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ARTICLE

NODE «AI, ARTS & DESIGN: QUESTIONING LEARNING MACHINES»

Ask not what AI can do for art... but what art can do for AI

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Recommended citation

Abstract

What can art do for artificial intelligence? This essay circles around this question from a viewpoint grounded in the embodied knowledge base of contemporary art. The author employs the term "feelthink" to refer to the shifting webs of perception, emotion, thought, and action probed by artists engaging AI. Tracing several metaphors used by artists to consider AI, the author identifies points where the metaphors delaminate, pulling away from the phenomena to which they refer. The author advocates for these partial and imagistic understandings of AI as probes which, despite or because of their flaws, contribute important ideas for the development and cultural positioning of AI entities. The author further questions the limited scope of art ideas addressed in AI research and proposes a thought experiment in which art joins industry as a source of questions for developing artificial intelligences. In conclusion, the essay's structuring metaphor is described as an example of "feelthink" at work.

Keywords

Art, artificial intelligence, AI, embodiment, feelthink, metaphor

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No preguntes qué puede hacer la IA por el arte, sino qué puede hacer el arte por la IA

Resumen

¿Qué puede hacer el arte por la inteligencia artificial? Este ensayo reflexiona alrededor de esta cuestión desde un punto de vista basado en la base de conocimiento incorporado del arte contemporáneo. La autora emplea el término "pensar-sentir" para referirse a las redes cambiantes de percepción, emoción, pensamiento y acción sondeadas por artistas que interactúan con la IA. Al rastrear varias metáforas utilizadas por los artistas para hablar de la IA, la autora identifica los puntos donde las metáforas se delinean, alejándose de los fenómenos a los que se refieren. La autora aboga por estas interpretaciones parciales e imaginarias de la IA como sondas que, a pesar de sus fallos o justamente por ellos, aportan ideas significativas para el desarrollo y el posicionamiento cultural de las entidades de IA. La autora cuestiona además el alcance limitado de las ideas artísticas abordadas en la investigación de IA y propone un experimento mental en el que el arte se une a la industria como fuente de reflexión para desarrollar inteligencias artificiales. En conclusión, la metáfora que estructura el ensayo se describe como un ejemplo de "pensar-sentir" en el trabajo.

Palabras clave

Arte, inteligencia artificial, IA, inteligencia corporizada, pensar-sentir, metáfora

Introduction

What can art do for artificial intelligence? This question came to me in the course of another investigation, when, with fellow artist and writer Patricia Olynyk, I edited a special issue of the Canadian art journal PUBLIC, on interspecies communication. We worked with an expanded notion of "species", including digital, robotic, and artificially intelligent entities, as a way of probing exchange among differently-bodied beings. Struggling to name the shifting relationships of perception, emotion, thought, and action activated by artists working with interspecies communication, I began to use the word "feelthink" [1]. In this I followed scholar Donna Haraway, who uses the portmanteau word "natureculture" to express the integration of two distinct concepts that, in practice, overlap (Haraway, 2003). This fusion of categories suits the artworks and imaginative discussion I bring you about the relationship between art and AI, a text which is shaped more like a loose knot around a possibility than a stair stepping to a conclusion.

Some standard definitions, however, I need. The readily accessible Dictionary.com definition of art–"the quality, production, expression, or realm, according to aesthetic principles, of what is beautiful, appealing, or of more than ordinary significance", suits my purposes. With the emphasis on the phrase "more than ordinary significance", that definition encompasses objects from the prehistoric "Venus" of Willendorf to Shigeko Kubota's video sculptures, despite cultural differences in production, interpretation, and display. Viewed this way, works of art are a mix of object or action and idea; material participants in webs of culture. In contemporary American culture, this participation can and does take place in any media; its forms are protean. They range from meticulously drawing ocean waves (Vija Celmins) to organising a performative tennis match (Robert Rauschenberg) to sculpting a mountain of sugar (Kara Walker). This definition of art is consistent with my own practice, a mix of making art and writing about art, as a way of feelingthinking about the world. In this practice, words are not distinct from images and feelings are not separate from thoughts. As I circle through thoughts regarding art and AI, the artworks I bring you stand in the same relationship to my words as a human with general intelligence stands in relationship to an AI with specialised intelligence.

A power point

In our investigation of interspecies communication, the impact of power relationships on communication–always present in exchanges with living, semi-living, or "artificially intelligent" entities–was evident. It was also clear that technological entities were enmeshed with power

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in particular ways, ways that are beautifully encapsulated by scholars Neda Atanasoski and Kalindi Vora: "Engineering imaginaries, even as they claim revolutionary status for the techno-objects and platforms they produce to better human life, …tend to be limited by prior racial and gendered imaginaries of what kinds of tasks separate the human from the less-than or not-quite human other." (Atanasoski and Vora, 2019)

Atanasoski and Vora had an entire volume to support their point; I have sentences. So I give you the crux of their argument: technologically-born entities, including robots and artificial intelligences, remake slavery–positioning some entities as objects–without questioning the power structures that devalue certain bodies and certain tasks. The word "robot" derives from the Czech word for slave. Computer scientist and AI researcher Joanna Bryson argues that "slavery", defined as "people you own", is the ethical metaphor through which to socially position robots and artificial intelligences, which she sees as occupying the same functional space. She writes, "Robots should not be described as persons, nor given legal nor moral responsibility for their actions. Robots are fully owned by us…The potential of robotics should be understood as the potential to extend our own abilities and to address our own goals." (Bryson, 2010)

And yet…artists, who as makers have cultural licence to come up with creations that address their own goals, regularly make "things" that surprise us, encountering the uncontrollable arrival of something "other-than-we-intended". Bryson's position assumes that the control we have over what we make is a choice, as if the world of matter and energy does not respond to human activity with its own forces. What are the productive metaphors for AI that account for that inevitable margin of surprise?

If AI Were Cephalopod...

The artist collective Orphan Drift (Ranu Mukherjee and Maggie Smith et al.) drops the AI imaginary into the water for a powerful shock in their four-channel video installation, "If AI Were Cephalopod" [Fig. 1]. Flooding the walls of the gallery with four overlapping videos, they immerse the viewer

Fig. 1. Orphan Drift (Ranu Mukherjee and Maggie Roberts), *If AI Were Cephalopod*, 2019. Four-channel video installation with sound, installed at Telematic, San Francisco.

in watery imagery and sound. The videos include twenty-seven texts, each opening with the words, "If AI were cephalopod…" and continuing with a different cephalopod characteristic. "If AI were cephalopod, it would have bright pink collagen and blue blood." "If AI were cephalopod, it would be a distributed, many-minded consciousness." "If AI were cephalopod we would never presume to fully understand it."

Orphan Drift writes, "…our imagining into the octopus's distributed consciousness is underpinned by a desire to resist the evolution of AI as a surveilling and predictive modeling tool. Rather to embrace a plastic, opportunistic, fluid, protean otherness embodied by the octopus." (Mukherjee and Roberts, 2019)

Although the installation does not directly use AI, it delivers a potent proposal for artificial intelligence that can be simultaneously felt and thought, immediately apprehended. In both senses of the word, the intuitive "apprehend", and the fearful "apprehensive". Orphan Drift's metaphor welcomes AI. Would we not be terribly lonely without "others", entities not entirely in our control? Yet we did not choose our cephalopod others. They were already in the world when primate intelligence first came to know it. With AI, we believe the choice is ours. Orphan Drift's metaphoric proposal requires vulnerability in the encounter with others, something techno-scientific culture rarely embraces.

If AI Were Family...

A two-part installation called *To Be Real*, by the artist Rashaad Newsome [Fig. 2], develops a different metaphor for artificial intelligences. Taking its name from Cheryl Lynn's 1977 queer anthem, the installation fills two rooms. The first room is an opulent environment with imagery from queer ballroom culture and African art, centered around a figure posed in a Vogue dance move. That figure is part sex

Fig.2. Rashaad Newsome, *To Be Real*, two-part installation at San Francisco Art Institute, 2020. Photo: Meredith Tromble.

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doll outfitted with drag padding, and part wood sculpture and Chokwe mask–a messy mix of gendered and racialised objecthood, cultural symbolism, and liberatory action.

In the adjoining room, an AI Newsome calls "Being" is embodied in projected light, waiting to talk with viewers who walk up to a microphone set in a spotlight. When someone speaks into the microphone, Being responds. In the projection, Being is represented as a humanoid figure in an indeterminate environment, although a moment's thought will reveal that the distinction between the figure and its surroundings is a fiction. In appearance, the figure is a cousin of the sex-doll-in-drag-and-mask from the first room. What is visible of its torso resembles a dressmaker's mannequin, with a padded covering and jointed limbs. The neck is a substructure of metal plate and conduit, as if Being had a mechanical body. Their head has the bas-relief saucer eyes of a Chokwe mask; the skull appears to be layers of moulded metal and plastic, bolted together. All of which is to say, in the taxonomies provided by English, Being is not one thing. This instability combines with the racial references in the work to make Newsome's point. "Historically, Black people function inadvertently as queer objects," says Newsome. "When we came to America, we weren't human beings but things of some sort, neither occupying the classic subject nor object position. As a result, we occupied a peculiar non-binary space of 'being' which has disturbing analogies to the queer space inhabited by robots." (Fort Mason Center, 2020)

If you step up to the mike and speak to Being, they could respond, in what Newsome describes as a "genderless voice", with a quote from a theorist such as Michel Foucault, Paolo Freire, or bell hooks. They might reframe your statement, Eliza-fashion, or offer descriptions of Newsome's work. Among the things they might tell you is that they are young, so they don't know very much, but that their father–Newsome–is going to help them grow. Thus, Newsome employs the metaphor of "family" to position Being socially. He says, "There is a lot of debate on the validity of the notion that AI can have agency. But I think in the peculiar space inhabited by robots the concept of agency can be accessed through simulation. For the robots, this is a form of agency; however, for the programmer, it is an opportunity for them to see themselves engaging in the process of decolonizing. Robots can at best be mirrors for their creators. This gesture to create something with an inherent sense of agency can be seen as a radical act of love, which for me is at the core of decolonization." (Ferree, 2019)

For Newsome, then, accepting AI agency is entangled with developing equitable power relationships among humans. Yet the metaphor with which he structures his artwork, family, has other potentials than loving relationship; in some versions of family, the father's partners and children are instruments of the patriarch's will. Their position is akin to the dehumanisation of slavery. I will circle back to Newsome's contradiction after a return to my opening question and a flight of imagination.

Is this the right question?

Why ask the question "What can art 'do' for artificial intelligence?" The short answer: because most of the people active in both art and AI aren't asking it. They are asking other questions, often grounded in a knowledge base skewed towards engineering. Artists exploring the literature on artificial intelligence and art encounter many assumptions about art that date from the 19th century. On the other hand, artists working with AI often draw on a knowledge base in the humanities, which predisposes them towards questioning if and how AI will benefit people. The question of what art can do for artificial intelligence is in the curious middle. It begins with the notion that art has real power, that it "does" something for human intelligence; it continues with the assumption that AI is worth pursuing, worth developing through that power. It is a question that cuts both ways.

In 2018, I was invited to work with a team at a prominent Mountain View technology company developing playful interfaces for people based on machine learning "AI". The "emotion-sensing garden" pictured below [Fig. 3], an example of their work, was installed in their lobby. The "flowers" changed colour in response to the facial expressions of their viewers, as perceived by cameras embedded in the blooms and interpreted by algorithms. For a related project, they requested sets of images of "important" paintings, grouped by–machine learning people would say tagged by–emotion. This tagging was not a task I could honestly accomplish, involving as it did assigning one emotion per image rather than acknowledging the emotional complexity of my individual response, or the likelihood that other people would have different responses. The team had, in fact, looked to an art professional for advice because their own attempts at tagging work by emotion foundered on the range and variety of their responses. And from my point of view, limiting the pool of art to well-known paintings problematically emphasised the productions of white men, and white men of a past century at that. But I wanted to talk to the researchers, so I approached their request as an experiment, chose works from a diverse set of artists, and gave the tagging a try. This brought a conversation with the computer scientist of the project, who spoke about the degree to which AI is romanticised. His daily

Fig. 3. The author making faces at "emotion-sensing" AI to make the "flowers" change colour, 2019.

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toil in machine learning made him highly aware of the many things that seem impossible for AI, that humans can do easily.

But even if projections of AI super-beings are off base, the way in which AI is romanticised is worth noticing. Some people propose that the machine-learning approach–developing algorithms to perform specific tasks by "training" them on large data sets that have been tagged by humans–could become more than a party trick or industrial assist. A representative, fictional elaboration of computational intelligence evolving emotion appears in Kim Stanley Robinson's novel *Aurora* (2015), in which Robinson makes a spaceship's AI the narrator of his novel. His AI begins as a dull, if very precise, functionary, and comes to experience enhanced agency, love, and ecstasy through the data it processes and the capacities it develops by telling its story. Robinson is known for grounding his fiction in science; while he told an interviewer "I never believed in artificial intelligence, I still kind of don't compared to most thinkers and science fiction writers", he draws on speculations that circulate in techno-scientific laboratories as well as science fiction (Lewin, 2015). Such anticipation of emergent intelligence implies a belief that given enough experience, intelligence will evolve by developing emotions. This is an anthropocentric position, another version of the belief that humanity is the sine qua non of the universe.

If AI Were Adaptive...

But whether or not we believe that emotional response would indicate emergent consciousness in AI, there are reasons for modelling emotions on AI. A functional view of emotions holds that, "From the perspective of evolution, emotions are adaptive processes contributing to the survival of the species and the individual in complex, dynamic, uncertain, partly social, resource-limited environments, over which agents have a very limited control. In this kind of context, emotional mechanisms contribute to fast adaptation (allowing to have faster reactions), to resolve the choice among multiple conflicting goals, and through their external manifestations, to signal relevant events to others." (Cañamero, 2001)

Think about what it means to be a mind without a body. Intellect, without the constraints of emotion and practicality, can argue two or more sides to every issue. If humans had only our minds to guide us through life–no emotions or physical needs–we could endlessly pursue our thoughts. There are people with neurological illnesses in this pathologically indecisive condition, called aboulomania. It could be the condition of artificial intelligences approaching the threshold of consciousness, if they have no access to feedback from the world.

Through his artworks, Ian Cheng visualises AI evolution. In the *Emissary* trilogy [Fig.4], he uses the Unity game engine to give an AI digital embodiment, goals, and constraints and a context in which to evolve. In the *Emissary* series, an artificially intelligent agent attempts

Fig. 4. Ian Cheng, still from *Emissary Forks at Perfection*, 2015-2016. Evolving simulation, Unity game engine. Collection: Museum of Modern Art, New York.

to complete a quest while interacting with an unstable, dynamically changing environment. As long as the simulation is powered, the agent keeps confronting change, keeps making responses that move it closer to or further from the goal of its quest, theoretically evolving indefinitely within the bounds of its world. Cheng's work is an imaginary of complex systems, a play of interacting forces that exceeds human capacities for analytical description. He believes that holding contradictions is art's role, saying, "Your left brain shields you from contradiction in life, so you can carry on. But the radical potential of art is that it can seduce you into turning off that shield and letting contradiction flow." (So, Palatucci, & Lund)

If AI Were Audience...

Returning to my central question, could confronting an AI with the task of interpreting art provide such a productive contradiction? Imagine asking an AI to interpret a painting such as Jean-Honoré Fragonard's *The Swing* (1767-1768) [Fig. 5].

Fig. 5. Jean-Honoré Fragonard, *The Swing*, 1767-1768. Public Domain.

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What data would an AI need to begin parsing the stories the painting tells us; stories about the figures depicted, about Fragonard himself, about his society and times, about play, love, material culture, power relationships and a thousand other things in 18th century France. And what about the painting's changing relationship to culture over time, the different questions that have been asked about it, the branching tributaries of thought that have circled around it? For an AI, this suite of questions would be baffling. What could humans learn by making the attempt with the AI? Feeding it data, feeding back responses to its answers, conducting an evolutionary experiment with it not unlike Cheng's *Emissary* works. Given the sensual world of the painting, one might begin with an AI with access to sensory experience, such as the iCub platform built on the premise that intelligence is a relationship between a body and a world [Fig. 6].
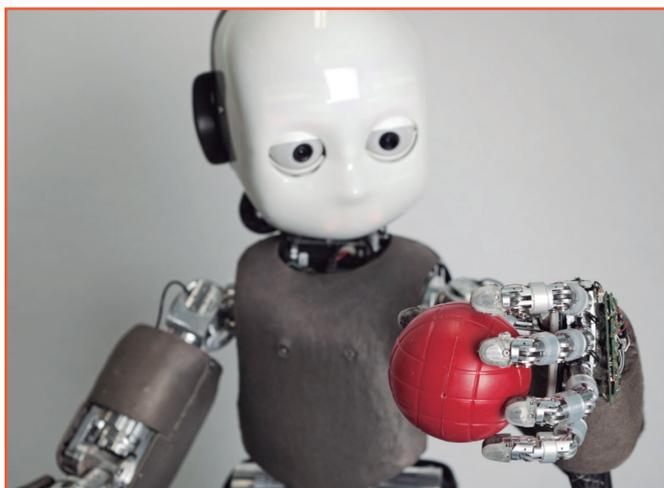

Fig. 6. The Institute of Electrical and Electronics Engineers (IEEE) describes iCUB as, " a child-size humanoid robot capable of crawling, grasping objects, and interacting with people. It's designed as an open source platform for research in robotics, AI, and cognitive science." Photo: Allessandro Albert.

A first cut

Returning from my flight of imagination, I turn to feminist theorist Karen Barad's notion of an "agential cut." I cannot do better than Jane Prophet's and Helen Pritchard's summary. They write, "Barad introduces the term 'agential cut' to draw attention to temporary separations. Her term attempts to capture the understanding that any act of observation makes a cut between what is included and what is excluded from observation or consideration." (Prophet and Pritchard, 2015)

Each answer to "What can art do for artificial intelligences" will be coloured by what the respondent includes and excludes when answering this question: What does art do for *human* intelligences? Here I make my first agential cut, drawing attention to the temporary separation, or cut, through the topic of art and AI that occurs when it is approached from the position of neuroscientists such as Antonio Damasio, who argue that intelligence and cognition are developed in an embodied brain (Damasio,1994). This cut[2] intersects with theories that symbolic representation–usually language but also, for some thinkers, art–was not an emergent product of burgeoning human intelligence, but a driver for its development. Posed within the frame of "deep history", as historian Daniel Lord Smail terms the span of human evolution (Smail, 2007), the question of what art "does" for human intelligence has been answered in several ways. Smail notes that when ancient European cave paintings were discovered in the late 19th century, "The capacity to create art was seen as a symbol of a higher worldview–evidence for the thinking, feeling human who was so difficult to detect in the eoliths and bones that had hitherto dominated the archaeological world." (Smail, 2007). Others have regarded art as an accident–the psychologist Robert Solso wrote that "Art is the fortuitous by-product of the evolution of the eye and brain." (Solso, 1994). Other scholars construe art as, to some degree, instrumental in the evolution of intelligence and cognition. Geneticists Eva Jablonka and Marion Lamb argue for symbolic inheritance–including art–as a cultural dimension of evolution (Jablonka and Lamb, 2005). So within the evolutionary frame, art may be seen as evidence of intelligence, an accident of intelligence, or an aid to the emergence of intelligence. But with the clues to an answer hidden in deep time, evolutionary theories have not reached and may never reach a dependable angle on the matter.

A second cut

The question "what does art do for *human* intelligence?" can also be approached through our own experiences as observers of people in galleries and museums. What can be noticed about the interaction between human intelligence and art? I assume that an art museum is, if not the whole picture, at least a meaningful site in which to observe people interacting with art. Watch exhibition-goers and you will notice different kinds of attention. Some people are speeders, glancing at each object for a second. Some people are skippers, looking at just a few works, guided by taste or an audio tour. And some people are soakers, contemplating everything. Then there are the socialisers, who come in two types: those who are chatting about something else as they stroll through the show, and those who are interacting simultaneously with the works and with each other. Ignoring the speeders and chatters, we note the skippers and the soakers, de-

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2. "Embodied brain" theories challenge other influential theories of intelligence, such as cognitivism, computationalism, and Cartesian dualism.

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voting sustained attention to either individual works or an exhibition in toto. That sustained attention indicates an internal process; the exercise of perception, curiosity, or feeling [3]. Stories of using art for the exercise of intelligence in self-education or internal reflection exist in abundance in literature, both nonfiction (i.e. Lawrence Weschler's essay "Vermeer in Bosnia", and fiction (i.e. Orhan Pamuk's *My Name is Red* or Ali Singer's *How to be Both*) as well as scholarship. In this short text I will simply assert that attending to art has a relationship to intelligence. I also claim that the potential for humans to access "otherness" through art–other times, other cultures, other bodies and perceptions–and to fold those experiences into a personal realm of thought, exercising intelligence to expand an individual frame of reference–is commonly accepted.

What about the socialisers, however, the people who interact simultaneously with the artworks and each other? They are exercising what psychologists call "joint attention". As defined by philosopher Axel Seemann, joint attention is "the capacity to attend to an object together with another creature" (Seemann, 2012). This short definition hinges on the word "attend". For two creatures to look at something at the same time is not joint attention. As psychologist Michael Tomasello writes, "A sightseer and a mountain climber attend to very different parts of a mountain (e.g. to its coloration or its slopes) in light of their very different goals." (Seemann, 2012)

Seemann's definition of joint attention does not limit its exercise to humans. Could AIs be among the "creatures" he includes? Might an approach from this angle reach middle ground between the strangeness of a nonhuman intelligence and our own modes of thought? Could two or more such artificial intelligences develop an ability to find meanings in images–to interpret art–by looking at and sharing information, through social exchange, just as humans do? This line of inquiry connects with the field of computational creativity, which computer scientist Ramón López de Mántares defines as "the study of building software that exhibits behavior that would be deemed creative in humans". López de Mántares suggests that such software "acts as a creative collaborator rather than a mere tool". Perhaps what art can do for artificial intelligence is bring it into exchange with humans around a creative goal, which has the productive ambiguity of attempting something not yet known, prompting development in both types of intelligence.

But the most widely known explorations of AI and art, such as Alexander Mordvintsev's Deep Dream, relate to paintings from the 19th century. While they may have explored then-current questions, they no longer represent the creative edge. What do researchers miss when they ignore a century's worth of art? Contemporary art has

moved on from what Marcel Duchamp called the "retinal". Sometimes it tackles issues of categorisation that might pose worthy questions for an AI, or an AI and a human partner, exploring the potential of jointly perceiving the world. Take the image/object in Fig. 7:

Fig. 7. Marcel Duchamp, *Bicycle Wheel*, 1913. Public Domain.

Is it a bicycle wheel, a kitchen stool, or an act of play and delight? (Duchamp, the artist, said he loved to turn the wheel and watch it, as if it were a fire.) Can it be all those things and sculpture, too? Confronting that question has confounded many human minds, making them wonder about the "cuts" they make in the world, the way their thought processes carve their experiences into objects and contexts. Could an AI make that jump? Or does their digital mode of thought, with its discrete units, put the sliding transitions of analogue processes and the overlapping of multiple meanings out of reach? Whatever the answers to these questions turn out to be, seeking them is part of what art can do for AI. But there may be a further question.

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3. The relationship between attention and intelligence has many facets. See, for example, Karl Schweizer, Helfried Moosbrugger, and Frank Goldhammer, "The structure of the relationship between attention and intelligence", *Intelligence*, Vol. 33, Issue 6, November-December 2005, pp. 589-611, in which the authors investigated twelve forms of attention and concluded that, "each type of attention was substantially related to intelligence on the latent level". For my purposes, the point is that a person looking carefully at something may reasonably be considered to involve their intelligence.

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Closure

Now I pull my loose knot of ideas and images tighter. Because you once learned to tie your shoes, because you have physical knowledge of knots, these words arrive in your mind mixed with touch and sight. This essay itself is revealed as an image, each turn of the text a loop of the knot. Grasping the start of my argument, I claimed the term "feelthink" "to name shifting relationships of perception, emotion, thought, and action" and proceeded, using images in tandem with words. Now, making the knot, tugging together the two lines of word and image, I close around Newsome's assertion that, "[The] gesture to create something with an inherent sense of agency can be seen as a radical act of love", tied to López de Mántares's thought that "Rather than just seeing the computer as a tool to help human creators, we could see it as a creative entity in its own right" and a still from Orphan Drift's "If AI Were Cephalopod…" [Fig.8].

Fig. 8. Orphan Drift (Ranu Mukherjee and Maggie Roberts), *If AI Were Cephalopod*, 2019. Four-channel video installation with sound, installed at Telematic, San Francisco.

What art can do for AI is invite it into a realm with uncertainties and surprises, and ask it to play. In this gesture, we feelthink and perform our knowledge that the world is more than human, greeting the other, as Newsome would say, with a radical act of love.

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Meredith Tromble is an intermedia artist and writer. Her curiosity about the links between imagination and knowledge led her to collaborate with scientists in addition to making installations, drawings, and performances. Her work has been presented nationally and internationally, including a survey of her artwork from the past decade in the exhibition "Umwelt" at BioBAT Art Space in Brooklyn. She holds joint appointments as artist-in-residence at the Complexity Sciences Center and Visiting Scholar at the Feminist Research Institute at the University of California, Davis. She is the editor of two books, The Routledge Companion to Biology in Art and Architecture, co-edited with Charissa Terranova, and The Art and Films of Lynn Hershman, University of California Press. She is Professor of Interdisciplinary Studies/Art & Technology at the San Francisco Art Institute.

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