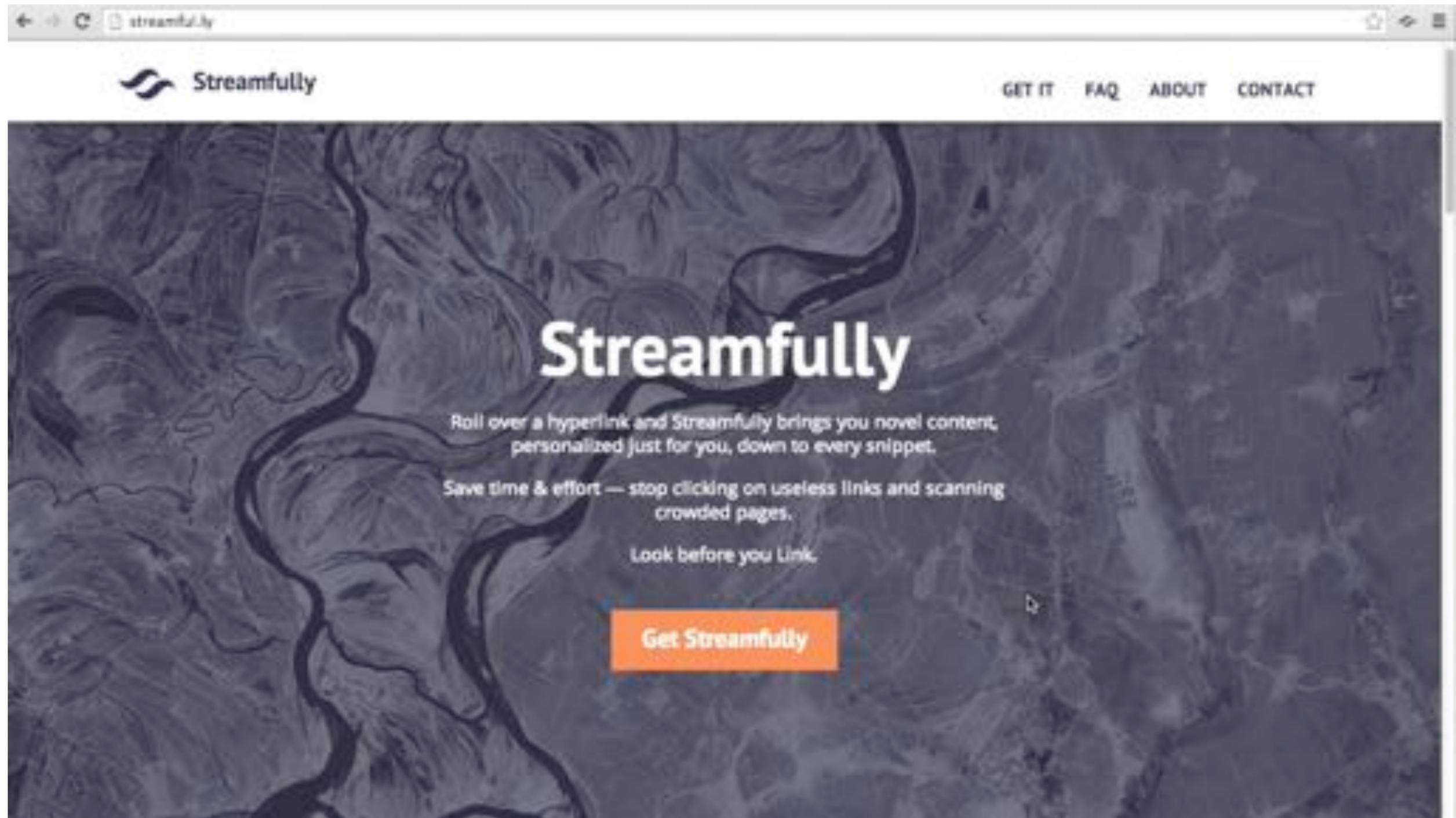
concept & heuristics by Paul Pangaro



## Streamfully mobile 2014

UI design & coding by John Katagawa  
UX & heuristics by Paul Pangaro





<http://streamful.ly/>

**But can a machine have a real conversation?**



**Are chats conversations? When?**

**Do chat / voice interfaces support conversation?**

**How? How not?**



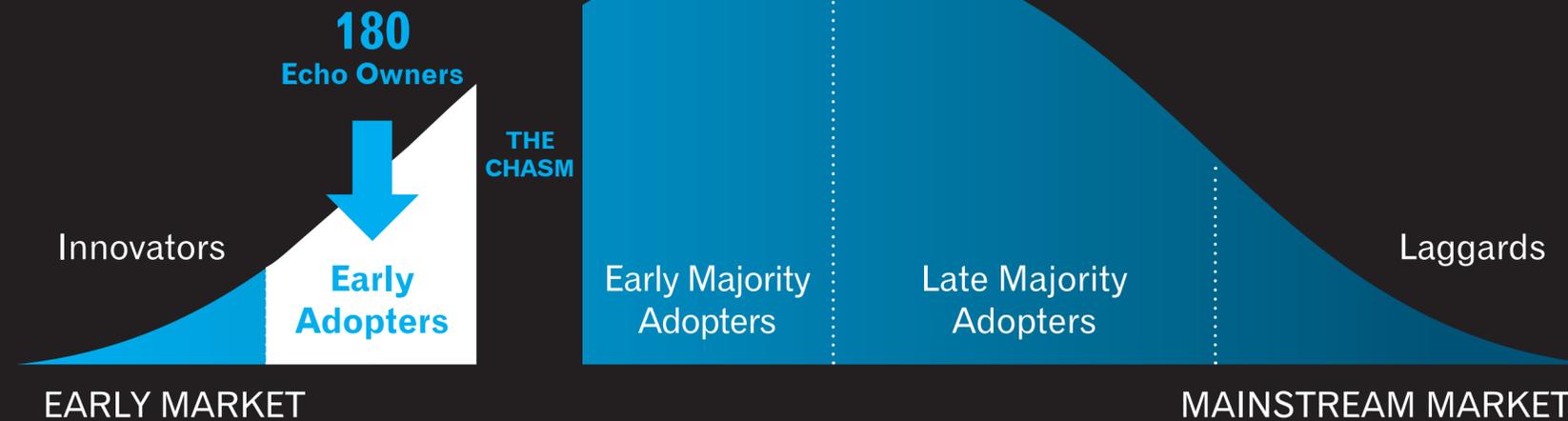
# AMAZON ECHO STUDY & FINDINGS

From May 12–16, 2016, Experian and Creative Strategies surveyed nearly 1,300 consumers to understand their usage of and satisfaction with Amazon's Alexa versus other top virtual assistants. Our panel included 180 early adopters who own an Amazon Echo.

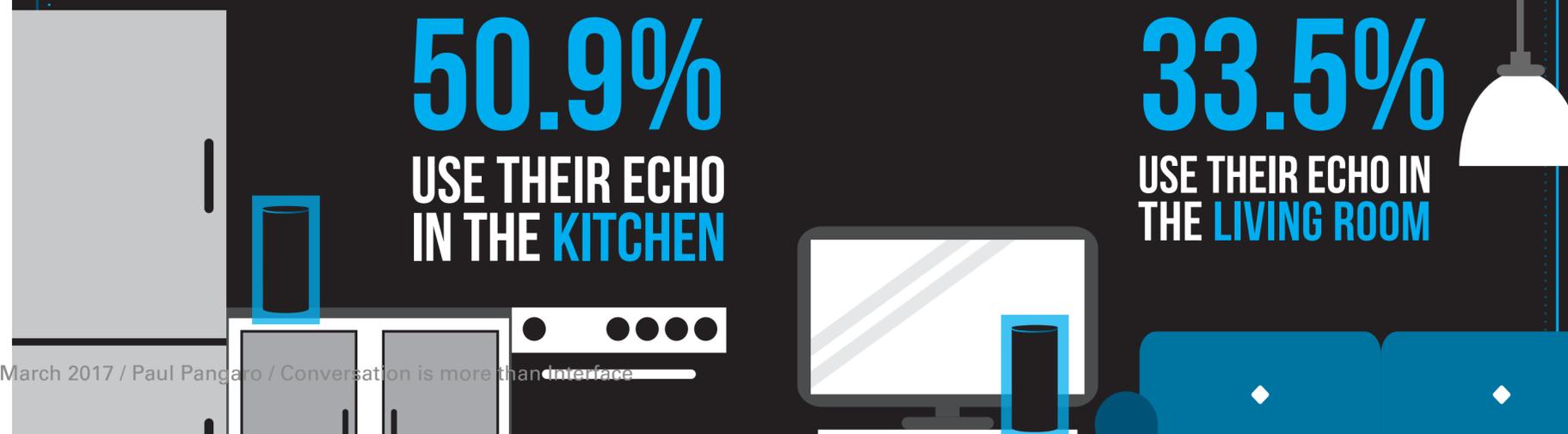
## OUR SURVEY FOCUSED ON EARLY ADOPTERS

To join our panel and participate in future studies, click here to opt in:

<http://bit.ly/29VTIhr>



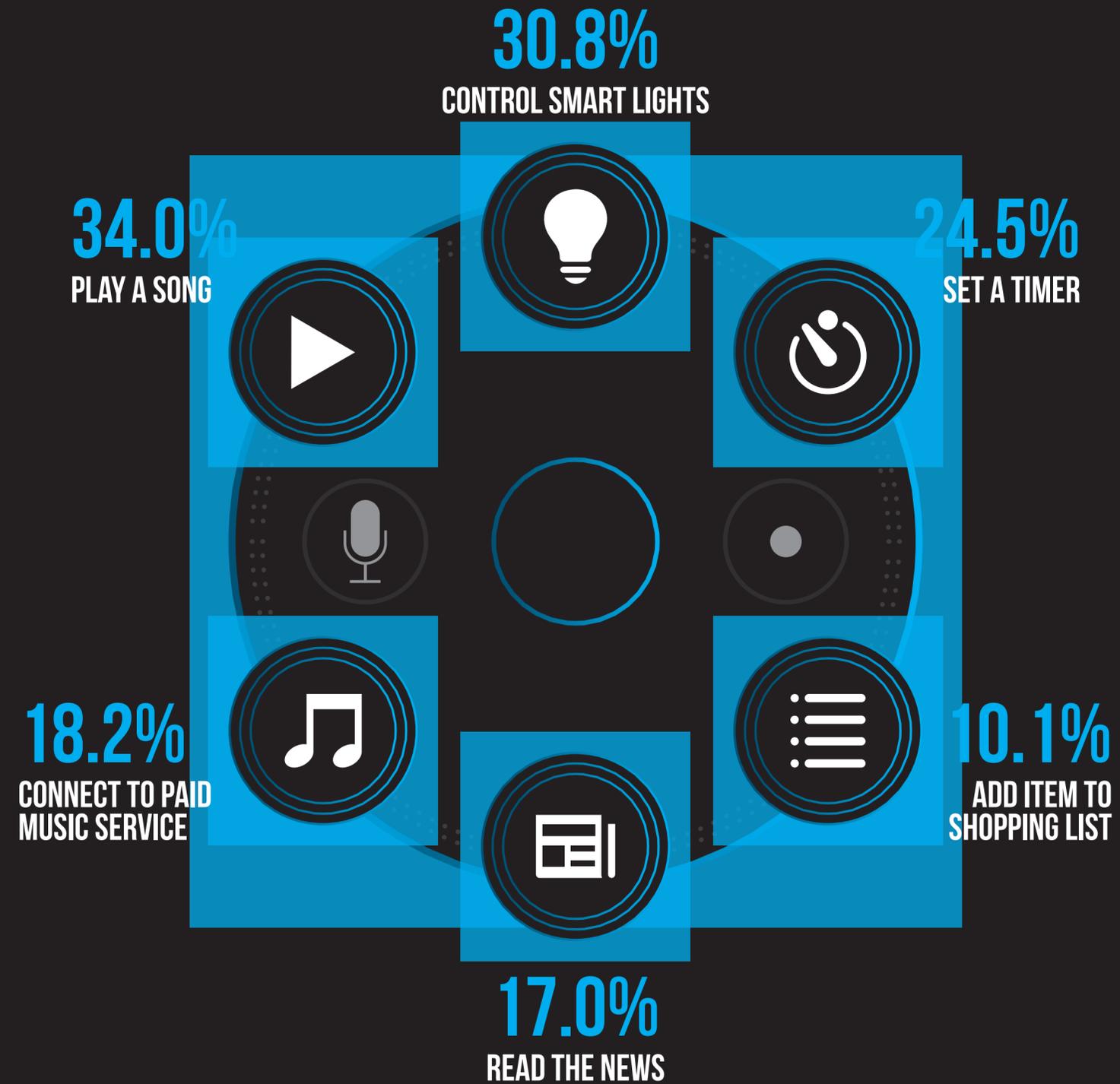
## WHERE ARE OWNERS USING THEIR ECHO?



# WHAT TASKS ARE ECHO OWNERS REPEATING MOST OFTEN?

## EMERGING ECHO HABITS

Tasks owners are repeating most often



"I AM USING IT LESS."

"MY USAGE IS ABOUT THE SAME"

"I AM USING IT MORE."

## WHAT DO ECHO OWNERS SHOP FOR MOST OFTEN ON AMAZON PRIME?

Nearly 96% of Echo owners in our survey use the Amazon Prime service; yet only 32.1% have asked Alexa to purchase an item at least once. However, this percentage is likely to increase over time given that 39.0% of respondents are increasing their Echo usage and becoming more comfortable using their voices to shop.

To get a sense of what Echo owners are likely to ask Alexa to buy in the future, we asked which product categories they most often buy on Amazon Prime today via any channel (e.g. Amazon app, online, asking Alexa or otherwise).



31.1%

HOUSEHOLD ITEMS

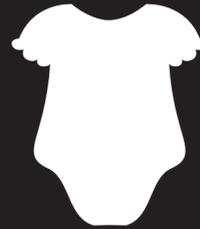
Detergent, paper towels, etc.



26.4%

HEALTH & PERSONAL CARE

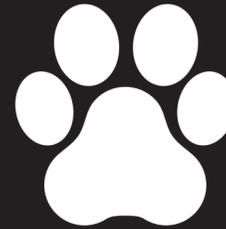
Razors, shaving cream, etc.



18.9%

BABY PRODUCTS

Diapers, wipes, etc.



14.9%

PET PRODUCTS

Pet food, treats, etc.



10.1%

BEAUTY PRODUCTS

Skin creams, lotion, etc.



10.1%

BEVERAGES & SNACKS

Snacks, coffee, water, etc.

Based on our research, Household Items and Health & Personal Care are likely to be among the top Amazon Prime categories for future purchases using Alexa.

To join our panel and participate in future studies, click or scan below to opt in: <http://bit.ly/29VTIhr>

Infographic by Sheryl Ong and @AaronSuplizio of Experian. Special thanks to @cherian\_abraham of Experian and @BenBajarin of Creative Strategies for their partnership in the creation and analysis of this survey.

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AMAZON GOOGLE

# Alexa and Google Assistant have a problem: People aren't sticking with voice apps they try

Discovery and retention issues are both challenge and opportunity.

BY JASON DEL REY | @DELREY | JAN 23, 2017, 6:00AM EST

TWEET SHARE LINKEDIN





TECH AMAZON

# TL;DR

## You can finally say 'Computer' to your Echo to command it

*Still can't make Tea. Earl Grey. Hot.*

by Dieter Bohn | @backlon | Jan 23, 2017, 7:42pm EST





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CNET » Appliances » Smart Home » 9 things Alexa can't yet do

# 9 things Alexa can't yet do

Alexa devices come with a laundry list of features, functions and integrations. However, there is a long list of things Alexa isn't capable of yet. Some of the missing features might surprise you.

# Amazon at CES: 'We believe there will be an Alexa skill for everyone, for everything'

BY TODD BISHOP on January 6, 2017 at 10:11 am

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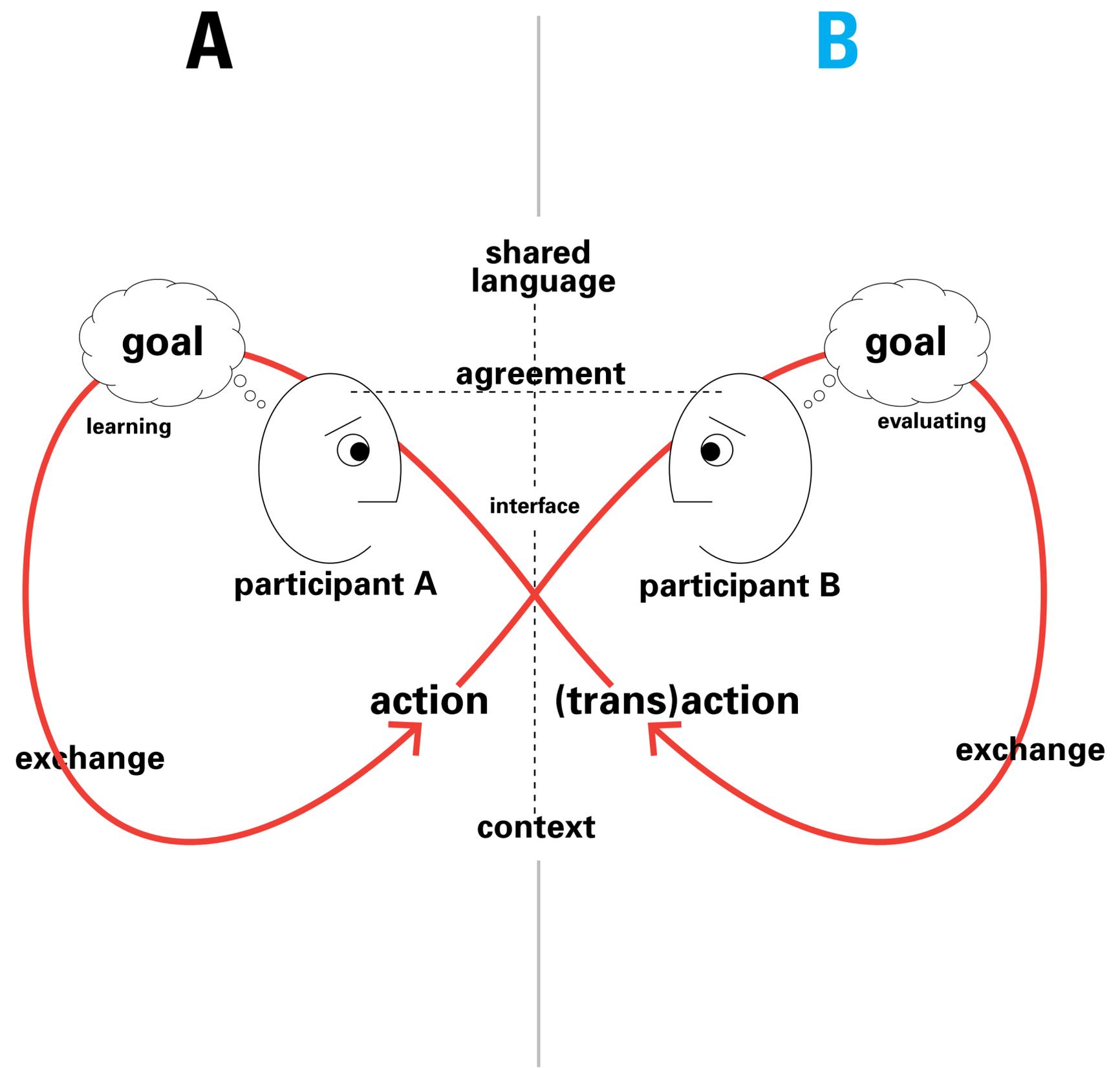
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Seattle

The GeekWire team is covering CES 2017 live from Las Vegas, featuring the latest in consumer electronics, cars, sports tech and more.

Applying Conversation Theory by Gordon Pask – Part 2

**What is the foundational structure of conversation?**

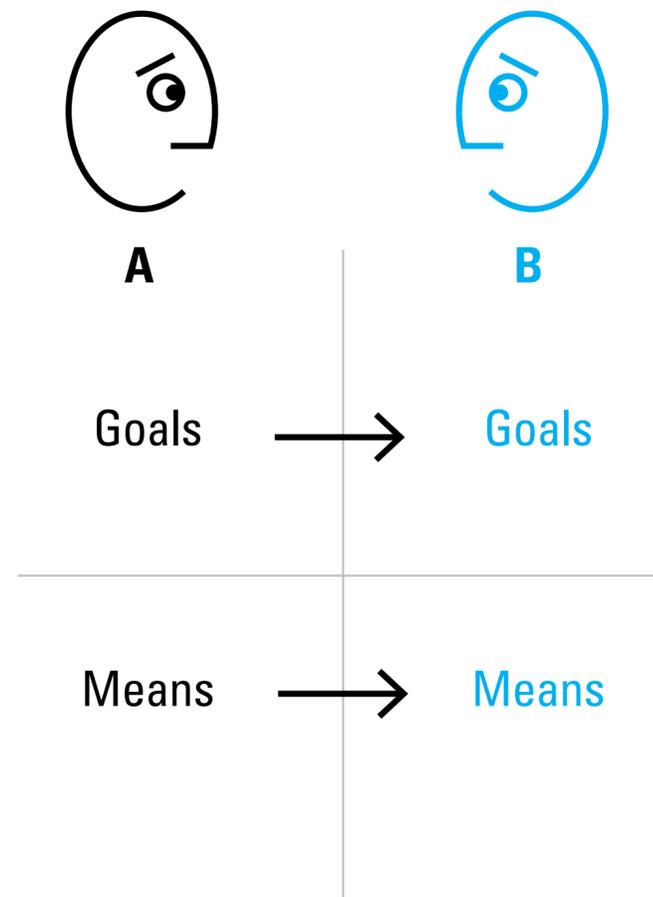
**What is an “architecture” for conversation?**



# Architecture of Conversation

A and B may talk about goals, means, or both

“What is the goal? And how do we want to accomplish it?”

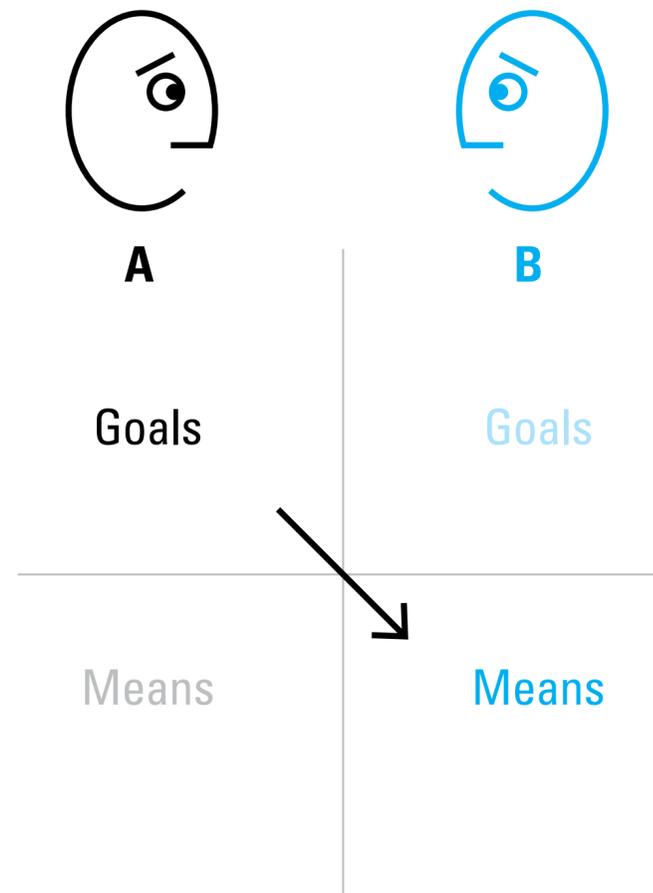


— adopted from Hugh Dubberly  
after Paul Pangaro and Gordon Pask

# Controlling

A tells B what to do and how to do it

“Alexa, give me some news from NPR.”—does this one

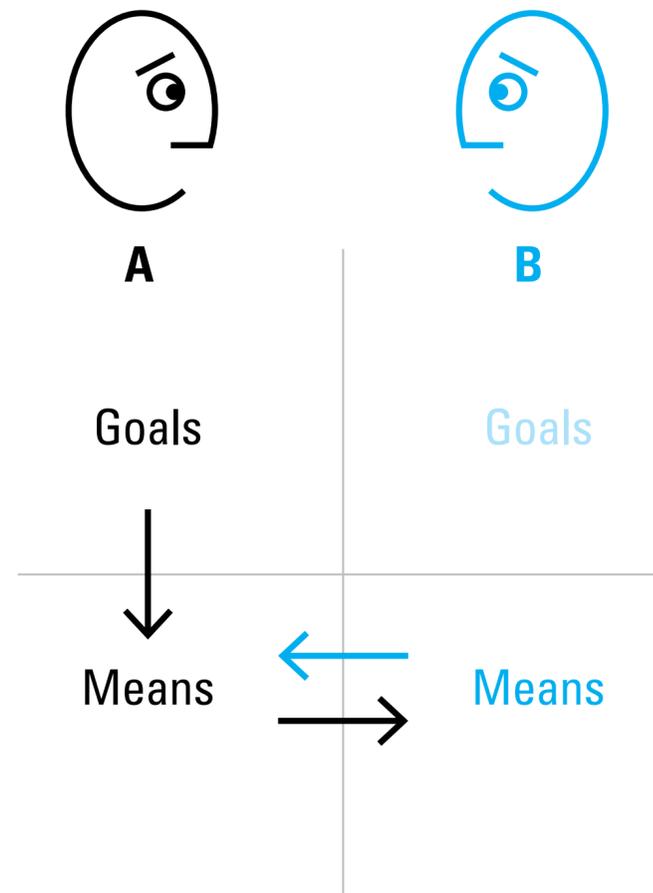


— adopted from Hugh Dubberly  
after Paul Pangaro and Gordon Pask

# Guiding

A sets goal but discusses means with B

“Alexa, I want to listen to news, what are my options?”

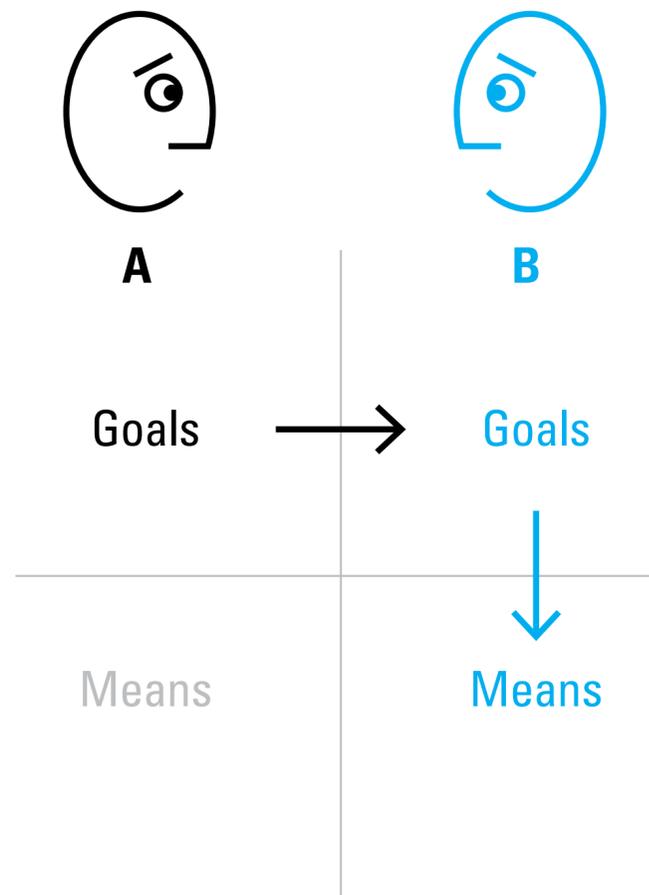


— adopted from Hugh Dubberly  
after Paul Pangaro and Gordon Pask

# Delegating

A sets the goal but lets B decide the means to reach it

“Alexa, some news please.”—does this one

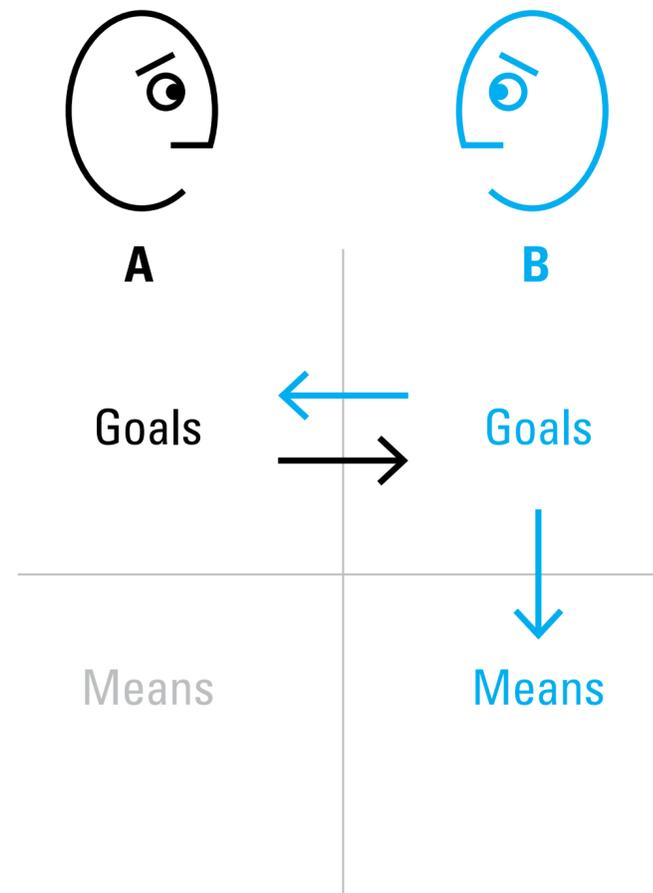


— adopted from Hugh Dubberly  
after Paul Pangaro and Gordon Pask

# Collaborating

A and B decide together on goals

“Alexa, how about I listen to something?”



— adopted from Hugh Dubberly  
after Paul Pangaro and Gordon Pask

## Applying an Architecture for Conversation

**What kinds of “skills” are there in conversation?**

- responding to achieve a given task
- offering different means (tasks) to achieve a goal
- helping to achieve an underspecified goal
- collaborating to define the goal

**Will VUI's / CUI's be designed to do all these?**

## Conversation with Content

### What's a "good conversation"?

- avoids repetition
- continually offers something novel
- ... while maintaining continuity
- helps you be what you want to be... to become...

**Will VUI's / CUI's be designed to do all these?**

Thank you.

# “It Depends On Whom I’m With”

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March 2017

Paul Pangaro, Ph.D.  
Chair and Associate Professor  
MFA Interaction Design Program  
College for Creative Studies, Detroit  
[paul@pangaro.com](mailto:paul@pangaro.com)



# Appendices

## “It Depends On Whom I’m With”

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University of the Arts  
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Chair and Associate Professor  
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College for Creative Studies, Detroit  
[paul@pangaro.com](mailto:paul@pangaro.com)



# How can interfaces be designed for conversation?



## Applying an Architecture for Conversation

**How can we improve the outcome of conversation?**

**We can design our conversations by asking:**

- what's the question at the conversation's core?**
- who can help answer it?**
- what new information is needed?**

**Why can't VUI's / CUI's anticipate these?**

## 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 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 VUI’s / CUI’s do all this?

“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 an Architecture for Conversation

**How can we improve the outcome of conversation?**

**... Can we design our conversations?**

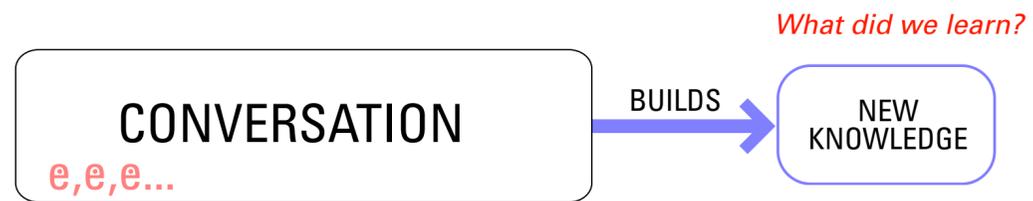
# CONVERSATION

e,e,e...

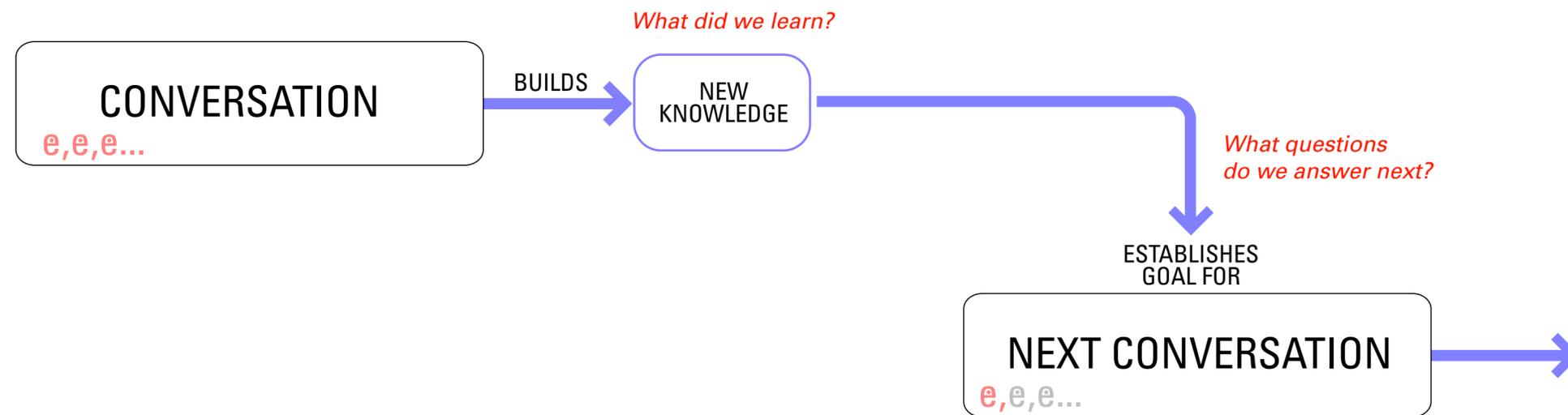
skip

CONVERSATION  
e,e,e...

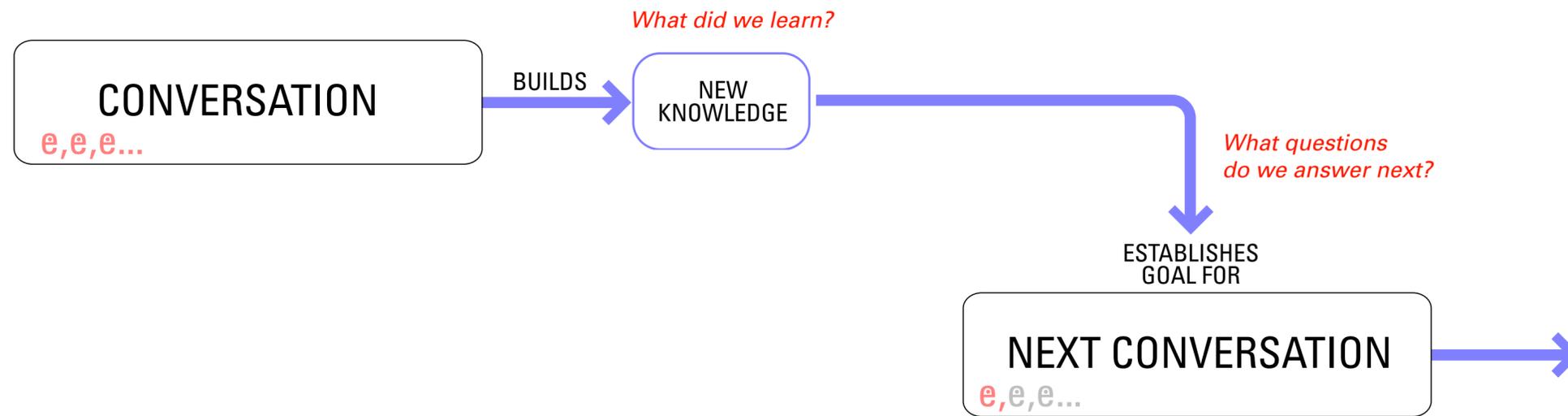
Every conversation involves participants.



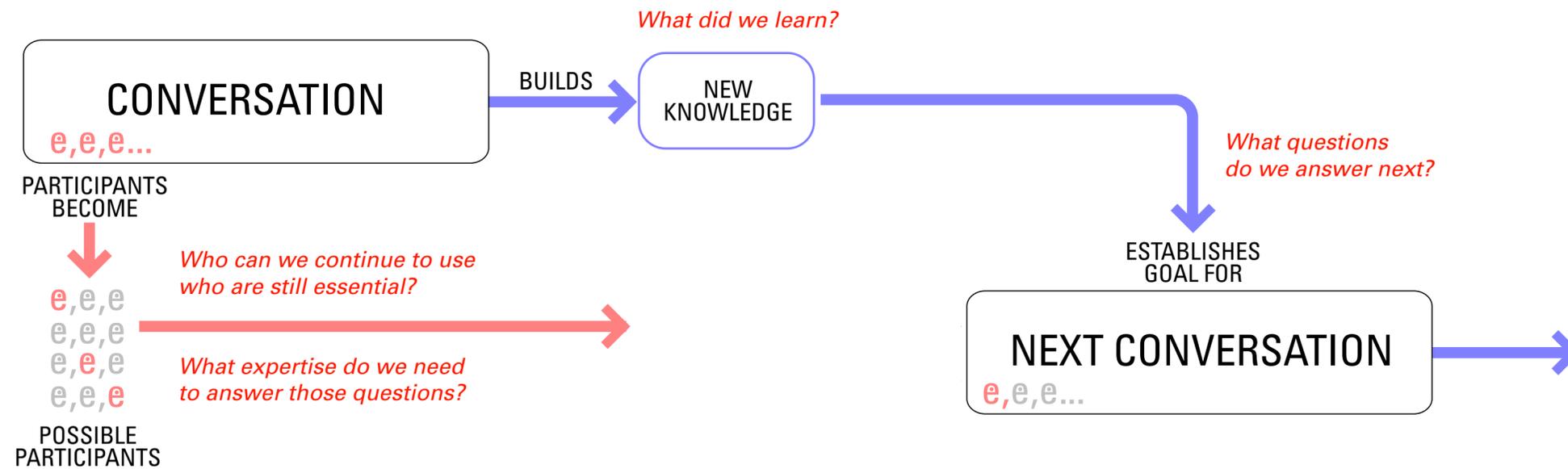
Each conversation should build new knowledge—one or both participants change.



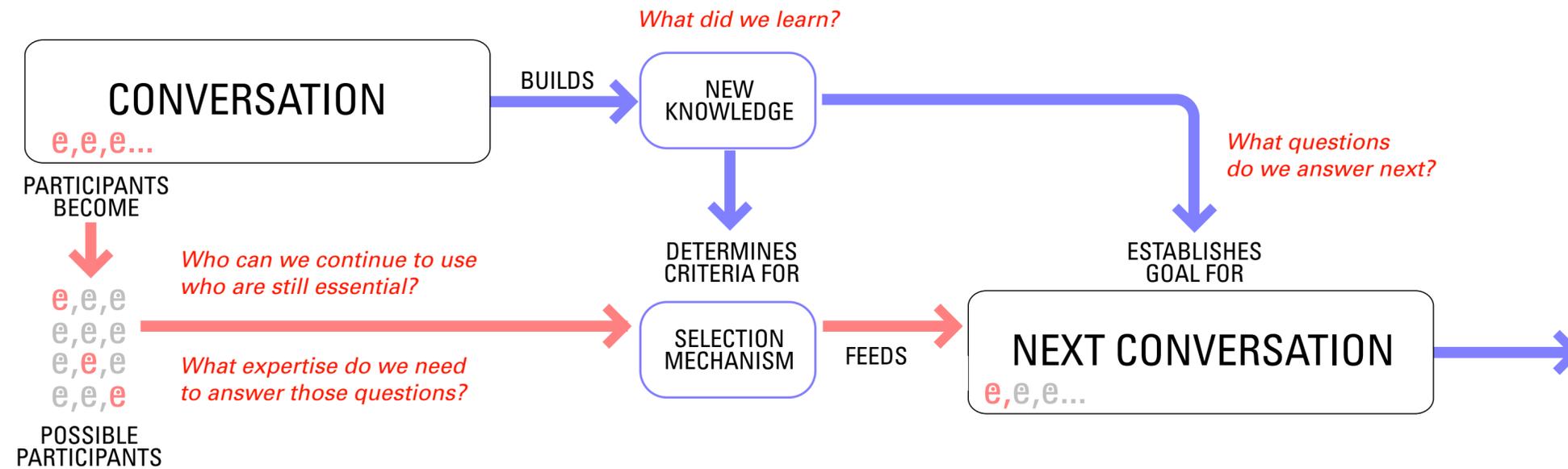
Each conversation may establish a goal for the next conversation, which includes the same participants by default – but are those participants the right ones?



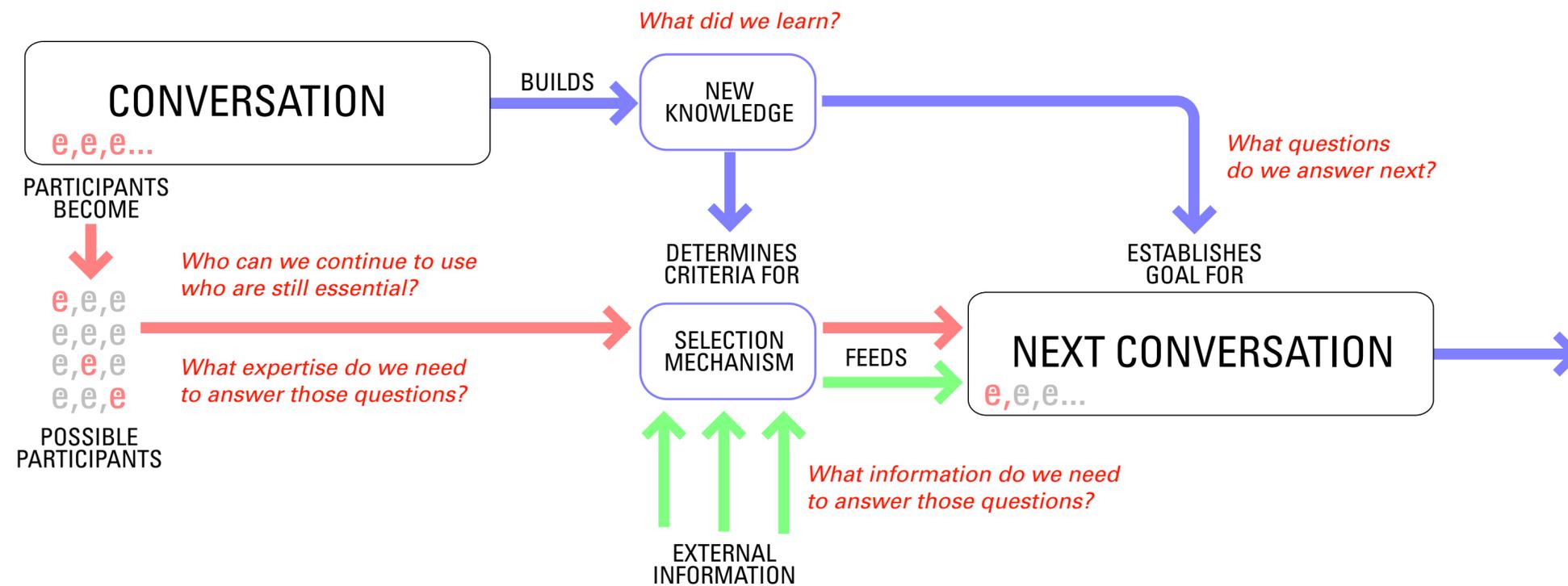
Why don't we design the next conversation *explicitly*?



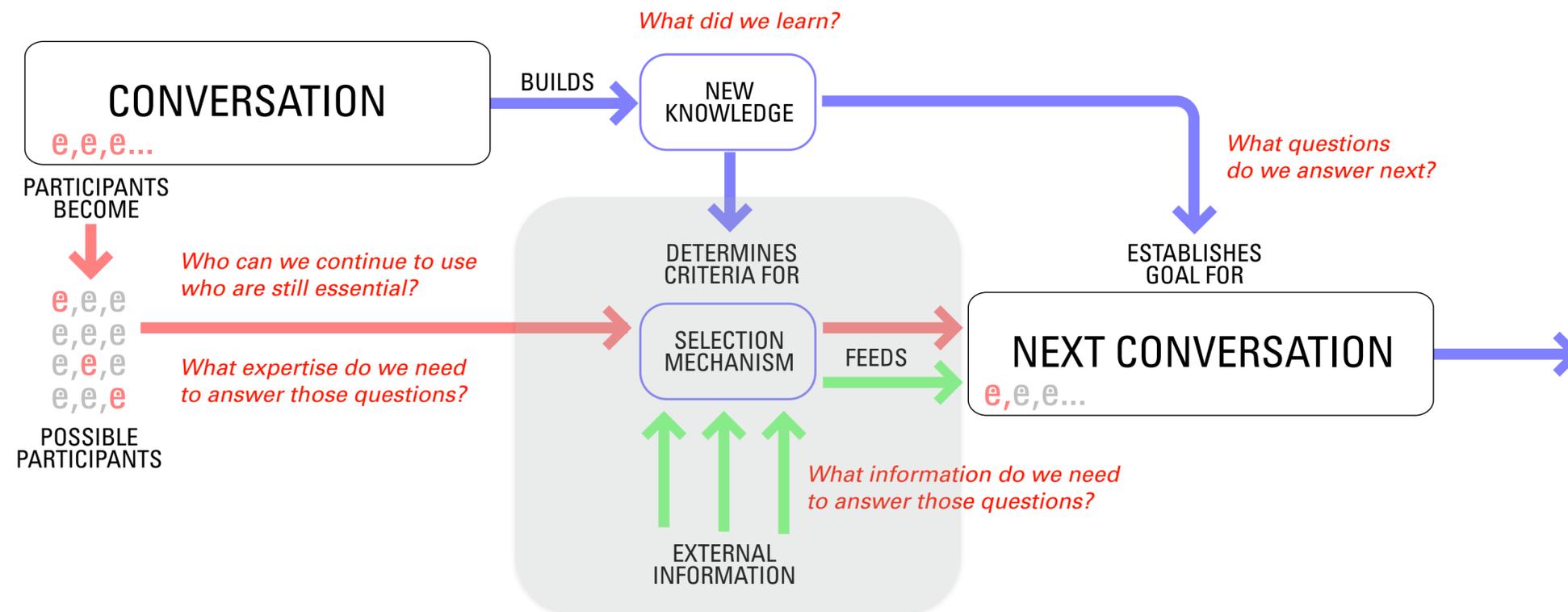
Based on goals for the next conversation, what if we ask, who is still needed and what new expertise is missing?



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.

# Cybernetics of Design

**We believe cybernetics offers a foundation for 21st-century design practice, with this rationale:**

— Dubberly & Pangaro, “Cybernetics and Design: Conversations for Action”, 2015

## **If design, then systems:**

- The prominence of digital technology in daily life cannot be denied (or reversed).  
Digital technology comprises systems of systems (Internet of Things).
- Design has expanded from **giving-form** to **creating systems** that support interactions.  
Human interactions span thinking and acting, whether mundane or metaphysical.

**We must model and tame this complex mesh of mechanisms.**

**Therefore: systems literacy is a necessary foundation for design.**

**If design, then systems.**

**If systems, then cybernetics:**

- Digital interactions comprise reliable connections, communication, and feedback.  
Human interactions comprise purpose, feedback, and learning.
- The science of communication and feedback, interaction and purpose, is cybernetics.

**We must model communication and intention in a common frame.**

**Therefore: cybernetics is a necessary foundation for design.**

**If design, then systems.**

**If systems, then cybernetics.**

**If cybernetics, then second-order cybernetics:**

- Framing “wicked challenges” requires articulating human values and viewpoints. Values and viewpoints are subjective.
- Designers must offer a persuasive rationale for our subjective viewpoints.
- Modeling subjectivity is the province of second-order cybernetics.

**We must embrace values and subjectivity at the heart of designing.**

**Therefore: second-order cybernetics is a necessary foundation for design.**

**If design, then systems.**

**If systems, then cybernetics.**

**If cybernetics, then second-order cybernetics.**

**If second-order cybernetics, then conversation:**

- Taming “wicked challenges” must be grounded in argumentation.
- Argumentation requires conversation so that participants may understand and agree.
- Agreement is necessary for collaboration and effective action.

**We must embrace argumentation and collaboration to the heart of 21st-century design.**

**Therefore: conversation is a necessary foundation for design.**

**If design, then systems.**

**If systems, then cybernetics.**

**If cybernetics, then second-order cybernetics.**

**If second-order cybernetics, then conversation.**

— Dubberly & Pangaro, “Cybernetics and Design: Conversations for Action”, 2015

**What is the role of conversation in design?**

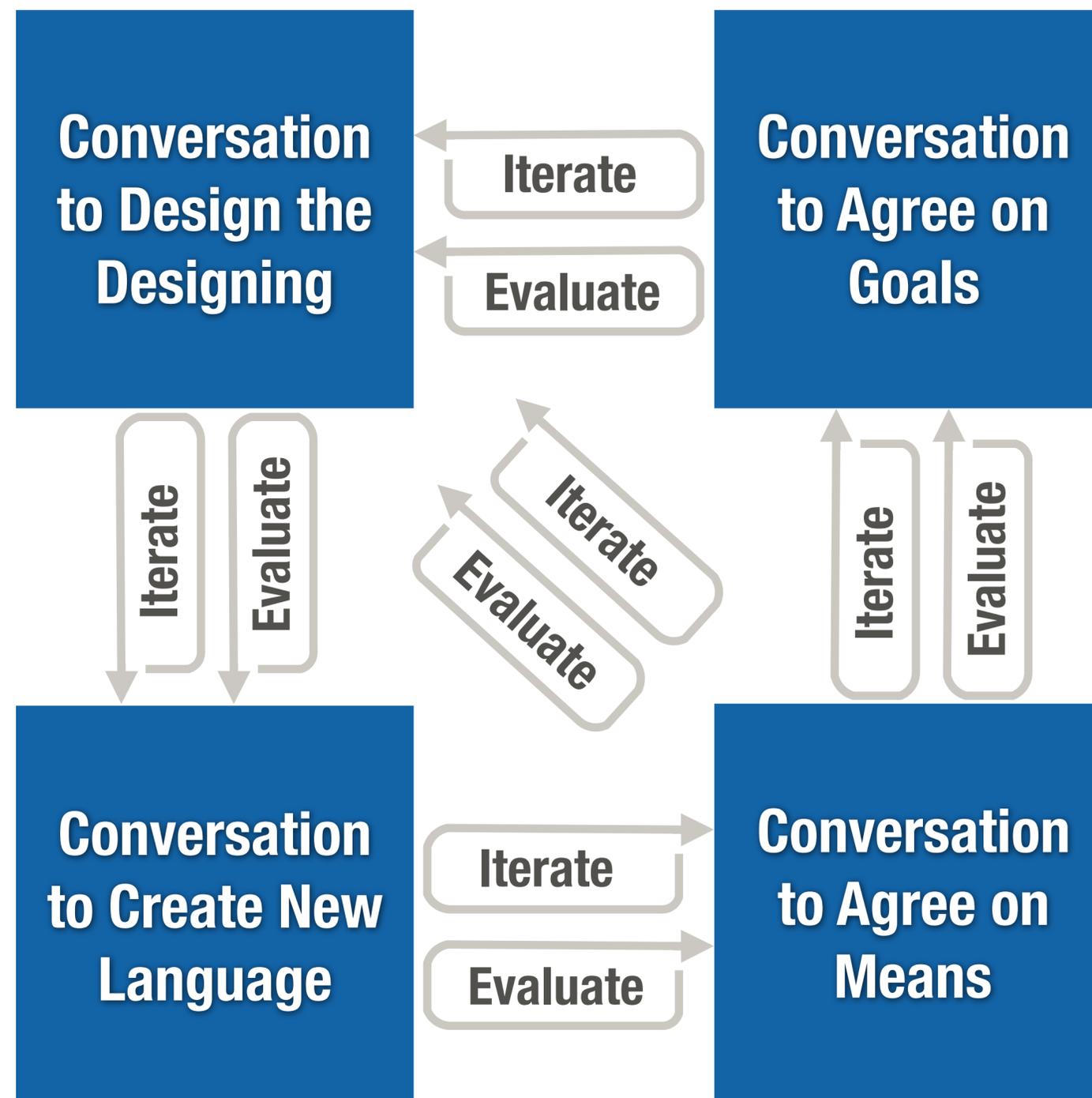
**How are conversation and design processes related?**

**See Cybernetics and Design: Conversations for Action**

<http://www.dubberly.com/articles/cybernetics-and-design.html>



# Design as Conversation



# Design = Social = Conversations for Action

**If we converse explicitly about goals, we are transparent about frames and values.**  
(This is ethical.)

**If we converse about the means to achieve those goals,  
we more fully engage participants and their abilities, improving outcomes.**  
(This is collaborative.)

**If we converse to co-evolve new language, we can escape the limitations  
of current viewpoints, and create new frames and new possibilities.**  
(This is innovative.)

**If we converse about the design process, we enter all our conversations  
as participants, answerable for our actions.**  
(This is responsible.)

# Design = Social = Conversations for Action

**If we converse explicitly about goals, we are transparent about frames and values.**

(To agree on goals is ethical.)

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(To create new language is innovative.)

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as participants, answerable for our actions.**

(To design the designing is responsible.)

# Design = Social = Conversations for Action

(To agree on goals is ethical.)

(To agree on means is collaborative.)

(To create new language is innovative.)

(To design the designing is responsible.)

- End -

