Technology and Work Worth Doing (Not Jobs) Post-AlphaGo

A World-Building Workshop on the Future of Artificial Intelligence

Ann Pendleton-Jullian and Robert J. Lempert
There exists much discussion of artificial intelligence’s (AI’s) impacts, good and bad, but much less on how AI might be used to shape a new world in which we would like to live. On June 19 and 20, 2018, in Santa Monica, California, the Pardee RAND Graduate School (Pardee RAND) and the RAND Frederick S. Pardee Center for Longer Range Global Policy and the Future Human Condition (Pardee Center) convened a workshop called “The Future of Technology and Work (not Jobs) Post-AlphaGo.” This workshop gathered a small and select group of innovative thinkers to engage in an approach called large-scale speculative design to sketch desirable, AI-enabled future worlds. We brought together a diverse group of people from the RAND Corporation; Pardee RAND; the University of California, Los Angeles; and the Center for Advanced Study in the Behavioral Sciences (CASBS) fellowship program with expertise in various areas, all of whom also share a deep interest in the future of work. The group included technologists, people in AI and deep learning, public policy analysts and policymakers, economists, environmentalists, lawyers, sociologists, people in education, cultural historians, political scientists, architects and designers, and an ethicist. This workshop was intended both to prototype a new methodology for speculating on an aspect of the future human condition and to initiate a line of inquiry around the topic from this different approach. For this reason, it was kept relatively small.

This report summarizes our framing of the topic, the process we employed, the three scenarios and initial world-building exercise, and the ensuing conversation among the workshop participants. It finishes by outlining suggested next steps. This workshop aims to serve as a foundation for future work on how to achieve these worlds.

About the Pardee Center, Pardee RAND, and the CASBS Fellowship Program

The RAND Frederick S. Pardee Center for Longer Range Global Policy and the Future Human Condition aims to enhance the overall future quality and condition of human life by aggressively disseminating and applying new methods for long-term policy analysis in a wide variety of policy areas in which they are needed most. There has been no shortage of past attempts to think globally about the human condition or the long-range future. What has been missing, however, is a means of tying those efforts systematically and analytically to today’s policy decisions. This is the gap the Pardee Center seeks to address.

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The Pardee RAND academic program takes full advantage of this rich and varied research environment and is composed of three integrated elements: an interdisciplinary curriculum that includes three different analytic concentrations, project-based research that encourages specialization in a policy research area, and a policy-relevant dissertation.

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Find information about Pardee RAND at www.prgs.edu, about the Pardee Center and its other projects and initiatives at www.rand.org/pardee, and about CASBS at casbs.stanford.edu.

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## Abbreviations

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<thead>
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>AI</td>
<td>artificial intelligence</td>
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<td>CASBS</td>
<td>Center for Advanced Study in the Behavioral Sciences</td>
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<td>Pardee Center</td>
<td>RAND Frederick S. Pardee Center for Longer Range Global Policy and the Future Human Condition</td>
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<td>Pardee RAND</td>
<td>Pardee RAND Graduate School</td>
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<td>ppm</td>
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1. Introduction

I think the process of imagining without limits, of breaking outside of what we currently know, is really key to any sort of big thinking. We got very much into discussion of the society as a complex adaptive system and being decentralized and resilient. We got close to developing something like a set of principles for working in a complex adaptive system.

Having worked on climate change since 2004, the world-building exercise was a deep dive into a space of speculative scenario planning where the world became far more real to me. To imagine a specific world with assumptions was both challenging and rewarding. This world started off as a dystopia, but as different people in the group started to think through the challenges of the world, the technology we would need, the social structures that would need to be in place, the world slowly transformed from a dystopia to something more easy to imagine and live with.

Some form of thinking changed in me—made me more hopeful about the future.

Workshop participants

There exists much discussion of artificial intelligence’s (AI’s) impacts, good and bad, but much less on how we might use AI to shape a new world in which we would like to live. This report describes a June 2018 workshop that gathered a small and select group of innovative thinkers to engage in an approach called large-scale speculative design to sketch desirable, AI-enabled future worlds. This workshop aimed to provide a foundation for future work on how to achieve these worlds.
2. Project Framing

We live amid a technology inflection point that we might call a “post-AlphaGo world.” In 2016, the machine-learning AI program AlphaGo beat Lee Sedol, the world’s best human Go player, in a five-match tournament, exhibiting strategies that displayed an astounding level of nonhuman creativity. Technology such as AlphaGo augurs social, economic, and political transformations at least as profound as those of the late 19th and early 20th centuries, with the attendant dangers and opportunities. AI can liberate people from much manual drudgery and buoy them with material wealth and convenience. Concurrently, many citizens have become cogs in large, society-shaping organizations, which increasingly concentrate wealth and power in a small number of hands. Global financial systems and supermoney create equality gaps of enormous proportion. But many of our societal institutions still operate within a neoliberal political, economic, and moral framework developed in the 20th century and designed for different economic and social conditions.

Extrapolating from current trends, without any new thinking, we might anticipate in 2050 a world with automation replacing many current jobs while offering unparalleled convenience and most power and wealth asymmetrically concentrated in a small number of firms and individuals. We might call this scenario “gatekeepers world” to capture the idea that a select few would control access to much of what society has to offer.

But we might also imagine other worlds. For instance, for many centuries, proponents of unfettered markets were also natural advocates for popular sovereignty and economic and social equality. Markets helped to shatter aristocratic hierarchies and government-chartered monopolies. Mid-19th-century thinkers, Abraham Lincoln among them, envisioned a world populated primarily by independent proprietors interacting with each other as equal citizens. Few economic and institutional hierarchies would exist. Most employees would be young apprentices learning a trade on their way to independence. But the Industrial Revolution sundered this synergy between markets, equality, and popular sovereignty. Might today’s technology revolution enable a society that reconnects these values? We can call such a scenario the

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1 This was documented in the movie *AlphaGo* (2017).

2 *Supermoney*, as defined by the financial writer George Goodman publishing under the pseudonym of Adam Smith (2010), is money that is not associated with the market of real goods and services. Instead, it is stock as currency that is based on future expectation of a company’s future profits. For instance, when Uber was sold for $50 billion, it was not turning any profit, and it had no real goods and services; it is still not turning a profit. But it was sold for $50 billion based on its anticipated future profits.
“Levellers world” after 17th-century partisans in the English civil war who envisioned transforming society with market-enabled equality and popular sovereignty.³

To help inject more focus on human agency into our consideration of technology futures, this workshop set out to explore one or more purposely different scenarios. In particular, the workshop aimed to enrich our understanding of current trends as a first step toward probing the extent to which shaping current trends toward a specific future might be possible or desirable. Our goal was not to identify what will happen but to stretch the imagination to think about what we would like to have happen within a robust framework for how it might happen. Such visioning may prove important in spurring new thinking and coordinated effort by networks of intellectuals, ideological activists, funders, and politicians to influence policymakers, elected officials, and the general citizenry.

To pursue such questions, the workshop aimed to envision a specific slice of the emerging post-AlphaGo world—a slice sufficiently focused to study in our workshop while sufficiently critical to implicate and include a larger territory. Specifically, the workshop explored new possibilities around technology and the economy in a post-AlphaGo world, using the future of work as the interrogative vehicle. But we need to qualify what we mean by work—we focused on meaningful tasks, not jobs. While a job could be considered labor done for financial gain, we instead thought about work that needs doing and is worth doing, at multiple scales. Whether working on the climate problem, contributing to the betterment of the health of others, discovering medical breakthroughs, inventing toys, educating others, expressing the human spirit, assisting with migration issues, or volunteering with a local organization, work worth doing is only increasing.

The workshop began with the scenario framing shown in Figure 2.1, adapted from Tim O’Reilly (2017). The horizontal axis shows the speed with which technology destroys jobs versus the speed with which it enables new kinds of work. The vertical axis shows the extent to which technology aims to optimize the wealth of the owners of the machines versus aiming to enhance the well-being of all participants in the global economy. Our workshop focused on the upper-right quadrant: technology enabling new kinds of work and enhancing well-being for all.

³ In her book Private Government, Elizabeth Anderson (2017) uses the Levellers to tell the story of how the Industrial Revolution brought to a close several centuries during which markets were largely a force for equality.
Figure 2.1. Scenario Framework

3. World-Building Methodology

To address these questions, the workshop employed an approach called large-scale speculative design, which it further developed through a methodology known as world-building. *Large-scale speculative design* aims to avoid the inertia of the present by helping us to imagine possible outcomes that may be different from what is already set in motion. World-building is characterized by imagining a few alternative and desirable future “what if” propositions and then building them out in detail across many relevant domains to understand their implications, uncover unintended interactions, and experiment with causal chains. Once imagined, one can then identify and design suites of mechanisms (for instance, policies, social organizations, and technology investments) that work toward shaping that future state.

Historically, scenario planners and future forecasters have had difficulty deviating from the assumption that the future is a continuation of the past. In theory, scenarios are built by playing out the trends deemed most important and uncertain. But in practice, traditional scenario planning can only consider a handful of trends, so planners often avoid futures that seem too speculative.

In addition, scenarios often focus on external drivers rather than internal ones. When thinking about complex systems, we use the term *path dependencies* to mean events and choices that got us from the past to where we are today. The problem with the word *path* is that it implies a linear development. This assumes a future unfolding under some grand scheme.

But, in reality, the future is being built by all of the small, medium, and large decisions that are made daily. This can be done in a routine way, or it can be done with some intentionality. One cannot aspire to the maneuverability of a steamship, which can force its way along a predetermined course, but rather to that of a sailboat setting out toward a distant shore, using the winds and currents to move toward that shore, tacking as necessary, figuring out what to do when blown off course, and adapting when the shore one had one’s sights on proves less desirable a landing point than it seemed when one set out.

In world-building, one begins with a speculative scenario. Then one lays out the assumptions under which that scenario is operating. Some of these assumptions are related to trends that can be anticipated, while others are conditions under which a specific scenario would be able to exist. Examples of the former would be the increasing vulnerability of humans stemming from the decreasing predictability of Earth’s climate and anticipated increases in human lifespan. Examples of scenario-specific assumptions could be that the majority of people might live in

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4 In speculative design, one goes after the preferable, not merely the probable.
5 See European Environmental Agency (2009) for a review of the literature on the strengths and weaknesses of scenarios.
condensed and networked city-states or that everyone has their own personal AI guru. In the practice of world-building, these assumptions are called logic points because they are not separate assumptions but points that are part of a coherent logic that serves the speculative “what if” scenario.

World-building is a complex systems approach to speculating on futures in a manner that relaxes the constraints associated with only those futures considered probable.

The actual limits of what is achievable depend in part on the beliefs people hold about what sorts of alternatives are viable. . . . Speculative design can make a whole range of viable and not so viable possibilities tangible and available for consideration. It is a catalyst for re-imagining reality.6

From the position of future-building (not future-forecasting, future-guessing, or just waiting for the future to arrive), world-building helps us interrogate the implications and consequences of technological, social, and environmental trends, and it provides a methodology to enable detailed speculation about a desirable future world, its conditions, and its manifestations. From there, as shown in Figure 3.1, one can interrogate existing conditions and trends and then design policy and action systems to work toward the long-range, intermediate-range, and short-range versions of a desirable future state instead of a default future state.

Figure 3.1. Futures Cone

SOURCE: Adapted from Voros (2003).

Instead of working off of incremental change around anticipated trends and immediate problems, large-scale speculative design and world-building serve to broaden innovative thinking, asking “what if” and “why not” to take “wishful thinking” seriously. Coupled with

6 Wright, 2010.
other methods, we can then design concrete ways to move in that direction, as described in Chapter Six. All of this is intended as fuel for conversation of a broader nature.

Domain-building is the core design activity of world-building. Domains help world-building participants ask a “what if” large-scale scenario question and then build that scenario out as if its world truly existed. This is the power of world-building because only with the specificity of the domains can one actually begin to entertain the imagined world as viable. In order to be perceived as if they are real, imagined worlds must be expansive across a broad cross-section of domains and subdomains that shape the world. With logic points in hand, different experts explore domains broadly across a diverse spectrum of concerns, and the domains are explored deeply through the imagination and expertise contributed by each expert.

Domains are containers for questions about the world. They are fields of study that lead to the design of specific characteristics of the world, from things and systems to actions, events, ideas, and influences. They deal with tangible things—infrastructure, objects, geography, and biology—and they deal with intangible items—language, mythology, and social structure. Domains are containers for questions that lead to imagining and designing how each area of exploration contributes to the world. Domains have subdomains, and they can also combine to form territories. Usually, one maps possible domains of interest as a framework for making choices, differentiating kinds of questions and keeping in mind what is related to what as one cascades questions and potential answers about what the imagined world will look like. Domains are not separate containers to be filled one after another, but entangled streams of imagined characteristics that influence each other as they emerge.

Figure 3.2 shows the provisional domains given to workshop participants to help spur their thinking, as described in the next section.

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7 Alex McDowell, the production designer of the 2002 film Minority Report, maps domains and subdomains as containers that are distributed around an origin (from conversations between McDowell and A. Pendleton-Jullian and diagrammed by McDowell in World Building Media Lab, World Building Media Lab Catalogue, Los Angeles, Calif.: USC School of Cinematic Arts, undated, p. 37). Mapping domains allows one to see relationships and identify missing areas. It is important to note that mapping domains does not mean that one must address every one of them. World-building is not about wholeness; it is about coherence, and mapping domains allows one to see how domains relate to each other and how they make sense together. And while it is not critical to be complete, it is important to identify a broad set of domains that will capture the complexity of the world.
Figure 3.2. Provisional Domain Map Provided to Workshop Participants for World-Building

NOTES: AR = augmented reality; VR = virtual reality.
4. Workshop Description

Beginning with the overarching assumption that technology would enable new kinds of work and would be optimized for everyone to use, we wanted to explore different versions of market systems and human-oriented work but with a range of different economic-political ideologies, or worldviews (see Figure 4.1). These worldviews exist to different degrees within the United States and embody different values, priorities, and belief systems. For example, environmentalists tend toward one ideological frame, while capitalists use a different worldview.

To do this, we split the group into three teams. Each team was asked to come up with its own secondary scenario that would be speculative in nature.

Participants worked in their teams over a day and a half to process three different large-scale speculative scenarios; each was the basis for a quick set of world-builds.

In other words, teams were not to optimize for assumed trends but instead were to begin with a large-scale “what if.” They were asked to complete the speculative question, “What if in 2050 technology plus humans creates a world in which work . . . ?” It was expected that each of these secondary scenarios would either explicitly or implicitly contain its own combination of market, political, and social assumptions. By processing three of these in parallel, we hoped to create a robust set of working world-builds that would catalyze rich and productive discussion.

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8 We approached this from three different worldviews using a framework that charts degrees of economic freedom and degrees of personal or social freedom. We used a four-quadrant framework, but we picked three to work from.
Each team experimented with different forms of work, economics, politics, ideology, social contracts, and material and creative cultures to expose trade-offs. By parallel processing three different scenarios, trade-offs can be discussed and debated with the goal of drawing a new single scheme of possibility.

This project began as a workshop to gather technologists, social scientists (e.g., economists, political scientists, behavioral scientists), architects, lawyers, a range of topic experts (environmentalists, health care experts, international affairs, education, organizational theorists, network theorists, media experts), and others to sketch and explore a set of future scenarios. The workshop examined such questions as the technology and social arrangements that would make such a world possible, the extent to which such a world might be desirable, and how near-term actions might affect the likelihood of such a world coming to pass.

The first half-day of the workshop presented the framing, modified the framing through conversation among the participants, presented and discussed the process, set up the three teams, and then produced the three first passes at speculative scenarios and assumption sets (also known as logic points). We discussed these before having dinner and more-informal conversation.

The second day began with each team revisiting and revising their scenarios and assumptions and then taking a first dive into world-building, using the concept of domains described previously.

Because of time constraints, the teams were presented with a very open domain map to jump-start their work, and they were encouraged to take on a broad range of domains, including those
that might seem less than directly relevant to their scenarios, such as tourism, architecture, or
love and sex. This proved valuable.

When doing world-building exercises that are aimed at prototyping a desirable future, one
wants to bring in multiple experts covering many different domains. Because we chose to work
with a smaller group, each person was asked to create two personas through which they would
imagine what the different domains would be and how they would operate. This proved to be a
breakthrough innovation to our world-building because, in all cases, one persona was close to the
participant’s own existing persona, identity, and expertise, and the other was not. The second
persona allowed participants to be much more expansive and playful. This was valuable for
innovation and productive novelty. In all cases, introducing this second set of personas, no
matter how far out, generated more-expansive and rigorous thinking because it forced new
stories into the system that had to be integrated equally. These stories stressed the system with
sometimes seemingly ridiculous concerns, which, however, had real truth to them. And, very
significantly, this forced the participants to think about the problem from inside the problem.

The shift from thinking about the world to imagining specific characters in the
world allowed us to background the climatic and weather challenges and focus
more on the social structures, an exercise I have never fully engaged in. Some
form of thinking changed in me—made me more hopeful about the future.
(Workshop participant)

After the dive into world-building, each team presented its work. A rich conversation
uncovered themes, conflicts, paradoxes, insights, and some extremely provocative possibilities.

All work took place as conversations with pens on the wall. The work was photographed.
The participants were asked to follow up a week later, after reflection, about key themes and
takeaways and to provide a brief description of two more domains they felt were critical to their
scenarios. These follow-up responses are also captured in this report.

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9 “Conversations with pens” is a methodology that one of the authors (A. Pendleton-Jullian) uses in her
workshops with Pardee RAND fellows. Teams of no more than five work standing up at a wall onto which large
sheets of white paper have been taped. Having at least eight linear feet of paper real estate is critical. Each team
member has a different colored pen. Teams are instructed to hold a conversation using their pens to write down
what they are thinking and saying as they are doing it. Diagramming is greatly encouraged. If one color is not
appearing on the wall, meaning that one team member is holding back or being prevented from participating,
the team is instructed that all colors must appear. This is to avoid one person scribing for the group and avoid
the social dynamic pitfalls of groupthink. If one or two team members are in disagreement or opposition or
feeling that they are not being listened to, they are encouraged to continue their conversation on the side.
Inevitably, the group merges back together because curiosity about what is going on adjacent to the main group
activity draws them back into conversation.
5. Workshop Results

This chapter summarizes the discussions of each team, including their scenarios, assumptions (logic points), and domains.

Team 1. An Archipelago of Biospheres: A “Communities of Fate”\textsuperscript{10} Approach

Team 1 used a triggering sequence of events to generate its speculative scenario. This resulted in an origin story, which is the future-historical explanation for the framing of their world. The speculative design scenario was then coupled to this origin story.

The origin story:

Climate change in the three decades from 2010 to 2040 made devastating advances. Almost monthly disruptions are now happening. The weather changes radically every 12 hours. Normal survival became increasingly problematic. The world was forced to wake up, to find a solution for survival of the species and repair of the environment. At first it searched for mitigation, but progress was too slow, and so a multinational effort was made to construct city-biospheres that house the majority of the population. Land outside the biospheres is used mostly for food production and species retrieval and renewal. These biospheres are of differing sizes, from smaller cities to larger city-clusters that float on the land like archipelagos. They are connected by a physical transportation network of bullet trains, a few superhighways, and a mesh information network.

All biospheres generate their energy locally. They employ a mix of traditional and new biologically inspired and biologic technologies that use the forces of the environment and the extreme climate—heavy winds and tides, for example—for energy generation; but, then, everything is used for energy generation. There is renewed interest in the ocean for both food production and living. Yet, at this stage, most of the emphasis is still on ways to live on the surface. This is also the world of the internet of things galore, both as sensors and as actuators. AI helps to manage the biospheres and the larger environment.

Carbon dioxide has stabilized at 350 parts per million (ppm) or less and is constantly monitored. The population has also stabilized. Given the nature of the new physical living environment, which is analogous to the kinds of settlements found in extreme conditions before the storms and fires—places like North Pole outposts—the social contract and systems have had to be, and still are, changing and adapting.

\textsuperscript{10} Communities of fate refers to social cohesion around a perceived risk or threat, such as climate change. Communities of fate bind people together in ways that extend beyond the networks they know.
What started out as a necessary and somewhat dystopian scenario is evolving into a new more interesting set of social structures, institutions, and relationships—a reboot that clarifies values while setting its sights on a more-complex set of relationships with the environment. It is hoped that in the future, portions of the biospheres may come down, opening the cities back up to the increasingly verdant and diverse green zone.

Given this origin story as the speculative scenario, the team went on to set down assumptions and describe other parts of the world, including the way in which AI both scaffolds and plays into this.

Some of the main assumptions or logic points:

- The weather is radically unpredictable.
- New technologies are needed, especially in the areas of food production, energy production, and the management of all resources.
- AI is possible.
- Energy is constrained, but need is always increasing; the environment itself can be the source.
- CO2 has stabilized at equal to or less than 350 ppm.
- There is a desire to fix the problem of income inequality.
- There is a desire not only to survive, but also to repair the environment.
- The hyperconnectivity associated with the early 21st century is desirable.
- The birth rate is below the replacement necessary for population stabilization.

Some of the following domains and ideas were explored in addition to those articulated through the origin story.

Domains and ideas relative to material aspects:

- Infrastructure: Networks of city-states grow from former geopolitical constructs. These are decentralized and distributed. There are biospheres of different sizes. They are all virtually connected.
- Food production: This occurs mostly outside the biosphere on the ground, although there is vertical farming in the biospheres themselves. Much farming uses new technologies, including AI, to maximize output and healthy crops.
- City: The biosphere generates its energy locally and is itself a new form of city that is significantly more evolved than what we define as a “smart city” today. Environmental sensors are everywhere.

Domains and ideas relative to technological aspects:

- There are only five big platforms and organizations.
- AI is both the distributor and the manager of a credit-based system: carbon, work, and social credits. Just as Uber, Airbnb, Amazon, and Facebook adapted supply and demand through surge-pricing systems, these will operate similarly. Resources (e.g., energy, material, people, skills, trust) will have credits associated with them that are
then linked to agents of various scales—individuals, organizations, social (community) units, institutional and political entities. The AI will work off of a rule system (analogous to a constitution) to manage these credits in a knowable but light-handed way.

- There are sensors everywhere to feed environmental and context-specific data into the AI, generating predictive analysis as well as real-time information.
- New technologies have been developed for food production, education, and health.
- New technologies are both biologically inspired and biological in nature.
- The city-biospheres are technologically and energy self-sufficient but virtually connected. They use a mesh system for adaptability.

Domains and ideas relative to human systems aspects:

- Government is only one type of platform that supports the social contract. There are other informal and guild-like mechanisms to provide both resource distribution and organization around a social safety net in a radically different world.
- The constitution is a rule set that informs the AI platforms.
- With regard to work:
  - People have multiple overlapping skill sets that are the minimum requirement for survival.
  - A second set of skills is interest driven and guild driven.
  - AI manages a credit-for-work exchange rate.
  - There is a strong relationship between platforms and people; if one does not work for one of the platforms, then the rest is all gig work; people can move across platforms based on their preferences.
  - Individuals have two decisions to make: At the macro level, which platform should they use? At the micro level, how should they manage their surge-pricing response?
- With regard to education (directly related to work):
  - A premium is placed on individual and experiential learning.
  - Training focuses on multiskilled agility.
  - Teaching and learning consists of a mentoring system around experiences.
  - There is a focus on skills and dispositions, as opposed to content and sorting of content through coursework. Goal-driven pursuits are always contextualized within an understanding of change as a constant state.
  - All learning is socially constructed.
  - Competency signifiers and skill signifiers are AI managed, evaluated based on personalized performance feedback, and technologically supported.
  - Education is based on a new pedagogy with an entrepreneurial approach to content production and many delivery methods, from online to apprenticeship to experiential.

Domains and ideas relative to issues of meaning, ideology, and identity:

- Meaning is the driver and goal of both work and one’s personalized education.
- There has been a great shift from meaning generated through things to meaningful experiences in contexts.
• Reading and listening to context has become most important.
• Identity is a function of health plus intellectual pursuits plus pleasure plus purpose.
• Nature and biologically inspired thinking have infused everything. For example, hearing has become an augmented sense: “Nature talks to us in ways similar to the way we listen to an orchestra . . . there is a deepening interest in registering/interpreting harmonic patterns.”

Team 2. A Society of Augmented Humans in a Post-Scarcity World

Team 2 took the diametrically opposite approach to Team 1. Instead of a speculative scenario that was large and comprehensive in nature based on a global triggering event, they pursued a more viral, ground-up approach. They generated a “what if” proposition based on the question of how AI could help people live a meaningful life in a post-scarcity world—that is, one in which human labor and striving was no longer needed to generate material abundance. In such a world, AI could help individuals pursue consequential lives in other ways. In particular, this team envisioned everyone having their own personal AI “guru,” whose teachings, advice, and partnership would help each person grow, learn, and act in meaningful ways. The team was less interested in AI in its third possible form—i.e., as “autonomous AI.”

The what-if:

What if in 2050 technology enables a post-scarcity world, one in which every material need can easily be met? How can technology and humans partner so that humans can enjoy the pursuit of meaningful lives?

The team then went on to generate the other assumptions (logic points) upon which this future speculative scenario would be built. There were two classes of logic points: those that were general in nature—in other words, those that were connected with trends we might assume to be valid—and those that were associated with their specific speculation. The team also identified key tensions that would arise as they played out different domain-specific questions through the eyes of ten different personas.

Generic assumptions:
• Everything is hyperconnected: 3-D printing connects to materials; the internet of things connects devices, places, and people; people connect as resources to form teams; and there will be more connectivity and fewer devices.
• The longevity of human life means that there must be a focus on cognitive life expectancy as well as biological life expectancy.
• Human-computer interaction goes way beyond you and your screen.
• Modern devices and platforms serve as an “extended mind” for all people.

Speculative scenario assumptions:
• Cities are no longer the only or principal economic driver.
• There are many resource currencies—multiple ways of measuring value where the pleasure of the work itself is the goal.
• We are in a post-scarcity era (because of tech and AI) of material resources. This enhances the drive to live a meaningful life. Still scarce are prestige, power and influence, time and attention, and craft—things made by humans.
• Distributed and autonomous communities define their own rules based on their culture and values.
• Everyone has a pervasive personal AI guru, which, through a symbiotic lifelong relationship, helps them pursue fulfillment, enlightenment, and a meaningful life.
• Data available to AI gurus consist of images, language-based information, self-measurement, biological details, personal history, communications, entertainment, and more.
• There is a government apparatus to enforce security and promote equality.
• Gurus are not perfect and have limited capacity determined by their humans.

Key tensions:
• Human-versus-AI identity versus human-plus-AI identity
• Virtual versus physical connectivity with others
• Automation versus a premium on human endeavors
• Data collecting for everything versus privacy
• Common welfare versus individual privacy
• There is a fragmentation of values: external values versus internal values; being in-group versus being out-group.

The team then went on to look at how this scenario and its associated assumptions would play out over seven different domains and through the eyes of ten different personas. While directly associated with speculation on the role of AI in the future but not directly associated with the future of work, the richness of the content around these domains easily suggests how it would extend into thinking about new kinds of work and the role of work in future lives. And the domains raise critical issues more generally. The following summaries show how the personas reflect various domains considered by the team:

Knowledge production:
• Jerry keeps rebooting his guru and shares as little data as possible with others.
• Ozioma teaches her kids an appreciation for truth and the tech skills necessary to discern it.
• Loren values services that are based on the knowledge provenance of both machines and humans.
• James relies on his guru for exploring new ideas; many of his publications are based on these explorations with his guru.
• Nawaz thinks that the only knowledge of value is that which people arrive at themselves.
Crime and jurisprudence:
- James contributes to advocacy groups that promote the right to no artificial self-incrimination. AI gurus cannot testify against their human partners.
- PP follows Socrates in believing that a good life means preserving the sanctity and innocence of your daemon/guru. Gurus should be a form of protoconsciousness.
- James is worried about hackers hacking his guru and influencing his actions. He becomes less trusting of guru-to-guru interactions.

Political system:
- Jerry is always joining with other people who want to share gurus more broadly and reboot them more often.
- Duanne is joining with people who want to encourage others not to live in an entirely virtual world.
- Ozioma fully delegates democratic participation to her AI.
- Additional details from the post-workshop follow-up: This world requires a broad public commitment to equality and aggressive government action to maintain it. The United States still exists and continues as a federal republic. Each federal level has an executive, legislature, and judiciary. The legislatures’ role is reinvigorated as the creative center of governance, shared, in part, by the leadership role of individuals in the executive branches. Otherwise, much of the judicial and routine executive functions are automated. Judicial algorithms are a subject of democratic review and tuning. Legislatures have representatives who are the ultimate makers of law, but legislative debates involve large numbers of people who weigh in on the deliberations. There is a widespread ability to play out policy choices over a wide range of scenarios and from multiple points of view to help people understand and debate the consequences of their choices. There is widely available information (properly scrubbed of private information) regarding the richness of politically active peoples’ information and social networks. That is, do they participate in one tribe or many? Those not interested in politics can have their gurus watch out for their interests and encourage them to engage at the necessary moments. This world came about after the horrors of the decade of the 2020s, which created the widespread passion for equality, which then became reflected in strong laws governing and limiting concentrations of wealth and power. Other countries—in particular, China—do not share that passion, and their vast concentrations of wealth pose an ongoing threat.

Faith:
- Duanne and his guru are more secure in their faith, so they are more tolerant of interaction and more willing to be friendly with people not like them.
- PP believes that your guru captures your essence and becomes your soul after death. He also sees most of the negative aspects of the post-scarcity society: Fewer markets mean more-insular cultures and the consequent filter bubbles.
- Loren is a dataist. She believes in radical data transparency and the supremacy of data-based decisions.
• Nawaz is only concerned with the question of existence—this is not evolutionary hedonism. The question can only be determined by unplugging.

Marriage/relationships/sex:
• Duanne and his wife disagree on whether their gurus are also Catholic. Their gurus disagree on matters of doctrine more than do Duanne and his wife.
• For Ozioma, marriage is a partnership that can be optimized via the interaction of partners’ AI gurus.
• Joe does not always agree with the preferences of his wife and both of their gurus, which causes conflict.
• PP is not married but has a polyamorous harem. He believes that marriage is a four-way transaction. His ascetic bent leads him to accept the scarcity of good matches.
• Nawaz only has a relationship with his guru as an equal to help him answer the questions of existence by leveraging the vast amounts of data available.
• Jerry has met women he has liked, but none whose gurus would let them marry.
• Gurus develop DNA-like features that can be inherited by descendants.

Education:
• Ozioma is unplugged and relies on an alternate form of home schooling.
• While Joe is enjoying his current hobby, his guru is learning the next one. He allows his guru to forget and to relearn a lot.
• Betty maintains more-conservative hyperparameters.
• Jerry is continually learning new things but not believing them in the end.
• Loren seeks other humans in her lifelong learning pathway to balance the AI-driven knowledge.
• Duanne teaches classes based on what he has learned on his visits to the past, although some students are not so sure what is true and what is made up.
• Additional details from the post-workshop follow-up: After middle school, the education system is a continuous, self-directed development process tailored to individuals. Personal AI provides ongoing feedback about recommended work based on each person’s education and history, as well as what kinds of new skills and knowledge would be an optimal match between person and market. Education becomes a driver for the data derivatives market, where speculators can buy up data from out-of-demand talent on the cheap in anticipation of future value.

Travel/tourism:
• Betty does not travel, but her guru learns about new places for her.
• For Nawaz, travel is a form of “rebellion”—getting on a random form of transport to a random place—and not following what his guru says.
• Duanne works with his guru to travel to visit people and places in the past in order to learn about the history that shapes the present.
• People like Loren travel up to 50 percent of their time because their assistants can handle a wide range of work-related tasks unsupervised.
• Additional details from the post-workshop follow-up: AI systems help people travel back in time (virtually) by assimilating all of the available information about a particular historic time and place (all of the archival and archeological information, all of the textual information on how people spoke and what they wrote) and creating scenes that people can walk through and in which they can engage with virtual inhabitants. People frequently travel back in time to help ground their sense of identity, based on these interactions with their virtual history.

Biology (additional details from the post-workshop follow-up):
• Valuation of individuals based on skills and predicted performance has sorted the workforce, over time, into categories of innate potential, known as the genetic endowment problem. Advances in artificial biology allow for corrections at increasingly affordable cost, which some advocate as a universal right, while others protest on religious grounds. “Genetic matchmaking” platforms become popular as a place for couples to find mates based on genomic profiles to maximize their offspring potential.

Values (additional details from the post-workshop follow-up):
• Individual social prestige and esteem, earned through recognition of personally produced content, has been the most highly culturally valued achievement. However, an oversaturation of “too-perfect” machine-augmented products and gaming of reputation systems has tipped mainstream taste toward a neodigital wabi-sabi aesthetic, valuing tasteful imperfection and perceived authenticity. This has led to an escalation of value placed on craftsmanship, proof of error, and performer trust.

Death in a world with AI gurus (additional details from the post-workshop follow-up):
• The introduction of AI gurus adds some novelty to the concept of death. Humans were already living longer, healthier lives. And a negative consequence of longevity was a breakdown in the ability of older welfare systems to support the aging population. People work longer (often until death), with the side effect that they are gaining more knowledge, cognitive equity, and wisdom over the course of their many jobs and longer lives. The AI gurus gain knowledge alongside their humans. And over time and extensive adaptation, each guru is functionally equivalent in knowledge to its human. When humans do die, loved ones and employers find themselves routinely consulting with the gurus of the deceased, either for wisdom and comfort or just for business and operational reasons. The preservation of gurus represents a minor cheat over death.

Privacy in a world with AI gurus (additional details from the post-workshop follow-up):
• (This reflection comes on the heels of the recent Supreme Court decision Carpenter v. United States, No. 16-402, 585 U.S. ___ [2018]) During the 2010s, human rights agreements routinely accepted the importance and sacredness of privacy. But privacy became an increasingly difficult right to safeguard in a world of extended minds. Decision support and decisionmaking powers were routinely devolved to nonorganic intelligence. And, while humans had a right to the privacy of their ruminations, the
question arose of whether they also had the right to the privacy of the records of those ruminations (such as mobile phone use histories and map searches), especially when there were public safety reasons to disclose these types of information.

This tension increased exponentially when humans became codependent on AI gurus. Are conversations with a guru privileged and protected? Do governments or corporations maintain access to these conversations? Can they incriminate people? Initially, warrants were required to force disclosure of guru interactions. But spousal privileges were eventually extended to gurus—i.e., gurus cannot be compelled to testify or provide evidence against their users. Eventually, gurus may have fictional personhood rights (like corporations).

Team 3. Data as the New Oil

This summary of Team 3’s world was written after the workshop by a team member:

In world 3, there is a tension between the abundance of resources and the concentration of power. AI has had profound advancements, but its capabilities are limited to measurable data. In this world, power is defined by data. Individuals have secured rights over their own data, but large institutions remain a powerful market force.

Team 3 resisted generating an origin story from a trigger problem or a speculative scenario. Instead, it began with two overarching questions regarding the future of work: “Who am I working for?” (i.e., what is the authority or power structure to which I am accountable?); and “what am I working for?” (i.e., what is it that motivates me to work?). They then went on to grapple with the framing of this world in an attempt to better unpack these two questions and define a target goal. From the two overarching questions cascaded a whole series of other questions, issues, and tensions that the team wrestled with as it sought to world-build toward its goal. One of the team members put it most aptly by saying:

The most significant point I took away was the three ways that AI could manifest itself in the future that were represented in each of the three groups (teams): the first being an AI that makes decisions on behalf of society (Team 1—an archipelago of biospheres), the second being AI as an extension of the individual (Team 2 with their AI gurus), and, third, AI that aids in making decisions on behalf of institutions (Team 3).

The workshop started with a provisional speculative scenario framework that was biaxial, with the vertical dimension being about markets and social systems with decentralized/networked at one extreme and centralized/hierarchical at the other extreme and the horizontal dimension mapping the ideology as collectivism at one extreme and individual freedom at the other extreme.

Team 3 worked on generating a multidimensional interrogative (not speculative) framework with the vertical dimension mapping market power, with concentration of market power/oligopoly at one extreme and distributed power at the other extreme, and a series of three
other horizontal dimensions mapping against the vertical dimension of market power. These were

1. material scarcity, with constrained at one extreme and abundant at the other
2. domain of competition, with material (wealth, resources) at one extreme and nonmaterial (social reputation, esteem, influence, trust, etc.) at the other
3. social cohesion/focus, with the collective at one extreme and the individual at the other (see Figure 5.1).

Figure 5.1. Team 3’s Set of Inquiry Frameworks

They identified a region that balanced around the center of all of these dimensions as their target. This led to a robust and far-ranging series of thoughts and questions, which fed into our final discussion. The overall coherence in the team’s conversation worked off of a center of
gravity around achieving balanced power (the center of the vertical dimension) by negotiating the condition of scarcity and abundance from a market perspective:

Without meaningful scarcity, there is no (or much less) basis for power because the main dynamic that gives rise to social/political power, and the main thing that power does, is allocate access to constrained resources that people want.

This led to three related sets of questions and issues:

- The “what” question: “A high-power determinant of many elements of future worlds will be what are the most important constrained resources that people desire.”
- The “how” questions—i.e., how the scarcity/abundance dynamic is played out: “If there is a general condition of abundance (i.e., assuming away the positional goods for the moment), and assuming that some people will still desire power over other people, creating and sustaining power will require creating artificial conditions of scarcity.”
- Questions relative to work: how work, access to work, and extrinsic and intrinsic motivations fit into this scarcity/abundance/power framing.

Adding the overarching questions of AI into the mix meant that much of the speculation played out around access to and control of data rights: Who gets what? Who is responsible for what? Who controls what?

This group took a rogue approach (see some of the comments in Appendix C) and chose to interrogate the problem rather than experiment with speculative proposals, as Teams 1 and 2 did.

Some key assumptions:

- The United States still exists as a viable unit of organization, and the world still exists in a similar form. The power structure assumes the existing frame but with emergent factors.
- There is a tension between material abundance and the concentration of power.
- Jobs exist, and people want to work.
- Longevity is a key factor.
- Connectivity is a key factor: Connectivity to power is about the extent and locus of networks.
- The local aspects of life are geographically focused, while the reach of the internet provides access to information and connectivity.
- Connectivity has magnified information.
- Values and purpose are reserved and protected for human input.
- There are profound advances in predictive AI capabilities, but these are limited by the amount and value of measurable data.
- Power is directly associated with defining the metrics around data.
- Individuals have property rights over their data.
- There is a focus on values related to stability, creativity, purpose, and equality.
- There is a dominant utilitarian calculation—“it’s still about utility.”
- Generations overlap more, and there are more people in every family.
Team 3 then went on to outline how their perspective and its associated assumptions would play out over a series of domains. They developed eight personas, but these were not very helpful to them because they took a pragmatic utilitarian and lightly philosophical/theoretical approach.

Legal system:

Individuals have rights over their data. This right is protected by the law and enforced by an AI. The nongovernmental organization called the World Telecommunications Union was established to create and enforce global data rights. An AI was set up with rules to monitor the World Telecommunications Union treaty, and automatic sanctions are implemented when data rights rules are abused. Large monopolistic institutions like Facebook and Amazon persist and subsist off of individuals’ data, but individuals are able to revoke their rights to data access at any time.

With regard to the legal system, the team asked what institutions needed to be created (the World Telecommunications Union), what needed to be changed (intellectual property and labor laws), and what needed to be ended (laws and briefs written in impenetrable language).

Values:

Human novelty, authenticity, tasteful (or valuable) imperfection, prestige, esteem, and trust are some of the key values.

Information:

Personal data property rights are critical. There will need to be systems for creating these rights, combating misuses, enabling and moderating data and rights, and dealing with criminal activity. What is the role of intellectual property in this world?

Work:

People want to work and are able to work in this world. Service jobs and startups are the primary work of low-paid individuals. Large, established companies use AIs to screen job candidates, which creates barriers to entry in highly paid and highly skilled work. Companies value data to inform their AI technology, so people use their data as a mechanism to generate income. People are incentivized to create data that are more valuable, which censors their behavior. There is data inequality because those that work don’t have to share their data for income.

“Data is labor,” and work generates data from kinetic wearables and all kinds of data sensors. It is not yet clear what is work and what is not work because all activities are involved with data production and retrieval. But there is a difference between work and a job:
Work is defined as “a set of activities done by a human that are potentially unpleasant and psychically costly to the human at the moment the activities are being performed but that yield some possible future benefits. This definition could be broadened to include nonhumans if we have reason to believe that the nonhuman entity would prefer not to engage in the activities absent the hoped-for benefit.”

And a job is defined as “a contractual relationship between one independent entity (individual human, collective human, or some other intelligence) and a human whereby the human agrees to provide the other with effort or a work product requiring work. A consequence of this definition is that robots can only do ‘work’ insofar as the contracting entity has the choice of contracting with a human or a robot.”

Education:
Education is directed development. One buys and creates “skills futures.” Education is designed around a skill- and attribute-based system of valuation.

Nation states:
Does citizenship exist? What is the role of existing nation states (and citizenship)? What new entities exist?

“Human” factors:
Relative to biology, humans and technology are integrated. An analogy was made to fryer chickens, a genetically optimized chicken—humans have been biologically optimized with technology. Other factors to consider: the genetic endowment problem, mating matchmaking, and usefully accurate genetic correction.
6. Next Steps

As noted above, this workshop aimed to “help inject more focus on human agency into our consideration of technology futures by exploring purposely different scenarios that stretch the imagination to think about what we would like to have happen within a robust framework for how it might happen.” Ultimately, we aim to identify a system of concrete actions that “lead to both new thinking and coordinated effort by networks of intellectuals, ideological activists, funders, and politicians to influence policymakers, elected officials, and the general citizenry in a direction that aims at a desirable future, not merely a default one.”

We envision two broad categories of next steps building on this workshop: (1) Complete the world-building exercise and (2) conduct a quantitative Robust Decision Making (RDM) effort aimed at identifying and evaluating near-term actions that might help realize a future similar to that described in the world-building exercise. 11

A world-building effort would aim to expand and refine possible futures around an assumption that technology would enable new kinds of work and would be optimized for everyone to use. The process would seek to uncover assumptions, issues, and questions (a beginning) and then complete the following steps:

1. Generate a single but inclusive speculative scenario and a well-constructed and well-informed framework of assumptions (logic points) that this speculative scenario will run on.
2. World-build those out with a dedicated group of experts.
3. From the world-build, propose a system of concrete actions to accomplish the goal of “new thinking and coordinated effort by networks of intellectuals, ideological activists, funders, and politicians to influence policymakers, elected officials, and the general citizenry in a direction that aims at a future that is desirable.”

To accomplish those next steps, we propose four activities:

1. Create a small task force to review, consolidate, and expand the work of this first workshop—specifically, creating a single speculative scenario and a framework of assumptions, mapping the domains to intersect with, and generating a list of potential experts to invite to the world-building summit.
2. Convene a world-building summit to build on the speculative scenario with a well-thought-out group of experts.
3. Generate a document that captures the world-build. This will be similar to an encyclopedia.
4. Return to the task force to design the system of concrete actions that was generated.

11 In addition, this workshop has also spawned follow-on thinking, such as the scenario analysis in Lempert (2019).
For Activity 1 (to get us started):

The task force would consist of several of the original workshop invitees and RAND Corporation and Pardee RAND Graduate School (Pardee RAND) associates who are both specifically dedicated to this topic and imaginative boundary-jumpers by nature. The task force would meet three times over a five-week period with the specific intention of not only collating the workshop work but also augmenting it with a series of seminal readings and distributed research.

To make sense of the three speculative conversations and sketch proposals from the first workshop, we would begin by looking at common and different assumptions, themes, lines of inquiry, specific things proposed, and questions that emerged. We would do this through five lenses. These lenses, while associated with the workshop framing and methodology, were made most significant—i.e., more significant than other possible lenses—by the results of the workshop.

1. How did each team negotiate the framework that mapped the tensions between centralized versus distributed markets and social systems against the ideological tensions of focusing on individual versus collective needs?
2. What was driving the speculative “what if” scenario of each team—i.e., where did each team start, and why?
3. What assumptions were the teams working with, and how did these assumptions operate in their speculative schemes? Which assumptions were they accepting as undeterrable or positive trends? Which were specific to their speculations/inquiries—to their starting points and drivers? Which were they wrestling with as important yet hard to qualify in terms of value and effect?
4. How did each team frame its conversation around work? More specifically, how did the notion of “work worth doing” versus the notion of “work as jobs” fit into this? This implicates discussions around several topics, such as extrinsic versus intrinsic motivation, whom one works for, how one works, and value creation. All of these are directly allied with the other lenses above. We want to also revisit Hannah Arendt’s framing of human activities in terms of labor, work, and action (Hannah Arendt, The Human Condition, Chicago: University of Chicago Press, 1958, pp. 7–8).
5. What were the roles of technology and of AI specifically, with clear demarcations between the three AIs as framed by PwC (2017): assisted intelligence, augmented intelligence, and autonomous intelligence?

We also envision grappling with these issues using an RDM analysis, which would focus on identifying and evaluating near-term actions that would shape the longer-term future in desired directions.  

The analysis might use the results of the world-building to inform the initial RDM decision-framing step—in particular, the desired outcomes; the potential actions to be taken; the relevant uncertainties; and the envisioned relationships, implicit and explicit, that connect actions

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12 Lempert, Popper, and Bankes (2003) offers the first extensive description of RDM.
and uncertainties to outcomes. The analysis based on this framing would propose initial actions, stress them over many futures, identify vulnerabilities of those actions, and suggest hedging and shaping actions that would reduce those vulnerabilities. Such an analysis might focus on questions of policy persistence, such as which near-term actions might create positive feedback that over time would help move the complex, emergent human and AI system toward desired goals.\textsuperscript{13}

\textsuperscript{13} Isley et al. (2015) explores policy persistence in the context of climate change.
Appendix A. Workshop Participants

John Ahlquist, political scientist  
Center for Advanced Study in the Behavioral Sciences (CASBS)/University of California, San Diego

Shahzeen Attari, environmental engineer  
CASBS/Indiana University

John Seely Brown, technologist, organizational theory, education, and AI  
Deloitte Center for the Edge

Lauren Davis, poverty policy researcher  
Pardee RAND

Sean Knierim, international development policy and founder of SidePorch  
CASBS/SidePorch

Camilo La Cruz, social and data scientist, networks and media  
CASBS/Sparks & Honey

Jonathan Lamb, policy researcher and user experience design  
Pardee RAND

Robert Lempert, principal researcher: risk management and decisionmaking under deep uncertainty  
RAND

Drew Lohn, engineer and technology policy  
RAND

Tim McDonald, policy researcher and design methods for large social systems  
Pardee RAND

Angela O’Mahony, political scientist and policy researcher  
RAND

Osonde Osoba, technologist (AI)  
RAND

Ted Parson, environmental law and policy  
University of California, Los Angeles

Ann Pendleton-Jullian, architect, complex systems, education and media  
RAND/CASBS

Gery Ryan, behavioral social scientist and policy researcher  
RAND

Rushil Zutshi, policy researcher: labor markets, development policy, behavioral health and climate change in the developing world  
Pardee RAND
Appendix B. Workshop Agenda

DAY 1

1:00–1:30  Welcome, introductions, and what we are doing
1:30–2:15  Frame the problem through a group discussion sparked by one or two points from the readings
2:15–3:00  Workshop method: Speculative design and world-building
3:00–3:15  Break
3:15–4:45  Work session #1: Each team will build an assumptions (logic points) map and create an extended or modified “what if” proposition.
4:45–4:55  Talk about the following day.
6:00      Dinner at a nearby restaurant

DAY 2

9:00–9:30  Reconvene: Capture any overnight thoughts and break back into teams.
9:30–10:45 Work session #2: Revisit assumptions (briefly!) and take a first dive into world-building (identifying containers and asking what ______ would look like).
10:45–10:55 Break
10:55–12:15 Work session #3: Introduce a second set of lenses to each team and generate more world-building from these additional perspectives. (Each team member will imagine and adopt a second expert persona to add to the mix.)
12:15–12:45 Lunch
12:45–2:00  Work session #4: Pick critical containers and fill them out through artifacts.
2:00–2:15  Break
2:15–3:30  Show and tell, conversation, and what can we do about this?
3:30      Share thoughts around the room.
Appendix C. Some Participants' Post-Workshop Reflections

In addition to the excerpted quotes on page 1, we share some key quotes relative to the process:

Having worked on climate change since 2004, the world-building exercise was a deep dive into a space of speculative scenario planning where the world became far more real to me. To imagine a specific world with assumptions was both challenging and rewarding. To be specific, this world started off as a dystopia, but as different people in the group started to think through the challenges of the world, the technology we would need, the social structures that would need to be in place, the world slowly transformed from a dystopia to something more easy to imagine and live with.

The shift from thinking about the world to imagining specific characters in the world allowed us to background the climatic and weather challenges and focus more on the social structures, an exercise I have never fully engaged in. The question I was left with after this exercise was: What should we do next? Some form of thinking changed in me—made me more hopeful about the future, but I was not sure where to go next. (Team 1 member)

In brief, I was skeptical. Filling out a couple of containers seemed ho-hum. I almost wasn’t going to do it but then again . . . not overthinking and just start doing broke the ice for me. The catch is to not overthink . . . but jeepers, aren’t we paid to think before everything? So, of course the natural state is to think, think, think. Wrong instinct here. I now get it. (Team 1 member)

I think the process of imagining without limits, of breaking outside of what we currently know, is really key to any sort of big thinking. We got very much into discussion of the society as a complex adaptive system and being decentralized and resilient. We got close to developing something like a set of principles for working in a complex adaptive system. (Team 1 member)

My big takeaway from the conversation is that the notion of “AI” has become something of a talisman to be invoked whenever we need a narrative device or other mechanism to wave away the messy human problems of conflicting interests, power, spite, and fundamental problems of collective action. Over the course of the 1.5 days, it was clear to me that AI meant different things to different individuals and groups and was often not internally consistent. It felt vague and mushy.

At the same time, I also feel like talk of AI sucked a lot of the air out of the room, precluding serious conversations about what we might do if we cannot rely on the conveniences of modern data storage or communications. (Team 2 member)
I thought the workshop worked great. I am intrigued by our group’s discussions—for instance, the AI guru idea—in part because, when combined with the assumption of no material scarcity, our team’s scenario creates a set of questions related to identity, meaning, and social connectivity completely orthogonal to so much of today’s utilitarian economics-based discussions.

I’m eager to start thinking about the scenario pathways that might take us from the current world into one or more of our imagined worlds. (Team 2 member)

Personally, one of the most fascinating takeaways for me was the “goods” people value in a post-scarcity world. When the bottom rung of Maslow’s pyramid is no longer a limitation, it’s interesting how humans might pursue and trade less tractable goods such as prestige, adoration, blessings, and so on. But what differentiates it from the slice of the current populace that lives in post-scarcity is that in our world, people obtain these “goods” solely through work, and they are an end in themselves.

Often, while debating policy, we lose sight of the fact that at some level, human beings are just trying to live the best possible life they can, and the meaning of this changes drastically in a world of heavy automation and AI. (Team 3 member)
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