

# Kevin Kelly

## “Faith at the Leading Edge of Technology”

Episode 32 (transcript of audio) of The Advent of Evolutionary Christianity  
[EvolutionaryChristianity.com](http://EvolutionaryChristianity.com)

**Note:** *The 38 interviews in this series were recorded in December 2010 and January 2011.*

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**Michael Dowd (host):** Welcome to Episode 32 of “[The Advent of Evolutionary Christianity: Conversations at the Leading Edge of Faith.](#)” I’m [Michael Dowd](#), and I’m your host for this series, which can be accessed via [EvolutionaryChristianity.com](#), which is also where you can add your voice to the conversation.

Today, [Kevin Kelly](#) is our featured guest. [Kevin](#) is senior maverick and co-founder of [Wired](#) magazine, former publisher and editor of [Whole Earth Review](#), and co-founder of the [Hackers Conference](#). He’s the author of 3 acclaimed books, [Out of Control](#) (and a free online edited “remix” of it, titled, [Bootstrapping Complexity](#)), [New Rules for the New Economy](#), and his latest, [What Technology Wants](#), which suggests that technology is a dynamic, ever-evolving part of the human experience. Here, Kevin and I discuss “Faith at the Leading Edge of Technology.”

**Host:** Hello Kevin Kelly, and thank you for joining this conversation on evolutionary Christianity.

**Kevin:** It’s my pleasure to be here. Thanks for inviting me.

**Host:** Kevin, Connie and I have both enjoyed your writings for many years, but when I mentioned that you’d be a part of this series, a lot of people said, “Wow, Kevin Kelly! You mean the *Wired Magazine* guy? *Out of Control*? *New Rules for the New Economy*? I don’t get the Christian connection.”

On [your Wikipedia page](#), it mentions—in fact this is mentioned several places online—that you’re a devout Christian, but it’s not easy to find where that’s spelled out. So, I’d love for you to help our listeners get a sense of your faith journey—like, what spiritual experiences you have had that have been particularly powerful. And, for you, what it means to be a Christian when you talk about yourself—that is, when you *do* refer to yourself as a Christian, what does that mean for you?

**Kevin:** I grew up in a Catholic family. I went to Catholic school, and by the time I was in sixth grade, I think I had pretty much rejected most of that as imaginary, superstitious. So I think I was pretty much of an atheist through high school.

But I did have a friend who became a Christian in high school, and I thought he was totally weird. He wasn't my best friend. He kind of went off the deep end and converted and was spouting Bible verses at me and whatnot, and I just thought it was totally strange. But one thing he did was give me a little New Testament to read while I was traveling in Asia, which I did. I basically started reading the Bible because I wanted to be able to quote the Scriptures back to this guy or at least understand them.

So I began reading it and I read it almost every day for years and years while I was traveling, but without any belief; I was just becoming educated. And I have to say, reading the Old Testament in places like India was a revelation because I saw people carrying around and worshipping golden calves. The entire culture that the Hebrews were responding to is still basically extant in places like India. That was the calf culture, that was the culture at large, the culture of sacrifice. And so it was very vivid to me.

Things changed as I was traveling in Asia. I spent a lot of time visiting the institutions of religion there. I was a photographer and those were the places of color—the temples and the mosques. And I went to all of them, and I hung around them, and I was really impressed by the way in which different religions had a common sense of what was good.

I had a religious experience in Jerusalem at Easter. It's a story that actually I told on *This American Life*. [Click for [transcript](#).] I came to believe the heretical idea that this historical person called Jesus was not only a kind of enlightened teacher but was, in fact, an incarnation of the very godhead who had created the universe. Once I believed that, the funny thing was I didn't feel any differently. I thought that I should suddenly be elevating among clouds, but none of that happened.

Instead, I decided that I needed to live as if I were going to die in six months. And that was another journey that I set off on. I think the reason was because I needed to have that born-again experience, which happened six months later, where actually I didn't die, but I woke up that morning and had the experience of being born again.

So that's the origins of my little journey. I see myself, not denominationally, but much more broadly as a follower of Christ. I'm not a [fundamentalist](#). I'm not someone who has a very strong belief in the inerrancy of the Bible. I think the people who put the Bible together were certainly very human and flawed, and I think there are some books that shouldn't be in the Bible. I think these decisions were very much made in humanity and not in divinity.

So I use the Bible as a guide rather than something that's infallible. And I think that the power of Jesus transcends our understandings and has to be certainly informed by the rest of Creation, which is very visible to us. I think God speaks to us, and Jesus as well speaks to us, through the visible world. That's why I believe that science is actually one of the ways that we can get to know God.

**Host:** Well, obviously, I completely agree with that. I am curious, though, that when you were telling the story of your powerful religious experience in Jerusalem, you said you had a “heretical” notion, and then you voiced a very *orthodox* perspective—which would suggest to me that when you usually tell this story, it's in a more secular context.

**Kevin:** Yes, exactly. I see my mission, so to speak, is not to believers, but to those in science, so most of the people that I'm talking to most of the time are those who don't have a belief.

**Host:** Well, how has a science-based understanding, an evolutionary understanding, influenced how you think about certain core aspects of your Christian faith? I'm imagining that the Christianity you grew up with, in terms of how you understood sin or salvation or heaven or hell or these sorts of core concepts, isn't necessarily the same way you hold those concepts now or those doctrines or those understandings now. I'm wondering how, if at all, has an evolutionary or science-based perspective caused you to shift your interpretation or your understanding or your experience of these?

**Kevin:** My experience with science has sent me on a quest to constantly question or investigate or shape my concept of God. So what I'm always asking myself is: By definition, my definition, God is *the* greatest being that one could imagine, so I'm constantly saying, can I imagine a more powerful being than I have been imagining? And very early on, it was obvious to me that a God capable of creating a world through evolution was a much greater God. Recently, I've concluded that a God that is itself changing is a greater God than a God that is fixed. And so this idea of persistent change that science preaches has forced me to constantly try to upgrade or improve my concept of who God is. And once I began doing that, it certainly influenced my conceptions of Christ.

**Host:** I'm curious how you understand concepts like salvation. I mean, I'm assuming you don't understand it simply as sort of a rescue from an otherworldly hell, a kind of cosmic fire insurance. But I'm curious, from an evolutionary perspective, from a science-embracing perspective, how do you see concepts such as sin and salvation?

**Kevin:** If you think about an optimal God, which is sort of again what my quest is, it's not just this planet. The God is not just the God of this planet. It's going to be the God of many planets, so there have to be many other beings and civilizations throughout the universe. My understanding is that what this optimal God is doing is in some ways sharing, bestowing sparks of its own free will into its Creation. And again, I see a lot of what we're doing right now with technology as a reflection of this. When we make an artificial intelligence or something such as robots, we are going to want to give them some element of our free will, dispensing them with the same goodness that we have. And I think the same thing with the God who is taking whatever that substance is, that quality that makes it possible for It to create, and sharing that creative force with its Creation, bestowing that creative force into its creations, in a sort of very recursive sense.

And I think when you do that, as soon as you give anything, if you were to put any kind of free will or creative force into something that you've created, you have suddenly unleashed a paradox. You have suddenly unleashed something that can conceivably choose to do harm.

And then in this calculus of godhood, you are in some ways responsible for that harm. But at the same time, because it's free will, that being is also responsible.

So, there's some kind of relationship to that harm that's now possible and that both the being and the God have to amend. And, I think that is the story of how the God amends the harm that his creative beings have done with their free will by taking that harm back upon himself.

On our planet, with the bodies that we have—that are run on blood, that are mortal, that have this biological thing—the way that we understand that sacrifice is with this being of Jesus. And I call Him the Cosmic Jesus because I believe that every civilization will have its own version of how this free will harm has been redeemed by the God.

**Host:** Interesting. I appreciate you fleshing that out a little bit more because there's not been a lot that I've found online that gives a window into how you hold your faith. I mean, it mentions several times that you're a devout Christian, but it doesn't exactly say how.

**Kevin:** I haven't written about it at all. I've spoken about it here and there—but in fact, I haven't written it down. On these kinds of topics, I think the voice carries more than just the words. So I prefer to talk about it than write about it so far.

**Host:** Kevin, could you share a little bit about how you came to be on the cutting edge of technology and your background with the [Whole Earth Catalog](#) and that sort of thing?

**Kevin:** Well, I'm a college dropout. My first year of college, I got sucked into reading [Ayn Rand's Atlas Shrugged](#) and somehow it just sort of triggered something, and I said, I don't need college, and I took off and went to Asia instead.

I was a photographer there for eight years, kind of a drifter, roaming around, getting an education into how the world really worked. It was kind of like my graduate school in some sense. Then I came back and I started writing about my travels, using the Apple II E computer in our office where I was working during my day job.

I was starting to send texts to local newspapers, to get my copy from my catalog printed. And when I plugged the computer into the phone line, I discovered that there was this emerging other world that was called "online," and I wrote a cover story for [New Age Journal](#) in 1984 called "[Network Nation](#)," treating this emerging world as if it were another country. Because of that article, I got access to an experimental bulletin board, as they called it at the time, an experimental online area. They were not connected to each other. Each one was separate. This was pre-Internet. AOL, Prodigy, and all those other early ones had their own separate little mail system.

I got invited on to one of these where the *Whole Earth Catalog* was being produced. And by hanging around on there, and talking on there, I actually got hired online to go work for the *Whole Earth Catalog* in San Francisco, which was really the only place that I wanted to work because they were doing these catalogs that recommended tools. And I was a recommender; I

did that naturally. So I came out there and while I was out there, I read [Steven Levy](#)'s book [Hackers](#), and I had this idea that these three generations of hackers he talks to had never met each other. So I said, "Let's invite them all out together to meet." He thought it was a great idea, and he made it happen.

That was the first [Hackers Conference](#). The same year, [Larry Brilliant](#), who was a doctor curing smallpox in the world, got involved with telecommunications to keep his workers together. He came to *Whole Earth* and suggested we make an online service that we'll try to make free for people, free access to this online world. And we started The Well.

I, among other board members, campaigned for The Well to be public access to the Internet because until that time, the only way to get onto the Internet was either you belonged to a university or through a company. So, we actually made The Well the first public access to the Internet.

I became involved in living online and that really changed me. I'd been having email since '81 and that really changed my mind about what was possible. I did an issue of the magazine at *Whole Earth* that was called "Signals," looking at the emerging culture, the digital culture.

Eventually, I got involved in starting *Wired*, and all this time I saw that in fact these new technologies were giving a new face to technology—that they were much more organic, that they were much more "Amish" in many ways. The communities were self-help. They were very peer-to-peer; they were very democratic.

So this was a different vision of the organizational man, the Big Brother version of technology, which was sort of the devilish smokestacks. I was seeing in these online communities a different face of technology, and that began to change my perspective. I began to look at technology in a different way, and I began to hunt for a different side of it.

I think that over time, others have begun to see the same thing—to see that computers really weren't this force for power and organization, but actually did enable the individual. And we still had choices, but technology was not inherently uncivil. It was not inherently inhumane. It was not inherently anti-nature. It could be green. It could be organic. It could be human.

So, I think my awakening to the very powerful, good aspects of technology, the ways in which it can be reflections of the divine, came initially from those years of being involved in the very beginning of the Internet world.

**Host:** I'd love to shift focus and allow you to speak about your most recent book, because your contribution to an evolutionary understanding of the cosmos, of life, of humanity, of human consciousness and culture, and human technology, I think, is one of your more significant contributions. And so I really want you to elaborate on that. Let's start with your most recent book, [What Technology Wants](#). Can you give our listeners a sense of what that book's about? What are you trying to say there?

**Kevin:** Well, there's different ways to answer that. But the best way to say it is that, while technology surrounds us in our lives and, of course, more and more every year, we swim in this world that we have invented and created. And it's occupying more and more of our awareness.

We spend more and more of our day mediated by these technologies. Yet we don't really even have a very good concept of it. We don't even have a good theory about it.

So, basically, the theory of technology up to now is just "one thing after another." Of course, that was what biology was, until Darwin came along. It was just one organism after another. You just made these collections of them. There was no framework for understanding what was happening. And there's basically been no framework for understanding technology. It's just one invention after another.

I'm suggesting actually that the best framework for understanding technology is the same framework as for biology. It's an evolutionary theory and, in fact, the best way to think about technology is that it's an extension and acceleration of the very same forces that work through evolution. Now, we can elevate it even further and say that the best way to understand those forces of evolution is in fact that they're an extension and acceleration of exotropic self-organization that runs through the entire universe. And so, in a certain sense, the world of all the stuff that we're making, and all this consumer stuff, is actually part of a long arc that goes back to the beginning of the universe—this long arc of increasing self-organization, increasing order, at least in certain little pockets. Increasing self-organization happens over time: it connects how galaxies stay together and how stars maintain their constant state of manufacturing elements, and planets with atmospheres, and our planet, at least, that has life, that is increasing in its complexity over time and makes a mind, and this mind makes increasing technology. This is all one long, great story.

What I am most interested in is the latter part, the part about technology—because until recently it has really not been amended to the long, great story. The Great Story is sort of about life and us—and I think that's just the beginning. The story continues *through* us into technology and will continue beyond us.

And so, I am really interested in the question of, what's the relationship of technology to God? We hear a lot about God in nature and man, and there's a lot of stewardship, and people thinking about what those relationships are. But there's almost no one talking about where does technology and God fit in? What's the relationship between us and technology and God? *That's* the area that I am interested in exploring.

**Host:** ... although, you actually don't get into that until the last chapter of your book.

**Kevin:** Right. I don't get into it because the book itself, *What Technology Wants*, which talks about the long-term trends in technology, is so huge and there are enough controversies within it that I didn't need to add more. Some people thought that even the little bit that I hinted at near the end was already too much. Nonetheless, I am interested in it. When I say I'm interested, I don't mean that my writing in this book shows that I'm interested. I'm interested in it now in terms of understanding what the cosmic role of technology is.

**Host:** It's a fruitful place of conversation, of dialogue, that I'd love to have with you at another time. In fact, there's several others that I'd like to invite into that conversation, because I think

it's really juicy, this whole question, this inquiry of how do we think about—how do we feel into, and think into—the relationship of God, cosmos, life, humanity, and technology—and also what seems to be emerging as a result of the interplay of humans, human technology, and nature.

My first introduction into this whole thinking was in the year 2000, when I read [Joel de Rosnay's](#) book, *The Symbiotic Man*. It was unfortunate that it was translated as *The Symbiotic Man*. It really should have been *The Symbiotic Human*. But, still, I consider it one of the top ten books I've ever read. And that's why, when I read your book, *Out of Control*, and most recently, *What Technology Wants*, I found that what excited me about de Rosnay's book was being reignited, re-excited by your writings.

**Kevin:** There is a tendency to think that a lot of these theological musings are academic and not very useful. But my position is that as we begin to invent artificial intelligences and robots, we are going to need, in a certain sense, these theological frameworks. People who have no belief at all are going to be drawn, dragged into, these discussions where these concepts and this thinking are going to be necessary because we're going to create things, and we're going to try very hard to, and eventually we will succeed in giving them some kind of free will. And, at that point, they may stand up and say, "I'm a child of God." And what do we say to them? Or they may do things that are harmful, and then we have to wrestle with our Godhood.

In fact, we *made* these, and what's our relationship? We're going to make things that are self-replicating over generations, and then we are forced to work to put into them some sort of moral guidance. And so, we're going to come racing back as a society to needing these kinds of things that we're right now barely talking about in religion.

We're going to realize, as gods, that we are made in the image of God and so therefore we're going to create things just like God did. We're going to make these other beings and we're going to have the same problem that God had. So for me, I think that by thinking about these things we can begin to rehearse them and get ahead. It's not just frivolous theologizing; it's actually going to become very instrumental and practical.

**Host:** My interpretation of what you're saying is as though what we now think about as metaphysical speculations may in fact become, rather quickly, physical realities that we need to deal with in a very ethical way.

**Kevin:** Right, and that's why I go back to this kind of thinking about the taxonomy of the different ways to be God, because I think this is going to be key. People who make games and other worlds already have some of these notions, where they're saying there are different types of gods and there are different ways to *be* god. Basically, I think we're still exploring the possibilities of godhood and different ways to be god—with a small "g."

What technology is doing is equipping us to express some of the inherent power that we have of creating other beings and then replicating—again, in this recursive sense. I think the recursive nature of the universe will reveal itself, and we'll see that the reason why we wanted

to talk about God is because we are going to *be* gods. That's my interest in this. It's not philosophical; I think it's actually going to be practical.

**Host:** What I'm reminded of, Kevin, is one of Connie's and my favorite movie series: [The Matrix](#). We've watched the whole trilogy a couple dozen times, at least. There's that scene with the Trainman, where he and Neo interact, and Neo tries to get on the train and says, "I need to get on this train. One way or the other, I'm going to get on." And the Trainman says, "Oh, no, no, no. You don't get it. Down here, *I* make the rules. Down here, *I* make the threats." Then he punches him and says, "Down here, *I'm* God." So, there's the notion that he created that setting and, in that context, he was the creator and the rule-maker. I understand that the Wachowski brothers [who created the *Matrix*] had the principal actors of that series read your book *Out of Control*. So I was wondering if you could share a little bit with our listeners about the essence of that book, [Out of Control](#). Its subtitle is [The New Biology of Machines, Social Systems and the Economic World](#).

**Kevin:** The last chapter is called "[The Nine Laws of God](#)." The idea was that I was really interested in this emerging field called Artificial Life, where there were bunches of people who were trying to recreate life in non-biological systems. This is all hinged on the idea that the essence of life is not carbon- or tissue-based, but is actually informational. Because life is an informational process, one could extract out the life-like processes—like evolution, or growth, or adaptation—and import them into artificial systems, mechanical systems, technological systems. This ability indicated, in a certain sense, that there was a continuum between living things (the world that was *born*) and the world that we *made*. There are some differences between a sunflower and your MacBook, but there's also a lot of commonalities, in that they are in fact two aspects of the same kind of systems.

And so, *Out of Control* was looking at how you make very complicated things. I was suggesting that when you make very, very, very complicated things, like the Internet or a robot or an automated factory or something like that, you actually need to have and to use biological organizational principles. You actually need to use evolution to guide things—and that when you do that, you'd be surprised at how much things are not in your control and that the out-of-control is sort of the price for getting the maximum out of these systems.

So that book was about how you made very large, complicated things in a decentralized, out-of-control way—and I was talking about all that kind of stuff basically before the Web, before what people think of as the Internet, although the Internet existed in some fashion. So those principles of decentralized, bottom-up, out-of-control creation are now seen as being really relevant and essential to a lot of the social media and other ways of doing things. The book in some ways is actually now more popular and sells better than it did when it first came out.



**Host:** Interesting. Now, I don't remember the title, but somebody put together a really nice, edited version, a PDF online, that tightened it up but also is really fabulous in its own right. What's the title of that?

**Kevin:** I forget. It was a Dutch guy who felt that the book was too rambling, and of course it was, and he basically edited at the level of chapters. He just took 1/3 of the chapters out and rearranged them and had it much more focused on just the emerging biological stuff and threw out the chapters on e-money, and cybernetics and stuff like that. It's available on my website. I think he did give it a different name, and also, by the way, I was never happy with the name of the book either. I thought it really didn't do justice to the central core.

*[Editor's Note: The short, "remixed" version of Kelly's book, "Out of Control", is titled "Bootstrapping Complexity," and it can be found [here](#).]*

**Host:** Well, Kevin, let me also ask you about another book that has received wide acclaim and covers some different territory. Speak about [New Rules for the New Economy](#) (also [here](#)).

**Kevin:** I wrote *New Rules for the New Economy* first as an article for [Wired magazine](#). It was my attempt to talk about the ways in which the digital economy was changing business. At the time, I was not talking about the [dot-coms](#). I was not talking about Internet companies. I was talking about the fact that this information-based economy behaved differently. And in this information economy, things that were priced free were more powerful than things that were priced very high, abundance was more important than scarcity, spaces were more important than places.

So I went through a bunch of different ways in which this very intense communication-based economy was behaving differently than the classical industrial economy. Stepping back now, it's been almost twenty years since I wrote that, but it's still true. I think it's more valid now than before because I was not talking about dot-coms, I was talking about how every business is becoming more intangible, the wealth and the value of the business is more based in the intangibles, the information, the design, the people, rather than in the actual physical product.

And I think that general trend is still happening, which is that there is a move away from value being in the material into the immaterial. Again, I think that's another reason why this kind of spiritual evolutionary view is so important. In a sense, we're moving away from the material to the immaterial, and how the immaterial behaves is of paramount importance. The new economy as well, it's the digital technology, it's all moving away from that which is tangible to that which is intangible. And the intangibles govern the tangible.

**Host:** Kevin, say a little bit more about that: How is the intangible shifting to where it's in control of the tangible? What do you mean by that?

**Kevin:** Well, again, it's sort of an emerging view that when you examine the material stuff—the atoms and the particles that the atoms are made up of—eventually you arrive at this astounding realization that they're just bits, it's yes or no, that they're intangible, and the very essence of our material world is basically itself just intangible, it's words and in the beginning was the Word.

And so we come back to this notion, and there's kind of a current in physics and all, and quantum is just one aspect of this. But there's this kind of drift to reinterpreting or restating the laws of physics in terms of information. And information is really, as far as we can tell, the most intangible, spiritual thing that we know. What is it? It's yes-no bits. It's "I am, I am not." As we move to a greater awareness and a greater clarity in understanding that the fundamental basis of reality is actually, in a certain sense, we would call it "spiritual"—it's intangible, it's verifiable, it's scientific in that sense. But it is as ghostly as any spirit is.

**Host:** How do you see evolution as being an expression of divine creativity or as a divine force?

**Kevin:** I would say it's a reflection of the divine in a sense that it seems to be the way in which all the things that we care about in the world—from life and mind and opportunities and possibilities—are created, that they're created through this force. And when I speak of evolution right now, I'm not just speaking about natural selection. Even what we think of as natural selection itself is really a suite of different processes. And when we talk about the evolution of life, evolution itself has evolved over time. We forget that in the very primitive life, in the beginning of its evolution, the kinds of processes that were running it were very primitive compared to, say, the way evolution now works.

As more and more structure was added, and more and more complicated organisms, evolution itself became more and more complicated and involved. As it started to make social groups, there were further kinds of evolution. When we came to making technology in our societies, our own technologies have affected our own biological evolution. Evolution right now, even in our own lives, is very, very complicated. It is not at all the same thing that was happening with prokaryotes and bacteria. As well, the type of evolution that just works in life is, again, a subset of the larger exotropic evolution that I talk about in *What Technology Wants*—and, I think, what *you're* talking about, where we see a ratcheting of increasing complexity and order over time.

We use the word evolution perhaps loosely to indicate that those things are also evolving, even though they're not evolving in the same way that natural selection would work on insects. So when I say it's a reflection of the divine, what I mean is that this long process creates what we would call good. When we look around the world and we identify things that are good, all those things were created through this process. And that's how they got here. So in that sense, good has come from those processes. I'd say that that process is a reflection of the godhead. It's not identical with it, but in some ways it's a mirror of it. This is where the investigation into

different types of gods becomes interesting, because the question is, What is the role of God in that process? And that's an open question that we don't know.

**Host:** Especially because we don't have an understanding. You know, when we use the word *God*, we are pointing to something that is ultimately beyond our comprehension and ability to nail down in words or language. And so, our own [models of God](#), our own [metaphors for ultimate reality](#) (also [here](#)) are going to be and have been shifting over the generations—and, of course, we're continuing that process now.

**Kevin:** Right, exactly, right. One of the reasons I'm interested in [Artificial Intelligence \[AI\]](#) and mindfulness is that one of the things that technology wants is increasing mindfulness: increasing mindness, increasing sentience in the universe. And that's also what evolution wants, in the sense of where it's moving towards: this kind of constructing of material and the immaterial in such a way that there is intelligence, that there is, you know, fast adaptation that we call learning.

There's a lot of concern in our popular culture right now about making an AI that's smarter than ourselves, then *that* will make something smarter than itself, and it will go so fast in making this auto-creation of increasing super-intelligence that eventually we have this thing that takes over the world. I've publicly talked about why I think that's not very likely. The reason is that I think there's really not very much reason for us to even try to make human-like intelligences—that what we really want to make is other kinds of intelligence, other kinds of thinking.

And the reason why we want to do that is because the mysteries of the universe—and, well, you can say the mysteries of God—are so profound and so great that it's going to require more than one kind of mind to even begin to approach it. What evolution and technology are about is actually trying to populate the universe with all the different ways of thinking, all the different species of intelligence, all the different species of consciousness.

It will take all those working together to even begin to approach understanding God, or understanding the universe. In a certain sense, what our agenda is right now here in 2011 and beyond is really to make different ways of understanding, different ways of seeing, different ways of thinking. The value of AI is that it's going to allow us to think *differently*—not just to think better than us—because it's a definitional shift.

**Host:** I think that's a profound understanding that our technology is, in a very real sense, extending our senses. But it's also taking knowledge and ways of knowing and ways of experiencing reality and ways of modeling reality: its taking them beyond what our brains would naturally do or normally do on their own.

Kevin, I want to ask you to speak a little more about these patterns, because the evolutionary writers that I've been particularly inspired by in the last decade have been (in addition to yourself): read [Joel de Rosnay's \*The Symbiotic Man\*](#), [John Stewart's book \*Evolution's Arrow: The Direction of Evolution and the Future of Humanity\*](#), [Bob Wright's book](#)

[Nonzero: The Logic of Human Destiny](#), and also [Peter Corning](#)'s writings, [Nature's Magic](#), [Holistic Darwinism](#), and [The Fair Society](#). All these books, all these authors speak about the patterning throughout time, the patterning of [greater complexity, interdependence, and cooperation on a larger and wider scale](#)—which directly confronts [the traditional misunderstanding that evolution is just meaningless, blind chance](#) (also [here](#)).

So I'm wondering if you could say a little bit about some of the patterns that you see at work in cosmic, biological, human, and technological evolution.

**Kevin:** The orthodoxy in evolutionary biology today is best stated by the late [Stephen Jay Gould](#), who said that there is absolutely no direction to evolution over time, that it's contingency based, meaning that if you rewind or if you redo, if you start from the same starting point in the same world and initial conditions, that in fact as things evolve over time you'll get something completely absolutely different—and that there are no inherent biases or directions in evolution. That is the orthodoxy.

**Host:** I would say that was the orthodoxy. I think I'd take you to task on that. I think I'd disagree with you on the idea that it is still orthodoxy, especially in light of the books I just mentioned.

**Kevin:** No, I would say that it is still the orthodoxy. The idea that there are directions may *become* orthodoxy, but right now it's not the orthodoxy. However, I actually side with those who say that, in fact, there are inherent directions within evolution.

So when I stand back and look at the large-scale movement from nothing to very complicated somethings, from the billions of years of increasing order and self-organization, I think it's very clear that there are these trends, these directions, these constraints, these convergences. What we need to do, over time, is to actually make them clear, to make them more evident.

We have the problem of life on Earth, basically, that there is a case of one. But as we make synthetic life, we'll have the ability to begin to fill in and to articulate a lot better what exactly these convergences are, what exactly the inevitabilities are, what exactly the constraints are, what exactly the trends and the directions are. My book [What Technology Wants](#) makes a kind of a rough guess at what I think some of those large-scale trends are—trends that are not just contingent but that would occur and *do* occur again and again, independent of what has already happened. An elementary understanding that there are these trends is a necessary first step right now today.

**Host:** Where I was going before, when I said that I might challenge you on what's orthodox or not, is because since Stephen Jay Gould has died, of course, you've got not only the authors that I've already mentioned, but also a very significant science writer and scientist, [Simon Conway Morris](#), and his book, [Life's Solution](#), as well as [Richard Dawkins](#)' wholehearted

support of directionality as articulated in a recent [New York Times interview](#). [Connie Barlow](#), my science writer wife, is one of the world's leading experts on this topic of [convergent evolution](#) or [parallel evolution](#). She put together something on our [Great Story website](#), that's called "[Let There Be Sight: A Celebration of Convergent Evolution](#)," a compilation of all the different things that we now know about convergent evolution, where something emerges time and again, independently—eyesight, for example, emerging over two dozen different times in different lineages, independently.

No matter how many times you run the tape back and run it out again, the way Stephen Jay Gould wanted to, you're always going to have eyesight, you're always going to have flying creatures, you're going to have the tree form, you're going to probably have some creature that comes to know that it knows. As I mentioned, Richard Dawkins has been publicly supporting this understanding, as well. So that's why I was not wanting to give as much credence to Steve Gould's position on that as perhaps you are.

**Kevin:** Well, I would say one of my definitions of orthodoxy is what would be taught, what would be printed, in your typical textbook.

**Host:** Good point. Because you're right; textbooks are typically 20 years at least out of date.

**Kevin:** That's how you define orthodoxy.

**Host:** In that case, I wouldn't argue with you; I think you're right.

Well, Kevin, this has been great. I want to ask you a couple other questions. One is related to your Technium writings: Could you say a little bit about that concept, of "[the Technium](#)." Obviously, you talk about it in your most recent book, but also some of the other, you know, cool tools and things that you have available on your website.

**Kevin:** Well, the *Technium* is my word for this larger system of technology. In the blog where I actually wrote the book out loud over a period of seven years, I was posting on this thing called the Technium, and the Technium is my word for what some people might call a culture, because my definition of technology is very, very broad. It's anything that comes from the mind—and for a lot of people that sounds like culture.

The reason why I think culture doesn't really convey what I'm trying to convey is because by technology I don't just mean a kind of a collection of all the things that are in your pocket and the things that are out in the street or the world of roads and automobiles and washing machines. What I mean is that any one of those devices, like your iPhone, require thousands of other technologies to actually create it and support it, and each of those sub-technologies, thousands, will require hundreds of other technologies to support it—and so you have basically a network of technologies that are all codependent upon each other.

They form kind of an ecology, or maybe you want to think of it as a superorganism, of technology. That superorganism of technology, like any other superorganism, exhibits inherent

biases and certain properties of its own that are independent of the pieces. So the Technium, my word for it, exhibits behaviors that you won't find just in the iPhone itself, or you won't find in just automobiles. But together that network, that superorganism, of all the stuff that we make exhibits certain behaviors—and I named that superorganism the Technium.

I'm suggesting that the Technium itself obeys evolutionary properties and has inherent biases. So the question, I say, is: What are these biases of the Technium? What does the Technium want?—not in the way that you and I want something, but in the way that a plant wants light and it moves in a certain direction to get it. So I'm saying that this world that we've made with our minds, this Technium world, has certain biases, certain drifts that it's moving toward, and that we should be aware of what those are—and that we can deal with new technologies, *if* we have this framework for understanding them.

**Host:** That's great. And *Cool Tools*? Say a little bit about [Cool Tools](#).

**Kevin:** [Cool Tools](#) is a hobby that came out of my stint at editing [The Whole Earth Catalog](#), where we recommended great tools. I'm a big believer in minimizing the amount of technology in your personal life, while trying to maximize the amount of technology in the world at large. This part of "minimizing the amount of technologies" is done by selecting just the right thing. *Cool Tools* reviews or recommends one fantastic tool in the broadest sense, something useful, each day. We don't evaluate bad stuff, we just rave about the good. The idea is to help you keep the amount of technology in your life to a minimum, by suggesting here's something that really works, and use this if you want to do X. It's a site that's written by the readers, and it's been going on 10 years now.

**Host:** I've noticed that [you've delivered three very popular TED \(Technology Entertainment and Design\) talks](#), roughly every two years. You gave one in [2006](#), [2008](#), [2010](#). And are you going to be giving one in 2012?

**Kevin:** Yeah, I should. *[laughter]* Yeah, I'm due for another TED talk.

**Host:** Kevin, the last question that I have is related to the future. Given the amount of time and energy you've put into thinking about the past, what have been the patterns that have gotten us here? What have been the patterns at work in evolution? How has emergence occurred? When you look to the future, I guess I want to ask two questions: What, if anything, would you like to share in terms of how you see the future unfolding for humanity? But then also, How do you see the Church, how do you see Christianity, evolving when you look into the future?

**Kevin:** I've been very concerned about the organized religion of Christianity, because for the past 2,000 years it's had a singular, mono-scenario for its future—that the End Times were near, that the end was near, that there was no future. So for 2,000 years, Christianity has believed that it was near the [End Times](#), the end was over. And for 2,000 years, it has been

wrong. The same scenario has been wrong for 2,000 years. It's now time to have an alternative scenario.

It's very possible that it will all end tomorrow. That's still very, very possible. But let's have at least one other scenario—maybe multiple scenarios. And so, I was thinking about the next thousand years of Christianity, just to kind of kick it off in one direction. I was imagining in that kind of scenario process of extrapolating from the past into the future. I did some extrapolations, and there are many things you can kind of conclude. One is that the schisms that we see in Christianity today—in other words, if you map out the number of different kinds of denominations over time, you would have to say, well, in another thousand years, it would be like a million, gazillion different sects. That would be the logic. But that's not very helpful. There are also other things that you can look at.

I looked at the geographical center of Christianity and concluded that, from its origins in Jerusalem, it's been drifting westward at almost a constant rate—first heading up towards Armenia, and then going over to Constantinople, and then over into Rome, and then kind of over into Britain and Northern Europe. And now it's sort of centered in the U.S., and it's going to keep drifting westward into Asia. The rise of Christianity in Asia (and in the South, too) is phenomenal and is going to shift the geographical center of it to Asia.

There are some people who can imagine the thing keeping drifting and returning, in a certain sense, back to the Middle East in a thousand years—sort of circumnavigating the globe. That's one imagining, one scenario: that Christianity becomes an Eastern religion again. But what I'm really suggesting about the point of this is that I think that everybody and every Christian should begin to think about the next thousand years to contemplate alternative scenarios—other than the single one that's been wrong for two thousand years. What would Christianity look like a thousand years from now?

**Host:** That's a great mental exercise. Any thoughts about how you see humans evolving in partnership with our technology?

**Kevin:** Well, one of the things you can say is that our evolution, our biological evolution, actually has increased. There have been people like Stephen Jay Gould—well, he's wrong about something else. He said that, basically, once cultural evolution came along, once we had culture, that the pressures for adaptation were shifted to the culture, and that our biological bodies stopped evolving. But it actually turns out that he was totally wrong about that. Right now, looking at our genetics, our genes are now evolving a hundred times faster than they were 10,000 years ago when we began culture.

So culture has actually accelerated our biological evolution—and that's even before we've done the genetic engineering that we're going to do. We'll certainly become much more dependent on our technologies. We've done it already. We're already dependent on cooking and other technologies like that. So I don't have a good sense of what that will look like, other than I think it'll become invisible, like it has so far. I mean, the fact that we're dependent on cooking is invisible to us. I don't think we're going to become aware of it. It won't look or feel

very different. It's just like we're dependent on writing; we're dependent on lots of other things. We'll become dependent on this exo-brain of [Google](#)—and as long as it's on, we'll use it. We'll offload all kinds of things to this constantly always-on brain that we're swimming in.

That seems inevitable to me. Human cloning is inevitable, partly because we already have it; it's called twins. And, so I think increasing sentience, increasing complexity, increasing diversity, increasing structure in all the things that we do: that's where our bodies are going in the same direction.

**Host:** I see that with the whole body of life going in that direction... Well, Kevin Kelly, thank you so much for sharing with our listeners your faith journey, your cutting-edge thinking around technology and its relationship to humanity and to biology, and your perspective with our listeners here today on the leading edge of faith.

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