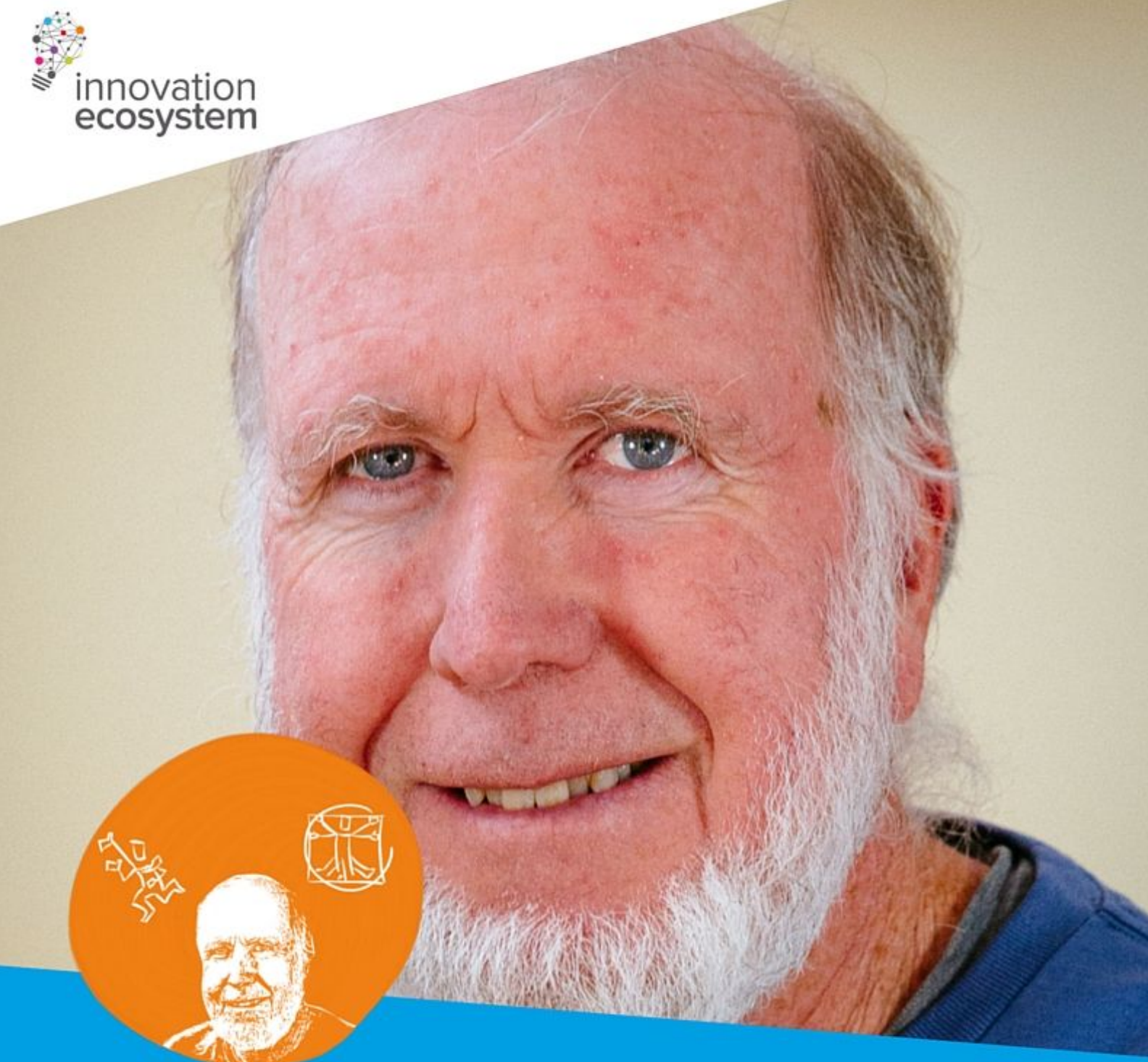
innovation ecosystem



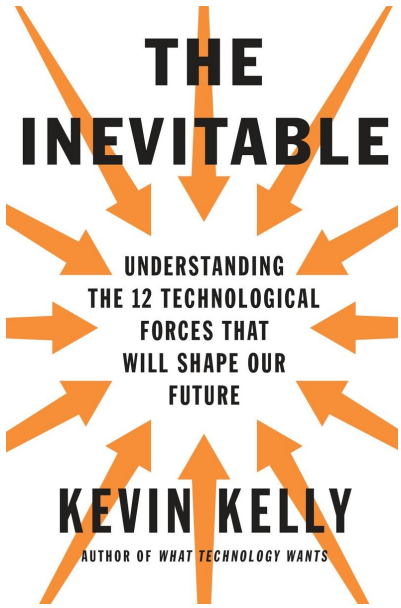


# Kevin Kelly - The Formula For The Next 10,000 Startups, Failing Forward, And Becoming A Teaching Organisation

A podcast interview with Kevin Kelly, Founder and Senior Maverick at Wired Magazine, and author of multiple books including The Inevitable.

By Mark Bidwell

Kevin Kelly is Senior Maverick at Wired Magazine. He co-founded Wired in 1993, and served as its Executive Editor from its inception until 1999. He is editor and publisher of the Cools Tools website, which gets half a million unique visitors a month. He is co-founder of the All Species Foundation, a non-profit aimed at cataloging and identifying every living species on earth, the Rosetta Project, which is building an archive of all documented human languages, and serves on the board of the Long Now Foundation. He is the author of a number of books including What Technology Wants, New Rules for the New Economy, and most recently The Inevitable.




*"I was inspired to make my own education...and caught a really bad dose of optimism in Asia."*

***So, welcome to the show, welcome to the Innovation Ecosystem. With me today is Kevin Kelly. Kevin, I have to say when we planned this program, you were the first person that I wanted onto this show. So, I'm really pleased that we managed to find some time in your calendar, and thank you very much for making that time.***

*It's my pleasure, really.*

***So, Kevin, you described your work as packaging ideas into books, websites, and making them interesting and pretty. Before we get into your new book, The Inevitable, can you give our listeners a sense of your back story?***

*Yeah, I was a science nerd in high school, but also interested in photography, and the arts. Couldn't decide whether to go to art school or MIT. In the end, I decided to be a college dropout, and instead because I read the Whole Earth catalogue, I was inspired to make my own education, and went to Asia where I awarded myself a graduate degree in Asian studies by roaming around for eight years mostly photographing the disappearing traditions of Asia.*

*I also caught a really bad dose of optimism in Asia because right before my eyes I saw people lifting themselves out of poverty very, very quickly, and becoming, from some of the poorest nations of the Earth, to some of the richest ones.*

***This was in the 70s?***

*This was in the 70s, right exactly. So, I came back in the 80s, and I was writing about travel because that was something I knew about. I got myself invited onto the earliest experimental online systems in the very early 80s, 1981, or something. I was reporting on it as if it was a new foreign country, like a travel reporter, and I saw something for the first time, which was high technology that was very human and organic. Until then I bought into the general drift of the hippies, which I was.*

*Big technology, steam-rolling, humans were very inhumane. It was us versus them, but with this all emergent online thing in the early 80s, I saw a different side of technology, and I became very convinced that this was the future, and that the stuff that we were making could actually have kind of a more organic sensibility, and back to the Whole Earth catalogue where I had my first job. We got involved in making the first public access to the Internet, and I started reporting on this frontier and became more and more interested in the future as a general phenomenon, something we had an obligation to both make more of and to become literate in.*

*So, I was involved in publishing a magazine, doing the first Hackers conference, the first Cyberthon, which was a 24-hour demo in 1989 for VR. All these other kinds of things so that I became very involved in talking about, and publishing stuff about the future, and eventually was involved in launching Wired in 92, 93. Then I edited that for a while until I decided to write my first book called Out of Control, and I've been writing books since then.*

***Yeah, yeah, and one of the ones, that in particular, my kids love as I do is Cool Tools, which is quite a remarkable book. I guess that's based on the original Whole Earth catalogue right?***

*Right, which was a large catalogue, a serious Robo catalogue of tools that were, in the broadest sense of anything that was useful, for self-empowerment, self-education, doing it yourself, and arrange from your tools to*

*build your own house to beekeeping tools, to homeschooling tools, to how to travel and hitchhike around the world, all that kind of stuff. So, that ceased publication right after I left the Whole Earth foundation, but I continued it on my own website, which is called Cool Tools. It's still going today where every weekday, a user, a reader will recommend and review one tool per day.*

*One useful thing per day, and that still is going on. I did the Best Of book that you're talking about, which is aimed at young people who, like me, might read it and realize that there's a lot more things they can do with their lives and with the tools available, and there's a lot more things accessible if you have the right tool.*

***I guess this is the optimism that you refer to, which seems to be a common theme, and it's very much in the book, your new book, The Inevitable. But, what was it that you saw in the early days that gave you that sense of optimism around technology because, back then, I probably couldn't even spell the word technology, being a bit young and new. But, what gave you this sort of sense of optimism about technology when the interfaces were so basic, and so few people were talking about these things in a coherent way?***

*Yes, so computers were big large machines that were impenetrable, and alien. There was no interface to them, really. They were just sort of these mysterious calculating things, and then I think what happened was computers as stand-alone devices didn't really change very much. You could do word processing on them, but the real thing that kind of spurred both the great prosperity we have right now, that kind of leap forward, and my own optimism was when the computer was married to the telephone. It was that communications aspect of it. I think communications is the foundation of society. It really is.*

*It's not just books and stuff, but it's things like libraries. These are always communicating ideas, and connect us together, which is really what a society is. Exchange, even money is a kind of communication, and so when we had this sort of new kind of communication, which was being amplified in all these different dimensions. That's what made me optimistic. We're actually amplifying society for the first time. We are now taking in new directions. We now have new levers to pull. We have new engines to make new ways to communicate. It was the fact that we were messing around and, in some ways, innovating in communication. For some reason that seemed like not was another sector, but that was the main event, and that was so, so big. I felt that in the early online communities.*

*"What we're seeing today are the effect of decentralizing things that were done in a central way, like Airbnb and Uber"*

*The very first experimental communities, one of the things that was we called them virtual communities. There was this initial kind of suspicion or worry that these are just pimply teenagers in their basement being asocial. What I saw was different. Yes, it was them but the communities were real. I mean, they were as real as any other kind of community even though they were virtual. That sense of, "No there's really something happening here. There's really engagement, there's really friendships, there's really something real, socially, in this. It was not asocial at all," and that was what gave me this optimism that we had, here, kind of a foundation for what I would call a very organic, very human scale kind of technology that operate at room temperature, and that was a normal social pressure. Then that was going to be really big. It was these early communities that I really felt that my optimism was based on.*

***Then fast forward to today. Your new book, The Inevitable, describes 12 forces, technology forces that have been, you said, in motion for some time. They have their own momentum, and you say in a rather all-expansive term. They will transform all aspects of our lives. So, can you introduce us to these themes, and what they might mean for our listeners who are mostly corporate executives, intrapreneurs, and entrepreneurs? What are the forces, and what do you mean by how radical will this transformation be, if you like?***

*Yes, so one of the ones I did not mention, but is an example, is decentralization, which has been going on for at least a couple decades with this new technology and will continue. So, a lot of the things we're seeing today are the effect of decentralizing things that were done in a central way. The latest two examples are like Airbnb and Uber, which instead of having a service that is a taxi service that's centralized, you can do one that's decentralized, that's peer-to-peer you have the users do most of the work, and Airbnb is another example where it's the largest lodging company in the world that owns no real estate, just as Uber is the largest taxi cab company that owns no cars. It's done because you can use these new communication technologies to provide the coordination, and collaboration that's necessary to decentralize something. So, the general drift of decentralization has been going on, but it's going to continue even more. We haven't even really begun to do it in some senses. All this technology that we are making, and carrying these little communication devices in our pockets allows us to do things in a way that we haven't done before and that's going to continue.*

*The kinds of things I talk about in the book are things like screening. So, screening is what we do with screens, and screens have been around for a while with the TV screen, but what happens is that we've moved from being*

*people of the book, which was where immovable, fixed texts like the constitution, like the Bible, like law. These were the foundations of our culture, and everything referred to them. That produced a certain kind of thinking where we would go to the authors who became the authorities, and that kind of authority sense of relying on authority for what's true, and how we live our lives. That's all revolved around these fixed texts, but now we have screens where everything is very fluid, and changing, and streams of flowing bits of data through them. There's lots of consequences of that.*

*One is that we don't get our sense of what's true from authorities. We have to kind of assemble it ourselves. For every expert on the internet, there's an equal and opposite anti expert somewhere else. Every fact has an anti-fact, and so there's a sense in which we have to couple together our own sense of what's true. We need other kind of critical thinking skills. Questioning authorities is now the default instead of the authority. So, these have lots of implications. Running a world on screens has lots of implications about the culture, and leadership, and how people behave, and what they believe in, and what they think is right or true. So, understanding that the screen culture is operated on flows, the things that are liquid. Things are always becoming in the process of change, nothing is finished, like Wikipedia. There's no final version.*

*These have a tremendous effect on people's ideas of a career, on what they're looking for, what drives them to do something. So, I think these kinds of a trend, which I said have been going on for at least a decade or more, but will continue to amplify in the next couple of decades. So, the screening that we're going to see, we're now going to cover almost every surface with screens, they become so cheap. If you've been to cities in Asia, the entire city scape is a screen.*

***This is profound because you talked about the book culture being driven by logic, but the screening culture being driven - technology rules, if you like. You also talk about the - you touched on it just a minute ago about the book reading amplifies your analytical skills, whereas, screening in your language, you're developing skills of pattern recognition, real time thinking. So, these are very, very profound implications at the personal level, but also the societal level as well.***

*Yeah, exactly, a lot of people are very kind of worried, and alarmed at the flitting that we do on surfing on the web, and flitting, flicking through tender, or being on Facebook, and tweeting. It seems, to them, very superficial, but I actually think that there is, in a certain sense, an appropriate response to this flood of information that we need to be scanning that this kind of positional ever quickening scan is really a skill that we have to acquire, and I think we need to perfect. I don't think that, necessarily, every teenager is doing it properly.*

*"There are going to be some skills, critical thinking skills that are going to be necessarily to prosper and survive in this environment, and learning how to scan, learning to how to question authority, learning how to question anything that you read is part of that skill set"*

*This is what I talk about techno-literacy, I think that we have to train ourselves. Literacy, we spent four or five years learning to read and write. It wasn't something that you could do by hanging around books, and you can't learn calculus by hanging around math. You have to actually apply some deliberate practice to learning it. I think there are going to be some skills, critical thinking skills that are going to be necessarily to prosper and survive in this environment, and learning how to scan, learning to how to question authority, learning how to question anything that you read is part of that skill set, but I don't think it's necessarily something you can just do or learn by osmosis. I think it may have to actually be trained in the best practices.*

***So, for a leader of an organization - getting specific - of an organization facing disruption, let's say, leader of a Detroit Motor Company, or a German auto manufacturer. What should they do in the face of these waves of disruption, and what kind of skills do you think they will need to survive?***

*Yeah, so when we were doing hiring at Wired, my little motto that I used internally, which was we hired for attitude, trained for skills. We actually didn't hire for skills because skills were always becoming your internal constant perpetual newbie. So, the skills at the - even kids graduating from college didn't have the right skills that we needed because what they were taught was a couple years old, and we needed something that was now. We were much more interested in the attitude, the ability to learn. An attitude of going with the flow, and understanding flows. All these other things were much more important than the actual specific skill, which needed to be learned on site or in the process.*

*So, that would be one thing, I think, that you need to do in your companies, which is to understand that you probably have to instill the skills within - I mean you may not be able to hire them, you may actually have to generate them. So, this idea of lifelong learning is going to take place in the job. That's part of what the career is, since we have careers, that's what it's about. It's about constantly learning. You are going to become a teaching company no matter what you're doing. Just like no matter what company, or what business you're in.*

*You're now in the data business. No matter what company, or industry you're in you're also in the teaching business. So, I think that just has to be part of the process, this kind of constant training, education, skill acquisition. That's what you're doing. Whoever you hire, it doesn't matter what language, or what skills they*

*have. They're going to have to learn new ones within two years, and so are you capable of teaching them? Co-teaching is actually the word I would use. Co-teaching, they're going to teach each other. That's the thing, it's not like - it's peer to peer. That's the other - decentralization is you're going to have them - your workers are going to teach each other, and so can you facilitate that? That's sort of what you're doing. Can you lead that in a sense?*

***Then I think the concept here- there are lots, as you said, there are these 12 forces and some of them are very, very specific, where you talk about adding AI to a product, which Uber is a great example of that. Are there some specific areas in those 12, out of which some strategies are almost like no-brainers to prepare oneself, or maybe there's a baseline of, as you say, co-teaching one another. There's a curiosity, the ability to continue to learn and to adapt. Are there any other things that you would say any CEO, irrespective of industry, geography, maturity of their company needs to get really get at to survive and thrive?***

*"You are going to become a teaching company no matter what company, or what business you're in"*

*I do. So, if we were having this conversation 150 years ago, I would say A, no matter what business you're in, you have got to understand that the industrial revolution is coming. Everything will be automated, we have synthetic power. Things that were done by muscle and animal muscle is going to go away, and you have to understand the general dynamics of automation, and industrialization. Get up with it.*

*We're having this second industrial revolution now, which is AI, and no matter what business you're in, it's going to be affected by AI. So, with the industrial revolution is we had synthetic power. So, when you drive a car today, you have 250 horses in your car. You have access to the power of 250 horses, and we're going to do the same thing right now with AI, which is delivered in the same way as electricity. It's being delivered. You don't generate it. You just buy it off the grid. You buy as much AI as you want, or need.*

*You'll have 250 minds, or 250 brains to do whatever it is you want to do. So, if you're not doing it, your competitor has got 350 brains working on it.*

*So, you have to understand that this is going to affect individual careers, individual tasks, individual jobs, the whole ecosystem of commerce because I think you can take whatever X you want, and you can add AI to it. That's the formula for the next 10,000 startups. It's just find something that we previously electrified, and that we're going to cognify. We're going to add intelligence, smartness to it.*

*"In the ecosystem of commerce, you can take whatever X you want, and you can add AI to it. That's the formula for the next 10,000 startups"*

*So, this is huge. It's going to affect education, it's going to affect food, transportation, agriculture, you name it. It'll affect lots of people's own jobs and tasks because a lot of tasks in each job can be newly automated not just with power, but now with intelligence and cognification. So, all our jobs are going to change. That's big. That's really big, and then I think people will be paid by how well they work with these other entities, these other forces, these other AIs. Just as we have interpersonal skills, there will be another set of skills that will be for being adept at working with these bots.*

***Yeah, yeah. So, it's the, I'm not sure who - there was a book a couple of years ago about the rise of the robots, but I think they were saying something about being able to position yourself between machines and humans is a reasonably safe environment to find yourself in for the foreseeable future, essentially.***

*Between machines, and - it wouldn't mean the humans - I'm saying instead of working against machines, we're going to work with machines.*

***Absolutely, yes.***

*So, this is the idea that some jobs will go away, but most jobs will just be transformed because some of the tasks that we do will be done by the AIs. So, AIs are mostly replacing tasks rather than jobs. So, you just have to get good at - some people will be better at it, but it will also relieve other people to actually become very impersonal. I think of things that are, well, bed side nursing.*

*Okay, that's a very interpersonal skill, that becomes extremely valuable because it's not a commodity because bots can't do it because it's all about being human. That's where we are going to be spending our money, and anything that can be specified as - and efficiency or productivity is something that the robots will do. So, if you have a task where efficiency is important, that is a task that AIs will do.*

***Another of the trends that you talk about of the forces, which I found fascinating, was the one around questioning. I find it fascinating for a couple of reasons. I mean, firstly because I think you talked about a different type of thinking - a number of different types of thinking. Well, you touched on it earlier on. Screening gets you to think in a different way, and then you talk about a number of different types of thinking methodologies of thinking, which are going to come to the floor in this new environment.***

***But questioning, and often leaders are expected to have all the answers. They're expected to be able to***

*"When hiring people, one of the things you're going to be asking is how good are their questions? Innovation is primarily failure, and ninety-nine percent of the things that you try are going to fail...if you don't the high failure rate, you're not asking the right questions"*

***provide clarity, which is increasingly difficult even before you read your book, but it becomes even harder once you understand how these forces are going. Can you say a little bit about what does questioning mean for someone, again, trying to navigate a large organization through some of these ways of disruption? How important will this be?***

*Yeah, I think we'll come to realize that answers are for machines. The machines do answers the best that if you want an answer you ask a machine. In fact, this was a very famous Pablo Picasso quote. I actually tracked it down, he really did say that. He said the problem with computers is that all they give you is answers, but that's the benefit of computers is they give you answers, and with Google and AI coming along, basically we'll get answers for free, and they'll be ubiquitous, and instant, and accessible anywhere.*

*They'll become extremely complicated answers. Things that are very - you'll ask someone and they don't know. So, the thing is that we will work, humans will work, will have this accessible to them. So, the answers will come from the humans plus the AI, but that's how doctors will work. They'll do a diagnosis, but they'll be working with the AI as a team member, as a partner. But, the thing is that the machines are better at making answers than humans. What humans are much better than AIs and machines are is asking questions, and a good question will become ever more valuable because machines can't do it.*

*So, I think, in general, it's not just questions, it's the whole idea of also failure, of also uncertainty of not knowing. So, in a certain sense, every time we ask a question, we get a couple answers, and then we get even more questions than we had before. That's how science works. So, in a certain sense, science is actually expanding our ignorance faster than it expands our knowledge, and that's a good thing because it's in that frontier of the ignorance of the unknown where all the opportunities are. What I think humans or a good leader is going to be is dealing with this uncertainty. Dealing with - helping us get through because I think, as humans, we're not comfortable with uncertainty. We actually talk about change, but we're actually not comfortable with change either, and we're making more of it all the time. So, part of being a great leader is going to be able to navigating, taking people through this expanding territory of uncertainty of ignorance of ever expanding the unknown, and asking the right questions.*

*It's not just, as Peter Drucker says, it's not just doing things right, it's doing the right things to become more and more critical. So, how do you know what the right thing to do is? That requires a meta level of asking the right questions. I think the art of asking the questions, and there are good questions, and bad questions, or better questions if you say. That becomes the thing that will be most valuable, and when we're hiring people I think we're going to be one of the things you're going to be asking is how good are their questions? I think we have a huge emphasis, and very rightly, on innovation, but innovation is primarily failure. Ninety-nine percent of the things that you try are going to fail, and if you don't the high failure rate, you're not asking the right questions. You're not really doing the right innovation.*

*The same with science, science is a very inefficient process. If you want to be efficient, don't do science. So, efficiency is not the metric that you measure science by because it has, inherently, this built in huge failure component. That kind of being able to steer our way through huge amounts of failure, huge amounts of inefficiency, huge amounts of uncertainty.*

*That's what leadership is going to be about is being comfortable in that kind of an arena, in that kind of a space where that's the norm, and yet the very real human tendencies is to be afraid, to be worried. The kind of fears that we're seeing people like Trump drumming up right now are natural when all this change is happening. So, you have to have leaders that are going to actually try to control and manage that, and really be able to offer guidance, and offer a vision, and all the other kinds of things that leaders need to do to get through that because that's where we're going to be living.*

***Yep, yep, and I guess for the individuals. When you talk about education, this sounds very much like a multi-disciplinary education that gives you multiple frames of references, different perspectives, different mental models if you'd like to --***

*Absolutely.*

***Is that something that you - I think your children may be a bit older than ours, but is that the kinds of things you would equip your children with from an educational point of view?***

*Yeah, my son, we had the privilege of homeschooling for one year in eighth grade. It was really one of the best thing that we did from his point, and our point of view, and the schools he eventually wound up going to were very - like for instance, this high school required all the students to take - obviously, the college prep students, beside all the AP advance course, they all had to take woodworking, glassblowing, metal shop, electronics, fabric,*

*sewing class because that was that kind of well-rounded making, the kind of maker of viewpoint of just of trying things in order to learn was an essential component, I think, of this multi-disciplinary education.*

*I think no matter what school you're in, this is my parental advice, is no matter what school your kids in, you're going to have to supplement the things that aren't there. So, there's no perfect school, this one will have some advantages of over the other, and your life is filling in and compensating for these other dimensions. I think that this idea of trying things is a big thing that I think is a meta theme in my books, which is that the only way we can know what a technology is good for is by using it, by trying it, by engaging it. We can't prohibit things. We have to embrace these things. We have to try and embrace, and it's by embracing them, and using them that we can actually find out whether they're useful to us personally, and what their right role in society at large.*

*"Corporations want to fail forward, you want to have constant small failures instead of these large big ones, and part of that failure will be coming from trying things"*

*That is through use in engagement, and embrace that we get those rather than through prohibition, or trying to undo them, or turn them back, or in some ways, outlaw them. So, I definitely would say, for corporate leaders and stuff, by far, the best way is to actually have an honest implementation of these new media, new technologies, and actually use them. Through use, which there'll be lots of failure, and again, corporations and government are very allergic to failure. They have to be less allergic, they have to tolerate more of these small experiments. So, you want to fail forward, you want to have constant small failures instead of these large big ones, and part of that failure will be coming from trying things, and not just in trying them intellectually but actually through use. To actually have people use them.*

*So there's no way you can become an information based, AI based company unless the people, themselves, are engaged in it through the people. The employees themselves are engaged at the lowest levels. It's not something - I'm not talking about having Skunk Works. That's good too, but there has to be - the program is talking about eating your own dog food in a sense of you've got to really be doing it, and trying it at a fundamental level.*

***Yeah, yeah, I was at a VC event yesterday, actually, Kevin, and there was a guy talking about - the VC was talking about the payback, and the corporate VC was talking about the learn back. So, they want to make money on it, but they actually want to take this learning from their investments in third party organizations and actually process that back into how they do business themselves, which I thought was quite a nice term actually.***

*Exactly, yes, that's a lovely term, "learn back". So, learning is the new currency, and you learn by failure, you learn by asking questions, you learn by doing, and making. So, the company that learns fastest makes the most money, basically.*

***Yes, so I'm curious. As I mentioned, I'm an anthropologist. What does all this mean for the bottom of the pyramid? What does it mean for the Nepalese farmer, for instance, who maybe has one screen on their iPhone, or their Samsung? It's very easy to get. We sit in very privileged positions in society where we can access these technologies and enjoy them. But, the bottom of the pyramid, your Nepalese farmer, what does this mean for them?***

*"Learning is the new currency, and you learn by failure, you learn by asking questions, you learn by doing, and making. So, the company that learns fastest makes the most money"*

*Yeah, well the important thing for the Nepalese farmer is the fact that he does have one screen now because when we were talking about this - we, meaning people like myself, talking about this 20 years ago, the question that people said, "What about the digital divide?" The question was, "What am I, and what are we going to do about the digital divide," and I said, at the time, "I'm not going to do anything about it because the amount of profit involved in making sure that the Nepalese farmer has access to this is so strong that the worry is going to be more what happens when everybody is connected." That's going to be what we're going to worry about, not about how we're going to get everybody connected.*

*So, the Nepalese farmer, even though people did not believe at that time that, within 20 years, the Nepalese farmer would actually have a super computer in his pocket, that's happening, and I think will continue to happen. I think the question's about not how do they get access to this, but how do they get clean water? How do they get solar electricity? How do they get roads? For the Nepalese farmer, that's what they're concerned about right now. They still have the basic infrastructure that is missing, and I don't think we can leapfrog over them. I think that you can leapfrog a little bit to get maybe something kick-started, but I think you still have to build the roads, and bring in electricity, and have the hospitals, that you can't just have the cell phone, and nothing else.*

*So, that process, we know how to do that. That's known. It's available, and when people are connected, those bottom billion, they're so eager. I spent a lot of time in China. I just came back from India and Kerala for a while in the back country. I've been everywhere in the most remote parts of China. I just came back from Oman yesterday. It's amazing how fast people like that are grabbing the opportunity that they have, and building the stuff themselves. Okay, so they don't need development, they just need an opportunity and they will build it*

*quickly, and quicker than we can even imagine.*

*So, I'm not so worried about that part, I'm much more worried about what happens when everybody does that, and the kind of friction that that rapid development puts on this society from going from a very traditional medieval society with kids who are just tuned in all the time, and the kind of spill over, and the quality of what happens with their jobs. So, the development, I'm just not that worried about because there's so much pressure, economic pressure to make that happen, and so many people eager to do that that that is going to happen. But I think the other issues about who to identify as, who am I, what's my relationship to this new world, what do I do, I think those are much more challenging issues.*

*"We're remaking our entire culture right now. I think people in the past had a very clear idea of who they were generally, and certainly about their relationship in the cosmos, and that's not there anymore"*

***Yeah, because there's two pieces here I'd just like to pick up on. One is in your lovely example of what screening looks like. I was struck by you said we all sit down for dinner, and screening is not allowed at the dinner table, which was very explicit. As a parent, we're always trying to get our kids to put down the iPhones. Then the second piece, maybe you can comment, I think they're both very similar, is I think your conversation you had with your father where he talked about, "Don't you want possessions?" and you talked about feeling liberated and the more hunter-gatherer life. But, humans with fewer possessions, which is great, but on the other hand we do want - I think humans want relationships, they want a connection with land. Obviously, hunter-gatherers, that relationship, to some extent, is broken. How concerned are you because you did touch on it. There's friction. How can we lubricate this friction, and how big of a problem do you think it is that we're facing here?***

*I think it's huge, I think some of the results of the Arab Spring, which were still repercussions reverberating through the entire world in a certain sense. So, we can have the technological infrastructure happen, but our views of our role in the world and the cosmos actually become more and more important. I think we're kind of on this - we have 100-year identity crisis ahead of us. It's not just the developing world. It's us, and I think it's even more acute in there because of the speed of the change. We've had 150 years' industrial revolution in places like Nepal, or whatever. They're going to do the industrial revolution, and the information revolution, and the post industrial revolution all within 10 years. It's like, "Wow!"*

*So, the question of who are these young people at the end? What's their identity, what are they for, what's their role in the world? I think it's uncertain, and I think that that's going to play out in terms if they're frustrated, if they're unemployed. This is where you get wars from. This is where you get unrest from. Talk about China, let alone Nepal, China is going a thousand miles an hour into the future, but they have no idea where they want to go. I mean, the Americans at least have some kind of an idea of, "Oh, the American Dream." We have some idea of what we think America's role in the world is even though other people may not agree with us, we know what it is. But what's China's role? They don't know, they don't have the China dream, and so this is starting to come to play out in a sense of you going so fast, but you don't know where you're going.*

*"The one thing I am worried about is whether we will treat our AIs and robots like slaves"*

*There needs to be answers to that, and I think in the AI, and the genetic engineering will all add another layer or two, which is what's human. What are humans good for? What's our role in this? What's our job? We thought we were tool makers, but other things can make tools too, so, obviously, we have to redefine ourselves. I think these intangible, almost philosophical questions are going to become much more important to try to answer, and, again, back to the role of the leadership, I think this is one of the things that leaders will be doing is trying to put into context, even in the terms of the cosmos, why are we here, and what are we doing, and what's your job, and what's our role? I think there are maybe these kinds of questions where we dismiss as philosophical, but I think the philosophical is going to be incredibly practical very, very quickly. You're talking anthropology. Well, we're in a whole new empathy scene, which has a whole 'nother - I mean, we're remaking our entire culture right now. I think what people, and the past had a very clear idea of who they were generally, and certainly about their relationship in the cosmos, and that's not there anymore.*

*Both the developer, and the developing world as they becomes developed, and I think that's one of the first thing that breaks and I think we don't have good answers right now for that. Why am I working so hard? People in China, I'm working all the time, what am I working for? I got money, then what? I can't breathe, the air pollution is so bad. The thing about the Nepalese farmer is they're just beginning to ask that question, but in ten years, twenty years, they're all going to have the same generation of youth at the same questions unanswered.*

***Of course if they look to us as having the answers when we're actually beginning to ask these questions even more, that makes it even worse doesn't it?***

*Right, so we can't give them good answers right now. So, that's exciting. It's thrilling because we don't know the answers to it, but I think that is the general drift. And what I'm thinking about, and what I worry about, for instance, I'm not really worried about much about technology, but the one thing I am worried about is whether*

*we will treat our AIs and robots like slaves. Whether or not they really are slaves, but whether we will have a kind of slave position, or a slave/master position to them really does concern me because I think that does affect your soul, your mind, your culture.*

***I think that's touching on this distinction you make around singularity, the soft singularity versus hard singularity, right?***

*Yeah, so for the listeners who may not know, the singularity is this term stolen from physics, and cosmology, which is that there's a horizon beyond which you can't see anything. So, like around a black hole, all the information flows into a black hole, so there's some point you can't see beyond and it's unknowable. Vernor Vinge was a mathematician, science fiction writer who applied that to our own future saying that if we could have an intelligence explosion make an AI so smart that it could make another AI smarter than itself then it could compound up, and it would suddenly have an explosion of intelligence that would leave us behind, and we couldn't see what would come after that. He called that the singularity, and Ray Kurzweil had sort of made that into a trope, into a myth that in the year 2040 or something, this will happen, and the AIs will become so smart that they'll solve cancer, they'll solve immortality, we'll live forever if you can just live until 2040 you'll live forever.*

*That's the hard version of this singularity. It's kind of like the rapture for the nerds because it sounds like God is coming in the year 2040, and I think that's very, very, very unlikely for a number of reasons that I don't have the time to go into right now, but I think it's very, very, very unlikely. But, I do think there is something in the soft version of that, which says that, basically, globally, we're assembly a very large super organism. We're connecting all 7 billion people together, and we have all these trillions of machines and AIs that we're making, and we're all connected together, and we will have a network, a system, the Technium, as a whole planetary system, and that it will exhibit, basically, phenomena or behavior that does not exist in any of the parts. So, there will be a planetary super organism that will, in some respects, be unknowable to us.*

*So, there will be a singularity in that sense of we won't be able to see what's happening in a certain sense because things will be happening at a planetary scale, and just like the whole definition of a system is a behaviorist that aren't present in the parts, the system will behave that none of the parts behavior, and so that's what I'm forecasting for these holos, this planetary machine, human, biological thing where all of us, all our machines, all the AIs connected together exhibits behaviors that aren't present in any of the parts. So, that's a kind of singularity in a sense that it'll be hard for us to see what's coming.*

***Kevin, I'm mindful of time, but also I'll put it in the show notes. There's loads of other things that you're doing beyond writing, and you've done. The Rosetta Project, the Long Now Foundation, your work on languages, but my final question is is there something else that you really want to achieve? You've filled your life with many other lifetimes of work, if you like, but what's the next big project on the horizon, or what else do you really want to achieve?***

*Yeah, yeah, that's a good question. The stuff that I've been talking about: AI, virtual reality are all kind of current hot topics, and there's a lot of money flowing into it. There's a lot of people interested in. It's important. It's going to be the main event in the next 20 years, and I decided that I wanted to pursue something that nobody else was interested in. I had this idea that everybody that I talked to thinks is a really bad idea. I think it's a good idea, so that's one of the messages to me is that this is for me. This is what I should be doing because nobody thinks this is a good idea, and that is that I become very interested in a proponent of world government.*

*I believe that we need, and have to have, and will eventually have a world government, a system, a policy, an institution of world government. My friends on the left thinks it's a terrible idea, my friends on the right think it's a terrible idea. Nobody thinks it's a good idea, but I think it's because of Star Trek, it's an inevitable idea. Doesn't any planet in the galaxy who has a certain level of technological advancement, and they'll have world government.*

*But it's very hard to imagine how we get there. In fact, it's also very hard to imagine how we could have a truly representative democratic governance with 7 billion people. How does it even work? Do you vote, or is it because of the levels of hierarchy might be so severe that it's not really significant, I don't know. The UN is probably the least democratic institution that we have, so I'm not talking about the UN. I'm talking about a real working world government that would do world police, that would do world sheriffing, that would do world justice. I have no idea how we get there, I have no idea what it looks like. I only have a belief that it's something that we should be working on.*

***It's interesting that you said it because there are clues in your book. This idea of bitcoin being based on***

***covalence, which wasn't a word.***

*Right.*

***That is a clue towards what you're talking about right?***

*Yes, right, and covalence, for people who haven't read The Inevitable, is this idea that surveillance, which is they are watching us, is uncomfortable, and is hellish in a certain sense. The premise is that, just as internet is the world's largest copy machine, and technology wants to copy, and everything will be copied can be copied. You can't really stop the flow of copies. The same way the Internet, and this online world, this digitalization is the world's largest tracking machine. So, in 50 years, we'll be tracked even totally than we are right now.*

*In fact, VR is probably the world's most severe surveillance system we can - everything inside the VR is being tracked. I think that what we want to do, though, is we want to have some way to bring symmetry back into that. So, If I can watch who's watching me, and I can know about them just as much as they know about me, and I have some control over what they know, or what they use the information for and I get some benefit. I call that covalence because it's going both ways. It's symmetrical. That makes it more civil. So, part of the challenge, I think, is not to stop the tracking, which is impossible, but to try and introduce the mutual symmetry back into it, which makes it much more reasonable.*

***Yeah, palatable for everyone concerned. Kevin, I've taken more time than I expected, but I found this fascinating. Thank you very much for your time. Quickly, where can people get in touch with you?***

*KK.org is my website.*

***Wonderful. Okay, we'll put it on the show notes. Really appreciate your time. Very, very glad that we finally managed to connect, and thanks very much, and best of luck with the book.***

*Okay, great. Thank you.*

***Many thanks, good bye.***

*Bye, bye.*