

Spiritual Robots: Kevin Kelly Presentation

Will Spiritual Robots Replace Humanity by 2100? **Kevin Kelly** goes to the heart of the question and comes up with a (two-word) answer. [Kevin Kelly](#) is Editor-At-Large of "Wired" and the author of "Out of Control: The New Biology of Machines, Social Systems and the Economic World". [Spiritual Robots](#), Part 6. [2000-06-15]
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Transcript

[00:00] 2100

Unlike most people on this panel, I am not a scientist or technologist. My role is mostly as a social observer. I was actually going to try - maybe unlike everyone else- and answer the question... [laughs, applause] There are six key words in Doug's question: *will-spiritual-robots-replace-humanity-by-2100?* So I wanted to talk about each of those words. There are six words. I'm going to talk one minute about each word.



I'm going to start from the back - 2100. I think it's very useful to think in terms of generations. A generation I define as about 25 years. On average, that's been about how long a human generation has been. [At] 25 years people start breeding. Over a century, that's pretty good. So that means that civilization, which began about 10 thousand years ago -the earliest cities were about 8000 years BC- that means that in the first 10 thousand years of civilization we've had about 400 generations. 400 reproductive cycles. That means, if you think about your mother, and your mother's mother, and the mother of your mother's mother, you go on, [there are] 400 mother-daughter cycles. That's civilization, that's humanity so far. So we've had the idea of automatons, robots etc. for maybe about eight generations. For the last two generations we actually made electronic computers in an attempt to make those [robots]. What we're suggesting here is, can we basically make true robots in another four generations? [] If you think about the fact that before 400 generations ago we were basically different than we are now - that's the definition of humanity and civilization. Did something happen? A paradigm shift? There are organisms and mammals that made things, but they didn't make civilization. Now we had something happen. So in 400 generations we did this incredible shift. So [we're saying here that] in [another] 4 generations we'll have another shift. I'm not answering this question, but I'm saying that that's the level that we want to ask this question on. It's 400 generations, so [at] generation 404 we're going to morph into something else.

In 2100 people are going to look back at us now and just be amazed that we thought we knew what humans were about. [...] Because we don't really know. I think we're in for a 100-year identity crisis.

[03:41] Humanity

Humanity. The central question, I think, that we're going to be asking ourselves through the next century, from now until 2100, the question that's going to be in *USA Today*, novels, the subject of movies, the subject of our conversations is going to be basically: What is a human and What are humans good for. This conference is part of that question. What are humans? What are we? What will we be or who will we be? What is it - oh, who will be we? So this is a central issue that we're going to work on for the next century. What does it mean to be me, what does it mean to be you, what does it mean to be male or female, an American, a human? What does it mean? Because what we're doing is we're making lots of other things that do what we used to do. So, I think, in 2100 people are going to look back at us now and just be amazed that we thought we knew what humans were about. They really think that they knew what they were about. Because we don't really know. So again, I think we're in for a 100-year identity crisis. We're launching right now.

[04:14] Replace

Next word -replace. Replacement is actually a very unusual position in biology. It's very, very rare that a species will replace another species. The most common thing that happens is that a species actually inserts itself into an existing relationship of other species. This is why we have

two million species now and we didn't have two million species four billion years ago. It's because, while many species have gone extinct, most species actually are not replacing others. In fact, the species that did go extinct did not [go extinct] because they were displaced by other species. It was from comets or internal troubles in general. The biological phenomena of displacement and replacement is actually very infrequent. So I think the same is happening with technology. [] It's very unlikely that technological things displace and replace other technologies. We've seen that in our own life where we tend to keep technologies. Sometimes they change and morph, but they actually don't go out of existence and become extinct. So given that we don't know who humans are and the fact that their roles are going to change, I think replacement even obsolescence seems very, very unlikely.

[05:45] Robots

Robots -the fourth word. In general, I like Hans' formulation that robots are basically our mind children. They are children of our mind. If you think about the issues that **Bill [Joy]** has raised about how [to] deal with the fact that we're going to make these kinds of systems of things that will go out of our control, that will self replicate -and that's the danger, that they are out of our control- what is interesting is [], how do we train children? We have children and we train them for this inevitable letting-go. In fact if we didn't let them go, it would not only be a disappointment but actually be kind of cruel. Just as with our normal biological children, so with our mind children. We have to let them go because it's only by letting them go that actually they can reach their full potential and they get their fullest power. There is nobody who has a teenager who is not slightly worried about this process[*laughs*]. Therefore actually, what I'm suggesting is that we should be worried because this is a vindication of the power of this technology. I would say that there is a power law that says that the power of technology is proportional to its inherent "out-of-controlness". There is even another extension [to] that, in fact: unless we can worry about technology, it's not revolutionary enough. That's why we're worried now: we're dealing with technologies that are very revolutionary. The way I like to think about technology is that we should be aiming to train it to be a good citizen [*applause*]. We should expect to let it go, and [] to deal with the fact that there are times [when] we can't control it.

[07:33] Spiritual

The fifth word is *spiritual*. What's the most spiritual event we could imagine happening right now? I think it's contact with ET. **[Frank] Drake** here will talk about that. It would rock every established religion. It would send theologians into the forefront just like they did in the movie *Contact*. But what's interesting is [that] we don't have to wait for a study to discover aliens because that's what we're going to do right now with AI. That is what artificial intelligence is. It's another name for ET. The AI is a different rephrasing of ET. We're going to [establish] the same kind of contact with that other - the other intelligence. Somewhere in my pocket here I have a calculator which is right now an other.[*Takes out calculator*] This calculator is smarter than [anyone] in this room - in arithmetic. Nobody is threatened by that. But in fact, this [*waves calculator*] is superior to every mind here -in arithmetic. So what's happening is that it's an *other*. It is so other that we are not threatened by it. I think what we're doing is [] making new kinds of intelligences. The way I like to draw this is that right now, if you [] map the different kinds of intelligences, somewhere out there there's a lot of different intelligences...[*plots chart in the air*] There's other animals... There's whales... There's us... Maybe down below there, there is the guppy and the hamster. Way up there in the corner, that's the calculator. They're all other. They're very different. What we're doing right now is [] populate this world and either make or

find a million, two million other intelligences and minds of various sorts and various dimensions.

Question: The question is, is there a God somewhere a mile that way?

Yeah, I think there is. There absolutely is. I think right now, meeting these minds is probably the most spiritual thing that we can do.

[09:40] Will

So here's the last word - *will*. *Will* this happen. I think technology has its own agenda. So the question I'm asking myself these days is what does technology want? [laughs] If technology is a child, even a teenager, it would help to know what teenagers want. We don't have a very good theory to go to about technology. We don't know [] its inherent desires, its inherent urges, its inherent systematics. We don't know that. So it's very hard to answer [] whether these things will happen. But I think that there are several things that we know about technology so far. One of the things that we know about technology is that it wants to get smaller. That's Moore Law. The other thing that we know about technology is that it wants to get faster. That's Ray's Law of Accelerating Speeds. I think there's another guess that technology wants to do whatever humans do. We can call that Kelly's Law... So every single thing that we are doing, this is what technology wants to do and will aim towards doing -not as a single species, but as a million different species, all kind of doing some of the things that we are now doing ourselves. So we're going to have competitors - not just one, but many. So humanity basically is going to fragment into a million different specialist technologies.

So what do humans do? In the end, what are you going to do? These [are] Hans' and Ray's words: computers are doing all these other things... What are we going to do? A lot of people are worried about this, but I think the answer is very easy. We're going to do anything we want to do. Which is a great liberation. Okay, so here's the question: Will Spiritual Robots Replace Humanity by 2100? I think I have a two-word answer: *no way*. [applause].

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