

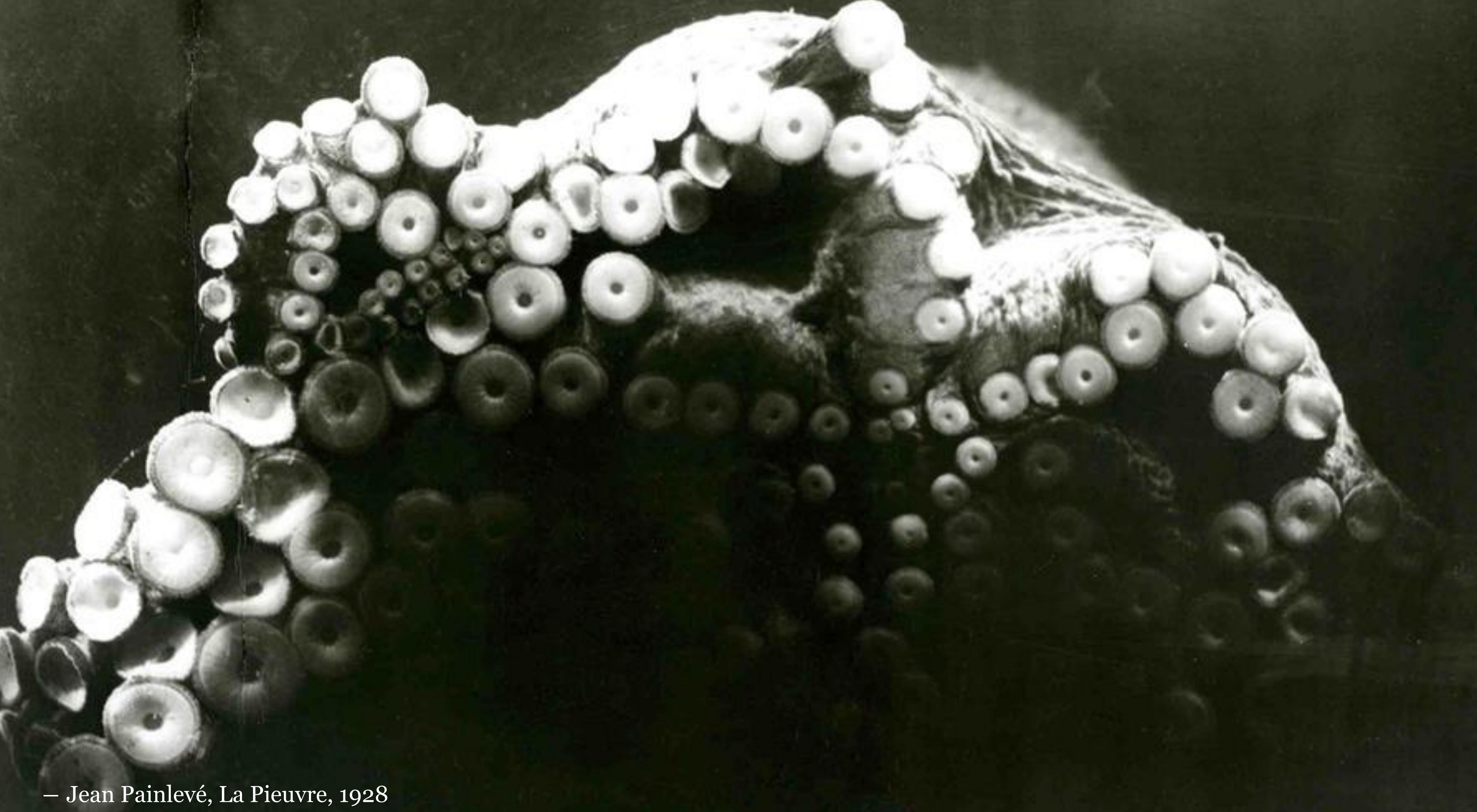
Soft Robotics

*Fluid Interactions:
Designing Soft Robotics for Domestic Spaces*

“Reverie. To share such a moment of deep tranquility with another being, especially one as different from us as the octopus, is a humbling privilege.”

– Sy Montgomery, The Soul of an Octopus: A Surprising Exploration into the Wonder of Consciousness





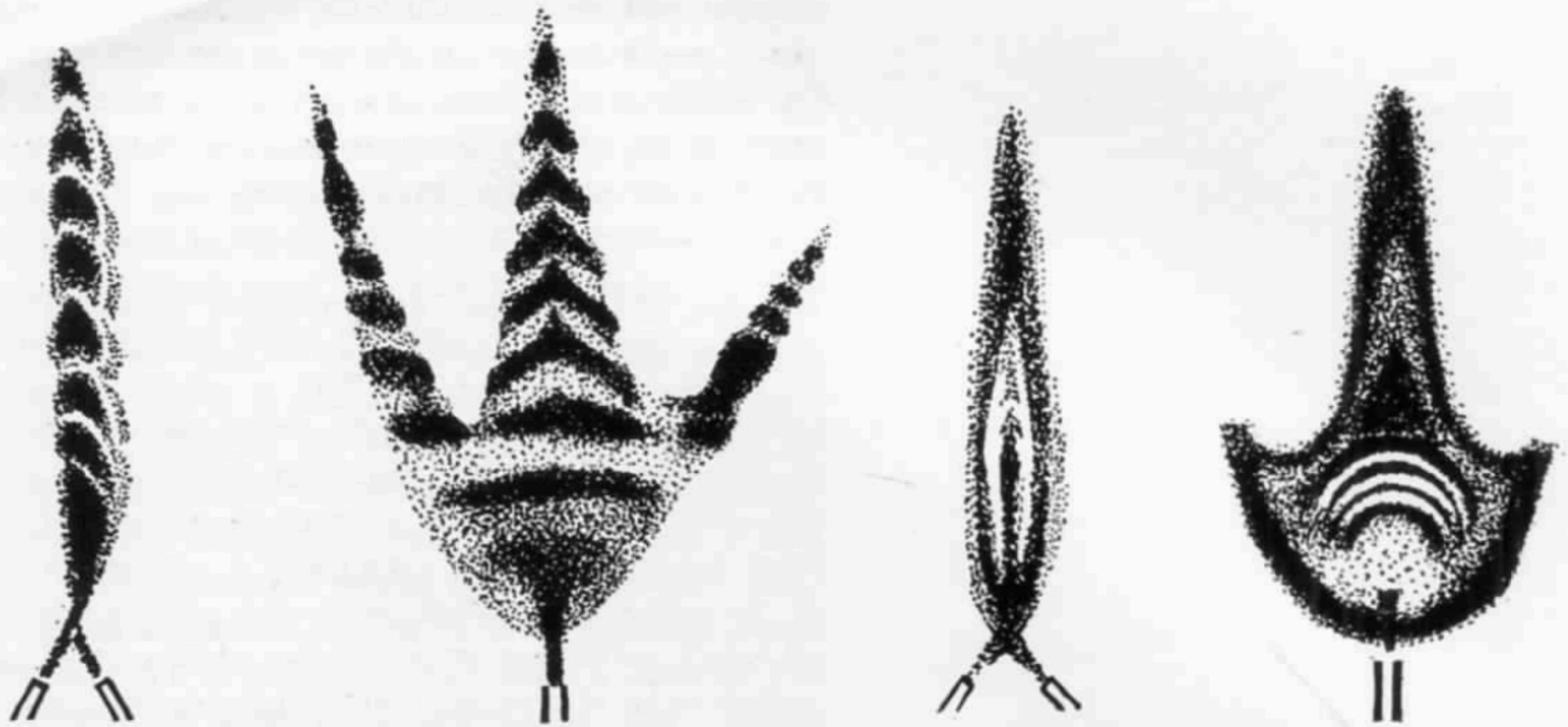
– Jean Painlevé, La Pieuvre, 1928

“Robots aren’t people. If anything, they’re animals. We need to stop thinking of robots as artificial people. It puts us on edge, creates confusion about what robots actually are, and blinds us to the harms they could actually cause. robots can be our collaborators—just as messenger pigeons, truffle-hunting pigs, and guide dogs help us perform different tasks today. Robots and animals alike can serve as mediators, facilitating human-to-human interactions”

– Darling, Kate. The New Breed: What Our History with Animals Reveals about Our Future with Robots, 2021

“What would it mean to build artificial intelligences and other machines that were more like octopuses, more like fungi, or more like forests?”

— James Bridle, Ways of Being: Animals, Plants, Machines: The Search for a Planetary Intelligence”

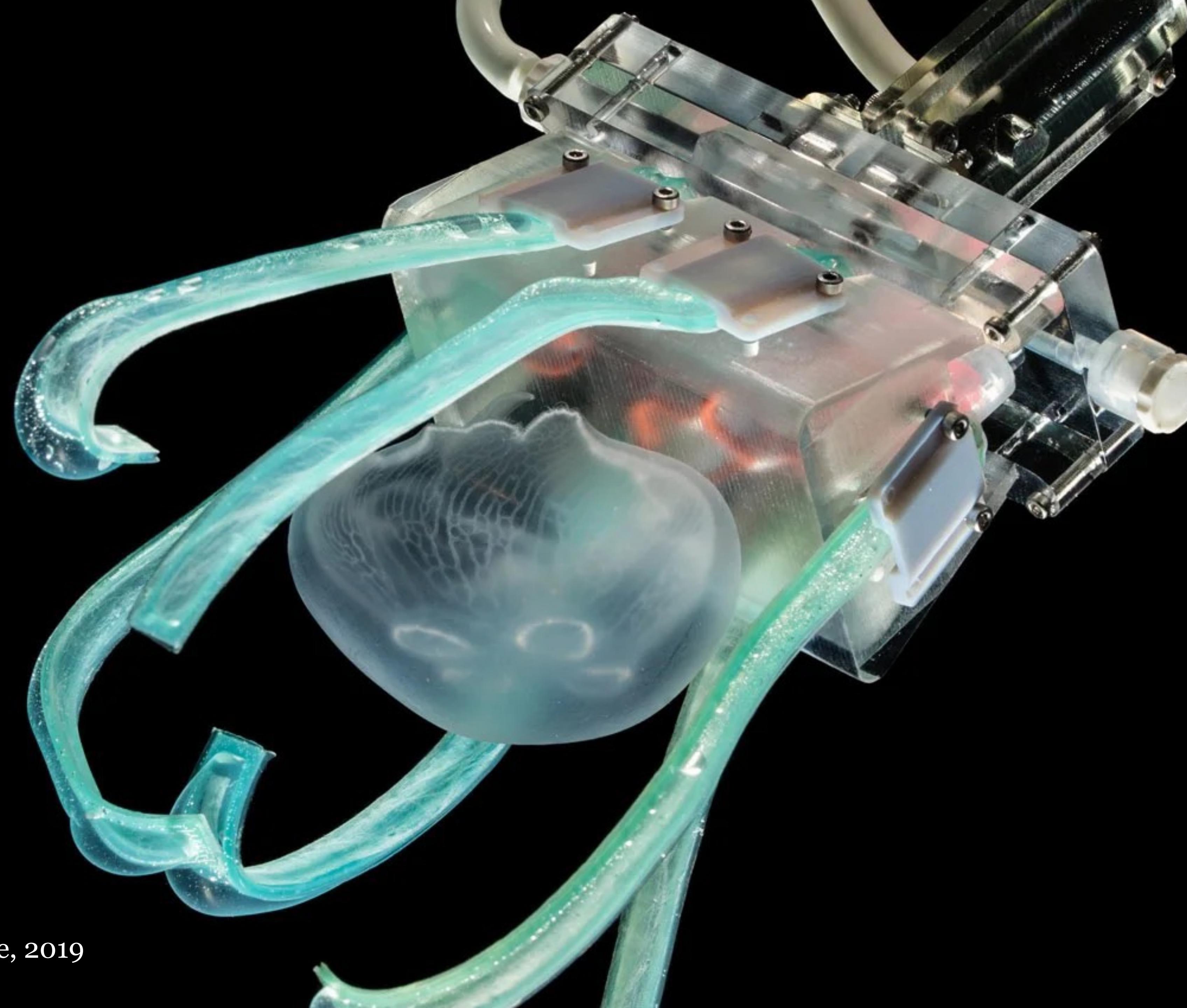


Convergence de deux jets d'air sous différents angles (d'après Carrière).

— Le Chaos Sensible, Theodore Schwenk



– How some jellyfish are born, Jean Painlevé 1960



– Jellyfish catching soft robot, Wass Institute, 2019

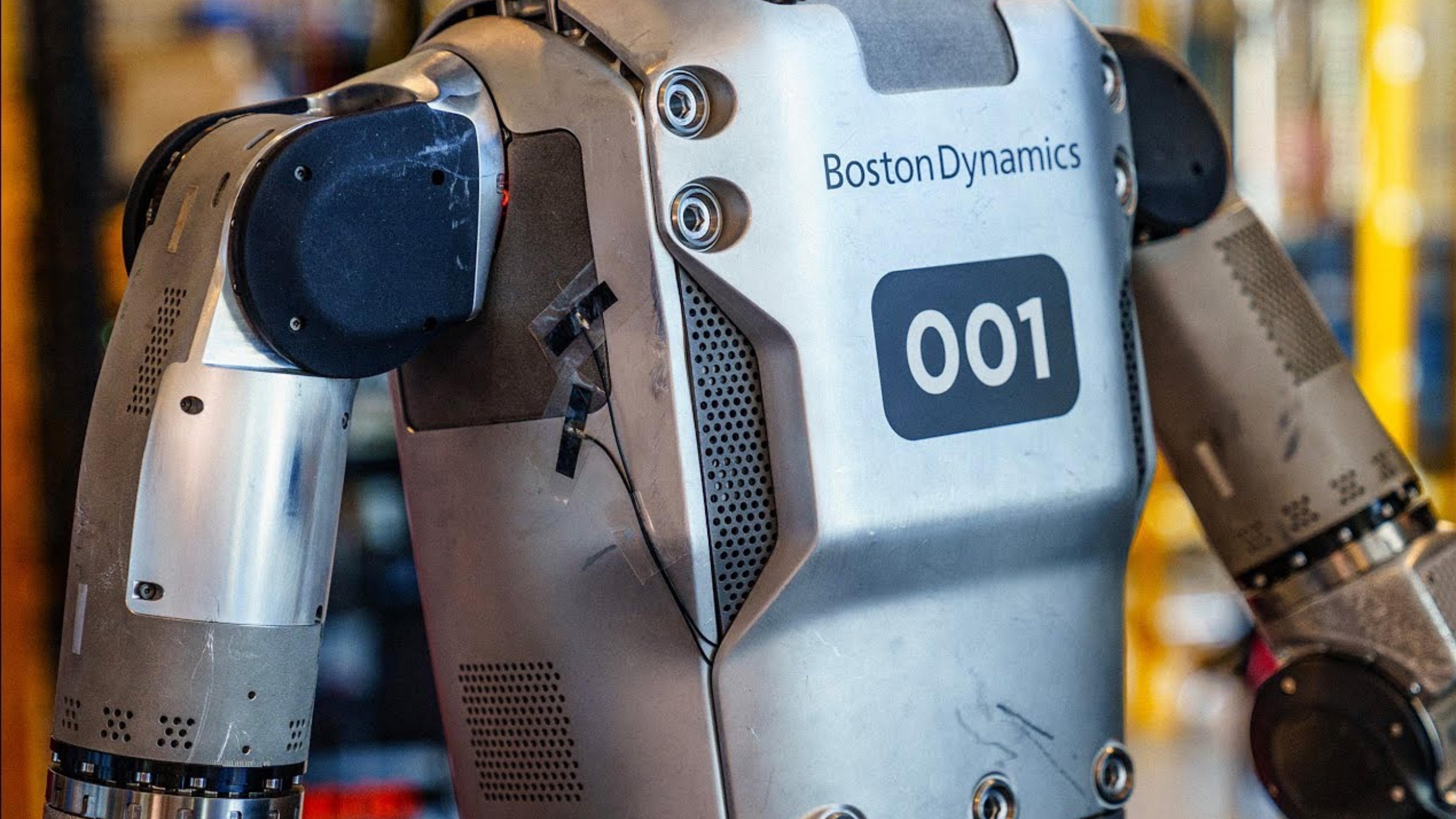
TENTACLE ROBOT



**Harvard John A. Paulson
School of Engineering
and Applied Sciences**

HIGHLIGHTS



A close-up photograph of a Boston Dynamics robot's head and upper torso. The robot has a metallic, silver-colored finish. On the left side of its chest, there is a circular sensor array with a small red light at the top center. The right side of the chest features two circular ports. A dark blue rectangular badge with the white text "001" is attached to the right side of the chest. The word "BostonDynamics" is printed in blue capital letters above the badge. The background is blurred, showing other parts of the robot and some yellow equipment.

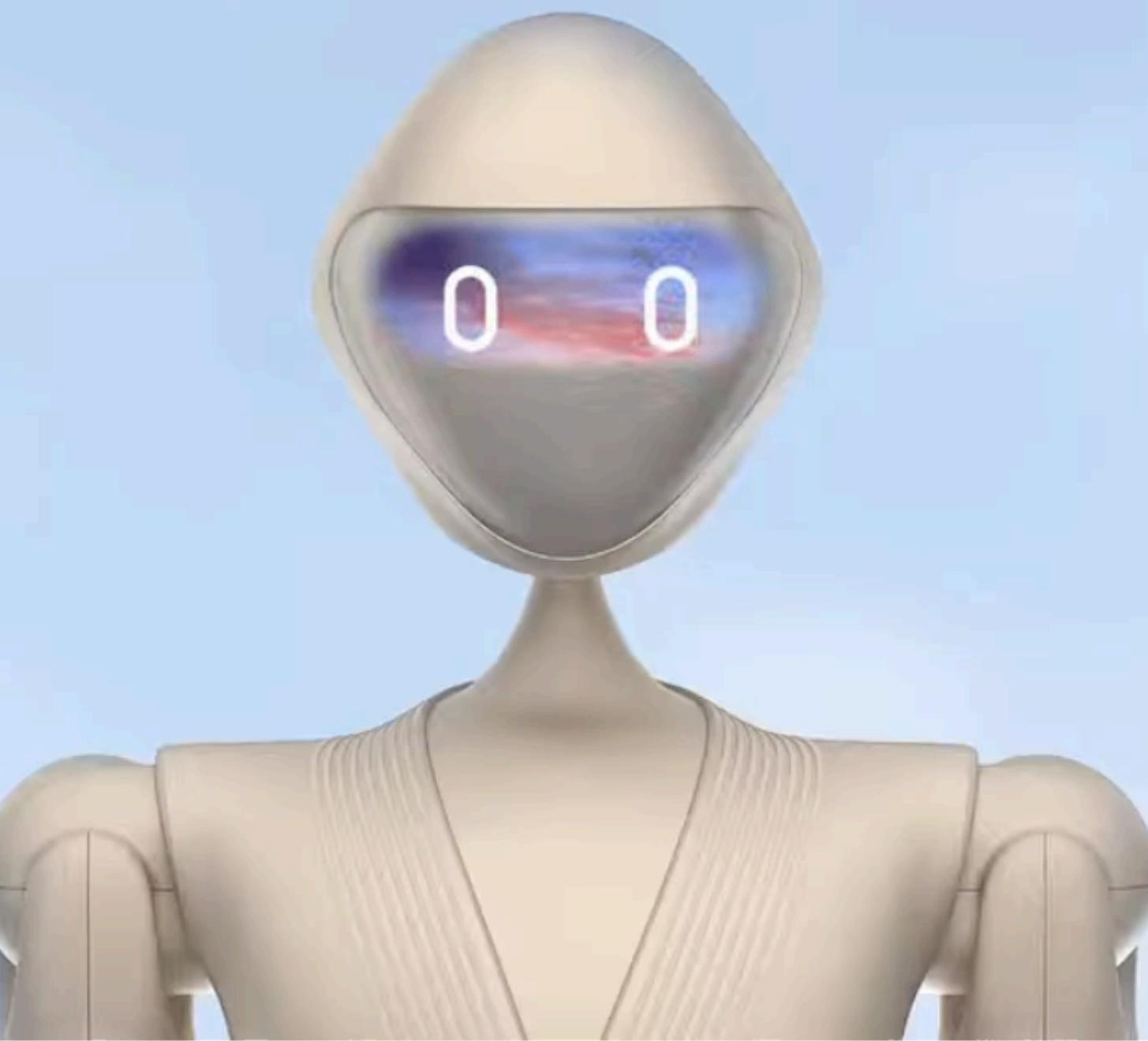
BostonDynamics

001





– Yves Béhar and fuseproject and Kind Humanoid



“What they mean by a general-purpose robot is to have Kind Humanoid assist people, not replace them. They think of it as a provider of additional labor ‘to do the work we don’t do but should do.’”

– Yves Béhar and fuseproject and Kind Humanoid

The word "robot" was first introduced in 1920 by Czech playwright Karel Čapek in his science fiction play "R.U.R." (Rossum's Universal Robots).¹⁴

The term derives from the Czech word "robota," meaning forced labor or drudgery.

In Čapek's play, robots were depicted as artificial biological beings created to serve humans."



HELENA: (sits) Where are you from?

SULLA: From here, the factory.

HELENA: Oh, you were born here.

SULLA: Yes I was made here.

HELENA: (startled) What?

DOMIN: (laughing) Sulla isn't a person, Miss Glory, she's a robot.

HELENA: Oh, please forgive me...

The Smart Wife

Why Siri, Alexa, and Other Smart Home Devices Need a Feminist Reboot

**Yolande Strengers
and Jenny Kennedy**

Meet the Smart Wife—at your service, an eclectic collection of feminized AI, robotic, and smart devices. This digital assistant is friendly and sometimes flirty, docile and efficient, occasionally glitchy but perpetually available. She might go by Siri, or Alexa, or inhabit Google Home. She can keep us company, order groceries, vacuum the floor, turn out the lights. A Japanese digital voice assistant—a virtual anime hologram named Hikari Azuma—sends her “master” helpful messages during the day; an American sexbot named Roxxxy takes on other kinds of household chores

There is no feminism,
only possible feminisms

There is no internet,
only possible internets

“What’s the first thing you think of when you hear the term feminist human-robot interaction ? We use the term feminism to indicate an approach to design of human-robots interactions which is sensitive to power structures.”

– Katie Winkle, Uppsala University

“What are the norms and expectations around the robot’s actions?”

“Who will be interacting with the robot?”

“How will the robot change the interaction?”

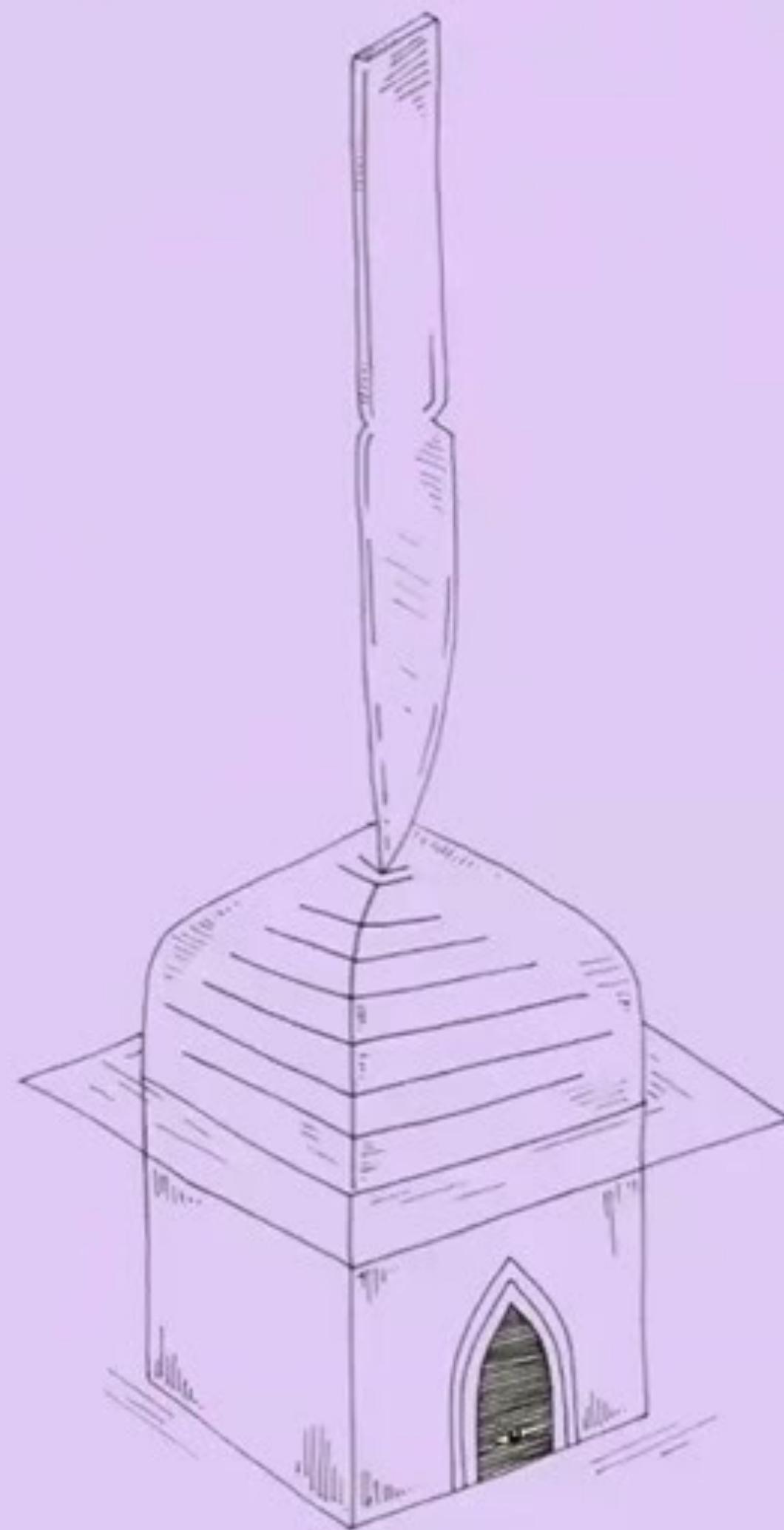
“What norms do we want to promote and what ones to challenge?”

*“Can we minimise the risk of harm to low-power users by reducing situational power imbalance?”
Eg - consent into ongoing robot interactions*

*“There is a crisis of imagination
when it comes to imagining
what good technology could be.”*



- The Good Robot: Why Technology Needs Feminism by Eleanor Drage



WHAT DO
WE MEAN BY
'FEMINISM'?



Designed to "help with everyday tasks", Amazon's Astro robot can complete a variety of domestic tasks, such as patrolling the home to monitor unusual activity and work with an upcoming Alexa service to help caregivers stay in touch with "aging loved ones".

– Astro robot by Amazon, 2021



LG two-legged AI robot that doubles as "home manager and companion"

Its multi-modal technology combines voice and image recognition as well as natural language processing, while the robot can also connect with and control smart home appliances and household IoT devices.



**Self-driving
AI Home Hub**

Free and active mobility through
2 steered wheels.
Emotional communication based on direct
interaction.
Situations, positions, and environment
sensing in the house: Temperature &
humidity sensing.
LG ThinQ™ and Matter certified solutions.





**Previously, such patients were sedated, and even now,
that's sometimes done in Europe and America.**





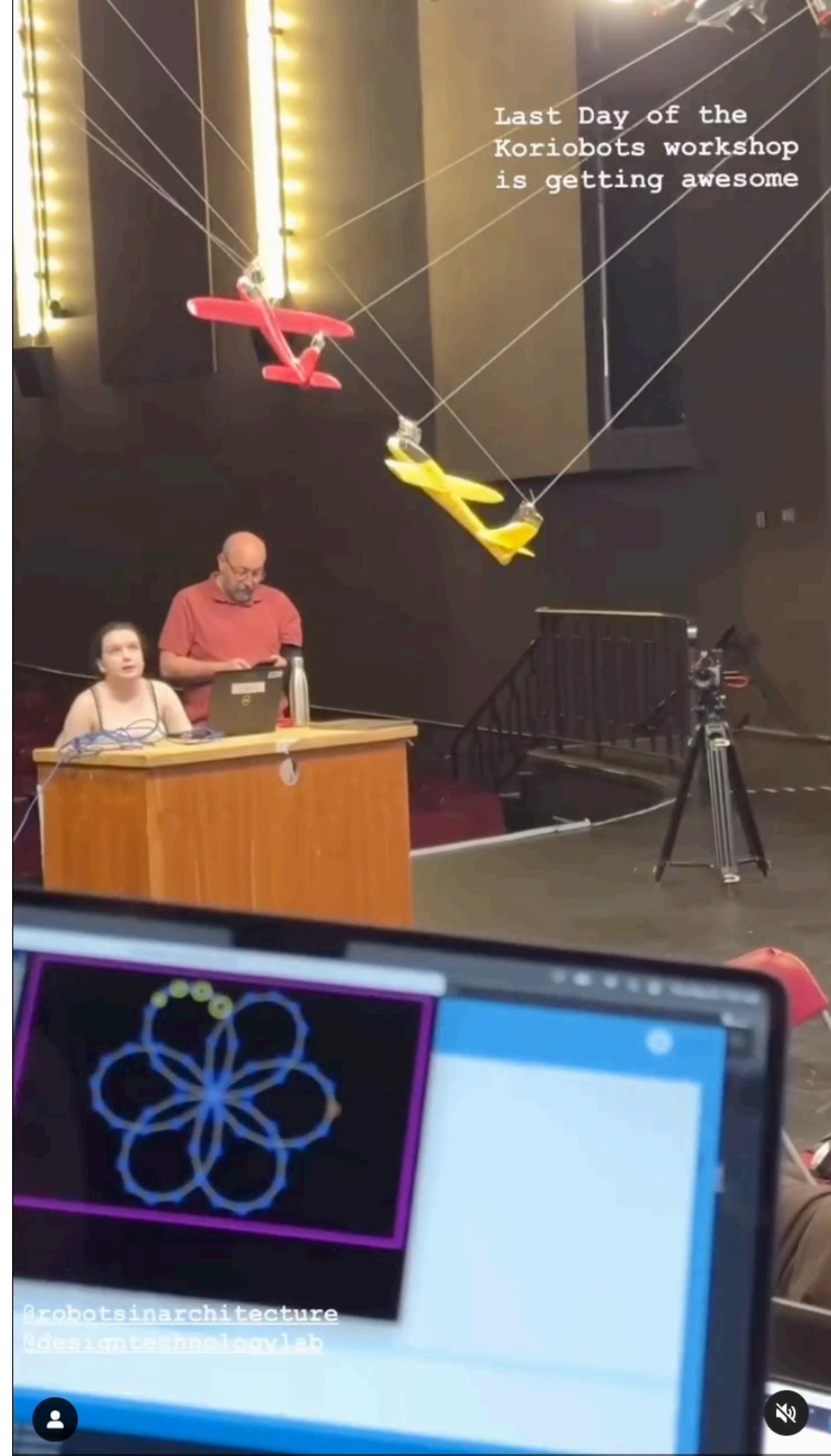
personal
robots

**Building intelligent
personified technologies that
collaborate with people to
help them learn, thrive, and
flourish.**

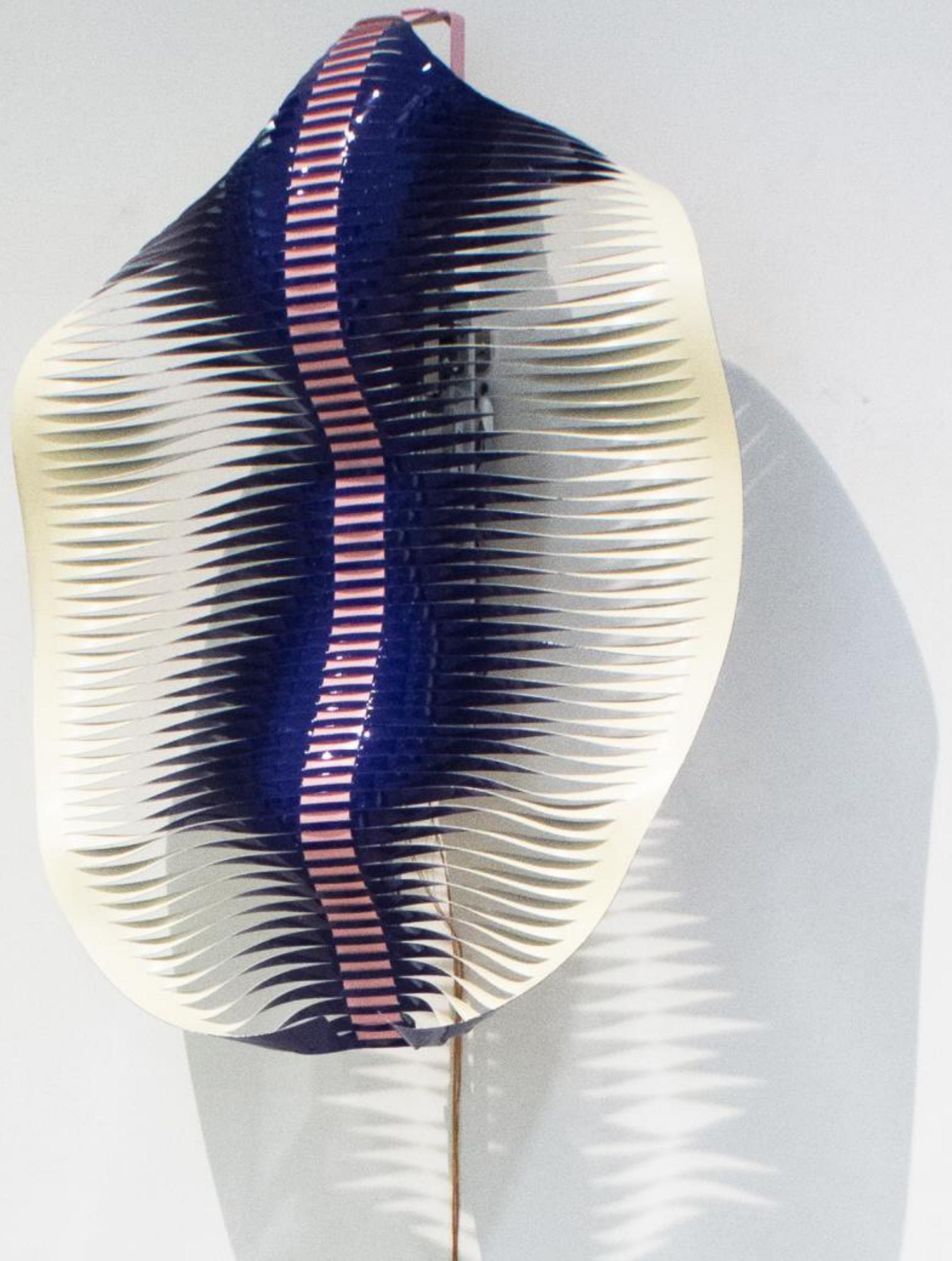
“For my work, I focus only on the in-between time or the tasklessness of it all – you can imagine that for a machine, that's going to be 95 per cent of the day, them not doing shit. My robots are distinctively obnoxious”.

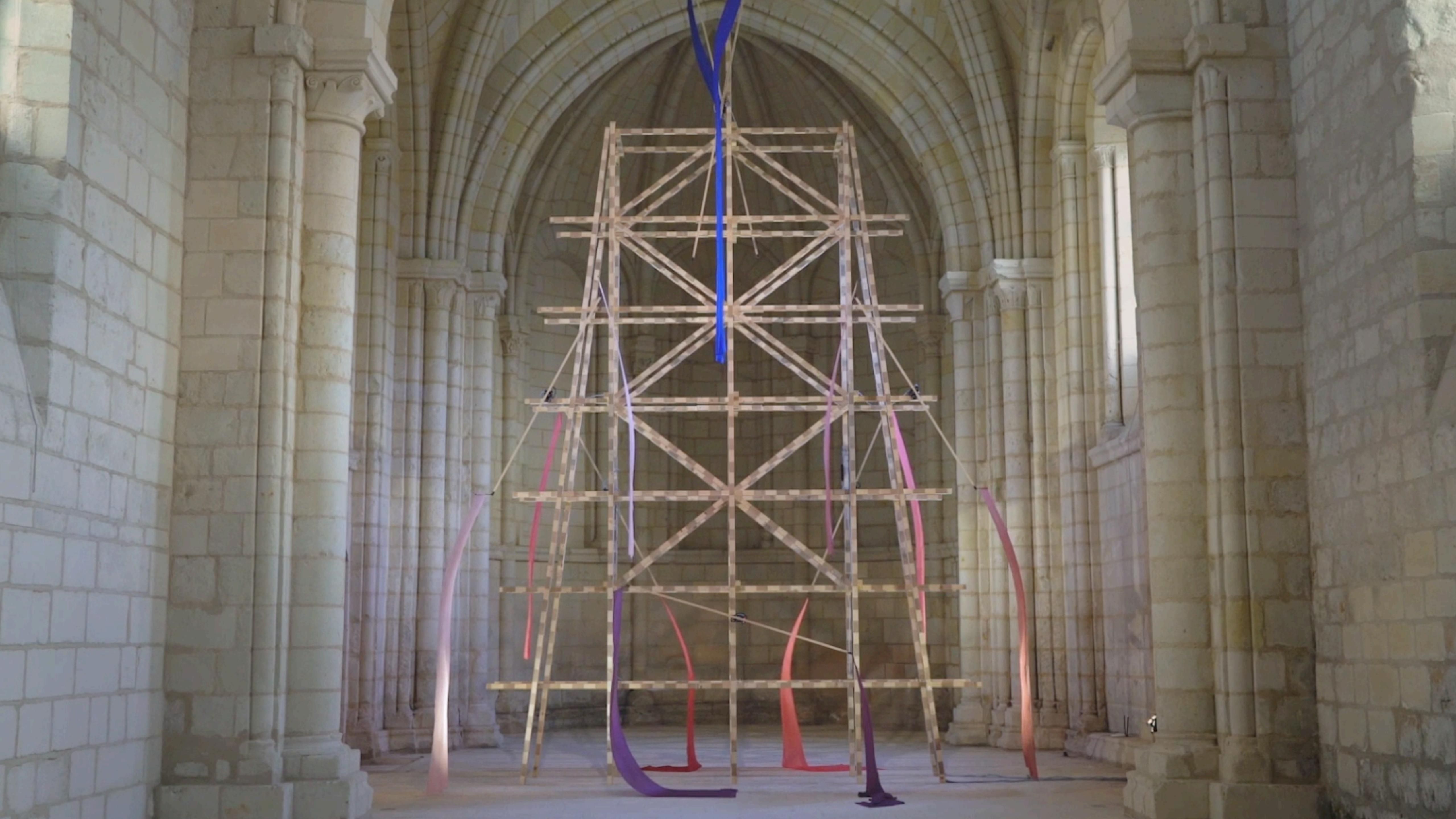
– Madeline Gannon, AtonAton





[https://
www.insta
gram.com/
madeline.g
anon/](https://www.instagram.com/madeline.gannon/)





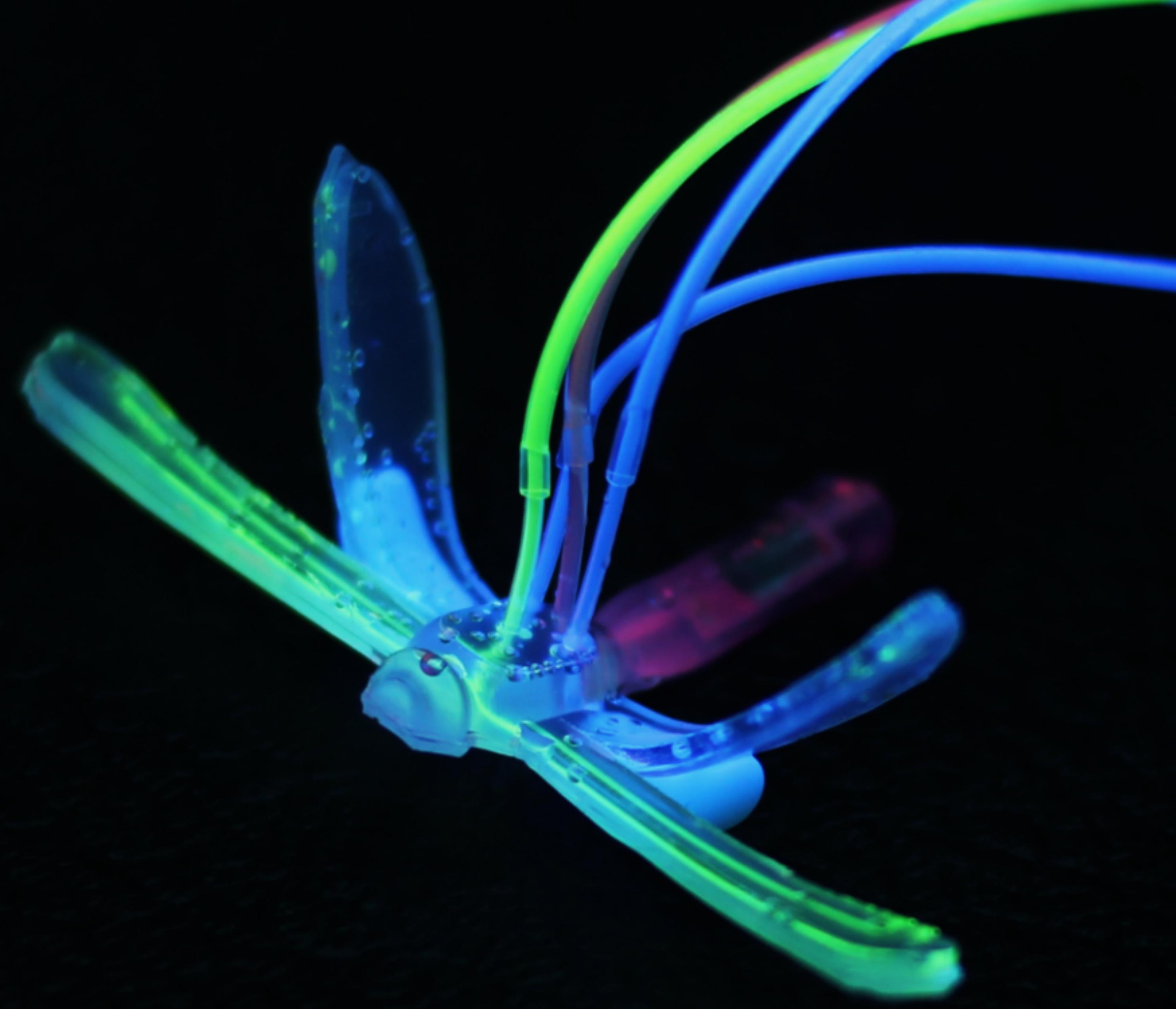








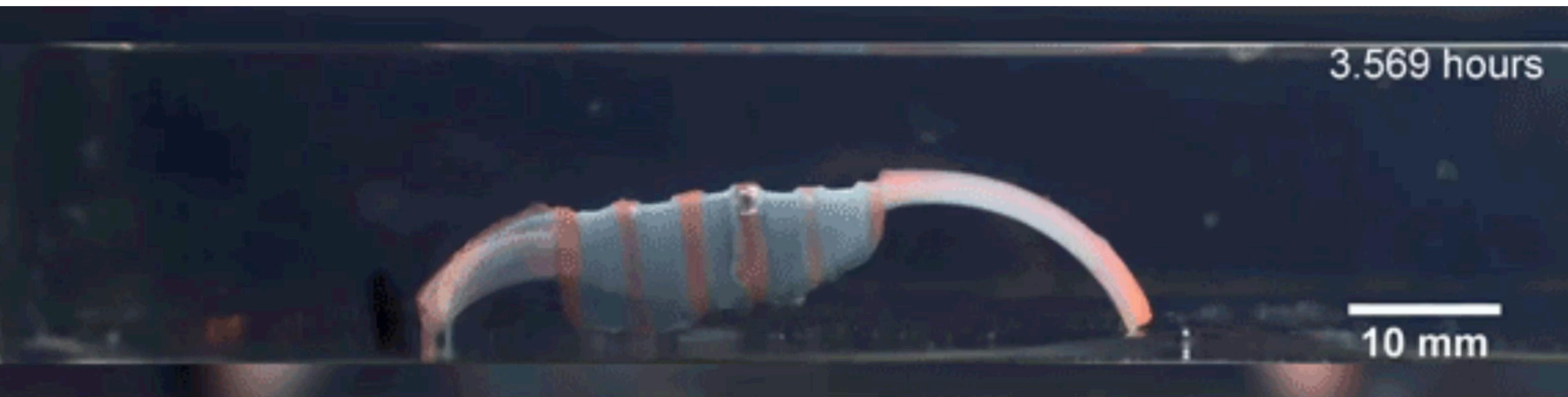






Speed: 4X

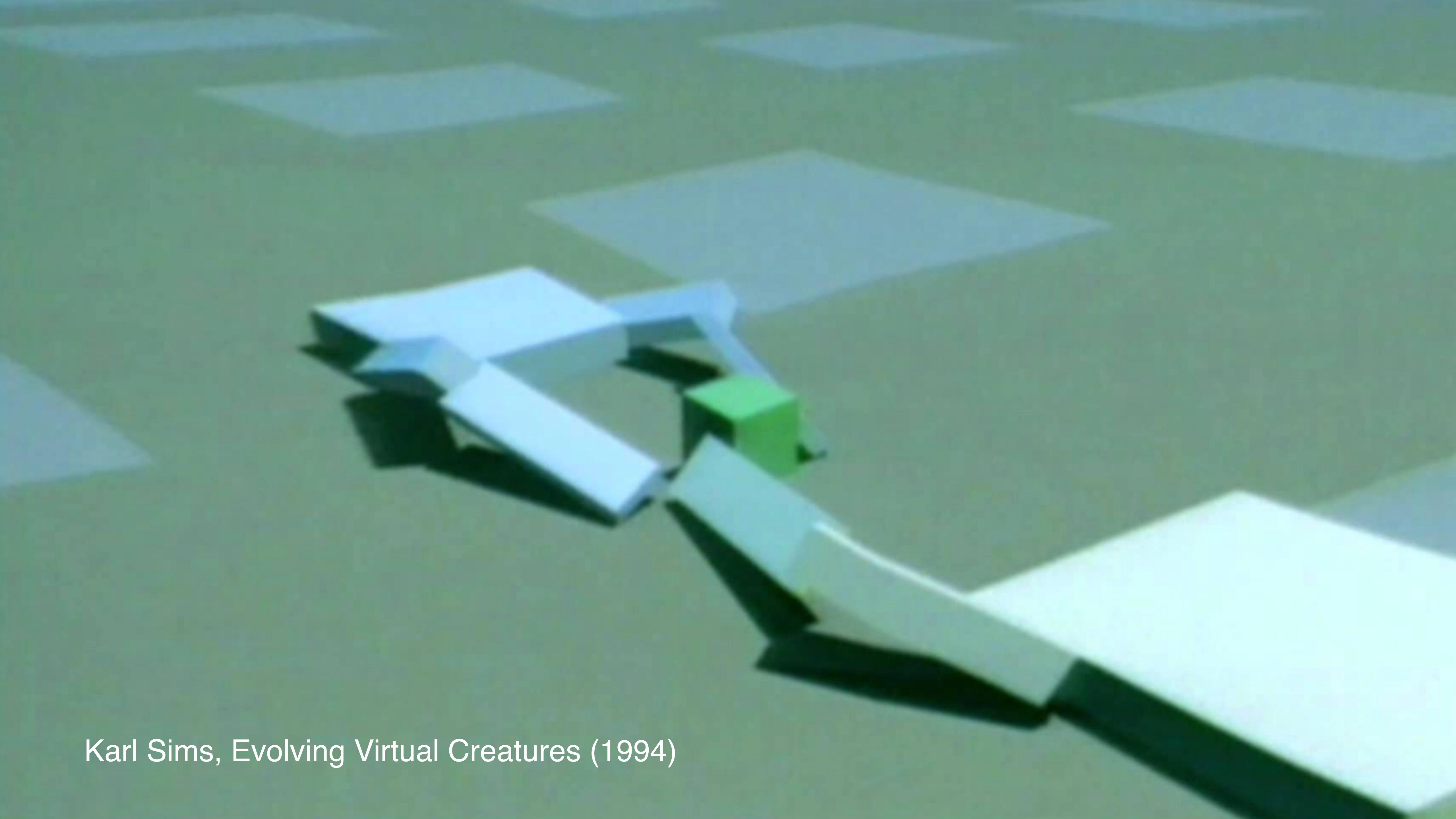
Creators at Johns Hopkins envision 'gelbots' crawling through human bodies to deliver medicine



Day time

Free swimming
at the depth of 8m

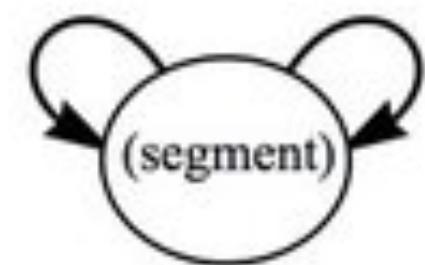




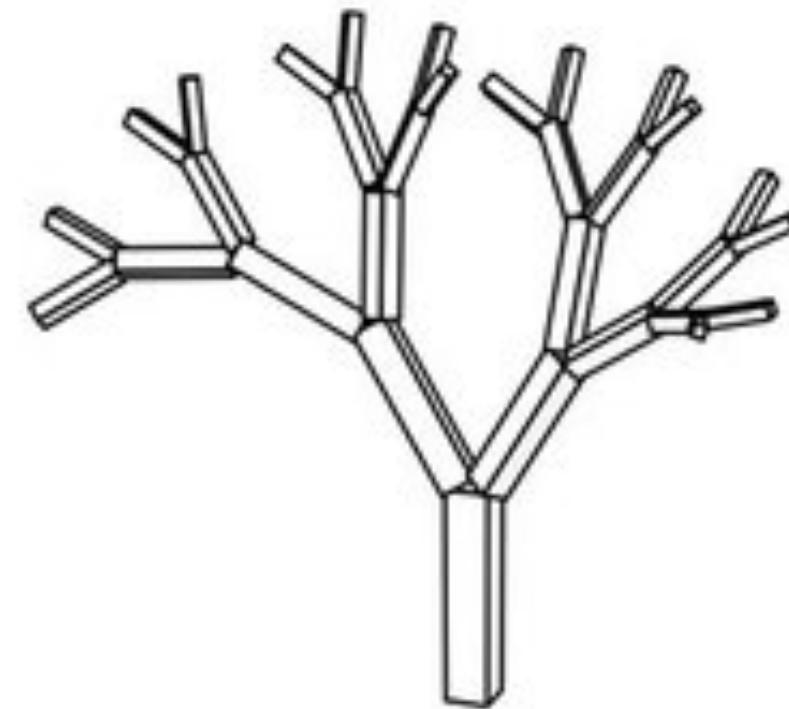
Karl Sims, Evolving Virtual Creatures (1994)



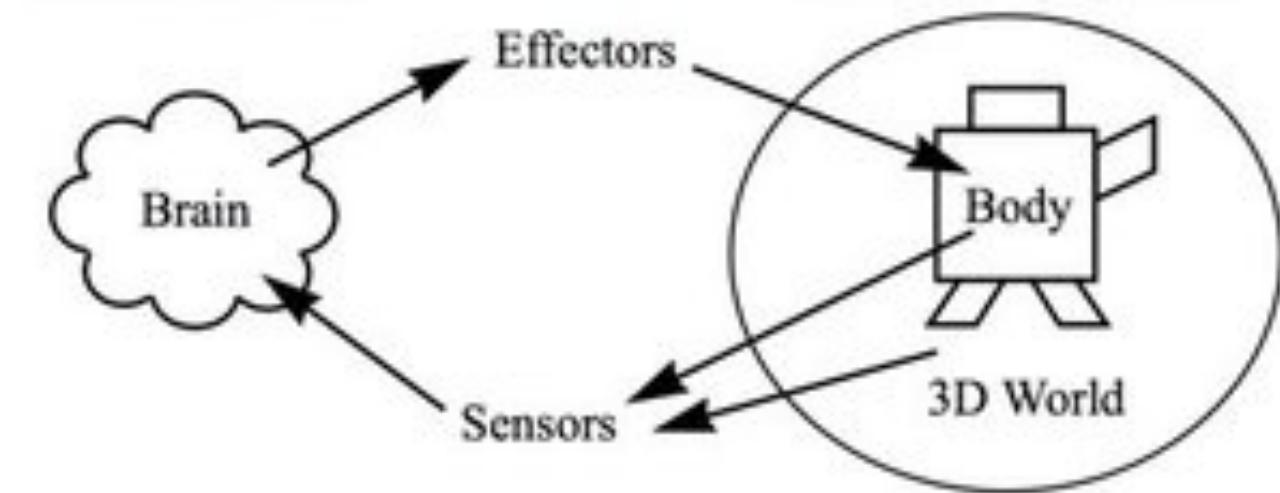
Genotype: directed graph.



Phenotype: hierarchy of 3D parts.



Control system



Physical simulation

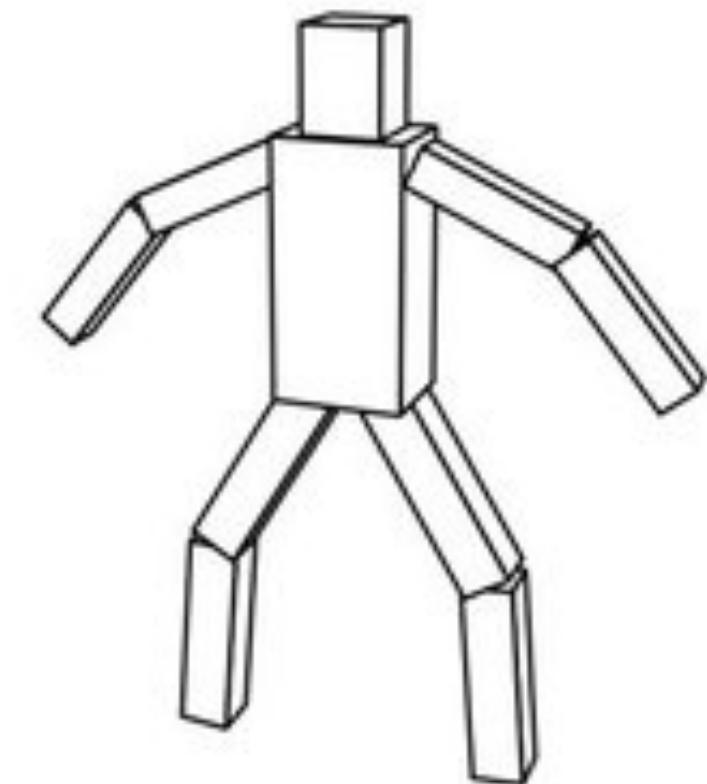
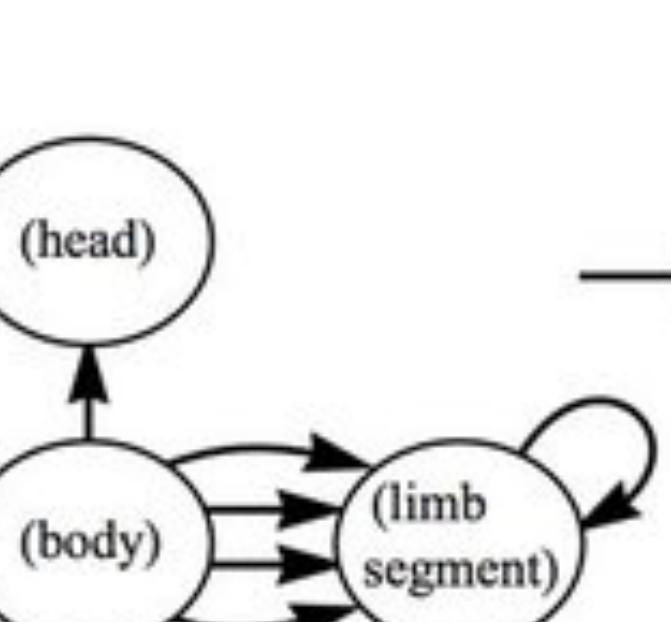
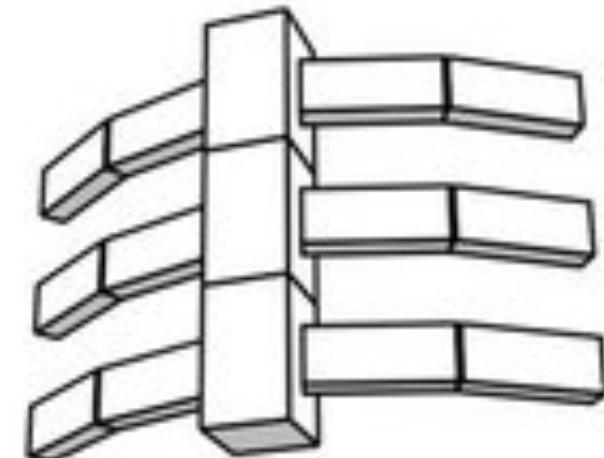
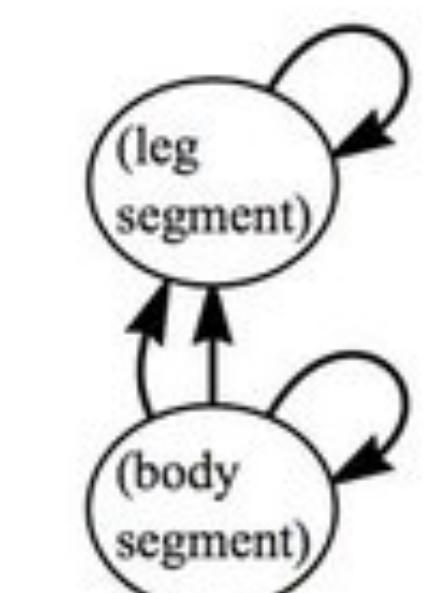
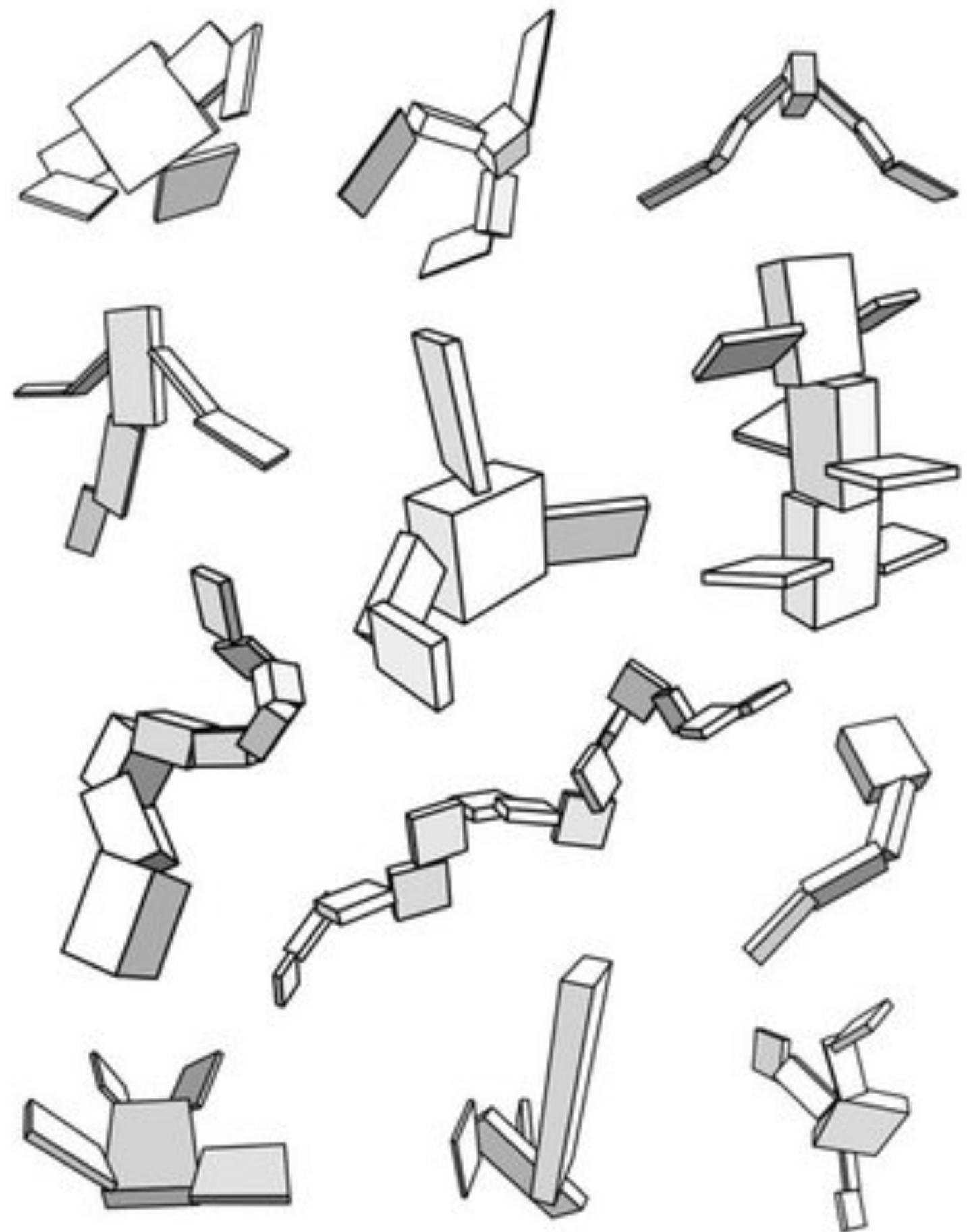
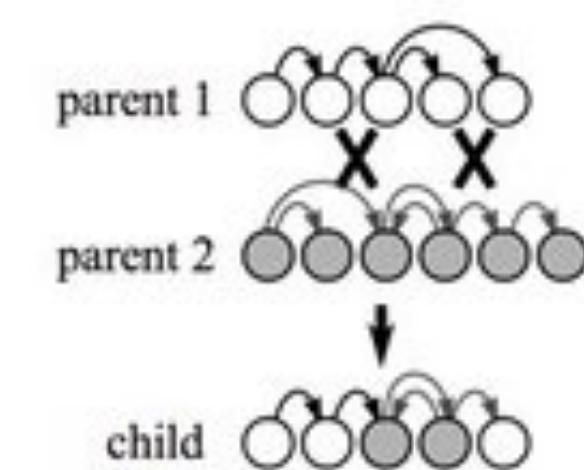


Figure 1: Designed examples of genotype graphs and corresponding creature morphologies.

Figure 2: The cycle of effects between brain, body and world.



a. Crossovers:



b. Grafting:

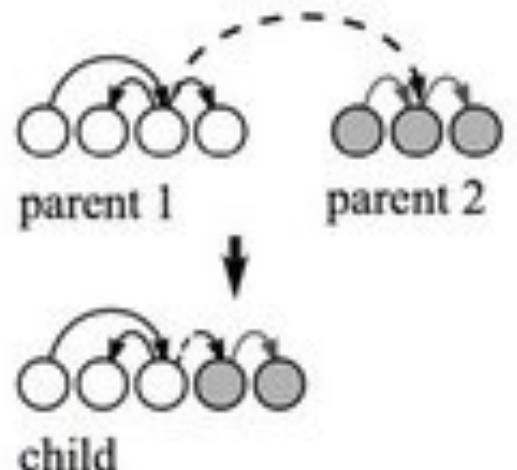


Figure 5: Two methods for mating directed graphs.

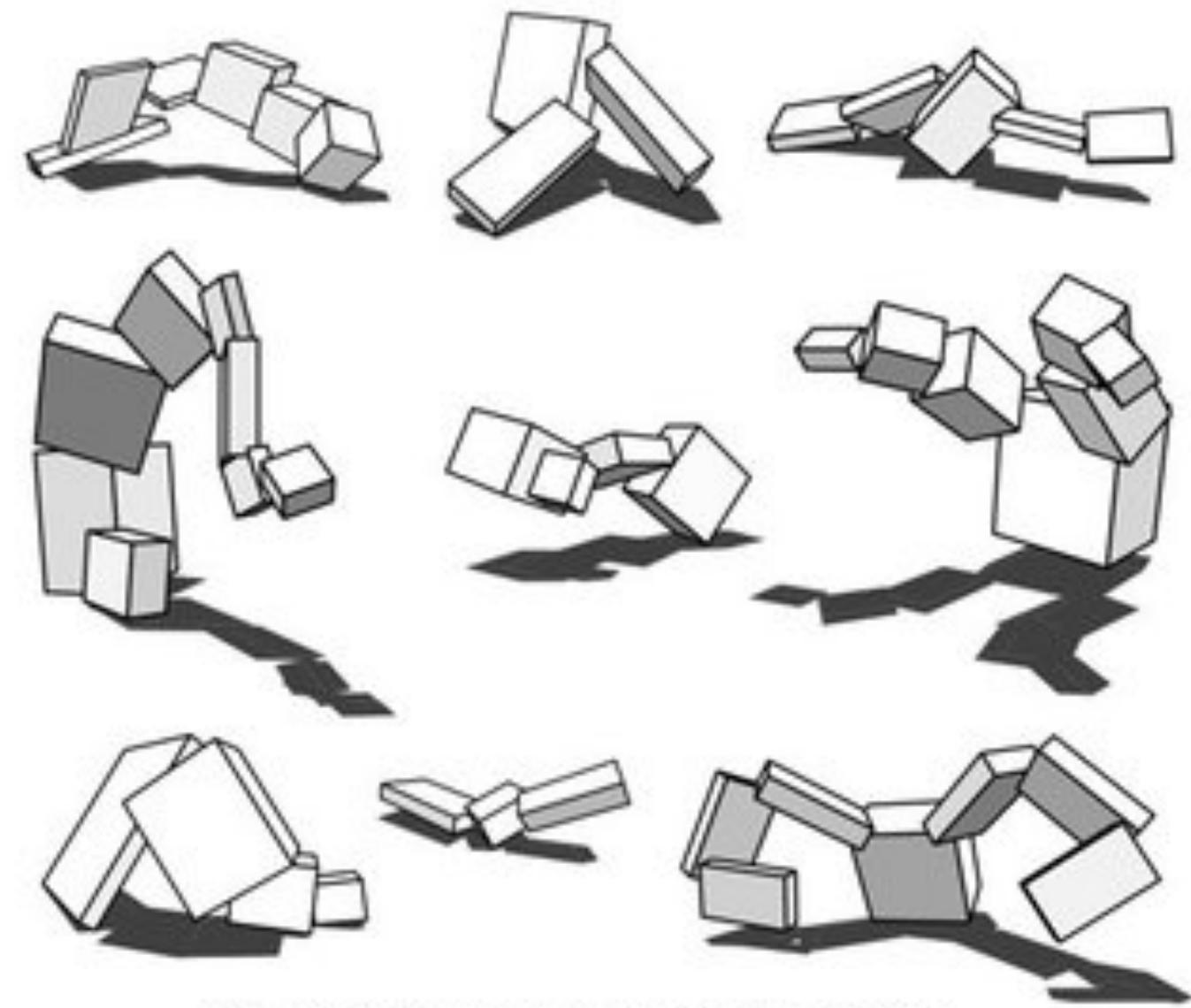


Figure 7: Creatures evolved for walking.

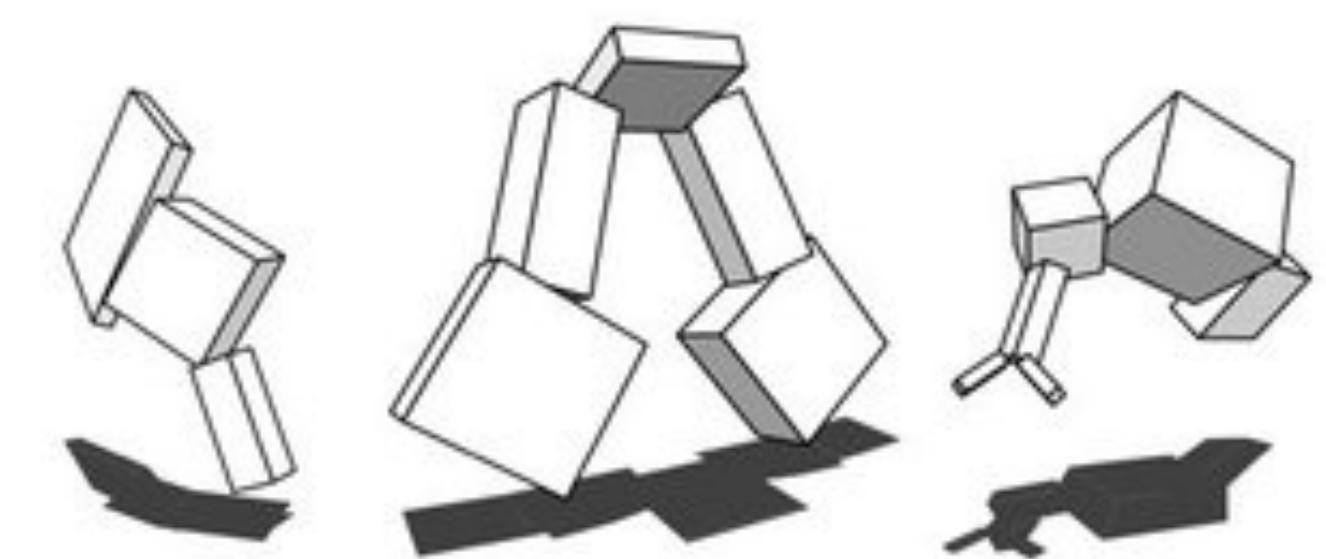
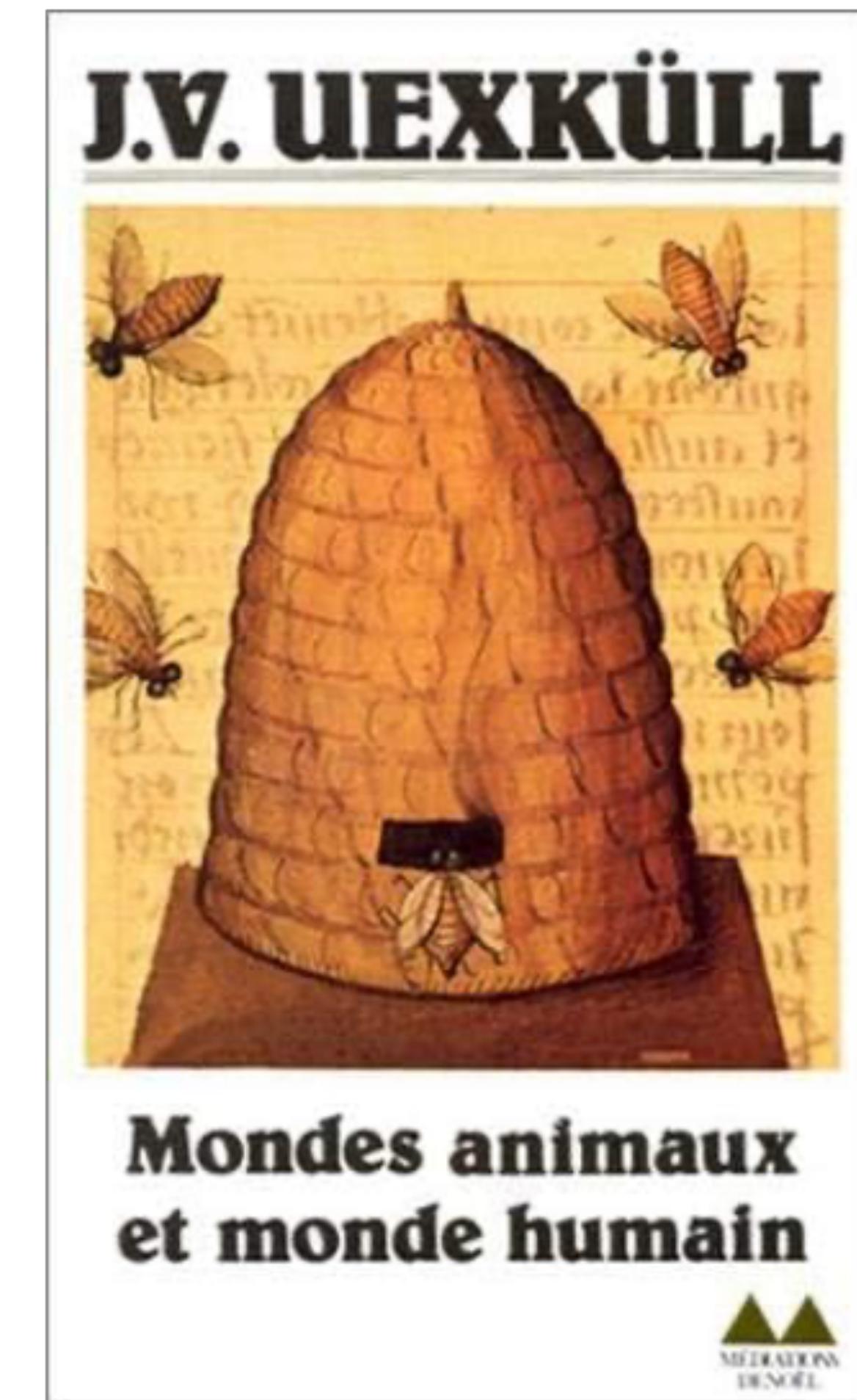
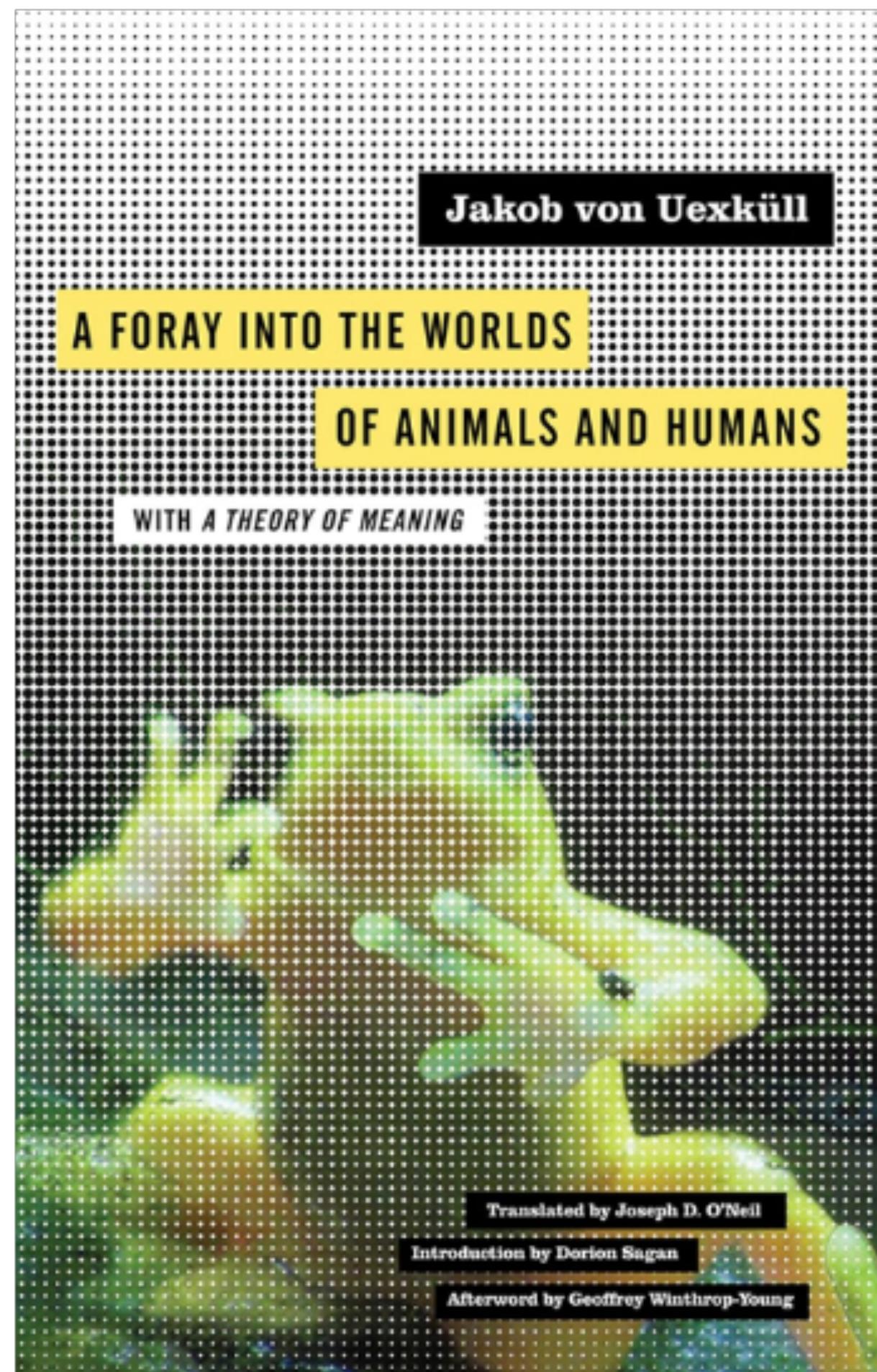
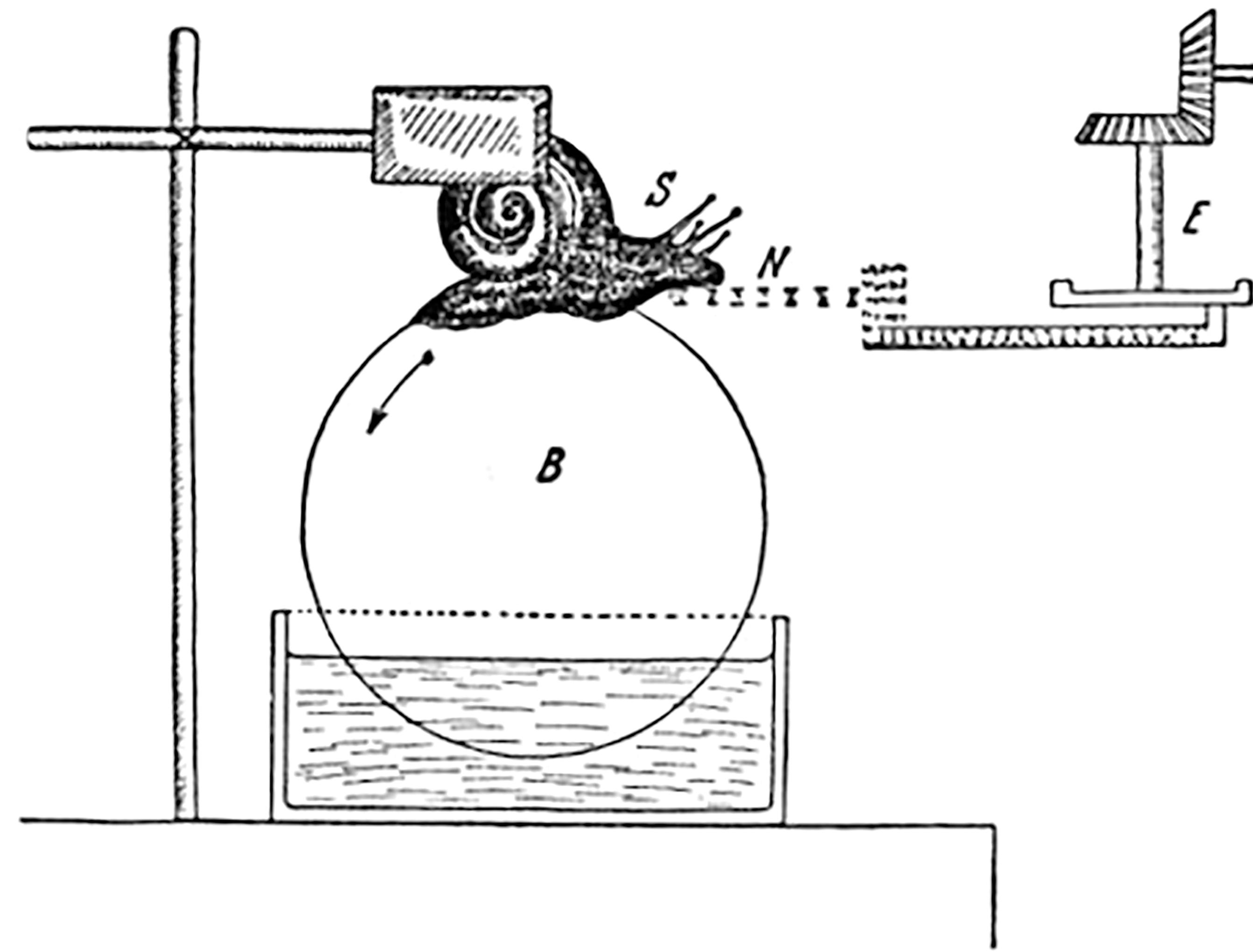


Figure 8: Creatures evolved for jumping.

Figure 6: Creatures evolved for swimming.



Jakob von Uexküll (1864-1944)

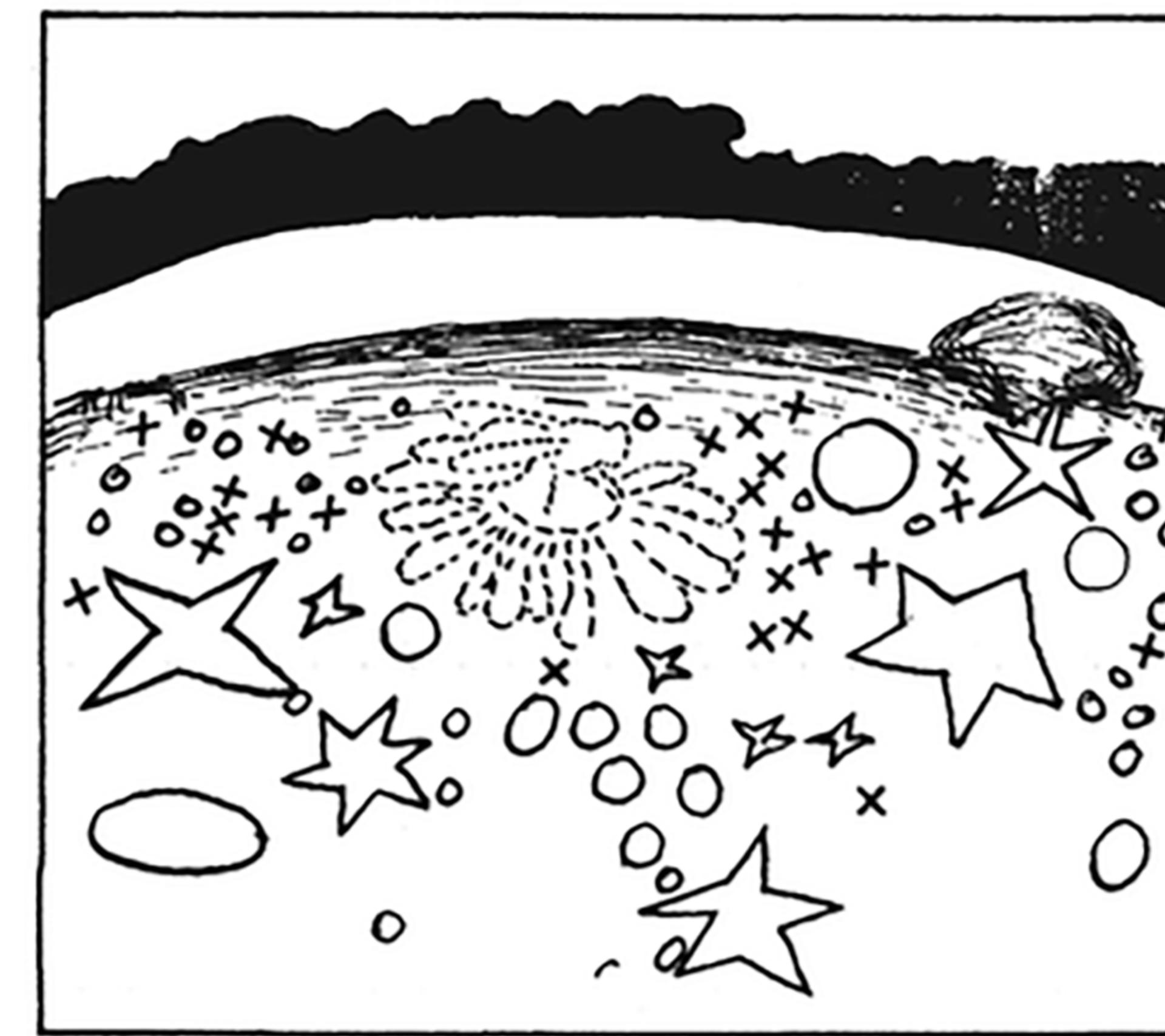


Jakob von Uexküll, *A Stroll Through the Worlds of Animals and Men* (1934)

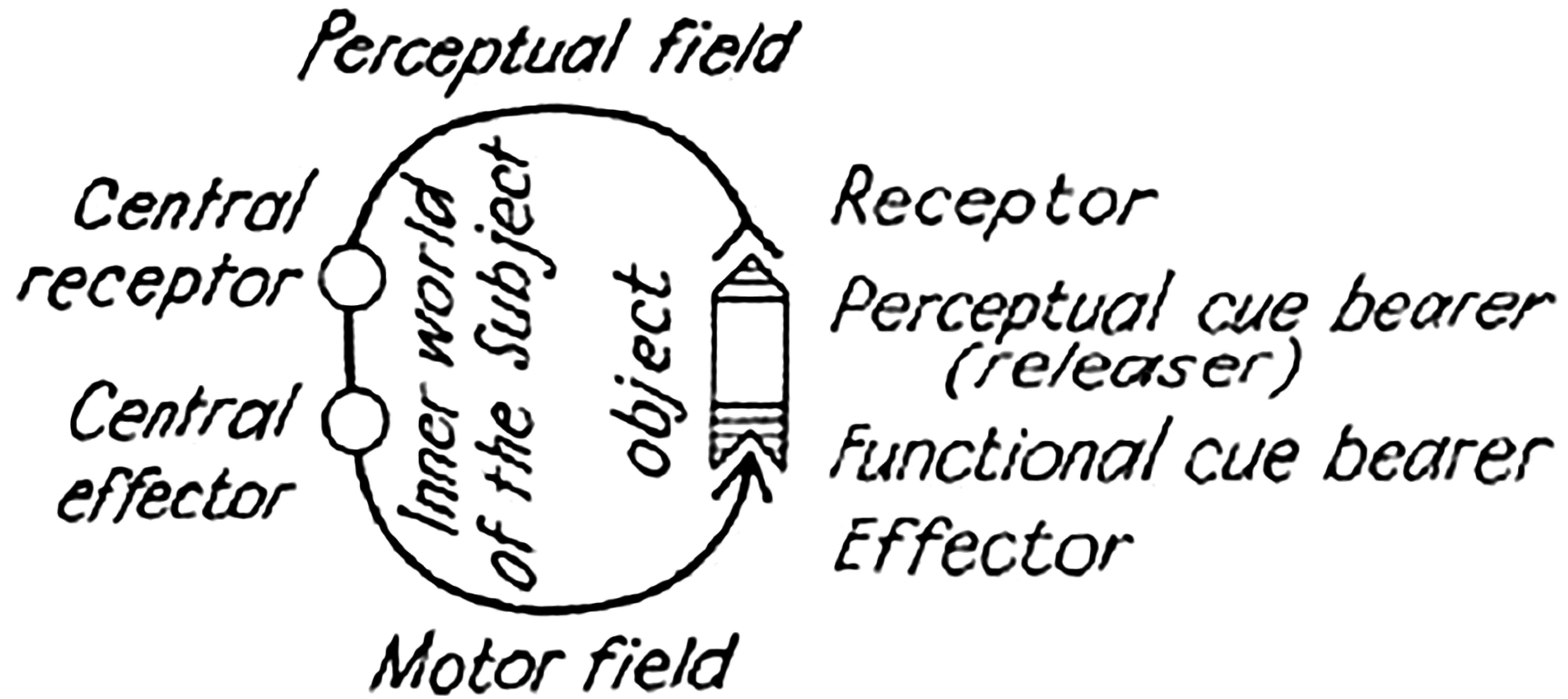
(a)



(b)



Jakob von Uexküll, A Stroll Through the Worlds of Animals and Men (1934)



Jakob von Uexküll, A Stroll Through the Worlds of Animals and Men (1934)

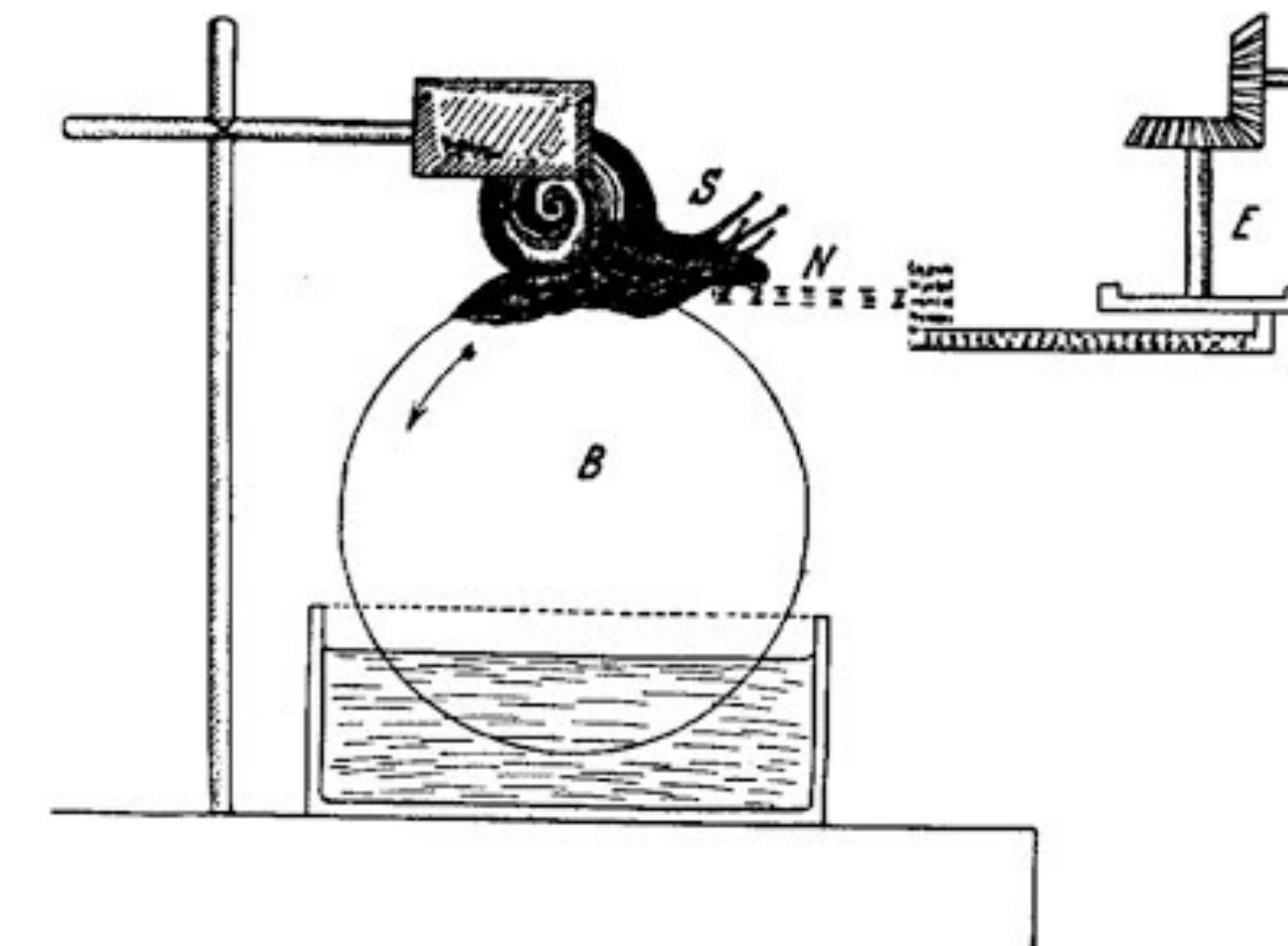
COMP 40280

Embodied and Enactive

Approaches to

Cognitive Science

Unit 4: Biosemiotics



"Poetry is what the world has to offer us – a whole series of mysteries, possible discoveries, phenomena, unexpected events, objects, things, living organisms.

There exists an almost infinite number of things on this planet that await nothing more than to be appreciated. So many things in this world simply ask to be explored, savored, and described."

– Edward Osborne Wilson, Biologist, 2020



Jasmine Molano

Moji