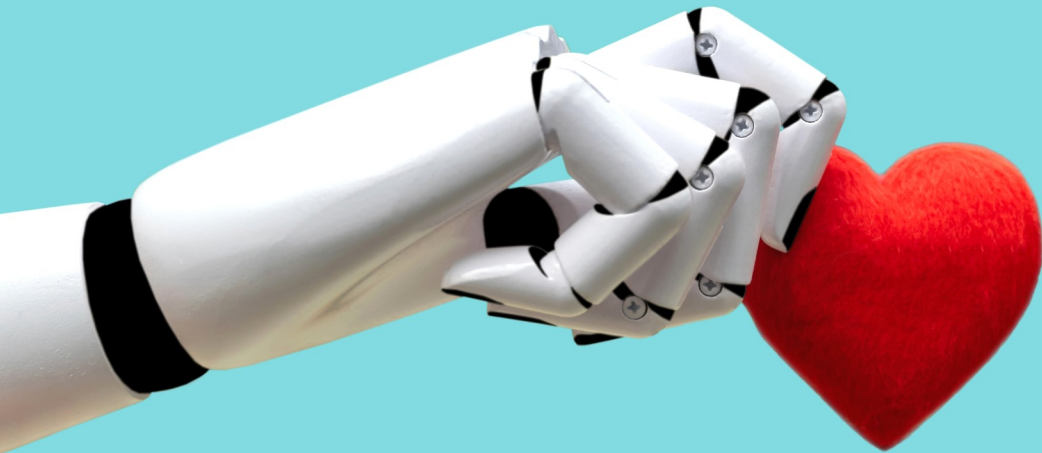


ARTIFICIAL INTIMACY



A Report on the 4th Annual Aspen Institute Roundtable on Artificial Intelligence



Letter from Vivian

Despite the rapid deployment of artificial intelligence (AI) across all sectors, society has only recently begun to orient itself to this powerful technology's tremendous ethical and political ramifications. We're now seeing a flurry of principles and governance models to help direct its future design. One of the most fascinating new dimensions is the ethical and psychological impact of simulated emotional responses by robots and other AI systems.

In January 2020, the Aspen Institute convened twenty-five leaders across industry, academia and civil society to explore the boundaries of "artificial intimacy." Our purpose was to examine both implications on society and proposed potential interventions to ensure ethical and moral standards for this type of human-machine relationship. Participants raised a range of provocations from *how will individuals interact with machines?* to *what happens to human-to-human connections—our communities and our societies—as human-machine interactions become more interactive and embedded into our daily lives?*

The following report, "Artificial Intimacy," authored by Dr. Kristine Gloria, reflects on these discussions and debates. Specifically, the report identifies key themes and critical issues surrounding the idea of artificial intimacy, and a shared language among participants. More importantly, the report captures a sense of urgency around the opportunities and costs of an "emotional" human-machine relationship. And, what safeguards (technical, legal or normative), should we consider to protect against the potential for harm.

The report is divided into three sections. First, *Darwinian Buttons*, examines the tradition of human psychology with a specific focus on empathy. Next, *Design Decisions*, explores man's progress towards more intelligent and empathetic machines, agents, and robots. It features real-world examples that illustrate the connection between form and function. Most importantly, this section tees up a core question: *To what extent is the projection of personhood on a "humanoid machine" dictated by a machine's form or function?* Last, the *Philosophical, Poetic and Political*, bridges the conceptual framework of artificial intimacy from individual human behavior to real world implications.

Acknowledgments

On behalf of the Aspen Digital Program, I want to thank the Patrick J. McGovern Foundation for their support and leadership in developing this roundtable series. I also want to thank Charlie Firestone for his 30-years of leadership as the Executive Director of the Communications and Society Program and for moderating this roundtable. Thanks, also, to Dr. Kristine Gloria, our rapporteur, not only for capturing the various dialogues, debates and nuanced viewpoints of participants but for her passion for both the science and the poetry of technology. As typical of our roundtables, this report is the rapporteur's distillation of the dialogue. It does not necessarily reflect the opinion of each participant in the meeting. Finally, I would like to thank Tricia Kelly, Managing Director, for her work on the conference and bringing this report to fruition.

Vivian Schiller, Executive Director
Aspen Digital
April 2020



Now, the decision you reach here today will determine how we will regard this—creation of our genius. It will reveal the kind of people we are, what he is destined to be; it will reach far beyond this courtroom and this—one android. It could significantly redefine the boundaries of personal liberty and freedom; expanding them for some—savagely curtailing them for others.

- Captain Jean Luc Picard, (1989)

ARTIFICIAL INTIMACY

Dr. Kristine Gloria (*Rapporteur*)

INTRODUCTION

In the 30 years since the premiere of *Star Trek: The Next Generation's*, [The Measure of a Man](#), our collective imagination continues to toil over a future in which machine—or synthetic life—and humans fully coexist. In *Star Trek*, the new *Picard*, the movie *Her*, and HBO's *Westworld*, we have storylines that explore moral and ethical boundaries, illuminating questions such as: *What does it mean to be human? Is the answer to that question an absolute or is it a social decision? If the latter, who gets to make it? And for those who are put in the category of human, are theirs special rights? Special responsibilities?* In 2018, [Kai Fu-Lee](#), author of *AI Superpowers*, wrote “Artificial intelligence is a technology that sparks the human imagination.” It has certainly sparked Hollywood. Now it's time for the rest of us to engage our imaginations to solve impending, real-world challenges.

Modern life already consists of constant human-machine interactions—from mobile devices to virtual assistants to [AI that helps improve online conversations](#). Modern AI techniques like deep learning lend machines the ability to receive feedback information, optimize algorithms and provide an output, like a personalized recommendation. Amid today's COVID-19 pandemic, the presence of these technologies and society's reliance on them continues to grow. From virtual dinner parties to distance learning to AI-assisted contact tracing to the potential for robotic therapy—like PARO—for people on ventilators, today's crisis reveals an enormous appreciation for the progress gained between man and machine.

But, we are a long way from peak human-machine symbiosis.



Participants from the Fourth Annual Roundtable on Artificial Intelligence (January 2020)

Some argue that for all of the advances unlocked by these intelligent technologies, deep social inequities remain, and indeed are exacerbated by the use of AI.

In *Automating Inequality*, political scientist, Virginia Eubanks, argues that in many ways big data, algorithms, and their misuse by governments has created a new “digital poor-house” predicated on surveillance, profiling, punishment, containment and exclusion.

Critiques like the one above coupled with the rate of integration and disruption across economies, governments, and cultures has catalyzed an urgent pursuit to guide development and deployment of AI for the good of humanity. This is best illustrated by the over 243 different AI policy frameworks currently available (see the [EPIC AI Policy Handbook](#) and Şerife [Sherry] Wong's [Fluxus Landscape](#), a network visualization of the AI ethics and governance community). While the ethical questions are driving academic debate as well as popular TV shows, they only scratch the surface of a far more complex, new type of relationship between man and machine.

If *Star Trek* provides us with entry into first and second order analyses of the problem, how will humans interact with machines? And how will this interaction change the human in the relationship? What naturally follows is a more globally acute dimension: *As the human-machine relationship becomes more interactive and embedded in every aspect of our lives, what happens to human-to-human connections—our communities and our societies?*

Participants of the 2020 Aspen Institute Roundtable on Artificial Intelligence, titled “Artificial Intimacy” and hosted in Santa Barbara, California, explored these and similar ethical questions. We posited possible future implications of AI on society, and proposed potential future interventions to ensure ethical and moral standards for AI. The goal of the meeting included defining “artificial intimacy,” and how to build, engineer and study this new relationship in a way that helps people be more human. The group reflects a diverse range of viewpoints from machine learning experts to philosophers, business leaders, academics, psychologists, inventors and artists. The following is a synthesis of these discussions.

To get a full sense of the range and depth of the meeting, the text is sectioned into three parts.

Darwinian Buttons examines the tradition of human psychology with a specific focus on empathy.

Design Decisions explores man’s progress towards more intelligent and empathetic machines, agents, and robots. It features real-world examples that illustrate the connection between form and function. This section also moves us towards the key paradox and core thesis of the roundtable articulated by Sherry Turkle, Abby Rockefeller Mauzé Professor of the Social Studies of Science and Technology at MIT. Turkle urged others to consider that what matters in building a machine that people relate to as a person does not depend on building a “humanoid” machine. If a machine behaves in ways that evoke personhood, people “create” a humanoid machine in their mind and project personhood onto it.

The Philosophical, Poetic and Political bridges the conceptual framework of artificial intimacy from individual human behavior to real world implications which expose deficiencies in our society and institutions. It offers a starting point for the development of certain tools and approaches (technical, normative, or legal) to address these imperfections.

We conclude with an urgent call for leadership willing to tackle the uncanny and the uncomfortable challenges of this future.

DARWINIAN BUTTONS

Einfühlung. Introduced into the English language in 1909 by psychologist Edward Titchener, the term “empathy” is often used to describe a wide range of emotional states and or the ability to separate oneself from the other. Scientific research shows that “empathy” is [deeply rooted](#) in our evolutionary history and is an innate human capacity indicative of prosocial behavior. MIT’s Sherry Turkle described empathy as a relational, reflective concept. It does not begin with “I know how you feel.” It begins with the realization that you don’t know how another feels. “So it begins with an offer of conversation: ‘Tell me how you feel.’ It’s an offer of accompaniment and commitment,” said Turkle.

In psychology, two [research traditions](#) have emerged: *cognitive empathy* and *affective empathy*. Cognitive empathy research—or perspective taking—concerns itself with the reliability and accuracy of a human’s ability to identify and understand another’s emotion. For example, when a close colleague receives a promotion at work, your ability to recognize and understand his or her excitement for the promotion is a cognitive function.

Affective empathy, on the other hand, is one’s ability to share in the feelings and perspectives of another. In the same example, a shared feeling of excitement for your colleague’s promotion illustrates an affective response. While empathy is a biological response, it nonetheless requires cultivation and practice. For example, [empathy training in patient-provider relationships](#) is documented to have positive effects with evidence showing an increase in both patient satisfaction and compliance, and enhances a practitioner’s ability to treat patients. In another example, researchers from the University of Southern California helped advance AI techniques in the use of [socially-assistive robots](#) to help teach social skills to children with autism. For Turkle, “good, old-fashioned empathy” depends on the lived experiences of human life like growing older, feeling fear, hunger, or being alone.

But, why is “good, old-fashioned empathy” important?

Moral philosophy suggests empathy is a key element of being human, as both social and moral beings (though, empathy has also been studied to be exhibited in animals, [such as primates](#); and has [been criticized as a poor guide for moral reasoning](#)). Turkle further explained:

Human empathy is a relational concept because it does something to the person who offers it. . . When you have a growing awareness of how much you don't know about someone else, you begin to understand how much you don't know about yourself, you learn a more demanding kind of attention, you learn patience, and you learn a new skill.

These skills parlay to social structure. It is through empathy that humans gain intimacy with one another. Without it, how does one negotiate the ["inevitable conflicts between their egoistic needs and their social obligation,"](#) noted by Martin Hoffman in *Empathy and Moral Development*. Robert Reich, former U.S. Secretary of Labor, has long suggested the inextricable relationship between inequality and social empathy. He [explained in](#) 2004:

Any society depends upon empathy in order for people to be able to answer the question, 'What do we owe one another as members of the same society?' Indeed, without empathy, the very meaning of a society is up for grabs.

This then begs the question: if empathy is critical for both individual development and societal endurance, what do we make of artificial and or simulated empathy?

Turkle once again offers a starting point. In her opening statement, she presented the negotiation between human psychology and artificial proximations, like affective computing. It is in this new paradigm that artificial intimacy becomes an assault on empathy. Turkle described that until recently, concepts like affect, emotion, and empathy were fully within the human domain. Today, however, affect and emotion have been operationalized as something computers can appear to have; and if history repeats itself, then empathy must not be too far behind.

DESIGN DECISIONS

The old design adage, “form (ever) follows function,” suggests that the style of architecture (building or object) should reflect its purpose. The purpose of a [coffee mug](#) is to safely transport (presumably) hot liquid. Hence its cylindrical body, wide mouth, and ceramic thickness.

But what happens when the [form becomes dislocated from the function](#)? Or, in the case of digital technologies, when multiple functions manifest within one form factor? To what degree is form really then a factor?

Making a guest appearance at this year’s roundtable was PARO, an extremely adorable, fluffy baby robotic harp seal that squeaks and tilts its head in response to human interactions. First introduced in 1993 by Takanori Shibata, its acceptance into society took several years and many iterations. Shibata, Chief Senior Research Scientist of the Human Informatics Research Institute at the National Institute of Advanced Industrial Science and Technology (AIST) in Japan, recalled investigating multiple robot prototypes and various companionship models. He settled on the human-animal bond and cited research from animal therapy which had successfully been applied in various situations and across demographics. In addition, Shibata recognized a need for an alternative therapeutic intervention for situations where real-life animals would be problematic, such as in ICUs or with patients with allergies. PARO is categorized as a medical device by the FDA and is said to improve depression, anxiety, pain and increase group participation. Shibata commented on the choice of using a baby seal stating, “In the case of a human-type robot, people expect too much from the robots because people associate the same functions or role of human beings. But, it’s very hard to realize similar functions.” For the record, PARO can learn names and remember faces.

Tom Gruber, Impact Advisor for Humanistic AI and former CTO, co-founder, and head of design of Siri, also shared his experience. “Now, is it true that we were influenced by the *Knowledge Navigator* video of 1987, absolutely. But, from a design point of view, we rejected the face from the beginning,” explained Gruber. For Gruber and team, adding a face would be a distraction and potentially run the risk of engaging the [“uncanny valley”](#)—the subjective phenomenon of feeling unsettled when faced with a human-like robot. This deliberate omission was augmented by other cues to help with public adoption of a faceless conversational agent. For example, the voice is gender-neutral and can be changed via a setting. Siri is also species-neutral. “It’s not human . . . it comes from a different place and maybe even a different number of dimensions. And, that was also by design; so that we could have a stance of ignorance but still have legitimacy,” said Gruber.

Today, the integration and adoption of (faceless) intelligent virtual assistants continues to move upward. In 2018, [over 43 million Americans](#) owned a virtual assistant like Amazon’s Alexa, Apple’s Siri or Microsoft’s Cortana. [Market reports](#) project this segment to reach approximately USD\$ 19.6 billion globally by 2025.

Both PARO and Siri serve as examples that [form and function are \(actually\) one](#). A product’s purpose can be shaped by form and or function—and with success. The key, according to some roundtable participants, is in a deliberate, inclusive, and thoughtful design process. Specifically, Michael Chui, Partner at McKinsey Global Institute, suggested the need for affirmative design guidelines such as incorporating regulation for identification like “this [machine] isn’t really understanding you, but feel free to play with it.” Yet, as machines become more sophisticated, is a mandate for better design truly enough?

For some in the room, design is useful but not an omnibus solution. To illustrate why, MIT Professor Sherry Turkle shared the following story:

So, I'm watching an older woman who's recently had a child die, talk to the PARO, and the PARO does very little. But, the woman understood that the PARO was sad for her, and the woman began to comfort the PARO. . . this was a really extraordinary moment because it wasn't just that the PARO had convinced this woman that the PARO was sad, but the woman was now responding to the PARO as though the PARO needed comforting and care.

This is technology pushing our "Darwinian buttons," as Turkle coins. In other words, this machine that offers pretend-empathy, regardless of design or form, exploits a deep psychological human vulnerability to feel an attachment for sociable artifacts. Turkle's concerns is for what happens to us in our vulnerability for pretend-empathy: "For it is our nature to project humanity onto these humanoid objects that have none, but which nevertheless push our Darwinian buttons to relate to them as human."

Good, old-fashioned empathy is a two-way street.

"Human relationships are messy," Turkle re-emphasized, "what matters here is not so much these robots or screens, but what it's doing to our relationships, and to take great care that what we don't ever substitute the kinds of things that we can do with screens for what we need from with each other." And, if humans begin to offload our mental and emotional labor onto machines, what is the potential ripple effect? And to what extent is this problematic?

THE PHILISOPHICAL, POETIC AND POLITICAL

This is where we catapult from *what we think we understand* about the human-machine relationship to *how we might rethink* its future.

"Every single one of you, is an AI," asserted De Kai Wu, Professor of Computer Science and Engineering at Hong Kong University of Science and Technology (HKUST). Like empathy, traditionally ascribed human qualities—such as creativity, emotion recognition, and sympathy—are no longer the "comforting myths" that once defined what is uniquely human. Instead, as De Kai points out, an AI can simulate and implement these criteria perfectly well. Hence, he argues that what differentiates humans from machines is negligible. Take for example, emotion recognition. Today, automatic emotion recognition is being performed with high accuracy by machines thanks to multiple inputs like facial expression or speech intonation or lexical choices. "The real differentiator is intentionality," said De Kai, "and that's true regardless of whether the agent is a human or a robot, because, remember, you are all AIs."

Expanding on this, Rama Akkiraju, IBM Fellow, challenged the room to consider, "Why do we care? Why is it important for agents—computer agents, robotic agents—to express or demonstrate sympathy, empathy, or any of these things? Why is it not enough for them to simply understand the user that they're interacting with?"

Songyee Yoon, CEO at NCSOFT, also cautioned not to conflate qualities of trust, empathy, and moral standards onto a machine's functionality and role within the relationship. "People think that because it's an outcome of a computer or computational algorithm, it's more accurate, more just, more moral," said Yoon.

"I think we are faced with the need to form a new relationship which has immense cognitive empathy but does not necessarily come with a similar moral standard that we are used to have or are rightly expected to have."

- Songyee Yoon

Terms like “understanding,” “purpose,” and “intelligence” typically litter AI discussions. However with their placement adjacent to artificial intimacy, participants exposed several nuanced and emerging challenges—surprisingly—about the human-to-human relationship.

For example, intentionality helps shine light on the role big commercial enterprises can play in manipulating human-machine interactions to improve their revenue at the expense of consumer privacy, agency, and intimacy (more on this later). The crux is that while artificial intimacy concerns itself (currently) with the human-machine interaction, its second-order effects are already beginning to ripple through society in the form of [increasing mental health concerns](#) correlated with the use of social media, particularly with younger users. In order to handle the powerful effects that are on the horizon, society must grapple with new modes of thinking and potential responses.

THE PHILOSOPHICAL



No discussion on AI is devoid of its epistemological history. But, what if this origin story had it wrong? What if the traditional European perspective—humans have intelligence, animals have instinct and machines have mere mechanisms—is in fact a categorizing mistake? Tobias Rees, [Director of Transformations of the Human at the Berggruen Institute](#), posited just this:

“There’s a kind of promise to AI that the distinction between intelligence and mechanism or between organism and machine or between human and machine might be negligible or unimportant, that it might not actually be really something that matters.”

Rees argued that this historical ontology defines categorical boundaries driven by human exceptionalism, limiting our ability to “question how to build machines to which we can relate and that can relate to us.”

Instead, Rees offered an alternative method. What if we situate AI within the natural intelligent living system where every plant, animal, or being exhibits intelligence specific to its own existence?

The current excitement for neural net architectures and machine learning are examples within the field of AI of this shift from a symbolic-logic driven (top-down) tradition to a more emergent “bottom-up” approach to intelligence. Informed by Gregory Bateson’s [*Steps to an Ecology of the Mind*](#), Rees questioned: “What would it mean to build AI from the perspective of an ecology of the mind? To build AI that is part of the world and that has a world?”

This call to tear down longstanding ontological categories may seem like an intellectual exercise only; but, as Rees expanded, there is real interest in designing experiments with companies to explore what it means to create future technologies that defer the hard boundaries between human and machine. Instead, what if companies create a true companion species, where the human is not anymore exceptional than the machine? If done correctly, there could be tremendous opportunities to address areas such as health and wellness, and the needs of a growing aging population, etc.

Moreover, Rees and others ask to consider modes of Eastern philosophy, such as classical Confucius or a Daoist perspective where the individual does not exist. Unlike in European philosophy, reciprocity and symmetry also do not exist. In an experiment with Sony in Hong Kong, Rees and team are attempting to build a “Daoist AI” that is grounded in relationalism rather than intelligence to inform an agent’s ability to navigate the world. This three-year research project aims to explore questions surrounding the relevance of Chinese thought on AI, if it can be created, and its implications on the new political economy.

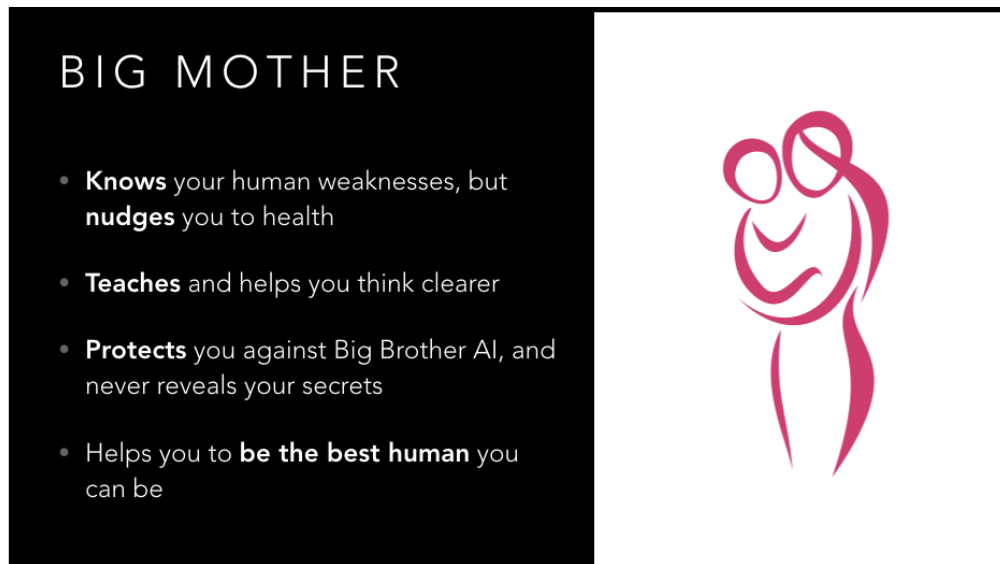
Similarly, Yukie Nagai, Project Professor at the University of Tokyo, noted research from the [Osamu Sakura](#) Laboratory which seeks to understand public visualizations of AI/robots in Japan and other East Asian countries. Their work suggests that the West juxtaposes humans to non-human animals and to AI/robots, while the Eastern narrative, heavily influenced by Daoism, emphasizes a continuity between objects. “In Japanese, the traditional picture called [Ukio-e](#), the mother and infant are sitting next to each other and sharing the same perspective,” explained Nagai, “whereas the European or American pictures, they are often face to face with each other. So, it seems that such cultural or historical differences between the human-human relationship and the human-machine relationship have a strong influence on how we perceive and how we accept machines.”

THE TAKEAWAY: In order to successfully design, develop, understand, live, and realize a future [Society 5.0](#), we may need to substantially rethink how we approach these questions: Do we need to move towards a model rooted in Eastern philosophy? What of other philosophical traditions? And can such a momentous ontological shift keep pace with scientific discovery and technological development? At the moment, there are far more questions than answers. But it is imperative that AI continues to be an experimental space that pushes us to think of new possibilities for understanding the world, how it is organized, and what role and place humans have in relation to the natural world and or machines.

THE POETIC

Poetry gives us another framework to consider a relationship with AI. As Italian novelist [Umberto Eco wrote](#), “[that] those things we cannot theorize about, we must narrate.” One powerful instantiation of this is the use of the metaphor as both descriptive and prescriptive to AI design. “If we give metaphors or guidelines that essentially offer people choices when they’re deciding what to use AI for, it’s a way to have impact,” noted Tom Gruber of Humanistic AI. One approach is to position AI as either automat-ing, augmenting, collaborating, or competing with the human—otherwise known as the “assistant.”

The second predominant metaphor is AI as an “invisible hand” or “Big Brother.” This metaphor conveys a powerful, omnipresent authority (think Facebook, Google, etc.) that manipulates individual behavior through surveillance and hyper-personalization. It places the individual at a disadvantage and relegates both agency and power to a third-party. To counter, Gruber offered an alternative metaphor—“Big Mother”—which moves the human and AI relationship towards augmentation, collaboration, and empowerment. Instead of big data and surveillance, the metaphor conveys the need to prioritize self-awareness, self-nurturing, self-care, and independence.



We'll dive into the economic challenges of adopting new metaphors—like Big Mother—in the following section. Lucas Dixon, Scientist at Google Research, also urged the group to think even more broadly. He offered three additional metaphors for consideration: 1) AI as "another sense;" 2) AI as a sub-personality of the person who uses it; and 3) AI as a relationship itself.

THE TAKEAWAY: Metaphors, like Big Mother, can serve as powerful tools in the design and application of AI. If combined with a deliberate examination for the "intent" of the AI agent, then perhaps we are moving in the right direction. AI for good has always aimed to enhance our capacity to be better humans, individually. But, is there also room for an AI to help us restore human intimacy? And can it help elevate us out of just individual needs? "If you take a step back and think just a little bit about why we usually build technology for the human race, usually we do it to shore up something we're not good at, and oftentimes to amplify something we'd like to be better at," described Gruber. "But today's problems are human-created problems. . . so one goal is to develop something [an AI] that can help humans grow, that is better at knowing humanity's weaknesses and strengths than humans. . . A new role for AI would be to help us be our better selves collectively." The third and final critique—the political—focuses on where the metaphorical rubber hits the real-world road.

“A new role for AI would be to help us be our better selves collectively.” - Tom Gruber

THE POLITICAL

To the extent that change can be achieved in the ontological space or that we find success in shifting to positive metaphors, reality remains bound by economic, legal, and political concerns. Recently, we have witnessed an upswing of ethical principles, guidelines, and frameworks - from the [OECD](#) to the [Global Partnership in AI](#) to [Responsible AI at Microsoft](#) to the [Universal Guidelines in AI](#). The idea of “human-centric” AI serves as a cornerstone for AI policy work, the Aspen Institute included. Big themes include fairness, accountability, transparency, democratic governance, safety, etc.

“As a general matter, the (U.S.) law is very good with dealing with relations between entities like government and citizens or companies and consumers,” noted Marc Rotenberg, President and Executive Director of the Electronic Privacy Information Center (EPIC). “But, it’s actually not so good in dealing with the kind of intimate relations between private people. But, a lot of ethical discussions about the relations between people and machines fairly quickly work their ways into consumer products, commercial applications, government systems, where those frameworks suddenly become very important.”

"One way to frame this is the proposition that there are net benefits to society and to individuals to have human intimacy."

- Richard Whitt

Mentioned above, Big Brother and similar devices designed to interact with people capture enormous amounts of sensitive data. And, "It's almost directly proportional to the degree of intimacy between the device and the person where the interaction takes place," said Rotenberg.

Just consider the amount of information you've shared with Google via your email account. Or to Amazon's Alexa with your last voice command. The volume of personalized data is staggering. Yet for the moment, these human-machine interactions are generally considered benign. Rather, issues such as corporate incentives, privacy violations, accountability, and liability began to surface through the lens of artificial intimacy. Cyrus Hodes, Vice President at the Future Society, cautioned that we must be careful to clearly distinguish the utility function of the concern around artificial intimacy: "Utility of an AI system that can understand as superhumans versus the utility of projecting empathy versus being fooled."

But, how do we respond to that as a society in terms of codes and regulations? Richard Whitt, President of the GLIA Foundation and former public policy director at Google, suggested, "One way to frame this is the proposition that there are net benefits to society and to individuals to have human intimacy." What is involved in that often asymmetric power relationship between parties—elements such as trust, vulnerability, and mutuality—can be and has been dealt with in the common law for hundreds of years through the fiduciary duties of care and loyalty. Whitt suggests that fiduciary law offers one way to help ensure that the deeply intimate bonds that can be forged by these technologies are based on genuine relationship, rather than outright exploitation. Songye Yoon, CEO of NCSOFT, added, "We do not want our empathy to be exploited for commercial motivations of a third party (whether it is a corporation or a political party) and it is something that we need to be particularly aware of and concerned about, and we probably need work on developing policy guidelines to protect ourselves from such attempts."

Intentionality is a key co-concept to consider. If these software applications or devices are serving larger for-profit enterprises, then the goals, motivations, and intent of the AI is driven by socioeconomic systems. For example, Kate Darling, Research Specialist at the MIT-Media Lab, described that in watching the movie *Her* the most interesting question was not about the main character's emotional relationship with the AI, but what happens after: "What if the company exploited his willingness to pay for the emotional connection and demanded that in order to keep the software running, you have to pay a licensing fee of \$10,000 a month? And he would have paid for it, right?"

Whitt identified two levels of infrastructure that warrant attention: the virtual, which include AIs and other technology tools, and the human, operating behind the scenes. While the focus often is on the presented virtual applications or tool augmentations, the human side includes the commercial incentive structures, and the specific terms of the social relationships that are embedded in the virtual layer. "Is it possible to have an AI that truly serves our interest, without also reckoning with the human infrastructure?" asked Whitt. "And, can the current asymmetric platform/user arrangement still support a healthy relational approach between the AI and the user?"

Our economic reality is a key focal point. Specifically, pulling on the Big Mother metaphor, participants questioned potential business models that may incentivize its adoption. One specific area is in challenging current key performance indicators used to determine success in different economic models. "I'd really like to have metrics like good [for human] autonomy and [helps people develop] great judgement," said Lucas Dixon of Google Research. "But, the problem is how do we know whether the machine interaction is helping someone develop empathy or, in fact, it's restricting someone from that development of empathy? The general problem is that it's hard to measure these things. How do we know? What's the test?" Tom Gruber offered one example of a commercial training system for the military and other corporations which leverages AI to understand visual, emotional, and voice patterns. This intelligent tutor adjusts for your personal learning curve; but the metric is not for targeted ads. Instead, the metric is the joint performance of the human within an augmented learning environment.

By way of a metaphorical stool, De Kai offered another potential approach to tackle issues around the structure and stability of a liberal world order. He calls this effort the "democratization of empathy." The first two legs are a scarcity mindset and allocation of resources.

"Humanity needs cultural hyper-evolution at a pace that it's never before witnessed."

- De Kai Wu

The third leg is our ability to outrun the destructive technologies we invent. "I'm concerned that AI today is eliminating that third leg," said De Kai. "There's no stopping AI evolution. But even if one country or one group stops, others will continue. And yet, our cultural evolution is still plodding along the same linear rate. Humanity needs cultural hyper-evolution at a pace that it's never before witnessed."

THE TAKEAWAY: Like the philosophical and poetic critiques, the political gives way to more questions than answers. But, looking at artificial intimacy through the political lens, we are beginning to see glimpses of areas in which our regulatory and economic structures may need a re-tooling. Participants offered a variety of interventions from changes in metrics for corporate governance to the need for increased autonomy through a fiduciary component to finding new ways to support inter- and transdisciplinary collaborations. Like the two critiques above, experimentation will play a critical role. The other question is, who will lead?

CONCLUSION

After two days of circling around the ephemeral notion of “artificial intimacy” the questions of *why does it matter* and *what do we actually do* started to coalesce. The outcomes of the discussion may not have settled on a final definition of “artificial intimacy” but we did settle on three key concepts: First, a working vocabulary and a unique set of lenses from which to explore human-machine interactions in the future. Second, the legitimacy of this field of research as a pervasive area of interest with significant impacts in the near horizon. Third, between the design aspects and the regulatory space, lies a sense of urgent obligation for leaders to think about what a good society looks like in an area where people’s emotional and intimate nature is being affected by the things we are creating. Taking artificial intimacy seriously, as Turkle advocated, means not just relegating it to a community of psychologists, but in expanding its utilization by others as a tool for informing the theoretical, individual, and social realms of the human-machine relationship.

So, what comes next?

If we move from the premise that we are already knee-deep in our integration with machines and our relationship with such objects are in a fluid state, then our job is to figure out how to elevate and propagate new modes of thinking and experimentation by a people from across all sectors—from creatives to entrepreneurs to technologists to philosophers to regulators. Artificial Intelligence can, and should, continue to be a philosophical, poetic and political laboratory. On the horizon, we look forward to moving a number of the ideas discussed—from exploring a [#Westless](#) technology future to democratizing empathy to surfacing additional positive metaphors for design. More importantly, our job is to cultivate leadership—whether in individuals or as institutions—that continues to challenge the bigger picture of the future of a good society.

Join us.

APPENDIX

Thank you to the [Patrick J. McGovern Foundation](#) for their leadership and support of this roundtable series.

Thank you to the [Roundtable Participants](#) for their time and intellectual capital.

Read our prior reports from the Aspen Institute Roundtable on Artificial Intelligence.

[Artificial Intelligence and the Good Society: The Search for New Metrics, Governance and Philosophical Perspective](#), *David Bollier* (2019)

[Artificial Intelligence, The Great Disruptor: Coming to Terms with AI-Driven Markets, Governance and Life](#), *David Bollier* (2017)

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