

NAVAL RAVIKANT INTERVIEW PART ONE

Welcome to a special one-week mini-series of *Ars on Your Lunch Break*. If you're not familiar with this show, we've done two seasons of it thus far. Each of them ran here on *Ars* for several weeks, and Season Three is coming up this fall. The show's built around serializations of episodes from the *After On Podcast*, which I also host (by the way, my name is Rob Reid, and I'll tell you a bit more about myself in a moment). The podcast itself consists of (very) deep-dive interviews with world-class thinkers, founders, and scientists, and is very tech- and science-heavy.

We're doing this special brief series, because I recently gave a TED Talk, which TED will release tomorrow. And that talk was directly triggered by the interview that we're featuring here. It's with Naval Ravikant – a serial entrepreneur, and one of Silicon Valley's most prolific and influential angel investors. In fact, one of the companies he started is none other than Angel list, which coordinates and enables a huge percentage of the total volume of angel investing in the high-tech world. Naval is also a profoundly original thinker on many topics, including the one we discuss in this conversation, which is existential risk.

And no – that's not the danger of sitting next to a Nietzsche-spouting chatterbox on a 12-hour flight (awful as that would be). It rather concerns a set of dangers, which might – in a worst-case scenario – imperil the very existence of human civilization. Many of these dangers could be enabled by near-term scientific and technological developments.

Particularly in the 2nd two segments of our interview, Naval and I will focus on risks connected to synthetic biology – or synbio, as I will succinctly refer it from time to time. This is ironic, because as regular listeners to my podcast know, I generally think of synbio bio as being a profoundly exciting and promising field. But things *could* go really wrong here. Naval I will also touch more briefly on dangers that could be posed by superintelligence research. We'll mostly talk about that in tomorrow's segment.

I originally posted my interview with Naval to my podcast feed back in March. It was a couple weeks later that the TED folks reached out to see if I'd like to present some ideas from it at their upcoming conference. The trick was, the conference was a little more than a week off at that point. Which was a bit daunting, because most TED speakers get several months to prepare. Luckily, I'm happy with how things went. But you'll be able to judge that for yourself tomorrow, when the talk goes up on the front page of TED.com.

Later this week, *Ars* will also be running few articles connected to the broader theme of synbio risk. Tomorrow, we'll start out with a piece that I wrote. Then on Wednesday, we'll be featuring a piece by George Church – who is widely considered to be one of the most influential bioengineers in the world. Then on Thursday, we'll be running a piece by entrepreneur Andrew Hessel, who also has profoundly deep credentials in synthetic biology. Andrew and George's writing will explore ways we might mitigate certain dangers that are inherent in synbio.

Finally, I'll briefly share my own background for those of you who don't know it. I was a longtime tech entrepreneur. If you have a prodigious memory, you may recall the Rhapsody music service, which a company that I founded created. We were the first to implement a truly unlimited on-demand music streaming music service – a model which most of you now most probably associate with Spotify. We were also the first company to get full-catalog licenses from all of the major record labels – which was not easy and no fun. After selling my

company, I started writing sprawling science fiction novels for Random House. And as a sort of spin-out of my most recent novel, I started my podcast, After On (which also happens to be the name of that novel).

And now, I bring you the first of four parts of my intriguing conversation with the ever-fascinating Naval Ravikant:

TRANSITION MUSIC

Rob: Naval thank you, first of all, for making time while we're both here in San Francisco to sit down and talk about this interesting subject – I know how busy you are. And before we dive in, I'd love to familiarize our listeners a little bit with your background, starting near the beginning. How old were you when you moved to the US?

Naval: I was nine years old when my mother, my brother and I came to the US.

Rob: And where did you come from?

Naval: New Delhi, India. A classic American dream sort of story.

Rob: And when you got here – I know you've told me some stories in the past – you didn't exactly come into the top 1% lifestyle upon arrival in the US.

Naval: I don't know if we were a bottom 1%, but we were probably close to that. So, sort of on the opposite end of the spectrum.

Rob: So, a long way to come. And, just to fast forward through the cliff notes of how you came from those circumstances to joining the elite ranks of Silicon Valley entrepreneurs.

Naval: I've always been a lover and student of science, and admirer of scientists. To me, growing up, scientists were the great heroes of my life. And I wanted to be a scientist – specifically an astrophysicist. Which I think is a common thing for kids of a certain age, especially boys. Back when I was growing up, you know, you get a telescope and those kinds of things. But I eventually ended up more in technology. I wanted to make money and It (technology) is the intersection of business, money, and science. And I was lucky enough, early on, to discover computers. So I fell in love with, originally, my Commodore 64, and then the Macintosh. I went to Stuyvesant, which was a magnet math and science school, which also helped in that regard. And then, by the time I got to college, it was computer science for me.

Rob: So you were a comp-sci major?

Naval: Comp-sci and economics.

Rob: Where did you go to undergrad?

Naval: Dartmouth.

Rob: And then after coming out of Dartmouth with those skills, did you come more or less directly to Silicon Valley?

Naval: I did come directly to Silicon Valley, almost directly. I bounced through Boston briefly, at Boston Consulting Group, but I wanted to be in Silicon Valley and be in tech. And

when I got here, I started working for a little ISP called @Home Network, which was doing cable modem stuff back in the first dot-com bubble. And from there, I helped start a company that made linearized optical amplifiers. I met up with some scientists coming out of Lawrence Livermore. And I was the guy who was translating their science into a business plan. And then I helped do the same thing with a 3D graphics team that eventually ended up creating what is today Google Earth. It's the group that now runs Google maps. And then I did my own dot-com which was Epinions, which went public as part of Shopping.com.

Rob: That's when I first met you, was in the Epinions days. You were four co-founders, is that right?

Naval: Five.

Rob: Five co-founders.

Naval: It's a pretty crowded trade.

Rob: It was crowded, but you guys did become part of a company that went public during the halcyon days of 2000 or thereabouts. Fast-forwarding significantly, I think you're probably best known for AngelList.

Naval: Currently, yes. [laughs]

Rob: Currently, of course. So, currently, best known for AngelList. Could you give us a quick fast forward overview of what AngelList is and what it is doing to change and disrupt the process of financing early-stage tech companies?

Naval: In 2007, I started a blog with my co-author, Babak Nivi, which was called Venture Hacks. And it was laying bare the game theory of venture capital to entrepreneurs who were raising money. We wrote a whole bunch of blog posts on how you negotiate, what term sheets look like, and so on. And the biggest question we used to get was, "Don't tell me how to negotiate a term sheet. Tell me how to get a term sheet."

I'd also raised a small venture fund, and I was investing in a whole bunch of early-stage companies, and I was an early investor in Twitter and Uber and Wish and Postmates, and a bunch of others. I basically took the list of investors that I used to work with and rather than trying to treat deal flow or company financings as this proprietary resource, I just opened it up. And I said, "I'm going to share all my deal flow with you people and feel free to share back." That's how AngelList was born.

It started as a network for entrepreneurs to meet with VCs. But eventually, we grew into a platform, where today you can do financings completely online through this product that we have called Syndicates and through angel funds that are accessible to any accredited investor. AngelList at this point has funded, literally, thousands of companies, hundreds of millions of dollars of capital deployed. And it's the largest driver of capital into the seed stage financing marketplace.

We also run the largest recruiting site for startups at AngelList Talent, where we literally have tens of thousands of companies and over a million candidates. And we're putting hundreds of people into jobs every week into startups. That's mostly a free service. We also acquired Product Hunt, which is the place where companies go to launch their products online. So it's an ecosystem for startups to raise money, to find talent, to launch their products online.

And then last year, we spun out a business called CoinList, which is a place where you go to have your legal, regulated high-quality ICOs in crypto. I got involved a lot in cryptocurrencies a couple of years ago. I love the intersection of decentralization, the politics of it, the economics of it, the idea that we can have an Internet in the future where we don't just have a few gatekeepers who run everything. And so, I've been fascinated with crypto. I'm an amateur student of science, I read a lot of physics at night, and hang out with physicists whenever they'll tolerate me in their presence.

Rob: When did you start getting interested in the topic of existential risk, or potential catastrophic risks that humanity might face in the intermediate future?

Naval: To me, it's just an inevitable observation. When I was young, I played a lot of war games and I was an avid student of military history, which is where I learned my game theory. And so I'm very familiar with not just weapon systems, but how governments and nation-states and how individual actors behave. The trend line of weapons systems is very obvious. It's been getting easier and easier to destroy something, thanks to technology. It's getting harder and harder to defend.

And the arc of history is giving more and more power to the individual, which is great for individual liberties and freedom, but not so good when it comes to blowing things up. So it became very clear to me, probably about a decade ago, that we're just on a trend line where on a long enough time scale, I can 3D print a nuclear weapon in my house. On a long enough time scale, I can take a synthetic biology lab in my room and I can create a weaponized virus that combines the most virulent features of smallpox and the longevity of AIDS and spreads like the flu.

The technology will absolutely enable that. I can even customize it to your genetic code if I wanted to. On a long enough time scale, I think commercial air travel will come to an end because weaponized drones will be too prevalent. I think on a long enough time scale, even if nobody has any malicious intent, little Johnny could create a singularity as part of his high school physics experiment by accident. It's just the nature of the Faustian bargain with technology that we get so much more power over our natural environment. That power includes the ability to destroy things and **the destructive power arrives long before the protective powers do.**

And the protection never quite adds up, right? Look where we are in nuclear. It's much easier to destroy something with a nuclear weapon than it is to build a nuclear power plant. So I just resigned myself to it slightly fatalistically. But I assume that all of society is already aware of this and is aware of it at scale. Culturally, science fiction has done a good job making us aware of it. But what's different now is that we're actually in range. You can actually see the timelines converging. I know you've looked at that.

Rob: Yeah, and I don't know how much of a conventional wisdom it really is. I think amongst people like you and I who have spent a certain amount of time digging into this and thinking about this stuff, everything you just said is non-controversial, but a lot of people who are further from the issues might find it very controversial. And the thing that would probably contextualize it for them better than anything else is that phrase you just used repeatedly, "Over a long enough time scale."

That's really critical because none of this stuff is necessarily going to happen tomorrow. And the unlikelihood or high impossibility of it happening tomorrow can train people to presume that it's never going to happen – because the present can feel very yawning and very eternal when we're inhabiting it. Are you familiar with something called Amara's law?

Naval: Yes, it's that we tend to overestimate technology in the short run and underestimate in the long run. That's partially why bubbles happen. The crypto bubble the dot-com bubble – we think it's all going to get deployed and rolled out tomorrow. We overestimate it, then it doesn't, then we're disappointed. But then a decade or two decades later, it really does change the world.

Rob: And it sometimes changes the world in a much grander way than we ever imagined possible even during the initial hype.

Naval: Right, because initially, we're just extrapolating out against known use cases. But we can't yet imagine things like – when the first dot-com came along – we can't imagine Uber, we can't imagine cryptocurrencies coming out of the internet, et cetera, et cetera.

Rob: I was thinking about it last night, and I realized a really fun example could be the history of aviation. The first manned balloon flight happened in 1783 and already two years later in 1785, you had the first person going across the English Channel. And I'd imagine sitting there looking at this in 1790 – or in 1785 – you would think that, you know, within a couple of decades, we'll probably have commercial service between Paris and London. And within a human lifetime, maybe transatlantic – and none of that ever happened.

Naval: Right, but they had lots of drawings of Victorian or Edwardian Zeppelins with lots of crew and passengers on board crossing all across the world.

Rob: Well, that's the kind of optimism that you would have had. I mean, in thousands of years of attempts at flight with no success – and then wow, we have somebody in a balloon and two years later they're crossing the English Channel. With that history and the inevitable disappointment it must have had, I'd imagined 120 years later if somebody said, "You know what? In a few decades, we're going to be walking on the moon." You would have thought they were insane, but a 120 years later is when Kitty Hawk finally happened. It's after all that disappointment, all of a sudden, things really, really do take off.

Naval: Another thing here is that creating destructive power, single actor destructive power, is actually a lot easier. From the moment we first split the atom to the first nuclear bomb was a much shorter trip than to the first nuclear power plant. **It always takes longer to create than it does to destroy because creativity has to be scalable. It has lots of moving parts, it has to be safe, it has to be rolled out. Whereas just blowing things up is easy.** So, we figured out combustion – and from there to cannonball and gun powder was much faster than to the internal combustion engine.

Rob: That makes it all the more powerful, for anybody who's skeptical when you and I start talking about some of these sci-fi improbabilities of worst case scenarios. Just think about these examples of us going from very disappointing initial progress to this explosive progress. And one thing I'd like to circle back on that you just mentioned briefly was the prediction about drones in commercial aviation. Because, by a rather cool coincidence, you first said something to me about that subject right before the Gatwick Airport incident that happened back in December.

For those who weren't aware of it – some mysterious drone activity stranded over 100,000 passengers and disrupted over a thousand flights over a span of a couple of days. You had said this audacious thing about commercial aviation and drones, I think just a few weeks before that, to me. So I'd love to drill down a little bit more about what Amara's law might have to say about drones in commercial aviation.

Naval: I've been tweeting about drones since 2013 and these are among my least popular tweets-

[laughter]

Naval: – because they're a little apocalyptic.

Rob: Least popular, in that people tweet back, "I'm really pissed off about that?" Or they just don't get liked very much?

Naval: They don't get liked,-

Rob: They don't get liked.

Naval: – they don't get retweeted. People just don't want to deal with it. But, at least since 2013, I've had this thought that, if you were a Bond villain trying to take over the world, the three technologies that you would look at are synthetic biology; of course, hidden nuclear weapons doomsday device style, like a Doctor Strangelove type of scenario; and hunter-killer suicide drones that are miniaturized. Nano drones that use pheromone tracking, essentially, to find their targets.

Rob: Pheromone tracking, talk a little bit more about that.

Naval: Essentially, it's just through your DNA signature, expressed through your breath, your breathing, your face recognition. It's not that far-fetched to see, when the technology arrives, that you can have drones that track down heads of state and are constantly monitoring them and using that as an intimidation vector. In fact, that's what we do in the Middle East all day long. American drones are always on the lookout for Al-Qaeda or ISIS heads. The moment they stick their head out of the hole, we blow them up. And that technology is just going to get better and better and smaller and smaller. And drones are essentially just guided bullets, that's all they are. It's a bullet with a tracking system, so they will obsolete all other weapon systems; airplanes, ships, everything.

But getting back to your original point, I think that they easily end commercial aviation as we know it.

Rob: Tell me how – and by the way, how miniaturized are you thinking about? How small of a drone and how big of a swarm?

Naval: Well, you could go watch the drone racing videos that are online, where people race tiny drones at very high speeds with incredible maneuverability.

Rob: Like the size of a quarter small? Or a little bit bigger than that?

Naval: Maybe a little bit bigger. Maybe it's the size of your fist right now.

Rob: But they'll shrink so quickly.

Naval: They're shrinking and shrinking so quickly, yes, and their maneuverability is tremendous. That airplane that went down over the Hudson a while back that was piloted safely to the bottom-

Rob: The one that landed.

Naval: – and everybody survived, which was miraculous. That hit a flock of geese. So, you just need a couple of geese and they took out both engines. So, if you have a couple of geese or smaller sized drones that are relatively fast and they're just hanging out near an airport, the drones don't have to launch until the airplane takes off on the runway. And at that point, they can just take it down. So it's a terrorist wet dream.

Rob: Yeah, you just said it's a guided bullet. It's also a guided bullet that can hover indefinitely or it's a guided bullet that can hang out on the ground rather than in the barrel of a gun.

Naval: Obviously, with the gun situation, we don't want people going down to Walmart and buying an M60. Well, this is a little worse. **This is going down to Walmart and buying a surface-to-air missile (0:20:02 – 0:20:04).**

Rob: When you take the extreme case scenario of it, essentially ending commercial aviation, I'm guessing you're thinking about a proliferation scenario in which the technology becomes so cheap and trivial and the hacks that would need to be made to simple consumer, or commercial, or otherwise legal technology, would be so well understood, that effectively all airports will be shut down?

Naval: Well, Al-Qaeda and ISIS already have bomb makers. They already actually do use drones in combat, they've used them. Iran has unmanned aerial vehicles that they've been using in combat and they export a lot of technology for terrorist activities. It's not much of a stretch to see them adopting drone technology as soon as it becomes viable for attacking commercial aviation. That means that the entire radius around an airport from where you can launch a drone gets shut down, and that's a large radius.

Rob: The asymmetry between the destructive power and the protective technology in this particular case is pretty strongly in favor of the aggressor.

Naval: Drones can be guided by pure line of sight, so there's no flares you can launch. There's not even jamming that you could do effectively that wouldn't take down the aircraft itself. It just so favors the attacker asymmetrically. And in this case, unlike a suicide bomber, the attacker doesn't even have to expose themselves.

Rob: Right, they still haven't figured out who was behind the Gatwick operation. And we have to assume that that was done with very primitive technology compared to that which will be available in five years, in 10 years, in 15 years, et cetera.

Naval: Right, so what do you do? Do you move airports to more and more isolated locations? Well, the drones just get longer and longer range. They can fly higher and higher.

Rob: One of the things that chills me the most about the Boston Marathon attack was the fact that that was essentially the long arm of Al-Qaeda reaching out through a self-organizing cell of two unhappy brothers. And it taught them how to use a pressure cooker, something that you can find in the kitchen. It was written up in the Al-Qaeda magazine *Inspire*, or one of those online magazines. And that kind of instruction can be conveyed to somebody. You don't have to convey something that's very difficult to obtain like plutonium. You have simple instructions, that this is what you do with a pressure cooker in the case of the marathon; or this is what you do with a drone that can proliferate well, well beyond those organizations.

Naval: So, I think one thing we have to be ready for is when there's a new kind of attack on an airplane, like a shoe bomber, they shut all the flights down while they retool security to try and catch this thing. And then commercial aviation starts again 24, 48, and 72 hours later. Now, we're talking about a much more difficult scenario. Drones start taking down commercial aircraft – what do you do? There's no actual proper response.

Rob: Yes, and you also said something that I want to drill down on, which is a pervasive threat against heads of state. If we have a very sophisticated bad guy out there – whether it's a terrorist organization or another nation-state – that wants to basically say, "24/7 we have the capability to take out your head of state." Now, let's say we're 15 or 20 years further into the future. I could imagine that a powerful state actor, or even a non-state actor, could make the credible threat that, "Look, we've got the president more or less on our sights 24/7. And by the way, every member of Congress as well."

Naval: Or their families or their extended families or their friends. So, if you stick your neck out, essentially you're making yourself a target. George Bush and Hillary Clinton and Barack Obama pioneered droning heads of state that we were not happy with. But that technology is just going to get better and better. So our own heads of state will come under the same scrutiny. You know, the nightmare scenario is an automated assassination market.

Rob: Yeah, let's talk about this. How would that look, and how might that work?

Naval: It's a dystopian cyberpunk construct that's been out there for a while, so I'm not the first one to think of it, but I'll articulate it. So don't blame me for this.

[laughter]

Rob: We'll blame whoever came up with the idea.

Naval: Yeah, it's been around for a while. But assassination markets – the concept is essentially that you build a piece of code that lives peer-to-peer in the dark web and is as harder or harder to shut down than a dark market. And people can come there and they can put in small amounts of money in untraceable ways – so they could use cryptocurrencies or laundered money. And they can essentially bid up assassinations on people they don't like. So if someone's extremely unpopular – say, you're in a country where some dictator took over. All the people who fled, the diaspora, they could essentially crowdfund an assassination on this person.

Rob: \$5 for me, \$10 from my equally dissatisfied neighbor and eventually, you're talking real money.

Naval: Exactly. And then once that number is quite high, what happens is – depending on which dystopian scenario you're subscribed to – assassins could actually take up the bid. Or, you could have drones that are automated, almost like distributed autonomous organizations where they're running around on station and sort of self-servicing. They could be carrying out the hits. Or, the victim themselves come in and pays 2X to remove themselves from the list, which then funds the next two people.

Rob: Interesting.

Naval: So it becomes self-perpetuating. And given that we can't even shut down things like BitTorrent and Bitcoin and dark markets and so on, it's not clear to me you could shut down an assassination market. The way an assassin or a drone could prove that they were the ones

to carry out the hit and therefore get the money, they pay a small fee and then upload the GPS coordinates and the time of when the hit is going to be carried out. And it's set on a time lock-encryption code, so it only gets decrypted after the hit was carried out. And if it matches up, then they get the money.

Rob: Interesting. You just answered the question that was about to pop into my mind – It's that, "How would you adjudicate this kind of thing?"

Naval: Smart contracts, cryptocurrencies can do it all.

Rob: The other thing that's scary about this is, it might just be an odious dictator with a global reputation that gathers enough money, inadvertently, to get killed. But over time, the cost of everything plummets.

Naval: Sure, it could be democratized. Essentially, you could create a piece of code that goes and downloads lists of all celebrities and automatically adds them to the assassination market list – unless they pay 2X to get off the list, which funds it further.

Rob: Or it might be somebody who is just unpopular at a high school. If the market -clearing cost of a hit – again, over a long and enough time scale – becomes a couple hundred dollars with cheap-ass hardware that anybody could get at tomorrow's equivalent of Radio Shack, people might be setting these things up for incredibly local unpopular people.

Naval: Wow, that's a very interesting point.

[laughter]

Rob: Sorry, I didn't mean to take it to the darkest spot, but you started it!

Naval: Yeah yeah, it could absolutely go there. That's the problem. Destructive technology is just spreading, and getting easier and easier. And what do we do about that?

Rob: Yeah – and when you have the asymmetry between the destructive capability and what it would take to defend against it. I mean, I can't afford personally an anti-aircraft system!

People are going to become very well-behaved, and perhaps very boring.

Naval: Very quiet and very anonymous.

Rob: Yes, society could become a very bland place. Now, as we're starting to veer in a bit of a sci-fi direction, it's worth noting to listeners that we're not presenting spooky scenarios that we think have almost zero chance of happening. At least one, and – in almost all cases – both of us believe that each of the outcomes that we're going to talk about range somewhere between plausible, to likely, to – I think you, Naval, would say – in at least a couple of cases, almost inevitable.

Naval: We have to be careful of what Nick Szabo, who's the creator of BitGold and smart contracts, called Pascal scams. A Pascal scam, for people who are not familiar with it, is Blaise Pascal had this idea that you should believe in God. And the reason you should believe in God is because if you don't believe in God, and God actually exists – especially a Christian God – then you're going to spend your eternity in hell.

Rob: A lot of downside.

Naval: Exactly.

Rob: this is Pascal's wager.

Naval: Pascal's wager, yes. So: Infinite downside risk, minor cost to actually doing something; so you might as well do it.

Rob: And high upside if there turns out to be a God, and you did those small steps that Pascal advocated that you do; Now, you get eternity in Paradise, and that's pretty good.

Naval: Exactly. It's a great trade in the expected value context. Except, the problem is – well, if you want to believe in the Christian God, then you also should believe in the Muslim God for the same reason; and the Hindu Gods for the same reason; and et cetera, et cetera. There's an infinite number of those kinds of possibilities. So, eventually, you realize the human brain is just really bad at computing probabilities when infinities and infinitesimals are involved. But what's different about this is that this is not an infinitesimal probability of something with an infinitely bad outcome. This is an extreme likelihood. I would argue it's an inevitability, on a long enough time scale. And I'm not sure there is a long term here.

Rob: We differ on that. I think I'm more optimistic than you are, and that might give me a different calculus in terms of the value of fussing over it now. But a couple of things that we've just mentioned pushed me back to the same historic anecdote, which I know you know well. There was a time when there was a very small, but not infinitesimal probability that something catastrophic would happen soon after the Manhattan Project was convened.

The calculation that Edward Teller, the future father of the hydrogen bomb made, established that there was a non-zero risk that the first atmospheric test of an atomic bomb would cause a chain reaction and ignite the atmosphere. And once ignited, the atmosphere would burn away to nothing ending all life on the planet.

Naval: But they rolled those dice anyway.

Rob: They rolled those dice anyway. The first thing they did is they ran deeper calculations. They actually made this calculation in 1941, four years before the first test. And Edward Teller and Robert Oppenheimer and the people running the projects convinced themselves that the odds were actually zero. But not everybody agreed with that, and one person who disagreed was named Arthur Compton. He was no knucklehead – he actually won the Nobel Prize for Physics. He was in charge of creating plutonium for the Manhattan Project. He put the odds of the sky igniting at one in 3 million, and he's still considered those to be the odds when the first test went off – the Trinity test in New Mexico.

Now there's a lot of historic nuance here. But it's reasonable to say that facing this risk was a perverse public good, in that the leaders were making the choice on behalf of everyone, whether the constituents liked it or not. And none of the leaders really had to wrestle with his own greed. There was not a Manhattan Project IPO. The leaders faced substantially the same upside and downside as the general public if they bet rightly or wrongly. But as far as I know, that was the very first time that anybody had to knowingly take a very small chance of humanity being annihilated. And at that time, it was a public good.

Naval: Yeah, it was socialized gains, socialized losses.

Rob: Precisely.

Naval: As opposed to today, where if you go to Wall Street, it's privatized gains, socialized losses. Bankers make money for decades, and then every 20, 30 years, they blow up the entire financial system, costing the rest of us trillions of dollars.

Rob: Exactly.

Naval: You can see that same calculation now starting to arise with all kinds of private actors who have access to technology to make these same kinds of decisions where, "Do I roll the dice and end humanity?" Small probability. Or, large probability, I get famous and get rich.

Rob: And the possibility of gambling with human annihilation becoming privatized – that, again is probably going to be a counter-intuitive notion to a lot of listeners.

Naval: That is a very new concept. This idea of privately playing roulette with the world.

Rob: Yes, it is. To the extent that it does happen, it will be mediated by new technologies, exponential technologies that are arising right now. And it will be enabled by the asymmetric power that can be wielded by the masters of those technologies. Or if they're just in a position to take chances that the rest of us aren't.

Naval: On the nuclear side, we forget, after the war was over, how many of the scientists were absolutely horrified. They formed the Union of Concerned Scientists. They built a doomsday clock. Many of them had huge regrets over what they'd done. Multiple ones, including Einstein, became extreme pacifists afterwards, almost in atonement. But their fears, at least so far, have been unrealized. And it's because nuclear weapons are still really hard to build. They require giant state actors. They are proliferating – slowly and scarily – but they're still fairly limited in terms of who can make the decisions around deploying those. But that's not true of the new class of emerging technologies.

END INTERVIEW ELEMENT OF PART ONE

That's it for now. Although of the rest of this interview will largely be about synthetic biology, tomorrow we'll mostly focus on risks associated with super artificial intelligence research. The TED talk I mentioned at the beginning of this episode will also premiere tomorrow – on TED.com and elsewhere. And I'll probably have a couple things to say about that.

Now, if you can't wait to hear my entire conversation with Naval – or, if you'd like to browse my podcast's archive of roughly fifty episodes with various thinkers, founders & scientists, just head on over to my site, at after-on.com. Or, type the words "After On" into your favorite podcast player – and you'll find it all there. Topics include synthetic biology and AI (of course). As well as astrophysics. Neuroscience. Cryptocurrency. Consciousness. Drones. Space Archaeology (yes, it's really a thing), and a whole lot more.

That's it for now. I hope you'll join me here again tomorrow, for more with Naval Ravikant.

OUTRO MUSIC