

Kevin Kelly — The Universe Is a Question

Author: Kevin Kelly

Krista Tippett, host: Across the years, I've heard Kevin Kelly described as one of the most fascinating people on the planet. And now that I've spoken with him, I understand why. He was the founding editor of the *Whole Earth Catalog* and of *WIRED* magazine. He's really a philosopher of our lives with technology. He doesn't think we should be surprised by the power of technology companies right now or unduly alarmed for the long run. He's fascinated by what we might learn from the Amish and how they collectively discern which technologies to use or not, and why. In writing and in life, Kevin Kelly has an original eye on the character and the spiritual meaning of technology that will unfold over time.

[music: "Seven League Boots" by Zoë Keating]

Kevin Kelly: We have a moral obligation to increase the amount of technology in the world, the amount of possibilities. And that's sort of what technology is doing over time. That's its role, is to increase the variety, the diversity, the options, and the possibilities that we have so that anybody who is born would be able to surprise God. And so I think that's what it is — it's a way of generating surprises. And that's the spiritual dimension of technology. It makes that much more likely.

[music: "Seven League Boots" by Zoë Keating]

Ms. Tippett: I'm Krista Tippett, and this is *On Being*.

Ms. Tippett: Kevin Kelly's current title at *WIRED* Magazine is senior maverick. His books include *The Inevitable* and *What Technology Wants*. He likes to note that the year in which he was born, 1952, was the first year that the word "technology" appeared in the State of the Union address.

Ms. Tippett: So a question I often ask at the beginning of my interviews, whoever I'm speaking with, is about wondering about the spiritual or religious background of someone's childhood, however they would describe that. I think, with you, I think I want to ask about the technological background of your childhood, like your earliest memories of what this meant as part of life in that time in which you were growing up. And perhaps it's connected to a way you might talk about what is spiritual or religious.

Mr. Kelly: Sure. So when I was growing up, which was in the suburbs of New Jersey, which is really, basically, the suburbs of New York City, technology was really not something that we thought about, or certainly, did not talk about very much. Computers were a thing that we didn't see very much of. I had the unique privilege, I might say, or the unique opportunity, to see computers very early, before many other people saw them. My father was involved in some role with computers and took me to a computer show around 1965 or so, I think. And I was totally bored by them. They were big cabinets. They didn't seem to do anything. They were nothing like the computers in the science fiction stories I was reading. They just didn't seem very real. They were kind of like, I don't know, cabinets that spewed out printed paper. They talked in

numbers. And so the image that I might have had, if you asked me about technology when I was kid, was, “Oh, that’s pollution. It’s big factories. It’s maybe big airplanes and rockets.”

Ms. Tippett: So let’s do some definition of terms. The word “technology” — you define technology broadly, so just talk a little bit about what you mean when you use that word.

Mr. Kelly: Well, I use it broadly to mean anything that’s produced by a mind. And that mind may be an animal mind. So in the broadest sense, when a beaver builds a dam, that’s technology, just like a human dam would be technology. So it’s things that are the product of minds. And it’s — broadly — a new domain of things on the planet that would only occur because of life but are, themselves, not living. And so these artifacts, these processes sometimes, that are made, not born, seem to be like a wholly new category. And individually, they are. So a spoon is a result of living processes and minds, but itself is not living. A shoe is not living. A chair is not living. A car is not living. But as we make more and more of these things, the — we require as many technologies to make a new technology. So if we hold up your iPhone or your phone, that’s a result of thousands of other technologies that are needed to produce that.

And I call that system as a whole “the technium.” So it’s more than just a bunch of technologies in plural. It is a system that’s like an ecosystem, or like an ecology that has its own behavior. And that behavior is an extension of the life force, the evolutionary process that has produced life. It operates in the technium, in that system, in the same way that it operates on living things.

Ms. Tippett: And even as you walk through some of the examples of things that, in the 21st century, might not necessarily come to mind for people when they think “technology” — like a dam, *[laughs]* or — you spent some years roaming around remote parts of Asia, after you dropped out of college. And you talked about really seeing inventions — I think you would say “technologies” — like aspirin, cotton clothing, metal pots, and telephones — as just so fantastic, because these things, as you say, they’re not living, but they become part of our lives and enhance our lives, even that kind of low-tech *[laughs]* technology.

Mr. Kelly: Yes, in fact, the low-tech probably has more impact on our lives than the high-tech. So right now, wherever you are, if you look around, most of the things that we produce with our minds are very old. So we’ve got wood tables, roofs, concrete, metal pipes. These are all ancient, and most of the stuff that is running your life is very, very old. But we tend to think of technology as anything that was invented after we were born, but most of it has been invented before we were born. And it’s not just the hard, physical things that would hurt you if you dropped it on your toe. It’s things like a calendar. It’s institutional things like a library. It’s — as you say, it’s aspirin, it’s cotton clothing. All these things are as technological as your phone, but we don’t see them that way, and they have, in some ways, far more impact on us than we realize.

Ms. Tippett: And I find your book, *What Technology Wants*, to be really important and thought-provoking, and I think if there’s any piece of your work or thinking that we’re gonna dip into more, I think it’s that one; also because you wrote it, I think, 2010, and because of the pace of acceleration of our technologies, the world has actually changed a lot in that time.

But one thing you pointed out in that book that has been pointed out to me just a couple of times in the last years, but I always — I think it’s so important — is that the word “technology” comes from the ancient Greek, from “tekhne,” which is like “art, skill, craft, ingenuity.” And you also use the phrase — this is about “useful arts.” That feels very tethering to me, as we think

about how we live with our technologies.

Mr. Kelly: Yeah, it's — it was originally seen as all the things that people did that were useful but maybe not necessarily beautiful, or maybe not necessarily thought-provoking, but that were useful. And if we look at, again, technology in the broadest terms, we discover that, in fact, our own humanity is one of the things that we invented. It's in part a product of our minds. So the reason why we're having conversations about technology today is that it's moved from just being useful, which it still is, to something being close to our own identity. And we're now asking ourselves, "Well, who are we, and who do we want to be?" because it's very obvious that we have the power to decide that.

Ms. Tippett: Exactly. So this moment we're in raises — and again, maybe this is just another degree of a phenomenon that's happened across human history. But we're faced with this realization that we need to reckon with the moral force of our technologies, on many levels, but also manage our lives with technology. And I'm just curious about how you work with that. And I was very interested — when you wrote *What Technology Wants* in 2010, you said — so this would be 2010, seven years ago — "I don't have a smartphone, Bluetooth. I don't tweet. My kids grow up without TV." You had no cable. You said you didn't have a laptop or travel with a computer. Is that still true, all of that?

Mr. Kelly: No, that's not true. That was true then, but no, I have — I do have a laptop. I do have a smartphone. And I do tweet. So yeah, we change; we adapt. I believe in trying everything at least once. I believe that we have to engage in technology by trying it. I think we have no — we should have no hesitation about dropping things if they don't work. And I think we're gonna see — social media is, I don't know, maybe 5,000 days old or something. It's pretty, pretty young. And I think we're going to see people become educated over time, understand what it's good for, and move on. So I think it's too much to expect that we can figure out how technology works immediately.

Ms. Tippett: Right now, yeah.

Mr. Kelly: It's too complicated. They're very complex. And you and I and everybody listening spent maybe four or five years of fairly difficult practice and study in order to learn how to read and write. So why do we expect that social media could be learned just by being next to it, just by hanging around it?

Ms. Tippett: Yeah, and I experience — it's hard for people to just actually step back and take in how new and young — how much the internet is in its infancy, because it does feel so powerful. And it is so powerful. I think, also, these technologies are addictive. I'm wondering if we're gonna look back, 20 years from now or 50 years from now, and see that reflexively buying your preteen a smartphone was like what it would have been to buy your preteen a lifetime supply of cigarettes, 30 years ago.

Mr. Kelly: Yeah, we definitely, I think — as you say, we'll look back on things and say, oh, my gosh. It's almost like when we were growing up, we didn't have seatbelts in cars. People would pile up in front.

Ms. Tippett: [*laughs*] Right.

Mr. Kelly: It was like, what were they thinking? Well, we didn't have that concept of safety at all.

So I think yes, I think we will change, but also, at the same time, back then, people didn't drive as fast either. And so as you have, standard, going 80 miles an hour down a highway with bigger cars, the safety has changed. And so I think social media will change in the future, as well, and we'll look back and say, wow, my gosh, we would do things differently now.

That process of refining things, I think, is the necessary path of technology, but I actually wrote about the Amish because I think the Amish have a great lesson for us in their approach to technology.

Ms. Tippett: And let's just — I just want to just point out, if people don't know, that you have this enduring fascination with the Amish that started a long time ago in your life. And actually, one thing that struck me when — you wrote about being deeply involved in the early years of the online world. One of the things you've said is, "Out of complete nothingness, we were harnessing a virtual commonwealth. When the internet came along, it seemed almost Amish to me." *[laughs]* Yeah, so keep going.

Mr. Kelly: The Amish, for listeners that don't know, are a group of religiously bent people, heritage out of Northern Europe, who are seen as being anti-technological but actually are just behind. They're just later than us. And the canonical vision of the Amish are a community who don't have electricity, who do things without much technology. But in fact, the story is a little bit more complicated than that. They're changing all the time. They're in the process of always evaluating the technologies. And it's that process that I found most interesting. I was really very, very curious about how the Amish decided what they were going to use and what they weren't.

And they're not that much different than most of us, because most of us are at the point where we can't use all technologies. There's just too many. So we make decisions. And from the outside, our decisions look kind of crazy, irrational. OK, so I have state-of-the-art internet, but we don't have TV. It's like someone said — that doesn't make any sense. *[laughs]* No, it doesn't make any sense. And the Amish will have — they'll have no cars and no bicycles, but they'll have skateboards. They don't have zippers, but they have disposable diapers. You kind of look, and you say, "What's the strategy? What's the theory there?"

Well, the theory is, very simply, that unlike most Americans — we're individualistic, so we decide individually what we're going to do or not going to do. We're gonna use email, but we're not gonna use Facebook. But the Amish are different in this way, in that they decide collectively.

And here's what the criteria that the Amish use implicitly, to decide whether they're going to adopt a technology. And the criteria are basically two things. One is, will this technology strengthen my family, increase my family? So the Amish, their ideal is to have every meal with their children until they leave. They want to have breakfast, lunch, and dinner every day with their children. And then the second one is very similar, which is, does it strengthen the community? How much time does it bring them and keep them in the community? So the reason why they have horses instead of cars is because the horse can only go 15 miles away, so they have to go shopping, go to church, go to visit, all within 15 miles. That forces them to pay attention, to support their local neighborhood, their community. And so when they're looking at new technology — like, they say, LEDs or whatever — does it help them do that, or does it not? So they're not rejecting technology. They're saying: We want technology that serves our purposes.

And the way that they do this is also interesting, is — they don't think about the technologies.

They have Amish early adopters. And these are guys, usually, in any community, who are eager to try new things. And they have to get permission from the bishop. And so the bishop will say, “OK, Ivan, yeah, you can have a cellphone in your truck for work.” And so, for the next year, they watch — his community watches Ivan to see how that affects his family, his community, his work, and if they don’t think that it’s a positive, then he has to give it up. So it’s a community decision.

[music: “Bidual” by Melodium]

Ms. Tippett: I’m Krista Tippett, and this is *On Being*. Today, with philosopher-technologist and senior maverick of *WIRED*, Kevin Kelly.

[music: “Bidual” by Melodium]

Ms. Tippett: One thing that has also evolved pretty rapidly, between the time you first started being involved in this and writing about it, even in the last few years, is the incredible power and increasingly consolidated ownership of the digital world by some companies that are more powerful than any political superpower ever was, in some ways, in terms of how many lives they reach. So the phrase “what technology wants,” for you is an intriguing phrase that also has human agency in it, in terms of how we respond to that. But I think there’s this feeling now that what’s all woven together with what technology wants, in the sense you meant it — we also have what Steve Jobs wanted and what Mark Zuckerberg wants and what Facebook wants us to do next. And behind those companies, you have philosophies like “Move fast and break things.” And you have this core value of disruption. And it turns out those are at odds, I think, with a lot of what we want as human beings, in fact. I don’t know, how do you respond to that?

Mr. Kelly: Yeah, well, a lot of the great new wealth from the big mega-companies like the Googles, the Amazons, Facebooks, are the result of a mathematical inevitability around networks, called the “network effects,” which is that the value of a network increases by the square of the number of members, which means that you have exponential increase in value for just a geometric increase in the number of people. So what that also means is that we have this effect of the bigger get even bigger, because the bigger it gets, the more powerful it gets; the more powerful it gets, the more attractive it gets for people to come onto the network. So you have these network effects, which means that things balloon up. You have one or two winners that seem to take all.

That is just the natural effect of networks. We’re gonna see it again and again and again. There are going to be natural monopolies that come into these things. And it would be horrible for the long term, except for the fact that all these natural monopolies are very short-lived. They all have — they all unravel almost as quickly. What’s new, what we haven’t really figured out, is that when you get to this scale — we’ve never had these networks this large. So there’s almost 2 billion people on Facebook.

Ms. Tippett: Yeah, so many, so many human beings.

Mr. Kelly: Right, so many human beings, and what’s happened is, in fact, nobody had thought about this. This was not anybody’s intention, but, in fact, the Facebook and the Googles have become quasi-governments. And they have to shift into a new mode, which we have never experienced before, which is this kind of corporate quasi-government, which means that they have to treat customers more like citizens, which means they have some of the other duties

that governments have — of fairness and equitable access and stuff — that corporations haven't really had to deal with before. And I don't think this is gonna go away. This is going to become the new normal, and so we're going to have to evolve new standards, new practices, new expectations of how these new entities work.

When you have a platform of two billion people that you're trying to govern that has great effect on democracy and speech, what do you do? Well, it's crazy to beat on the CEO for not doing a better job, because *[laughs]* nobody has ever done this before. We don't have any idea what's gonna be involved, and everybody's making this up as they go along. So this is going to be a process. And there's great power there, but there's great potential for good, so I think we have to be vigilant, but we should also be humble and kind at the same time.

Ms. Tippett: One of the interesting points you've made across the years that is just not something I've heard anyone talk about in this way — you wrote a piece called “The Next One Thousand Years of Christianity.” You had a conversion experience in Jerusalem, a long time ago...

Mr. Kelly: That's right.

Ms. Tippett: ...to Christianity; to a belief in the basic Christian tenets. One thing you wrote in this piece about the next thousand years of Christianity is, “What is missing, and what may take several generations to supply, is an understanding of the spiritual meaning of technology.” And I think that is such a fascinating phrase that you never hear anyone use. What do you mean, when you say the “spiritual meaning” of technology?

Mr. Kelly: *[laughs]* Yeah, so I think that technology has a spiritual dimension or direction. It's an extension, acceleration of evolution through life — that its origins is actually not in human minds, but, actually, back at the Big Bang. So all the things that evolution's trying to do — and that's the question one asks, is, well, where is evolution going? Is there a direction? And that's a very controversial question in biological circles. There's a small group of people and biologists, and I'm on their side, who say that there actually are directions. There actually is a — that there's directions in evolution, and technology is going in that same direction; it's actually accelerating those directions. And so what the directions seem to be is in making as many new, complicated, interesting, self-organizing structures as possible. What it's doing is trying to increase the possibilities in the universe, increase the number of degrees of freedom.

And we have a moral obligation to increase the amount of technology in the world, the amount of possibilities, and that's what technology is doing, over time. That's sort of its role, is to increase the variety, the diversity, the options, and the possibilities that we have so that anybody who is born would be able to surprise God. And so I think that's what it is — it's a way of generating surprises. And that's the spiritual dimension of technology. It makes that much more likely.

[music: “Four (Kettel Remix) by Near the Parenthesis]

Ms. Tippett: You can listen again and share this conversation with Kevin Kelly through our website, onbeing.org. I'm Krista Tippett. *On Being* continues in a moment.

[music: “Four (Kettel Remix) by Near the Parenthesis]

Ms. Tippet: I'm Krista Tippet, and this is *On Being*. Today, with technologist Kevin Kelly. He co-founded *WIRED* magazine and is one of our greatest techno-cultural experimenters and meaning-makers. He's also a founding member of the board of the Long Now Foundation, a group of individuals encouraging long-term thinking.

Ms. Tippet: One place, you said — and to me, this gets at the notion of: OK, so it's just this possibility machine, but then there's also human agency. So you said, "We can't influence the direction of technologies, but we can influence its character."

Mr. Kelly: So you and I had no choice about whether we became teenagers, assuming we lived that long, but we had a choice about what kind of teenagers we could be, and so technologies sort of follow a developmental pathway. And I know this by looking at the order of technologies on different continents in prehistory, when there wasn't really much influence between the continents. And so they follow roughly the same sequence, where you'll have domestication of dogs before pottery. You'll have mention of sewing after pottery. There is a natural sequence, which suggests that there is certain inevitability to technologies. Once you have the previous ones, the next ones are going to happen. And I would say, once you invent electricity and copper wires and switches, you're going to invent the telephone. And once you have the telephone, you're going to invent the internet. So the internet was inevitable.

But the character of the internet, whether it's international or transnational, whether it's commercial, whether it's private, whether it's open or closed, all those questions are not at all inevitable. Those are the questions of a — species-specific. And those answers make a huge difference to us. So the other image I would use to illustrate this is, imagine rain falling down in a valley, and the particular path of a single drop as it hits the hillside is completely unpredictable. You cannot predict the path of that drop as it goes down the hill. But you can say with certainty its direction, which is downward. So it's inevitably gonna go down, and collectively, all the raindrops will go down, but the particular path of an individual is unpredictable. And the same thing with technologies at the individual product level — we still have huge amounts of choices in the character, which has a huge difference for us. And so we're engaged in that process right now with AI and social media.

We can't stop them; they're going to come. But we have a decision about the character of social media, all the things that we're talking about — the rules, the regulations around the governance of it, the social etiquette — and the same thing with AI. We'll have choices there. So we have plenty of choices that make a huge difference to us. But any efforts to try and stop it or outlaw it are going to fail, because those things are inevitable at the large scale.

Ms. Tippet: I like the language of spiritual technologies, of thinking of meditation and ritual and virtues — even like, I don't know, the Amish example you gave of a practice of discernment that is a tool for choosing how we live and what you do and not do. What do you think of that language of spiritual technologies?

Mr. Kelly: I think it should be developed. I think people other than me should run with it and try to strengthen and deepen it. Unfortunately, for a lot of spiritual people, they tend to categorize technology as an enemy; as devilish, as satanic; as something that is at odds with our humanity, and certainly, at odds with divinity. And so reversing that and thinking of it as a divine force and looking at the spiritual dimensions, I think, would be really fantastic. And it would maybe help people begin to adjust their view, because there's gonna be more technology coming. We are gonna become more technological ourselves. And the funny thing about this is,

it's a two-faced deal. We at times feel as if we work for technology — that we're the slaves to it; that it's our master. And at the same time, it's very clear that we are the curators of this. And I think that we have to accept the fact that both of these things are true all the time — that we are both the parent of technology and its child, and that we are both the master of technology and the slave at the same time, all the time. And that kind of paradox is difficult for a lot of people, but I think it's closer to the actual relationship that we're gonna have with it, where we are both the created and the creator at the same time.

Ms. Tippett: Yeah, and I feel like that's where these spiritual technologies precisely can come in to help us inhabit that space and work with it, generatively, and get between direction and character.

Mr. Kelly: Yeah, almost any mystic of any religion will tell you that basically, there's a necessary paradox at the heart of any spiritual belief. And so if you get to the paradox, it means you're at the root. It's not like it means it's wrong. No, it means it's true.

Ms. Tippett: Yeah. You have grandchildren?

Mr. Kelly: I don't.

Ms. Tippett: You don't. *[laughs]* I was gonna ask you how, if you did have grandchildren, how would you — let's say, these humans who are now growing up with, working with iPads when they're three and having phones when they're nine, or maybe six — how would you talk to them, this generation, about parenting their technology? *[laughs]*

Mr. Kelly: That's a good question. I've been polling people as I go along, asking them what their policies and approaches are. And it's really remarkable, the diversity. I've had — met people who are: "Yeah, yeah, we give the baby, from the beginning, the whole thing," and others: "No way! Not until they're 16" or whatever it is, and everything in between. So I don't know if I — in the particulars, I don't know if I have anything to offer in particular, because actually, I don't even know right now. And also, I would have to say that it probably depends on the kids. I don't think you can have a universal rule. It depends on the kids, the environment, et cetera.

But I do think, in terms of the spiritual side of it, is that I think almost having some constraints, as a matter of principle, would be helpful. And it's sort of like — when you are an artist, what you discover is, having constraints actually is a lot of the source of creativity, and that there's — I think a lot of schooling is really about character-building and training. And part of what you want to do is, you have delayed gratification and all these other very important things. And I think having constraints almost — I wouldn't say they're arbitrary, but I think that is part of what schooling should be about. And you can make it clear that, in some ways, that these aren't fundamental, basic principles of the universe, that you can't have a phone until you're 16. But you can talk about the fact that you're working with constraints and that whatever it is, these are things that your family does, and even if they're done traditionally, that's what they are. But I think you can cast the constraints in different ways, and I think there are healthier ways to do it than others.

Ms. Tippett: Have you ever heard of Teilhard de Chardin and his — the noosphere?

Mr. Kelly: Yeah, so he was a French priest who —

Ms. Tippett: Yeah, well, and a paleontologist. He was working on —

Mr. Kelly: And a paleontologist, who had a very elaborate, mystical, global sense of view. And I share his sense of the global something that we're making — global superorganism that we are creating.

Ms. Tippett: Yeah, it kind of reminds me of the technium, the way you talk about it. It's different, but he talked about the noosphere, which would be that human invention and — I don't think he used the word "technology," but essentially, that's what he was talking about — human invention and what our minds create would overwrap the biosphere and change it.

Mr. Kelly: Right, so he had a vision of this layer around the globe that was a thinking — "noos" meant a "thinking" — a thinking layer, a thinking sphere that surrounded us. And I do think that that's happening — and it's not just the seven billion people who are all connected to each other, but it's actually the seven billion AIs plus the seven billion people, together — and that we are making this global superorganism.

But the one small detail that I would diverge from Chardin is, he believed that there was an endpoint an omega-point; that this was all moving to a single endpoint. And I think, if you look at the grand, cosmic story, that we're not moving to an endpoint; that we're radiating outward into more and more — it's like a radiation outward, rather than a convergence to a single endpoint; that it's a process of diversification, outward expansion, and that there are multiple destinations, multiple trajectories, and that we're not converging to a single endpoint.

But other than that, I think the idea of — the real frontier, the thing that's even bigger than AI, which is gonna be really — AI is probably the most powerful force in the next 100 years. But the thing that's even bigger than that is the fact that we're making a global superorganism of some sort that will have effects way beyond anything that we can imagine. AI will be part of that, but not the whole thing. It's just — we have never made a planetary something that works in real time, and we're gonna be shocked by what will happen when we have a billion people working together on something in real time. And we'll be shocked even when a million people do it.

And I still remember, growing up in the '60s, a real shock was when Woodstock first happened, because it seemed to come out of nowhere. It was — all of a sudden, the same thought occurred to half a million people. The thought was, "I need to be at this farm." And they all showed up. They were all shocked that so many others showed up. And it was sort of a mark of what was happening in the culture at large. And I think we're gonna have these Woodstocks, where suddenly, several million people will come together and use these new tools of communication around the globe, and they'll be from all different countries, and they will work together in real time to do something collaboratively, and people would just be dumbfounded that "Oh, my gosh, that's possible? What happened?" And so that will be the beginning of the second frontier, where we have true globalism.

Ms. Tippett: Yeah. Right.

Mr. Kelly: People talk about globalism. We haven't had globalism yet. That's coming. And when we have planetary-scale institutions and planetary-scale governance, we're in a whole different level. And there will be planetary — we have planetary problems, and we need planetary solutions, but we're gonna even have new planetary problems created by this thing...

Ms. Tippett: *[laughs]* Right. Right, yeah.

Mr. Kelly: And so it's a whole other order, and that's where we're headed after AI.

[music: "The Posture of a Melting Snowman" by Lullatone]

Ms. Tippett: I'm Krista Tippett, and this is *On Being*. Today, with philosopher-technologist and senior maverick of *WIRED*, Kevin Kelly.

[music: "The Posture of a Melting Snowman" by Lullatone]

Ms. Tippett: I'm really glad I brought up Teilhard de Chardin and elicited that thinking. There's one quote of his that I just kept thinking about, when I was reading you, partly inspired by just thinking about how — what is a technology? — and that fire — of course, everybody knows this, but someone just really thinking about how fire was a technology. And so anyway, this quote of his and also, I guess — and maybe this is indulgent, because this also kind of flows in with my thinking about what are the spiritual technologies we need to meet this incredible possibility that you're describing, this thing we're moving towards. So he said: "Someday, after mastering the winds, the waves, the tides, and gravity, we shall harness for God the energies of love. And then, then, for a second time in the history of the world, man will have discovered fire."

Mr. Kelly: Yeah, that's beautiful. That's really, really beautiful, the technologies of love. Well, I think we're gonna be surprised by how deeply emotional we'll — the relationships that we'll have with the things that we're gonna invent, coming soon, the robots and things like that, because we're gonna program emotion into them. That's actually not hard to do. And we're gonna program ethics into them, which is not hard to do, once we decide what kind of ethics we want to put into them. And so I think we'll have relationships that are gonna really play with our minds, and we're not really ready for how much love we might have for these and maybe even how much love they will express back, if you can imagine a dog that could talk to you. And so it's gonna be a real challenge, and — as I said, we know how to program in ethics and morality and even emotion into machines, but what we don't know, yet, is what we want to put in. It turns out that we think we, as humans, are highly ethical, moral, but it turns out that our morality and ethical is really shallow, very inconsistent; horrible.

Ms. Tippett: *[laughs]* Right. Yeah.

Mr. Kelly: And as we try to program these into the machines, that process is gonna make us better. It's like parenting. It's like we will realize where we're insufficient, and we're going to actually become better humans, as we try to make our machines better, as well.

Ms. Tippett: That's a wonderful way to lead into this vast question I wanted to just ask you to start thinking about as we finish — how your — well, I want to say one thing, because we're not gonna have time for this. But I just absolutely love where your book — *The Inevitable*? Is that what it's called?

Mr. Kelly: Yes.

Ms. Tippett: *The Inevitable*: where it ends is on questioning, or close to the end, on just the asking — the power of questioning and how questions become more important. The quality of our questions becomes, perhaps, more important than the quality of our answers — that

technologies that generate questions are gonna be valued. It's such a contrast to how we only deal with competing answers now and just tie ourselves up into these ridiculous knots. But this question of what it means to be human and how you're — through all of the vast perspective you bring to this and being part of the internet in the early days, and thinking about technology, thinking about the future of technology — how does your own sense of what it means to be human continue to evolve right now?

Mr. Kelly: I was — I actually did some research, because I heard a quote that was attributed to Pablo Picasso, which he said, “Computers are useless, because they only give you answers.” And I actually did some research, and I found out he actually did say that in the 1960s. And that was a real prompt, because it appears that, more and more, that if you want a good answer, you're gonna ask a machine. It turns out the machines are actually really good at giving you answers — and not just simple answers. I think they're gonna increasingly give us answers to complicated questions.

But it does appear that, so far, machines are not very good at asking questions. So we have this world where, basically, answers have become cheap and ubiquitous and pervasive, and they're everywhere, and so what's much scarcer are good questions. And good questions are kind of like a discovery. They're kind of like a way of exploring “what if?” And it turns out that they're not very efficient. And so what machines are really good at are all the things where efficiency counts, where productivity and efficiency counts, and those are the kinds of tasks we're gonna give to the machines. And we're, as humans, left with things that are inefficient, which happens to be the things that we enjoy most, like discovery or innovation. Innovation is inherently not efficient — or science, for that matter. Science is inherently inefficient, because if you are 100 percent efficient as a scientist, you're just not learning anything new. So trial and error, there's the error part. There's the failure. There's the dead ends. There's trying prototypes. All these things are the essential part of exploring, trying, discovering, which are all inherently inefficient. And so are human relationships. And so we're — humans are — we're expert at wasting time. We're expert at the things where efficiency and programmability don't count for much.

And I think that's — as the robots rise and the AIs rise — that's one of the answers to the questions about what we're gonna do, and I think there's plenty of room for us to explore, curate, invent, innovate, love, chat, experience things, all of which are inherently inefficient and not things that machines are good at. And I think, ultimately, there's a — as you're suggesting, there's a kind of a larger resonance of this idea of asking a question, of asking “why?” — not just “Why?” the first time, but “Why? Why? Why? Why? Why? Why?” all the way down, as far as we can go.

And I think, in some ways, that does echo some structure of the universe — that it's probably built on a question, rather than an answer; that it's very likely that the universe is really a kind of a question, rather than the answer to anything. And so I think that's why we resonate with a question — a good question so much, rather than just with a smart answer.

Ms. Tippett: And when you talk about — like when you were using the Amish example of our lives with technology, it's like, how do we — if this power we have, not to determine the direction but to determine the character, it's the questions we're gonna ask: “OK, so what will this do to my time with my family?” Questions are also the tools we have for building the character of our technology.

Mr. Kelly: Right. Yeah, the answer to a good question is more and better questions.

Ms. Tippett: *[laughs]* Well, thank you so much. This has just been delightful, and I'm just really glad you're out there with the questions you have and living them and bringing what you know to other people.

Mr. Kelly: I really enjoyed the conversation, as well. Thank you for your great questions. You're obviously not an AI. You're a human.

Ms. Tippett: Thank you. *[laughs]* I take that as a great compliment.

[music: "Music for a French Elevator and Other Oddities" by The Books]

Ms. Tippett: Kevin Kelly is senior maverick at *WIRED* magazine. He co-founded *WIRED* in 1993, and served as its executive editor for its first seven years. He's part of the Long Now Foundation, among many other ventures and activities. His books include *What Technology Wants* and, most recently, *The Inevitable*.

[music: "Classy Penguin" by The Books]

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Ms. Tippett: Special thanks this week to Claudia Dawson and Natalie Jones for making our interview with Kevin Kelly possible.

Our lovely theme music is provided and composed by Zoë Keating. And the last voice you hear, singing our final credits in each show, is hip-hop artist Lizzo.

On Being was created at American Public Media. Our funding partners include:

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