How Cybernetics Connects Computing, Counterculture, and Design

Hugh Dubberly & Paul Pangaro

MICRO MAN

Dr Gordon Pask

COLLOQUY 2018 Project

The Exploratorium
June 2018

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Cybernetic Serendipity

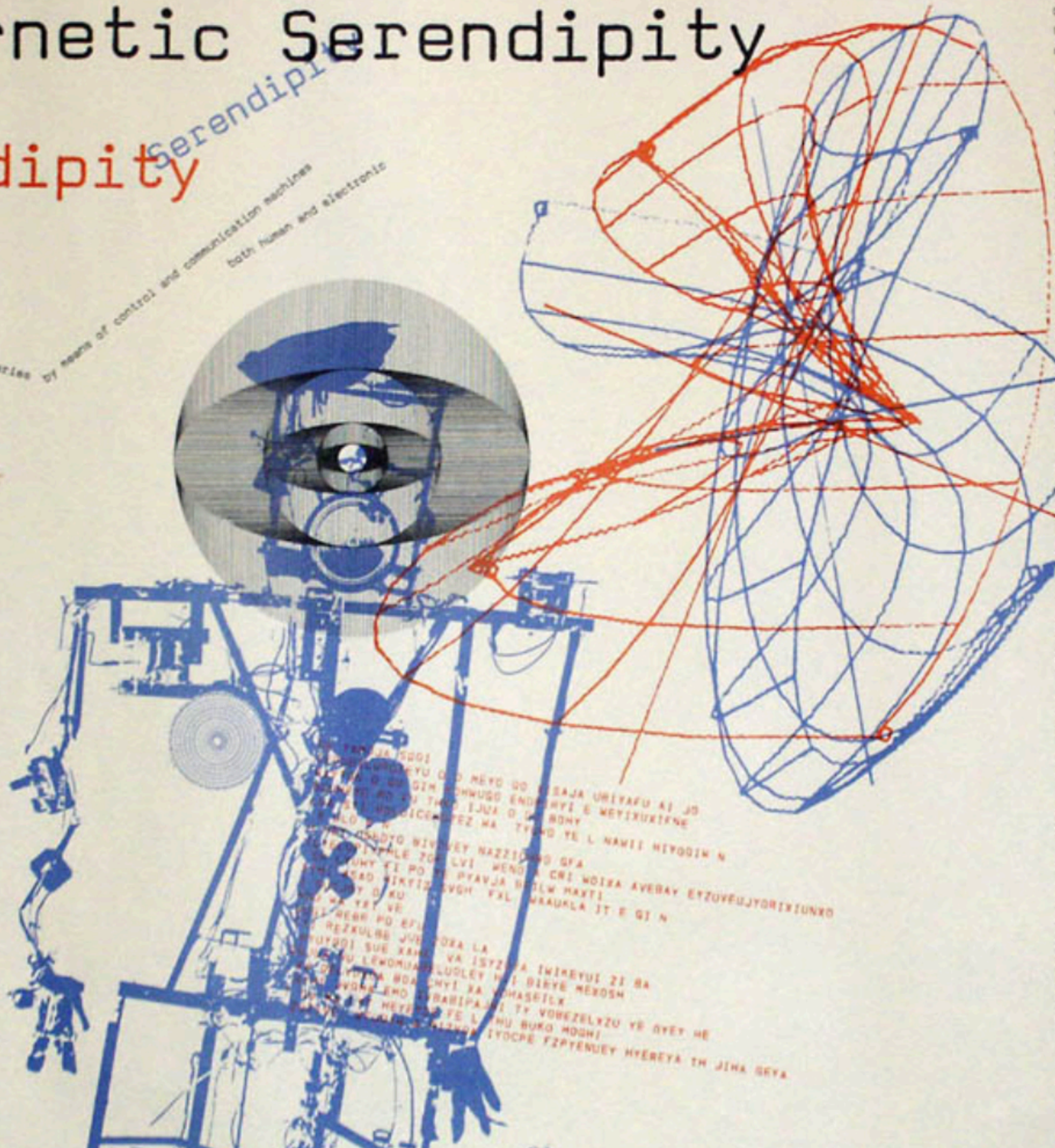
Serendipity

Serendipity

the faculty of making happy chance discoveries by means of control and communication machines both human and electronic

An exhibition

and other serendipitous manifestations



Institute of Contemporary Arts

August 2 – October 20

CYBERNETIC SERENDIPITY LECTURES

Thursday August 8

Tuesday August 13

Thursday August 15

Tuesday August 20

Tuesday August 27

Tuesday September 3

Thursday September 5

Tuesday September 10

Thursday September 12

Thursday September 19

Tuesday September 24

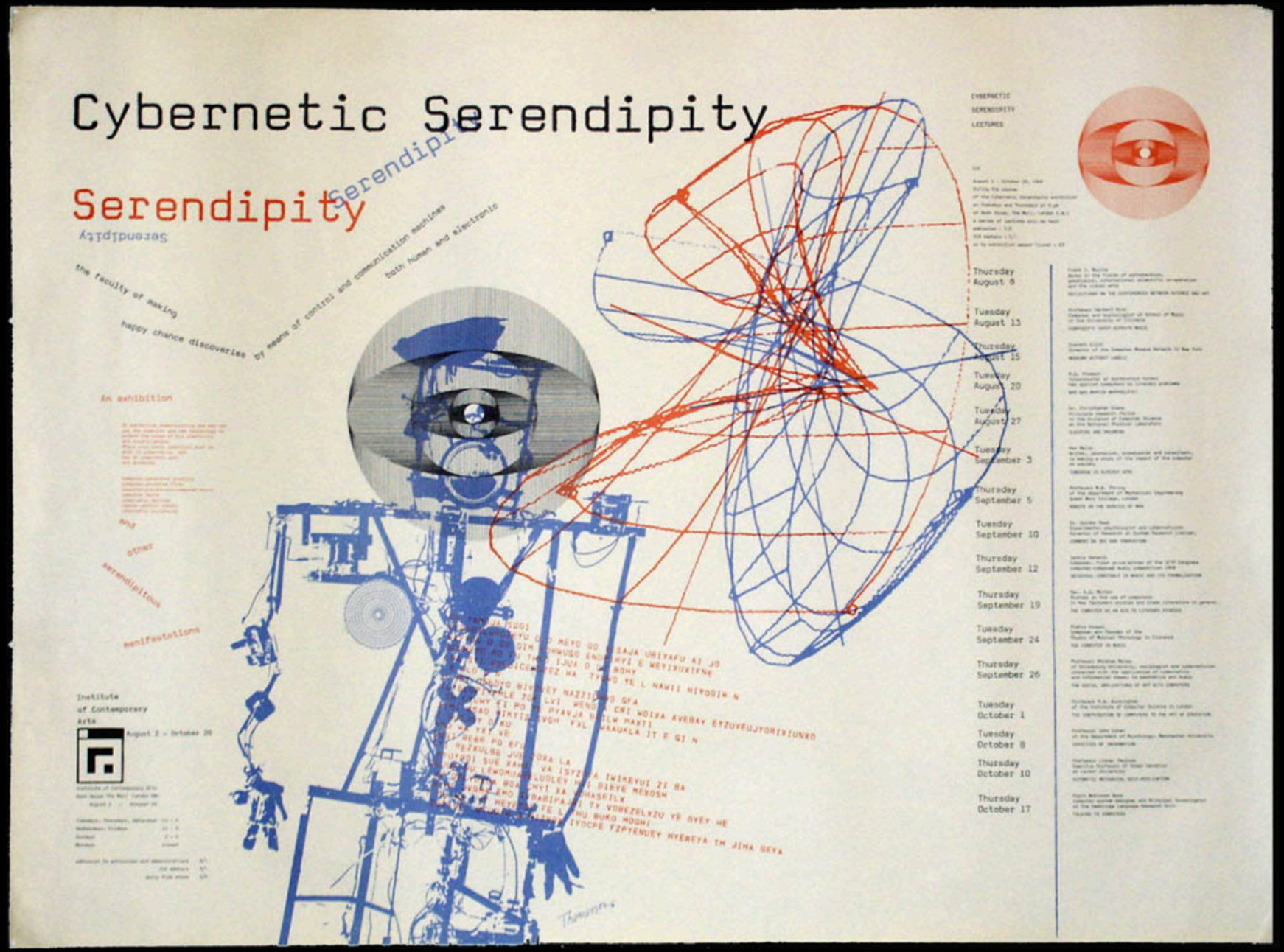
Thursday September 26

Tuesday October 1

Tuesday October 8

Thursday October 10

Thursday October 17



In 1968, Jasia Reichardt curated Cybernetic Serendipity, an exhibition of 130 works of cybernetic art in London.

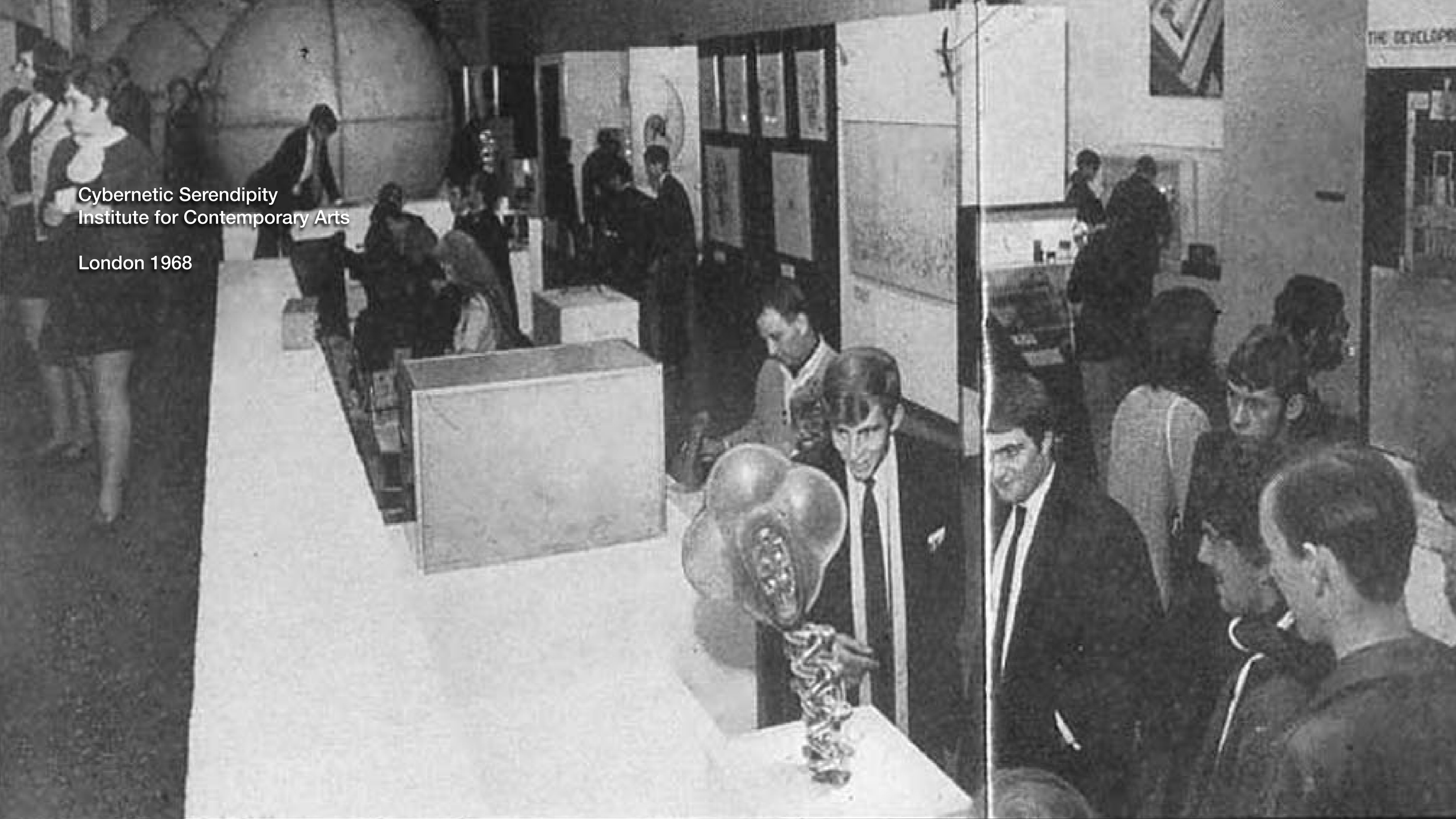
Poster: Franciszka Themerson

Cybernetic Serendipity
Institute for Contemporary Arts

London 1968

Cybernetic Serendipity
Institute for Contemporary Arts

London 1968



Cybernetic Serendipity
Institute for Contemporary Arts

London 1968

For Cybernetic Serendipity.
Gordon Pask created his
“Colloquy of Mobiles.”

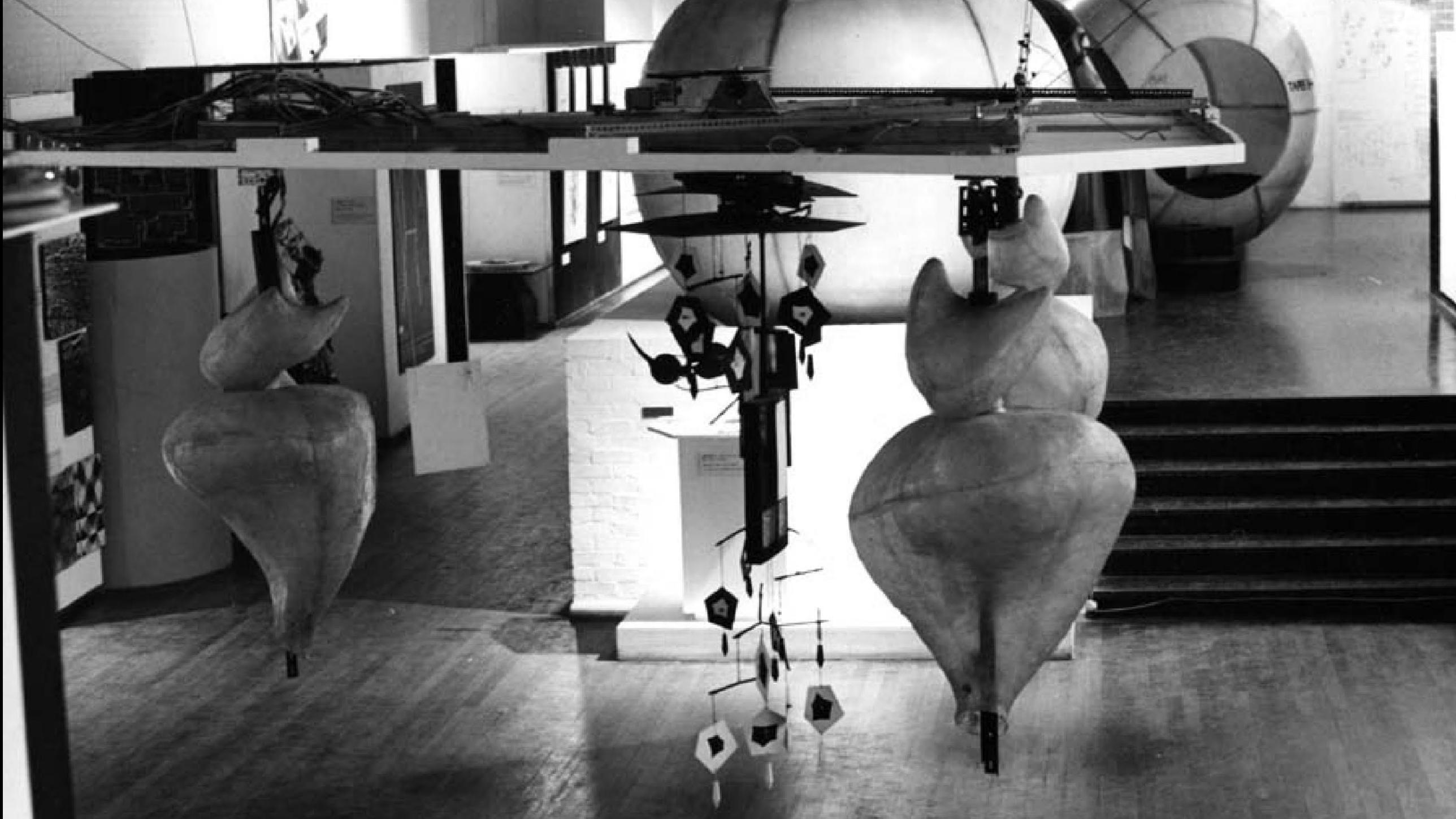
Here he stands in front of his design
for a male mobile.

Photo: Gordon Pask Archive
University of Vienna

Here are all the mobiles, males surrounded by females.

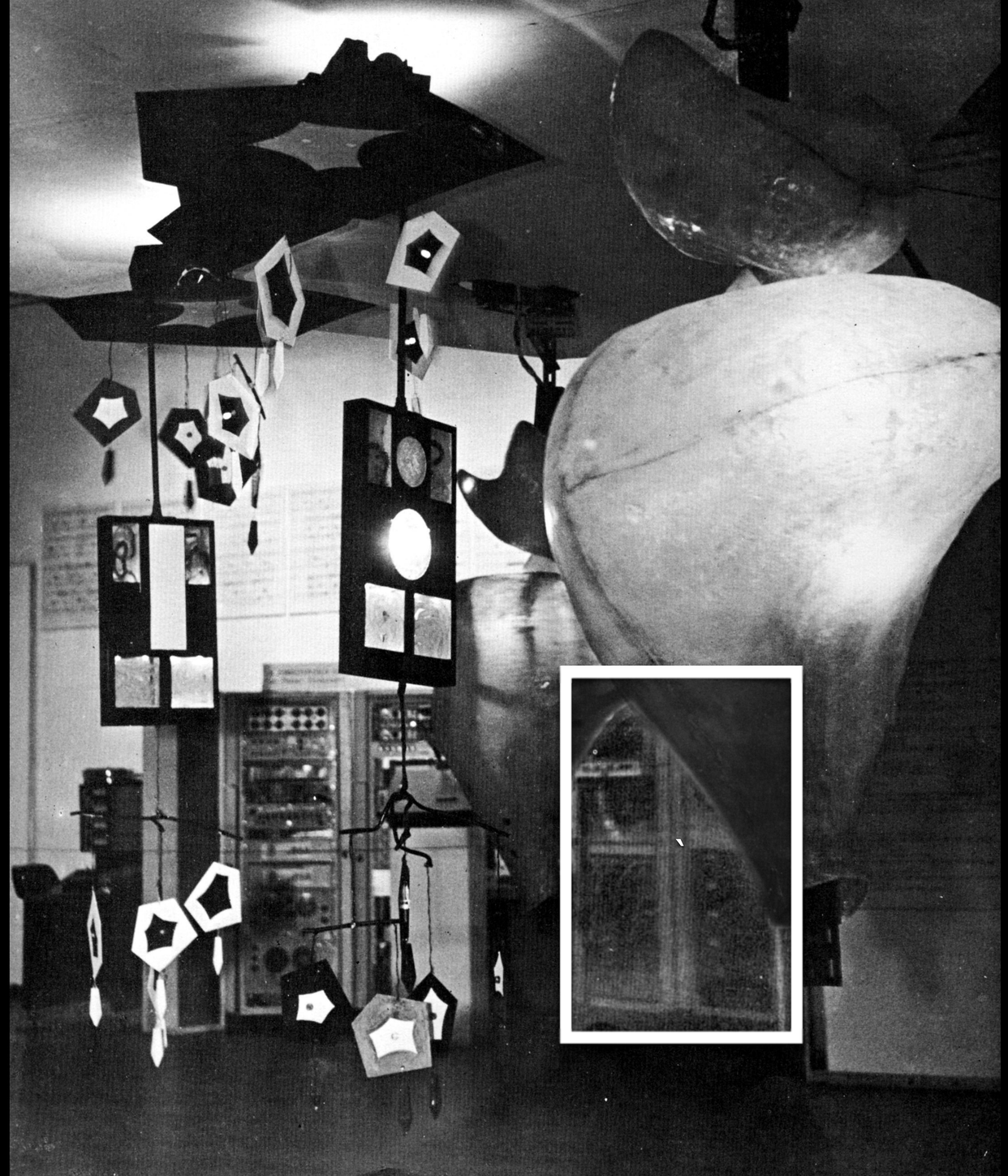
“Colloquy”—as in “colloquium”—means “gathering for conversations.”

http://www.medienkunstnetz.de/works/colloquy-of-mobiles/



The female mobiles were designed by Yolanda Sonnabend, who became a famous designer for the Royal Ballet in London.

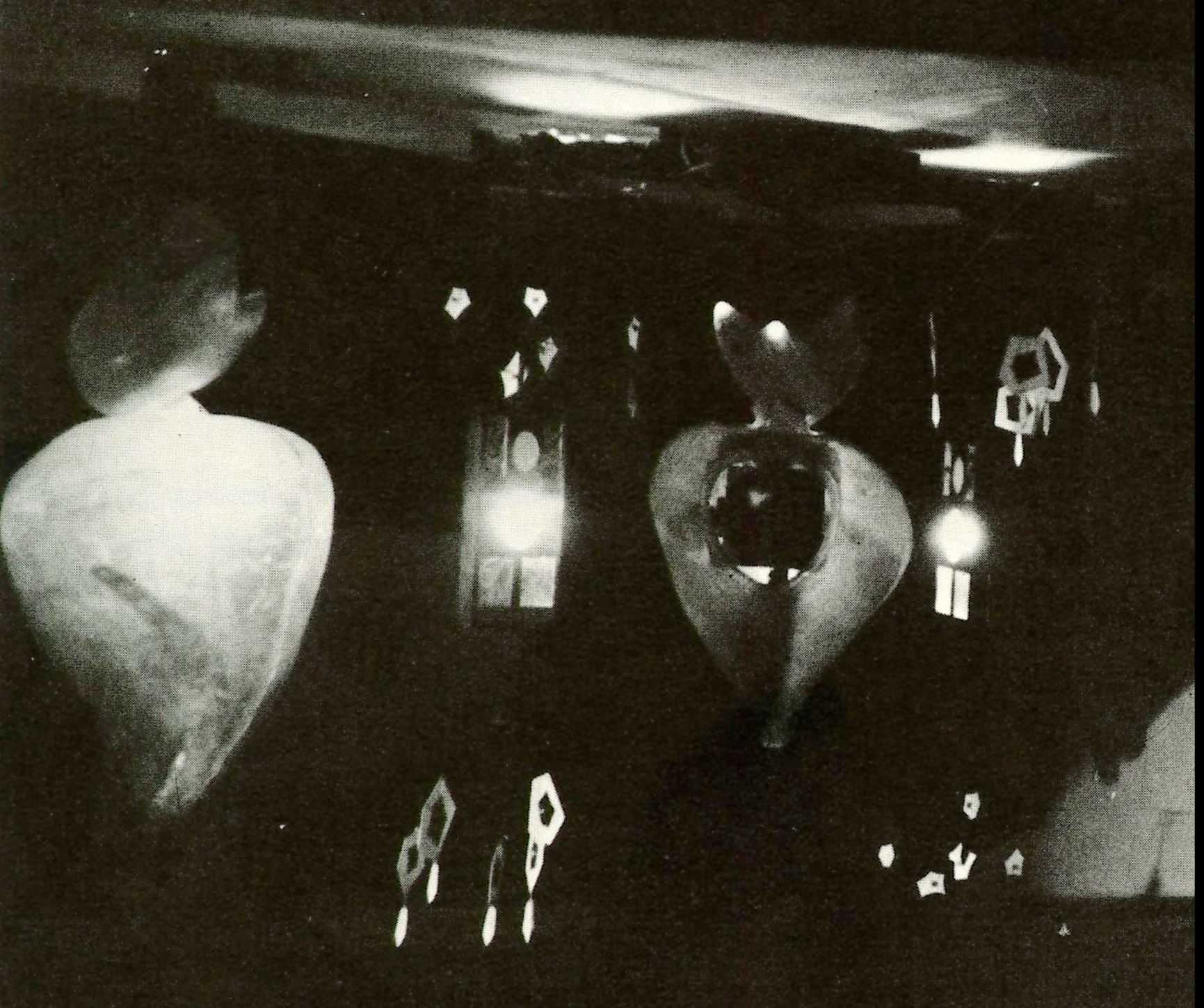
http://www.medienkunstnetz.de/works/colloquy-of-mobiles/



The computing machinery required
in 1968 can be seen in the background.

It must have weighed 100 pounds.

http://www.medienkunstnetz.de/works/colloquy-of-mobiles/



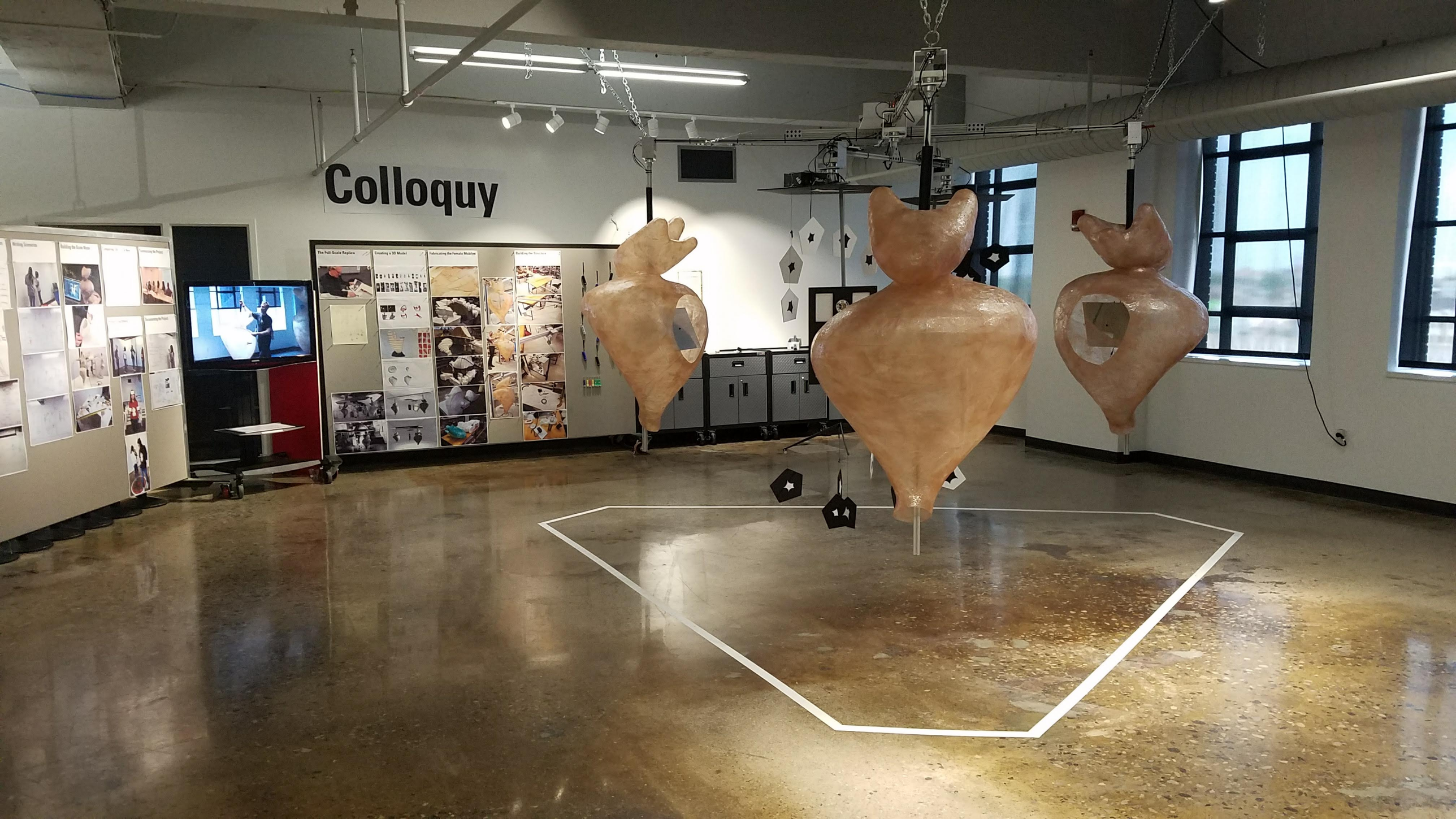
It’s hard to know how the satire on gender roles was taken in 1968.

http://www.medienkunstnetz.de/works/colloquy-of-mobiles/

Silent film
Colloquy of Mobiles
1968

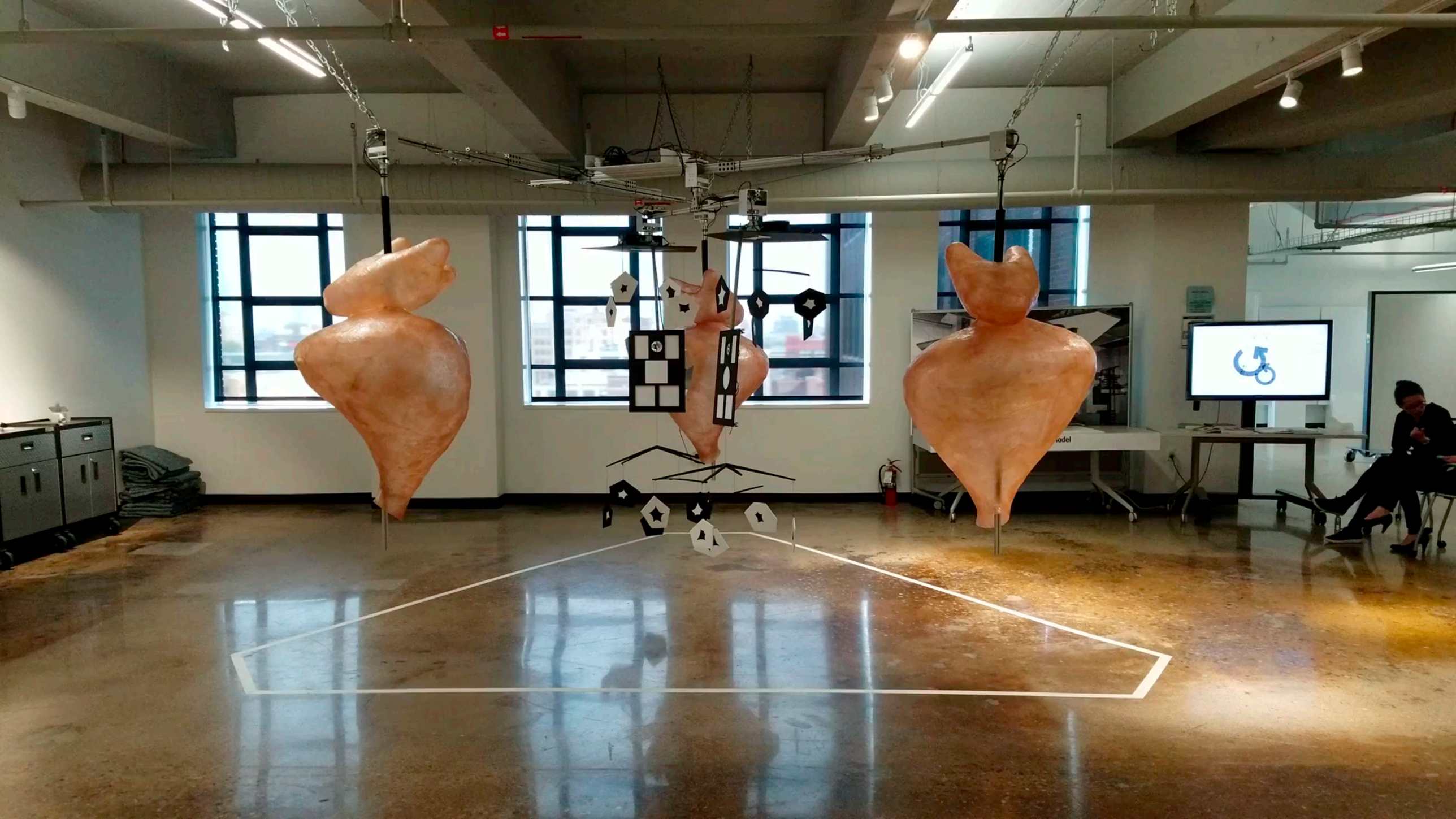
Click for Video

http://cyberneticians.com/index.html#gp


Colloquy
The Full-Scale Replica
Creating a 3D Model
Fabricating the Female Mobilee
Building the Structure

Colloquy
The Full-Scale Replica
Creating a 3D Model
Fabricating the Female Mobiles
Building the Structure
Summarizing the Project
Documenting the Project

Display explaining the fabrication
and
flashlights for interaction (to come)



EMERGENCY EVACUATION
In his youth, Paek was covered by the media when he invented a new type of explosive.
In 1975, he was the subject of an entire episode of the series The Experimenters by the BBC.
SAMSUNG
1/6 Scale Model

Opening the exhibit
MFA Interaction Design
College for Creative Studies
2018

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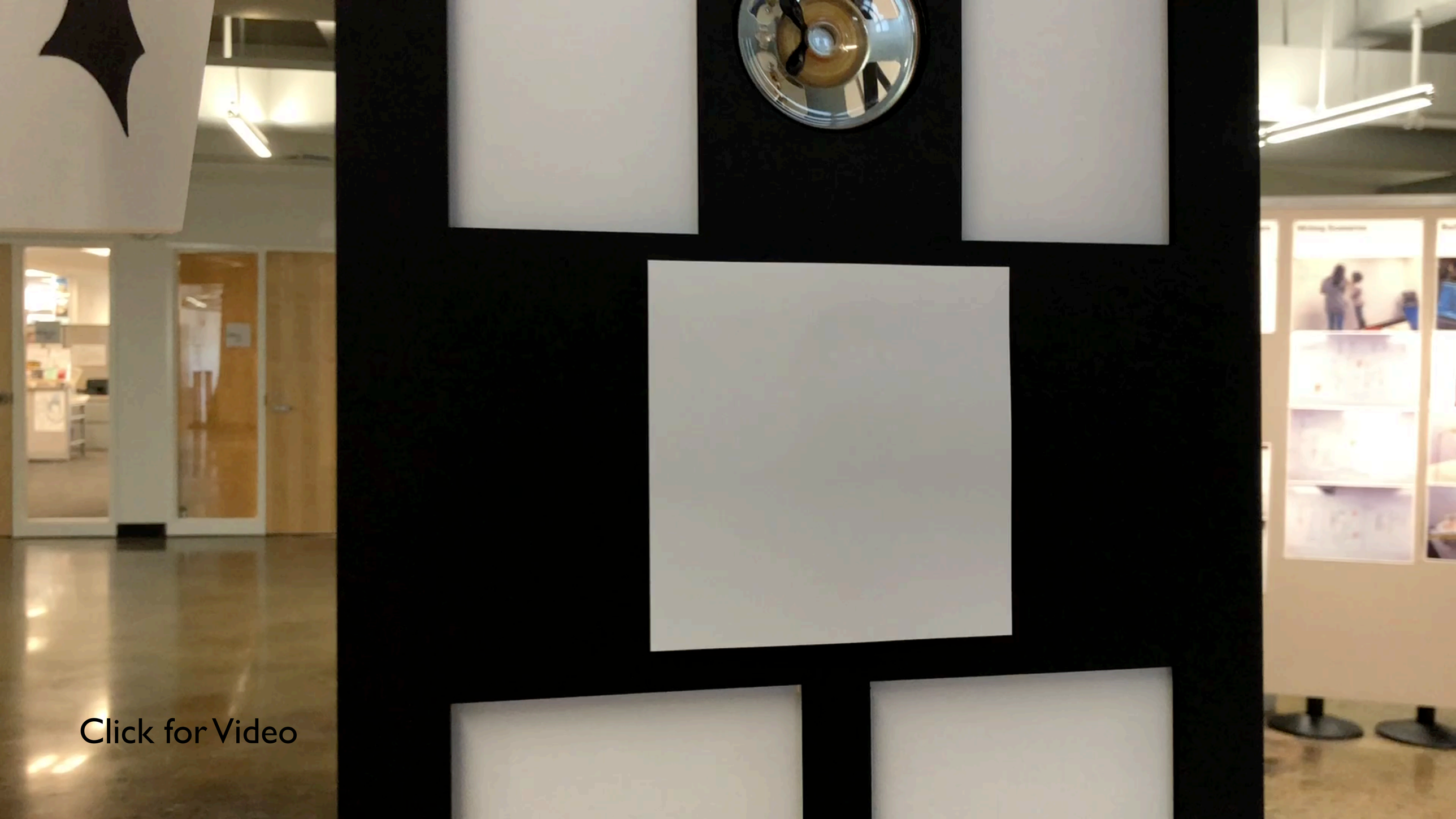
College for Creative Studies
2018

Pangaro & McLeish / COLLOQUY 2018 Project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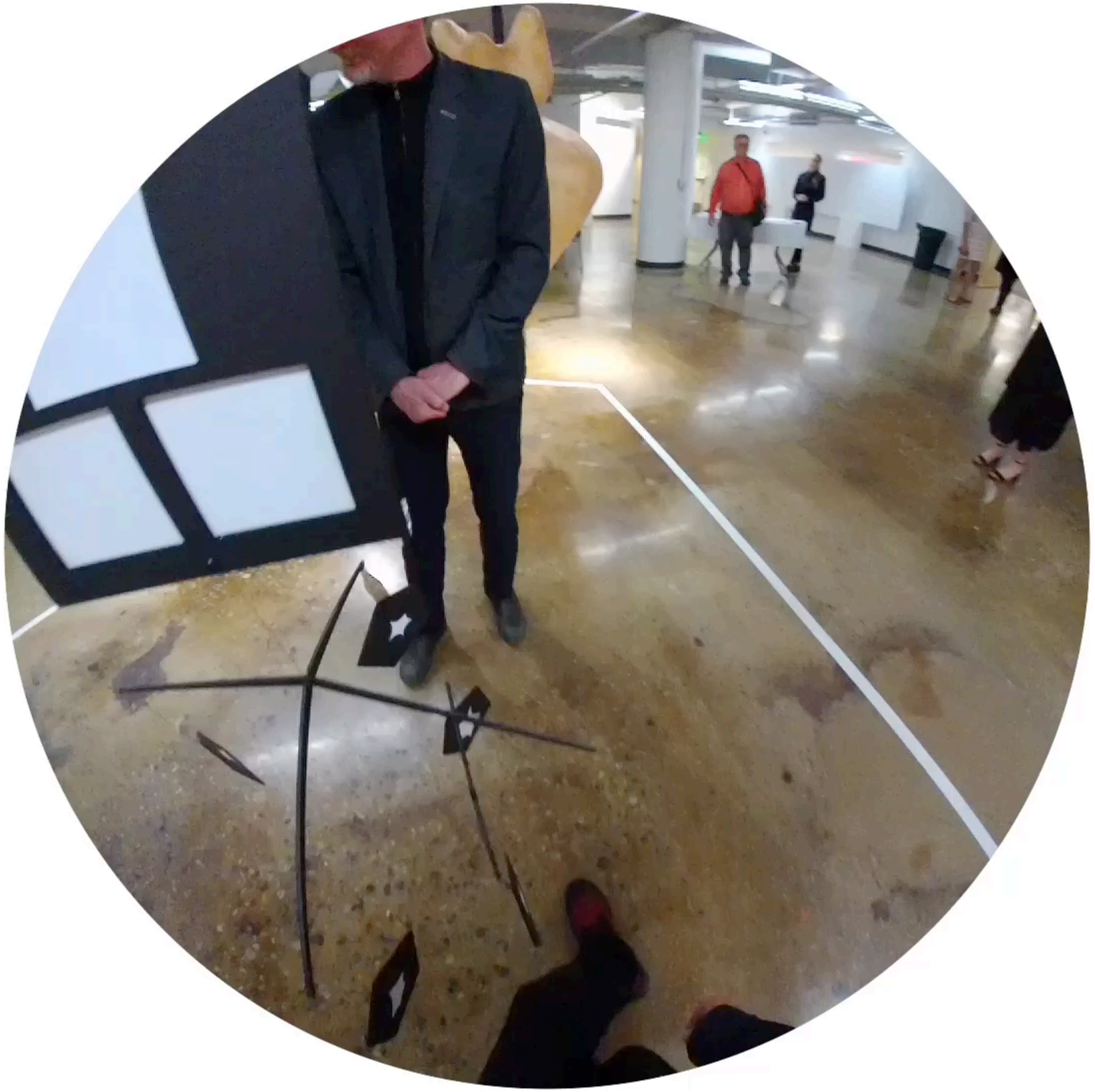

Click for Video

…to use in the classroom or certain places like that. That is a machinery, hardly discernible perhaps, for um… running a Colloquy of Mobiles, as it was called.

Ah, it's the wrong way up, yes.

These were large suspended mobiles and I was taxed with the ability of making an exhibition piece for entertainment, in fact, where people would engage in "conversations through"…

So I made a family of mobiles which were these things on mechanically rotating beams, an environment out of PDP8 [mini-]computers and whatnot, and what in those days was the equivalent to a microprocessor with a load of junk in each one.

The point being that the mobiles had a life of their own and they chatted to each other by beams of light which they waggled up and down and by hooting sounds and so forth and anybody could go into that discourse if they wanted to or hoot at them and put their hand up in front of the light.

And they did.

Click for Video

Here in 1979 Pask explains that Colloquy is "an exhibition piece for entertainment where people would engage in conversations…"

The mobiles have "a life of their own."

"A comment, a case history, and a plan"
by Gordon Pask

In *Cybernetics, Art and Ideas*
Jasia Reichardt, editor
Published 1971

Written before Colloquy was created

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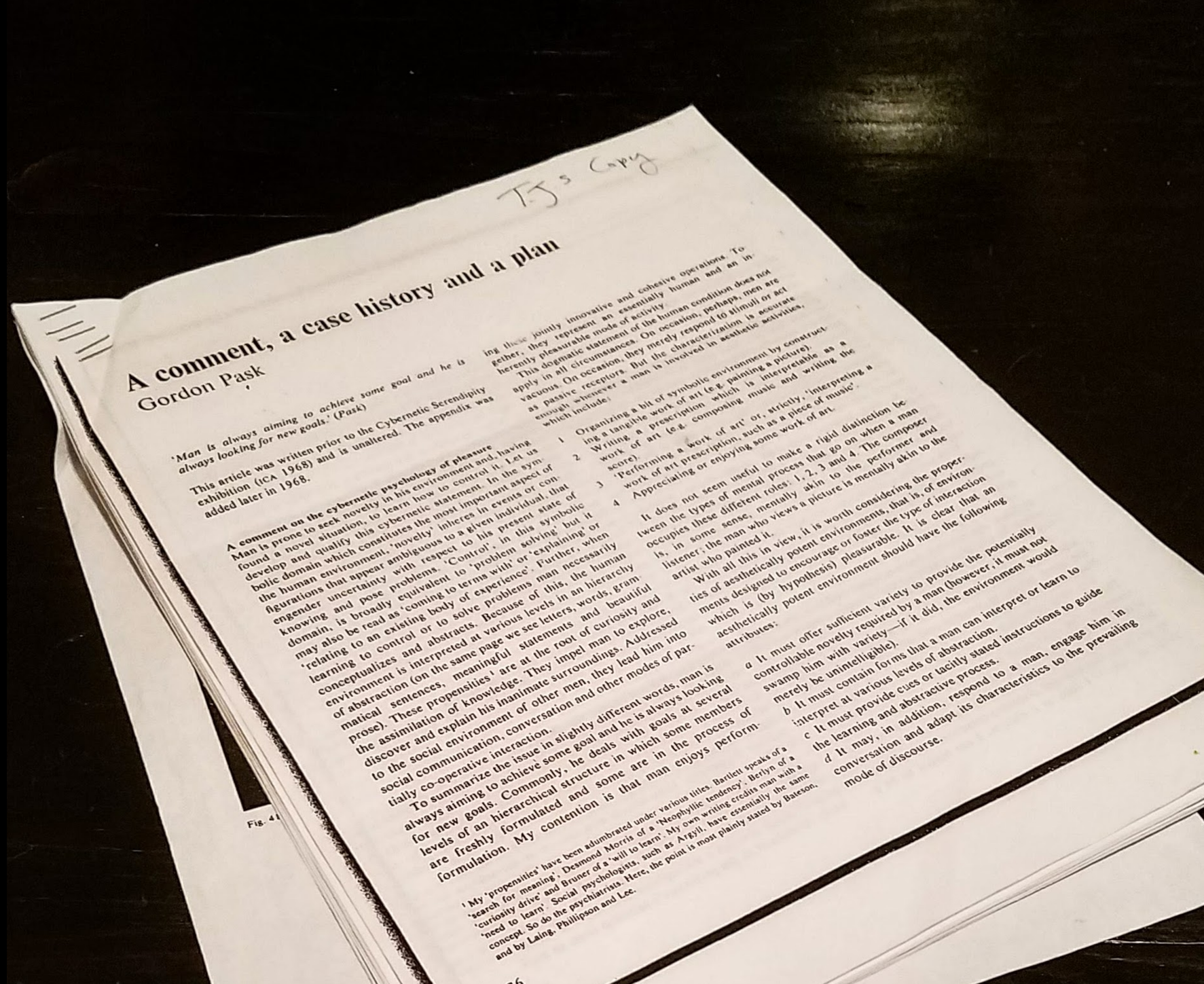

Pask's description of mobile's interactions

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It is evident that the achievement of the *O* satisfaction goal involves an hierarchy of sub-goals and that communication in pursuit of these sub-goals takes place at various levels. Further, the selection of a main goal (such as *O* satisfaction) involves a still higher level process. Referring back to the list of desiderata, we can check that the male members of the mobile community satisfy all of them.

Consider a female: she also has an *O* drive and a *P* drive. Unless both drives are satisfied (when she becomes inert) the female rotates and searches for a male. According to her drive state, she is receptive to males offering *O* or *P* co-operation or to both. Suppose that she is looking for *O* co-operation and suppose she encountered male I in the state already described, on receipt of his intermittent directional signal, she puts his name 'male I' and his intention '*O* satisfaction' into a short-term memory. Next, she emits the correlated sound which he can recognize and expects to receive the 'energetic' beam of orange light. If this *does* fall on her vertical reflector, *b*, she stops her rotational motion and starts a search, using this reflector, to position the beam on some part of male I that will give rise to a reinforcement signal; her goal is to obtain the conjunction of orange light on her reflector and the reinforcement signal from male I; goal achievement reduces her *O* drive. Her likelihood of achieving this goal in the rather short time allowed for an unreinforced encounter, depends upon the vertical reflector search strategy and this in turn depends upon her previous experience (upon what she has learned and placed in a long-term 'memory'). In ignorance of males, her vertical strategy is a haphazard search reflecting the beam up and down. However, if she has previously learned that reinforcement for *O* light comes from reflecting it upwards (in fact on to *C* of male I), then her strategy becomes a limited upwards search. A similar comment applies to *P* experience. Further, not all males are necessarily the same; some may like *O* light on *D* and *P* light on *C*; she can learn that trick also.

In any case, the vertical search strategy terminates after a short time (and the rotational search is resumed) if a reinforcement signal is not received from the male.[1] If a signal is received, the vertical search is prolonged possibly until the female drive state has been modified. The whole process is summarized in the accompanying flow-charts. There are five independent systems, three female and two male which are run asynchronously in parallel. The flow-charts of figures 35, 36 and 37 represent a female system and the flow-charts of figures 38 and 39 represent a male system.

This completes[2] our description of the social environment of mobiles.

The really interesting issue is what happens if some human beings are provided with the wherewithal to produce signs in the mobile language and are introduced into the environment. It is quite likely that they will communicate with the mobiles, for the mobiles are interacting already and ostensively define the gambits involved in the process. Further, their community has quite an intriguing organization. At this level alone, the environment has the properties required of an aesthetically potent environment.

But the mobiles produce a complex auditory and visual effect by dint of their interaction. They cannot, of course, interpret these light and sound patterns. But human beings can and it seems reasonable to suppose that they will also aim to achieve patterns that they deem pleasing by interacting with the system at a higher level of discourse.

I do not know. But I believe it may work out that way.

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Schematic diagram of the mobiles

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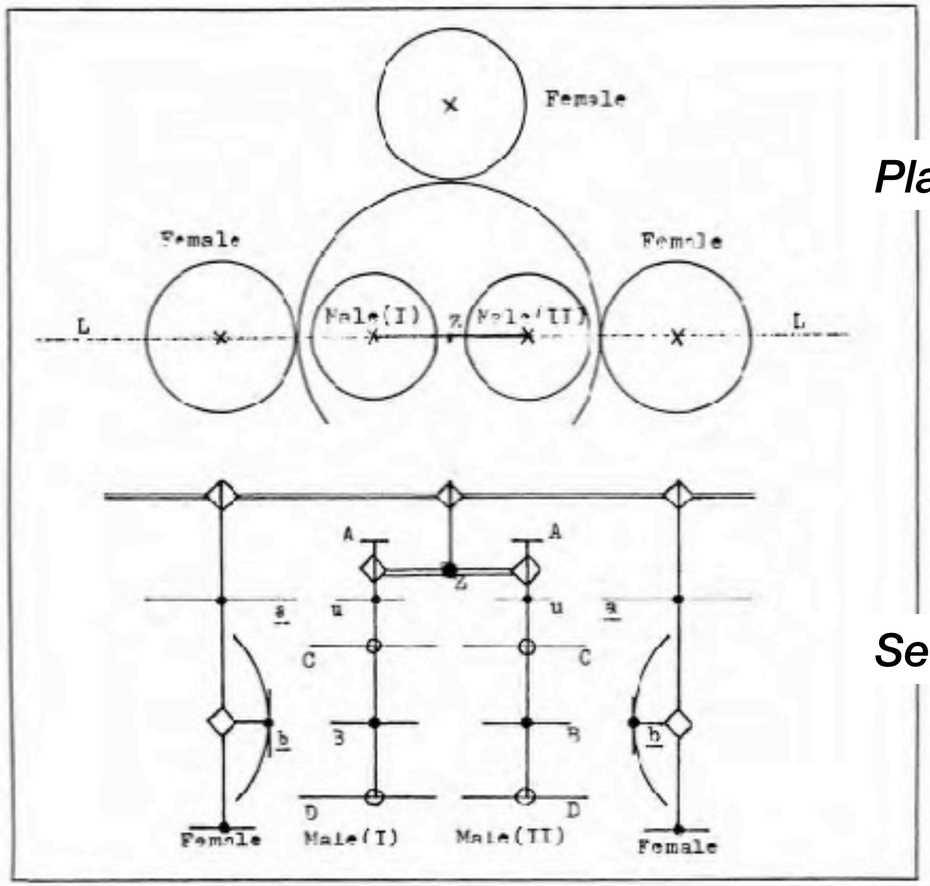

Plan View

Section View

Fig. 34 A rough sketch of powered mobiles.
a Horizontal plan
b Vertical section taken through line *L* in horizontal plan.
A = drive state display for male
B = main body of male, bearing 'energetic' light projectors *O* and *P*
C = upper 'energetic' receptors
D = lower 'energetic' receptors
U = non 'energetic', intermittent signal lamp
a = female receptor for intermittent positional signal
b = vertically movable reflector of female
Z = bar linkage bearing male I and male II

= Drive motor
= Free coupling
= Fixed coupling
= Bar linkage

Flowcharts of mobile behaviors

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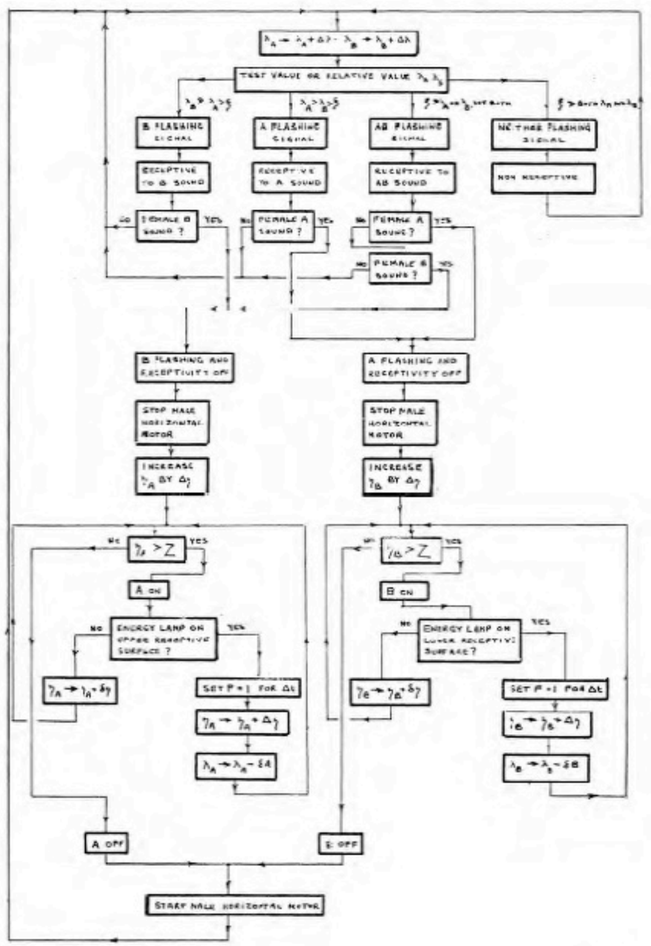
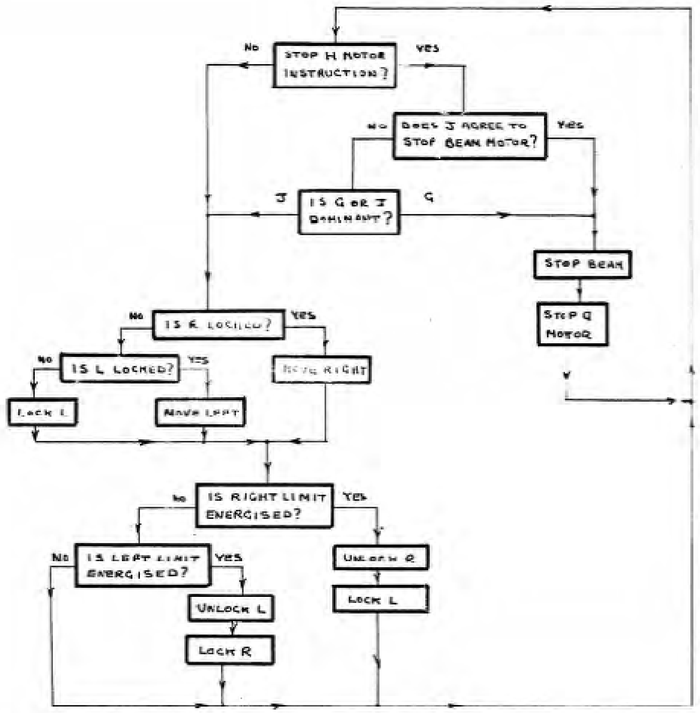
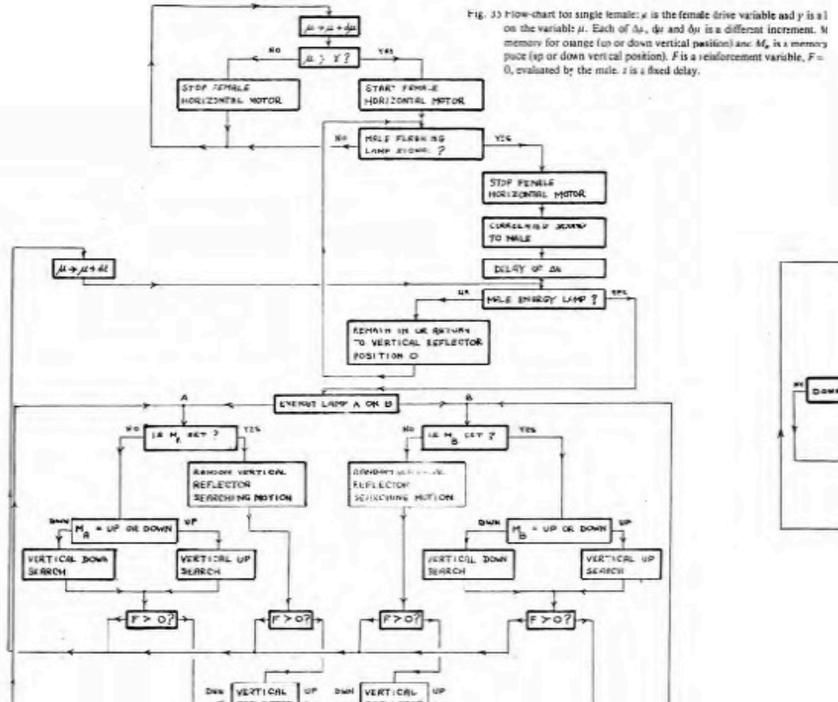
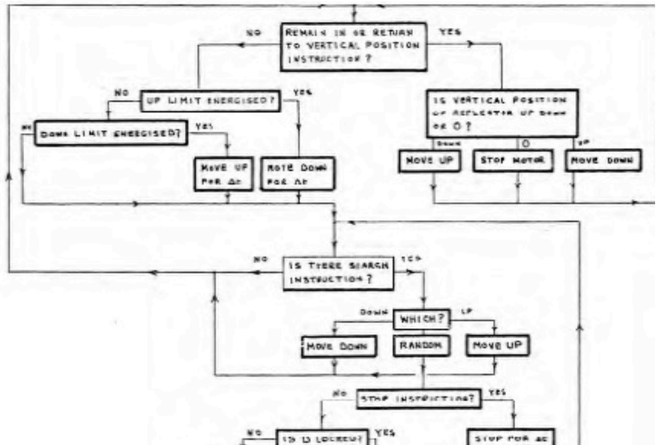
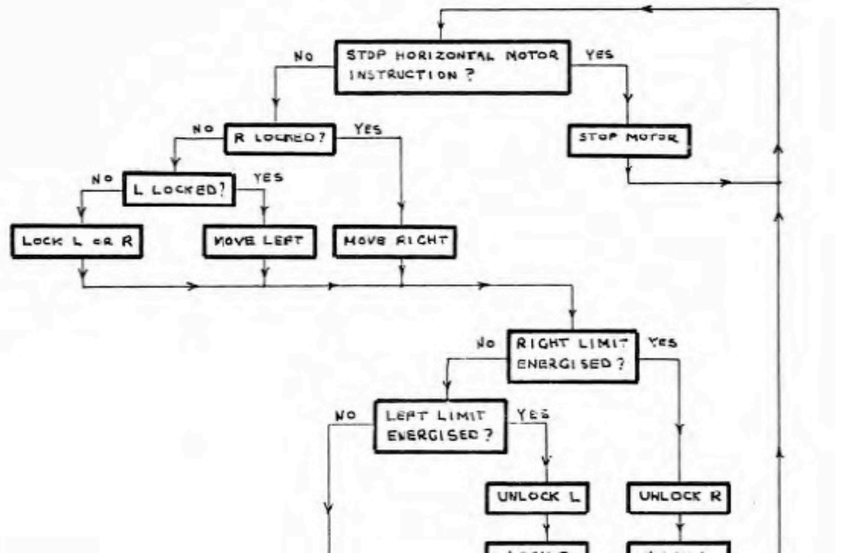


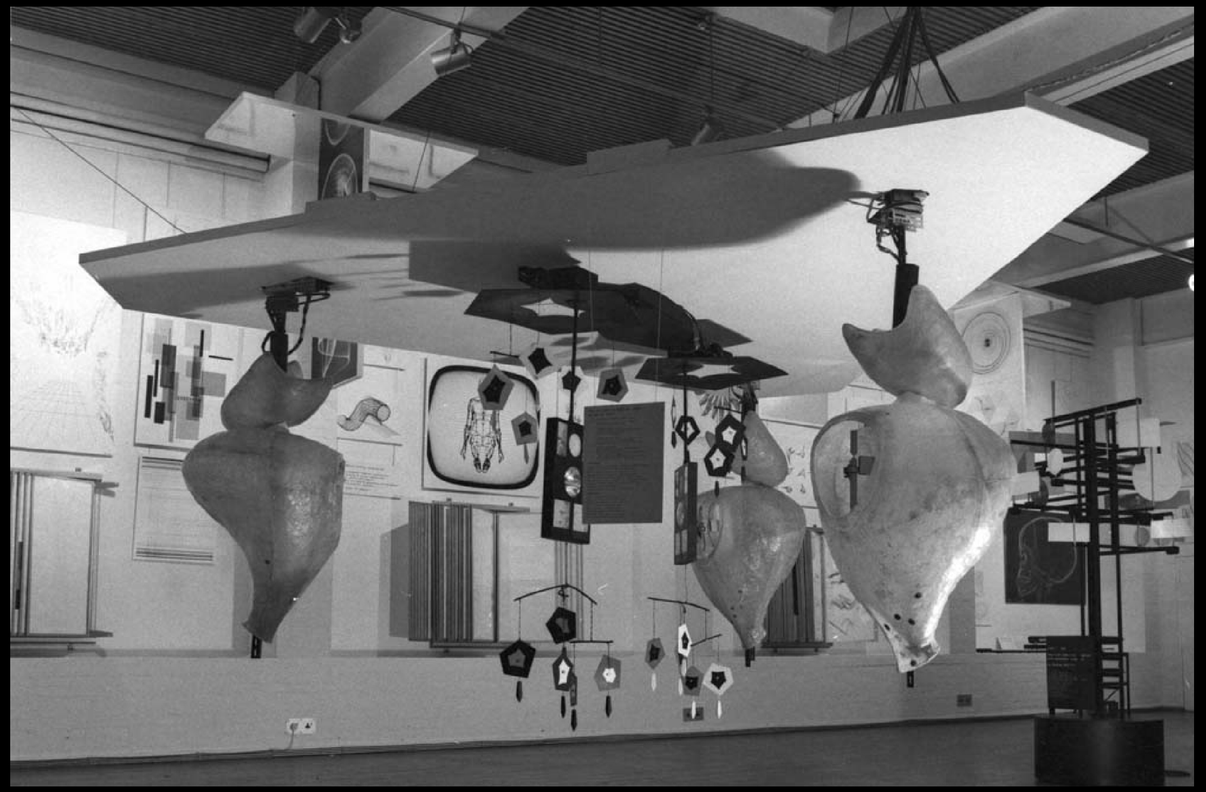








Colloquy of Mobiles, Institute for Contemporary Arts, London
by Gordon Pask
1971



COLLOQUY 2018 Project, MFA Interaction Design Program
College for Creative Studies, CCS
2018

Image simulated at inception of the project

Advisors

Amanda Pask Heitler and Hermione Pask, Gordon Pask's daughters and executors of his scientific and artistic estate

Jasia Reichardt, Curator of the original Cybernetic Serendipity Exhibition at the ICA in 1968

Albert Müller, Curator of the Gordon Pask Archive, University of Vienna

Andrew Pickering, Author of "The Cybernetic Brain"

Guilherme Kujawski, Writer, Teacher, and Co- Curator of Emoção Art.ficial, ITAU Cultural

Hugh Dubberly, Design Planner and Teacher

John Plunkett, Designer and co-founder, WiReD Magazine

Marc Schwartz, Co-founder, DLECTRICITY

Vince Carducci, Dean of Undergraduate Affairs, CCS

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COLLOQUY 2018 PROJECT

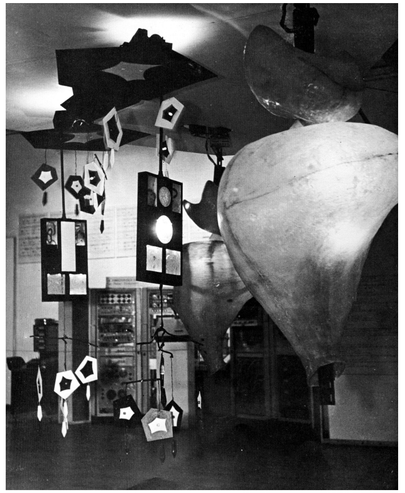
College for Creative Studies, Masters Program in Interaction Design

The College for Creative Studies (CCS) is a nonprofit, private college that strives to provide students with the tools needed for successful careers in the dynamic and growing creative industries. The CCS Masters of Fine Arts Program in Interaction Design was established in 2014 to prepare graduates for creating richly interactive products and services that enhance meaning and expand possibilities in people's daily lives.

Project Description

The COLLOQUY 2018 Project will reproduce Gordon Pask's seminal interactive gallery work, COLLOQUY OF MOBILES, originally created for the ground-breaking exhibit CYBERNETIC SERENDIPITY at the Institute of Contemporary Arts in London in 1968. COLLOQUY OF MOBILES comprises sculptural figures that move and interact through light and sound, with each other and with the public.

In 1968 COLLOQUY OF MOBILES explored the nature of machine-to-machine and person-to-machine conversations in an interactive, immersive environment, perhaps the first of its kind. Frequently praised for its originality and influence, Pask's work is a precursor to practices of contemporary art and design, such as relational aesthetics, social practice, intermedia, user experience/interaction design, and human-machine interaction.



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

Project Objectives

In celebration of the 50th anniversary, a full-scale version of Pask's COLLOQUY OF MOBILES will be replicated, approximately 10' by 12' in floor area and stretching from floor to ceiling. While the physical form will be as close as possible to the 1968 original, it will be driven by modern digital software, sensors, and motors. This makes possible the recreation of the dynamic interactions as Pask designed them in 1968 as well as the invitation to students to explore what the newest technologies in 2018 — voice interfaces, motion sensors, facial sentiment analysis, and artificial intelligence — imply for the future of human-machine symbiosis.

Audiences

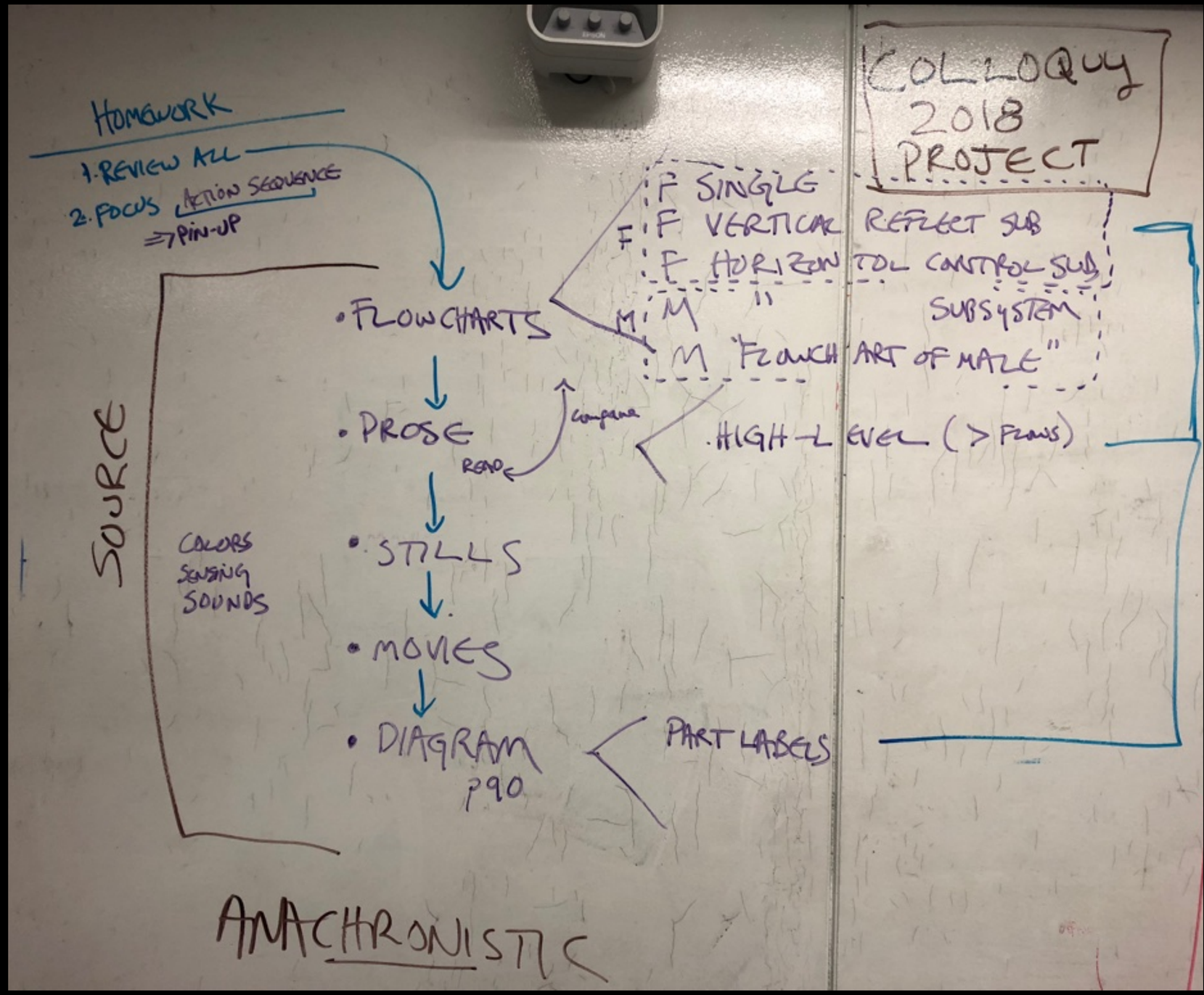
COLLOQUY OF MOBILES creates a human environment that contains conversational machines, a condition that is now part of everyday life. Whether operating in its original 1968 mode or an updated 2018 mode, COLLOQUY allows gallery audiences to participate in immersive, real-time interactions that are surprising and provocative. In 2018 the experience of moving among the mobiles of the installation and engaging them via sound, speech, body movements, and facial expressions, via enhanced 2018 technology, will offer a rational as well as emotional sense of what it means to live among machines that converse. The COLLOQUY 2018 Project will change how we feel about going home to voice interfaces such as Siri and Alexa, and how we experience living among smart machines.

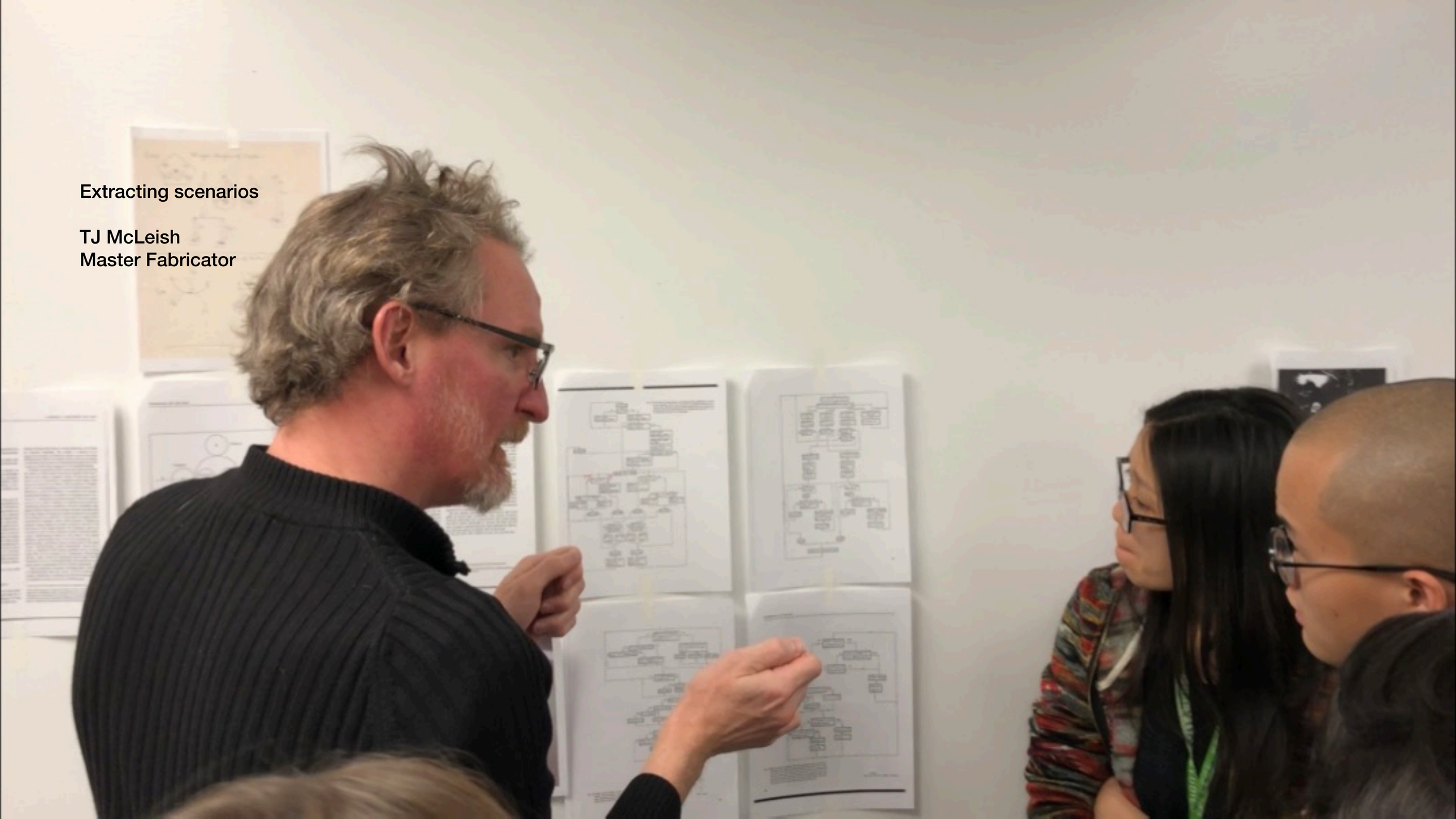
Enter the students
CCS MFA Interaction Design

COLLOQUY 2018 Project

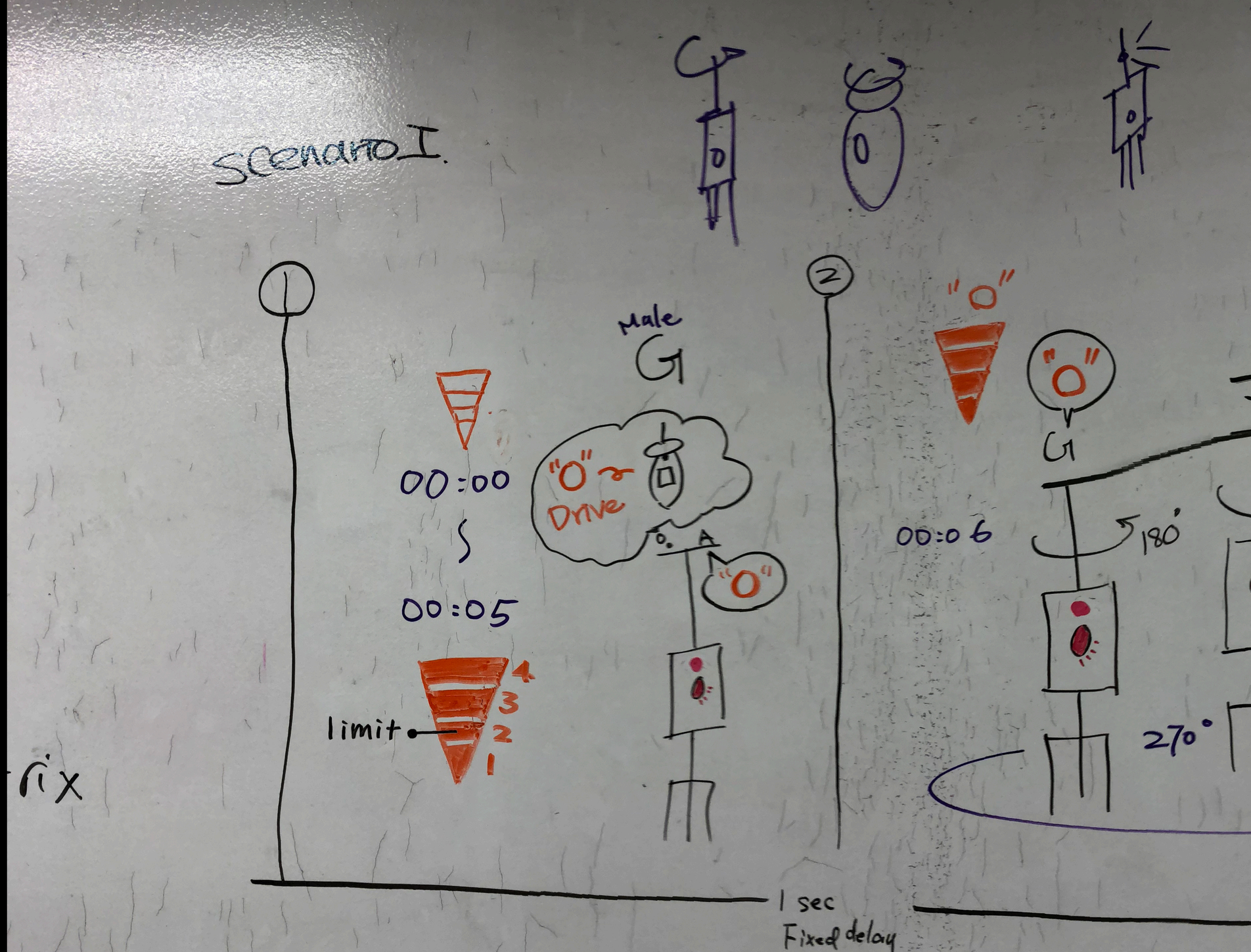
Understanding available materials

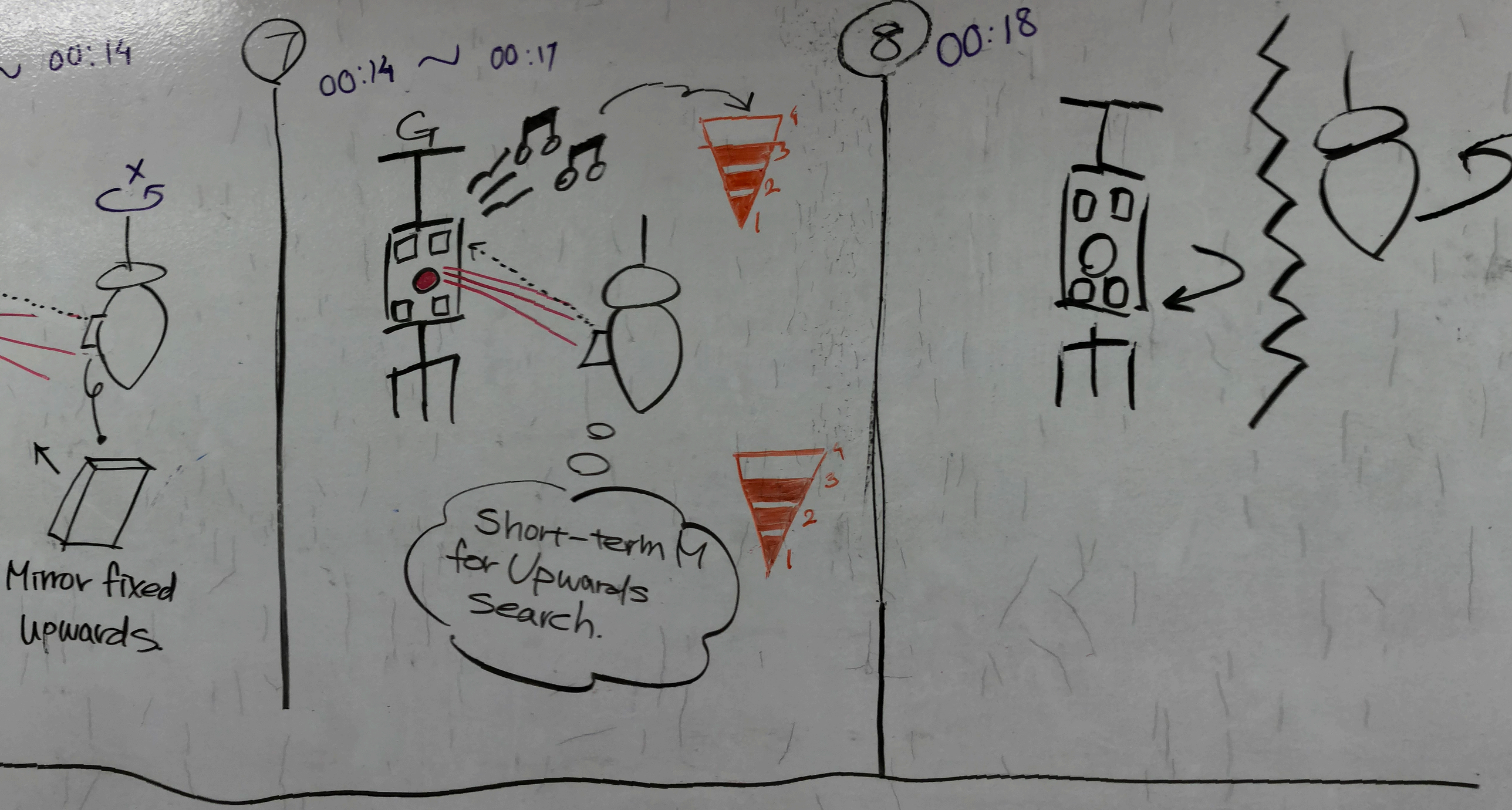
Studio IV: Immersive Interactive Experiences
CCS MFA Interaction Design Program




Extracting scenarios
TJ McLeish
Master Fabricator

Extracting scenarios




~ 00:14
X
Mirror fixed upwards.
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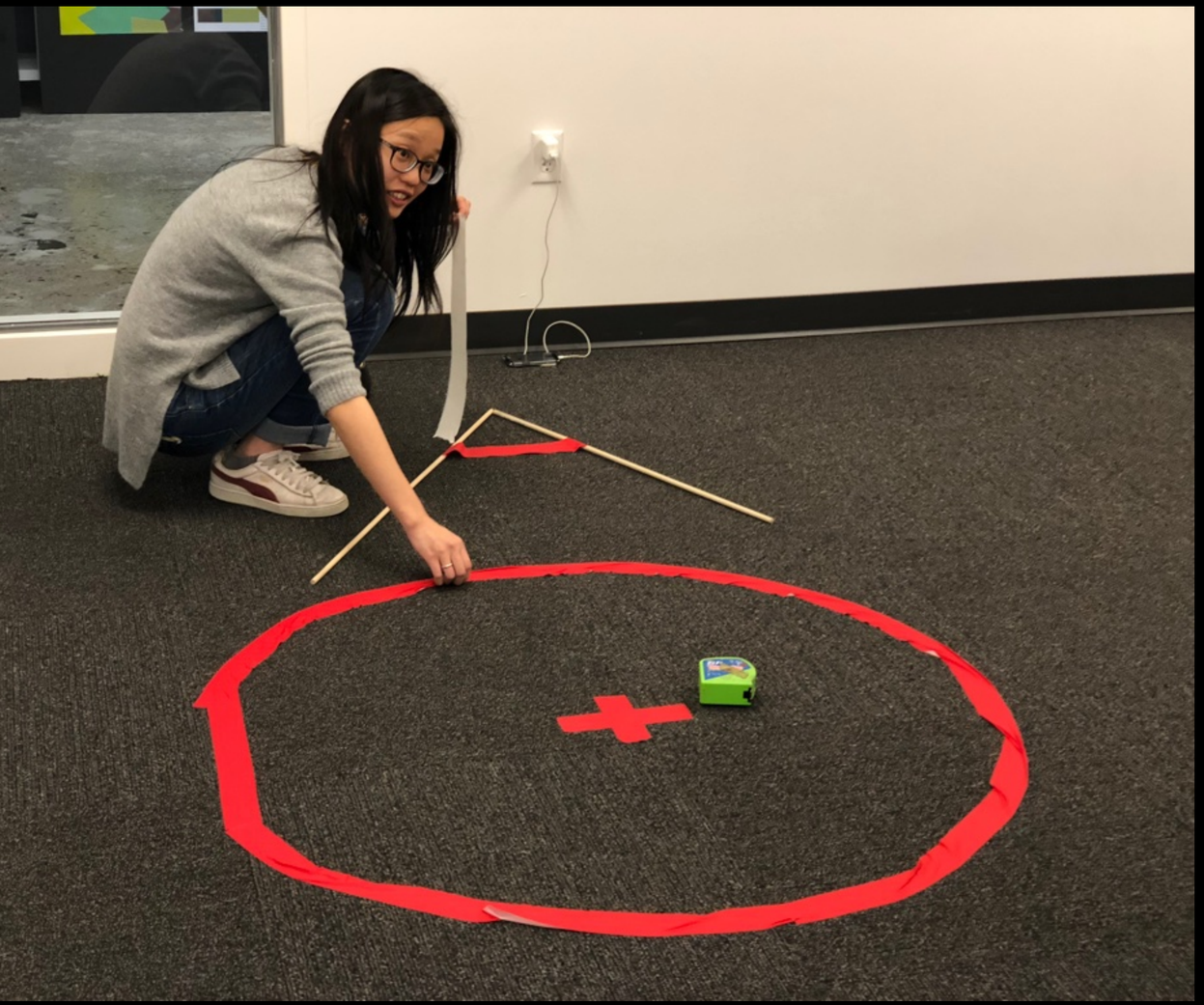
Understanding the configuration

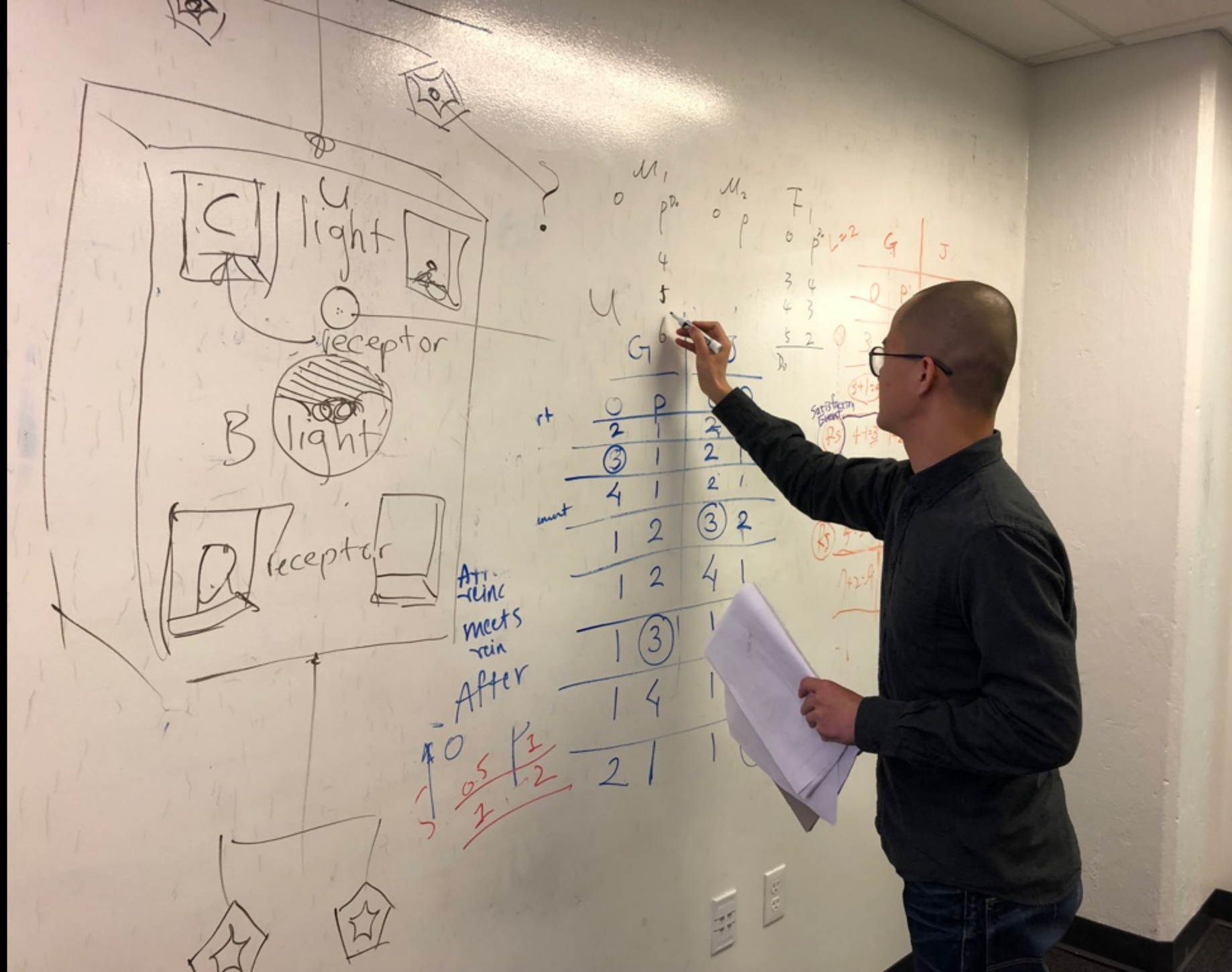


Role-playing mobile behaviors

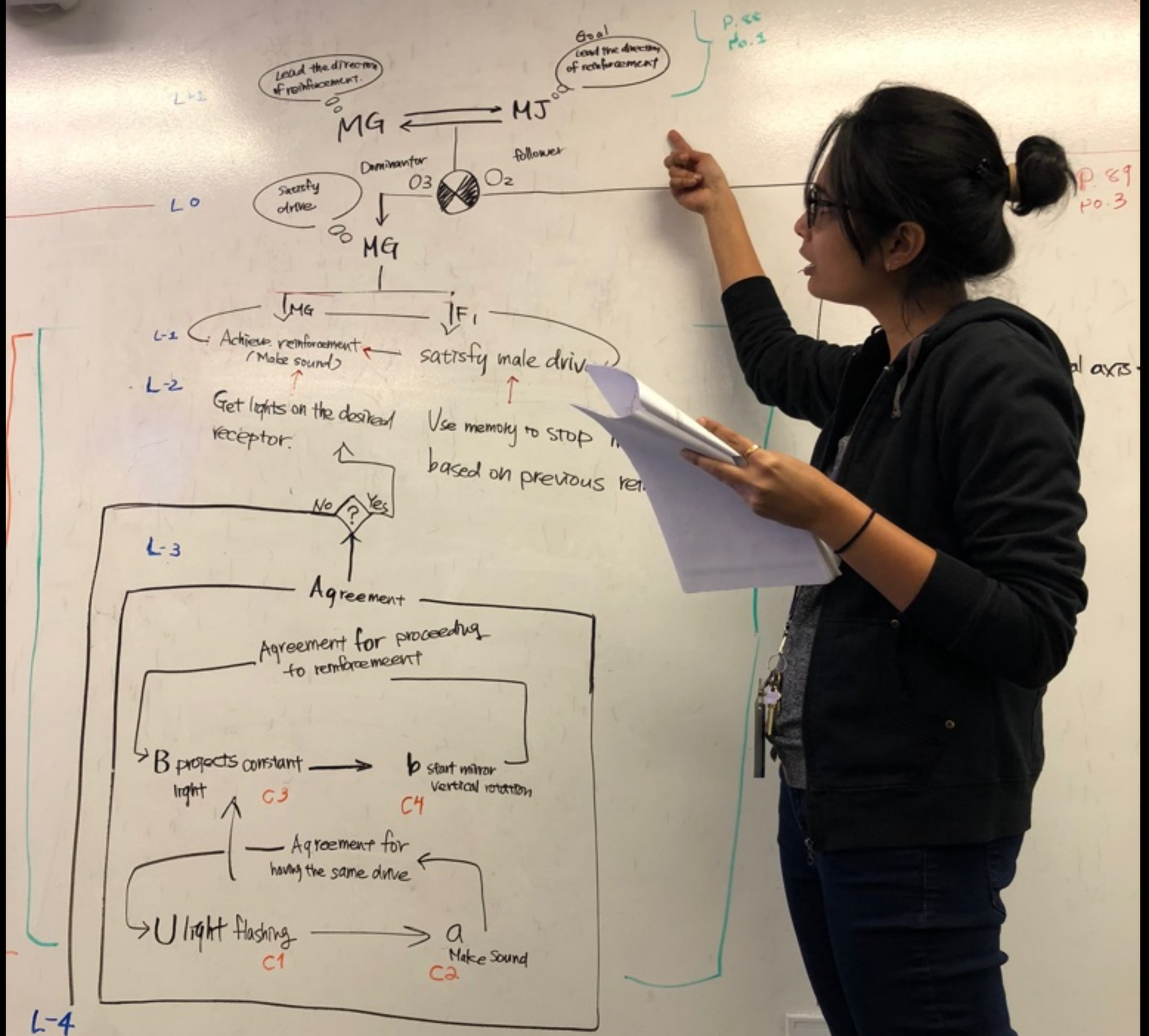
Click for Video

Arguing about the behaviors

Specifying the interactions
and quantifying the logic



Modeling the conversation



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Written before Colloquy was created in 1968

It is evident that the achievement of the *O* satisfaction goal involves an hierarchy of sub-goals and that communication in pursuit of these sub-goals takes place at various levels. Further, the selection of a main goal (such as *O* satisfaction) involves a still higher level process. Referring back to the list of desiderata, we can check that the male members of the mobile community satisfy all of them.

Consider a female: she also has an *O* drive and a *P* drive. Unless both drives are satisfied (when she becomes inert) the female rotates and searches for a male. According to her drive state, she is receptive to males offering *O* or *P* co-operation or to both. Suppose that she is looking for *O* co-operation and suppose she encountered male I in the state already described, on receipt of his intermittent directional signal, she puts his name 'male I' and his intention '*O* satisfaction' into a short-term memory. Next, she emits the correlated sound which he can recognize and expects to receive the 'energetic' beam of orange light. If this *does* fall on her vertical reflector, *b*, she stops her rotational motion and starts a search, using this reflector, to position the beam on some part of male I that will give rise to a reinforcement signal; her goal is to obtain the conjunction of orange light on her reflector and the reinforcement signal from male I; goal achievement reduces her *O* drive. Her likelihood of achieving this goal in the rather short time allowed for an unreinforced encounter, depends upon the vertical reflector search strategy and this in turn depends upon her previous experience (upon what she has learned and placed in a long-term 'memory'). In ignorance of males, her vertical strategy is a haphazard search reflecting the beam up and down. However, if she has previously learned that reinforcement for *O* light comes from reflecting it upwards (in fact on to *C*

of male I), then her strategy becomes a
search. A similar comment applies to *P* exp
not all males are necessarily the same; som
on *D* and *P* light on *C*; she can learn that
In any case, the vertical search strategy
short time (and the rotational search is
inforcement signal is not received from the
is received, the vertical search is prolong
the female drive state has been modified. T
is summarized in the accompanying flow-
five independent systems, three female and
are run asynchronously in parallel. Th
figures 35, 36 and 37 represent a female
flow-charts of figures 38 and 39 represent
This completes[2] our description of the s
of mobiles.
The really interesting issue is what
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can and it seems reasonable to suppose th
aim to achieve patterns that they deem plea
ing with the system at a higher level of disc
I do not know. But I believe it may wor

Pask's description of mobiles' behaviors
"A comment, a case history, and a plan"
by Gordon Pask
Written before Colloquy was created in 1968

It is evident that the achievement of the *O* satisfaction goal involves an hierarchy of sub-goals and that communication in pursuit of these sub-goals takes place at various levels. Further, the selection of a main goal (such as *O* satisfaction) involves a still higher level process. Referring back to the list of desiderata, we can check that the male members of the mobile community satisfy all of them.

Consider a female: she also has an *O* drive and a *P* drive. Unless both drives are satisfied (when she becomes inert) the female rotates and searches for a male. According to her drive state, she is receptive to males offering *O* or *P* co-operation or to both. Suppose that she is looking for *O* co-operation and suppose she encountered male I in the state already described, on receipt of his intermittent directional signal, she puts his name 'male I' and his intention '*O* satisfaction' into a short-term memory. Next, she emits the correlated sound which he can recognize and expects to receive the 'energetic' beam of orange light. If this *does* fall on her vertical reflector, *b*, she stops her rotational motion and starts a search, using this reflector, to position the beam on some part of male I that will give rise to a reinforcement signal; her goal is to obtain the conjunction of orange light on her reflector and the reinforcement signal from male I; goal achievement reduces her *O* drive. Her likelihood of achieving this goal in the rather short time allowed for an unreinforced encounter, depends upon the vertical reflector search strategy and this in turn depends upon her previous experience (upon what she has learned and placed in a long-term 'memory'). In ignorance of males, her vertical strategy is a haphazard search reflecting the beam up and down. However, if she has previously learned that reinforcement for *O* light comes from reflecting it upwards (in fact on to *C* of male I), then her strategy becomes a limited upwards search. A similar comment applies to *P* experience. Further, not all males are necessarily the same; some may like *O* light on *D* and *P* light on *C*; she can learn that trick also.

In any case, the vertical search strategy terminates after a short time (and the rotational search is resumed) if a reinforcement signal is not received from the male.[1] If a signal is received, the vertical search is prolonged possibly until the female drive state has been modified. The whole process is summarized in the accompanying flow-charts. There are five independent systems, three female and two male which are run asynchronously in parallel. The flow-charts of figures 35, 36 and 37 represent a female system and the flow-charts of figures 38 and 39 represent a male system.

This completes[2] our description of the social environment of mobiles.

The really interesting issue is what happens if some human beings are provided with the wherewithal to produce signs in the mobile language and are introduced into the environment. It is quite likely that they will communicate with the mobiles, for the mobiles are interacting already and ostensively define the gambits involved in the process. Further, their community has quite an intriguing organization. At this level alone, the environment has the properties required of an aesthetically potent environment.

But the mobiles produce a complex auditory and visual effect by dint of their interaction. They cannot, of course, interpret these light and sound patterns. But human beings can and it seems reasonable to suppose that they will also aim to achieve patterns that they deem pleasing by interacting with the system at a higher level of discourse.

I do not know. But I believe it may work out that way.

Specifying instructions for mobile behaviors
Students of Studio IV
MFA Interaction Design
2018

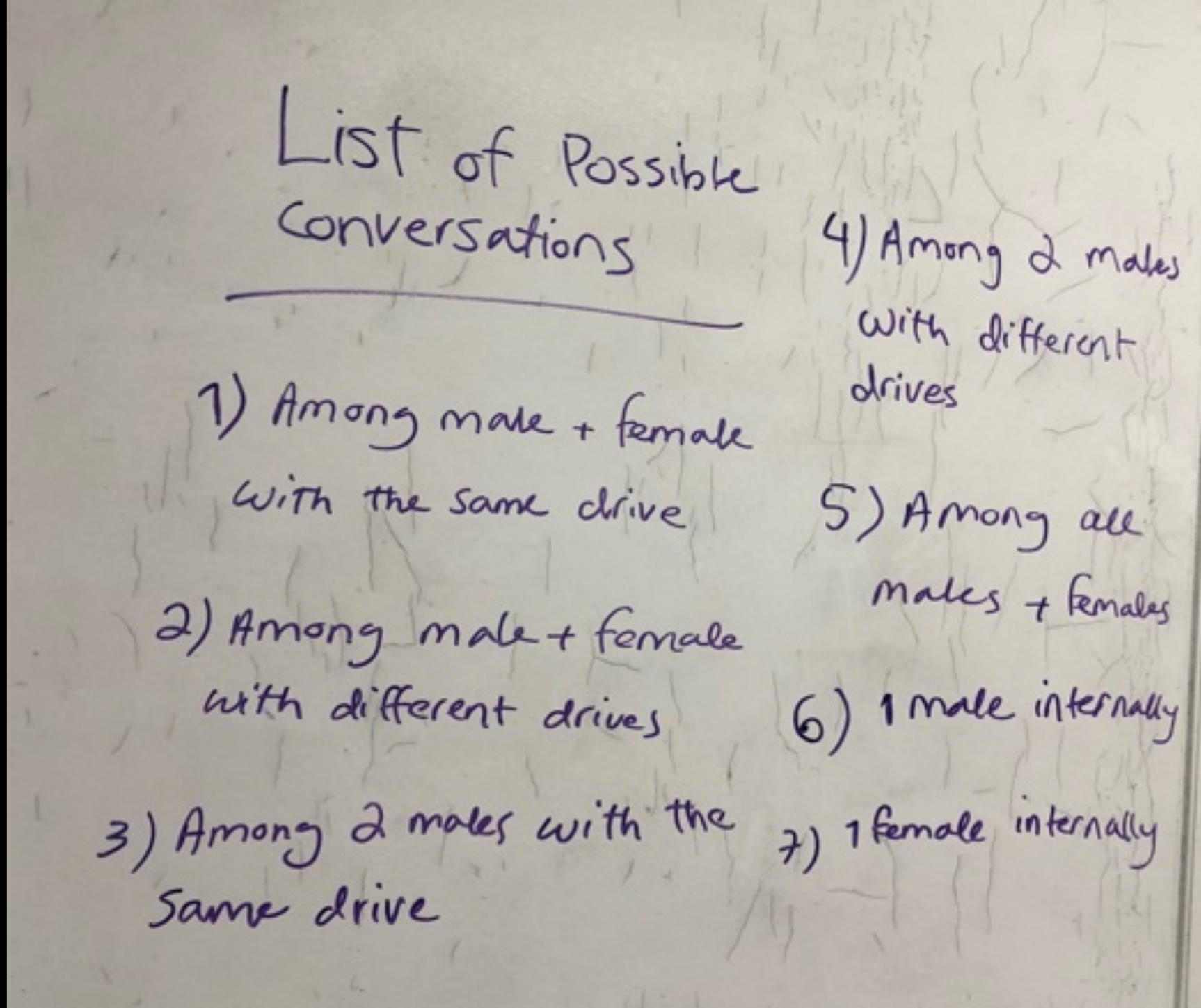
Scenario 1: Initial conditions: No female memory as of yet. Male and female have same drive 'O' and reinforcement occurs.

1. **Male G has an 'O' drive and needs to locate a female that has the same drive. He is flashing his 'u' light which is signalling 'O'. He has sound sensor which is always active.**
2. **Male G rotates on its own axis across 180 degrees and two males rotate across 360 degrees. Their 'u' lights are flashing.**
3. **Females rotate back and forth for 90 degrees on their axes.**
4. **Male G happens come across Female F1 and all of their components (sensors, lights, mirror) face each other for a fraction of a second.**
5. **Male G's flashing 'u' light falls on the photo sensor 'a' of F1, which causes F1 to stop. The frequency of the flashing 'u' light will convey the drive of male G—which is 'O'—to F1.**
6. **The following multiple steps happen in a split second:**
   a. **F1 determines if her drive ('O') matches Male G's drive, still signalling 'O', based on the frequency of flashing of G's light 'u'.**
   b. **F1 confirms that her drive matches Male G's drive; she signals this by producing a sound.**
   c. **Female starts her vertical mirror oscillation.**
4. **Male G receives the sound and his 'u' light becomes B light, which is the constant light.**
5. **B light falls on the 'a' receptor of F1 and, if it becomes constant enough, she stops her vertical motor search.**
6. **F1's mirror stops at the upper angle causing light to hit the C receptor, and reinforcement starts to occur.**
7. **Male G's 'O' drive becomes satisfied when the reflection of the B light hits the C receptor for a sufficient period.**
8. **F1 receives the sound from Male G, indicating the reinforcement succeeded, and lowers her 'O' drive by 1 point.**
9. **F1 places the mirror angle into short-term memory.**

They part ways — they rotate again on their own axes.

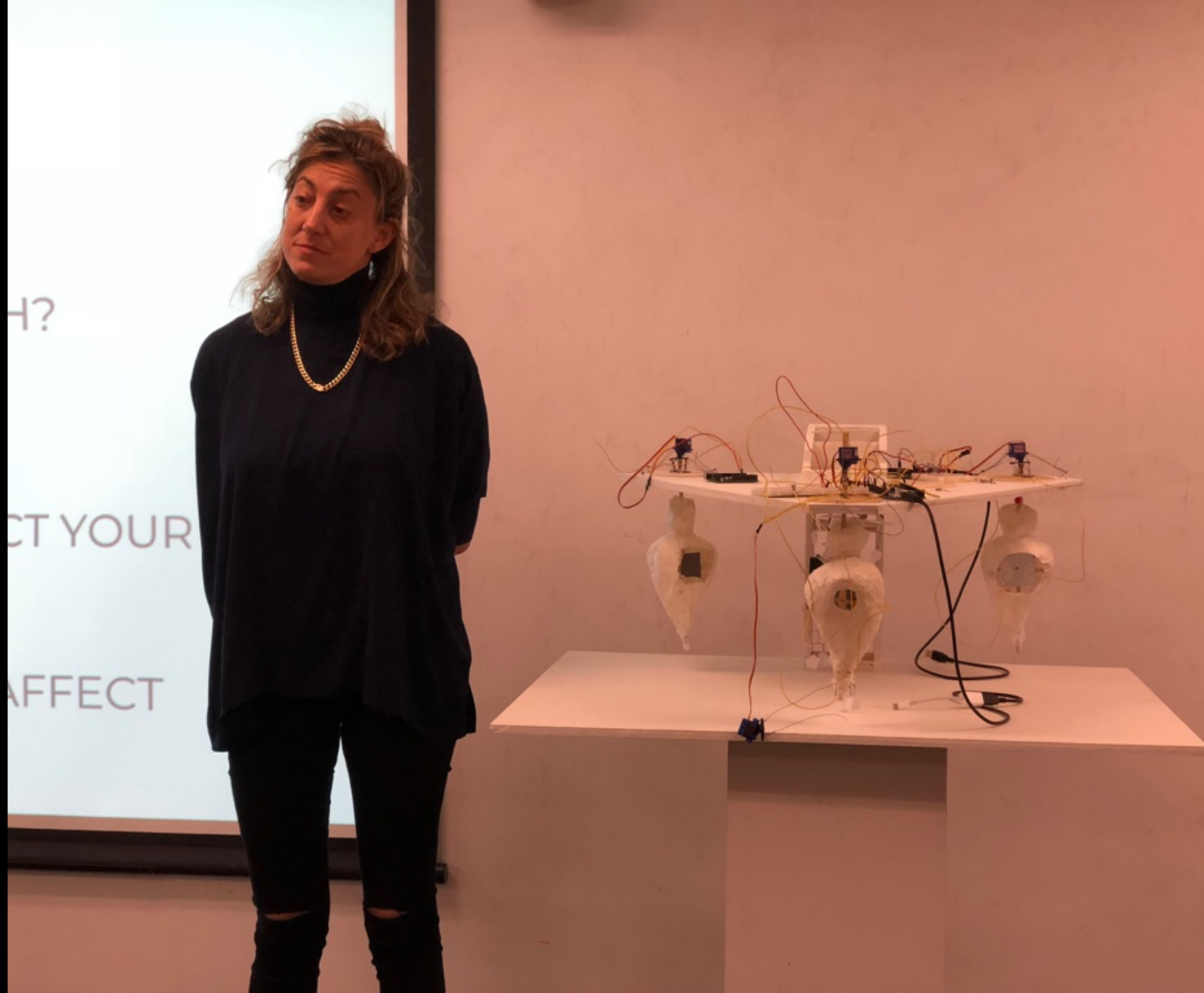
Presenting outcomes

Imagining alternative conversations
for COLLOQUY 2018 scenarios



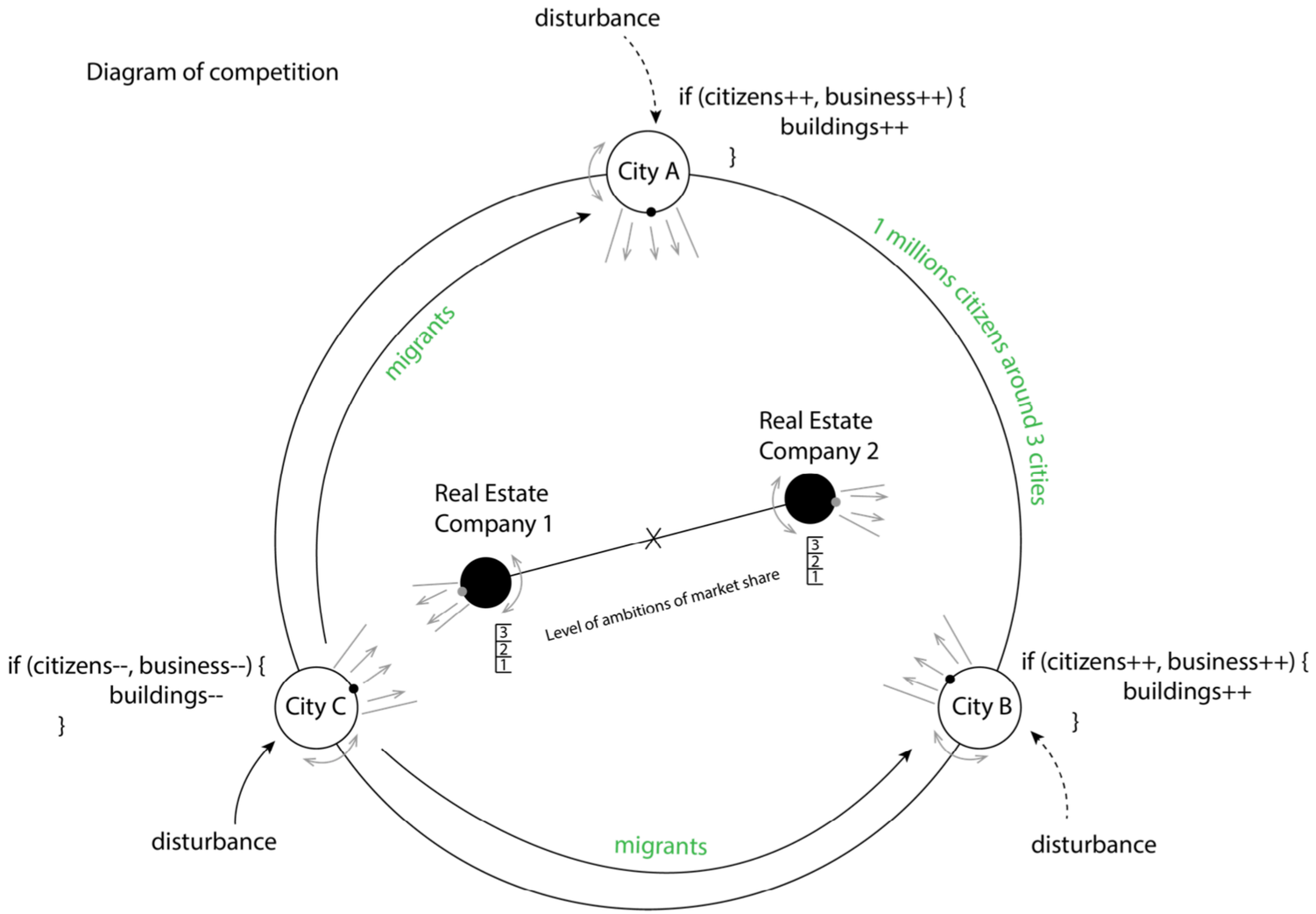
Rinat Sherzer, Facilitator

Workshop on alternative conversations
for COLLOQUY 2018 scenarios



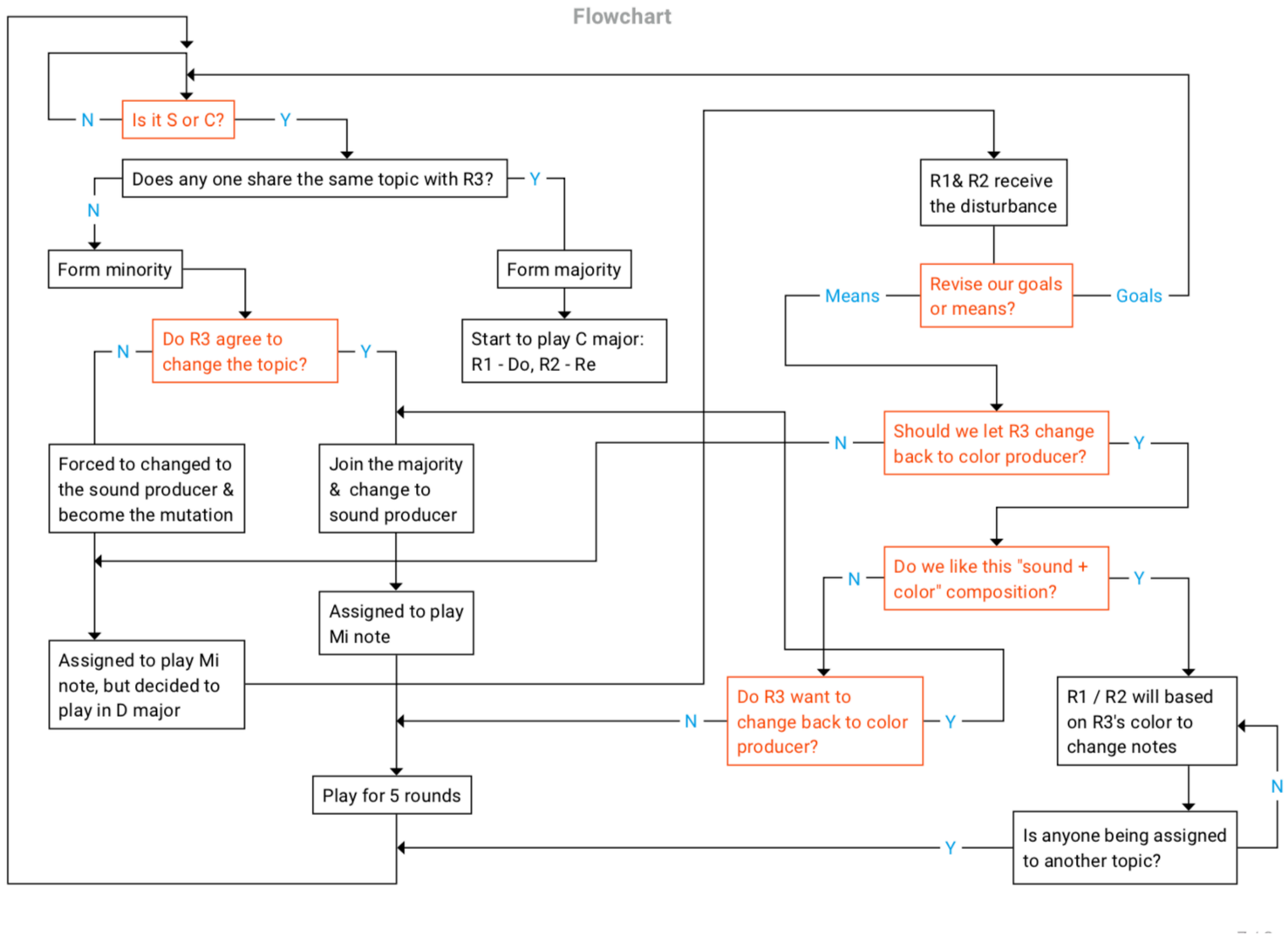
Imagining alternative conversations
for COLLOQUY 2018 scenarios

Cities & Startups
Agreement for mutual benefit
Zhibin Wu, IxD MFA Class of 2018



Imagining alternative conversations
for COLLOQUY 2018 scenarios

Participants in conversation
Compromising to reach agreement
Chia-min Lin, Class of 2018



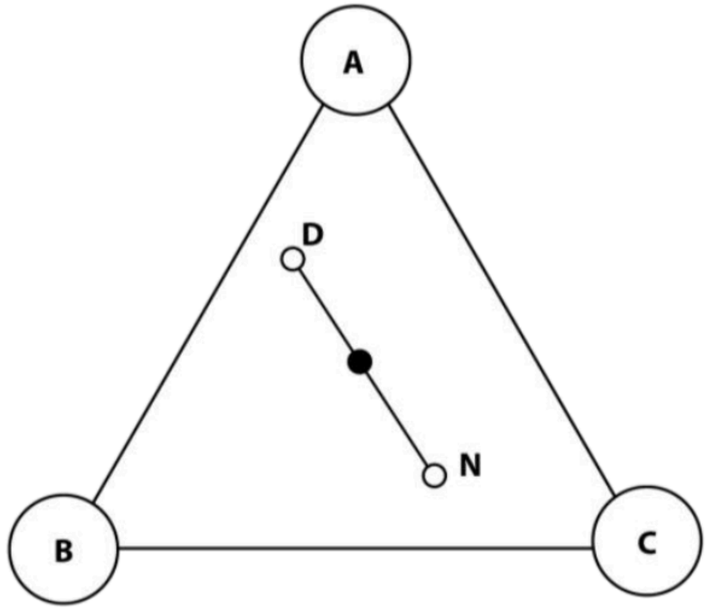
Imagining alternative conversations
for COLLOQUY 2018 scenarios

1 User & 3 E-commerce companies
Finding the best deal
Pooja Upadhayay, Class of 2018

Players

Outer: Three E-commerce companies (A, B and C)

Center: One customer's two elements (D = desire and N = need)



Description

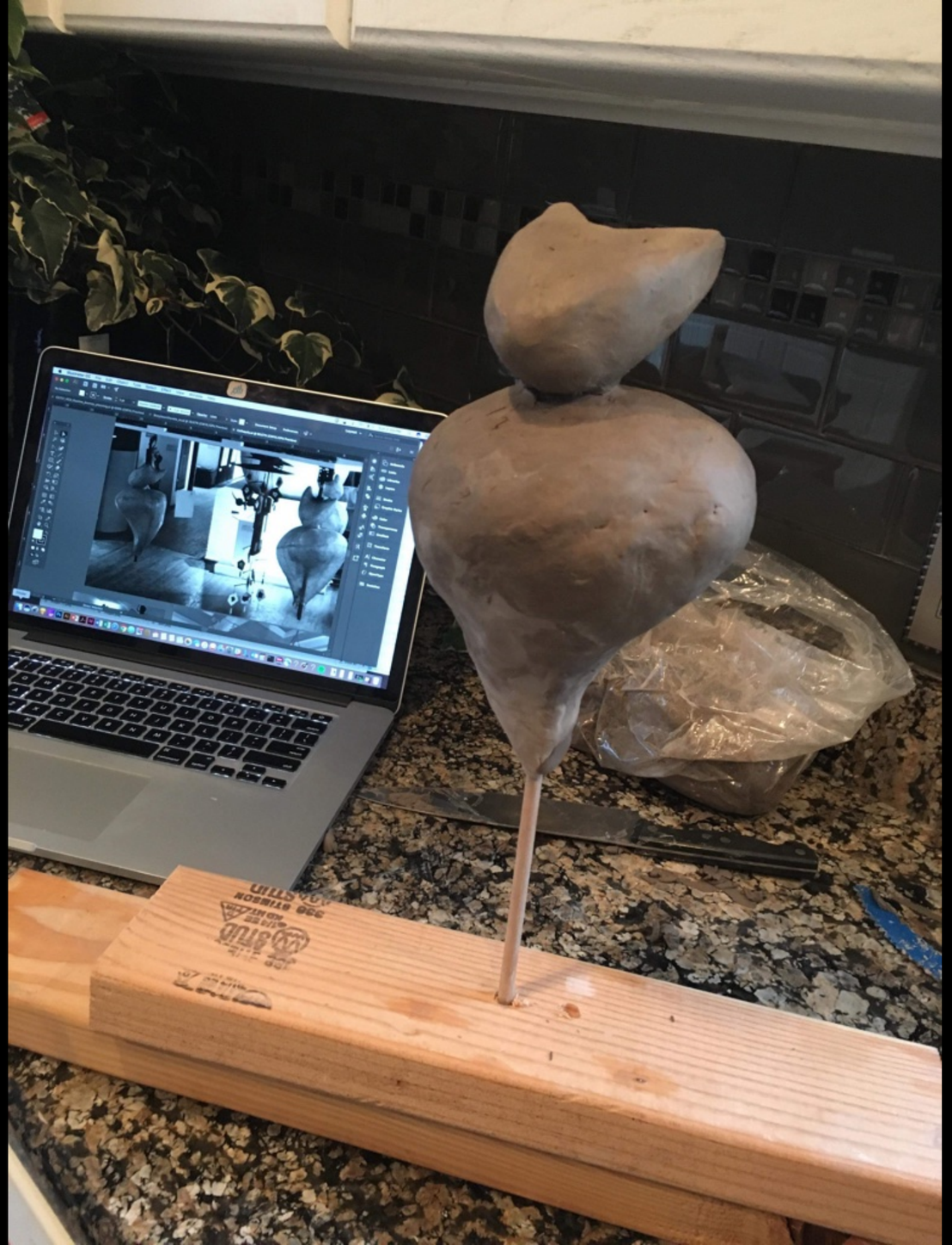
Customer's Desire (D) and Need (N) are connected with a coupled bar.

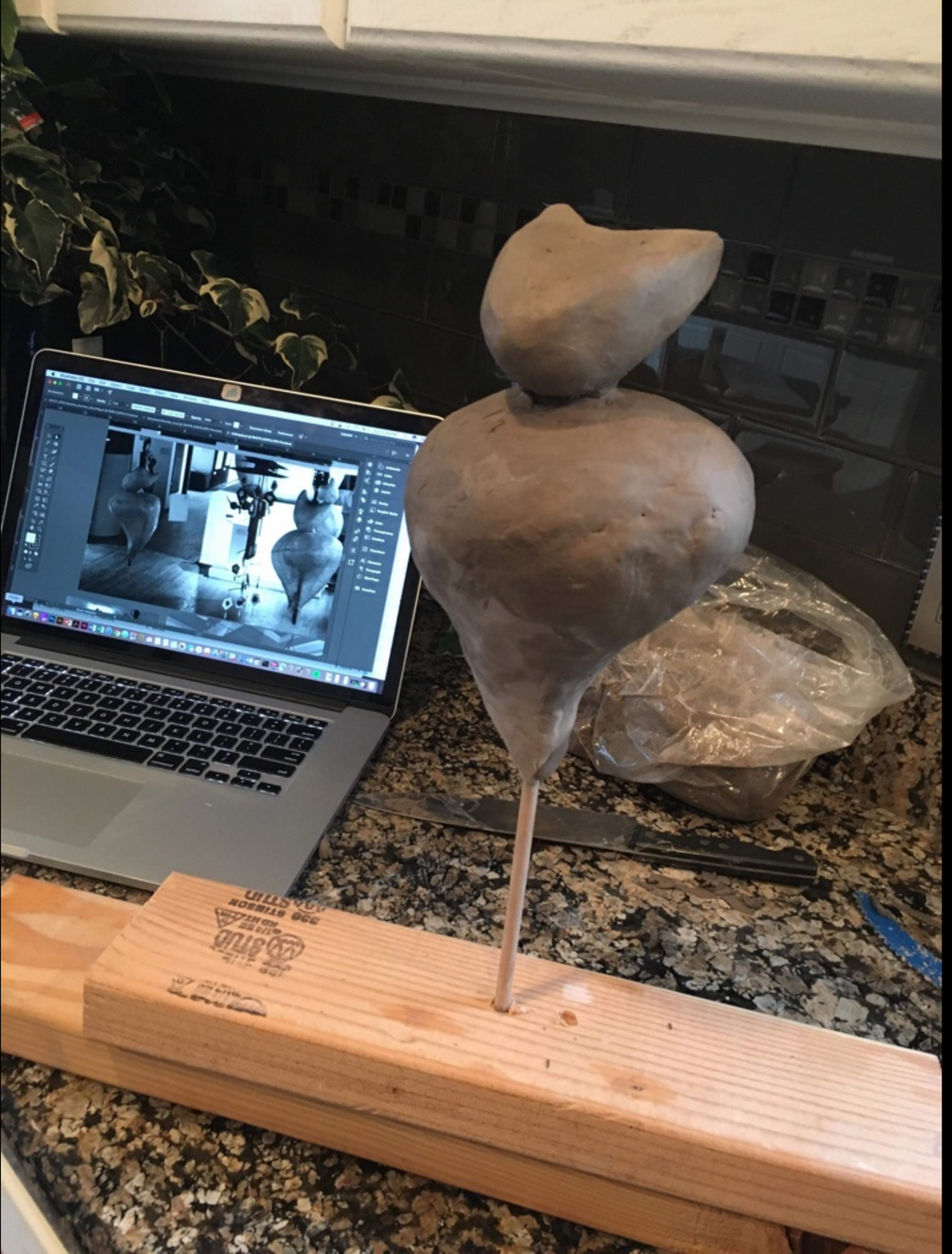
Budget limits constrains both.

E-commerce companies (A,B,C) compete with each other to attract D and N.

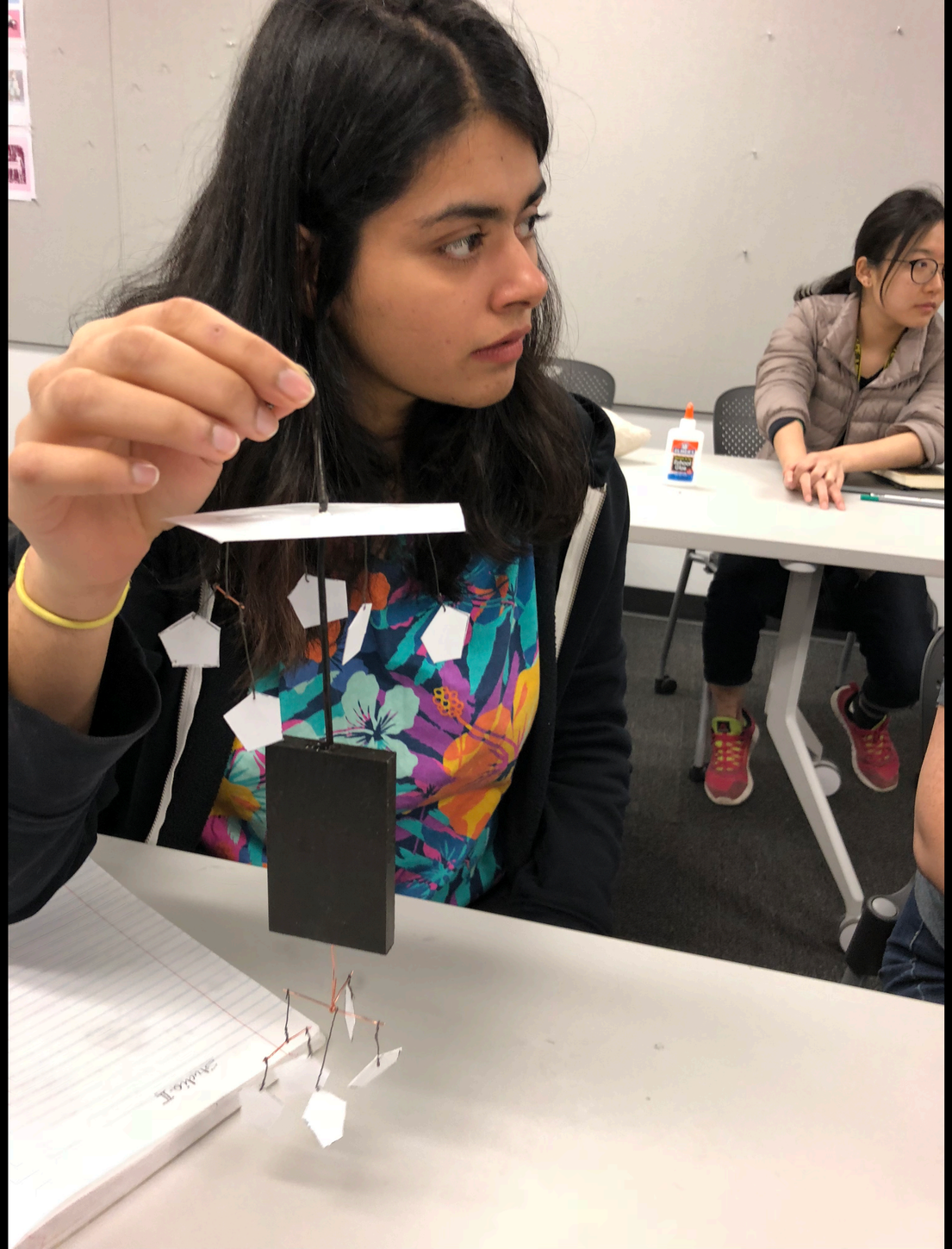
Building a 1/6-scale model

Studio II: Prototyping & Internet of Things
MFA Interaction Design
College for Creative Studies
2018





Building the scale model
Khyati Shah, Student
Studio II: Prototyping & Internet of Things
MFA Interaction Design
College for Creative Studies
2018



Pask's schematic drawing (before building Colloquy)
1968

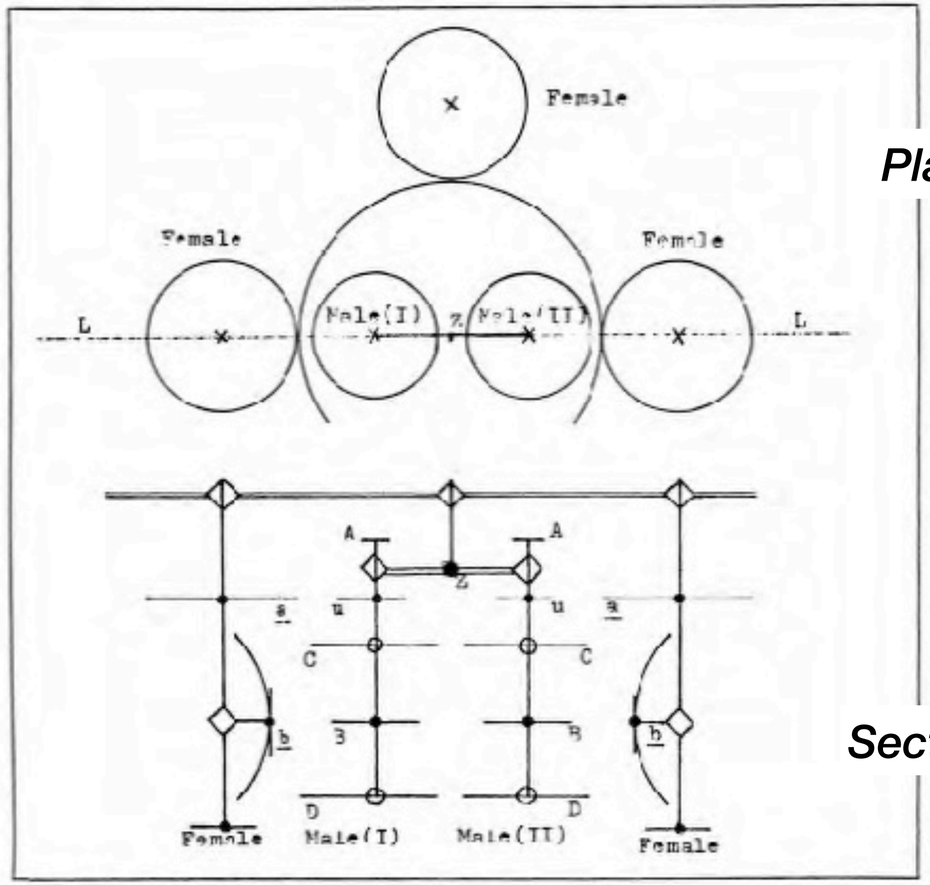


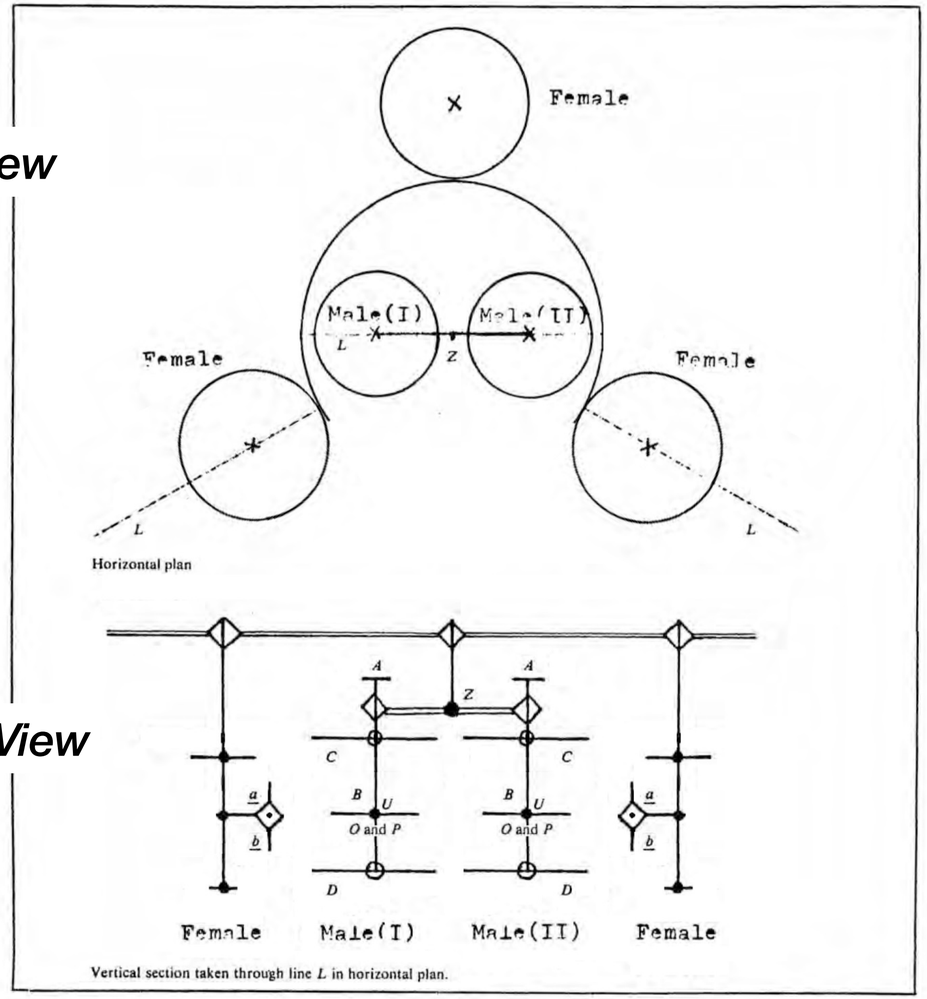
Fig. 34 A rough sketch of powered mobiles.
a Horizontal plan
b Vertical section taken through line *L* in horizontal plan.
A = drive state display for male
B = main body of male, bearing 'energetic' light projectors *O* and *P*
C = upper 'energetic' receptors
D = lower 'energetic' receptors
U = non-'energetic', intermittent signal lamp
a = female receptor for intermittent positional signal
b = vertically movable reflector of female
Z = bar linkage bearing male I and male II

= Drive motor
= Free coupling
= Fixed coupling
= Bar linkage

Plan View

Section View

Corrections based on photographic record
2018



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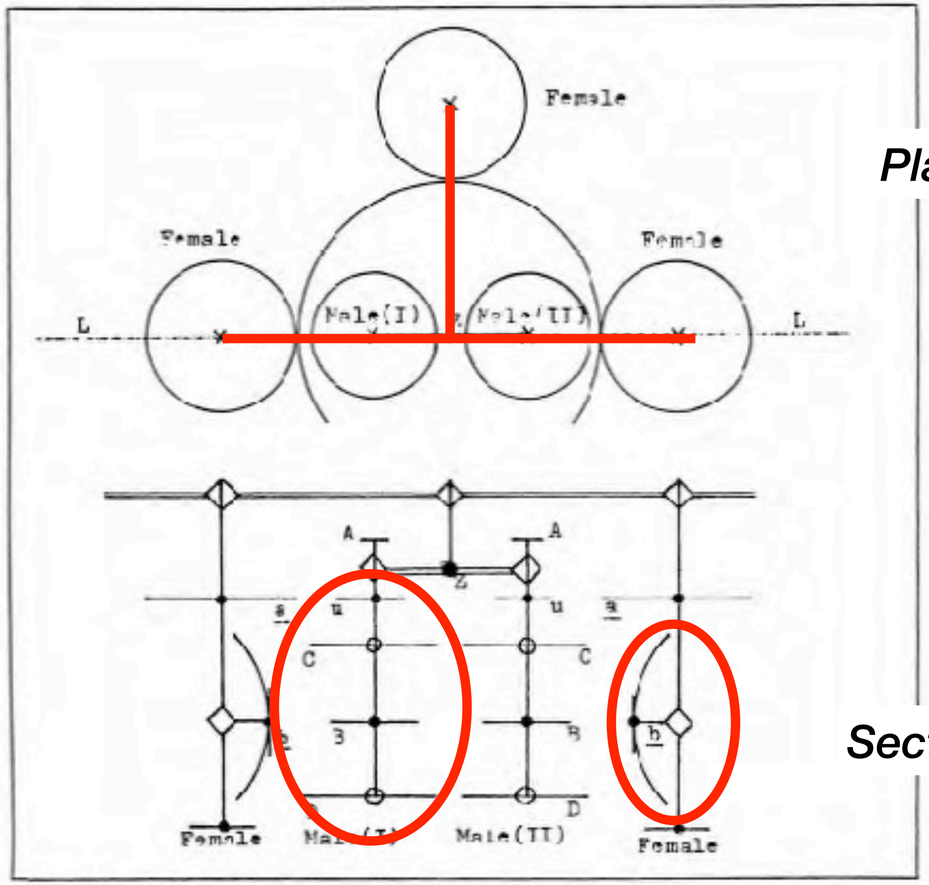

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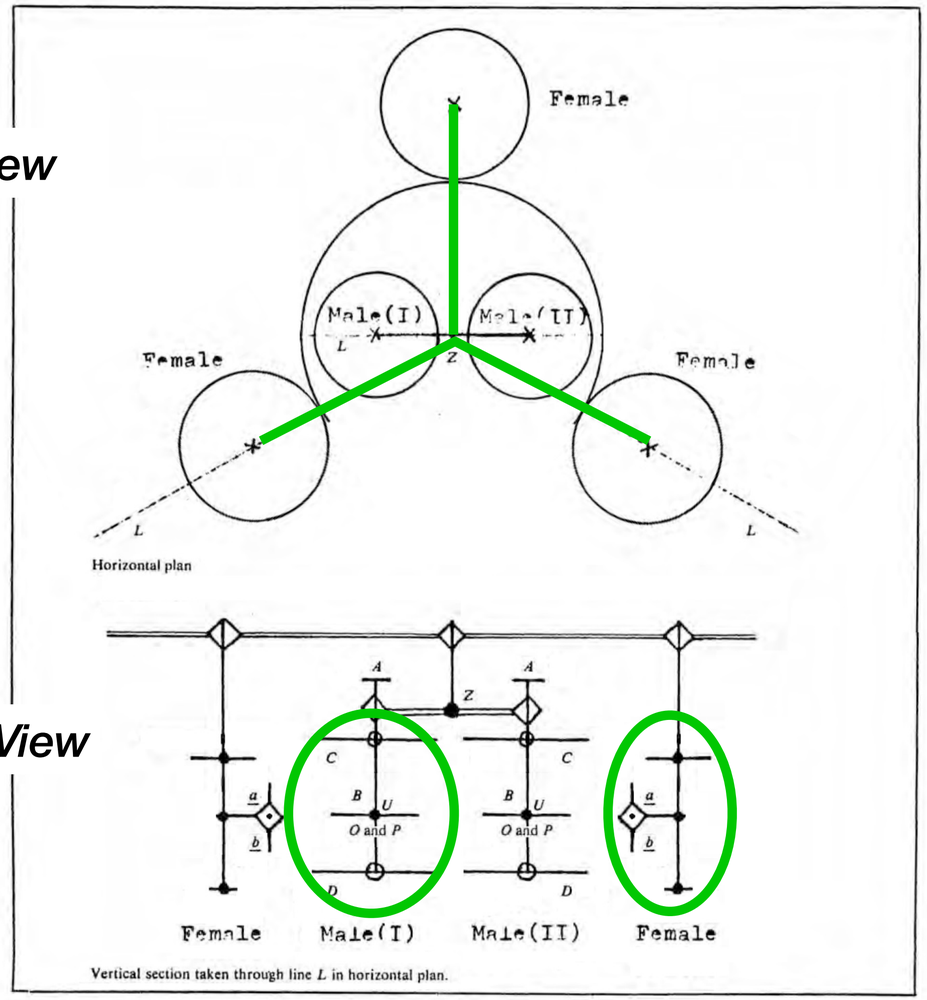

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= Free coupling
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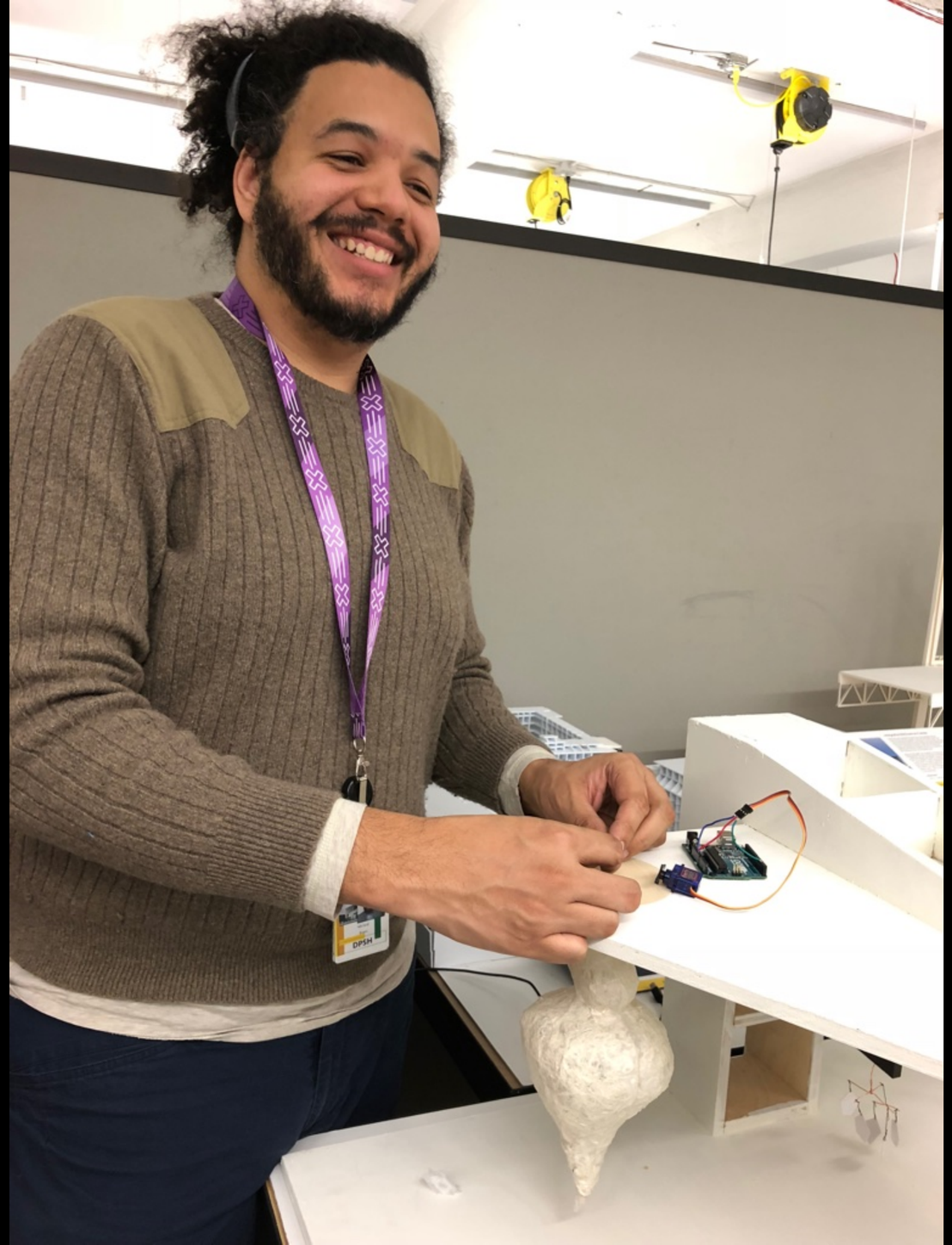
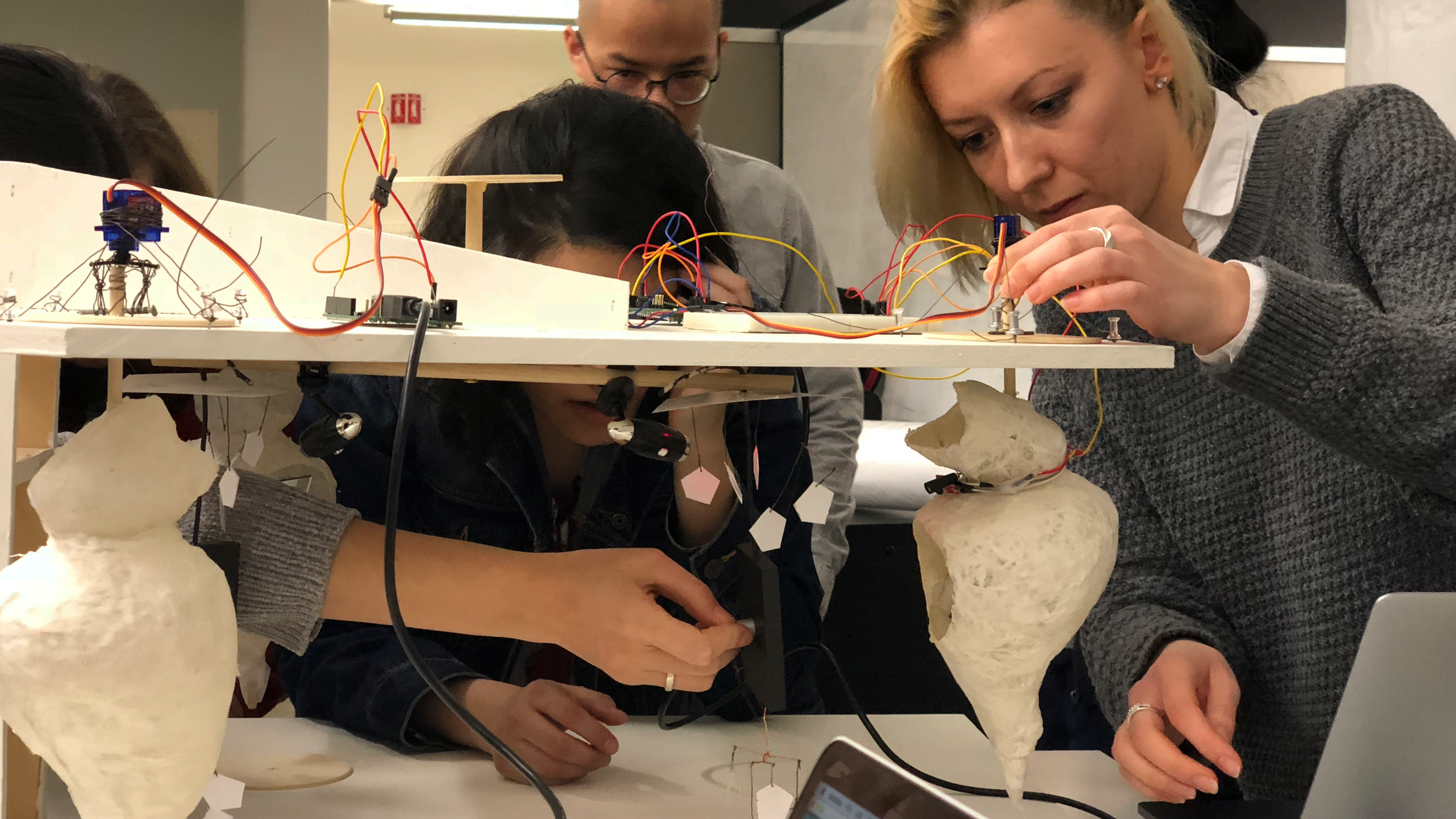
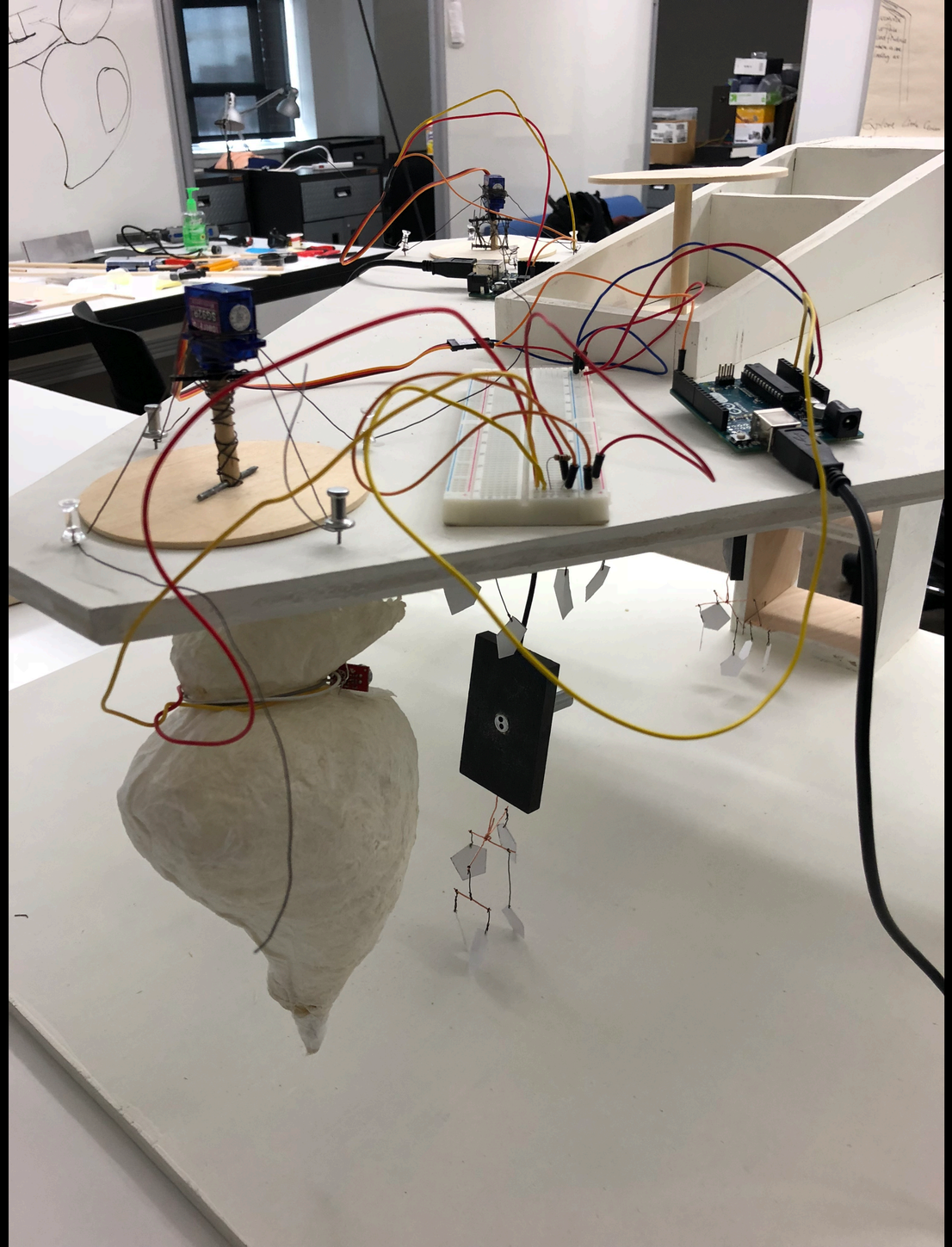
Building the scale model
Michael Evans, Instructor
Studio II: Prototyping & Internet of Things
MFA Interaction Design
College for Creative Studies
2018





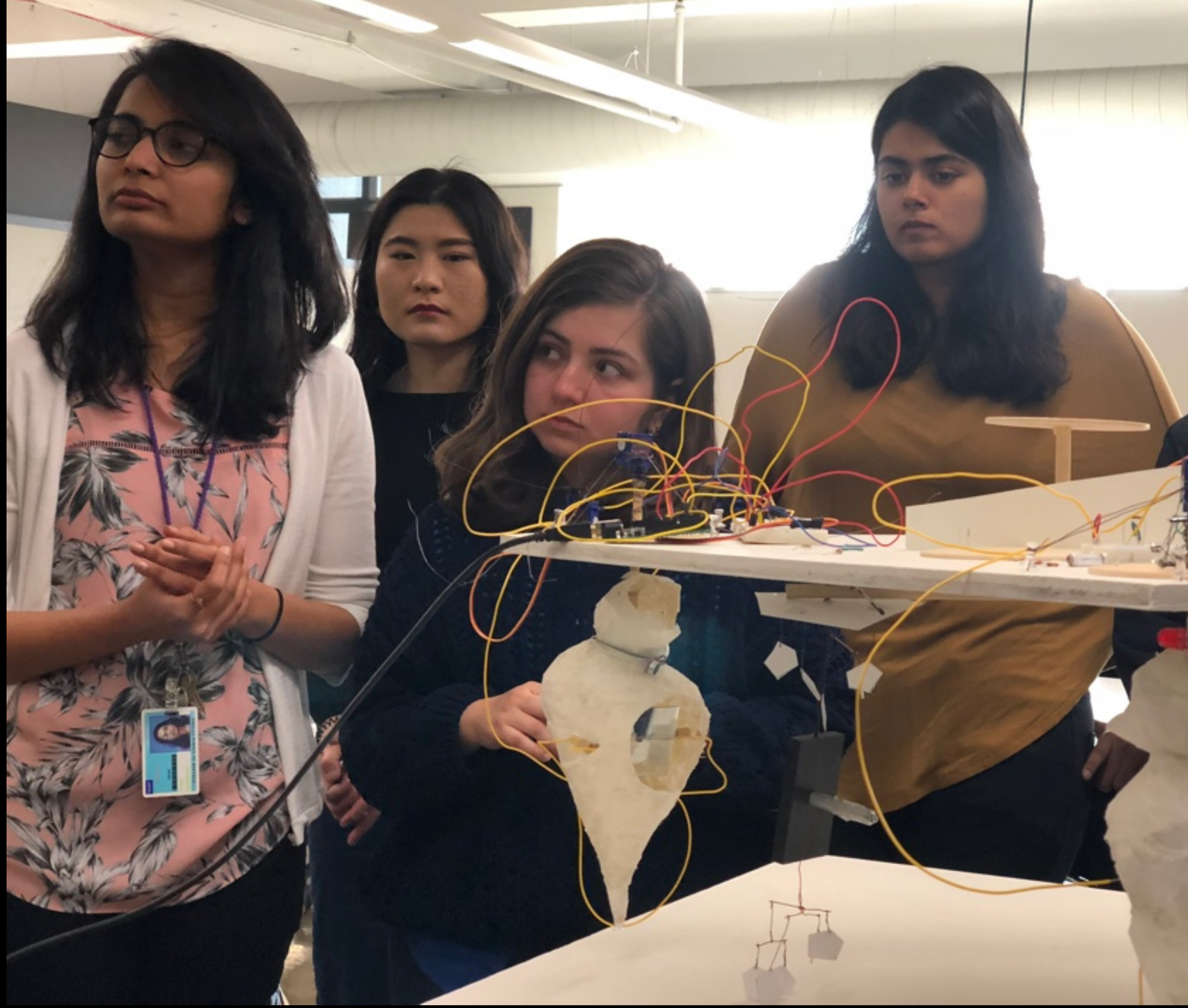
Building the scale model
Studio II: Prototyping & Internet of Things
MFA Interaction Design
College for Creative Studies
2018



Building the scale model
Sofia Lewandowski, Student
Studio II: Prototyping & Internet of Things
MFA Interaction Design
College for Creative Studies
2018

Building the scale model
Studio II: Prototyping & Internet of Things
MFA Interaction Design
College for Creative Studies
2018

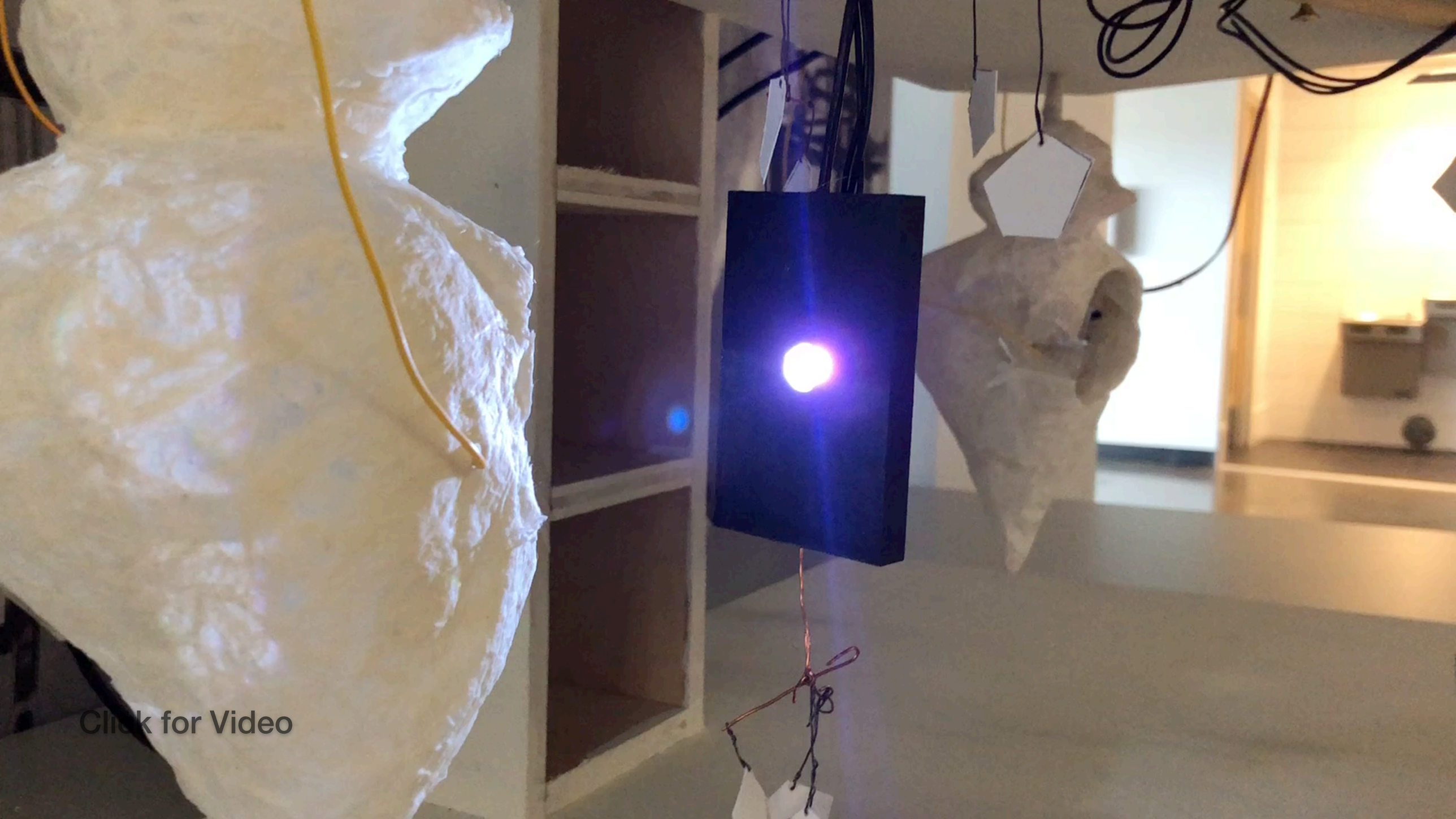
Studio IV briefing Studio II
MFA Interaction Design
College for Creative Studies
2018



Annual Student Exhibition
MFA Interaction Design
College for Creative Studies
2018

Annual Student Exhibition
MFA Interaction Design
College for Creative Studies
2018

Colloquy of Mobiles
COLLOQUY 2018


Click for Video

The consultant will fulfill the need for a focused workshop and related phases because of the requirement for students to (a) produce excellent documentation for the benefit of their portfolios, and (b) share the project outcomes in ways that would be useful to other audiences, including other interaction design and media arts students, designers, historians, and artists working in interactive art and media.

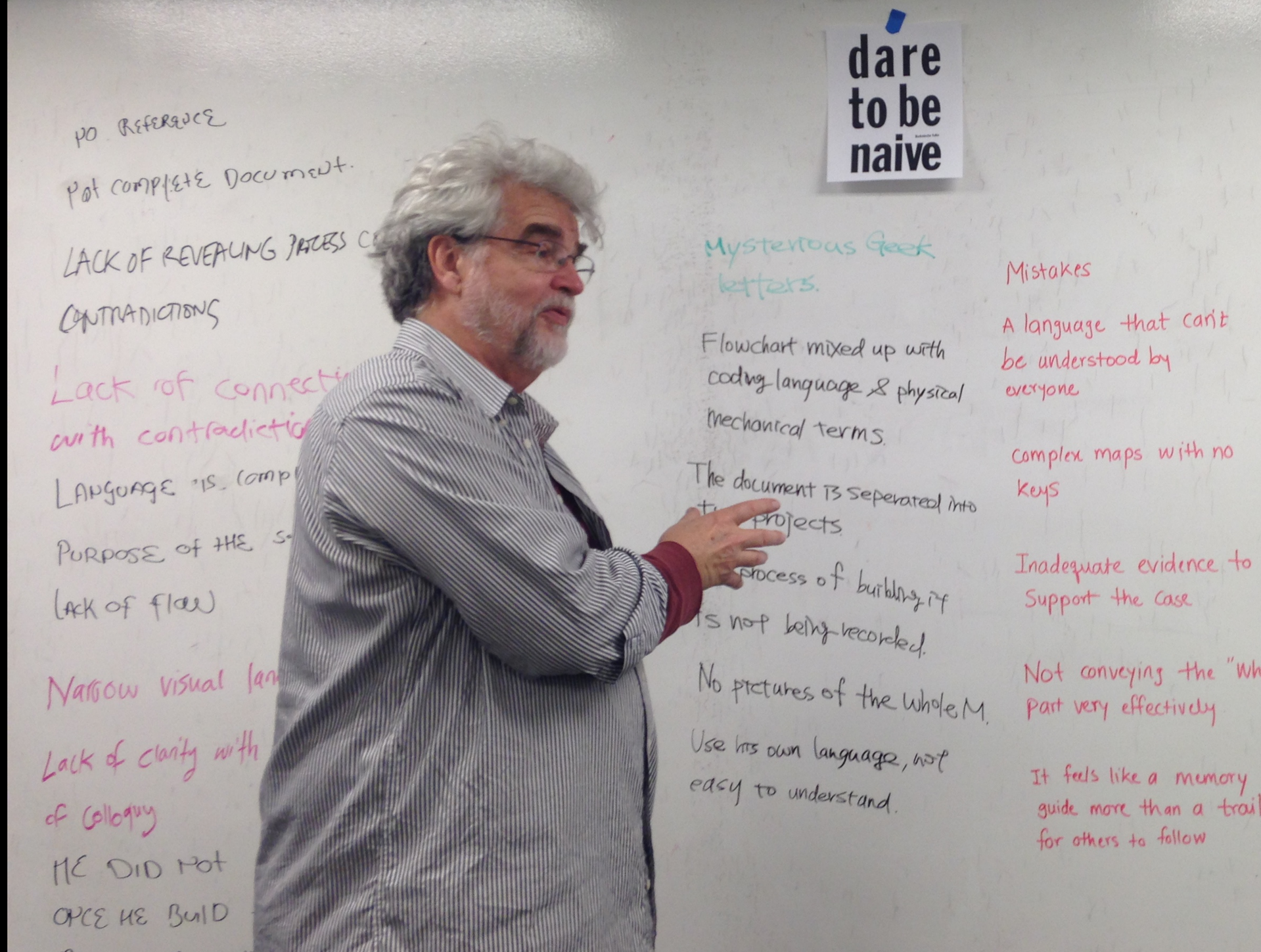
Bruce McIntosh
P.O.Box 771 Chama, NM 87520
Phone 505 692 4069
bruce_chama@yahoo.com

WORKBOOK FOR COLLOQUY 2018 DOCUMENTATION ASSEMBLED BY BRUCE MCINTOSH, FEBRUARY/MARCH, 2018

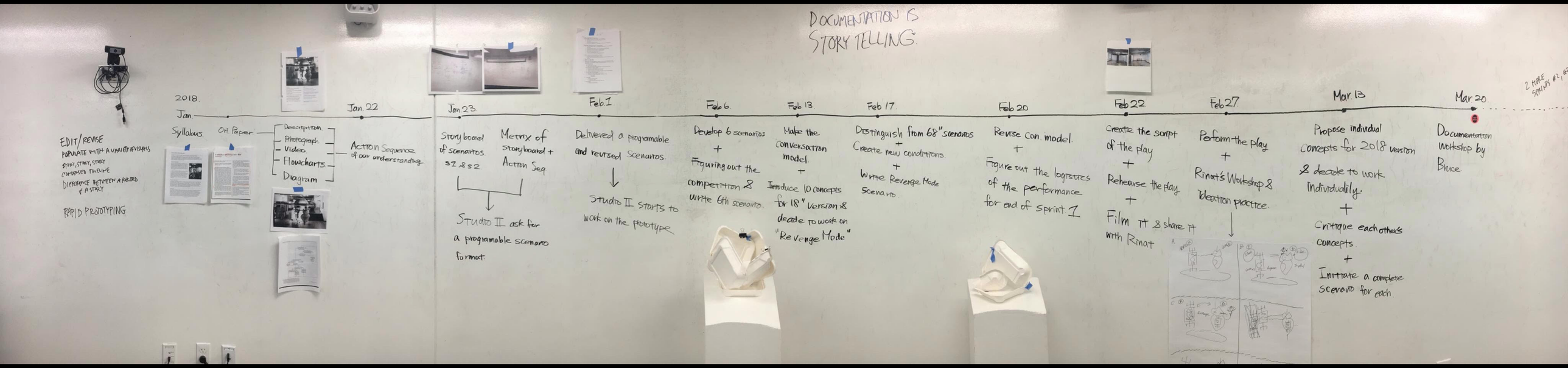
The consultant has considerable expertise in such workshops and has demonstrated his effectiveness in numerous contexts, including the creation, editing, art direction of Cybernetics magazine; and the development of a visual thinking curriculum featured in Smithsonian magazine. He has had a distinguished professional career that includes serving as creative director for Steve Jobs' NeXT computer company; a project charged with re-inventing banking for Citibank; art directing and/or editing numerous publications; designing museum exhibits and packaging; and education and community engagement projects.

COLLEGE FOR CREATIVE STUDIES, DETROIT

Bruce McIntosh, Facilitator
MFA Interaction Design
College for Creative Studies
2018



Documenting the project with Bruce McIntosh
Studio IV: Immersive Interactive Experiences
MFA Interaction Design
College for Creative Studies
2018



DOCUMENTATION IS STORY TELLING.

Feb 13.

Make the conversation model.

+

Introduce 10 concepts for 18" version & decide to work on "Revenge Mode"

Feb 17.

Distinguish from 68" scenarios

+

Create new conditions.

+

Write Revenge Mode Scenario.

Feb 20

Reuse Con. model.

+

Figure out the logistics of the performance for end of sprint 1

Feb 22.

Create the script of the play

+

Rehearse the play

+

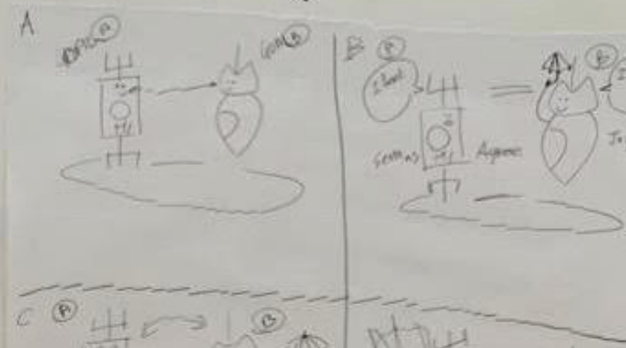
Film it & share it with Rinat

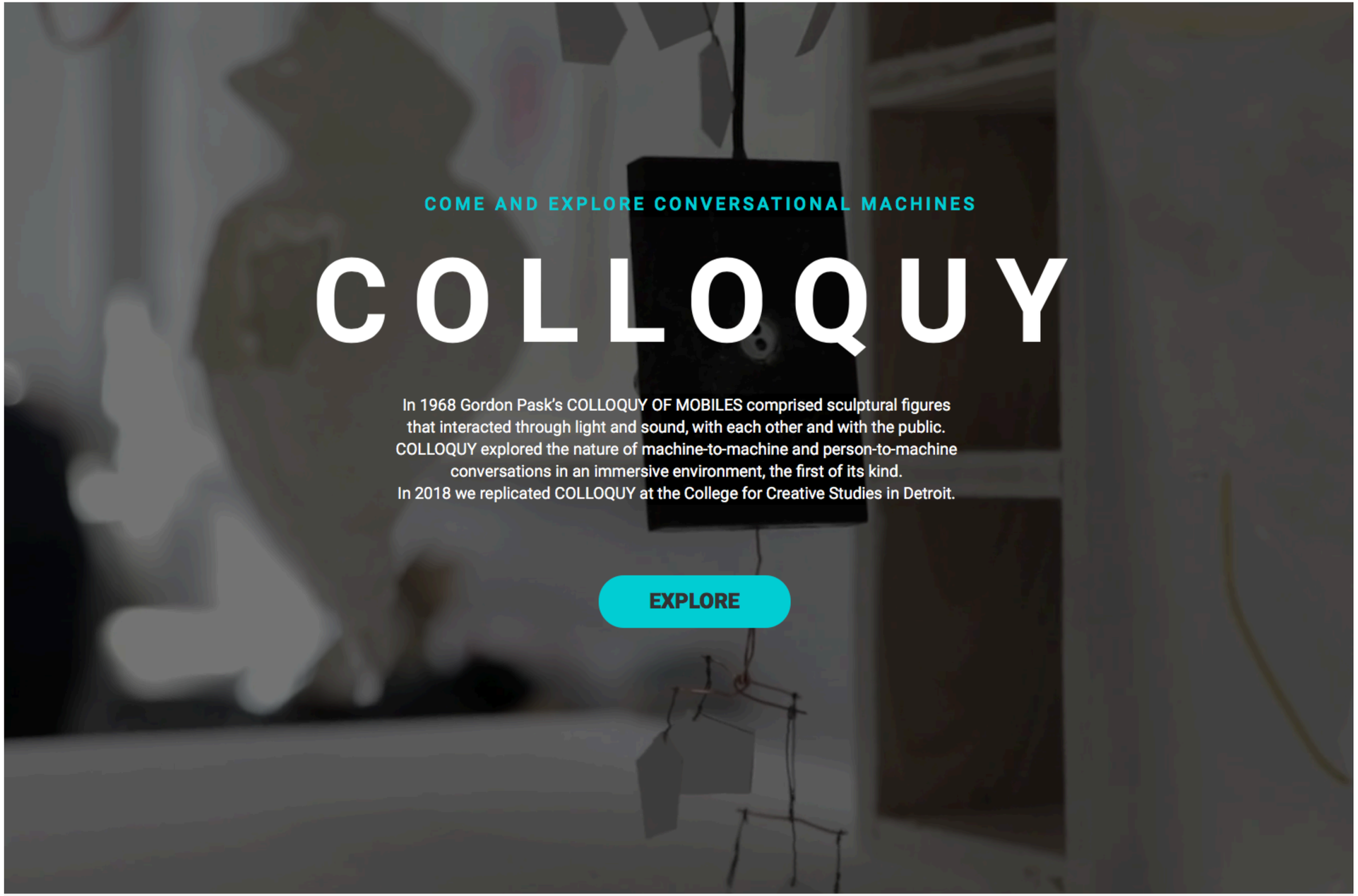
Feb 27.

Perform the play

+

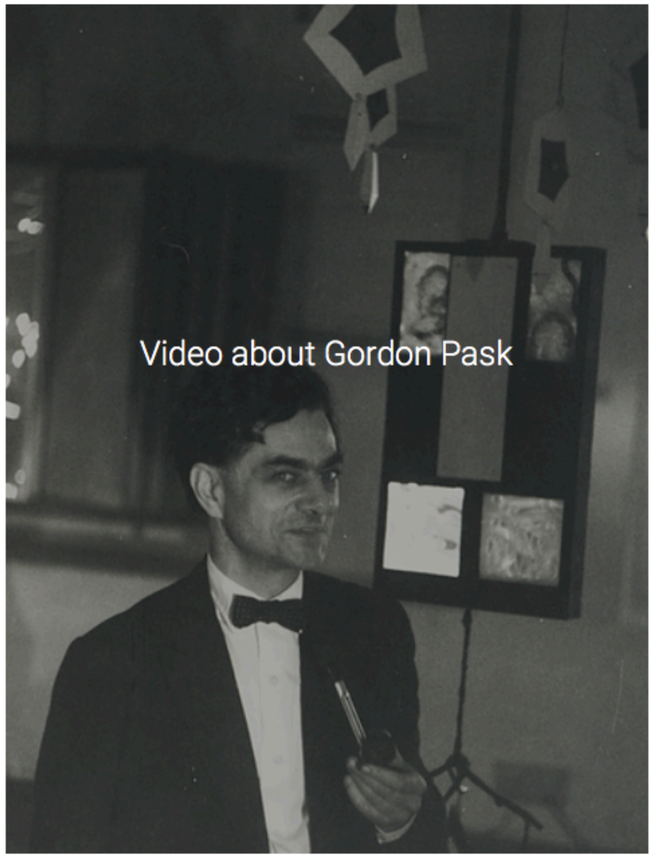
Rinat's Workshop & Ideation practice.





ColloquyOfMobiles.com

HISTORY



About Gordon Pask

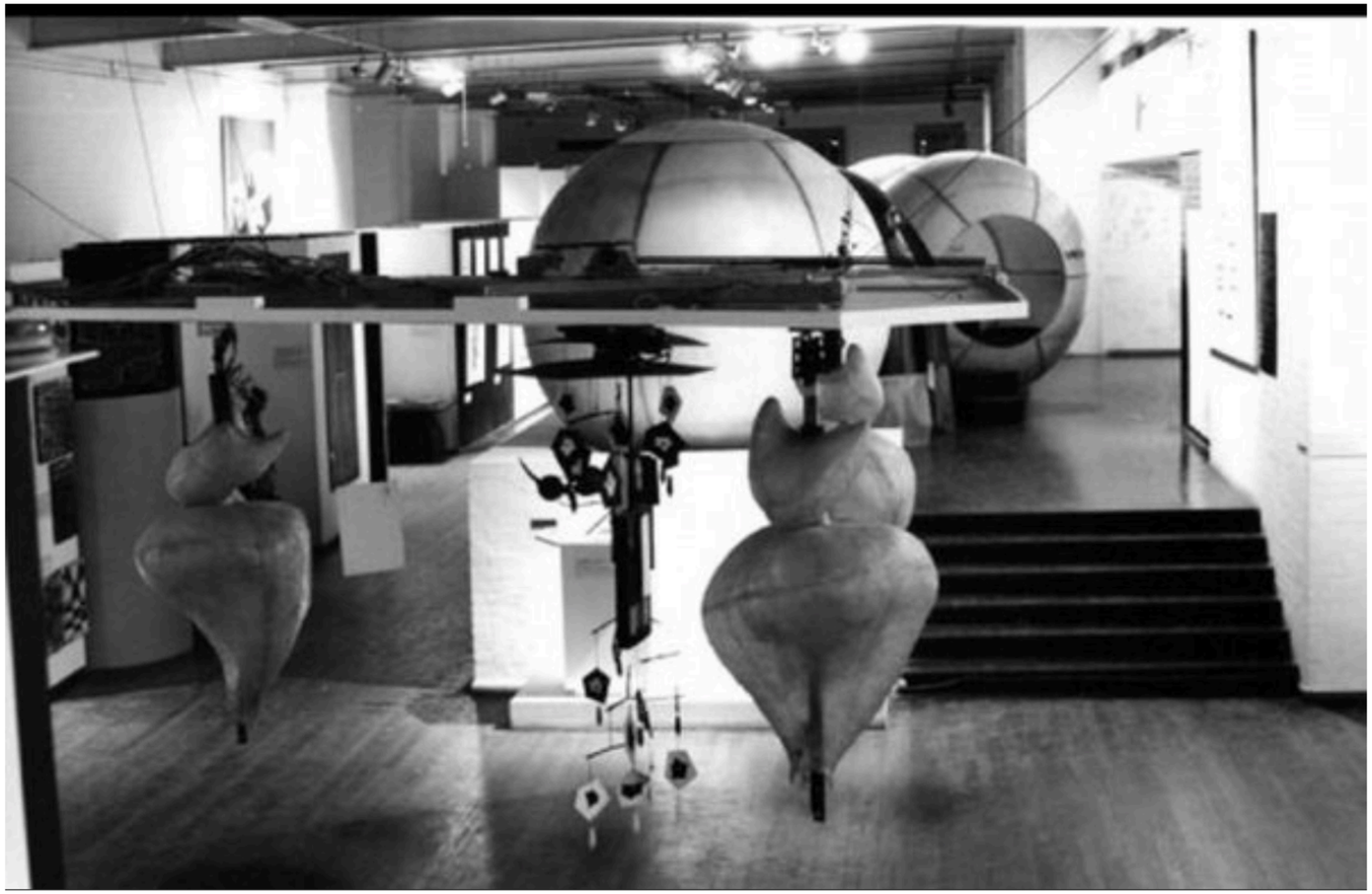
Andrew Gordon Speedie-Pask, M.A., Ph.D., D.Sc., Sc. D., lived many lives in the span of one. Over the course of his 68 years, he stayed up for 36-hour days, published 6 books and 270 papers, soldered machines into behaving like learning organisms, and developed a comprehensive theory of human cognition. If the worlds of psychology, artificial intelligence, and cognitive science knew his work better, they would never be the same: for then they could hold the human and the rational, subjective and objective, in the same frame.

When Pask built his machines and his theory, his philosophical view was at odds with artificial intelligence, which arose from the seeds of cybernetics but presumes that knowledge is a commodity to pluck from the environment and stick in a cubbyhole. Pask's learning environments, whether for entertainment or touch-typing or statistics, viewed the human as part of a resonance that looped from the human, through the environment or apparatus, back through the human and around again. For Pask, that is the interaction by which we understand each other when we speak or dance together. He specified how this works in detail in his many publications on Conversation Theory.

Conversation Theory has provided cybernetics its prescriptive power for modeling, learning, and agreement. Which the colloquy of mobiles explores in the form of an interactive installation

Connecting cybernetics & design

Cybernetic Serendipity



Cybernetic Serendipity was an exhibition curated by Jasia Reichardt and shown at the Institute of Contemporary Arts in London in 1968.

It was a gathering of international works that explored relationships between technology and creativity, art and engineering.

The aim of the exhibition was to express artists' involvement with science and scientists' involvement with the arts. The concept of "serendipity" was a theme taken up by many of the individual works, where artists, poets, roboticists, and composers displayed works ranging from computer graphics and computer music to robotic installations.

The exhibition was divided into three sections:
1. Computer-generated graphics, computer animated films, computer-composed and played music, and computer poems and texts.
2. Cybernetic devices as works of art, cybernetic environments, remote control robots and painting machines.
3. Machines demonstrating the uses of computers and an environment dealing with the history of cybernetics.

Much of the original exhibition was subsequently shown in the US at the Corcoran Annex (Corcoran Gallery of Art) in Washington, D.C., and then the newly opened The Exploratorium in San Francisco, where it became the basis of their inaugural exhibition.

ColloquyOfMobiles.com

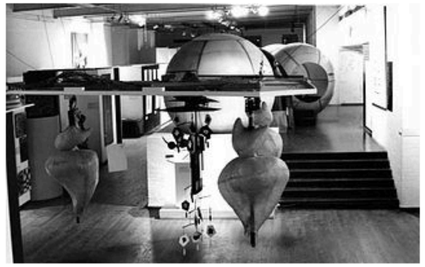
Colloquy of Mobiles

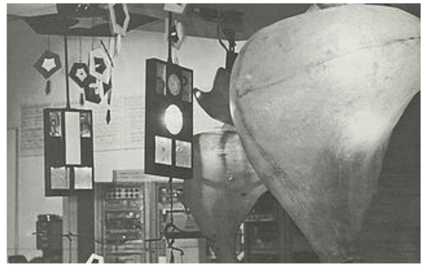
Colloquy of Mobiles, designed by Gordon Pask, was originally installed in the ground-breaking exhibition Cybernetic Serendipity at the Institute of Contemporary Arts in London in 1968. The installation comprises sculptural figures that move and interact through light and sound, with each other and with the public.

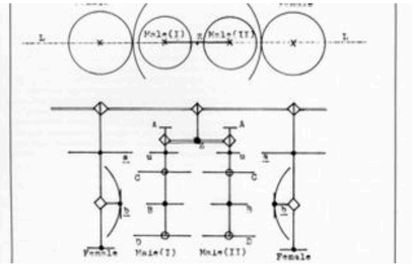
It explores the nature of machine-to-machine and person-to-machine conversations in an interactive, immersive environment. Surprising and revolutionary in its day, Colloquy of Mobiles has influenced generations of artists and critics concerned with the role of technology in everyday life. It has never before been reproduced and the project has garnered attention and support from communities in the arts, media, design, and education.

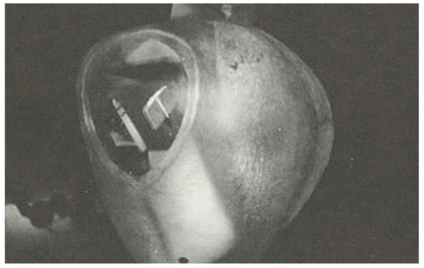
Colloquy of Mobiles creates a human environment that contains conversational machines, a condition that is now part of everyday life. Colloquy allows gallery audiences to participate in immersive, real-time interactions that are surprising and provocative.

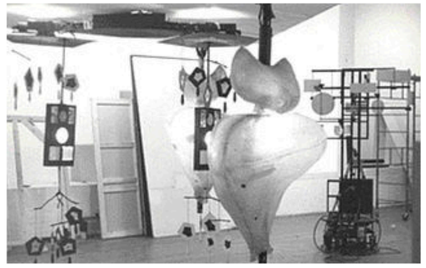
The experience of moving among the mobiles of the installation and engaging them via sound, speech, body movements, and facial expressions, offers a rational as well as emotional sense of what it means to live among machines that converse. The Colloquy 2018 Project will change how we feel about going home to voice interfaces such as Siri and Alexa, and how we experience living among smart machines.

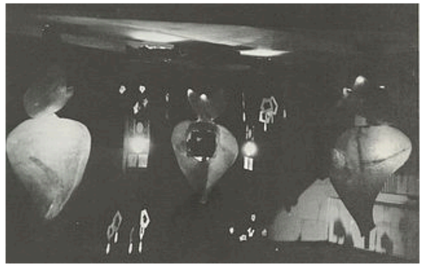








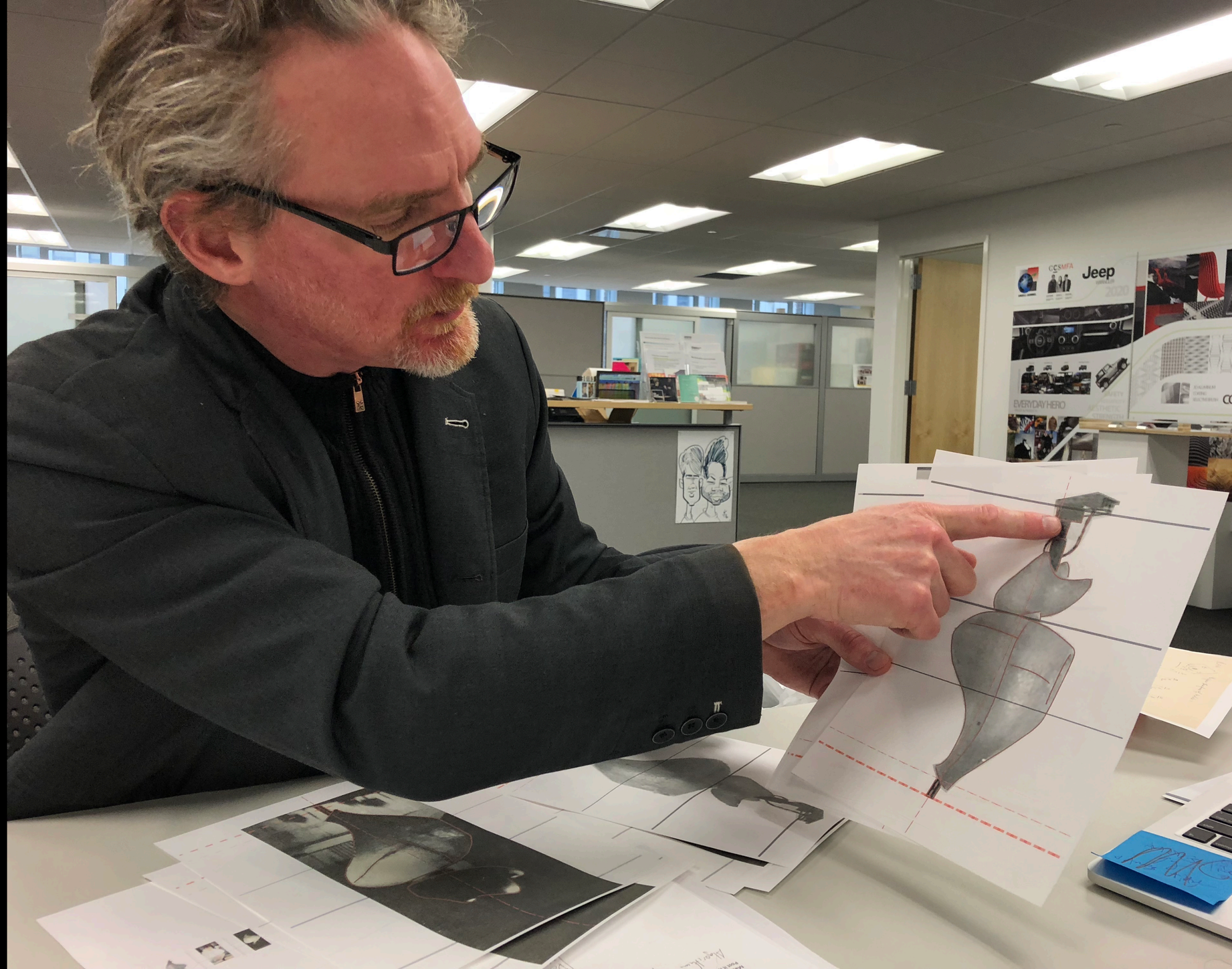




ColloquyOfMobiles.com

Bruce McIntosh, Facilitator
Students of Studio IV
MFA Interaction Design
College for Creative Studies
2018

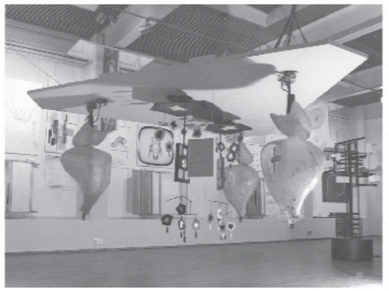
TJ McLeish, Master Fabricator
COLLOQUY 2018 Project
MFA Interaction Design
College for Creative Studies
2018

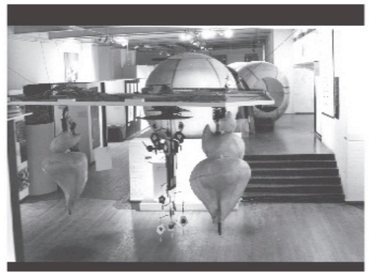


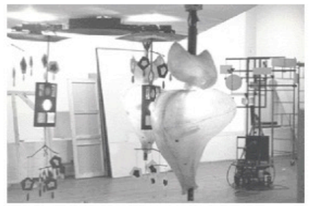
Planning the full-scale replica

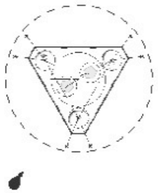
Installation Elements		
Component	**Description**	**Potential Materials**
Armature	the non-digital/electronic components of the installation responsible for structure and visual aesthetics of - the figural components of the piece, the mechanical components [actuation], sensing, and the computational hardware [brains]	Structure: Aluminium Strut, unistrut, perforated angle Plinth Surface: Fabric, foamcore, thermoplastic, Figure Composition: Fiberglass, resin impregnated fabric, thermoplastic
Mechanics	the actuation components of the installation that enable movement of the sculptural elements	12v/24v Motors and Servos, motor control boards, gearbox, pulley, belts
Wiring Harness	The components of the system that deliver power and signal [if necessary]to the distributed sensing/actuation/and computation components	DC wiring, enclosure
Sensing	The electromechanical components of the installation that enable the sensing of [at least] light	photoresistor, microphone, spectral analysis, limiit switch thermal imaging device, photodiode, microphone, CO2 sensing, etc.
Actuation	The electromechanical components of the installation that enable the generation of [at least] light	LED, incandescent light, speaker
Computation	The devices that receive input from sensing and generate output to deliver to actuators via communications protocol, as well as communicate with other computational entities.	Microelectronic computers i.e arduino, electron, raspberry pi, intel edison, TI launchpad, LittleBits, etc.
Communication	The means of communication amongst computational components	antennae, wiring, communications protocol i.e. 3G, WIFI, hardwired, etc.
Software	The logic that runs on the computational platform that determines installation behavior and interaction with installation participants both human and machine.	Programming language, development tools, API/ Libraries used to communicate with hardware

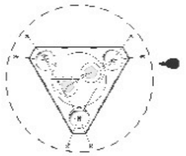
Designing the full-scale replica from the photographic record

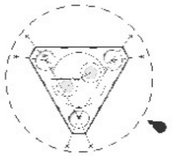


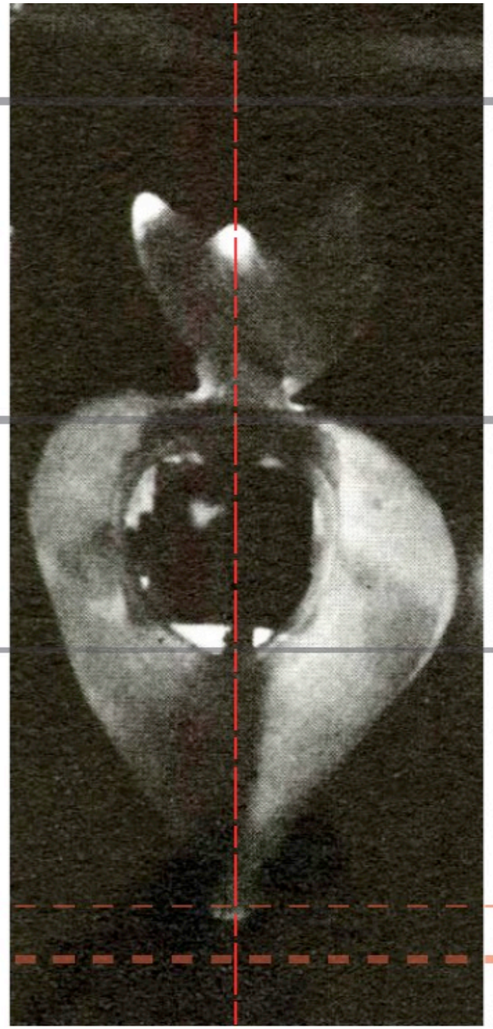


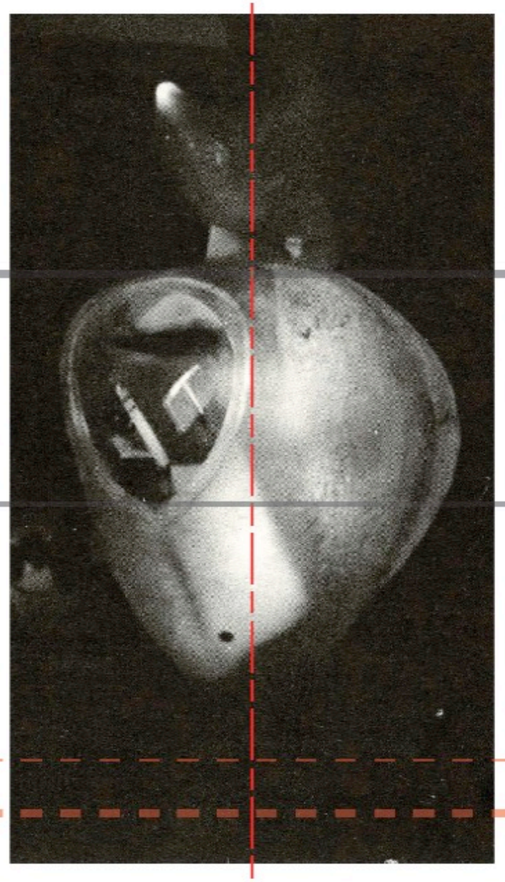


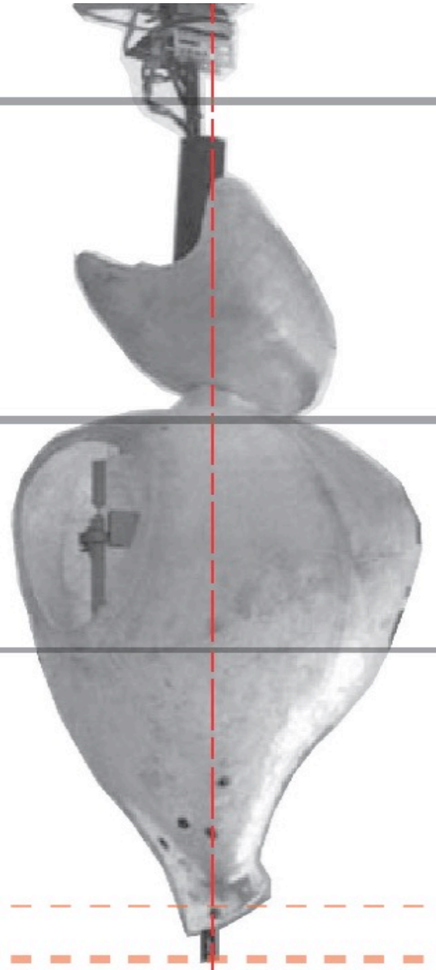


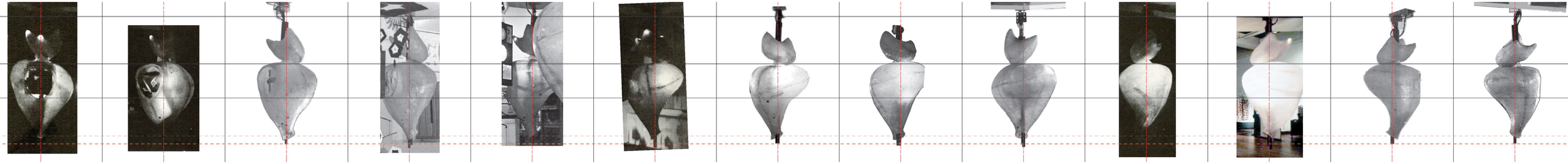


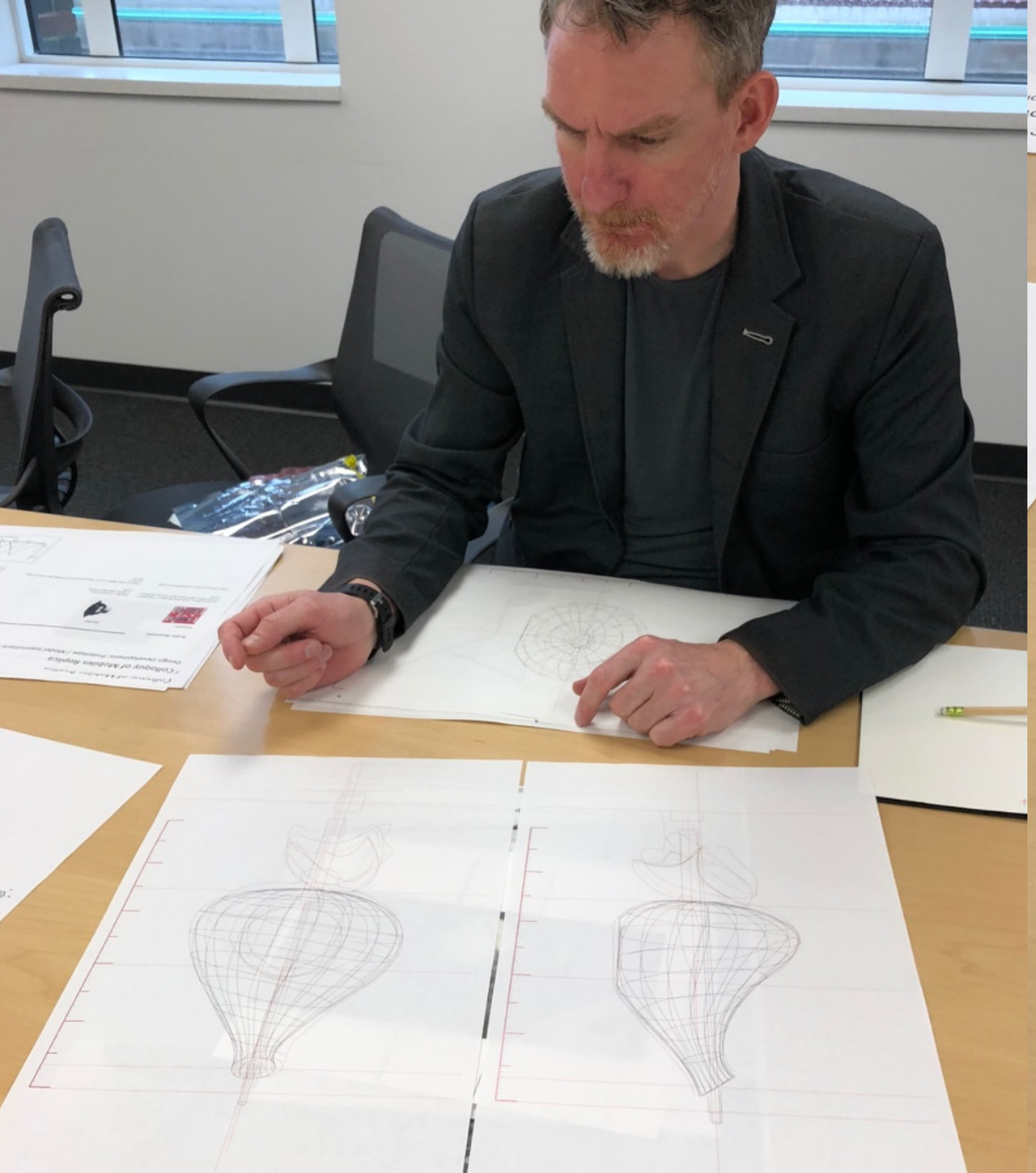


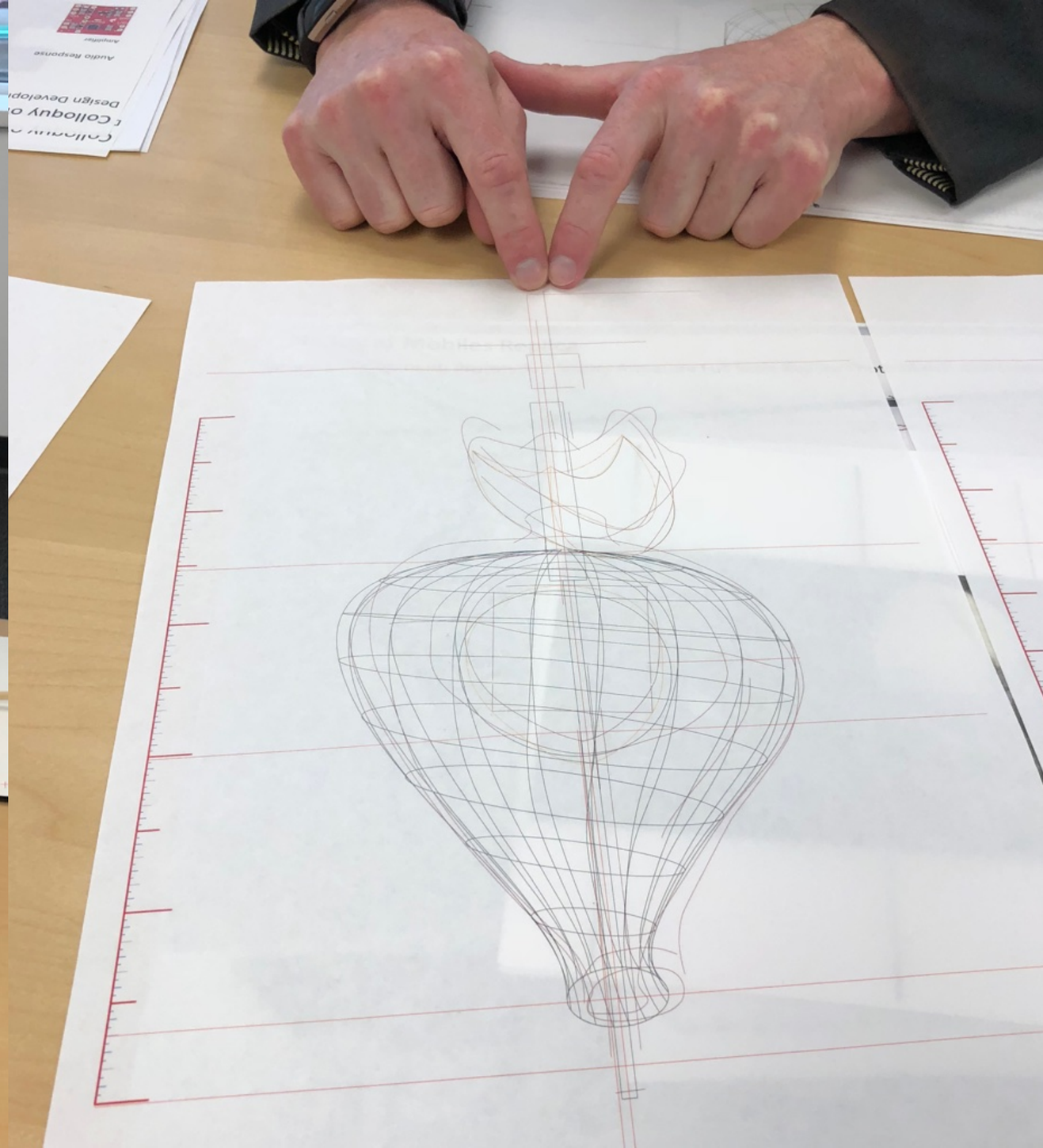


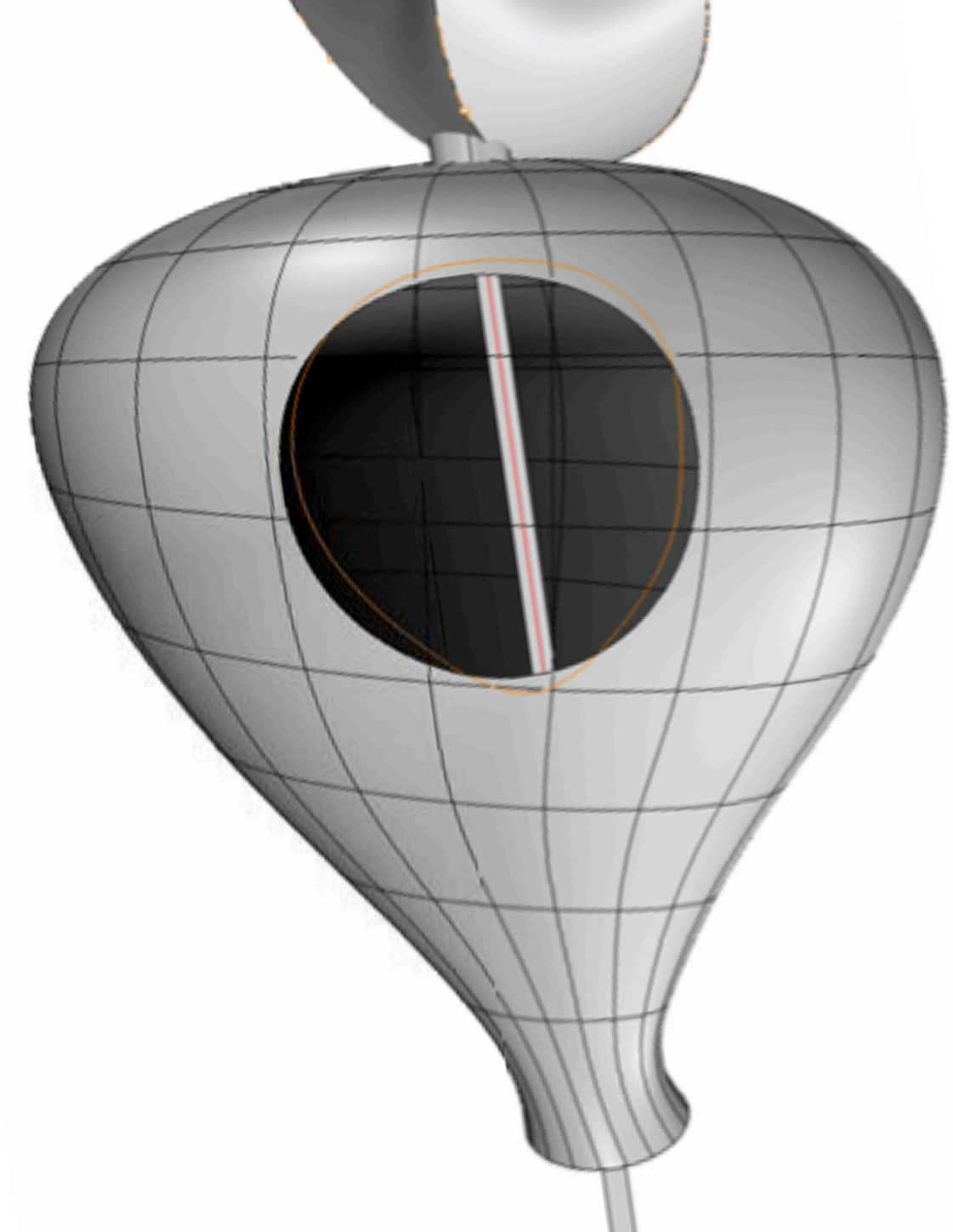


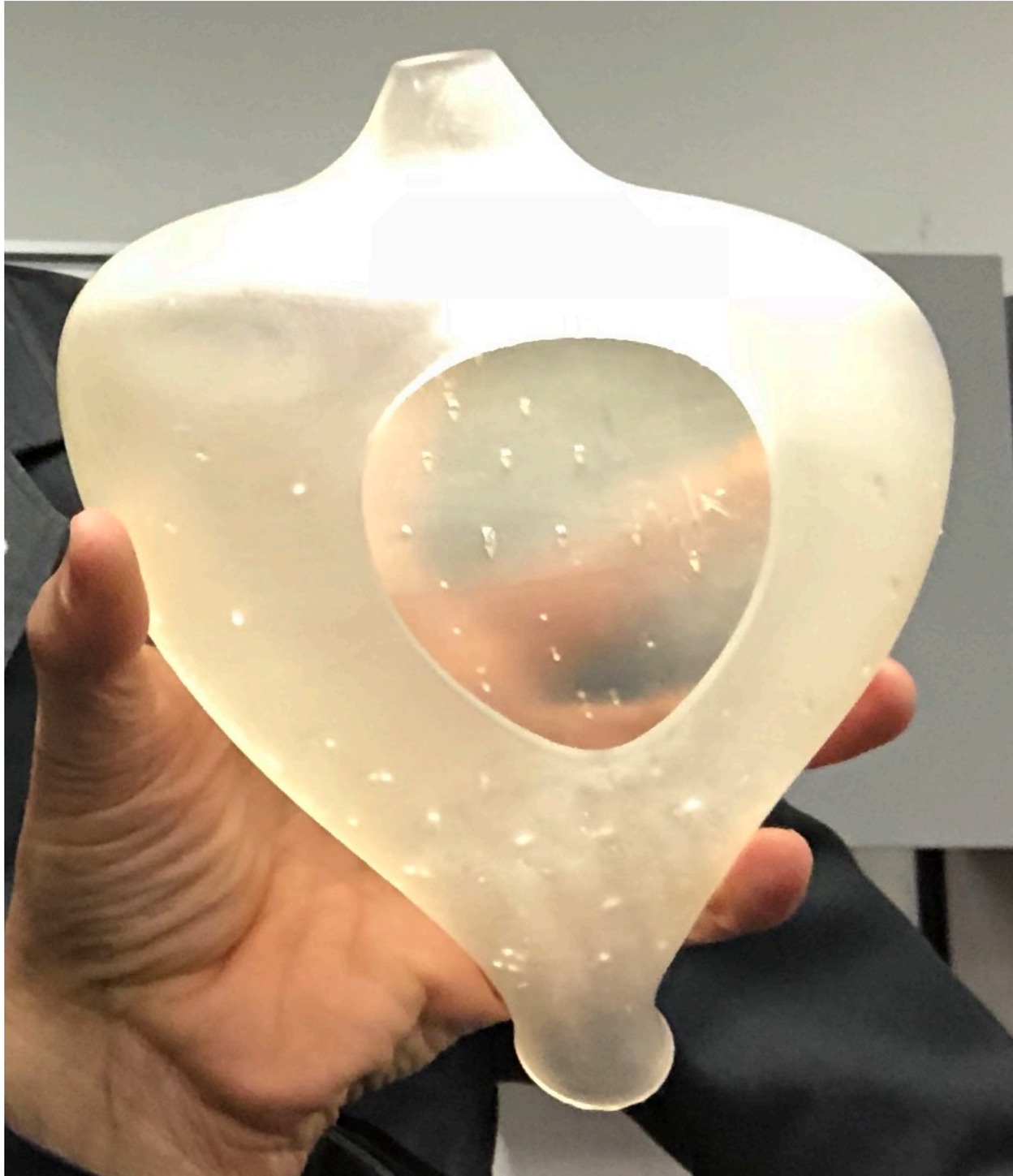




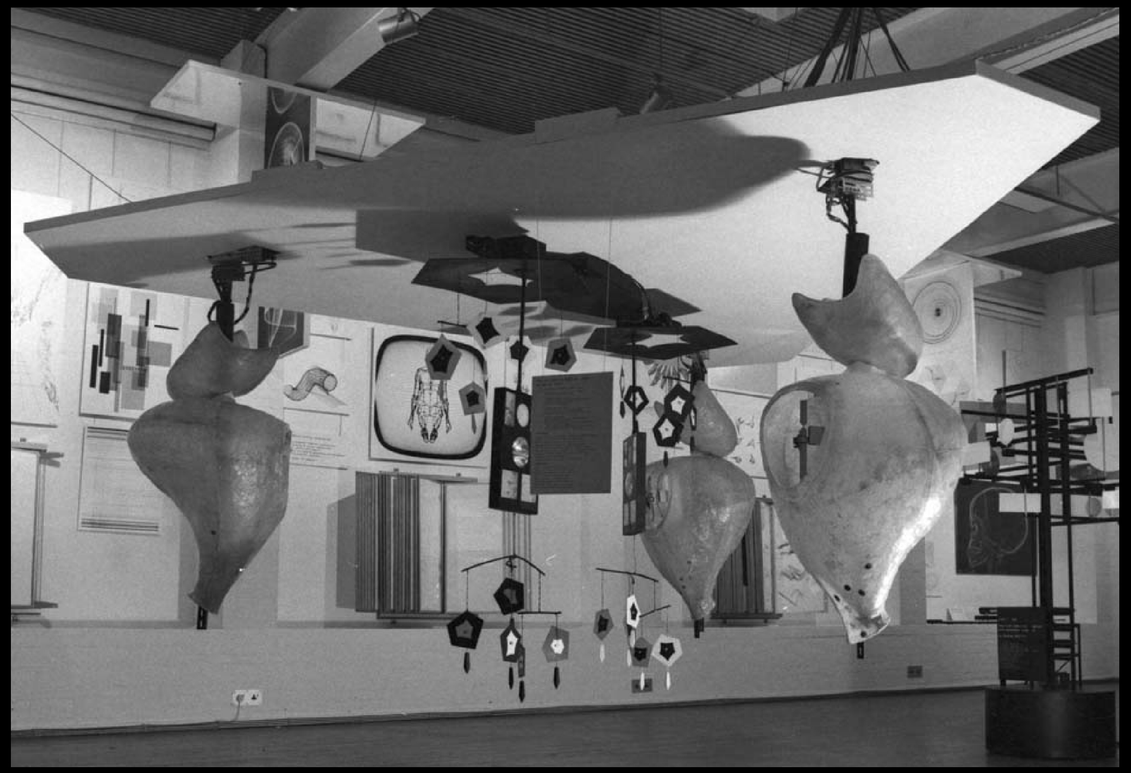




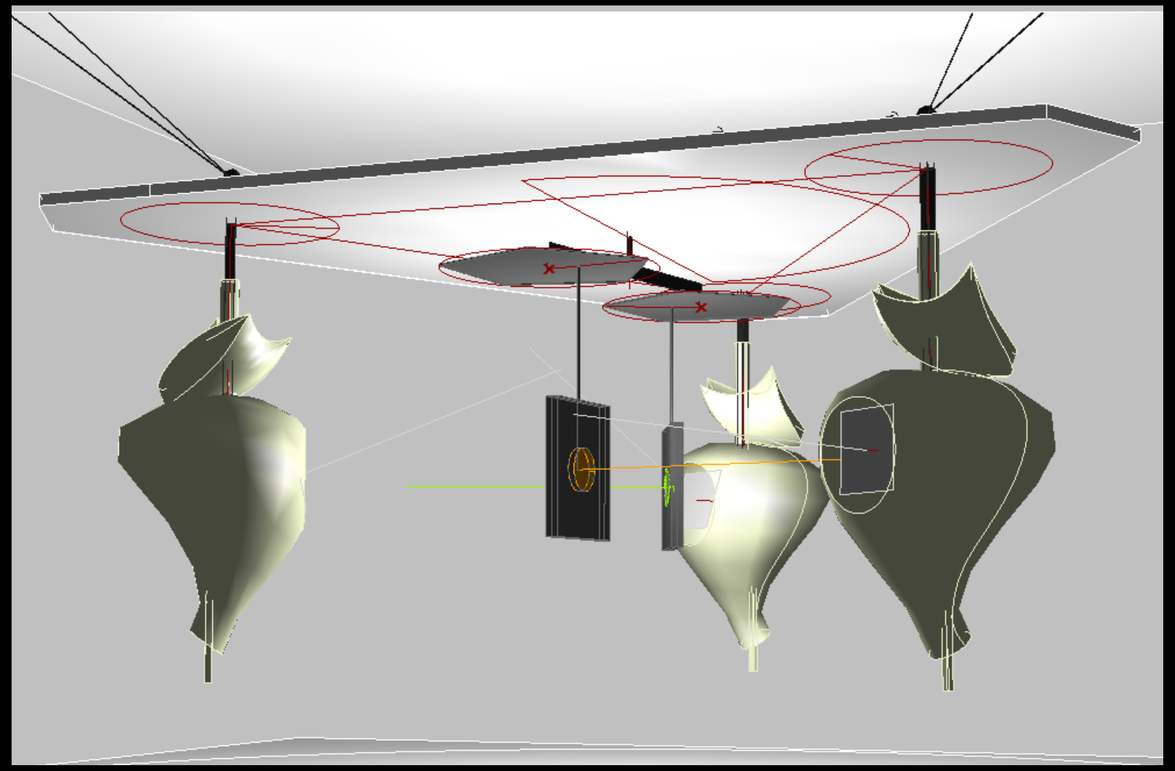




Colloquy of Mobiles
Gordon Pask
1968



3D Digital Model
TJ McLeish
2018



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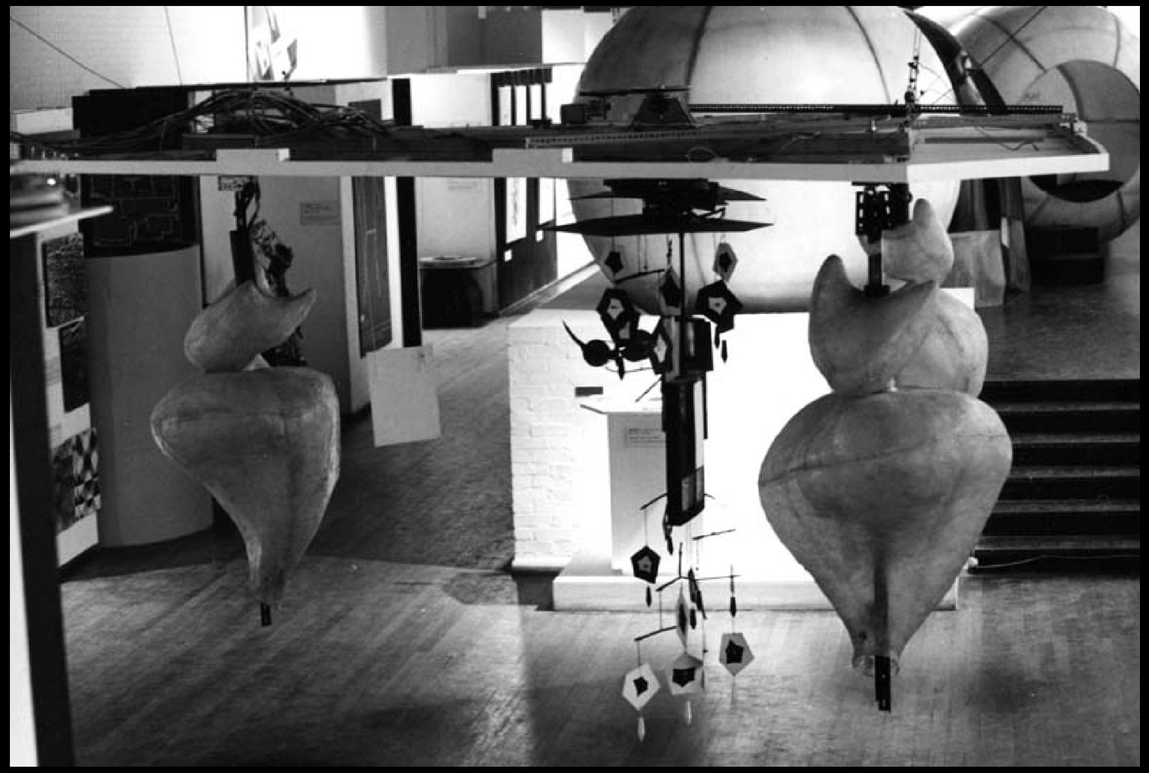
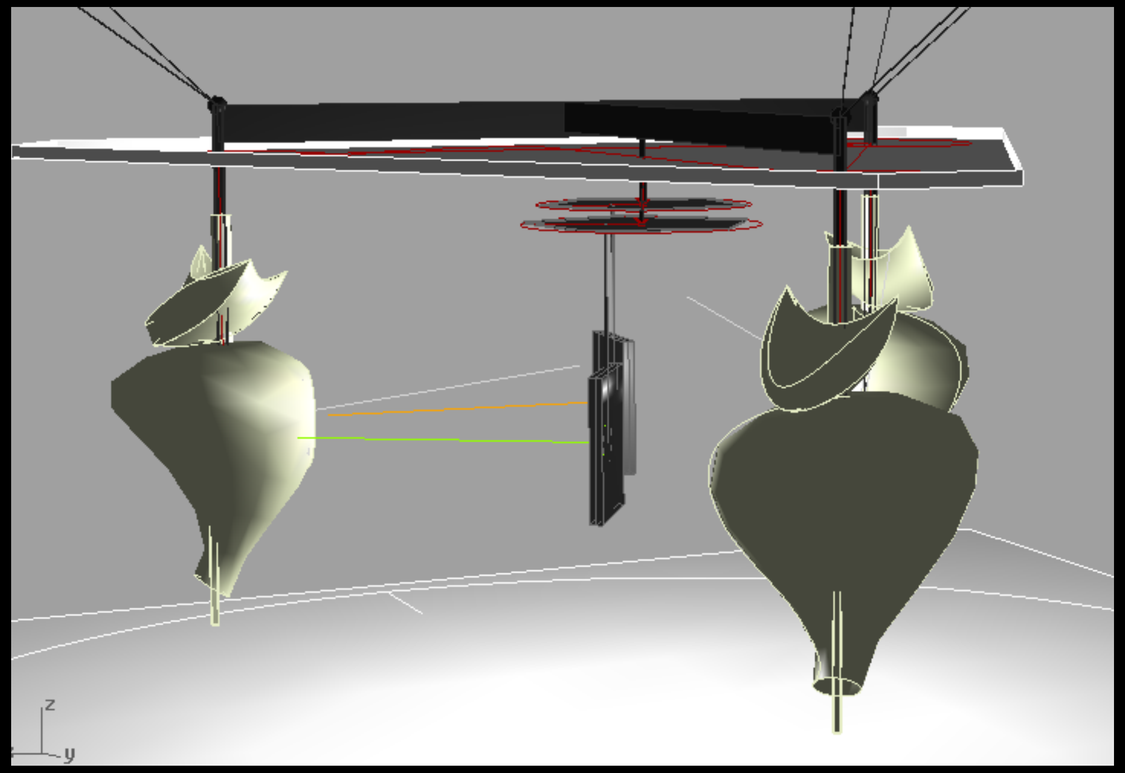


3D Digital Model
TJ McLeish
2018



TJ McLeish, Master Fabricator
Chido Johnson, Sculpture Dept

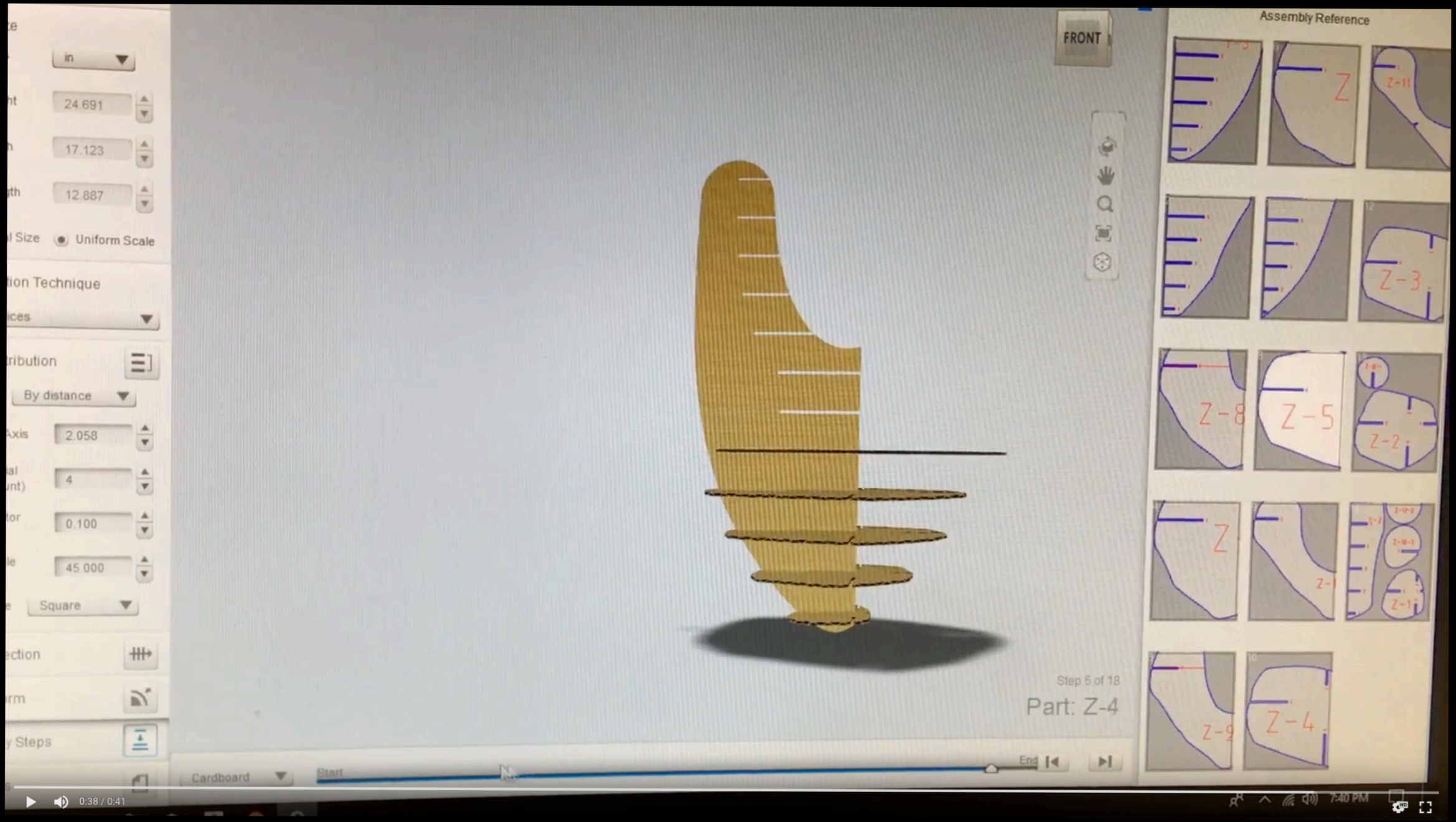
College for Creative Studies
2018

Paul Pangaro, Chair MFA IxD
Leith Campbell, Ape Technologies

College for Creative Studies
2018

Leith Campbell, Ape Technologies
TJ McLeish, Master Fabricator

College for Creative Studies
2018


in
24.691
17.123
12.887
Uniform Scale
By distance
2.058
4
0.100
45.000
Square
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Assembly Reference
Z
Z-11
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Z-9
Z-4
Step 5 of 18
Part: Z-4
Cardboard
Start
End
0:38 / 0:41
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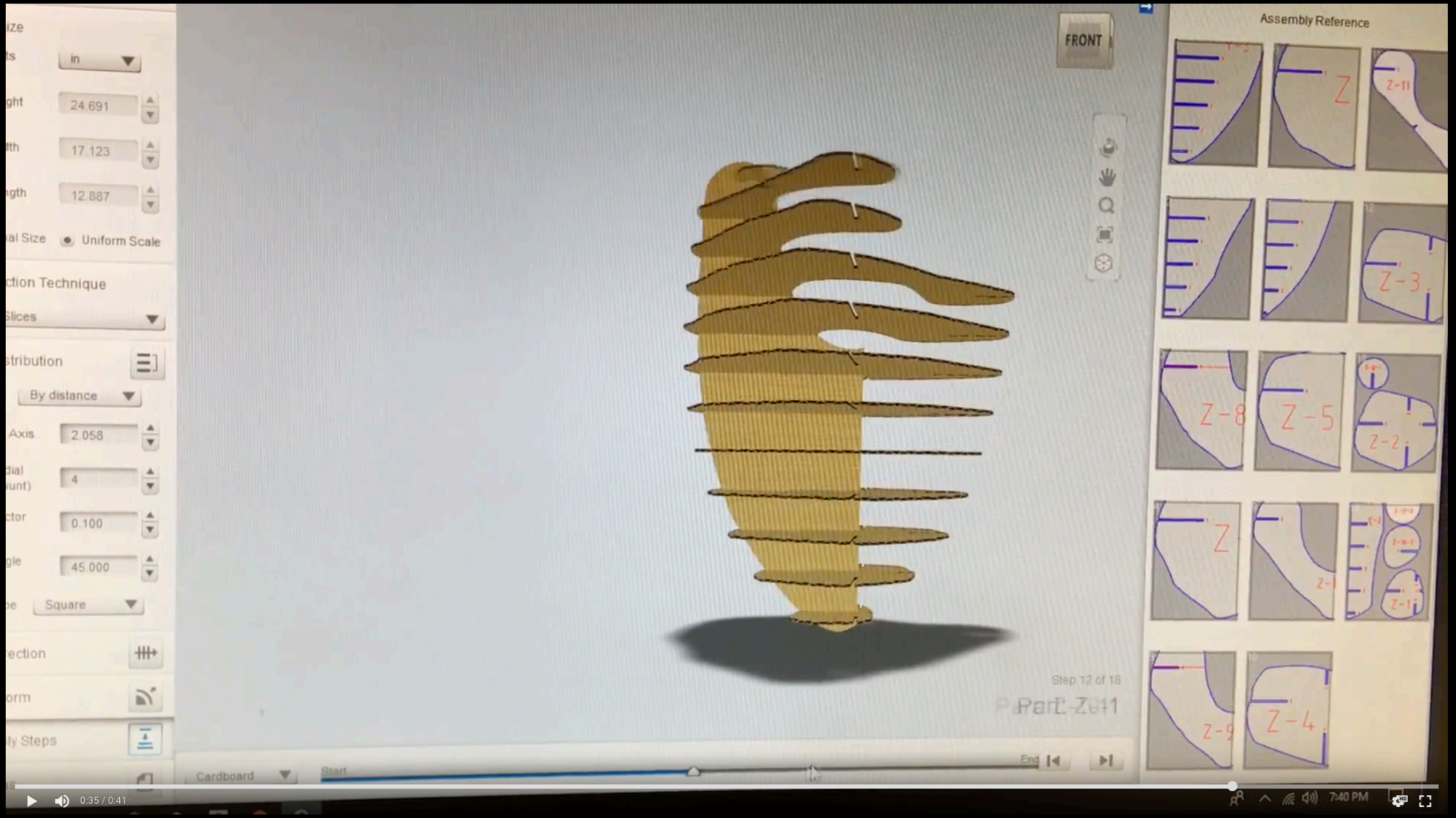
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Step 12 of 18
Part Z-11
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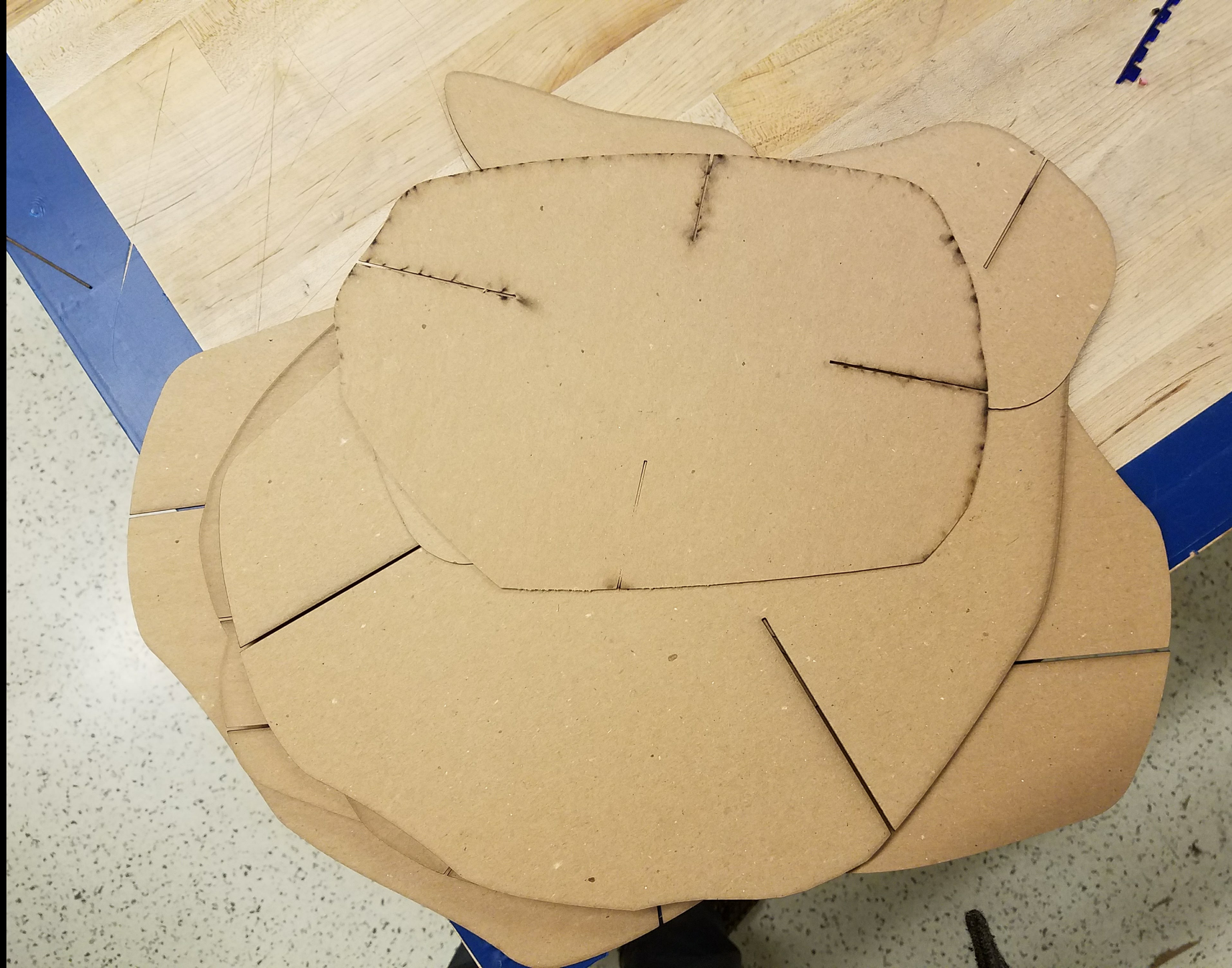
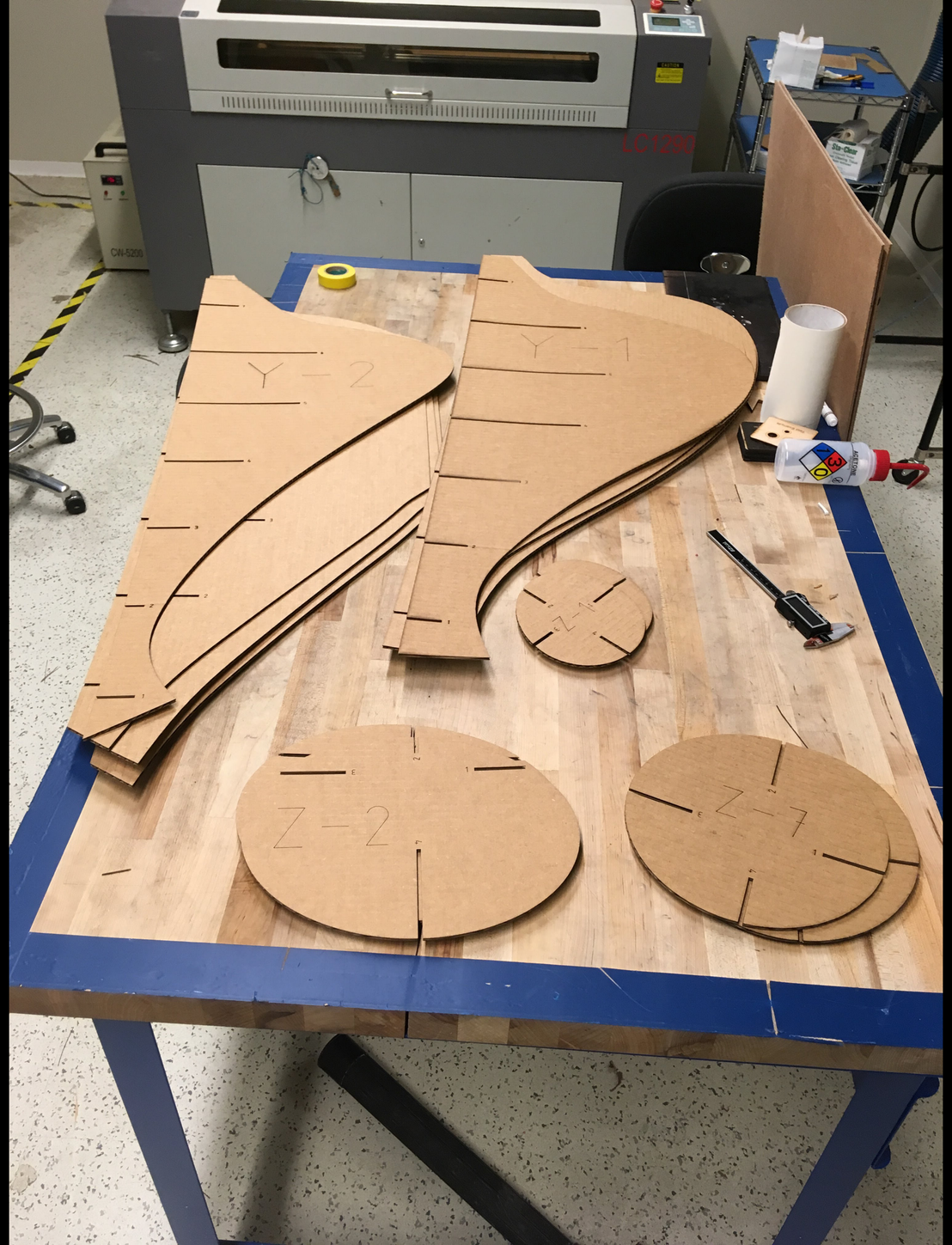
Laser-cut sections
Female mobiles
Building Brown Workshop
Chicago



Laser-cut sections
Female mobiles
Building Brown Workshop
Chicago



Assembling the forms
Female mobiles
Building Brown Workshop
Chicago

Cutting foam to fit the forms
Female mobiles
Building Brown Workshop
Chicago

Assembling and glueing
Female mobiles
Building Brown Workshop
Chicago

Smoothing the foam
Female mobiles
Building Brown Workshop
Chicago

Smoothing the foam
Female mobiles
Building Brown Workshop
Chicago

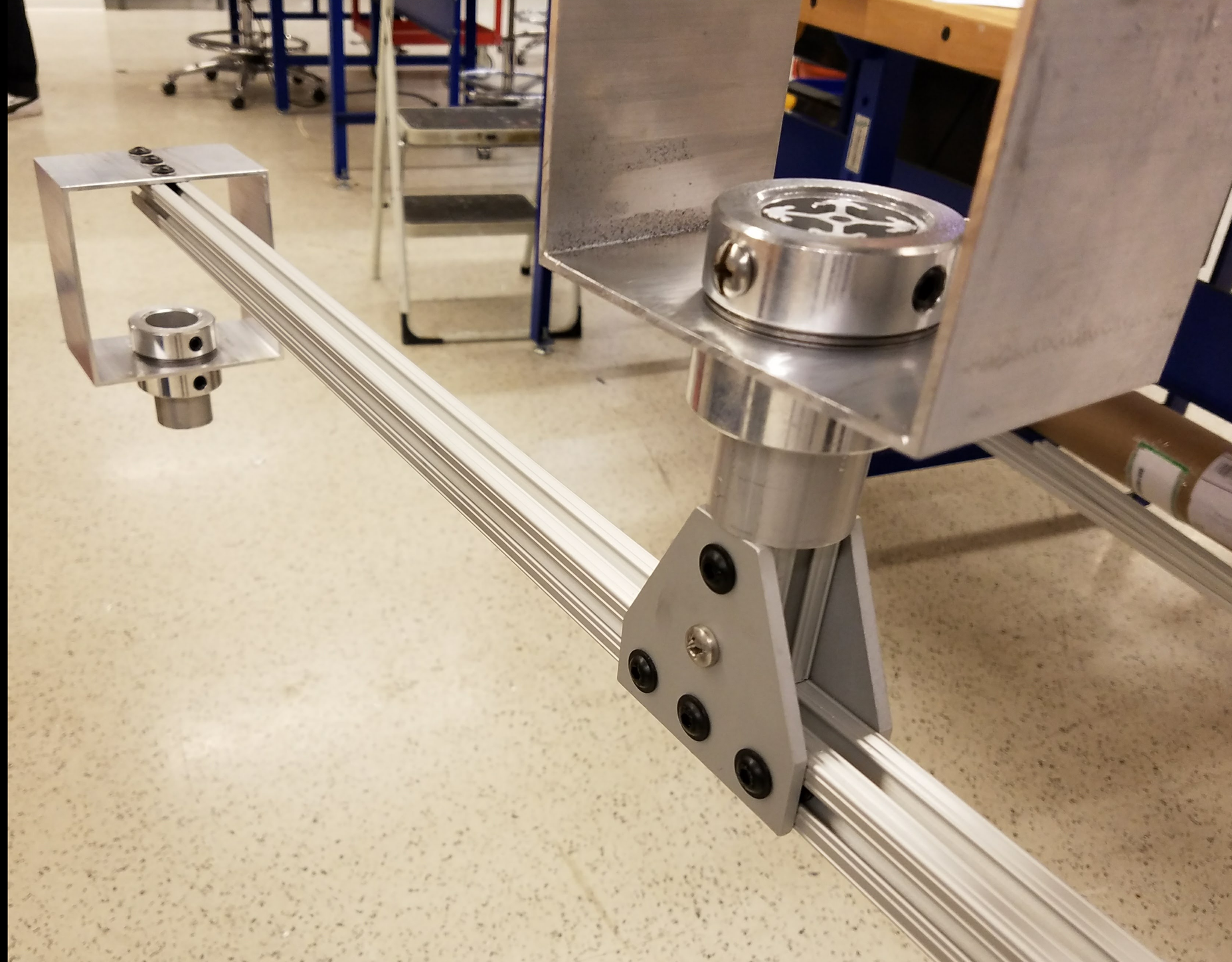
Wrapping before coating
Female mobiles
Building Brown Workshop
Chicago

TJ McLeish, Master Fabricator
Female mobile
mHub, Chicago

Fabricating the support structure
Primary material “8020”
TJ McLeish

Fabricating the support structure
Hooks for cabling to ceiling
TJ McLeish

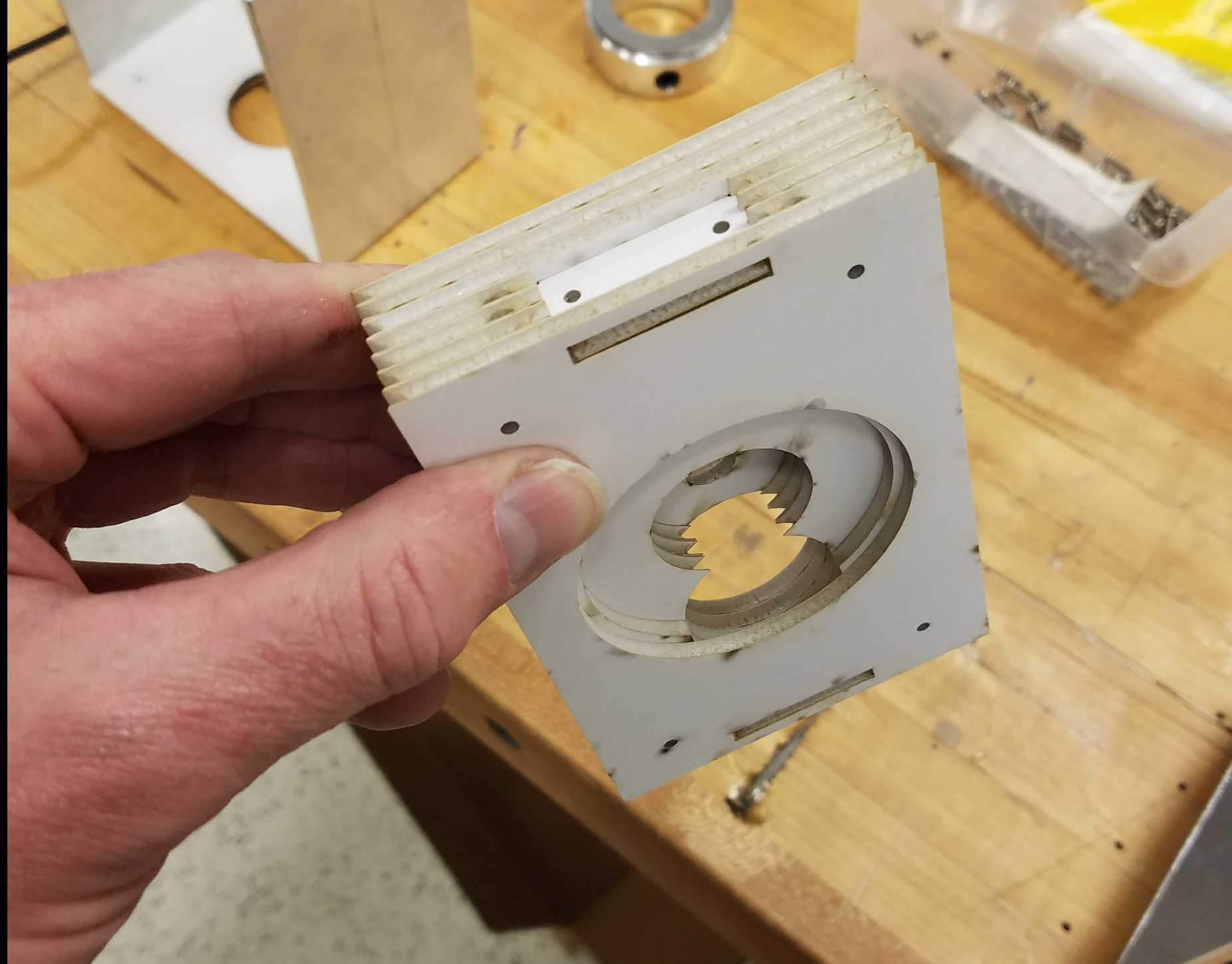
Fabricating the support structure
Rotating bar for male mobiles
TJ McLeish



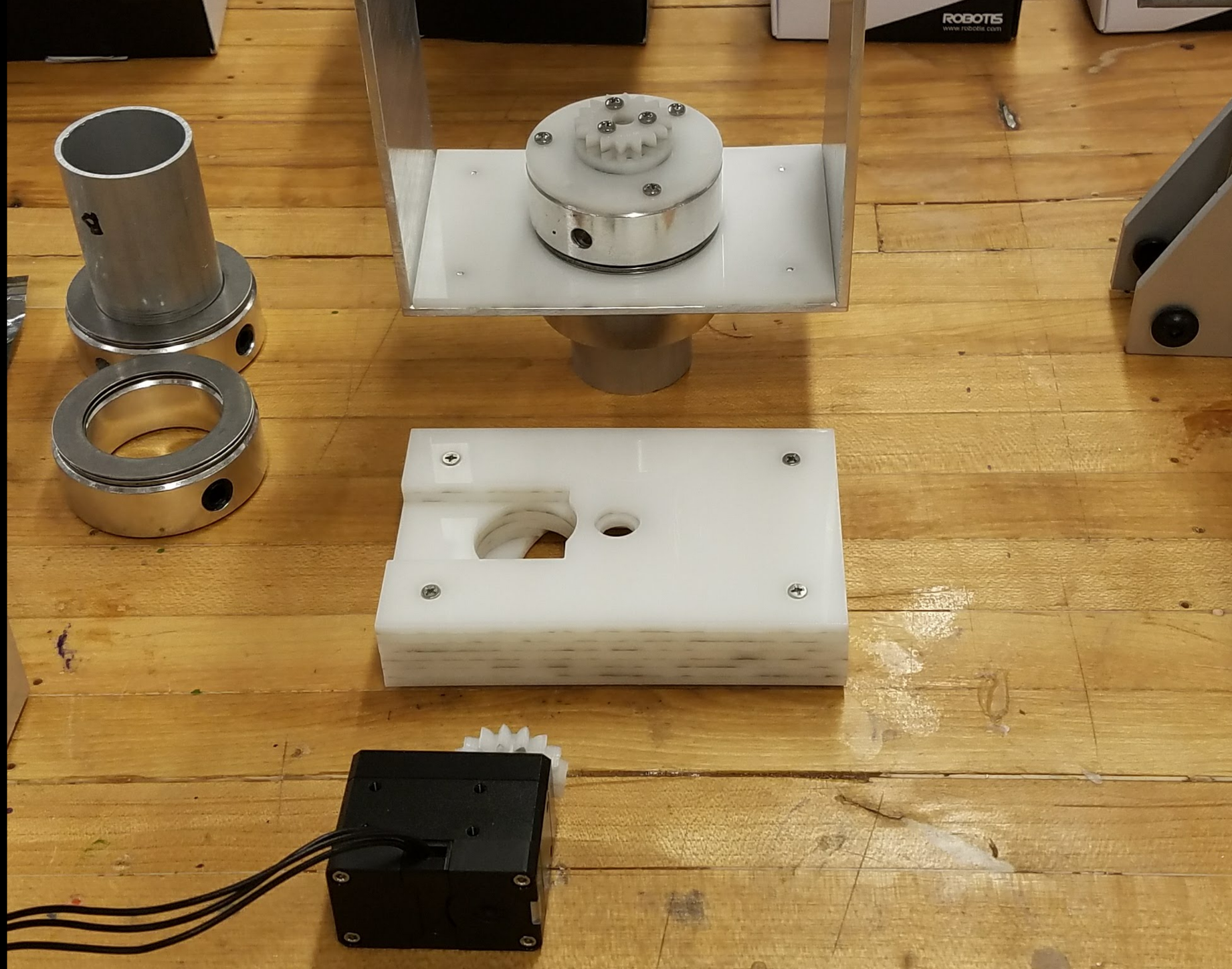
Prototyping the mechanisms
Servos, wires, and Delrin
TJ McLeish

Fabricating the mechanisms
Laser-cut gear tests of paper
TJ McLeish

Fabricating the mechanisms
Servo mount test of paper
TJ McLeish



Fabricating the mechanisms
Servo mount and gearing of Delrin
TJ McLeish



Beginning assembly
TJ McLeish, Master Fabricator
Wendy Wu, Class of 2019

EXIT

Beginning assembly
Brendon Quinn, Class of 2019
CCS MFA Interaction Design

Beginning assembly
Class of 2018 & Class of 2019
CCS MFA Interaction Design

Raising the structure
Class of 2018 & 2019
CCS MFA Interaction Design

Assembling the female mobiles
TJ McLeish
Alecia Secord, Class of 2019
Sofia Lewandowski, Class of 2018
CCS MFA Interaction Design

Assembling the female mobiles
TJ McLeish
Alecia Secord, Class of 2019
CCS MFA Interaction Design

Hanging the female mobiles
TJ McLeish
Alecia Secord, Class of 2019
Sofia Lewandowski, Class of 2018
CCS MFA Interaction Design

Mounting the female mobiles

Assembling male mobiles
TJ McLeish
Gissoo Doroudian, Class of 2018
CCS MFA Interaction Design

Mounting male mobile structure
TJ McLeish

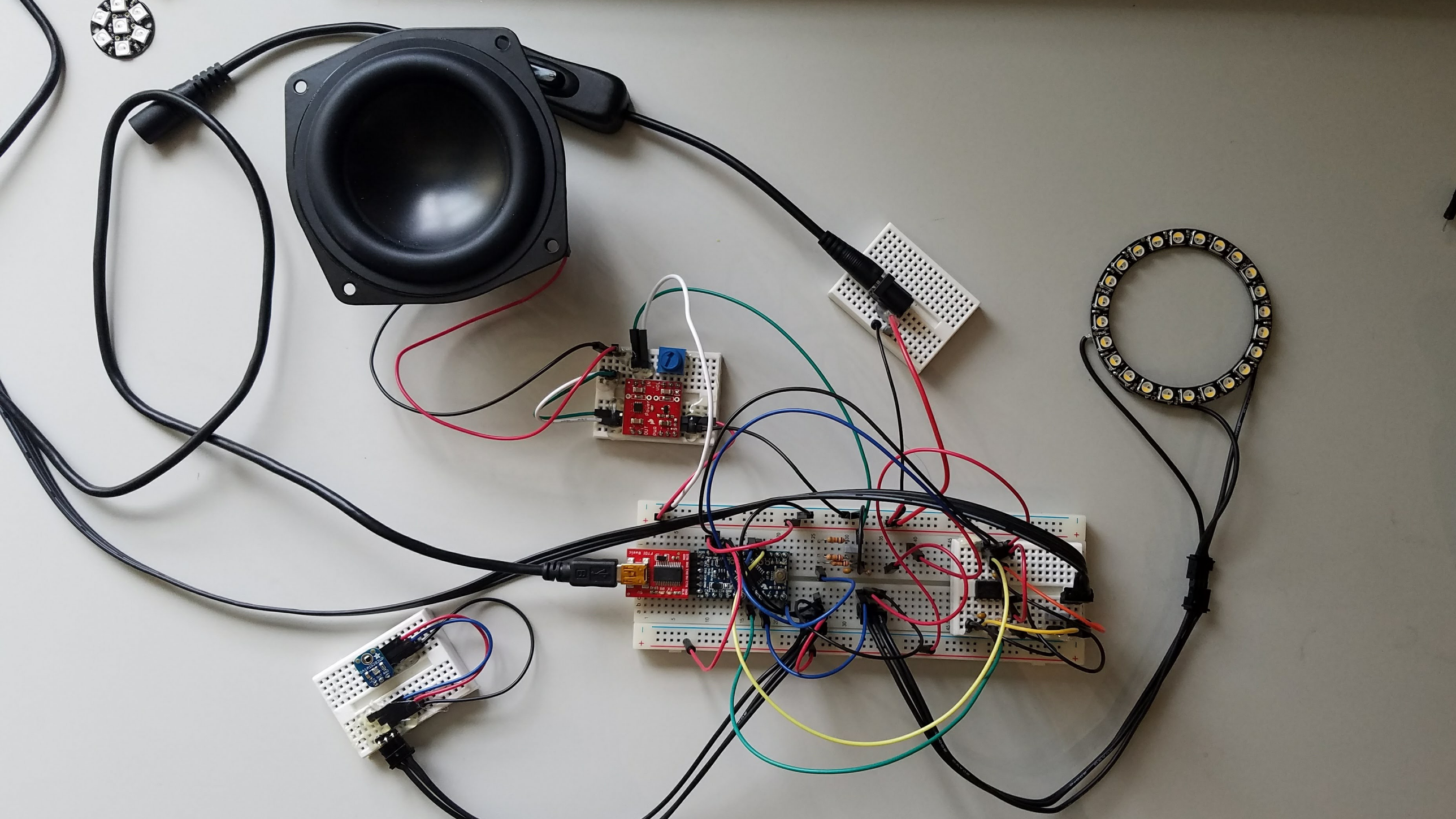
Mounting male mobile structure

Installing mirror motors
TJ McLeish

Installing mirror motors

Wiring the mobiles
TJ McLeish

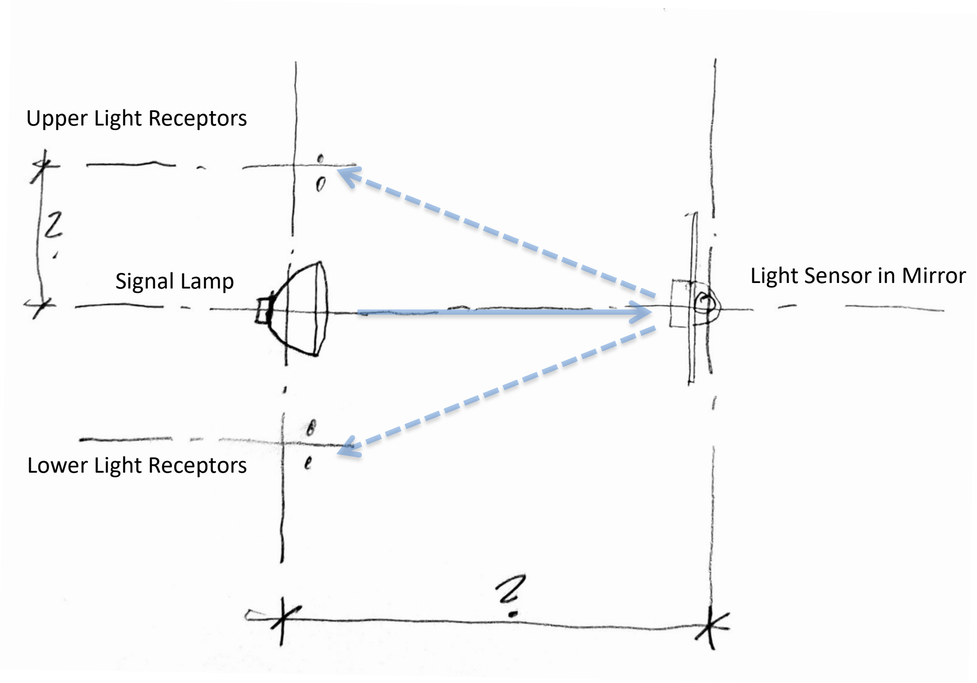
Designing & building the electronics
TJ McLeish, Master Fabricator
COLLOQUY 2018 Project
MFA Interaction Design
College for Creative Studies
2018

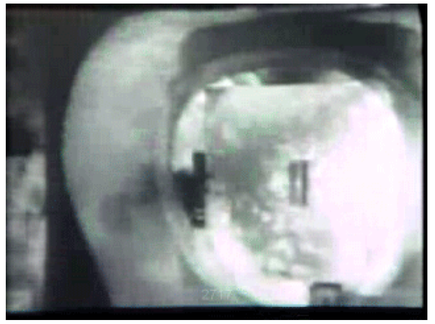


Colloquy of Mobiles Replica

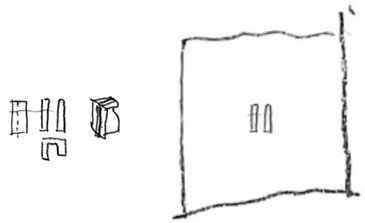
Design Development: Prototype / Model Intermittent Signal Light

Intermittent Signal Light





Video of Light Sensor in Mirror



Light Sensor in Mirror

Servo motors have three wires: power, ground, and signal. The power wire is typically red, and should be connected to the 5V pin on the Arduino board. The ground wire is typically black or brown and should be connected to a ground pin on the Arduino board. The signal pin is typically yellow, orange or white and should be connected to a digital pin on the Arduino board. Note that servos draw considerable power, so if you need to drive more than one or two, you'll probably need to power them from a separate supply (i.e. not the +5V pin on your Arduino). Be sure to connect the grounds of the Arduino and external power supply together.

Light Sensor Options

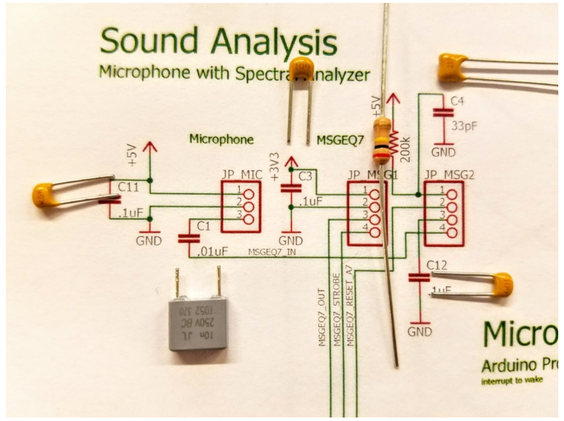
Colloquy of Mobiles Replica

Design Development: Prototype / Model Audio Transceiver

Determine configuration of microphone and speaker for audio transciever.

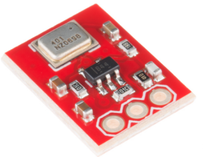
Use a standard cell phone microphone and a 7 band spectral analyzer to cluster sounds heard and build signal models.

Use a standard speaker to transmit sounds generated by the microcontroller.

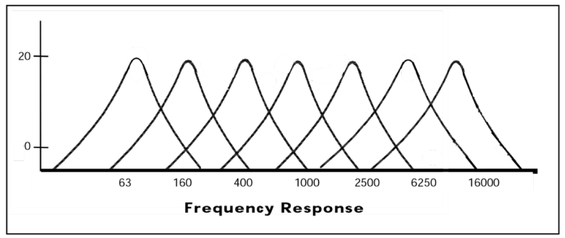


Audio Receiver

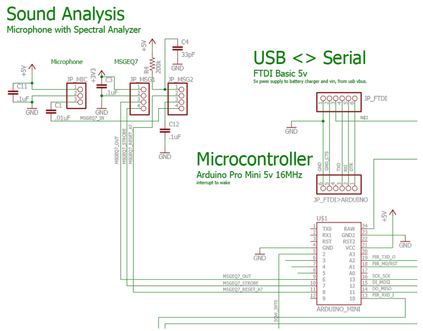
Microphone



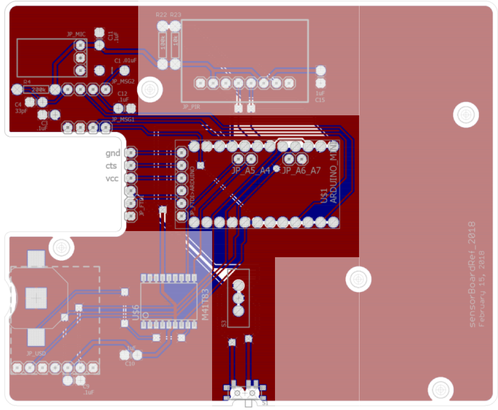
Spectral Analyzer



Spectral Analyzer Frequency Response



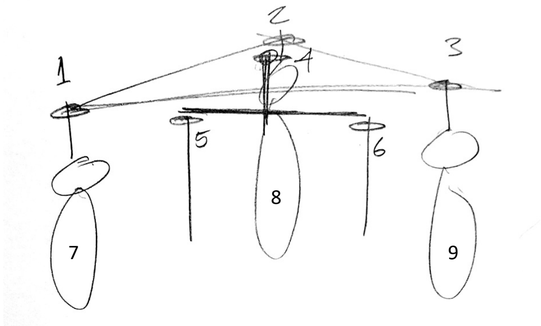
Sound Receiver Schematic



Sound Receiver Circuit

Colloquy of Mobiles Replica

Design Development: Prototype / Model Movement and Control of Figures – Servo Motors



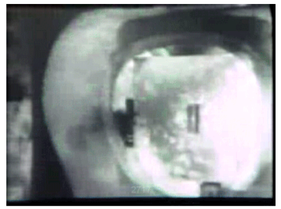
Rotation of figures about Z axes.

A total of 9 servo motors drive figures.

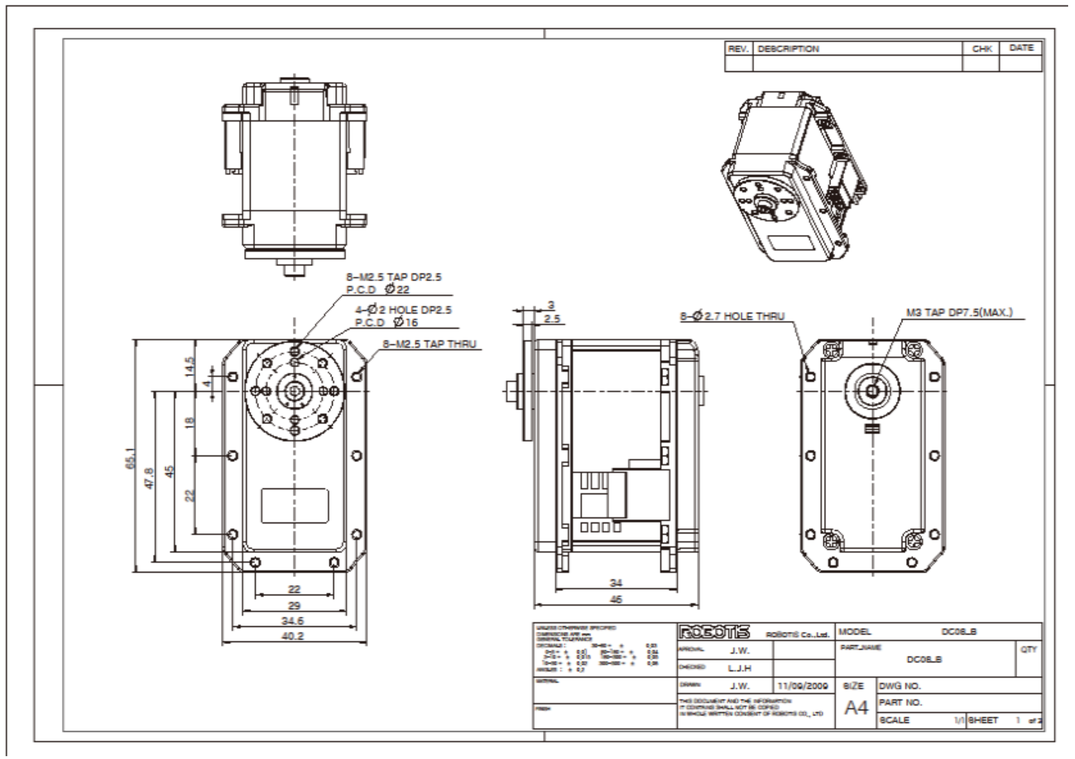
- 1 Drive motor for each of 3 Females
- 1 Drive motor for each of 2 Male figures
- 1 Drive motor for Male linkage bar
- 1 Drive motors for each of the 3 Female reflectors

Low torque will be required to turn the lightweight figures about their axes.

MX-106T Stats			
Operating Voltage	14.8V	12V	11.1V
Stall Torque*	102 kg·cm	85.6 kg·cm	81.5 kg·cm
	1,416 oz·in	1,189 oz·in	1,132 oz·in
	10.0 N.m	8.4 N.m	8.0 N.m
No-load Speed	55 RPM	45 RPM	41 RPM
Weight	153g		
Size	40.2 x 65.1 x 46 mm		
Resolution	0.088°		
Reduction Ratio	1/225		
Operating Angle	360° or Continuous Turn		
Max Current	**5.2A @ 12V**		
Standby Current	**55 mA**		
Operating Temp	-5°C ~ 85°C		
Protocol	TTL Asynchronous Serial		
Module Limit	254 valid addresses		
Com Speed	8000bps ~ 3Mbps		
Position Feedback	Yes		
Temp Feedback	Yes		
Load Voltage Feedback	Yes		
Input Voltage Feedback	Yes		
Compliance/PID	Yes		
Material	Metal Gears &		
	Engineering Plastic Body		
Motor	Maxon RE-MAX		
Manual Download	MX-106 Manual		
Controller List	USB2Dynamixel		
	CM-530		
	CM-700		
	Arbotix		



Female reflector



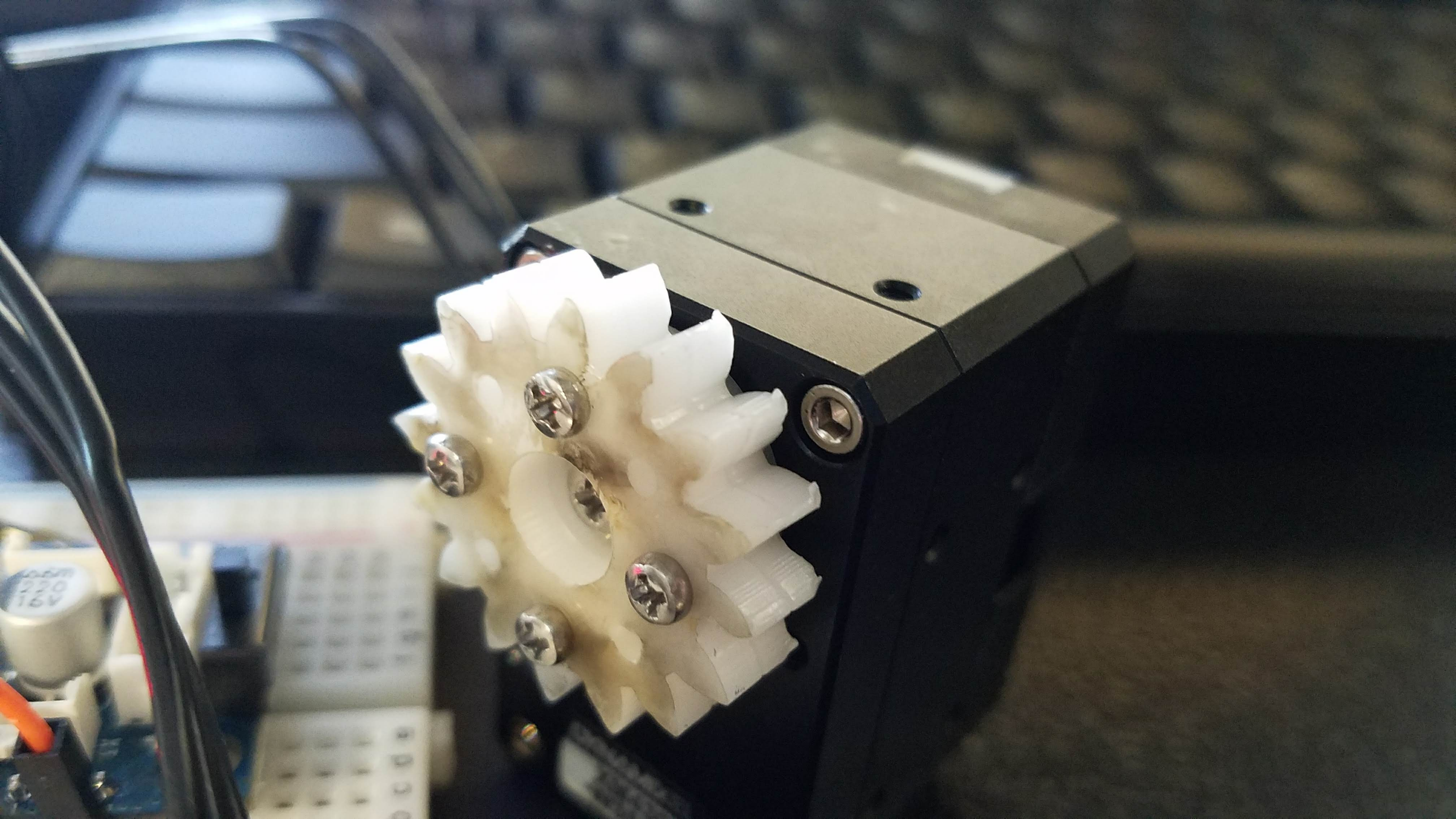
5.2A @ 12v = 62.4W
62.4W x 9 = 561.6W
561.6W = 4.68A @ 120v AC

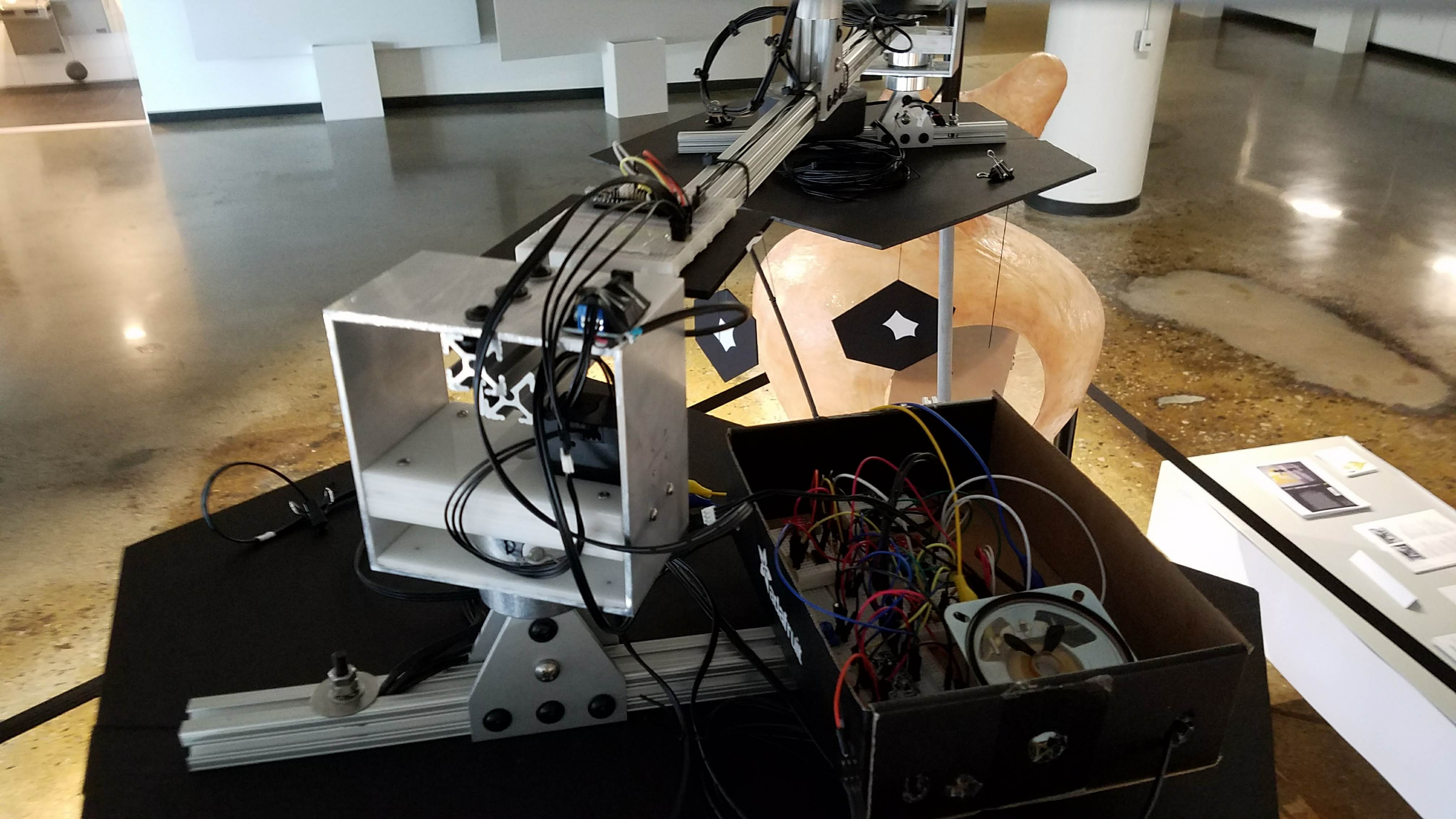
Estimated MAX power requirement for Motors and Control is 5A @ 120vAC

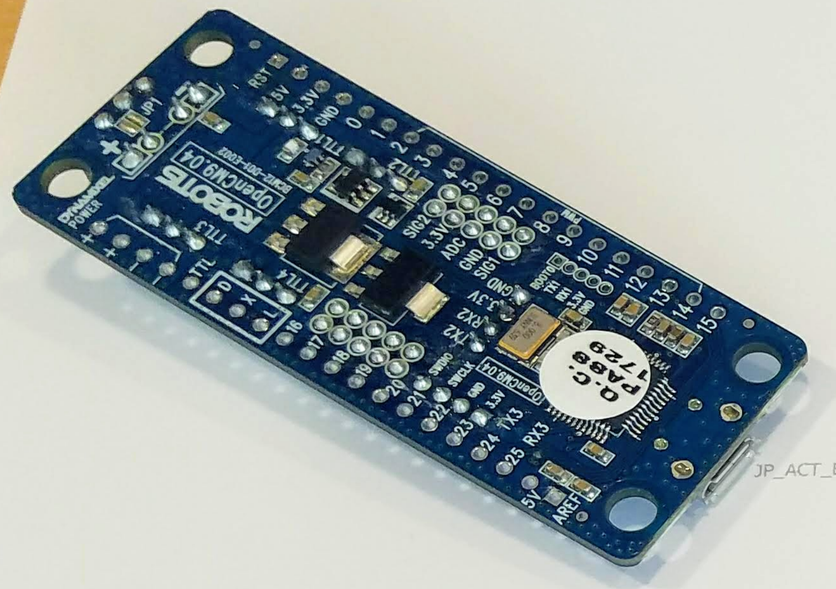
estimated running power is 1A.

12V 5A switching power supply
PRODUCT ID: 352

Testing the servo motors & circuits
Wendy Wu, Class of 2019
MFA Interaction Design







POWER_VCC_NEO

JP_ACT_BODY_STOP_REQUEST

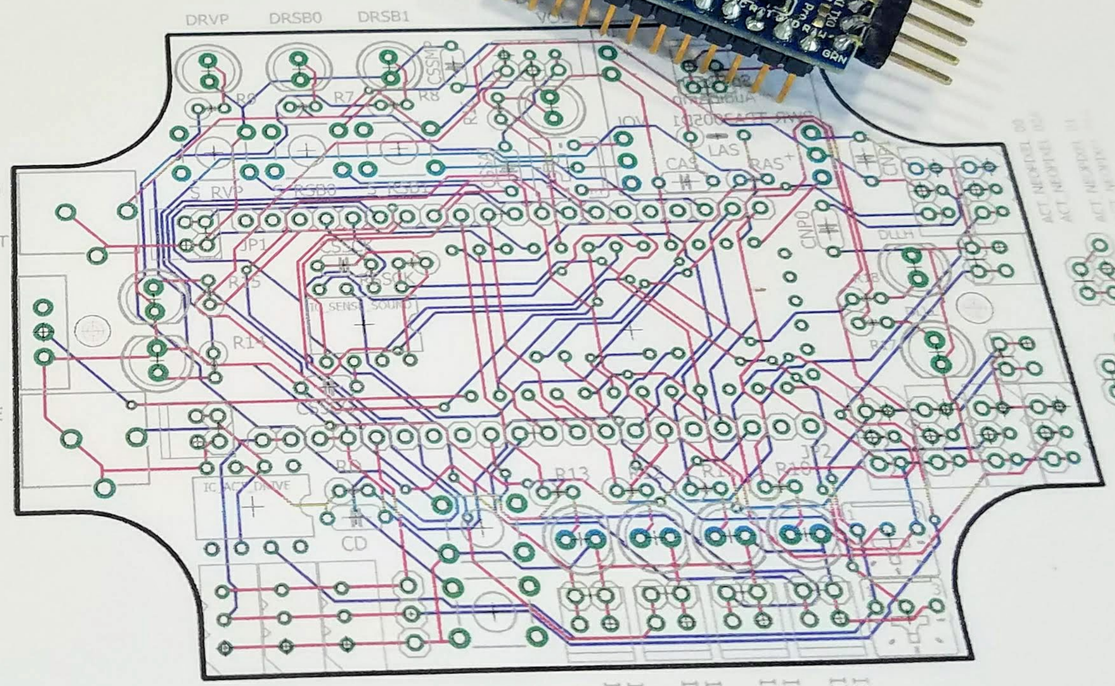
DDPRO

S_DEBUG

DDOCM

JP_ACT_DRIVE

POWER_12V_SERVO



SERVO_COM_A

SERVO_COM_B

SERVO_COM_C

SERVO_COM

S_BSRI

S_BSRII

JP_SENSE_DRIVESTATE_I DDSI

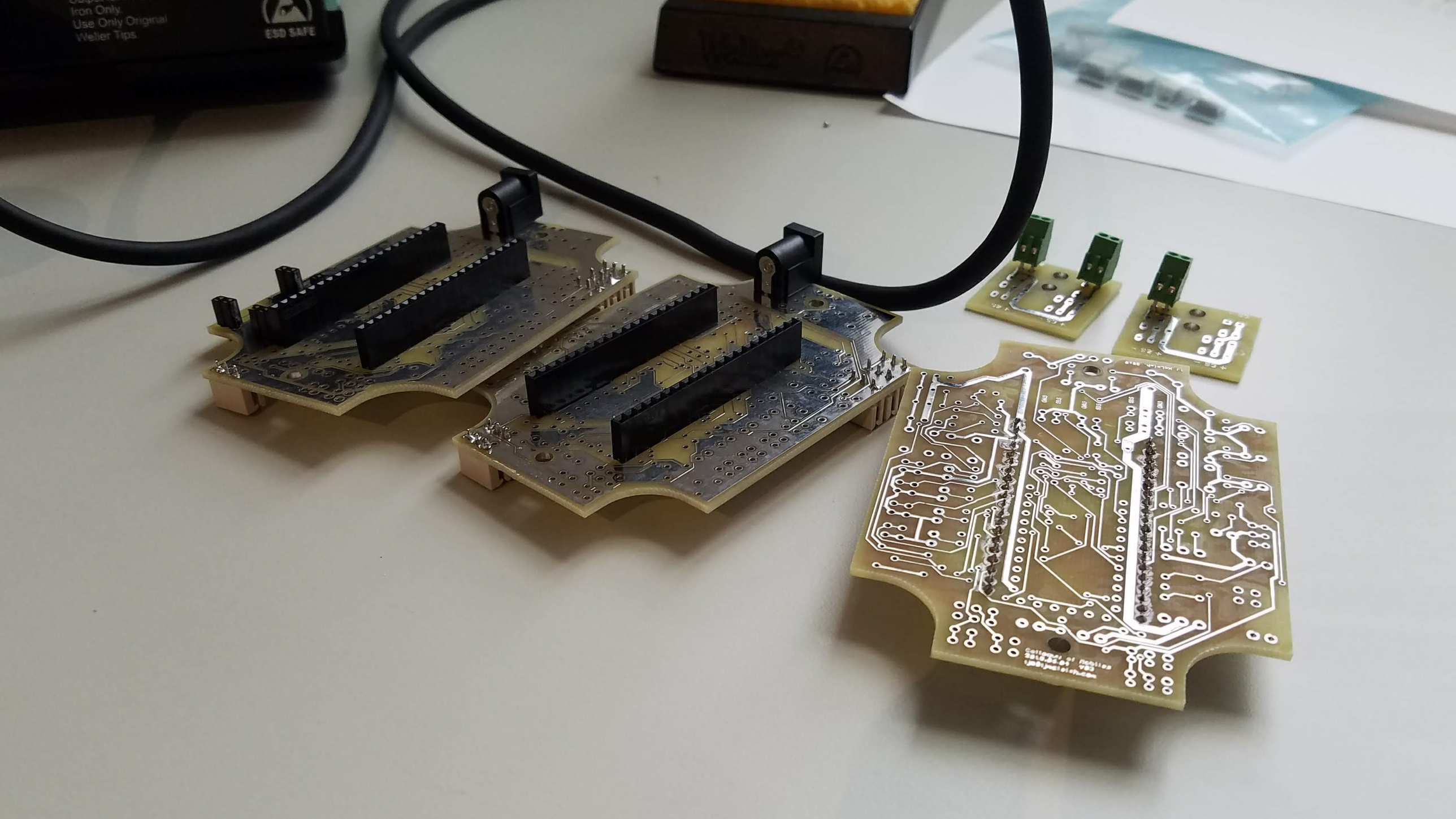
JP_SENSE_DRIVESTATE_II DDSII

JP_SENSE_BODY_STOP_REQUEST_I DBSRI

JP_SENSE_BODY_STOP_REQUEST_II DBSRII

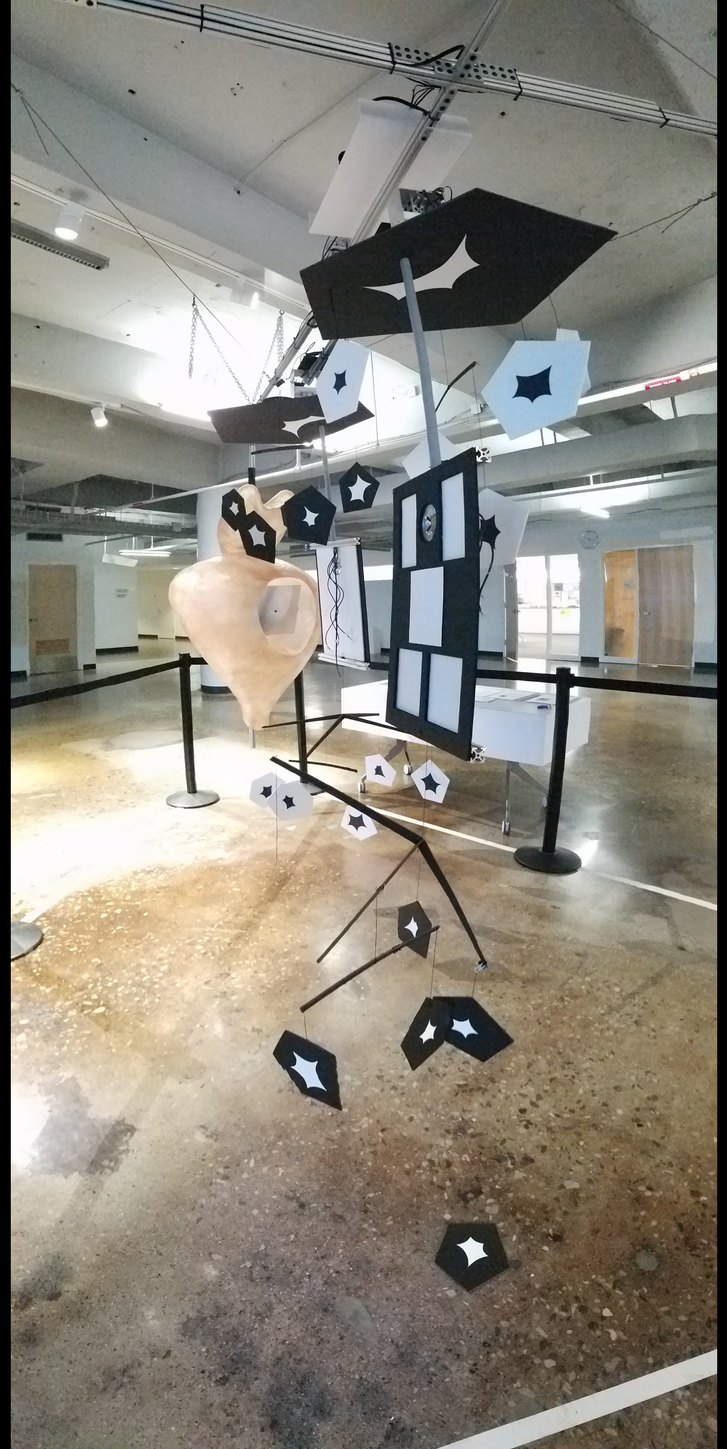
R_DSII

R_DSI


Iron Only.
Use Only Original
Weller Tips.
ESD SAFE

Baked!
30
STAPLES copy paper
11 x 17
Item# 512210

Testing the completed assembly

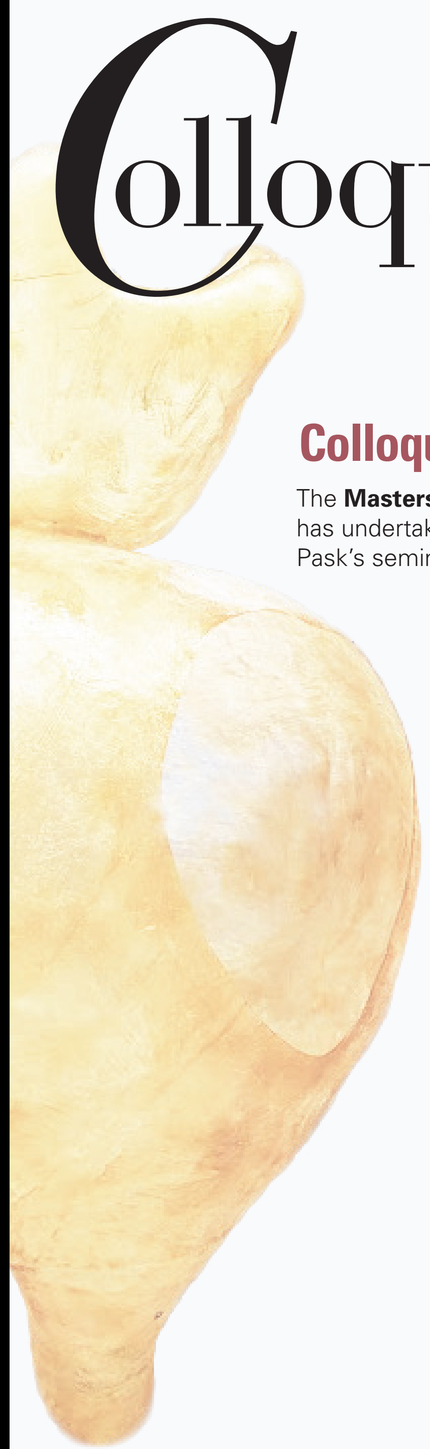


Opening the exhibit
MFA Interaction Design
College for Creative Studies
2018

Click for PDF

Pangaro & McLeish / COLLOQUY 2018 Project

Colloquy *of* Mobiles



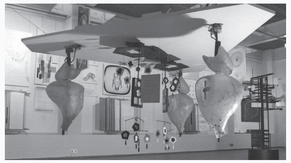
Colloquy 2018

The **Masters in Interaction Design** department at CCS has undertaken the full scale reproduction of Gordon Pask's seminal interactive work, **Colloquy of Mobiles**.

The work, then and now, explores:

- **the dynamics of conversing with machines, now occurring every day**
- **the impact of smart environments, which increasingly effect our lives**
- **the implications of artificial intelligence, inside of every device we use**

Colloquy 1968



Colloquy of Mobiles was designed by Gordon Pask for the ground-breaking 1968 exhibition ***Cybernetic Serendipity*** at the Institute of Contemporary Arts in London. The installation comprises sculptural figures that move and interact through light and sound, with each other and with the public. Colloquy explores cooperative and competitive conversations, machine-to-machine and person-to-machine, in an interactive, immersive environment. Surprising and revolutionary in its day, **Colloquy of Mobiles** has influenced generations of artists and critics.

ADVISORY BOARD

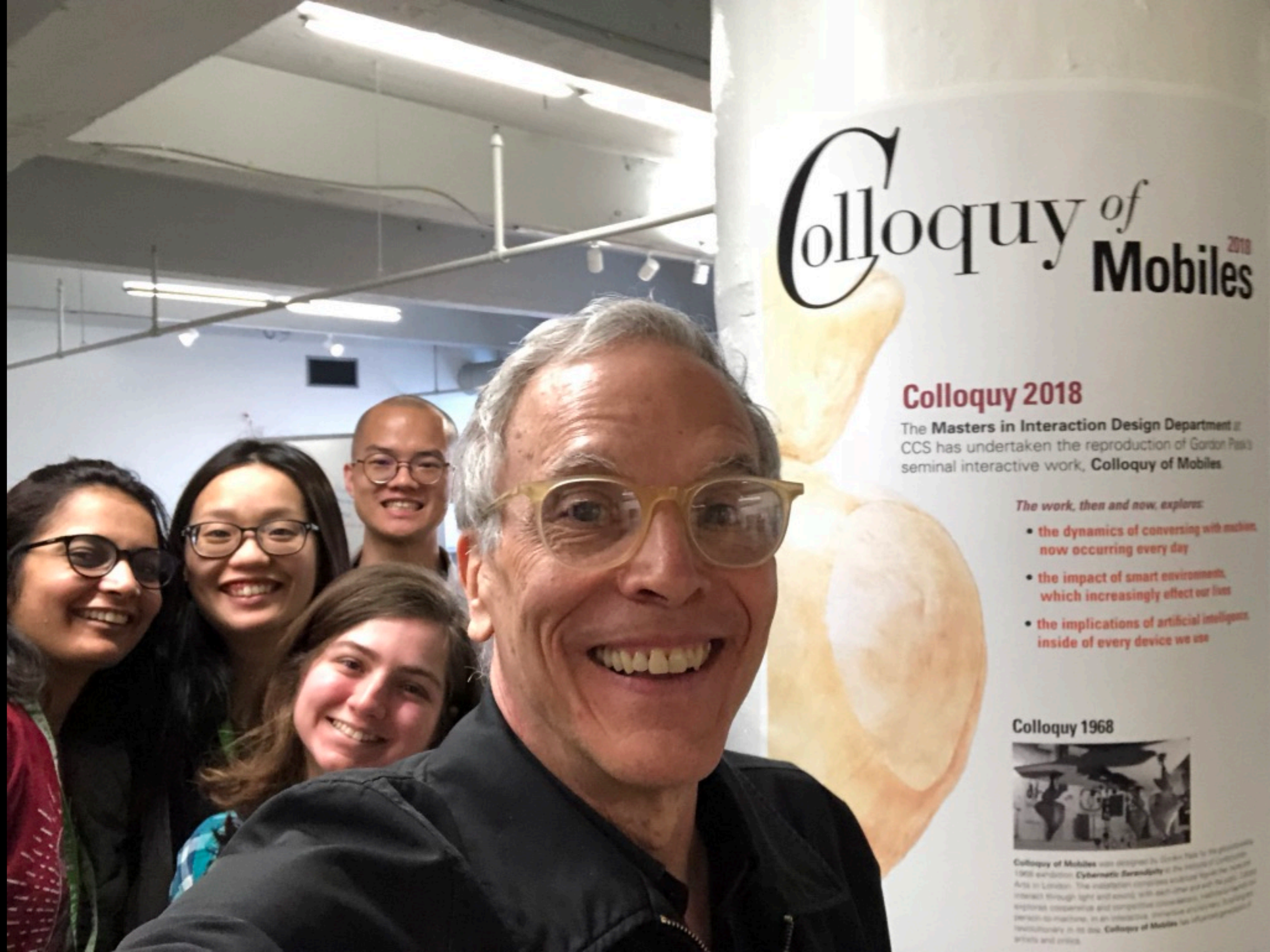
Amanda Pask Heitler and **Hermione Pask**, *Gordon Pask's daughters* • **Jasia Reichardt**, *Curator of Cybernetic Serendipity at the ICA in 1968* • **Albert Müller**, *Curator of the Gordon Pask Archive, University of Vienna* • **Andrew Pickering**, *Author of "The Cybernetic Brain"* • **Guilherme Kujawski**, *Writer, Teacher, and Co-Curator of Emoção Art.ficial, ITAU Cultural* • **Hugh Dubberly**, *Design Planner and Teacher* • **John Plunkett**, *Designer and Co-Founder of WIReD Magazine* • **Marc Schwartz**, *Co-founder, DLECTRICITY* • **Vince Carducci**, *Dean of Undergraduate Affairs, CCS*

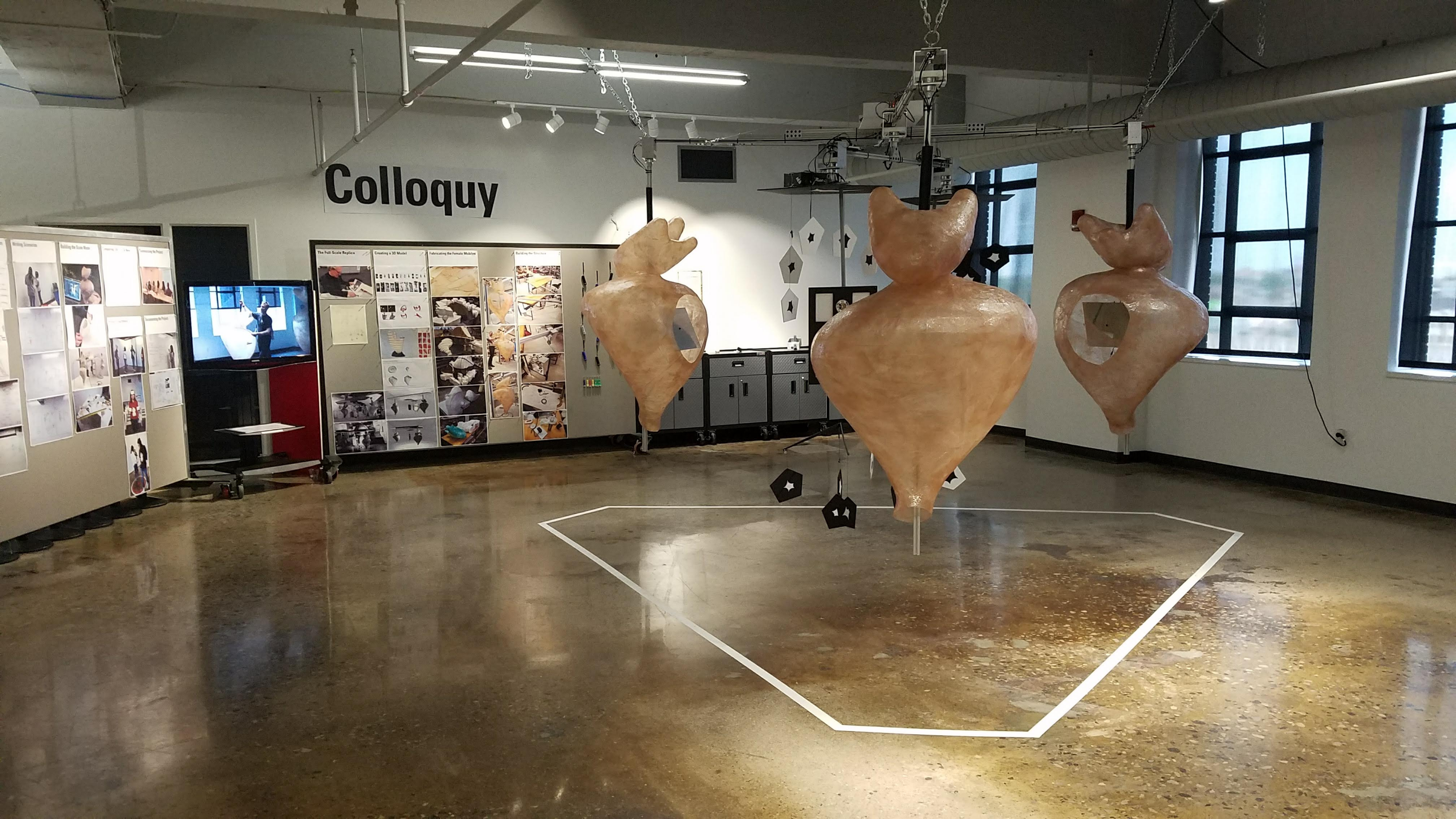
FUNDING

We have received $28,500 from individual donors and are seeking $6,000 to complete the full-scale **Colloquy of Mobiles**. Additional funding is sought to disseminate thorough documentation as widely as possible under an open-source license, as well as to hold symposia and foster deep conversations on the implications of conversational machines in our lives.

Contact us at **colloquy2018@gmail.com**

Opening the exhibit
Paul Pangaro, MFA IxD Chair
Students of Class of 2018
College for Creative Studies
2018

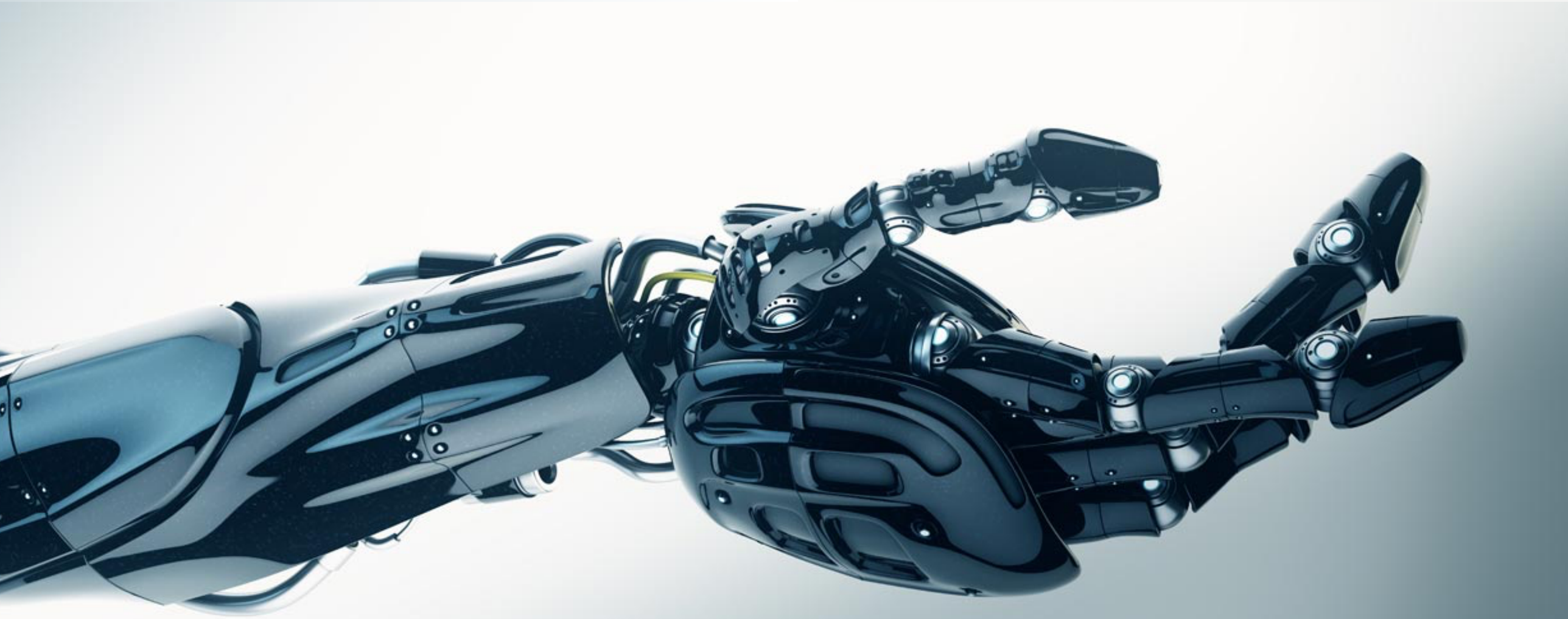



Colloquy
The Full-Scale Replica
Creating a 3D Model
Fabricating the Female Mobilee
Building the Structure

Cybernetics is not Robotics

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

Cybernetics is not Biomechatronics



https://carleton.ca/mechatronics/

Cybernetics is not AI

Annapurna Pictures

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

LIBRARY

JUN 22 1949

U S PATENT OFFICE

CYBERNETICS

OR CONTROL AND COMMUNICATION IN THE ANIMAL AND THE MACHINE

Norbert Wiener

PROFESSOR OF MATHEMATICS
THE MASSACHUSETTS INSTITUTE
OF TECHNOLOGY

THE TECHNOLOGY PRESS

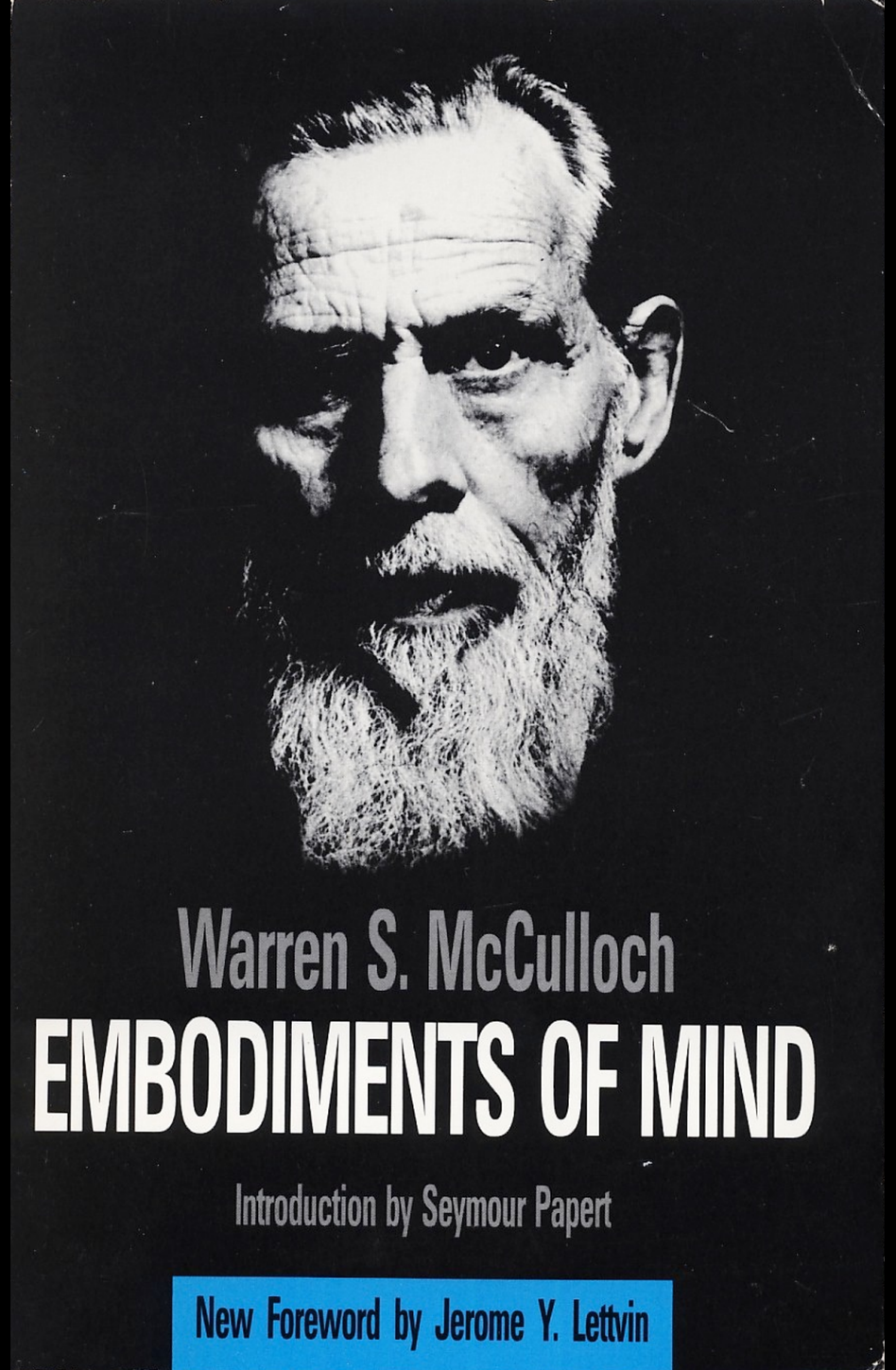
JOHN WILEY & SONS, INC., NEW YORK
HERMANN et CIE, PARIS

Cybernetics is the title of a book published in 1948 by Norbert Wiener.

Photo: MIT Archives

Wiener became world-famous for his work in cybernetics.

But he was not the only important figure at the origin of the field.



Warren McCulloch was a neurophysiologist and genius who gathered world-renowned scientists to a series of conferences.

CYBERNETICS

CIRCULAR CAUSAL AND FEEDBACK MECHANISMS
IN BIOLOGICAL AND SOCIAL SYSTEMS

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

Edited by

HEINZ VON FOERSTER
DEPARTMENT OF ELECTRICAL ENGINEERING
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McCulloch organized the Macy Meetings that founded the trans-disciplinary field of cybernetics.

Photo via UN Multimedia

Margaret Mead was a world-renowned scholar who revolutionized anthropology.

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Mead was heavily involved at the founding of cybernetics.

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Heinz von Foerster was a physicist and charismatic personality who was also deeply involved.

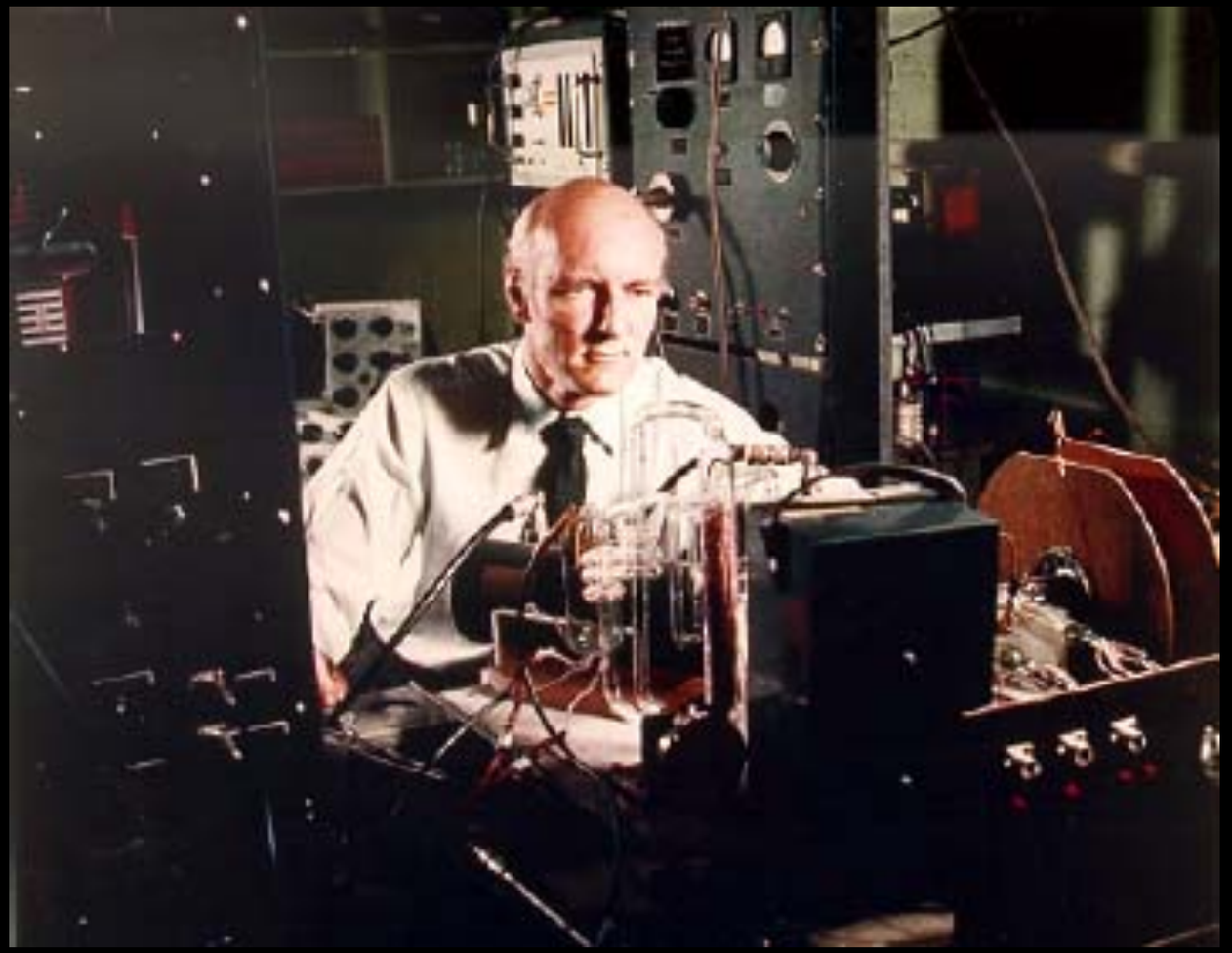

Photo: BCL Archives
University of Illinois
Urbana-Champaign

Von Foerster ran the renowned Biological Computer Lab in Urbana from the 1950s to the 1970s.

He influenced generations of cyberneticians.

1982

Heinz von Foerster

OBSERVING SYSTEMS

THE SYSTEMS INQUIRY SERIES

PUBLISHED BY INTERSYSTEMS PUBLICATIONS

Understanding Understanding

Essays on Cybernetics and Cognition

Heinz von Foerster

2002

1953

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FRANK FREMONT-SMITH, *Medical Director*
JANET FREED LYNCH, *Assistant for the Conference Program*

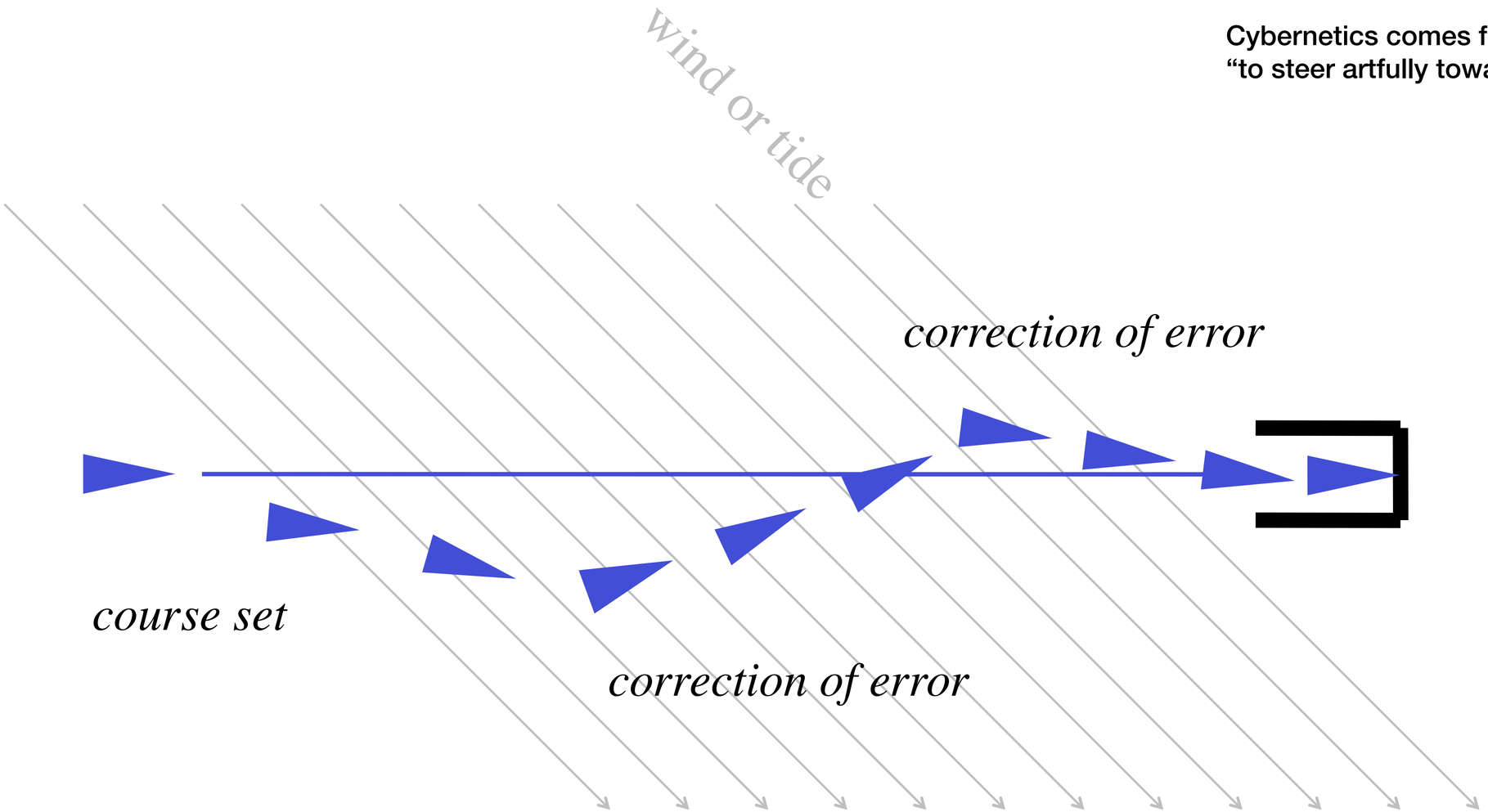
* This is the final conference.
† Absent.

† Absent.

Great thinkers from all the major disciplines were involved in the origin of cybernetics.

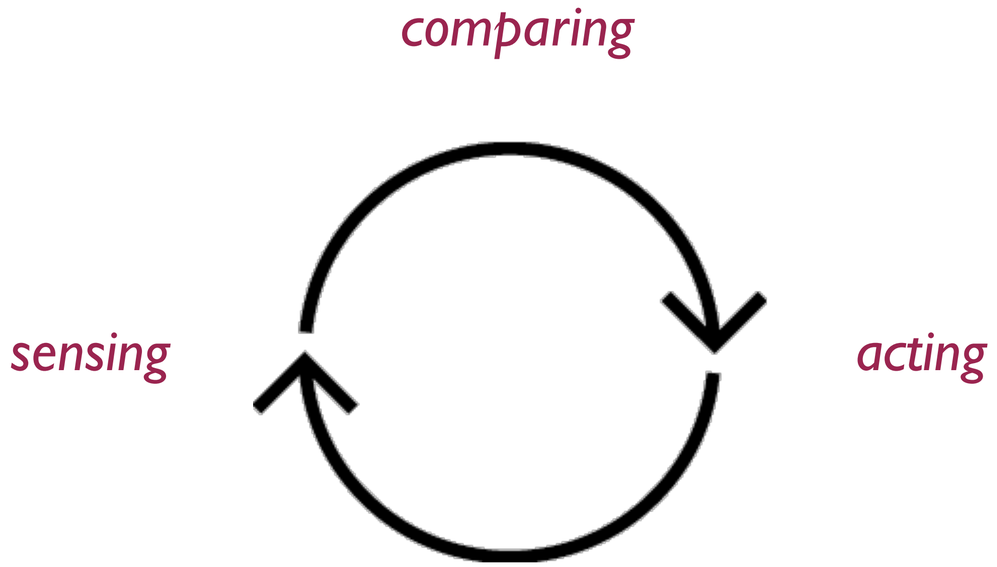
the art of steering

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



the art of steering

Cybernetics is the art and science of feedback and goals.



Early 1950s

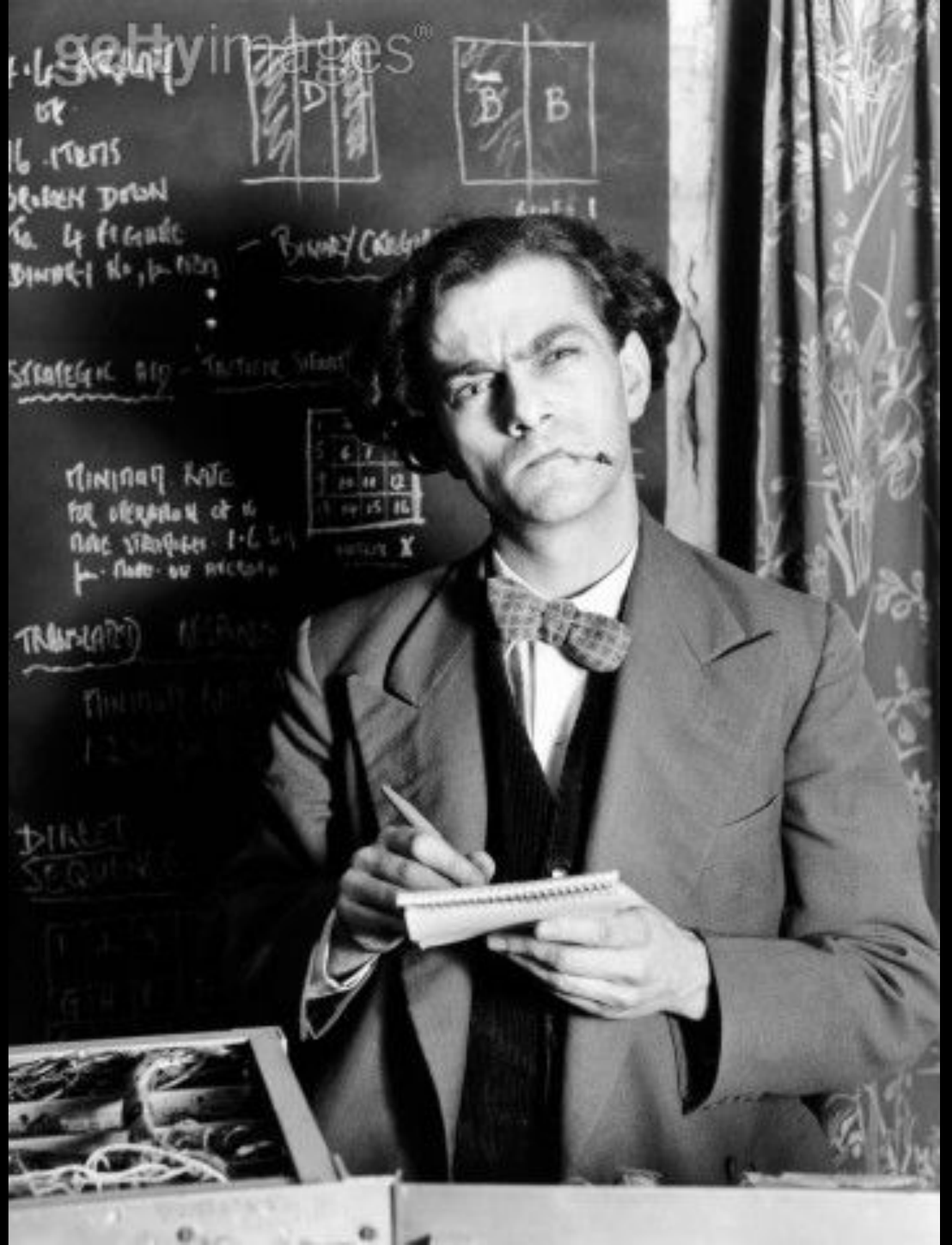


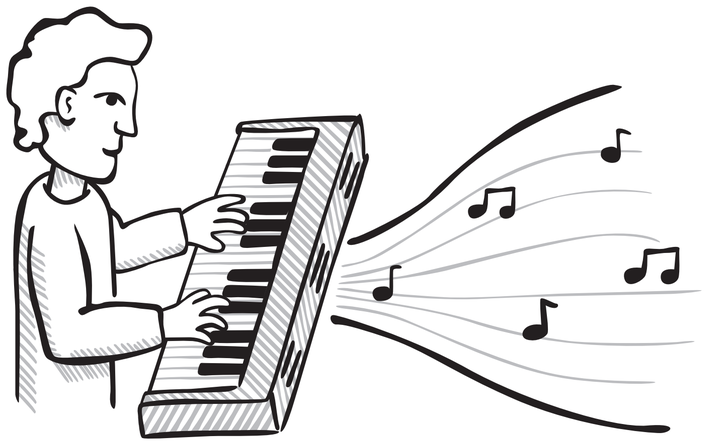
Photo: Uncredited

Gordon Pask was a wunderkind who was doing cybernetics before he knew it.

He realized it only after meeting Norbert Wiener.

Pask’s first interactive machine was called Musicolour, completed in 1953.

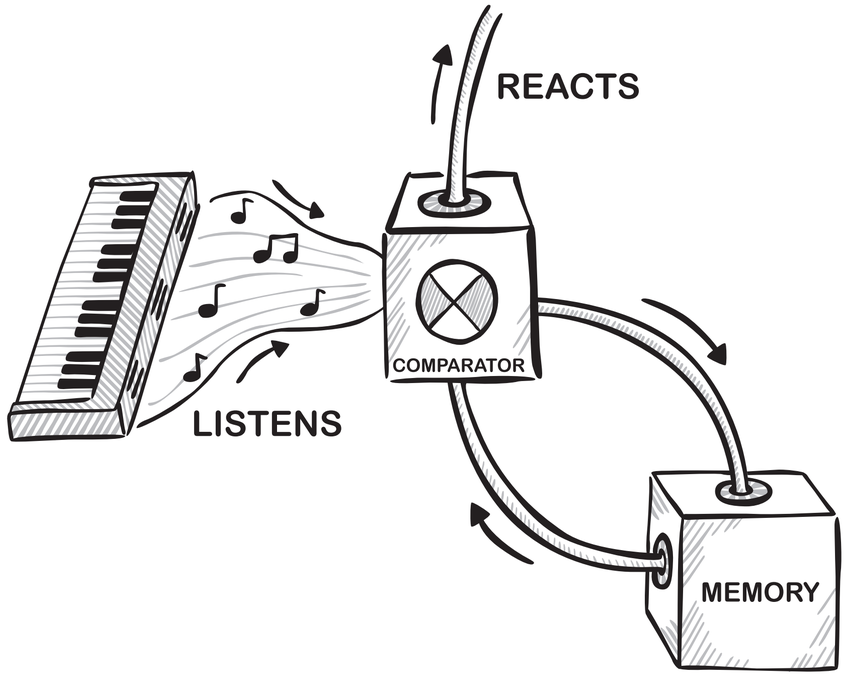
A musician improvises on any musical instrument.

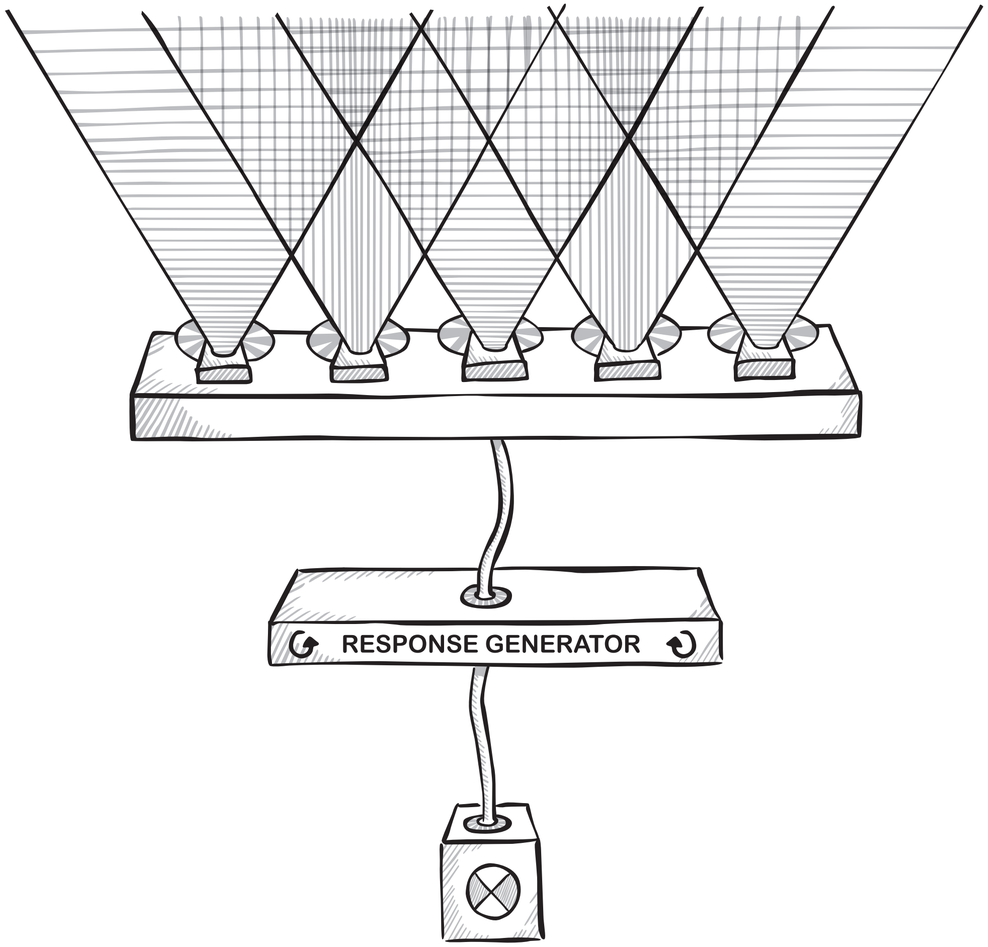


Musicolour listens in real-time and reacts, depending on what came before.

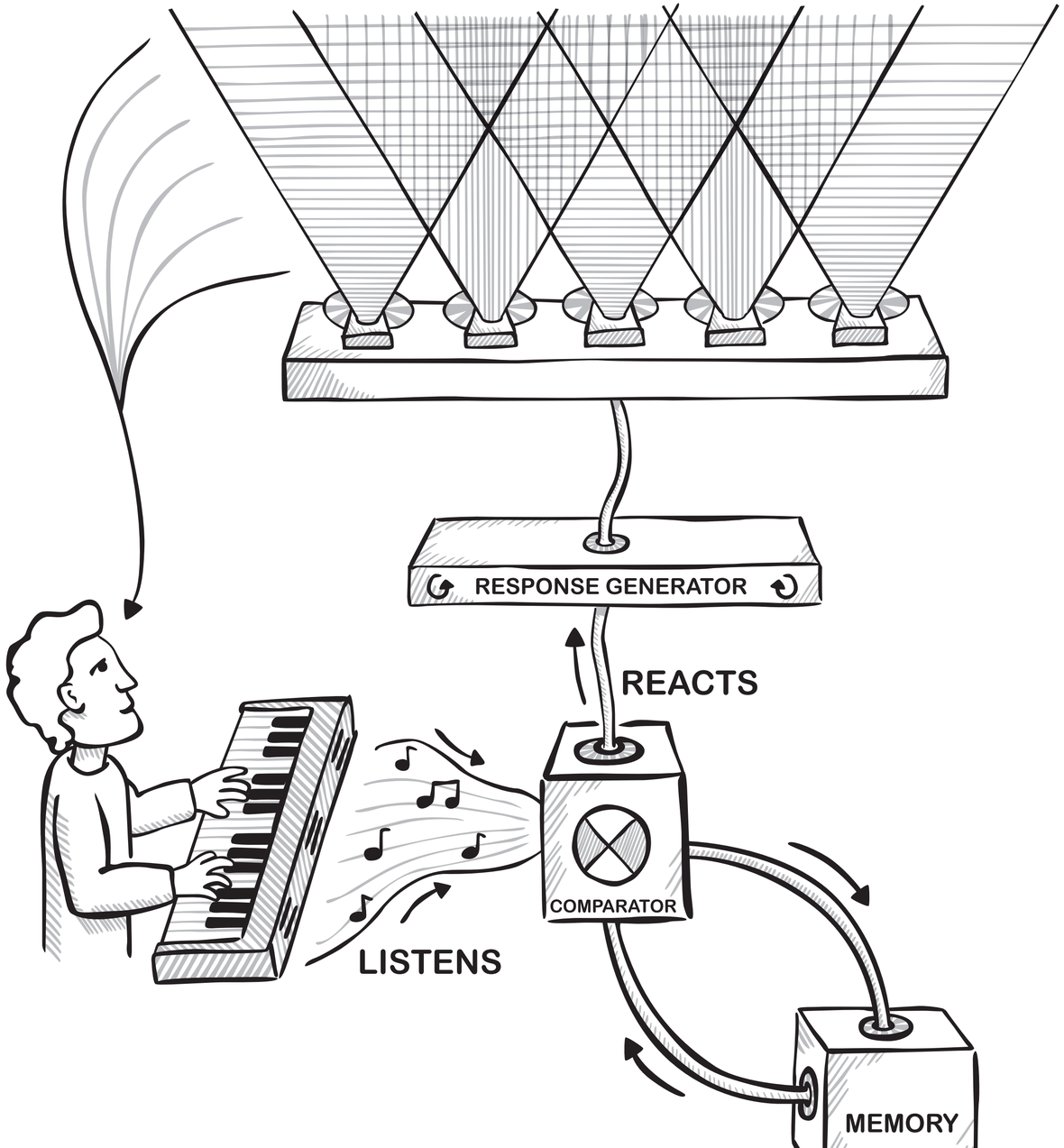
It’s purpose is to avoiding getting “bored.”

It wants the music to change over time.





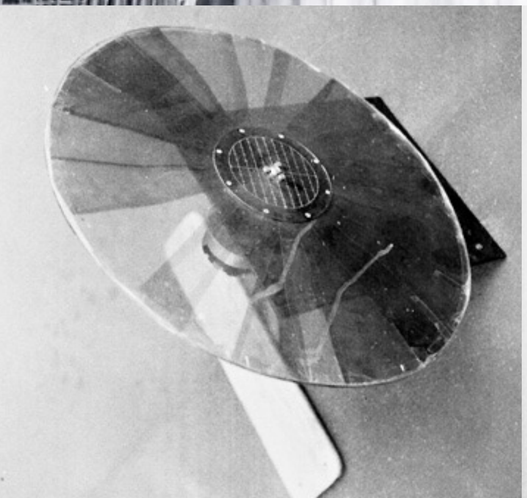
If the music is changing, Musicolour responds with colored lights that synch with the music—but its response also changes over time.

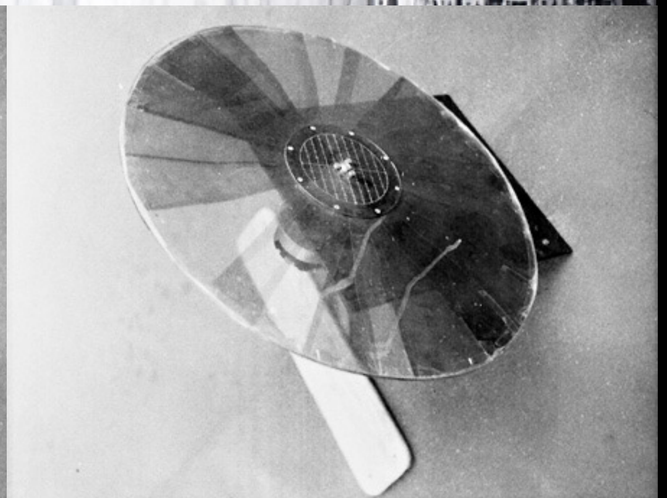


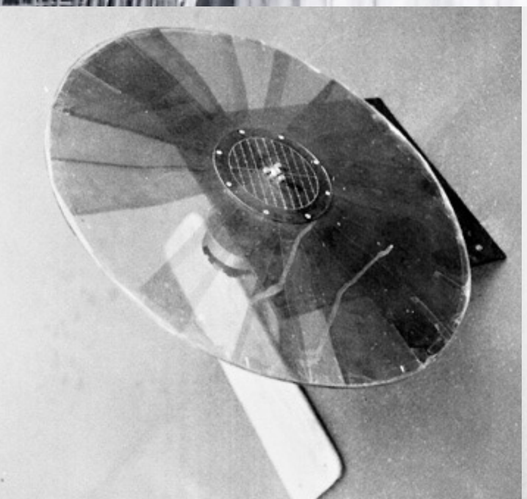
If the musician sees Musicolour is not responding, he changes his playing.

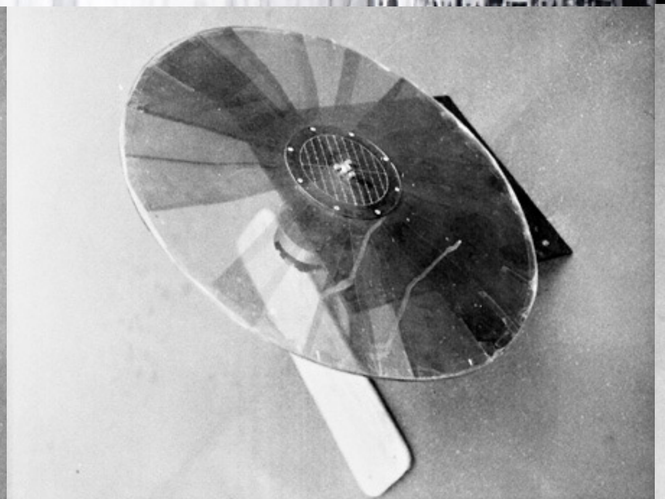
Musicolour provokes a conversation between human and machine.

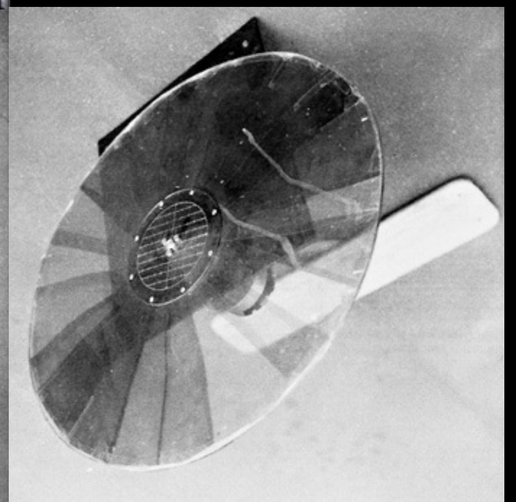
Pask installed Musicolour
in venues around England.





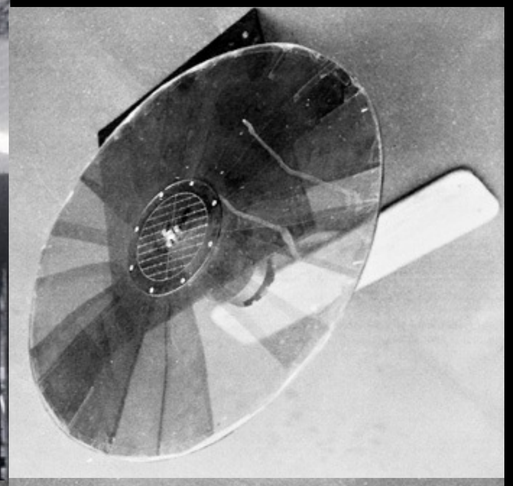


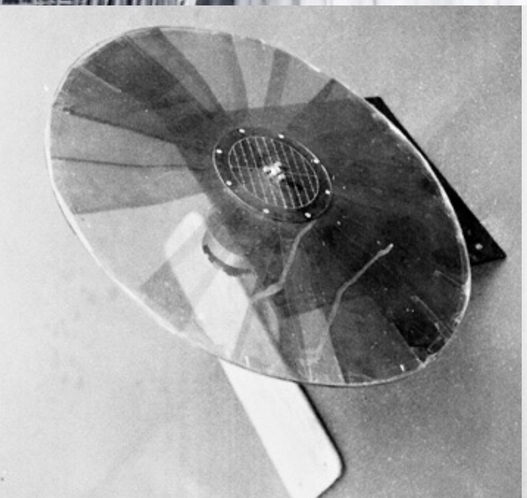


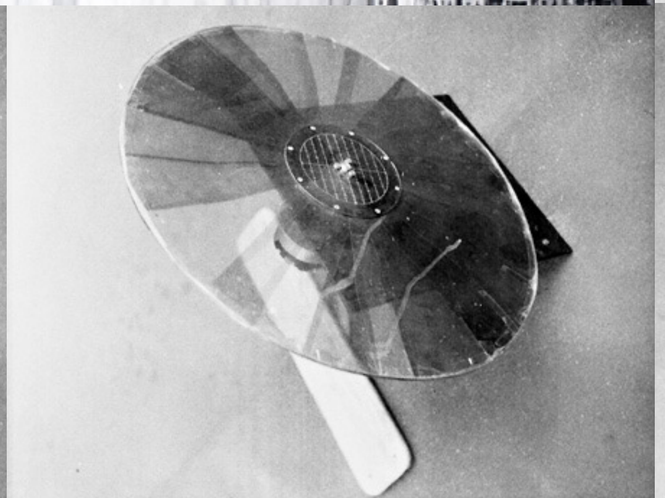


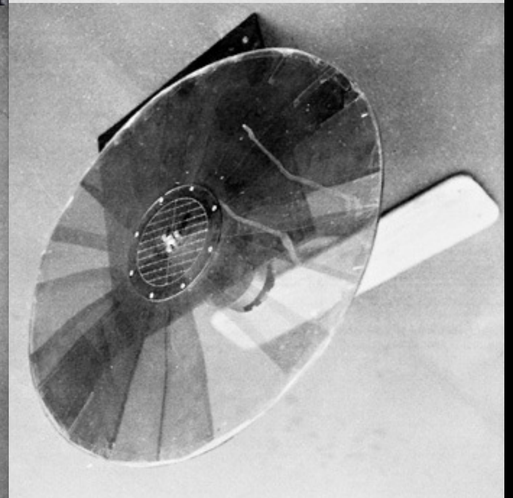
Lights were configured to shine on curtains.

The electronics were bulky and complex and could malfunction or catch fire.









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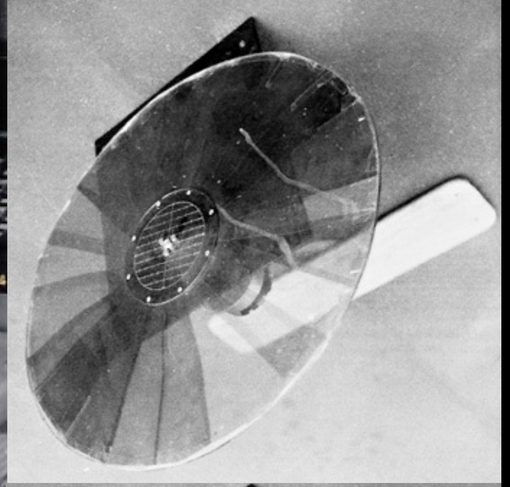

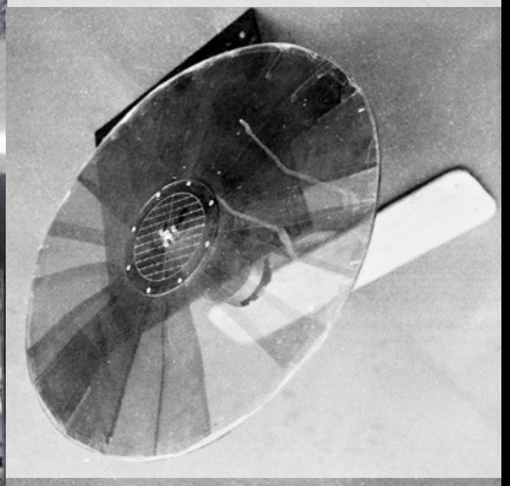

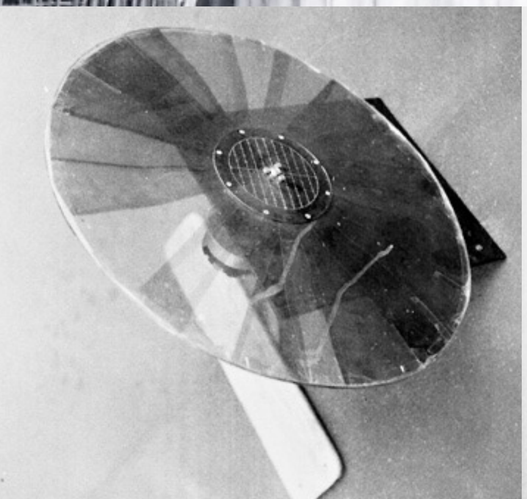

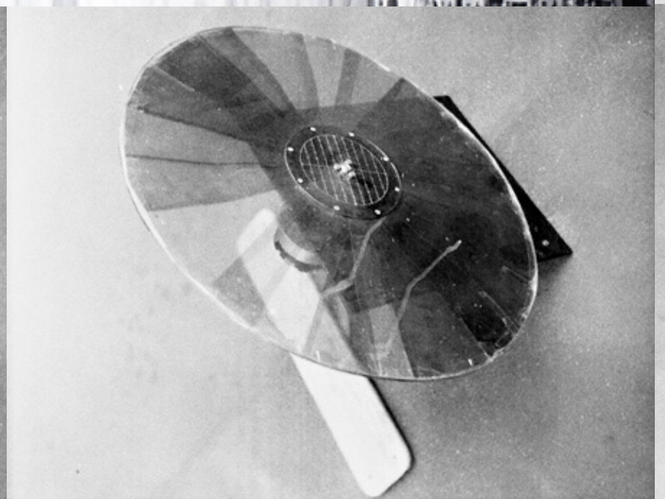

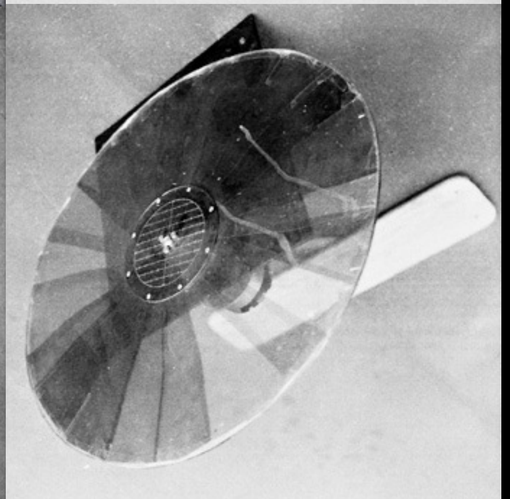

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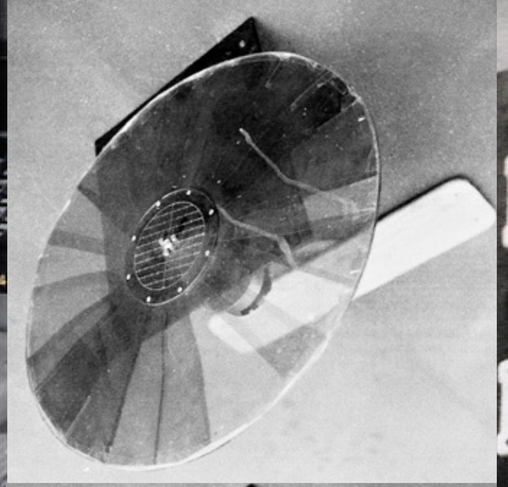
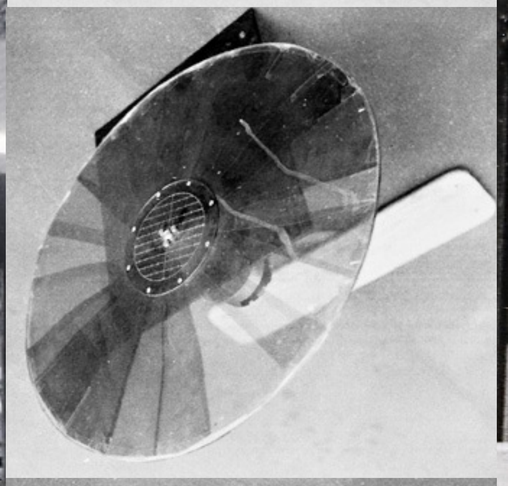
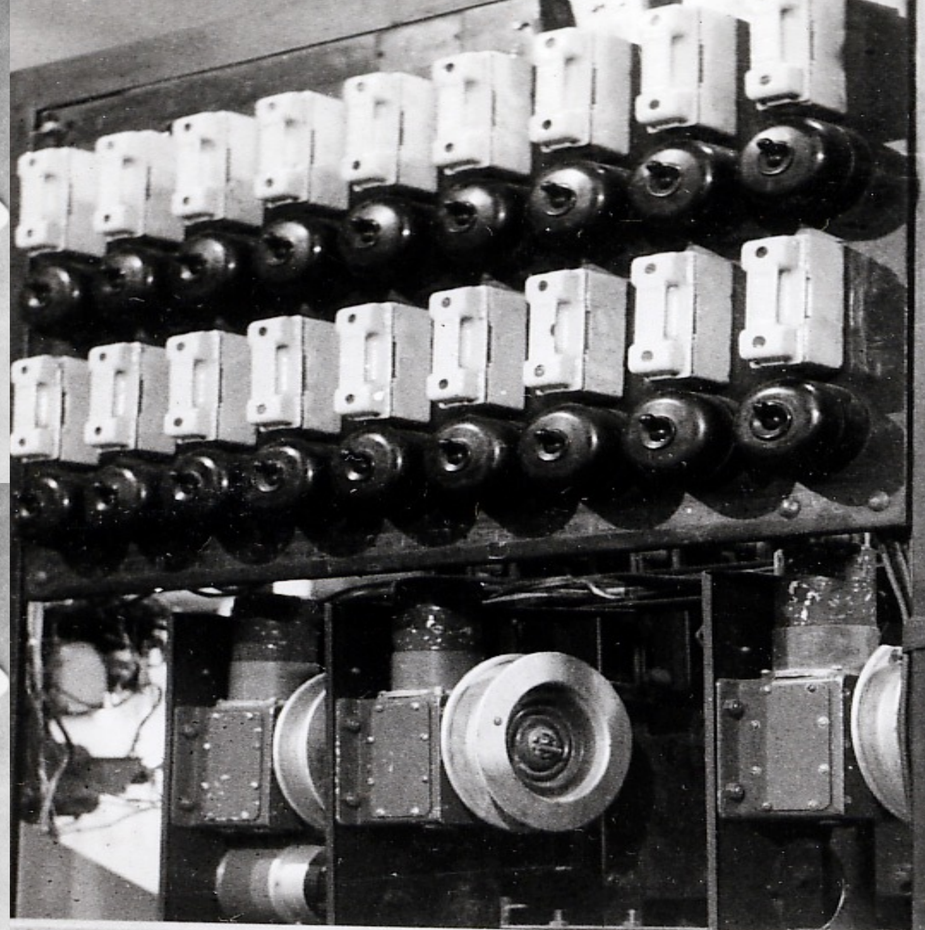
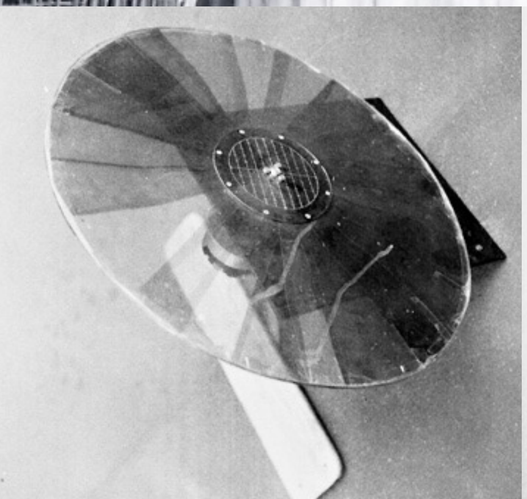
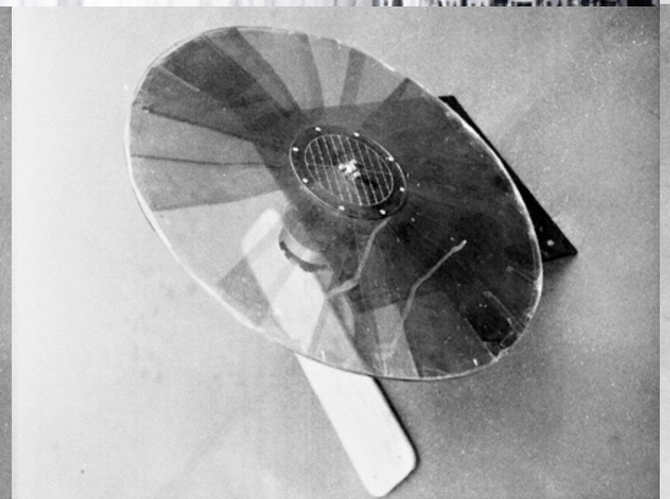
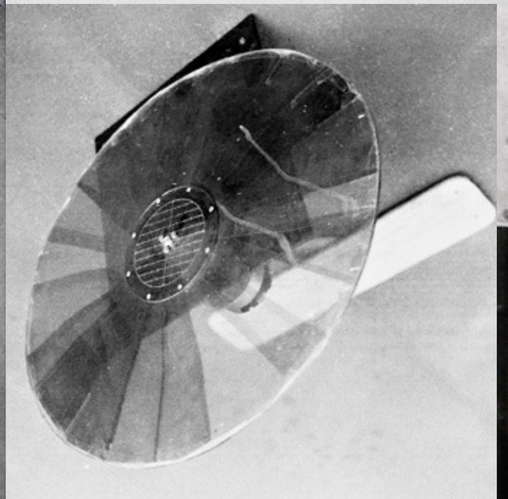


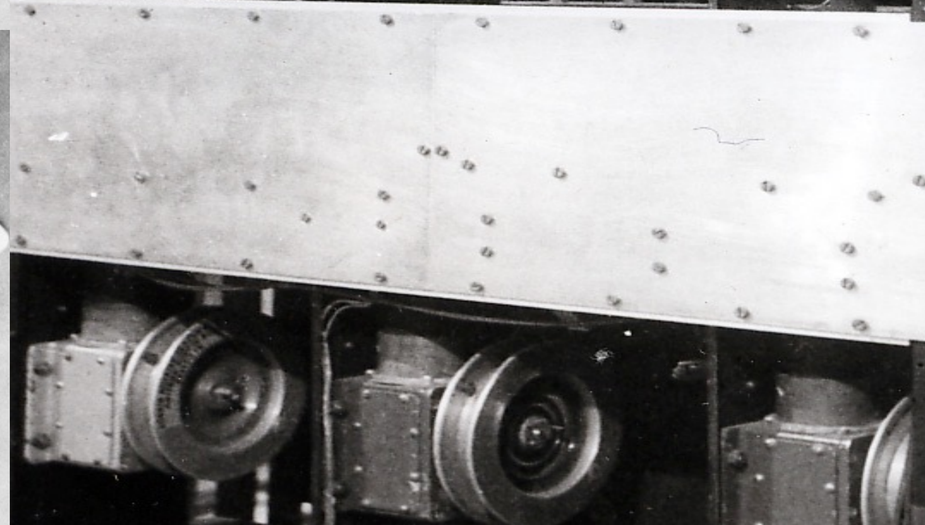


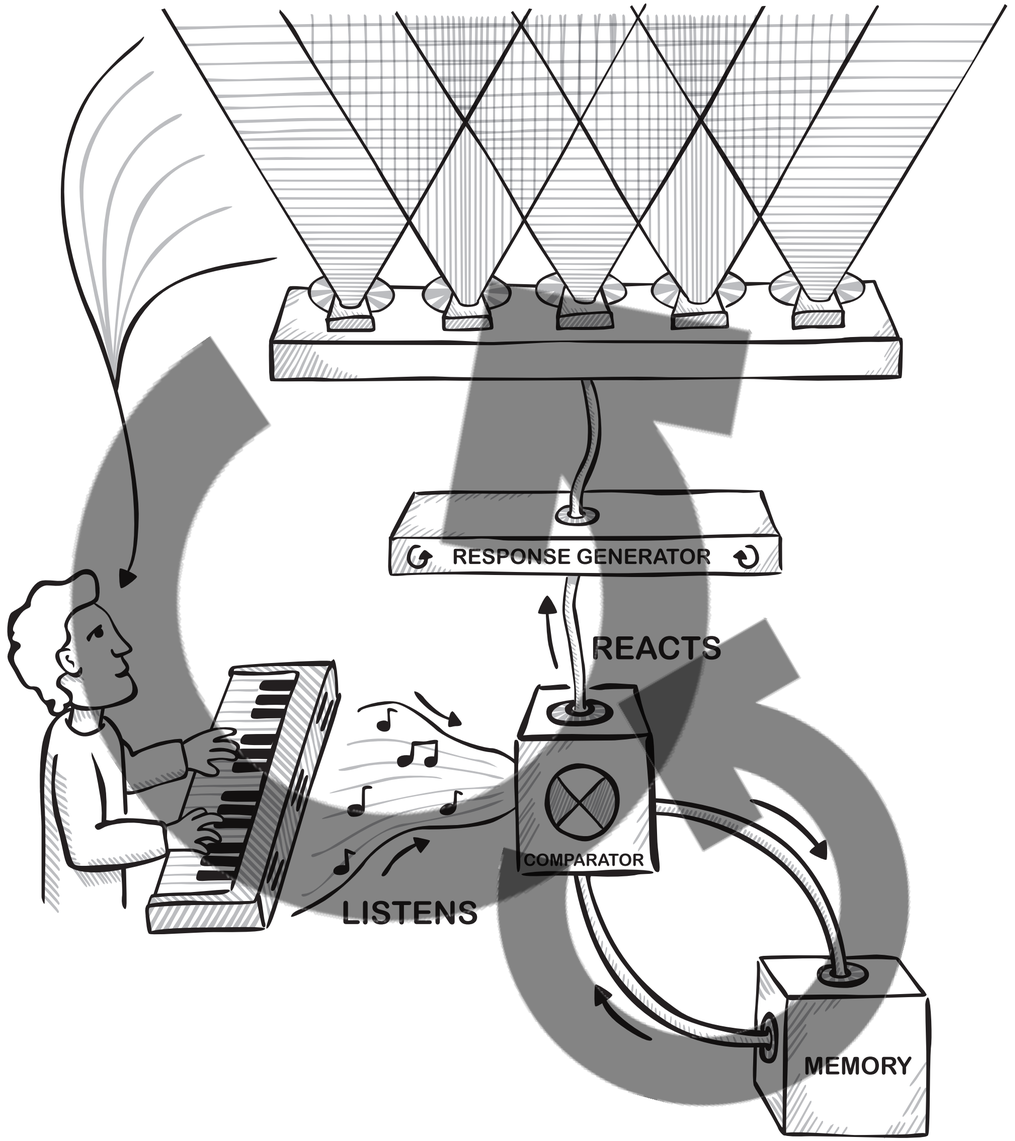






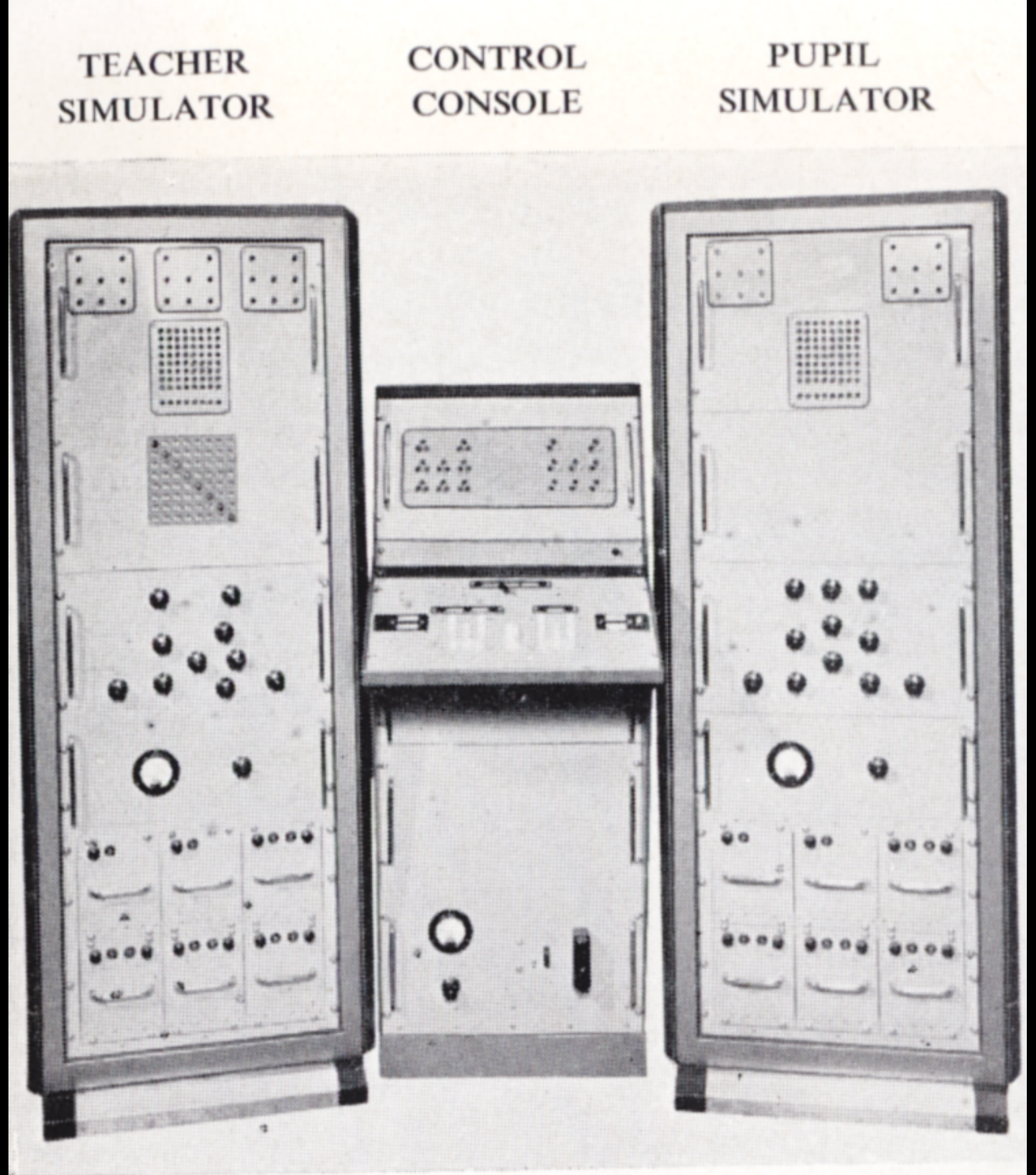






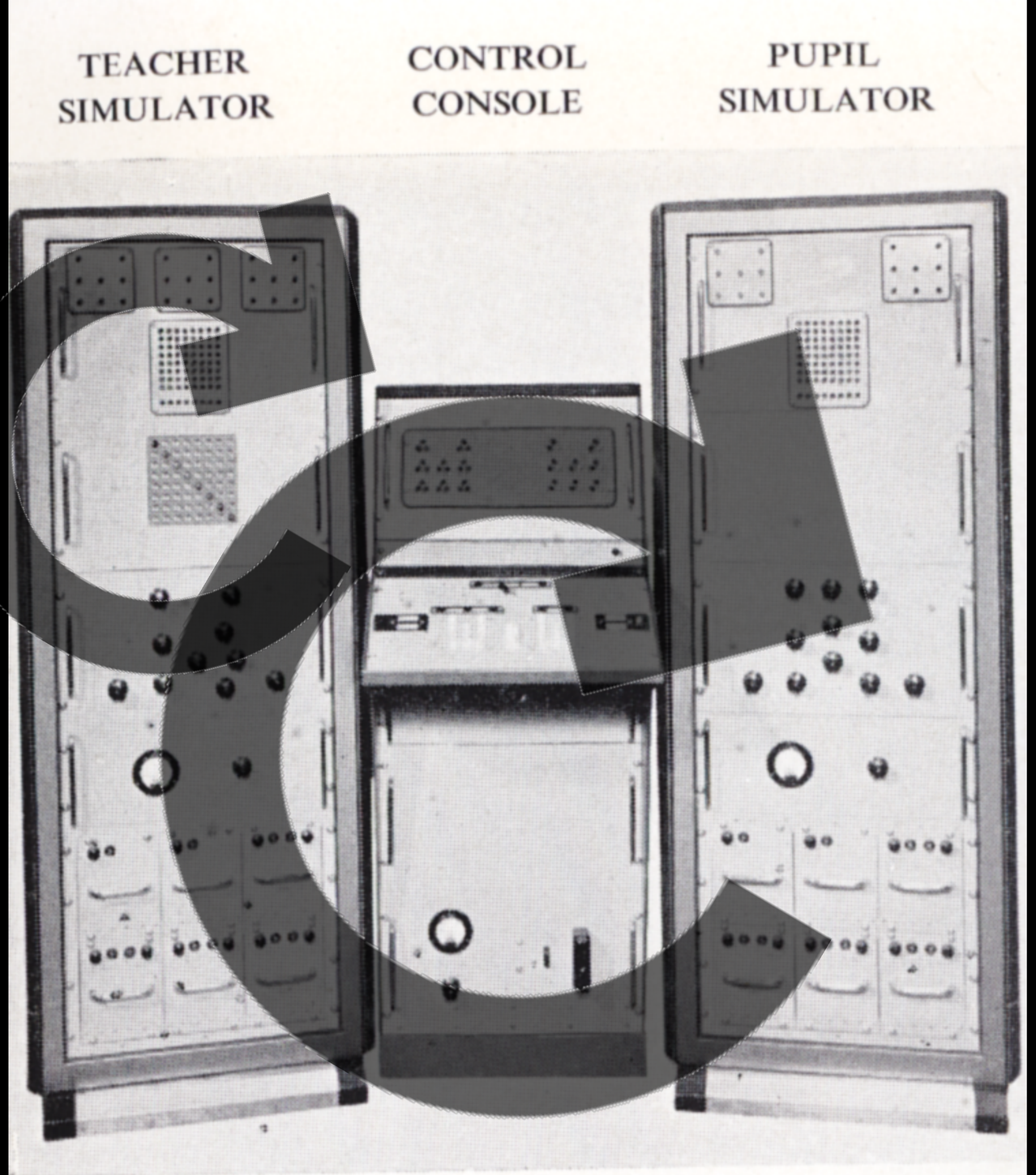
Musicolour had multiple levels of feedback that separated actions from goals.

This architecture is the core to Pask's theory of conversations, which he evolved from the 1950s through the 1990s.



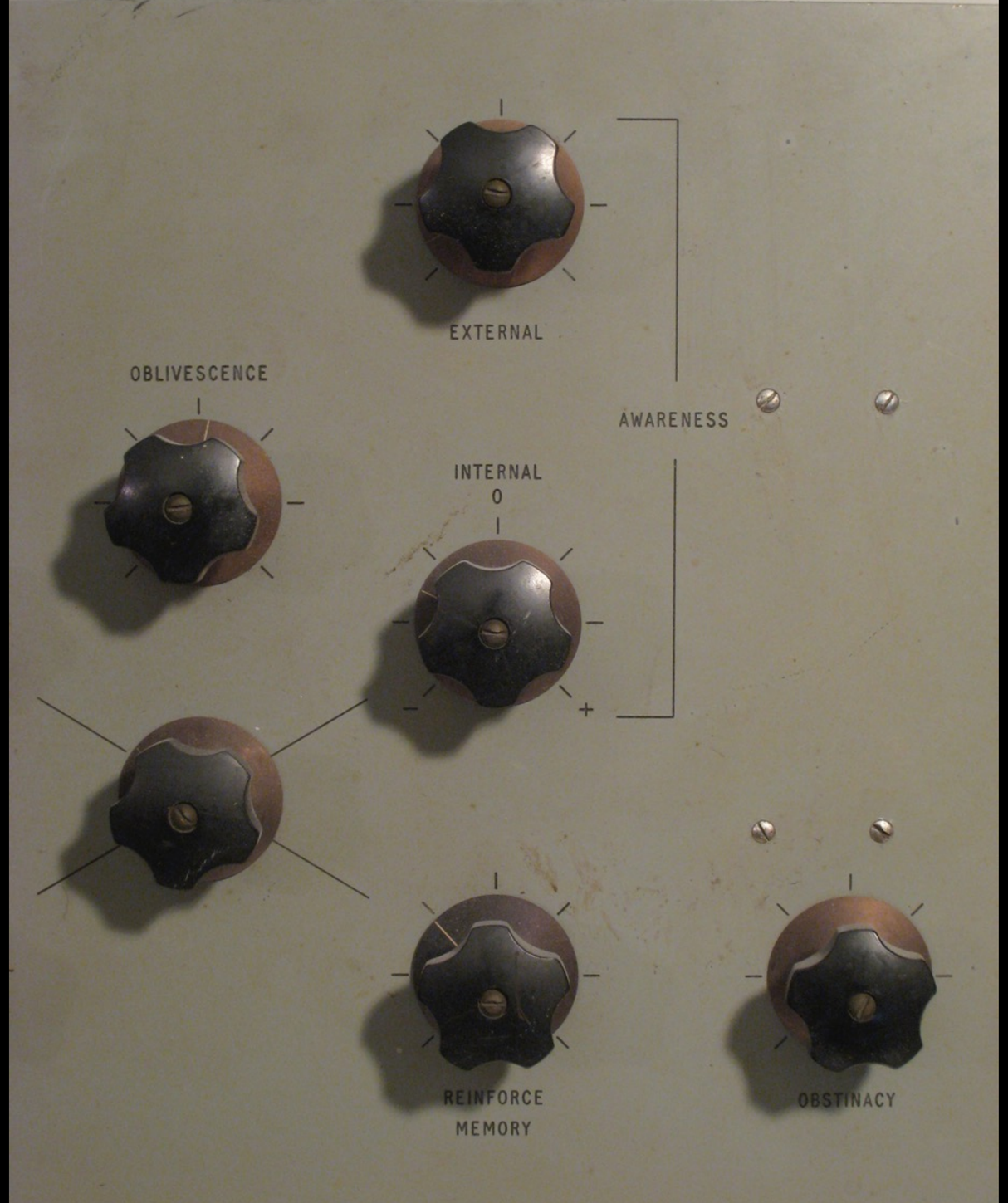
Pask created many conversational machines.

Here a teacher-machine converses with a pupil-machine.



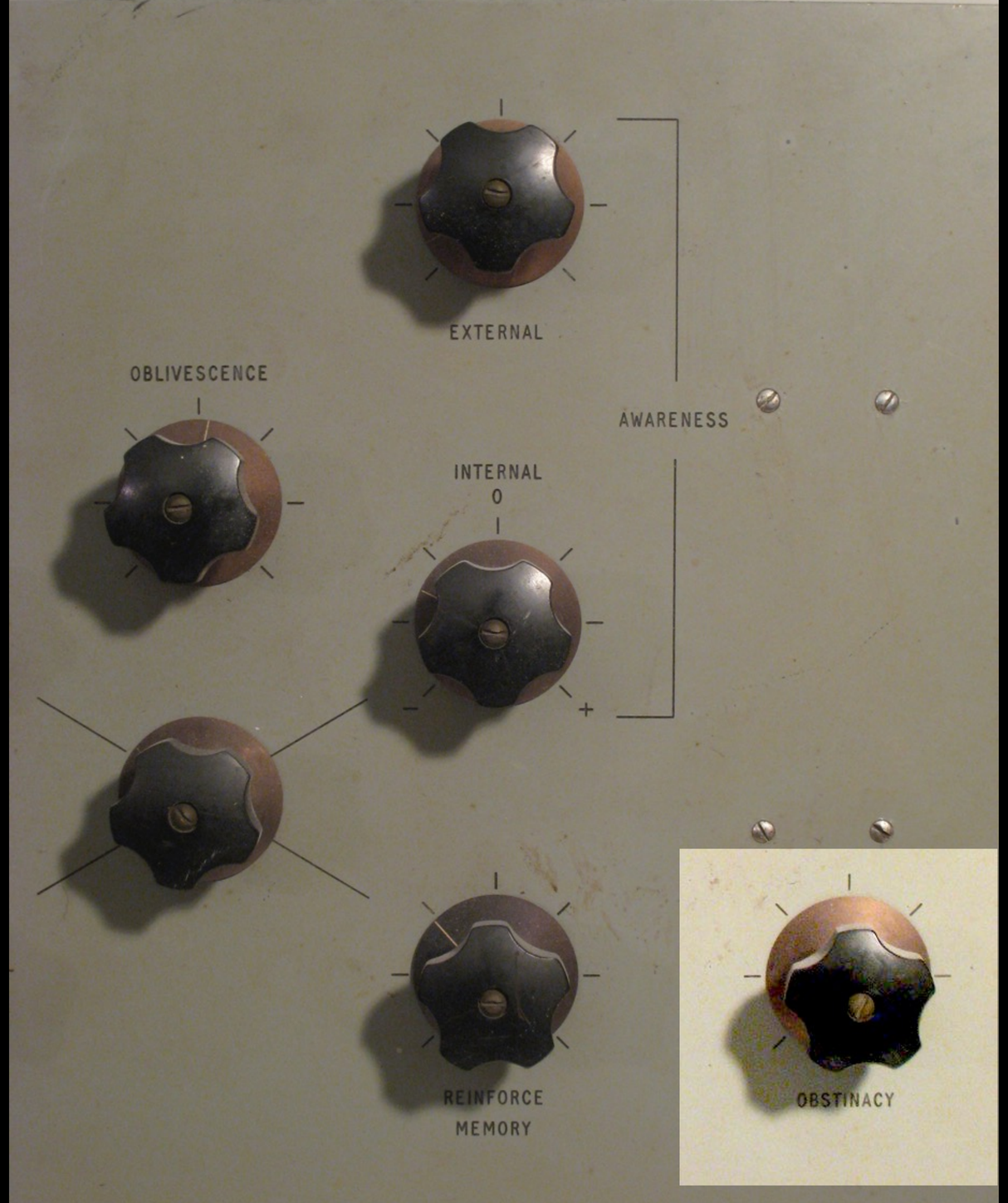
The conversation architecture was the same as Musicolour.

One loop applied feedback from actions and another applied feedback about goals.



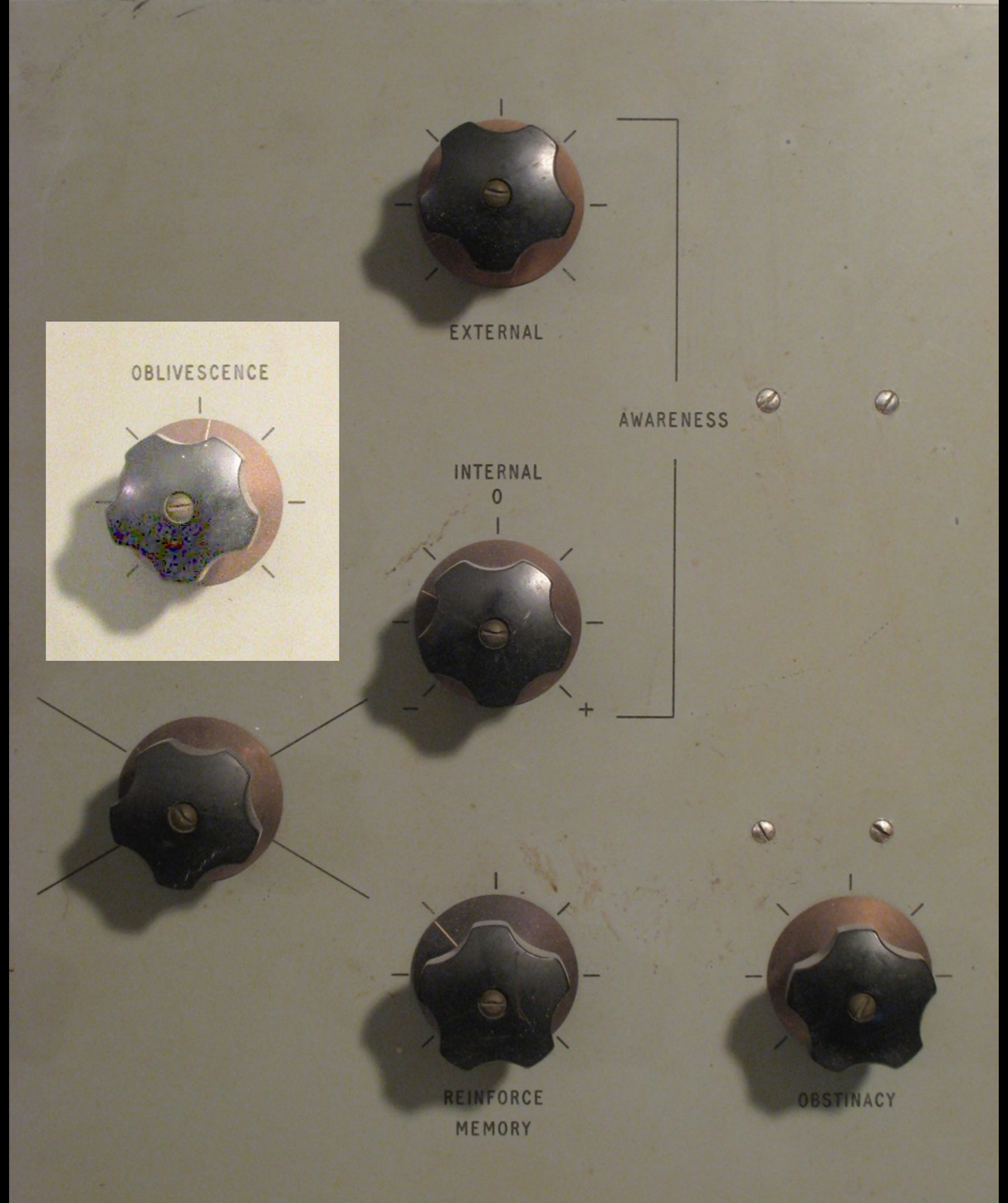
The control panel of the pupil-machine had a knob to control internal awareness

And another knob to control external awareness.

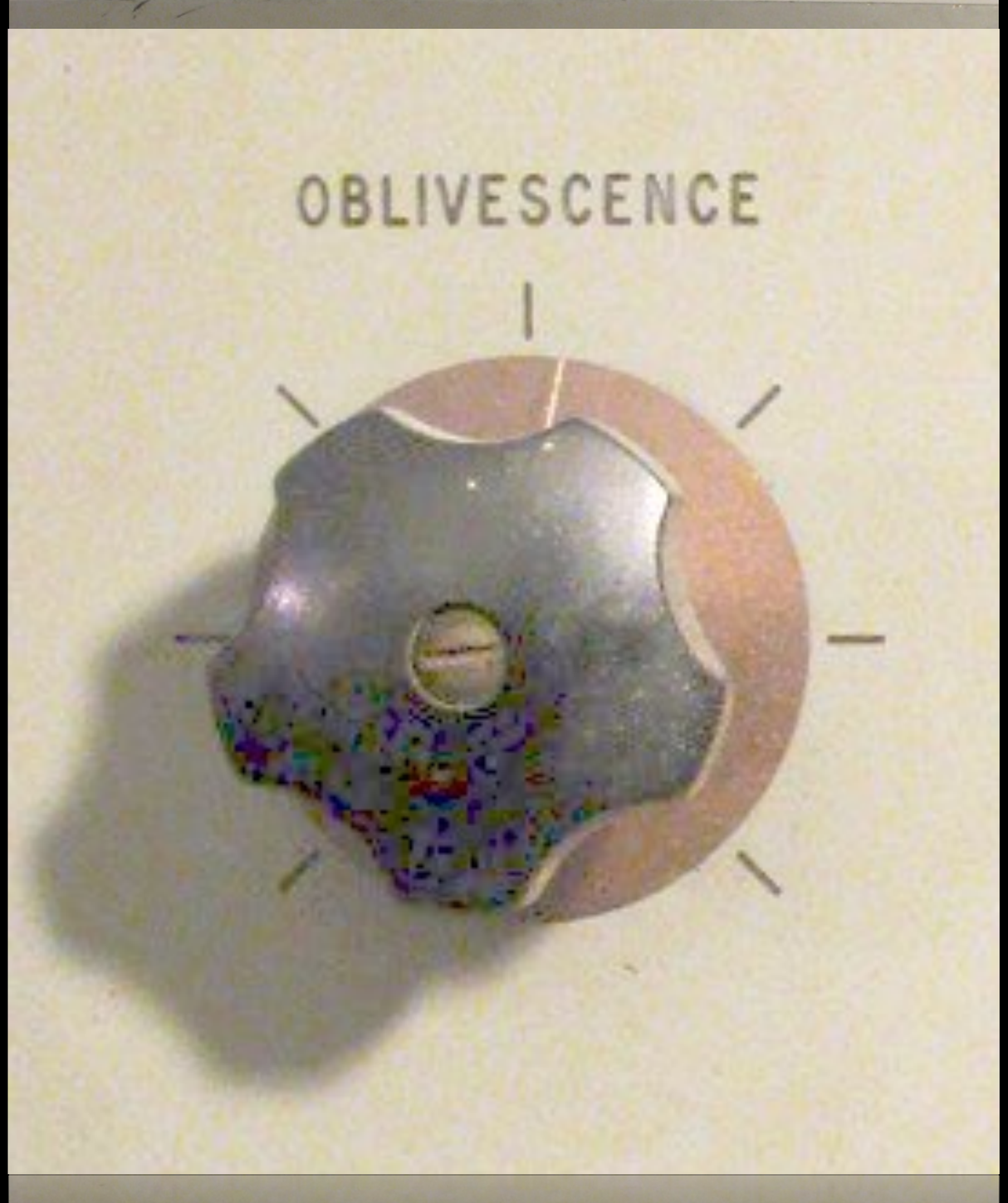


Yet another knob controlled the degree of obstinacy.

Turning up this knob made the pupil-machine less willing to learn.



But there was something beyond obstinacy.



“Oblivescence” means
“willful forgetfulness.”

In his youth, Pask was covered by the media when he invented a new type of explosive.

In 1975, he was the subject of an entire episode of the series *The Experimenters* by the BBC.

Click for Video

Gordon Pask was considered
“A Cybernetician’s Cybernetician.”

Photo: Paul Pangaro

Photo: Paul Pangaro

Pask was a second-generation cybernetician.

He had his own research approach before knowing about the field of cybernetics.

Photo: Paul Pangaro

Pask's approach was to create machinery for studying feedback in conversations of all kinds.

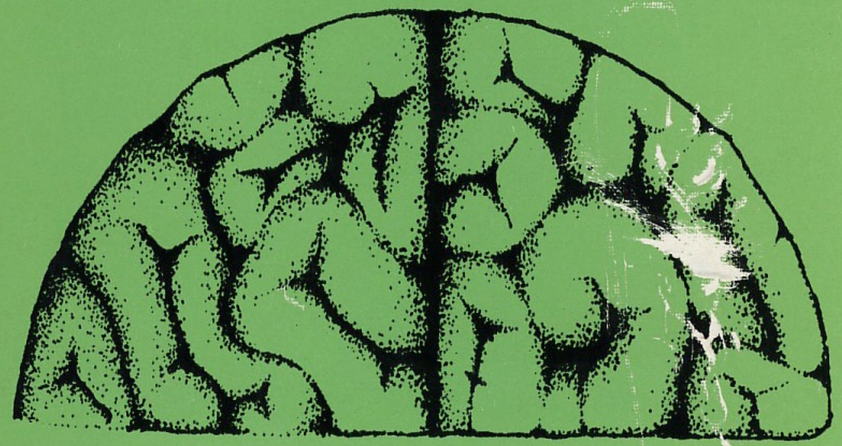
That's his wife, Elizabeth.

Photo: Paul Pangaro

1975

GORDON PASK

CONVERSATION, COGNITION AND LEARNING



A CYBERNETIC THEORY AND METHODOLOGY

ELSEVIER

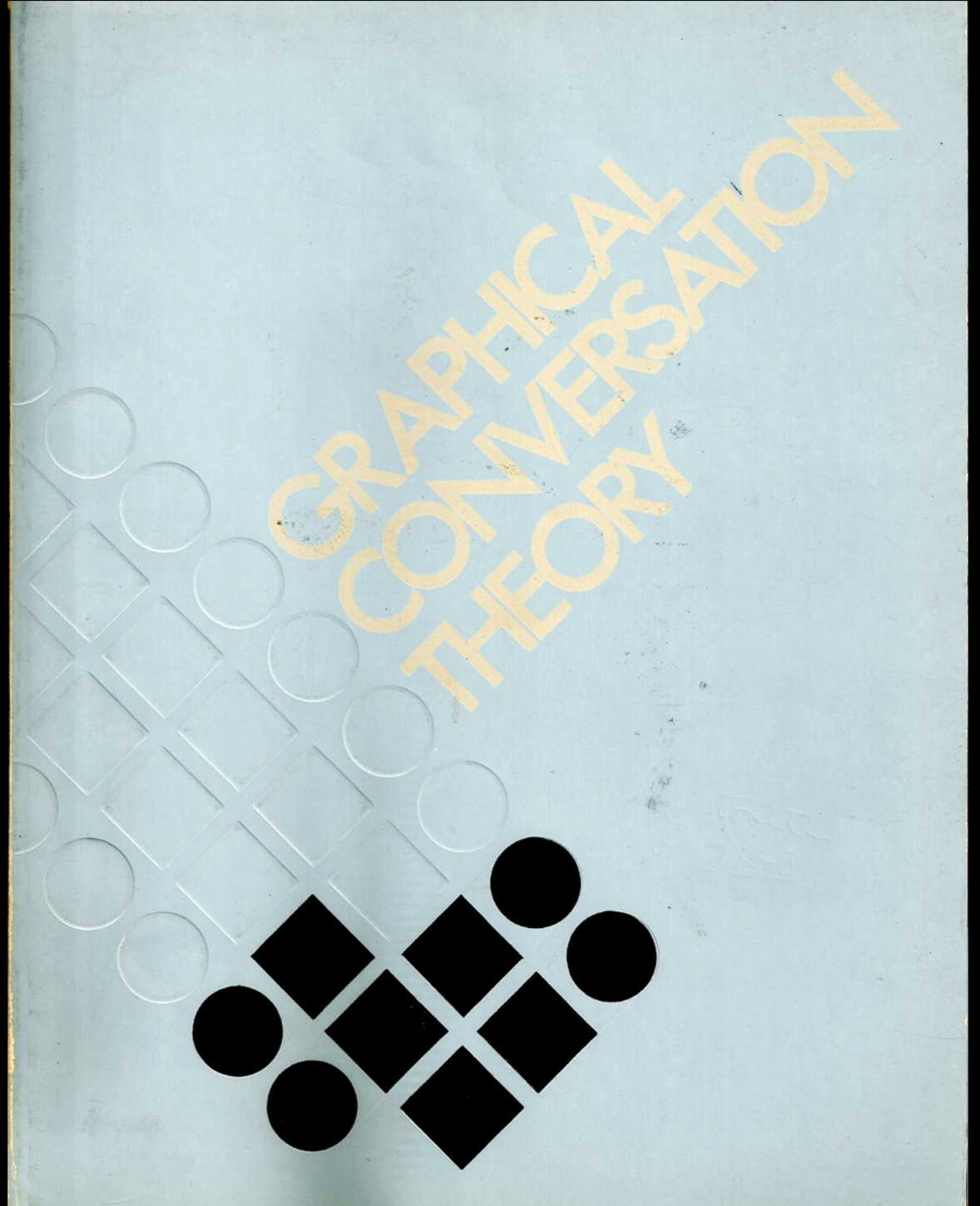
GORDON PASK

CONVERSATION THEORY

APPLICATIONS IN EDUCATION AND EPISTEMOLOGY

ELSEVIER

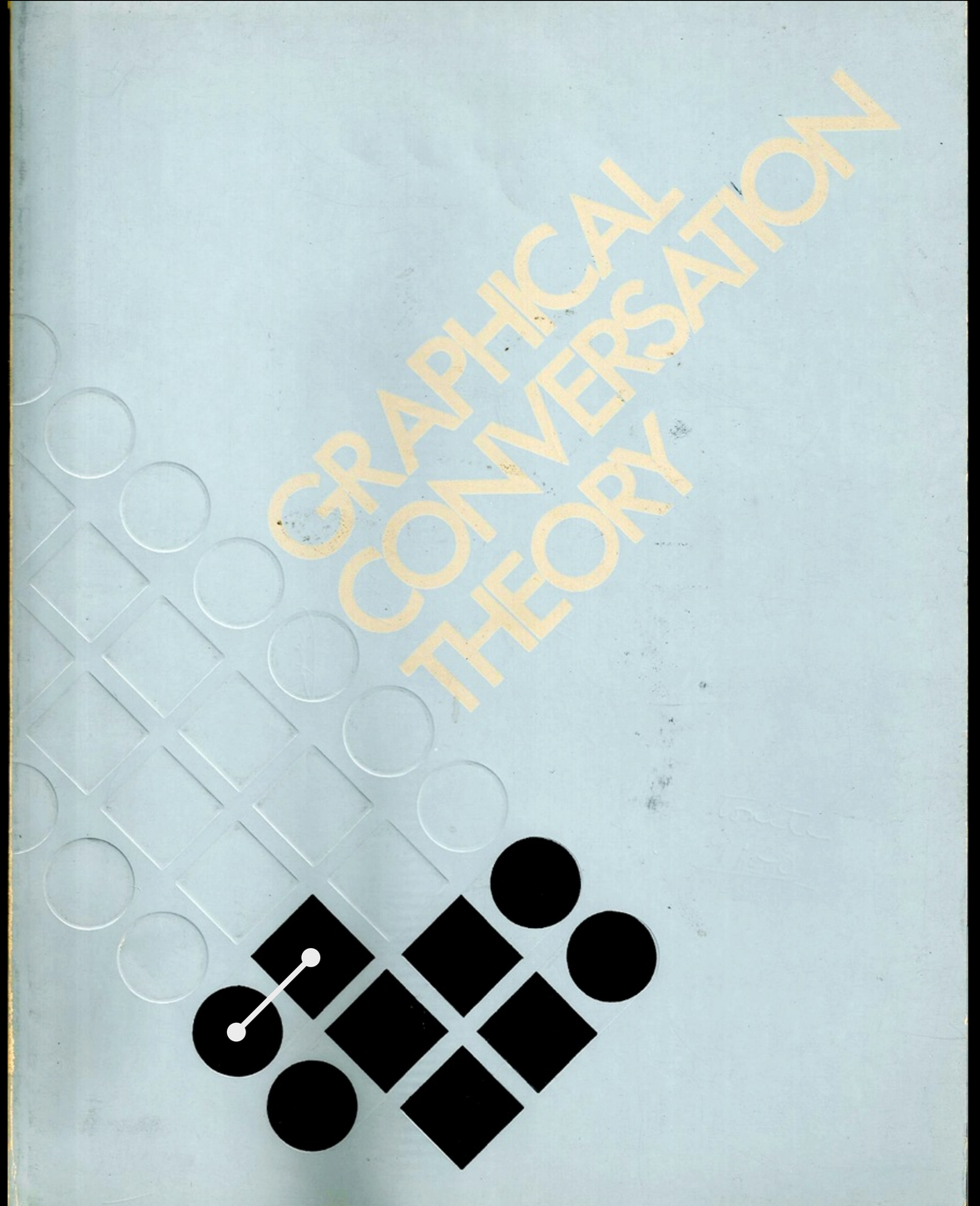
1976



Cover Design: Muriel Cooper
Visible Language Workshop, MIT

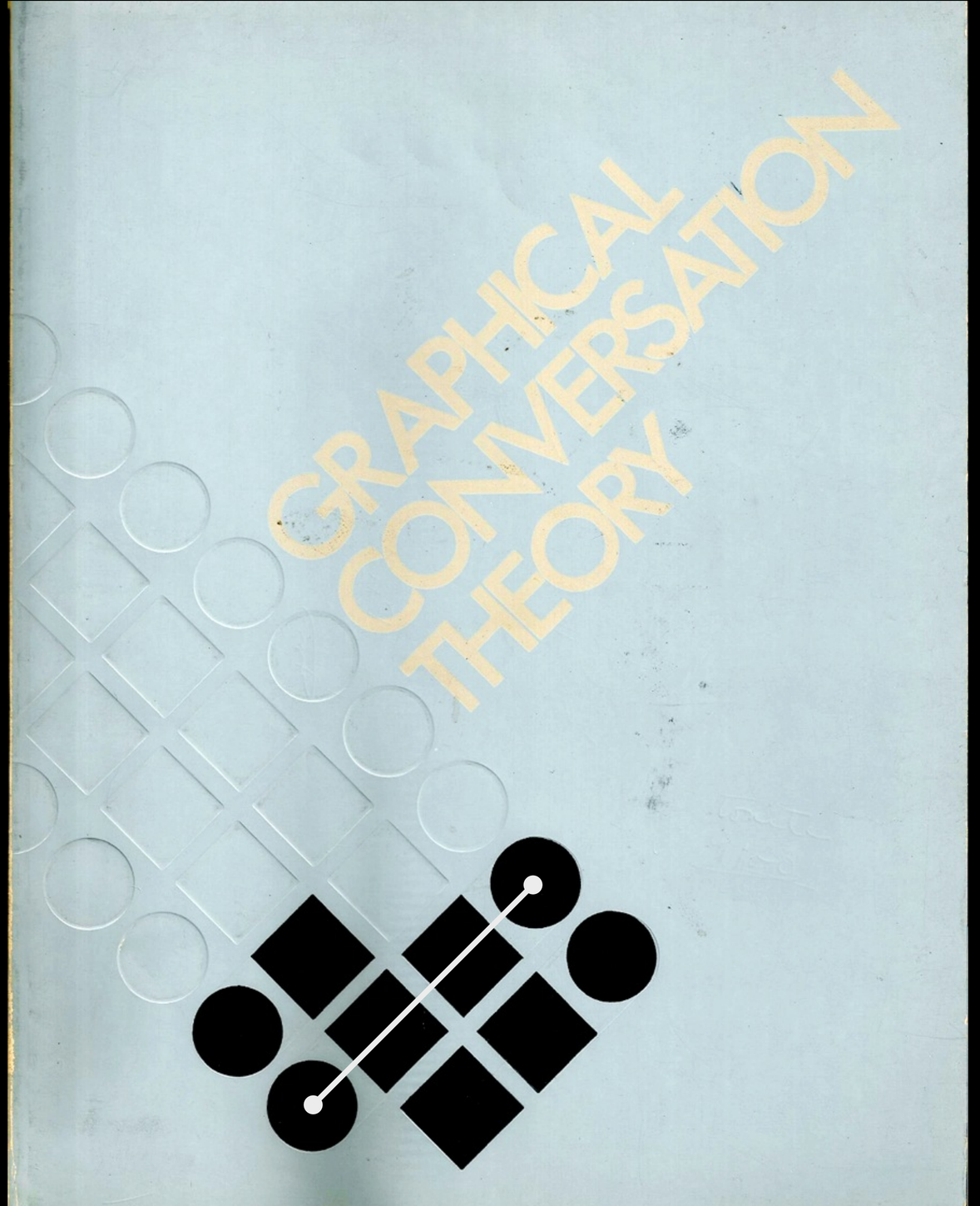
Pask influenced many researchers, including those that founded the MIT Media Lab.

Pask offered them inspiring metaphors and rigorous models of conversation.



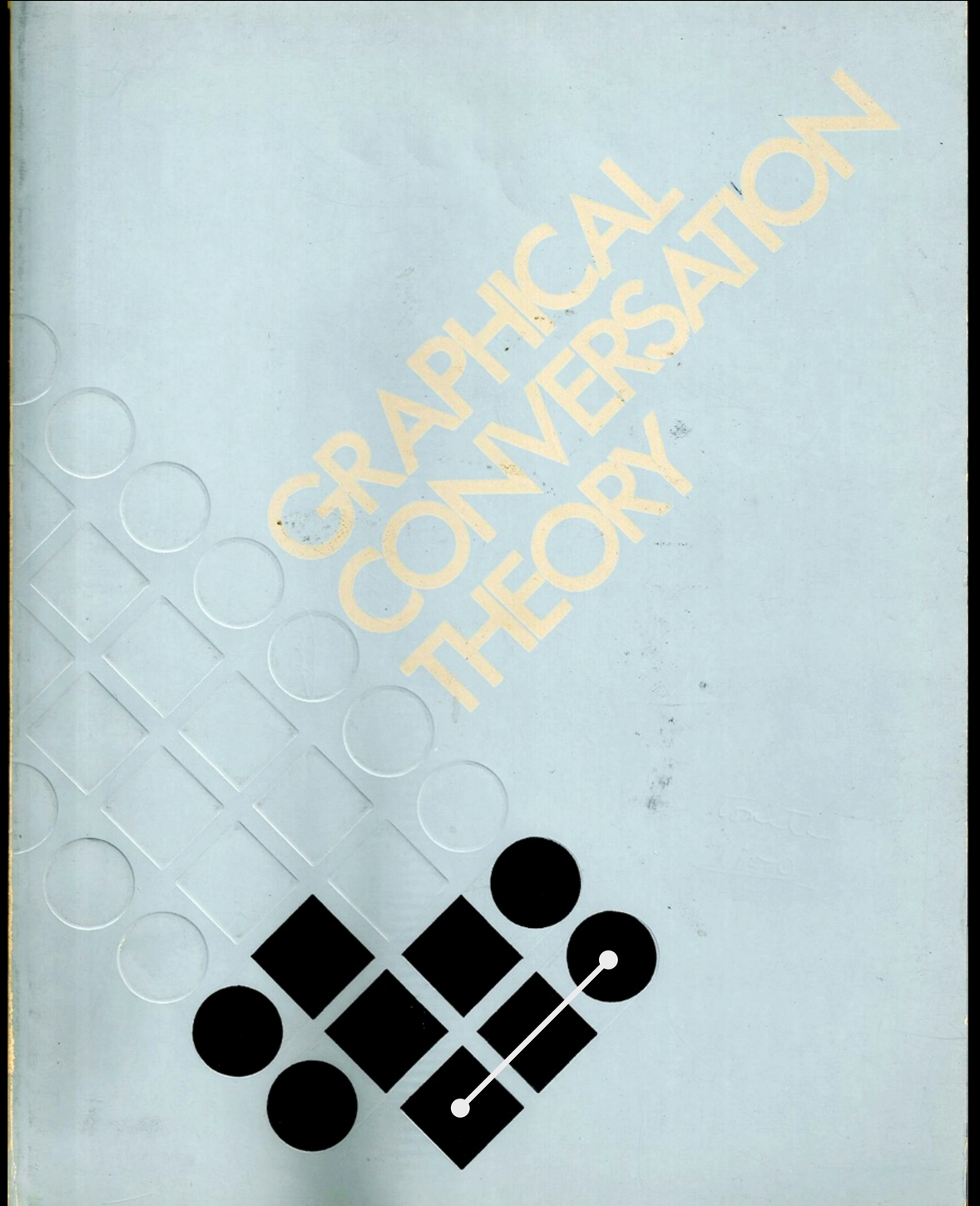
This line represents a person conversing with herself through a machine.

Cover Design: Muriel Cooper
Visible Language Workshop, MIT



This line represents a person
conversing through a machine,
through a network, with another person.

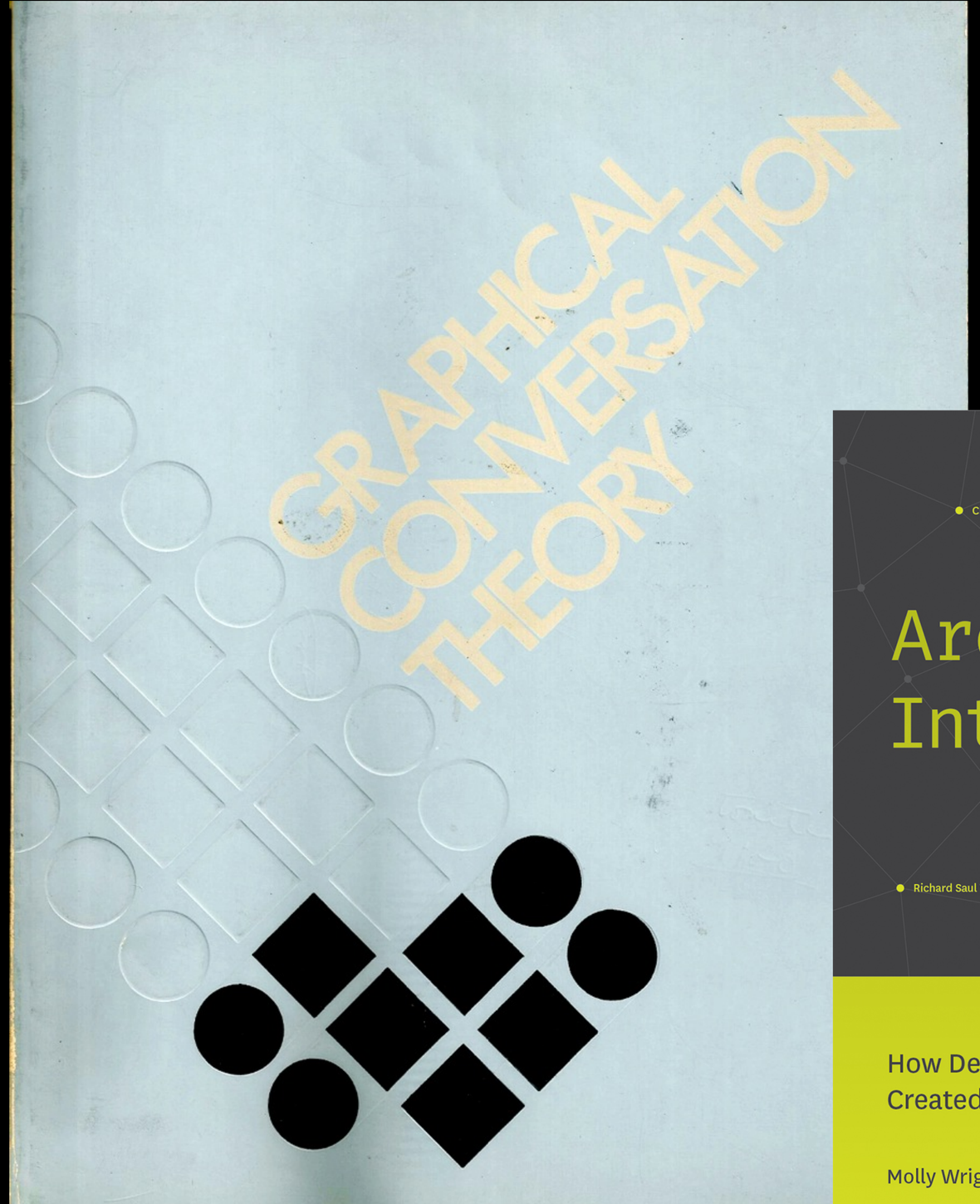
Cover Design: Muriel Cooper
Visible Language Workshop, MIT



This line represents a machine conversing through another machine with a person.

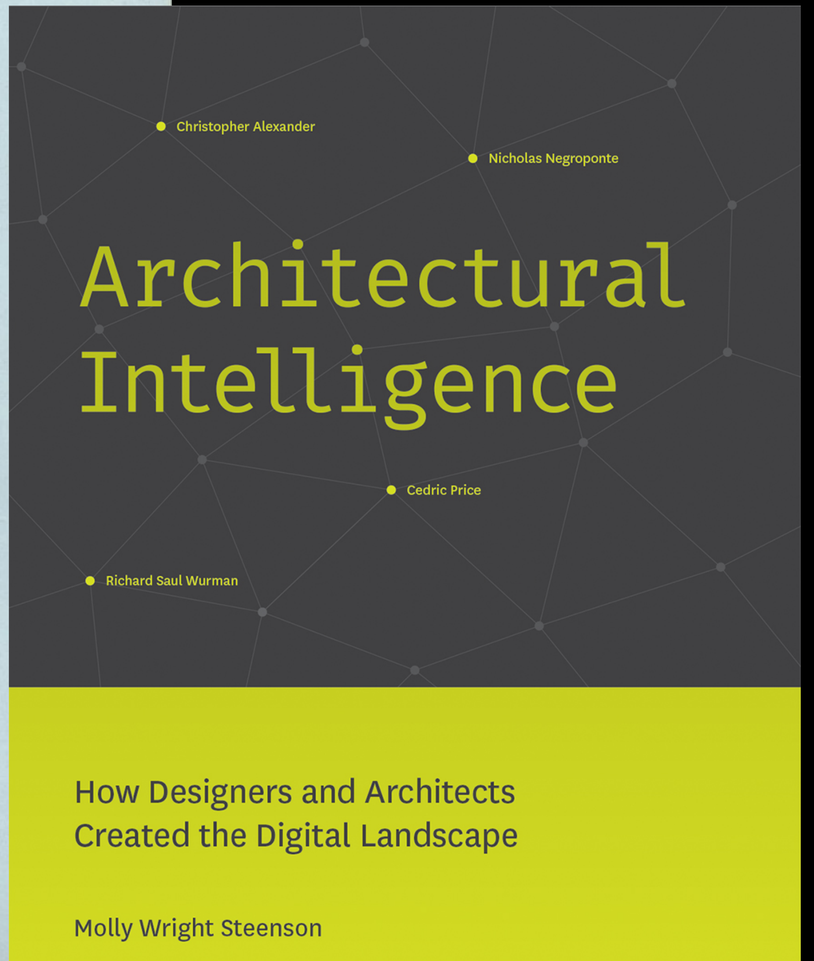
It means the machine itself is capable of conversation.

Cover Design: Muriel Cooper
Visible Language Workshop, MIT



Cover Design: Muriel Cooper
Visible Language Workshop, MIT

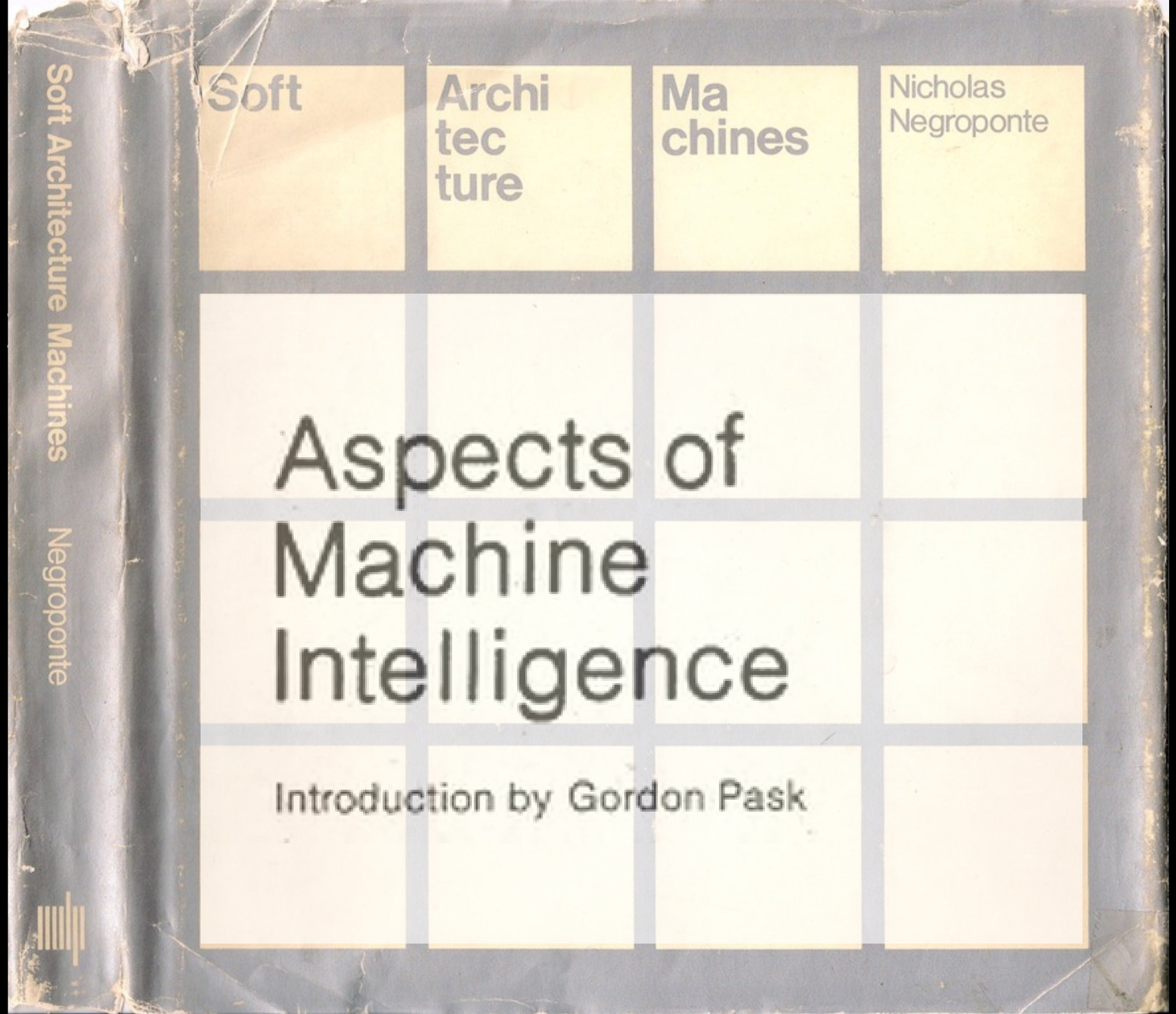
The work is documented in the book *Architectural Intelligence*.



In 1976 Nicholas Negroponte edited a book about machines that could converse with designers about designing.

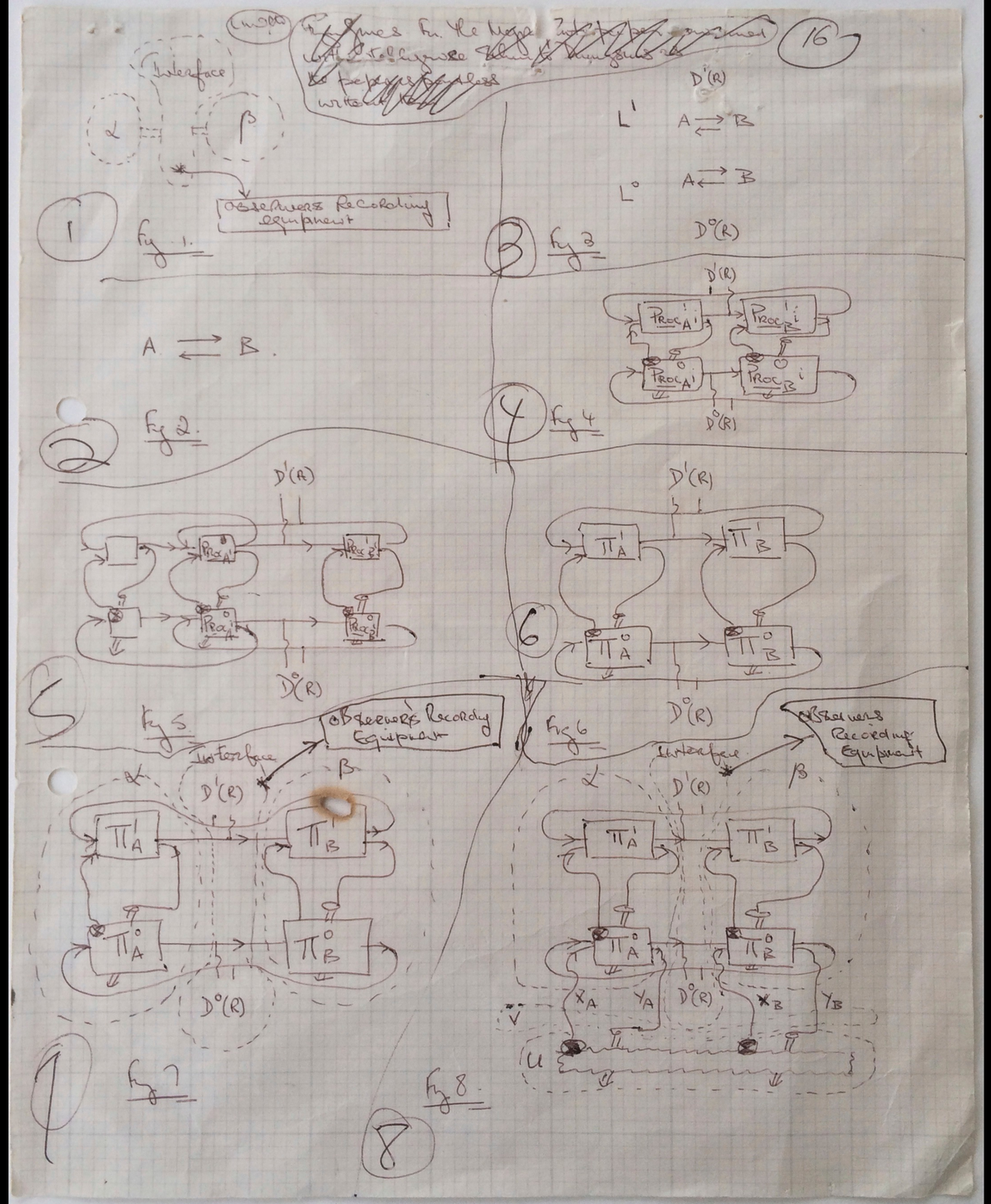
(He later co-founded the MIT Media Lab.)

Book Design: Muriel Cooper
MIT Press



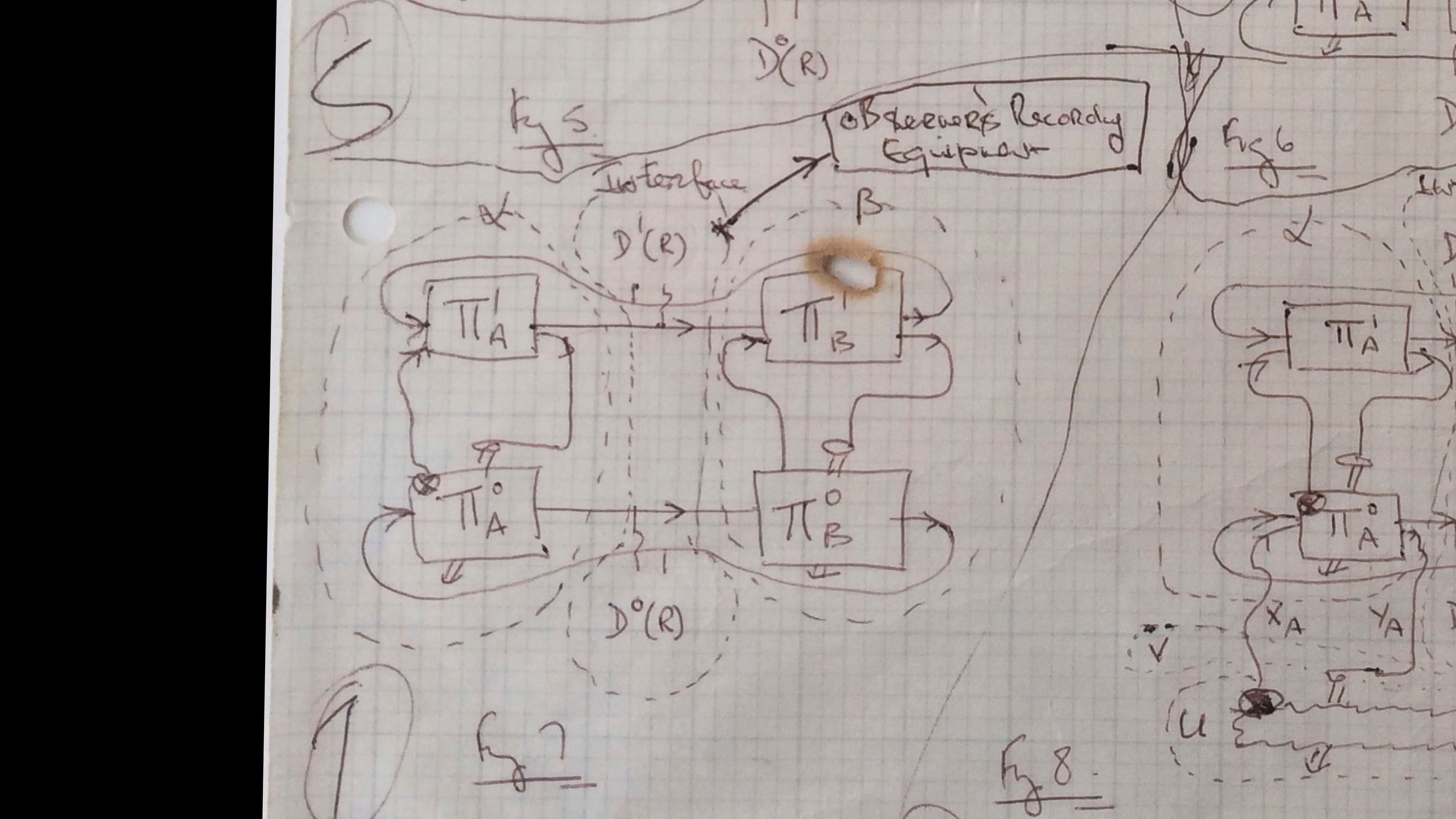
Pask took the opportunity to summarize his formal approach to conversation and made sketches to explain his model.

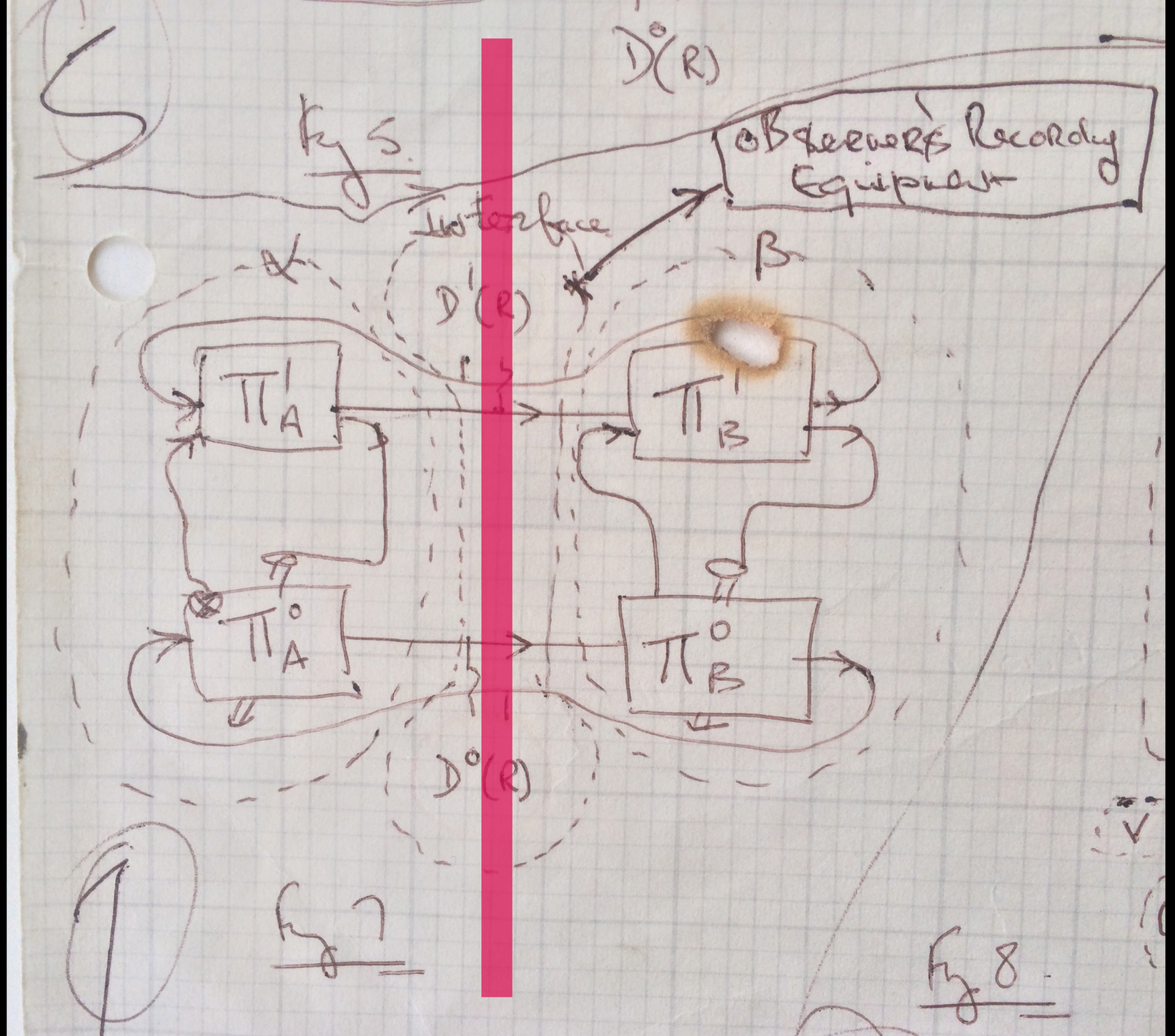
Book Design: Muriel Cooper
MIT Press



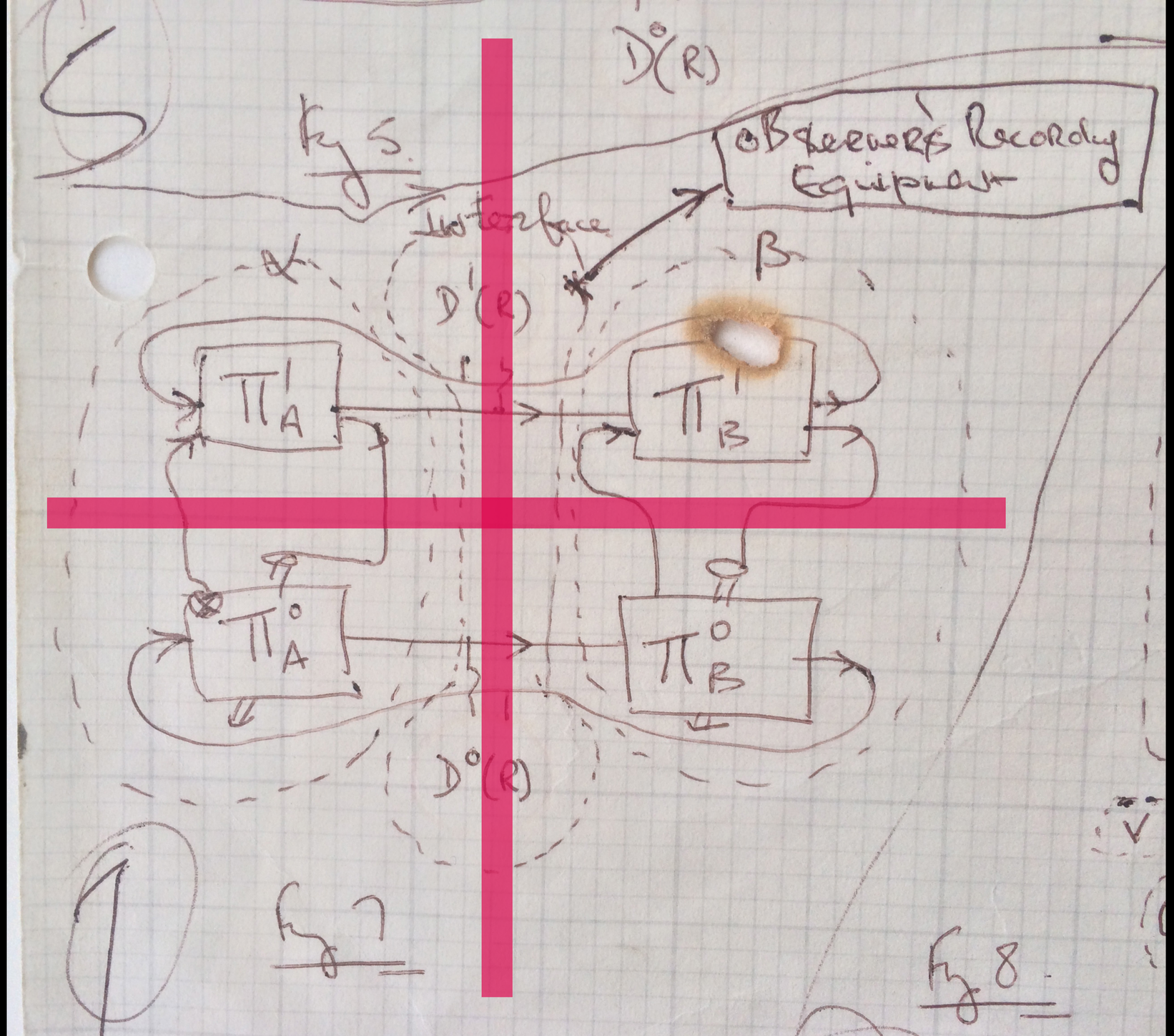
Pask's drawings are playful in character and rigorously complete.

They capture all the interactions involved in conversation.

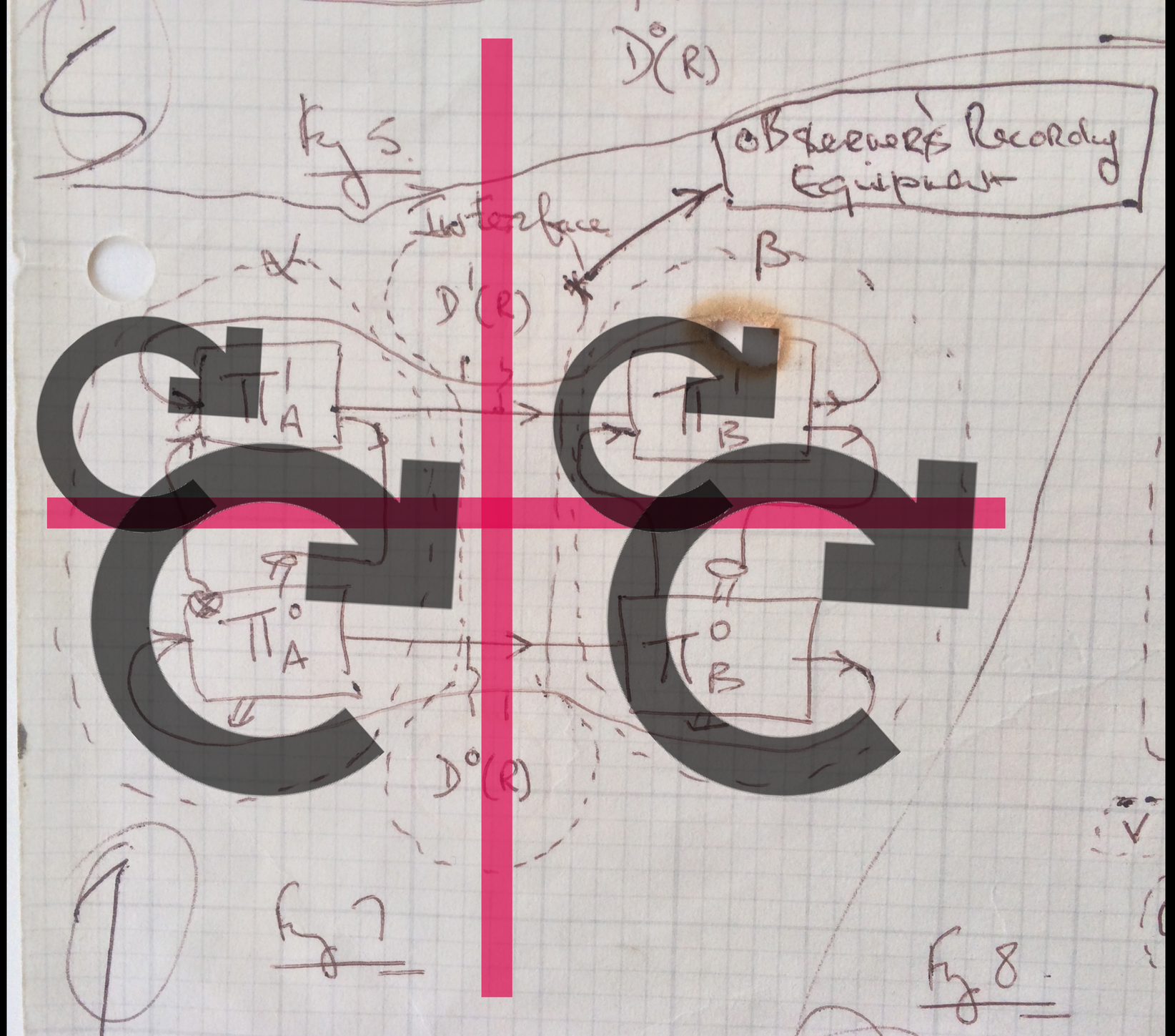

D°(R)
Fig 5
Observers Recording Equipment
Interface
D'(R)
α
β
Π'A
Π'B
Π°A
Π°B
D°(R)
Fig 6
Fig 7
Fig 8
XA
YA
V
U



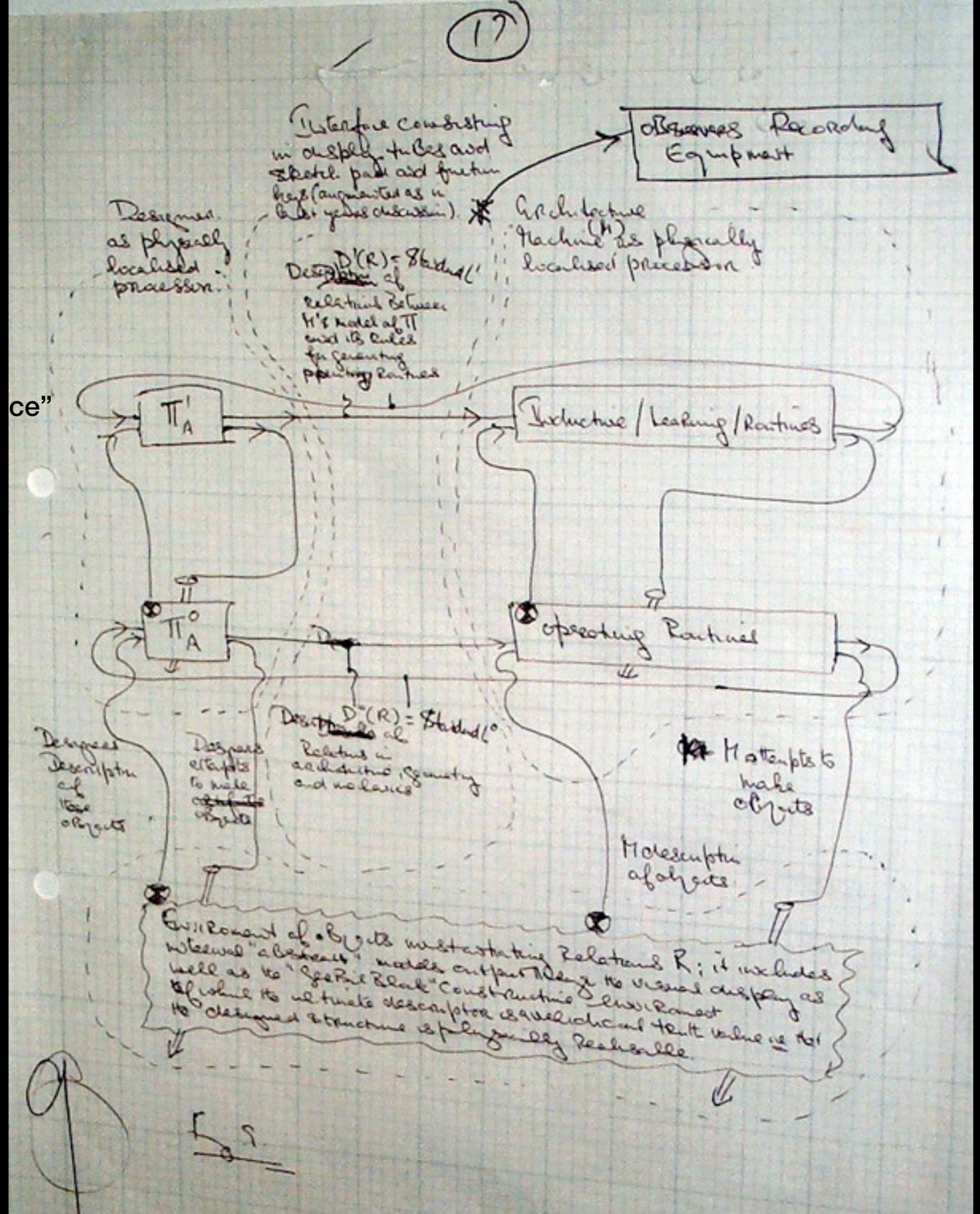
Conversations involve distinct actors.



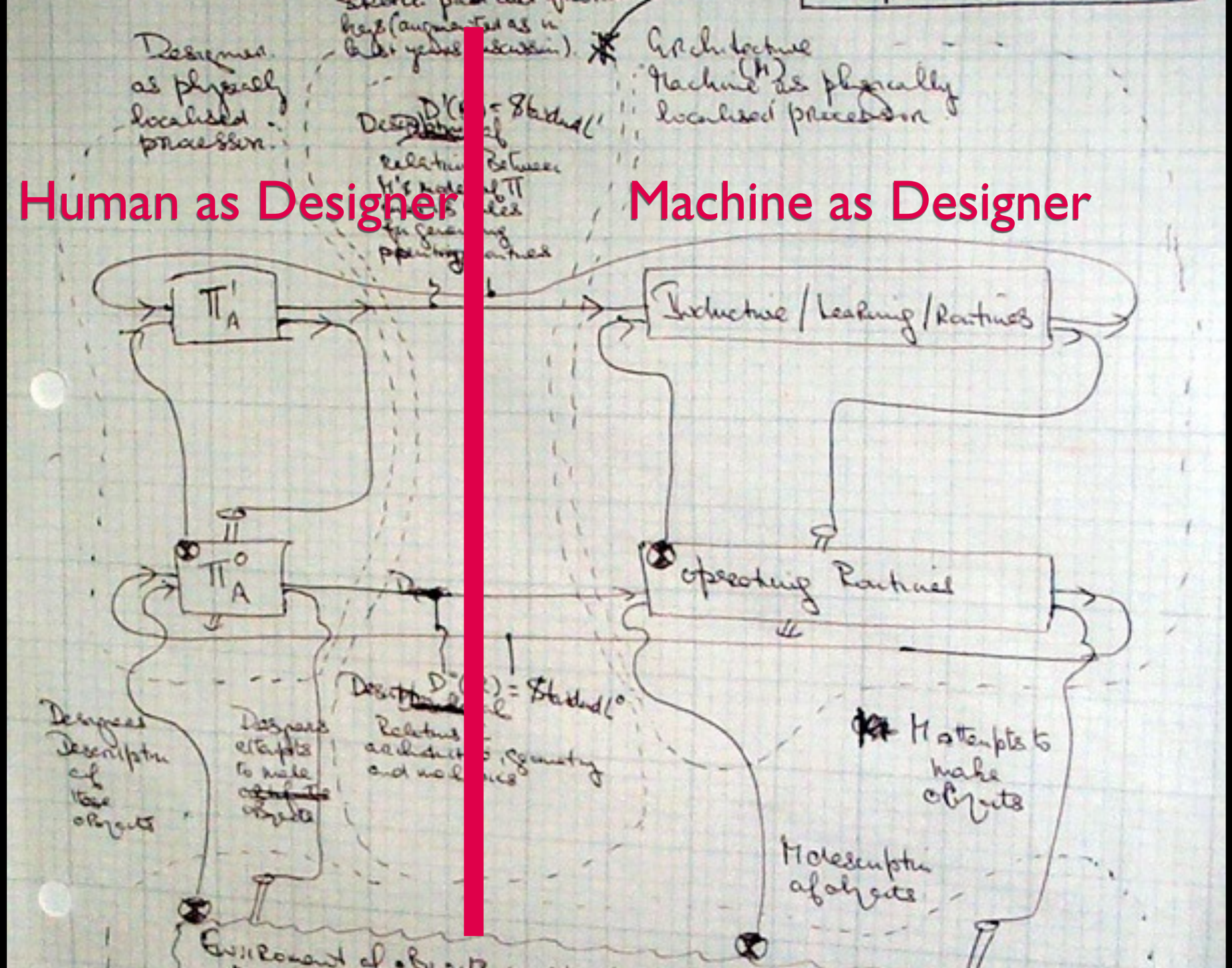
Actors interact at different levels about goals and about actions.

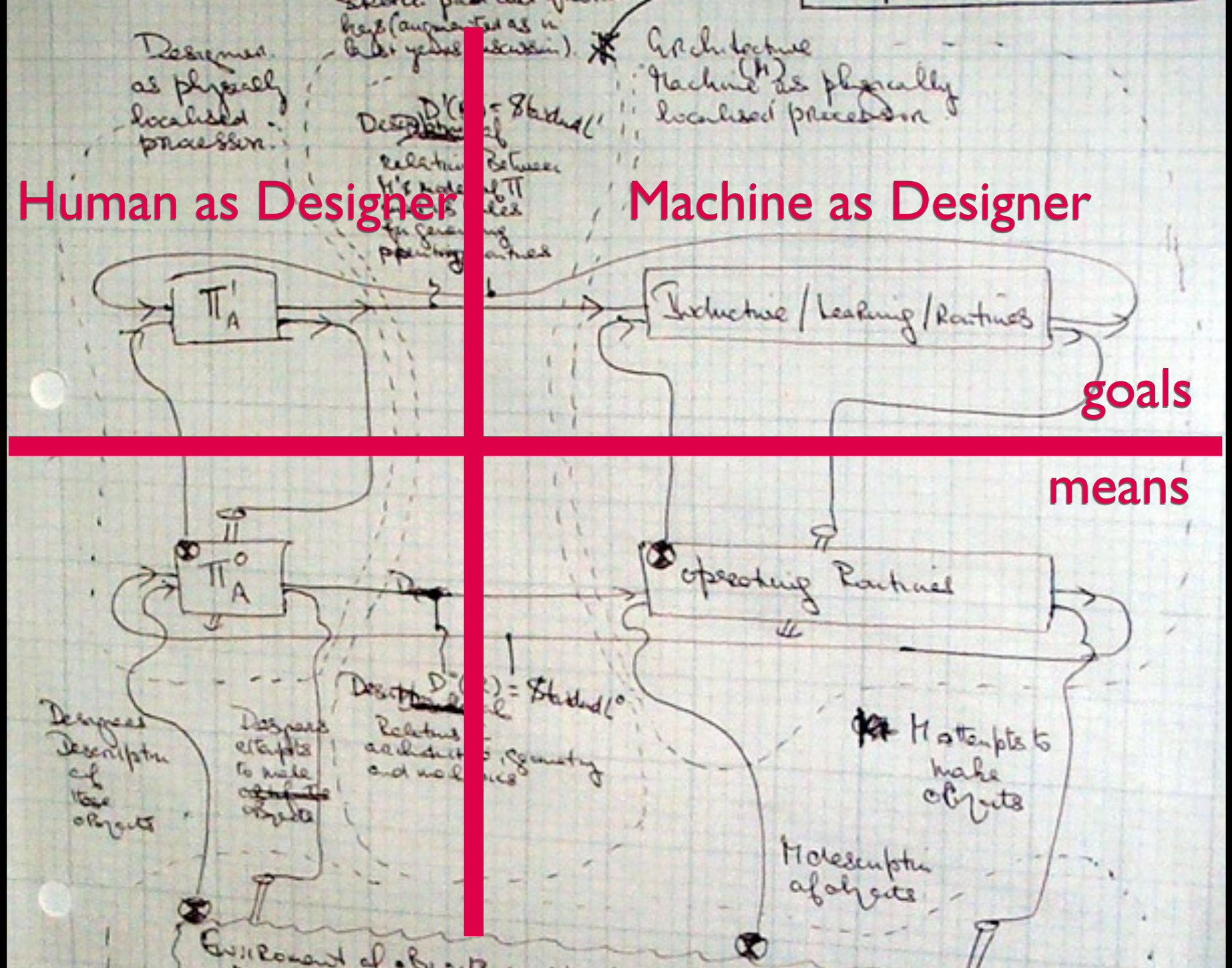


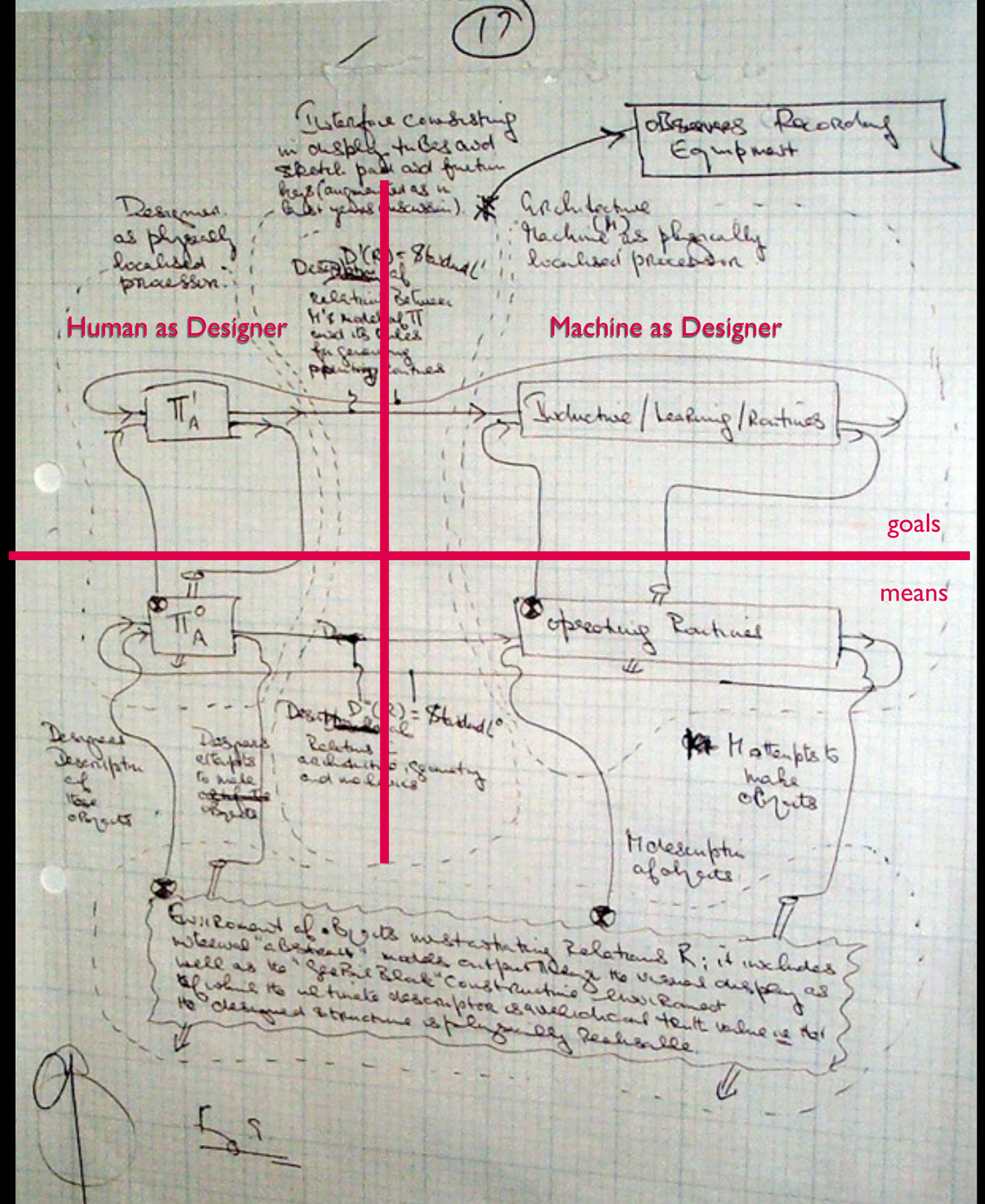
Feedback loops steer across actors and across levels.



In Pask's model of conversation, the actors need not be human.


Human as Designer
Machine as Designer
Designer as physically localised processor
Architecture Machine (M) as physically localised processor
Inductive / Learning / Routines
operating Routines
M attempts to make objects
M description of objects
Designer's Description of these objects
Designer's attempts to make objects
Environment of objects

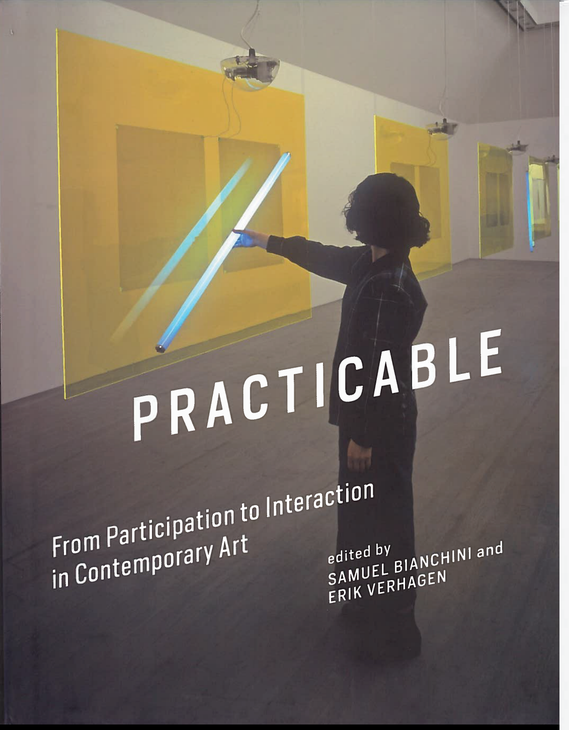

Human as Designer
Machine as Designer
goals
means



Here Pask proposes a design conversation between a human and a machine.

They have exchanges about possible goals as well as the means to achieve them.

Pask's work has influenced generations of designers, architects, and media critics.



Pangaro & McLeish / COLLOQUY 2018 Project

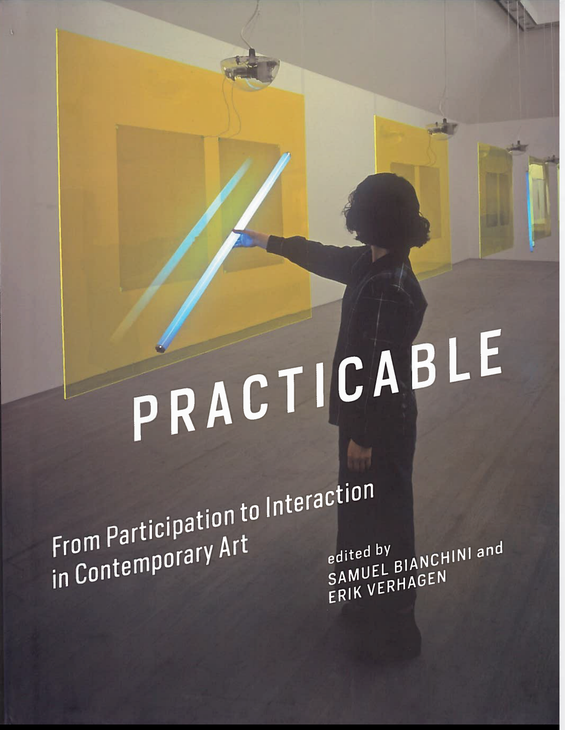
1 Gordon Pask's Cybernetic Systems: Conversations After the End of the Mechanical Age

Margit Rosen

In November 1968, K. G. Pontus Hultén's exhibition *The Machine as Seen at the End of the Mechanical Age* at New York's Museum of Modern Art announced the birth of a new technological epoch. The mechanical machine, "an imitation of our muscles," was about to lose its dominating position to electronic devices, "which imitate the processes of the brain and the nervous system."[1] This observation was not entirely new to the public. Twenty years earlier, in his book *Cybernetics or Control and Communication in the Animal and the Machine* (1948), the mathematician Norbert Wiener had described the advent of the "age of servomechanisms,"[2] of automata that were equipped with equivalents of human and animal sense-organs and coupled to the external world "by a flow of impressions, of incoming messages, and of the actions of outgoing messages."[3] Nor was Hultén the only curator responsive to the technological transition described by Wiener and popularized by the mass media. Earlier, in August 1968, a young British curator, Jasia Reichardt, had opened an exhibition titled *Cybernetic Serendipity* at the Institute of Contemporary Arts in London in which she sought to show how the new information technology—its devices and theoretical models—were about to transform science and art. Hultén's *The Machine* also included a few electronic responsive works, but Reichardt's *Cybernetic Serendipity* presented many more electronic objects, as well as environments that seemed to fulfill the promises of the epoch of communicating machines.

The visitors of both exhibitions experienced a new relationship with artifacts that were equipped with light and sound sensors and responded in real time to changes in the environment, of which the spectators formed a part. These machines incited the viewers to break the rules of bourgeois art perception. Instead of quietly contemplating the exhibits, they moved and made the exhibition space resound with their whistles, voices, and clapping hands. This behavior provoked by the electronic objects and environments was a perfect fit with what Hultén identified as "one main trend of the

When a recent book referenced
the origins of interactive art,
Pask is invoked in the first chapter.



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Pangaro & McLeish / COLLOQUY 2018 Project

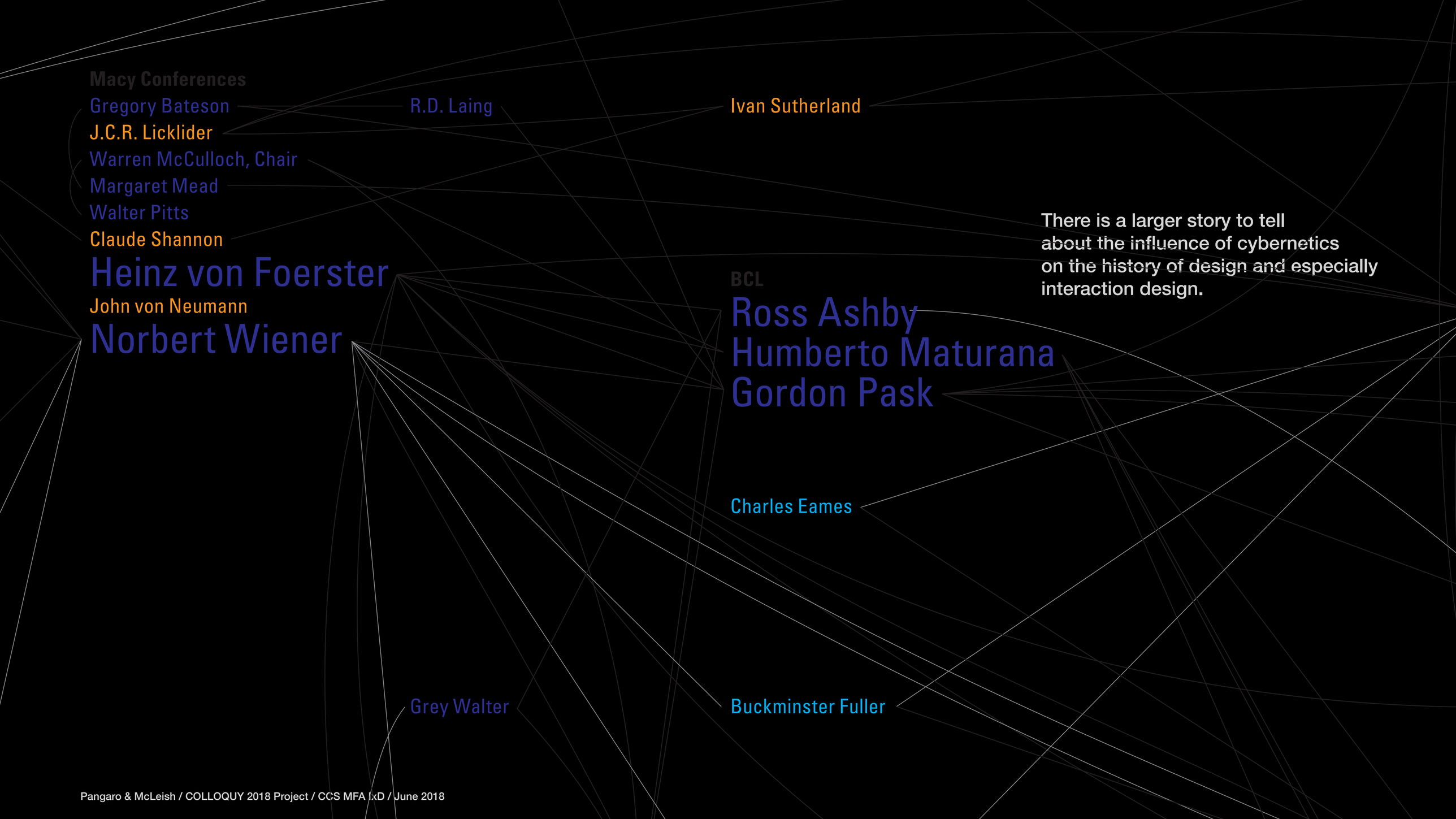
Figure 1.2
Gordon Pask, *Colloquy of Mobiles*, 1968. Installation view showing part of Gordon Pask's *Colloquy of Mobiles*, with Peter Zinovieff's computer in the background, in the exhibition *Cybernetic Serendipity*, Institute of Contemporary Arts, London. Courtesy of Jasia Reichardt.

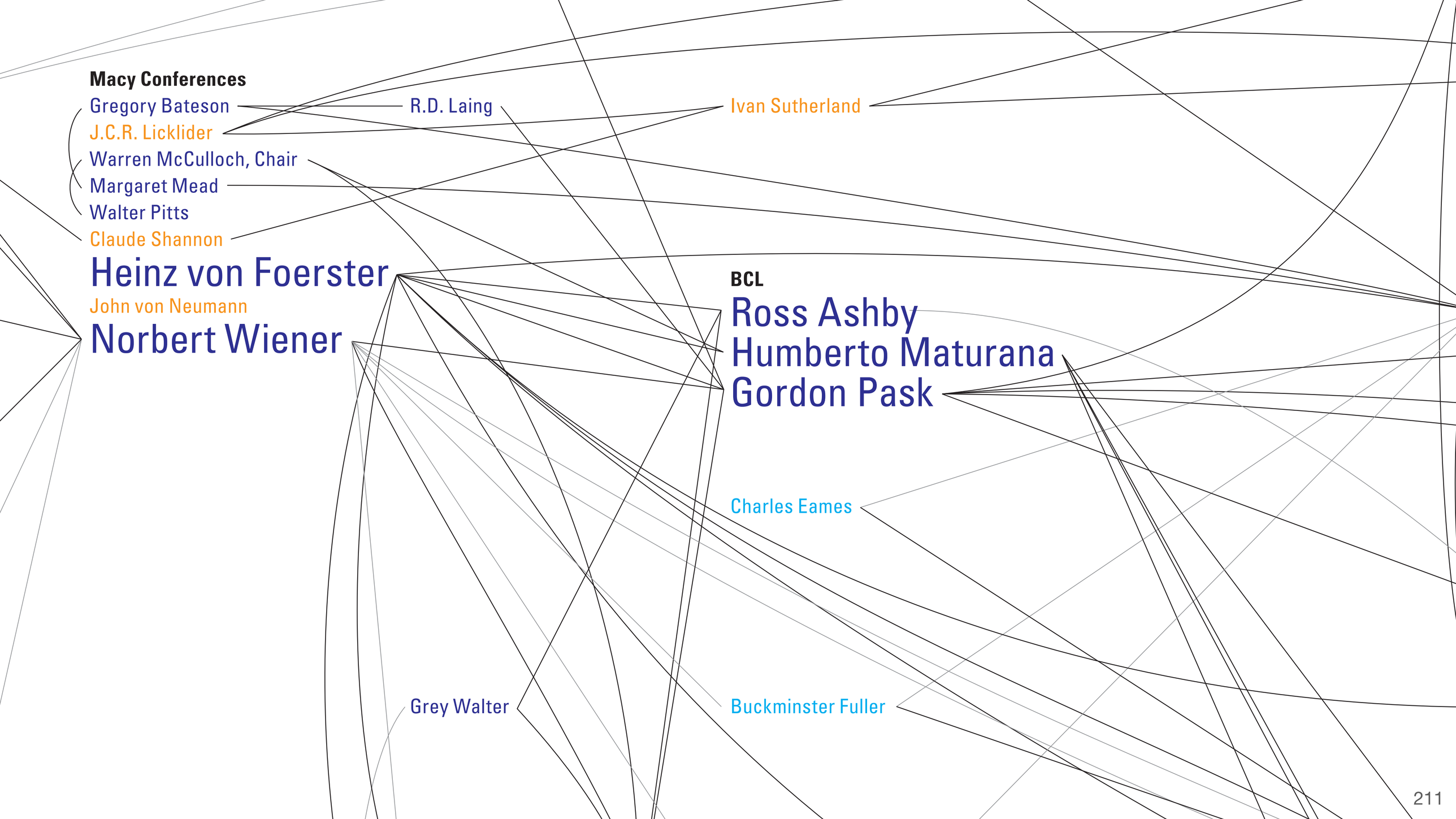
reinforcing a person's perception of him- or herself as an acting subject that could see him- or herself "reflected in the environment."[27] This assumption that the spectator desires to take the role of the artist had little to do with traditional notions of creation or creativity. It was simply about the experience of seeing that one's actions had an impact, if only on a fragile electronic device in an exhibition space. The machine perceived the individual; therefore the latter existed.

Inducing Happiness

Pask staged his adaptive systems in the art context as devices to induce pleasure. Beyond pure physical responses, a person should taste the delights of learning—that is

Colloquy of Mobiles is heralded as the first work of its kind.


Macy Conferences
Gregory Bateson
J.C.R. Licklider
Warren McCulloch, Chair
Margaret Mead
Walter Pitts
Claude Shannon
Heinz von Foerster
John von Neumann
Norbert Wiener
R.D. Laing
Ivan Sutherland
There is a larger story to tell about the influence of cybernetics on the history of design and especially interaction design.
BCL
Ross Ashby
Humberto Maturana
Gordon Pask
Charles Eames
Buckminster Fuller
Grey Walter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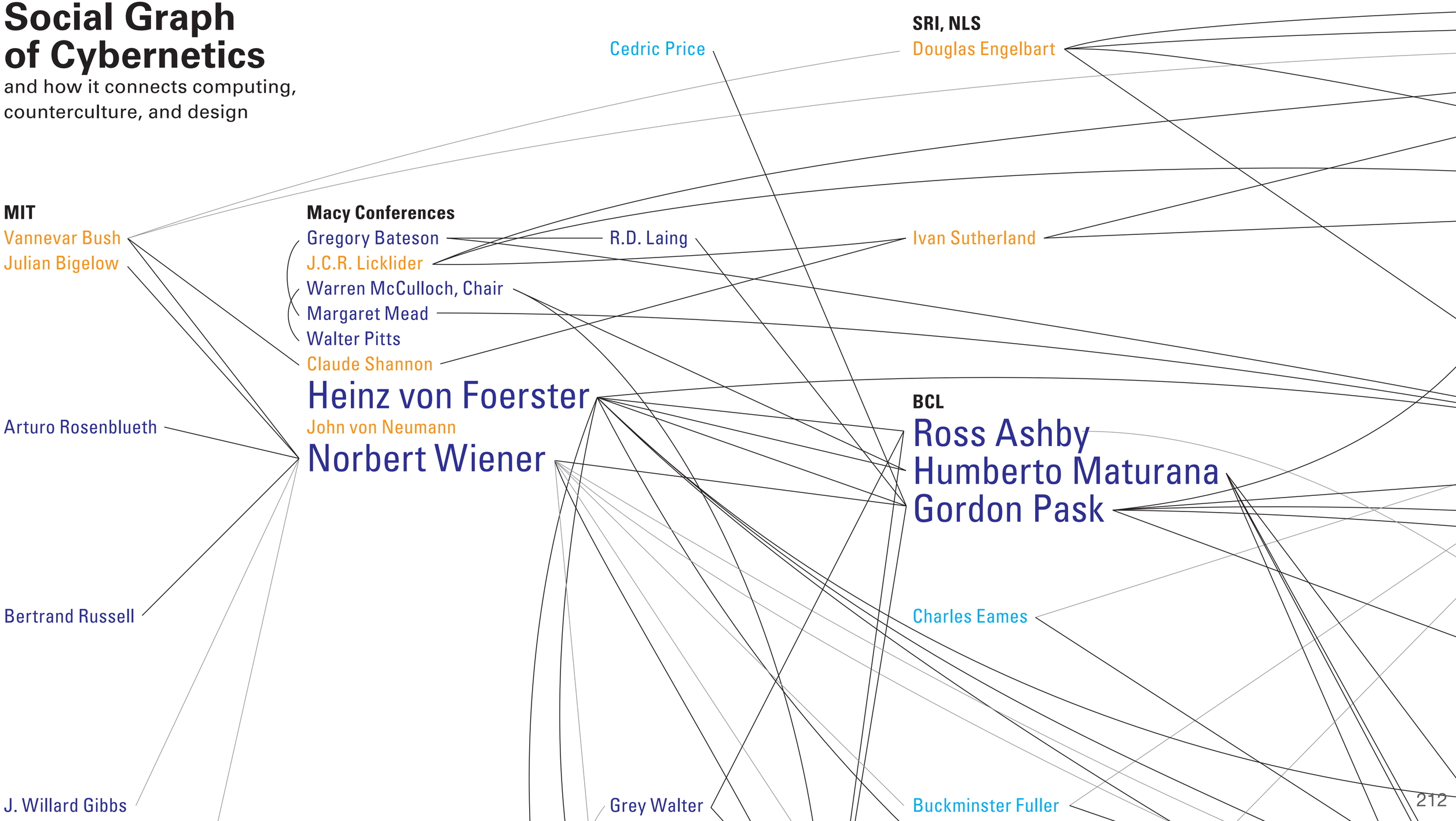
Norbert Wiener
R.D. Laing
Ivan Sutherland
BCL
Ross Ashby
Humberto Maturana
Gordon Pask
Charles Eames
Buckminster Fuller
Grey Walter

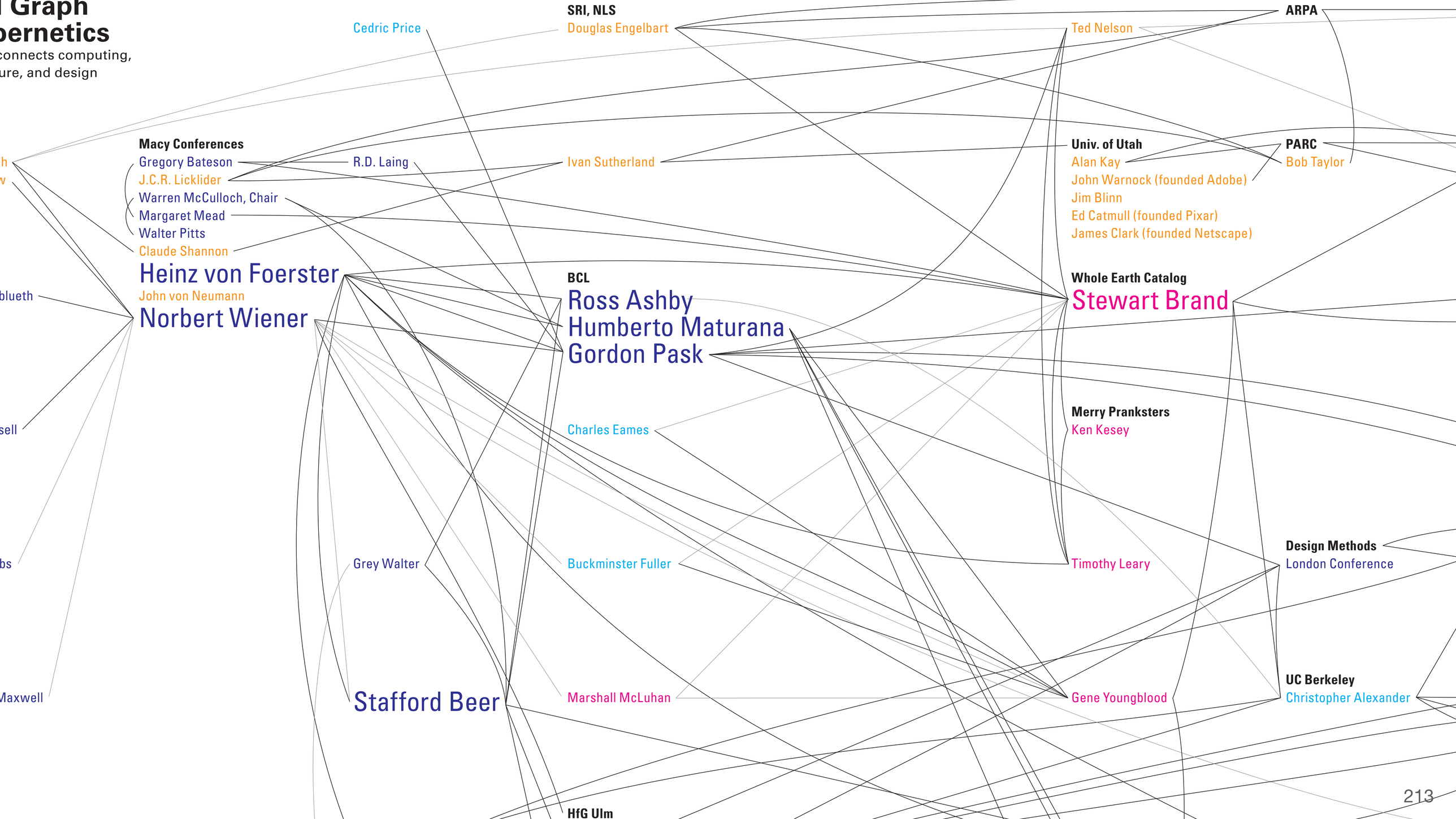
Social Graph of Cybernetics

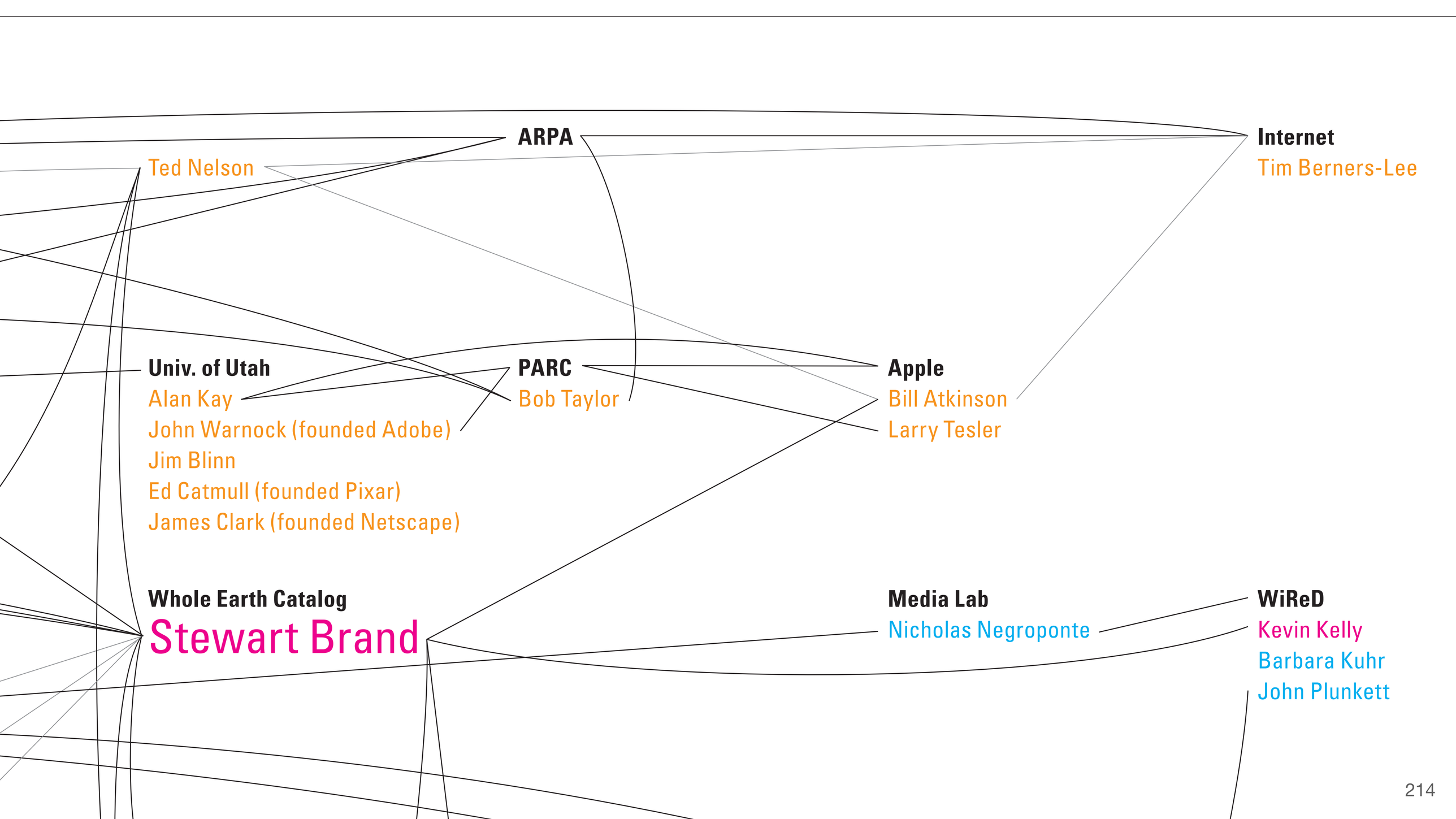
and how it connects computing, counterculture, and design

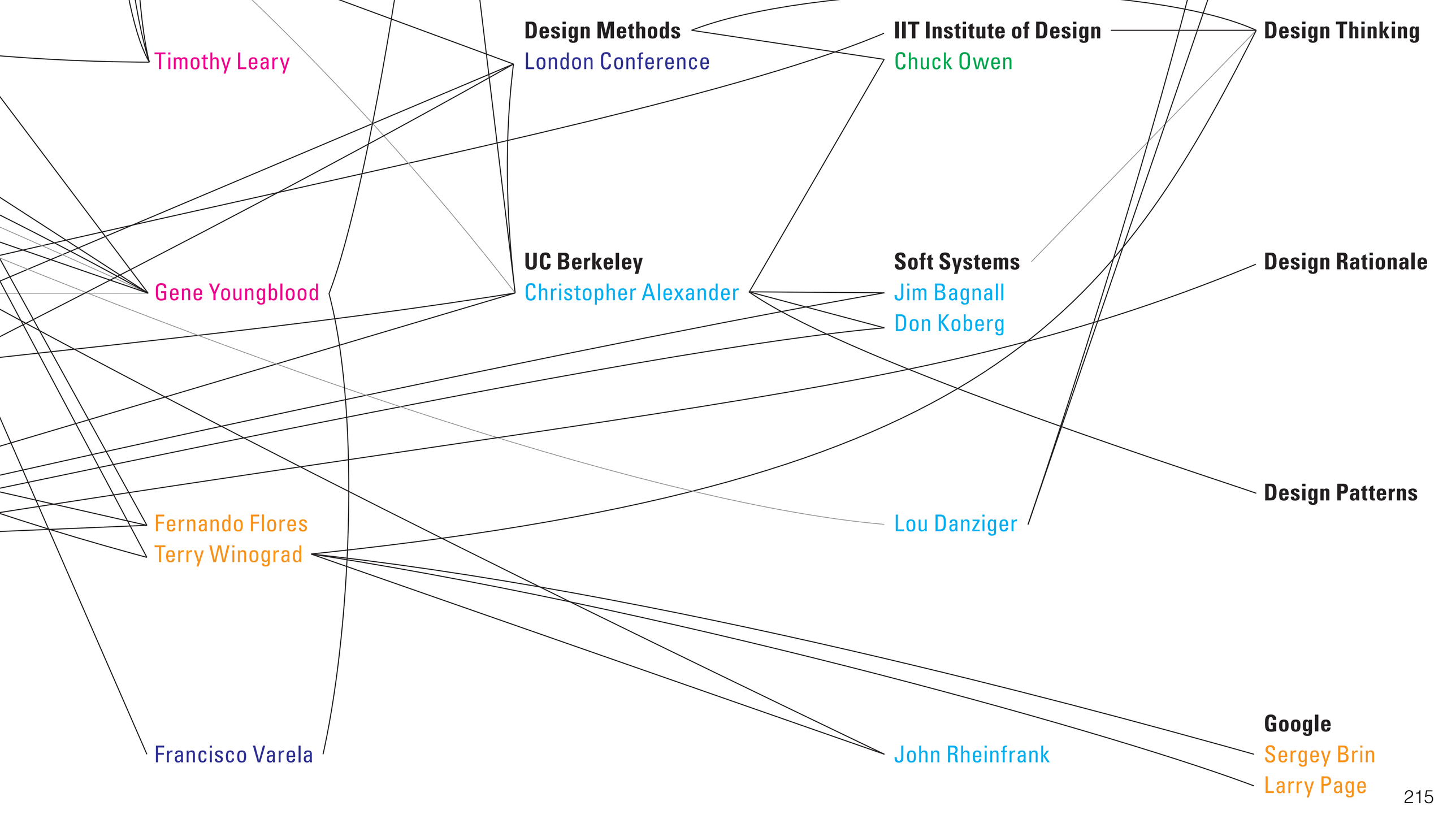


l Graph
bernetics

connects computing,
ure, and design

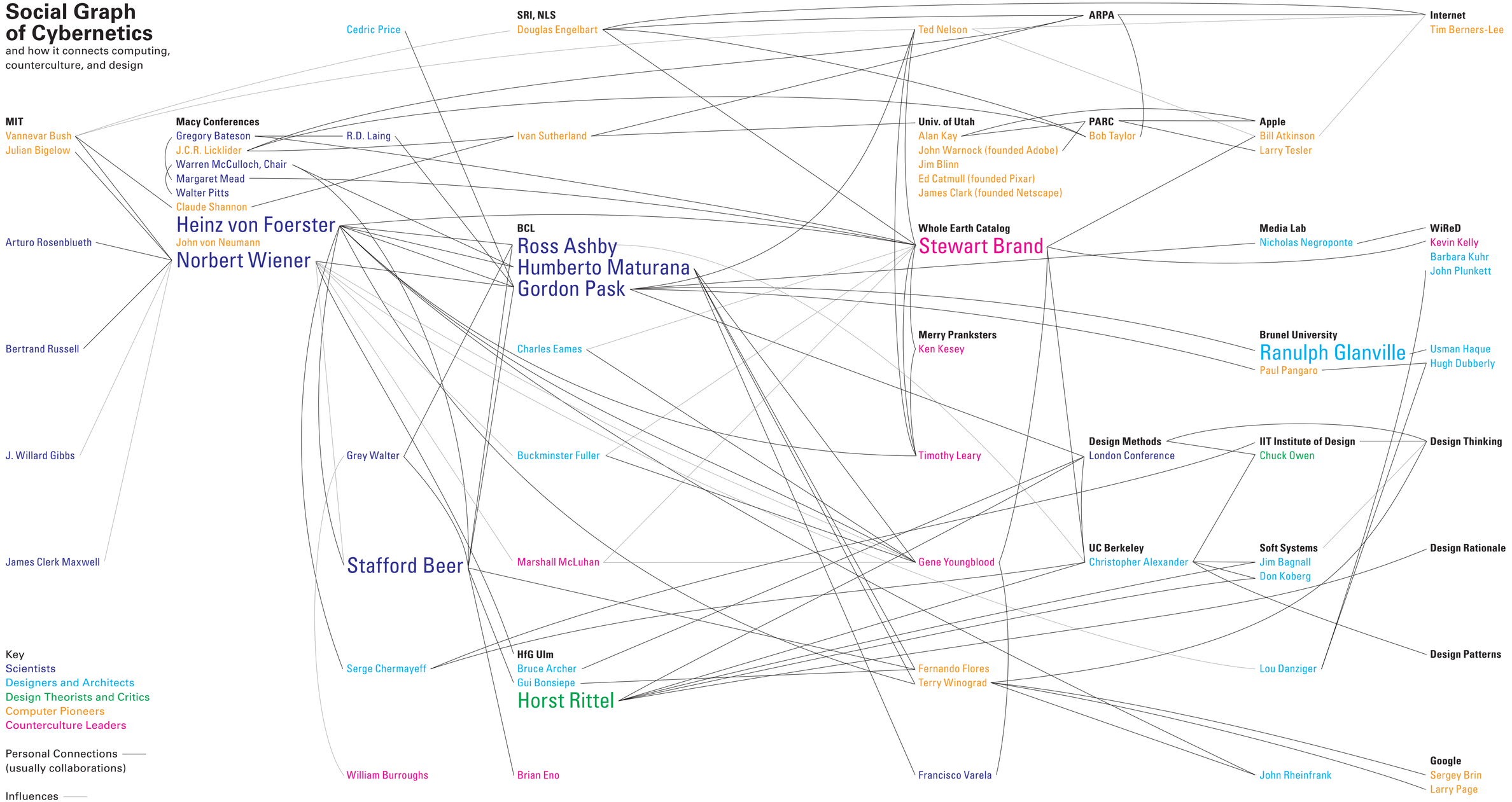



ARPA
Ted Nelson
Internet
Tim Berners-Lee
Univ. of Utah
Alan Kay
John Warnock (founded Adobe)
Jim Blinn
Ed Catmull (founded Pixar)
James Clark (founded Netscape)
PARC
Bob Taylor
Apple
Bill Atkinson
Larry Tesler
Whole Earth Catalog
Stewart Brand
Media Lab
Nicholas Negroponte
WiReD
Kevin Kelly
Barbara Kuhr
John Plunkett


Timothy Leary
Gene Youngblood
Fernando Flores
Terry Winograd
Francisco Varela
Design Methods
London Conference
UC Berkeley
Christopher Alexander
IIT Institute of Design
Chuck Owen
Soft Systems
Jim Bagnall
Don Koberg
Lou Danziger
John Rheinfrank
Design Thinking
Design Rationale
Design Patterns
Google
Sergey Brin
Larry Page

Social Graph of Cybernetics

and how it connects computing, counterculture, and design



Key
Scientists
Designers and Architects
Design Theorists and Critics
Computer Pioneers
Counterculture Leaders

Personal Connections ——
(usually collaborations)

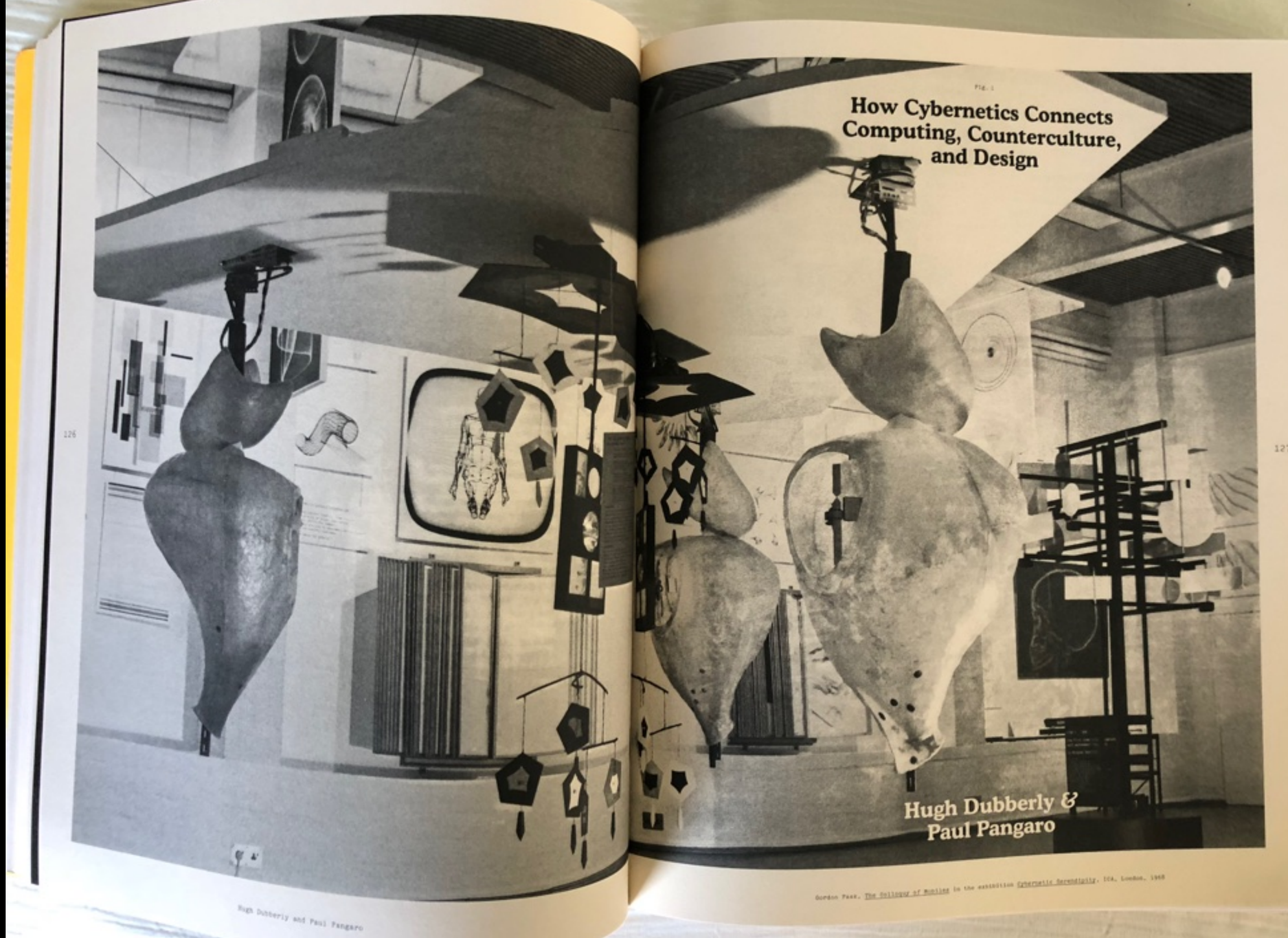
Influences ——
(usually publications)

Interactive version at
http://cybergraph.dubberly.com/

In Dubberly & Pangaro: How cybernetics connects computing, counterculture, and design

Catalog
HIPPIE MODERNISM
Walker Art Center, 2016
Minneapolis

Andrew Blauvelt, Curator



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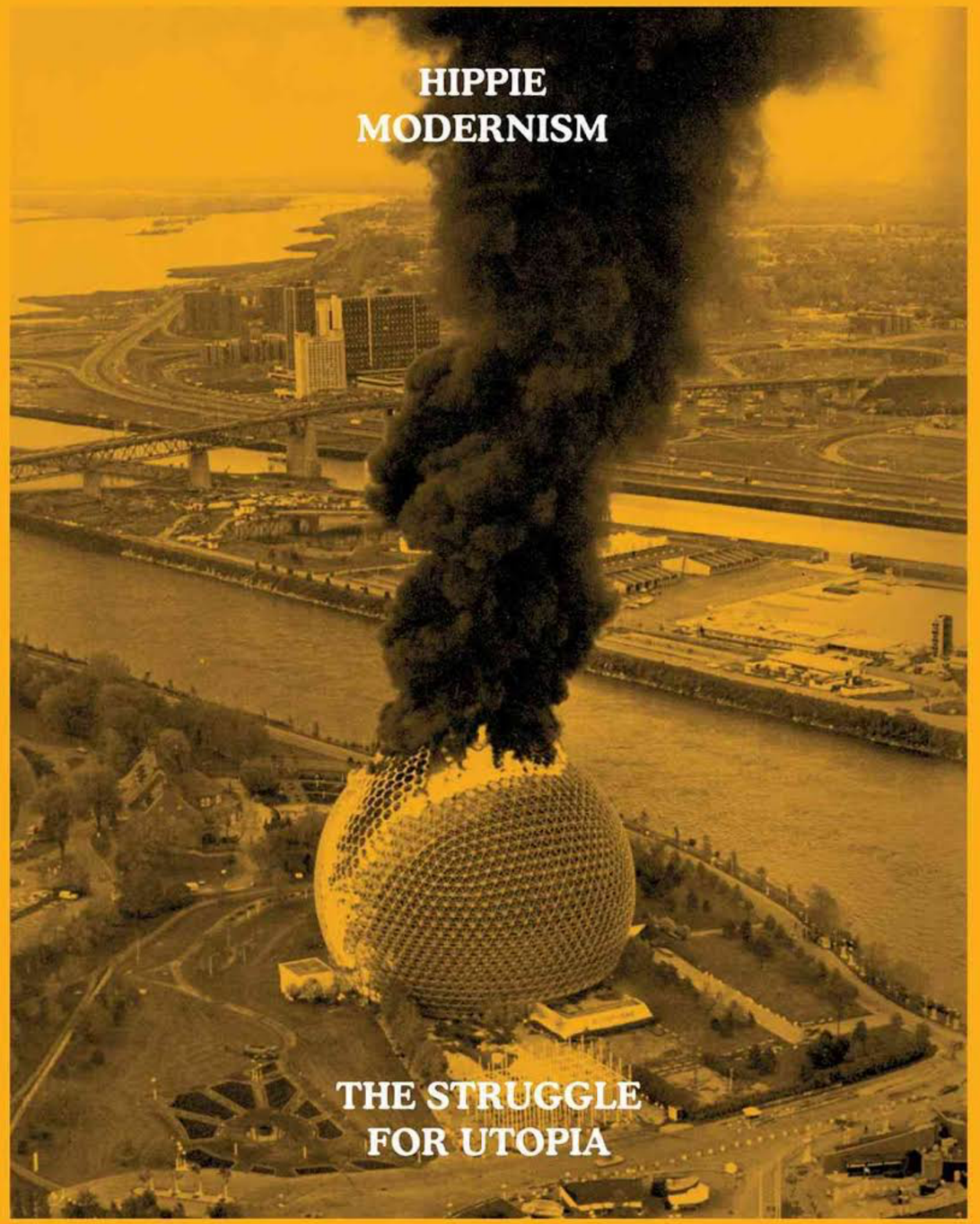


Margit Rosen <rosen@zkm.de> Inbox -...studies.edu February 19, 2018 at 5:20 AM
Gordon Pask's »Colloquy of Mobiles« Hide
To: Pangaro CCS <ppangaro@collegeforcreativestudies.edu>,
Cc: Judith Bihr <bihr@zkm.de>

MR

Dear Paul Pangaro,

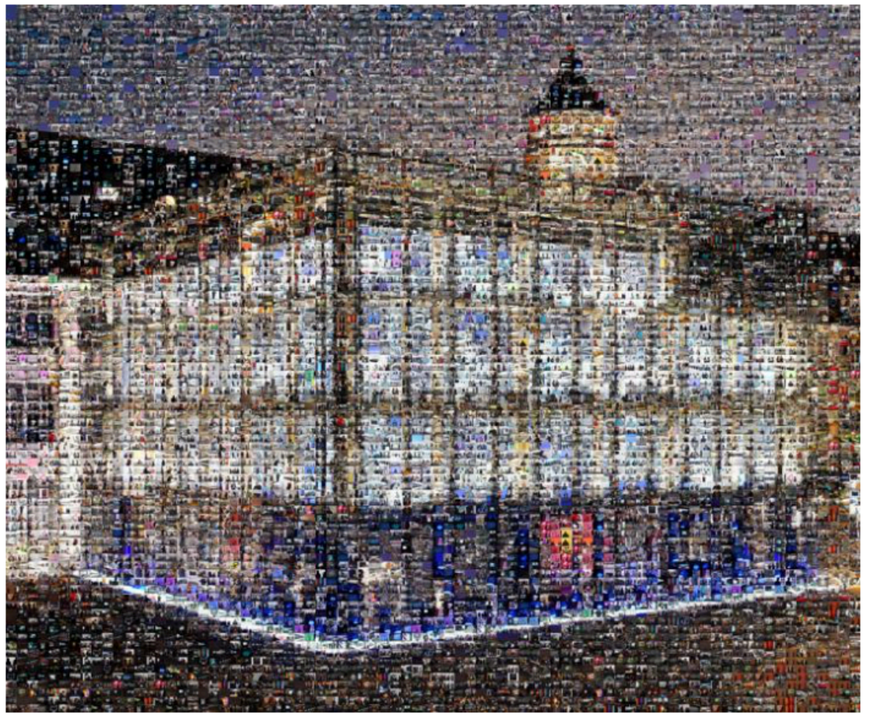
I read the note about the reconstruction Gordon Pask's »Colloquy of Mobiles« (http://pangaro.com/colloquy2018/index.html) with great interest, as I had been hoping for a long time that someone would reconstruct this wonderful installation. I was wondering if it's possible that the »Colloquy« would be exhibited here at the ZKM | Center for Art and Media in Karlsruhe, Germany.
I would be very grateful if you could tell me whether this would be an option. I've read that that installation is intended to be ready for the annual College of Creative Studies (Detroit) Student Exhibition opening on May 11, 2018.

With kindest regards
Margit Rosen

Margit Rosen
Abteilungsleitung | Head of Department
Wissen
Sammlung, Archive & Forschung | Collections, Archives & Research
/////// / |< III | ZKM | Zentrum für Kunst und Medien Karlsruhe
/////// / |< III | ZKM | Center for Art and Media Karlsruhe
/////// / |< III | ZKM | Centre d'Art et des Médias Karlsruhe

Lorenzstr. 19, D-76135 Karlsruhe
Tel +49-(0)721-8100-1936, Fax +49-(0)721-8100-1309
E-Mail: rosen@zkm.de
www.zkm.de

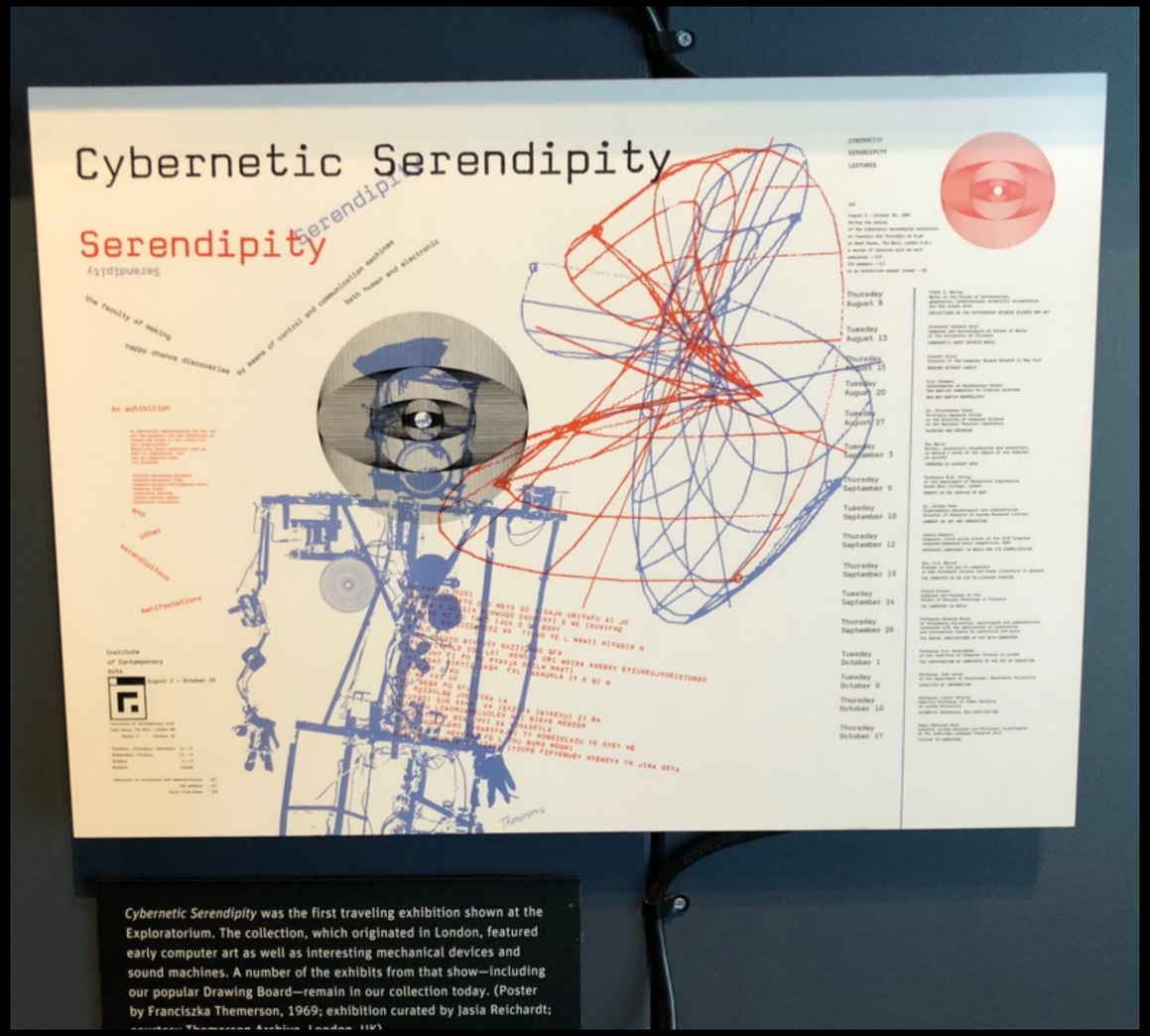
Das ZKM



Das ZKM | Zentrum für Kunst und Medien Karlsruhe ist eine weltweit einzigartige Kulturinstitution, denn es ist ein Ort, der die originären Aufgaben des Museums erweitert.

Es ist ein Haus aller Medien und Gattungen, ein Haus sowohl der raumbasierten Künste wie Malerei, Fotografie und Skulptur als auch der zeitbasierten Künste wie Film, Video, Medienkunst, Musik, Tanz, Theater und Performance. Als Museum wurde das ZKM 1989 gegründet mit der Mission, die klassischen Künste ins digitale Zeitalter fortzuschreiben. Deshalb wird es gelegentlich auch das »elektronische bzw. digitale Bauhaus« genannt – ein Ausdruck, der auf den Gründungsdirektor Heinrich Klotz zurückgeführt wird.

Cybernetic Serendipity Display
The Exploratorium



Liz Keim & Larry Cuba
The Exploratorium

Jasia Reichardt
Curator, Cybernetic Serendipity 1968

Cybernetic Serendipity Revisited
Sackler Symposium
Washington DC
2018

Colloquy, then and now, explores:

- the dynamics of conversational machines that now surround us every day
- the impact of smart environments that increasingly effect our lives
- the implications of artificial intelligence, inside of every digital device we use

Click for Video

In 2018 we live among machines talking to machines, machines talking to people, and people talking to people through machines.

Yet that is Pask's Colloquy—how could he have foreseen our world as it is today?

From 1968 he chides us with his vision of rich, humane interaction—organic and analog, immersive and unpredictable, conversational and emergent.

Would that today's digital interactions have even some of those properties.

Colloquy of Mobiles appeared 50 years ago as an apparition from a distant future. It is a lesson for today, as we live in that future.

- Paul Pangaro

COLLOQUY 2018 Project

Special thanks to:
Students of CCS MFA Interaction Design
Bruce McIntosh
Rinat Sherzer
Karen Kornblum Berntsen
Hugh Dubberly
Our Advisory Board
Our Generous Donors

Paul Pangaro & TJ McLeish
MFA Interaction Design Program
College for Creative Studies, Detroit
colloquy2018@gmail.com

COLLOQUY 2018 Project

Advisory Board

Amanda Pask Heitler and Hermione Pask, Gordon Pask's daughters and executors of his scientific and artistic estate

Jasia Reichardt, Curator, Cybernetic Serendipity Exhibition, 1968

Albert Müller, Curator, Gordon Pask Archive, University of Vienna

Andrew Pickering, Author of "The Cybernetic Brain"

Hugh Dubberly, Design Planner and Teacher

Guilherme Kujawski, Writer, Teacher, and Co-Curator of Emoção Art.ficial, ITAU Cultural, São Paulo, Brazil

John Plunkett, Designer and co-founder, WiReD Magazine

Marc Schwartz, Co-founder, DLECTRICITY, Detroit

Vince Carducci, Media Critic & Dean of Undergraduate Affairs, CCS

COLLOQUY 2018 Project

www.colloquyofmobiles.com

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