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The Gap Between AI Capabilities and Their Use in the Workplace

by
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9 Min Read

September 26, 2025

Erik Brynjolfsson, director of the Stanford Digital Economy Lab, has been researching and writing about the impact of digital technologies on work for decades. He has published some of the biggest studies on genAI and jobs, including early research showing the technology provided a meaningful productivity boost for less experienced customer-service workers, and a [recent study](#) suggesting that it has worsened job prospects for some groups of entry-level workers.

M1 partner Charter recently spoke with Brynjolfsson, who is a co-founder of the startup Workhelix and whose books include *The Second Machine Age*, about where the AI transformation stands today and what capabilities workers should be building for what comes next. Below is an excerpt from that conversation, edited for length and clarity; the full interview can be read [here](#).

Can you talk about the motivation for writing your new paper '[The Future of Work with AI Agents](#)'?

It's a big paper—there's a lot of different parts to it. One of the key things was comparing the kinds of things that AI is doing versus the kinds of things that people would *like* AI to do. I've been doing other work for some time, actually going back to a paper with Tom Mitchell in 2017 in *Science*, where we tried to understand better how machine learning and later generative AI would affect work.

The way we did that was breaking occupations down into tasks, and that gave us some sense of where AI would most likely affect different parts of work and different parts of occupations. But another side of it is what people actually want to have AI help with. There are parts of jobs that people would just love to get rid of. There's other parts of jobs that people love. I love a lot of my work. I bet you do too. And there's not always a great match between what AI is doing and what people would like AI to do.

How would you make the case to a skeptic who might argue that it's less important what people *want* automated—that technologists and managers should focus on automating valuable things?

First off, I don't think AI is just for automating. It's also for augmenting. A lot of people jump too quickly to automating when really most of the value today—and for some time—is going to be from augmenting, allowing us to do new things, allowing us to do things better. Most technologies have been augmenting technologies, not automating technologies. My paper *The Turing Trap* goes into that.

But I agree that it is great to identify valuable opportunities. You could put weight on [tasks] based on how much salary or value-add there is. I think that's a great thing to do. But another part is how much people like doing jobs. People get a lot of either utility or disutility out of working, and that's not taken into account [by] GDP. But it's actually quite significant.

In *The Turing Trap*, you have a graphic that illustrates tasks humans can do, tasks humans can do that machines can automate, and a whole area of *new* tasks that humans can only do with the help of technology. How can leaders identify opportunities in that third bucket—new tasks that are now possible with AI?

First off, it's hard. And there's a bias that basically everybody has. It's so much easier to think, 'How can we apply AI to what already exists?' Thinking about what hasn't existed yet that we could create, that's a much intellectually harder question. At the same time, it's a much more valuable question.

Great entrepreneurs, great inventors, they create value by asking that second question: How can we create something new that didn't exist before? I don't think there's a list of these things yet that could exist, they have to be created on the fly. But if people put the time into doing them, I think it ends up being much more valuable—and from a business perspective, much more defensible—value creation than simply taking costs out of things that are already being done. So I encourage managers to do the hard work of thinking about those [opportunities]—engineers, scientists, researchers to do that as well.

Many of the AI labs are focused on developing artificial general intelligence (AGI), which some have defined as an AI system that can outperform humans on most economically valuable tasks. What do you think about that goal?

So the word AGI—I have a little bit of a minority opinion that I feel like people are not using the word literally correctly. They keep using it as a synonym for *human* level or *human* activities. As I say in *The Turing Trap*, humans have a lot of intelligence, but it's not the only kind of intelligence. Bats are able to do echolocation that I can't do. Chimpanzees have better short-term memory than humans. Obviously calculators and all kinds of machines can do all sorts of cognitive tasks better than humans can.

Humans have a particular kind of intelligence, but equating AGI with human intelligence is, I think, a category error and it leads to some practical mistakes like steering the technology towards trying to match humans. And it implicitly and sometimes explicitly puts a premium on shoring up the places where machines are not as good as humans. Often there's a lot of value in having machines build on their strengths—have them help us do new things that we never could have before.

Buttoning a shirt is something that a 4-year-old can do, but it's really hard for a robot. Or walking upstairs. Whereas multiplying large numbers and sifting through lots of data and recognizing patterns, these are things that many kinds of machine learning systems can do extremely well, even if humans have trouble with them.

I'm glad that people are working on advancing the capabilities, but from an economist's perspective, most of the value is in doing new things that we hadn't

done before, not simply taking the same things that we're doing and doing them more cheaply.

There's a thought experiment that's worth highlighting in The Turing Trap that I think really highlights this. There was a mythical engineer called Daedalus who supposedly made humanoid robots, and if he had made robots to do each of the tasks that the ancient Greeks were doing and really focused on what was being done and simply replicated them—making clay pots, fixing chariots—it would've been good in the sense that you could have eliminated a lot of labor, or maybe all labor if they did all those things. But you could also see that having rooms piled with clay pots and chariots that are always running smoothly is not anywhere near our living standards. Most of our value came from inventing new things that never existed before. I would've steered Daedalus towards trying to do new things, not just take our existing tasks and match them.

In your 2000 paper *Beyond Computation*, you argued that to really see the benefits of new technologies, companies have to make all of these other complementary investments and change their business processes. Where do you think we are today in terms of those complementary investments and process changes with AI?

It's like rolling waves, it happens one after another. That said, I do think we're still very early. There are new business models that are going to be invented—that are being invented—that we haven't seen yet.

That Beyond Computation paper was written in the year 2000. The internet was hot and everybody was excited about it. Jeff Bezos had said, 'Let's take bookstores and we can reinvent how they work.' Thankfully, when he said that, he didn't mean take the cashier and replace them with a robot. That would've been kind of a lame way to automate a bookstore. He came up with a whole new business model.

But it's interesting that now we're in 2025 and most retailing is still done in physical stores. Books, software, a lot of that's moved to the cloud. But total retail sales in the United States—every year, more and more of it is done online, but it takes decades for this transition to happen in the economy. So we can look at the current situation and see how the internet is taking time to transform industries like retail. It's happening, nobody would say it was a dud. But it takes a long time.

Likewise, AI will play out over some number of years or decades and continue to transform the economy. The tech-industry people are very enthusiastic about these [models'] capabilities, and I agree, they're breathtaking. They can win the Math Olympiad gold medal, etc. That's awesome. But then people in the rest of the world are like, 'Well, where's the productivity? Is it really changing my insurance company? Is automobile manufacturing completely different now?' And in most cases you have to squint really hard to see any difference at all.

That gap between capabilities and actual implementation is what I talked about in Beyond Computation, and it's self-evident that we are a long way from closing that gap. I believe it's going to happen a lot faster than it did with electricity or with the internet, but it'll still take years.

Part of my mission is to shorten that gap. I have this company, Workhelix, that's focused on reducing the lag time so that we can take these capabilities and turn them into value for consumers and productivity. It's a multi-trillion dollar opportunity, and the bottleneck is not in adding to our capabilities. The bottleneck is figuring out how to transform business.

When people talk about the importance of reimagining the way things are done with a new technology, startups often come to mind. How do you do this if you're an incumbent?

Well, it starts with asking the question you just did. Because honestly, I think asking the right question is halfway to a solution. More and more senior executives and CEOs are realizing that they need to rethink their businesses. It's not enough just to buy the software and bolt it onto what they're already doing—they have to be ready for a much more fundamental transformation.

One of the tools and techniques that I found very effective is what we call the task-based analysis, where you take your organization, you break it down to occupations, you break each of those occupations down to what I call the atomic unit of work, which is the task. O*NET has a taxonomy of about 18,000 tasks. At Workhelix, we have a much richer taxonomy of a couple hundred thousand tasks. For each of those tasks, you can now assess whether or not AI can help with that particular task. Sometimes generative AI is a big boost. Sometimes generative AI doesn't do much.

After you've scored every one of those tasks, you now have a data-driven roadmap for where the value is. As you mentioned earlier, you multiply the task by how much value is associated and assess whether AI can make a big difference. Now you can prioritize which ones are most important. That gets you a long way towards knowing where to implement AI.

Once you do that, you have to measure it. Most companies aren't careful enough about having causal inference, where they understand what the causal relationship is between introducing AI and actually getting benefits. We were looking at one company recently—they found that the coders who were using the AI tool were way more productive, and then we asked to look at the data more closely. It turned out that those coders were already more productive even before they got the AI tool. They were the rockstar coders, and they were the first to adopt some of these tools.

So it wasn't the tool really that was driving most of the change. To be fair, it did drive some of the change. But they had massively overestimated the effect by not taking into account this causal inference. Being much more careful about identifying the KPIs and metrics and how they're doing causal inference—that's the next step. If you do all those steps, then you're going to have a good chance of closing that gap between the capabilities and the business value.

***The Second Machine Age* makes it clear that it's hard to predict which skills are 'future-proof.' But it's likely easier to identify skills that complement current technologies. What skills do you think complement AI?**

On your first point, I agree. A lot of the things that we said in *The Second Machine Age* held true for a while, but now some of them are flipping around. At the time, I didn't think computers could be that creative, but LLMs and generative AI do have a kind of creativity, or [they] help with creativity.

On your second question, I would say leadership and management of agents, whether they're human or non-human. I think increasingly we're all going to be CEOs of teams of workers, and a lot of them will be non-human workers. Having the skills to identify a goal and specify it clearly and allocate it with clear instructions to the agents and have them work on that, and then have them come back and verify whether they're doing the right performance—arguably even [with] some incentives and motivation—those are all skills that are super valuable when dealing with agents and with dealing with humans. Almost all of us are going to become CEOs.

Jacob Clemente is senior reporter, AI & work, at [Charter](#), a media and insights company that publishes articles, shares original research and hosts events for workplace decision-makers. This content is brought to you through M1's partnership with Charter. More information about gift subscriptions for our members can be found [here](#).

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