



Social Vision in the Age of AI

– Work, life, and the pursuit of a new ethics –

As AI becomes ever more prevalent, one thing is certain: its impact on society will be tremendous. How will AI evolve? How will it change the way we work? And how will it affect the nature of our society? We asked Mr. Joichi Ito, the director of the MIT Media Lab, about his vision of the future.

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Venture capitalist, activist, and entrepreneur, Joichi Ito has been Director of the MIT Media Lab since 2011. The lab conducts interdisciplinary research into applied technology, art, communications, and artificial intelligence, centering around the field of digital technology.

What if AI eliminates the need for human work?

There is growing concern that people will lose their jobs as humans are replaced by artificial intelligence (AI). Recent progress in AI is undoubtedly remarkable, so it's understandable that people are starting to worry about the future of work. But this is nothing new. Advances in technology have always changed the way we work, eliminating some jobs, while creating new ones. There are many things we can learn from past examples such as the Industrial Revolution. The real problem is how to cope with the possibility that the spread of AI will make human work unnecessary.

For example, one field where AI could have a big impact is medical care because large-volume data analysis is ideally suited to machine learning.

It takes many years of hard work and study for a human to become a doctor. And that effort doesn't end once they become a doctor. Keeping up with the latest knowledge is crucial in order to stay abreast of progress in medical care. An AI technology, on the other hand, can easily absorb massive amounts of information, continuously updating its knowledge base. In other words, it's possible that AI will take over tasks conventionally performed by humans, such as diagnosis.

Should this happen, the role of doctors may change from that of hand-on practitioners to something more

like an AI operator. Or the importance of their role may be more critical as an interface with nurses, pharmacists, and patients and as a medium for relaying to patients the assessment of the AI.

If that's the way the future turns out, people will simply go to a pharmacy when they get sick, only going to see a doctor at a hospital when it is specifically necessary. Should that be the case, the occupational role of doctors will significantly change and there will be attempts to deregulate medical practices that can be performed by nurses and pharmacists. As a matter of course, the educational system will also change.

What we must think about when AI changes the way we work is how our society should accept AI and robots. The answer to that may differ depending on the country.

As AI spreads, jobs that are suited for AI and robots will be the first ones to be replaced. I think this kind of trend will be welcomed in countries like Japan, where there is inherently little antipathy towards the introduction of new technology and the population is rapidly aging. On the other hand, countries with larger and younger populations like the United States may not be as willing to accept these changes because the idea of increasing the unemployed is abhorrent. My prediction is that these differences in willingness to accept AI and robots will directly affect the competitiveness of nations per se.

If AI starts replacing human labor, it will spur the introduction of a universal basic income, which guarantees a base level of household income. If AI and robots improve the efficiency of industry and society, there may come a time when people don't necessarily have to work. If that does happen, many people may lose their sense of worth because they have no work to do. I think this is critical and we need to discuss what we should do about the *raison d'être* we get from our work. Maybe, there will come a time when we live in a world like ancient Greece where we let AI do all the work and we concentrate on philosophy, art, and sports.

I think our present sense of the value of money and the value of human relationships will change if all that is achieved. For example, it's possible that an index to measure the value of a nation such as GDP may be expanded to take into consideration household chores, childcare, and other social contributions.

Bias in data and the issue of ethics are the keys to safe utilization of AI

Is AI a danger to humanity? From renowned thinkers like Stephen Hawking to innovators like Bill Gates, the notion of a "singularity" in which AI surpasses the intelligence of humans and poses a threat to the very exist-

ence of our species has led many to fear the development of AI. This fear has become to subside and many scientists today think that such an event is unlikely. It's not utterly implausible that AI will be autonomous, but I don't think it will be common. Even now, the formation of knowledge by humans and computers in groups is called collective intelligence. I think it is more likely that humans and computers, or data, will collaborate with each other to perform various tasks.

In addition to the role of doctor's surrogate I already mentioned, AI is expected to be effective as a support tool for judges and police officers.

Currently, one of the biggest issues in the US justice system is how to set the amount of bail. For example, if a single mother is arrested for speeding and the bail is too high for her to pay, she will be incapable of paying it and sent to jail. If this happens, the mother can't work and her children can't go to school, resulting in a broken home. This will result in much greater damage to society than the actual offence.

To prevent this from happening, it is necessary to set bail appropriately. However, there are countless cases like this, and judges make their decisions quickly and intuitively. I think this problem could be solved by using AI to determine bail amounts based on previous criminal record and potential flight risk.

Similarly, when it comes to releasing a prisoner on parole, decisions are often made intuitively. There are many problems with this. Some research suggests parole decisions can become harsher over the course of a day since judges take a lunch break. In this case too, results can be optimized by referring to the judgment of an AI. As we have seen, humans have weaknesses and biases that can affect their decisions. Applying AI in these situations can produce optimized outcomes, helping change society for the better.

There are problems with AI, however. In particular, is the problem we call the bias of data in learning. For instance, the law enforcement system in the United States uses a type of AI called predictive policing that advises officers where to go in order to prevent crimes. In New York, police officers can question anyone who looks suspicious right on the spot. However, racial discrimination is persistent in that country, and arrest rates are higher in black neighborhoods. In other words, if data on arrest rates is used, the AI determines that there are more suspicious people in black neighborhoods, causing a vicious circle of more arrests of African-Americans. When there is a bias in data like this, AI ends up making biased decisions, so it is important to figure out how to eliminate this.

This problem also leads to the question of social ethics. As is clear from today's US politics and presidential race,

there are many cases in which people can come to a conclusion that may conflict with what is considered an ethical or social good. Simply talking about it doesn't help create AI with a high ethical standard. Teaching ethics to AI is difficult. It's just like teaching ethics to students. If things aren't done right, there is a danger of amplifying the evil elements that exist to some extent in all of us.

AI will change the nature of humanity

In the next ten years, we can expect a rapid increase in the number of cases in which AI will make socially important decisions in areas where human lives are at stake, such as autonomous driving and medicine. In the case of self-driving vehicles, one of the most salient issues is how to decide what such a vehicle should prioritize in the event of an emergency — for example, whether it should protect the passengers' lives or the pedestrians' lives.

As people become accustomed to the presence of AI in different aspects of their lives, society will begin to experience dramatic changes. When self-driving vehicles become commonplace, those people who insist on driving themselves will come to be seen as dangerous outliers, much as drunk drivers are regarded today. Inevitably, this will result in conflict between the idea of the public good and the individual's right to the enjoyment of driving. I expect something like this will happen in Japan sooner than in the United States because the Japanese adore gadgets.



Talking about twenty years from now, it's possible that AI will make a discovery beyond our imagination and surpass humans. Even now, there are more than a few researchers who believe that we will soon create robots that learn on their own initiative and have their own opinions. If that happens, AI could move into areas where humans have made decisions so far — such as companies managed by AI and funds controlled by AI. In terms of working based on processes, governments and corporations are entities that are inherently well-matched with AI, so at some point AI may take control over such entities.

In thirty years or so, as the biological sciences — such as genetic engineering — progress in tandem with this, we could see humans physically connected to computers. As Hiroaki Kitano who heads Sony Computer Science Laboratories is trying to file more than a million medical papers per year using machine learning has pointed out, medical research itself is being accelerated by AI. If this trend spurs research into genetic engineering, there will be arguments about whether computers should be made with silicone or biological material. So someday there will be no boundary between natural and artificial objects. These kinds of things will happen in the research layer within ten years. And I think they will be a reality in the real world within thirty years.

In other words, there will be a time when human functionality will be expanded. When it becomes possible to prolong people's lifespans and backup people's bodies with clones, there will be arguments about how to deal with the resulting problems of culture, ethics, and human emotion.

Resistance to this future may seem strong today, but remember, just thirty years ago the idea of *in vitro* fertilization generated a tremendous amount of antipathy. Today, it is accepted as normal. In this way, people sooner or later accept new things as long as they are socially valuable. So I have a feeling that progress in biological sciences will eventually be accepted too.

By the way, as I mentioned earlier, there are many people who worry that AI will become more intelligent than humans. But humans with expanded functionality made possible by bio-engineering may be more frightening. That's because humans have their own mind, and if evil humans expand their functionality, they can potentially be more dangerous than AI.

It's not easy to predict when what I have said will happen and how the world will change. I think what happens in the future will depend on the timing of these breakthroughs.

* This article is edited based on an interview conducted in July 2016.

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December 2016

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