Demetri Kofinas:	00:00:00	Today's episode of Hidden Forces is made possible by listeners like you. For more information about this week's episode or for easy access to related programming, visit our website at hiddenforces.io and subscribe to our free email list. If you listen to the show on your Apple podcast app, remember, you can give us a review. Each review helps more people find the show and join our amazing community.
Demetri Kofinas:	00:00:26	And with that, please enjoy this week's episode.
Demetri Kofinas:	00:00:32	In 1948, the same year in which Claude Shannon's revolutionary paper on Information Theory was first published in the Bell Labs Technical Journal. Economist Paul Samuelson released, what would become, the best-selling economics textbook of all time. Though no one can measure the creative impact of Shannon's ideas in shaping the next 70 years of innovation and progress in the information sciences, Samuelson's work is perhaps equally noteworthy for the destructive impact it had on three generations of capitalists, policy makers and academics.
Demetri Kofinas:	00:01:19	Elegant but flawed, economic theories built on models that borrowed recklessly from the physical sciences, is the legacy of the neo-classical synthesis canonized in the works of Samuelson's Economics. The failure of that discipline to account for the global financial crisis, coupled with the rise of a new sort of political economy driven by the disruptive forces of globalization, financialization and the information revolution, have forced academia to re-think the entire edifice upon which our understanding of markets and the economy have been built. In this climate, what Bill Janeway calls, "The mission-driven state," has been rendered illegitimate as an economic actor, disrupting the process of capitalism itself, as well as the credit cycle from which all paradigm shifting innovations are born.
Demetri Kofinas:	00:02:19	If we hope to survive this new century, we need to develop a framework for understanding the place of government, the power of markets and the forces driving both. This week on Hidden Forces, Bill Janeway markets the state and capitalism in the innovation economy.
Demetri Kofinas:	00:02:59	Dr. Bill Janeway, how are you doing? Welcome to Hidden Forces.
Bill Janeway:	00:03:02	Delighted to be here.

Demetri Kofinas:	00:03:03	It's great having you on the program. Do you go by Bill or William?
Bill Janeway:	00:03:06	Bill, always have.
Demetri Kofinas:	00:03:07	Always have. Always Bill.
Bill Janeway:	00:03:09	Yup.
Demetri Kofinas:	00:03:09	We've talked for a bit before we turned on the cameras, I told you what an admirer I am of your work, the way that you've compiled what I think is for me at this moment in time, the right book at the right time, for reasons that we'll get into. But also just everything that you've said that is publicly available, videos, lectures -- I think are just illuminating and I've listened to a lot. And, I even told you I listened to your father's 1970 interview or panel for an hour with William F. Buckley.
Demetri Kofinas:	00:03:41	So, fascinating career, fascinating life that you've had, and that's part of this book that I think it's integral to it, but the way I sort of understood it as a I took it in, was there was this one part was biographical, to the extent that it supported the overall thesis. One dealt a lot with finance, the other with sort of venture and business. So, there's all this historical stuff but there's this overall theoretical framework that you call The Three Player Game.
Bill Janeway:	00:04:08	Right.
Demetri Kofinas:	00:04:09	So, why don't you maybe start us off with I guess what prompted you to write this book? Was it the financial crisis? Had it been brewing a long time and what's the history of all this?
Bill Janeway:	00:04:21	Okay. So, the first half of the book is a kind of narrative of how I'd learned how this world works, the world of technological innovation at the frontier, and the first piece of that was a kind of discovery/recognition, something like 35 years ago, in the early 1980's, as I was investing in computer software, enterprise software, infrastructure software. And, I realized that I and all of my peers, all the other venture guys investing in what we called IT, Information Technology, and the entrepreneurs we were backing, we were all dancing on a platform that had been constructed by the United States Department of Defense.
Bill Janeway:	00:05:05	From World War II, to the '50s and '60s, into the '70s, DOD, different arms of DOD funded all of what came to be the

		components of this digital revolution we're now living through. From silicon to software on to the internet.
Bill Janeway:	00:05:24	The second piece of this was about a dozen years later, having joined Warburg Pincus, great investment firm, with a mandate to invest aggressively in this new increasingly distributed computing, as the internet was just beginning to be born as a commercial entity.
Demetri Kofinas:	00:05:45	Late 1980's.
Bill Janeway:	00:05:47	1990, 1991, 92. Then came the great tech internet.com bubble, and I was a very active participant in the process through which a wave of financial speculation, a bubble, could radically amplify and accelerate both the development and the deployment of a new set of transformational technologies, and also, fund the exploration of the new economic space being created.
Bill Janeway:	00:06:23	So, then I went back, then I went back and started looking at the history of economic growth and development through technological innovation, back to the end of the 18th century. Back to when first England, then much of Europe and the United States escaped from what is often called the Malthusian Trap, that population grows, production and productivity doesn't, you starve and you go back to, you get trapped into basically a poverty cycle.
Demetri Kofinas:	00:06:54	Well, that was a real concern even in the early 1900's that that would happen, that we would run out of food.
Bill Janeway:	00:06:59	That's right. But we already had been through that a hundred years of economic growth driven by vast productivity increases and initially both in manufacturing and in agriculture. But, the point here is that, you could see this pattern again and again and again, from the railroads through electrification and on to the world of the automobile and highways and then the computing internet revolution. And again and again, you could see this kind of unplanned collaboration between governments driven by some kind of mission, some kind of politically legitimate mission, initially national development, but then national security.
Bill Janeway:	00:07:44	And, on the other hand, financial speculators always looking for some opportunity for super profit for investing in assets whose price could rise independently of any concern with current routine, boring cashflow and profit. So, this interplay, this is what I call The Three Player Game, this interplay between the

mission-driven state, the financial capitalism, financial bubbles in the market and the market economy transformed by that mobilization of resources at far larger scales and far deeper deployment than you would expect to see in an economy operating according to the rules of mainstream economics, where investments are based on a nice calculation of cost benefit analysis, where everything happens incrementally and you don't have these transformational surges that leave behind a lot of waste, a lot of wreckage, but also step function increases in the production possibilities and the consumption possibilities of an economy.

Bill Janeway:	00:09:04	So, that's where this came from, and that's why the first half of the book's they say was a kind of on-ramp to lead the reader along, to appreciate the significance of the role of the state and the role of speculation in building and rebuilding the economy, the ordinary day by day working economy where we are employed, where we get paid, where we consume, where we invest.
Demetri Kofinas:	00:09:32	So, there are a lot of interesting kernels there that all of which I'd like to explore, one of which is this notion of when you talked about the normal rules, there's also something having to do with efficient allocation of capital and in bubbles as you mentioned, what you're really highlighting there is the speculative meaning, that drives capital to flow into a particular market and to really allow for the products and technologies to reach as critical escape velocity.
Bill Janeway:	00:09:59	But even before that Demetri, even before that, at the frontier advanced progress is made by trial and error and error and error. Efficiency in the allocation of resources means doing this calculus of net present value of expected future cash flows, cost versus benefits, but at the frontier, you can't define the benefits. You don't know what the consequences of an NSF grant to a couple of graduate students at Stanford named Larry Page and Sergey Brin, is gonna produce as that becomes the PageRank algorithm as the basis for Google.
Bill Janeway:	00:10:40	So, you need sources of funding that are not concerned with immediately visible economic value, that can tolerate waste and loss. And that's where as I say, the mission-driven state as it was coming out of World War II into the Cold War, mobilizing upstream resource, creating the Research University, funneling research into upstream RND from computer science to the science of semi-conductors. And then being the early customer for stuff that was much too unreliable, much too expensive to be commercially relevant.

Bill Janeway: 00:11:21 And then, once it takes hold, once the transfer comes to the private sector, then this promise, this possibility of a new economy motivates investors to behave like extreme speculators, again escaping from the narrow bounds of efficiency. And, that's where I say that at the frontier of technological innovation, efficiency is the enemy of innovation.

Demetri Kofinas: 00:11:50 Well, a few things, let's try my best to capture all the important points to the extent that I can. First, not first, but I want you to define the frontier. What are frontier technologies? How are we defining this? But, I also wanna say, I mentioned this maybe at the top of the interview, but I've said this to you before, that for me the great insight of your work was to take the state and to put it inside of the business model. And, the way that I view what you just said is that, the state plays an important role in paradigm shifting technologies at the very beginning of the business cycle, where money is poured into developing technologies that may take a generation to evolve and then eventually the financial markets and the incentive structure of capitalism allows for the allocation of capital in order to bring those to their full maturation, those technologies.

Bill Janeway: 00:12:43 Right.

Demetri Kofinas: 00:12:43 And, that is the entire cycle.

Bill Janeway: 00:12:45 Well, except, except, that's the supply side of the cycle. I did my graduate work for the students of John Maynard Keynes, at Cambridge University 50 years ago. So, I grew up with a deep recognition that from time to time there's trouble on the demand side as well. And, the kind of post 2008 rediscovery at least for a time that Keynes' message that the state also has a role on the demand side when the private sector often due to financial crisis is not capable of generating the demand for all the resources available.

Demetri Kofinas: 00:13:25 You're talking about counter cyclical policy.

Bill Janeway: 00:13:27 Exactly.

Demetri Kofinas: 00:13:27 Well, let me ask you about that, 'cause that's always troubled me, and like I said this is one of the benefits of having read your book. For example, the way that I view the role of stimulating aggregate demand in the cases where it's been applied effectively or the evidence of its proper application supposedly has I feel been really a way of addressing, a sideway of addressing a balance sheet recession, or an excessive amount of debt has been built up and the economy needs to alleviate that debt.

Demetri Kofinas:	00:13:56	So, my point being is the problem that, let's say in the 1930's, that the American consumer didn't wanna spend or was it that the banking system had collapsed and that that debt had swamped the system, and so, the aggregate demand was a way of dealing with the balance sheet recession.
Bill Janeway:	00:14:14	Demetri with all respect-
Demetri Kofinas:	00:14:16	Yes, please.
Bill Janeway:	00:14:17	Your Austrian roots are showing through. Let's back up for a minute.
Demetri Kofinas:	00:14:21	Sure.
Bill Janeway:	00:14:22	First of all, Keynes' message is actually not what become Keynes in economics, the notion of discretionary, fiscal stimulus turned on and turned off when the economy was operating below full potential. Keynes' message was that we have to expect that there is no necessary link between what we save today and what gets invested today. They're not the same people. They're mediated by financial markets and by financial institutions like banks, so they can get out of sync with each other. And at the incentive to invest in the private sector, not our consumers to indebted, but if the incentive to invest is not there, then resources will be wasted. They will be what I call Keynesian waste, come back to the notion of waste in the other context.
Bill Janeway:	00:15:15	Now, what Keynes actually-
Demetri Kofinas:	00:15:16	When you say the incentives to invest, what do you mean exactly?
Bill Janeway:	00:15:18	I mean the prospective profit.
Demetri Kofinas:	00:15:19	The prospective profit.
Bill Janeway:	00:15:20	The return on investment, what Keynes called the marginal efficiency of capital, but what any businessman will tell you is, "The return I expect from investing in building or buying new resources."

Demetri Kofinas:	00:15:33	What you're saying there, if the banking system is, if there's not a proper financial system that allows for the exploitation of those incentives.
Bill Janeway:	00:15:40	Well, first the banking system does not automatically mediate and transfer the resources, it's subject to what's going on in the financial system. And, the one thing we know is that financial market are subject to extreme volatility. I'm also a student of Hyman Minsky, who was a Keynesian, a real Keynesian, not a late Keynesian, so a real Keynesian who in effect documented and logically suggested why it should be that when you have a condition under which banks lend money, they get repaid, they lend more money at riskier terms, to riskier borrowers. Maybe they have to refinance the debt when it's due. And, then maybe when it goes too far, which is where we were in 2007, to pretend that the debt is still good, they have to lend the interest back to the borrowers. And, that's when you know you're heading for trouble.
Bill Janeway:	00:16:39	Now what Keynes actually suggested, and this is something that is fundamentally missing from the historical and analytical history of our times, what Keynes suggested was that the investment function in the private sector was so fragile, was subject to so much uncertainty about what those returns out there were gonna be, that would motivate me as a businessman to invest today. That he actually put it this way in the general theory, that it may prove necessary, quote, "To more or less socialize the investment function." That sounds terrible-
Demetri Kofinas:	00:17:17	Sounds horrible.
Bill Janeway:	00:17:18	Except, except-
Demetri Kofinas:	00:17:19	It sounds dangerous.
Bill Janeway:	00:17:20	Except, let me give you some numbers.
Demetri Kofinas:	00:17:21	Sure.
Bill Janeway:	00:17:22	Because that's exactly what we did. It's exactly what we did from 1929 to 2007. 1929, the total public sector of the United States as a share of national economy, 7%. 5% at state and local government, largest single component school teacher's salaries. State governments required by their constitutions to balance their budgets. So, after 29, between 29 and 33, as the economy went into extreme contraction, their tax revenues fell, they had

to cut their spending. Federal government, 2% of the national economy.

Bill Janeway: 00:18:00 Guess what? In those four years, 2% went to 4%, it doubled. Do you know why? Because nominal GDP, in current dollars, declined by 50%. Come to 2007, and even in the US, the least socialist of all developed countries, total public sector as a share of the national economy, 35%. This time around, when the banks failed, when the banks were bailed out under extreme conditions of panic, the public sector was large enough to offset the contraction in the private sector.

Bill Janeway: 00:18:40 So, this time, we, quote, "Only," unquote, had 10% unemployment instead of 25 to 30% unemployment a generation ago.

Demetri Kofinas: 00:18:49 But, you're saying that the reason that the recession or the depression wasn't as bad as it was in the 1930's was because of the size of the public sector, but what about the role of the fed in quadrupling-

Bill Janeway: 00:18:58 Oh well, there's no question-

Demetri Kofinas: 00:18:59 The size of its balance sheet?

Bill Janeway: 00:19:00 What I'm saying is that the fed was not alone in putting a floor under the economic consequences of the crisis. During that horrible winter of 2008 and nine, when we'd had no idea where the floor was, social security checks continued to be mailed and cashed and the money spent. Medicare payments continued to be made.

Demetri Kofinas: 00:19:24 Right.

Bill Janeway: 00:19:25 And, there was no Medicare, there was no social security in 1933. I'm saying that the institutional transformation of the American economy, and by the way, of all the western economies, the US had the smallest public sector of all of them. But, all of them were large enough. So, when we had this massive shock to private sector, confidence activity investment, the public sector was big enough to buffer and cushion and protect the private sector, even while the central bank this time around, first in the US and the UK, finally in Europe, only finally and late in Europe, played the appropriate role of beginning to refinance the private sector.

Demetri Kofinas:	00:20:10	So, this is a good opportunity to step back and maybe try to take a very detailed path forward for an example for how this works, this three player game works in its most effective fashion.
Bill Janeway:	00:20:20	Right.
Demetri Kofinas:	00:20:21	Because something that comes up in what you describe is that certainly I would agree with you that the responsive central banks and governments prevented a collapse of the banking system, and I can't imagine what the economy would look like in that event. At the same time, the way in which the bailout was handled and the enabling of loan growth and prior to the boom, prior to the depression, allowed for a redistribution of wealth over a number of decades, that has I think just begun to really express itself politically.
Demetri Kofinas:	00:20:57	So, there are I think the best case scenarios in which a mission-driven state works to the benefit of driving this innovation cycle, and then there are the messy sort of in-betweens and then maybe more extreme versions of that with let's say China, which is what I wanna get into, but let's talk about I think what possibly in your opinion is the best example, which is the United States after, well during and after World War II, and how that led to the growth of the technology sector.
Bill Janeway:	00:21:24	Okay. So, we'll talk about the three player game. It's not an accident that it's a kind of metaphorical relationship between my three player game in political and financial economics, and the three-body problem in physics. The point about the three-body problem in physics is there are an infinite number of configurations and none of them represent a stable equilibrium. So-
Demetri Kofinas:	00:21:47	Tell our audience, for those people who don't know what the three-body problem is, explain it to them.
Bill Janeway:	00:21:50	It's trying to calculate that the orbit of three bodies that are gravitationally attracted to each other, and it's so complicated, you can't solve it analytically, you can only kind of observe it as it evolves over time, to an infinite number of different configurations. And that's what I'm saying about the, metaphorically about the three-body problem. So, for reasons of whose history I got into in the book, in World War II, the United States following Britain, mobilized science for war. It did so in a new way. It did so by funding science through universities and creating the great research universities. It did so with a mission, win the war, which meant being effective is

more important than being efficient. Try anything that works, if it doesn't work, scrap it. If it does work, double-down.

Bill Janeway: 00:22:43 And, coming out of the war, particularly when Korea hit in 1950 and it was clear that we were gonna be into an extended challenging struggle with the Soviet Union, that mission of national security became extended and open-ended, and led to investments in the creation of computer science as a discipline, the radical acceleration of the development of semi-conductor materials, micro-electronics and then the multiple dozens of different experiments, and actually trying to produce digital computers. And then on to sponsoring the invention of software as a discipline and as a then ultimately as an industry. All of this took place over 25 years.

Demetri Kofinas: 00:23:36 Well, Claude Shannon wrote a mathematical theory of communication while he was at Bell Labs.

Bill Janeway: 00:23:40 That's right.

Demetri Kofinas: 00:23:40 And, that's also interesting, I learned about this much more when reading your book. I've also read John Naughton's book, but specifically the way in which the government sort of struck these deals with large corporations, AT&T is a good example, but it's not the only one where money was being allocated towards the public good. And, of course it's also important to note that, and I think this is interesting and I don't mean to interrupt, but I wanna say it before I forget, I think one of the important, interesting points that you make around having the mission-driven state at the beginning of an economic cycle where risk is fraught, perhaps too fraught for a normal capitalist to invest, but there's also the fact that when the state develops the technology, it's not proprietary. And, that has an impact on the development cycle.

Bill Janeway: 00:24:26 This goes all the way back to ... Very good point. It goes all the way back to the early 19th century. The miracle invention that made possible mass production, took place in the armories owned by the United States Army, in Springfield, Massachusetts, and Harper's Ferry, West Virginia. It's called Interchangeable Parts, you could assemble things like guns without a craftsman having to hand, sand each piece and fit it together on a one-off basis. That was reduced to practice in the armories, it was given to the world by the United States Army. No royalties, and became the basis for first sewing machines, typewriters, bicycles, automobiles.

Demetri Kofinas: 00:25:10 Didn't we steal that from the French or something?

Bill Janeway:	00:25:12	No, no-
Demetri Kofinas:	00:25:12	Wasn't there some story with the inventor of the cotton gin?
Bill Janeway:	00:25:17	People had been working on trying to produce things with interchangeable parts. Eli Whitney was an early user.
Demetri Kofinas:	00:25:21	Eli Whitney, right.
Bill Janeway:	00:25:22	But look, we're going so far off-
Demetri Kofinas:	00:25:24	I understand.
Bill Janeway:	00:25:25	Off-piste as the skiers say, but I just want to assert here, we can come back to it when we talk about China. Every nation that is trying to get to the frontier by following those who are in the lead, begins by appropriating whatever intellectual property they can get their hands on.
Demetri Kofinas:	00:25:42	Sure. Appropriating, that's a good word.
Bill Janeway:	00:25:45	The Brits took textile technology from the Indians and the Italians, we took it from the Brits.
Demetri Kofinas:	00:25:51	You steal what you can get.
Bill Janeway:	00:25:52	We took it from the Brits. The Japanese and the Koreans took everything from steel to semi-conductors from us, and obviously China has had the most coherent, centrally directed, mass program on doing this. But it's a long history.
Demetri Kofinas:	00:26:05	And then the same point though, I think you make the point in the book, Steve Jobs, Xerox PARC.
Bill Janeway:	00:26:08	Sure. Steve Jobs was invited to Xerox PARC without the bosses knowing about it, they showed him the first computer with a easy to use, interact, mouse, graphic screen. He looked at that and said, "Hey, that's the future."
Demetri Kofinas:	00:26:25	The GUI!
Bill Janeway:	00:26:25	"We're gonna do that, we're gonna do that." But, let's try to work our way back to where we were. Where we were was talking about this extraordinarily constructive configuration of the three player game that ran for a generation. Ran for a generation in the US from World War II through into the '70s. And, we gotta talk about the '70s. It then took two full

generations for the technologies that were sponsored by the state to spill over into the private sector, beginning with the PC revolution of 1980 with Steve Jobs and the MAC and then the IBM PC. Where these new technologies were reliable enough and cheap enough for mass production, okay?

Bill Janeway: 00:27:07 And then, it took from 1980 till 1995, 15 years, with the introduction of the internet, with the first Mosaic browser, that's where Marc Andreessen got is name in the books for the first time. For speculative investors, investors, to begin to say, "Hey, you know, something really big is going on here." Is it as big as the railways? Is it as big as electrification, which was motivated the roaring '20s? We don't know, but boy it's gonna be big. And so, there's no price too high to pay. And, we got what I call a productive bubble in the late 1990's, wherever there are markets and assets, wherever there are markets and assets, you're gonna find investors who are hurting together, momentum investing, prices for those assets will de-couple from concern with cashflow, past, present or prospective.

Bill Janeway: 00:28:03 Most of the time, the assets that are the subject of speculation, have no potential of generating increased productivity growth, increased production possibilities, from tulip bulbs to marijuana stocks, they're just objects of speculation. We can talk later about where we put Bitcoin in that context. But every once in a while, every once in a while, the object of speculation is one of those technologies which when deployed at national scale, at mass scale, they say the railroads, electrification, really does create a new economy. And, that's what we saw happening in the late 1990's.

Demetri Kofinas: 00:28:50 I was gonna say ... Well, I wanna reiterate something. There are a few things you said, well one a very funny point, we had Howard Marks on the program, he gave me the exact opposite point of view, but it was in the context obviously of investing as a capitalist, point being there is a price too high-

Bill Janeway: 00:29:02 Of course.

Demetri Kofinas: 00:29:03 Of course, no, no, no, no question. I just thought it was funny.

Bill Janeway: 00:29:05 No, no, no. Demetri, Demetri, I wrote my PhD thesis on 1929 to 31, right? So, I had two unfair advantages when I came into Wall Street for a generation. First, I'd seen 1929. I have a stock chart of Radio Corporation of America-

Demetri Kofinas: 00:29:22 RCA.

Bill Janeway:	00:29:23	The iconic, iconic new economy, super high tech stock of the 1920's. And then I have my two great companies. Veritas Software where Warburg Pincuss funded half of what became Veritas, and BEA Systems where we funded all of what became BEA Systems. And, I have those three stocks together over about a six year period. In RCA's case it's 26 to 32, and BEA and Veritas it's 97 to 2003. They're identical. So, 1999, 2000, 1998, 99, 2000, Warburg Pincuss liquidates my entire portfolio into the bubble. The prices were ridiculous.
Demetri Kofinas:	00:30:02	Yeah, I know. You remember-
Bill Janeway:	00:30:03	And the market pretty-
Demetri Kofinas:	00:30:04	You weren't even able to get most of it out, right?
Bill Janeway:	00:30:06	We got-
Demetri Kofinas:	00:30:06	80% out or something?
Bill Janeway:	00:30:07	on a $50 million investment we got seven billion out of BEA.
Demetri Kofinas:	00:30:10	I think you did pretty well.
Bill Janeway:	00:30:11	Good enough, good enough.
Demetri Kofinas:	00:30:12	One more thing though I wanted to say, there's so much history I could let you talk forever and I will try to do my best. I just wanna say two things that struck out to me and then please continue. One, an important point that I don't know that you addressed in the book, and it just came to me now which is, the Transatlantic Cooperation, the cooperation of countries that were in a state of mission-drivenness, it's something that we've covered a bit in our history of Claude Shannon and in information theory, and then another point to further bolster this with empirical evidence are the Germans. The Germans of course is used towards malevolent end, but one of the running jokes is that in the space program was that our German scientists beat their German scientists.
Bill Janeway:	00:30:50	Right, right, right.
Demetri Kofinas:	00:30:50	So, that's another I think-
Bill Janeway:	00:30:52	You know, you can go back here, I'd like to kind of talk about this when we talk about, is China gonna succeed in succeeding as the next leader of the innovation economy? Because there's

		a lot of history to be learned around 1900, 1914, when it appeared that Germany was going to be the successor to Britain as the leader of the technological leader of the world.
Demetri Kofinas:	00:31:16	And, philosophical intellectual.
Bill Janeway:	00:31:18	Well, they created the research university, they invented the first science-based industry, chemicals. The US was slopping around, Germany had already what became the Max Planck Institute, so originally called the Kaiser Wilhelm Institute, state investment and the best science in the world. Yeah, right up until the 1960's, did you know that if you wanted a doctorate in any subject in the United States-
Demetri Kofinas:	00:31:41	You had to speak in German.
Bill Janeway:	00:31:42	You had to learn German.
Demetri Kofinas:	00:31:42	Yeah, you had to learn German.
Bill Janeway:	00:31:43	You had to learn German. That was a layover, a holdover from back through up until the '30s when you absolutely had to read German. But, let's come back to-
Demetri Kofinas:	00:31:50	Absolutely.
Bill Janeway:	00:31:51	Where we are now, because somewhere between 1980 and let's say 2005, through with the accelerating impact of the great tech bubble, the Digital Revolution reached take off velocity. It matured to the point where it no longer needed state subsidy, no longer needed state support, no longer needed the state as the lead customer, it took off on its own. At the same time, back in the '70s, something else was going on. And, I have this whole new discussion in my book, it's really kind of where the book concludes. Ideas really matter. As this game evolves, it's not just a game about redistributing power, although that's so important, but it's also about what's legitimate? How do we define the way the world works?
Bill Janeway:	00:32:43	And, between 1970 and 1980, some ideas that had been marginal in the '50s, became mainstream, and those ideas came out of Vienna, Austria originally. They propagated through the University of Chicago principally, but not exclusively, they came to transform the content of economics and finance as academic disciplines, and to redefine the space, to redefine the space in which public policy was discussed, debated, decided. And, those ideas could be summarized in terms of their political message

very simply. Left to themselves, markets will deliver an efficient, fair and stable outcome, and the only economic role for the government is to screw them up.

Bill Janeway:	00:33:42	Regan famously in 1981 in his first inaugural said, "Government isn't the solution to the problem, government is the problem."
Demetri Kofinas:	00:33:51	And, then went ahead and doubled the national debt.
Bill Janeway:	00:33:54	Well, that was because his genius political advisors worked out that there were two absolute requirements for a Republican administration. One was, transfer income from the poor to the rich by cutting taxes. Second, because of running deficits, create a political and circumstance in which you could cut the fundamental programs that had increased the scale of the public sector. The programs of the social safety net. And that we're back there, we're right back there right now.
Demetri Kofinas:	00:34:24	What was their objective, to transfer wealth from the poor to the rich, or was it to just sort of fit their ideology? And, I should also make the point one could argue that despite the fact that like I said, there was just some hypocrisy in saying government's the problem, then you double the national debt and you blow out deficits, but you of course put them towards military spending. But, one could argue that that was a contributor to finally winning the Cold War. One could make that argument in retrospect.
Bill Janeway:	00:34:48	Look, 20 years later, in 2000, in 2000, the year 2000, the last year of the Clinton administration, the United States posed an existential, financial threat to the world. Everybody's forgotten it. You know what it was? You know what it was? We were gonna repay the national debt and eliminate the risk-free asset.
Demetri Kofinas:	00:35:08	Right.
Bill Janeway:	00:35:09	So, don't-
Demetri Kofinas:	00:35:09	Greenspan went and told Clinton to-
Bill Janeway:	00:35:12	I know. He told Clinton, "Don't keep paying down the debt, 'cause we need to dollar, we need dollar securities as the underpaid, the liquidity reservoir for the world." I am so radically unconcerned about excesses of the US National Debt, because they can be corrected with a political will and they never will be corrected without it. And-

Demetri Kofinas:	00:35:33	That's a whole other discussion.
Bill Janeway:	00:35:34	Yeah it is, and I don't wanna-
Demetri Kofinas:	00:35:34	It's an interesting discussion to have, no I understand, and we don't have to go down there. It's an interesting discussion to have, it requires I think another full episode.
Bill Janeway:	00:35:42	But my point here is that from 1980, across both parties, bipartisan basis, it comes to be believed that government should be dismantling regulations, it should be freeing the financial system to follow the self-interested incentives of rational, omniscient, market participants who would never do anything so stupid as to put their own banks at risk of failure. How could they have imagine them doing that? Because we all know that the markets of the economy are entirely peopled by rational agents who know what the consequences of their actions are gonna be. That was the mission of efficient markets and rational expectations that doctrines that came to dominate economic and financial theory. And, it gave us as one of their primary consequences, the global financial crisis of 2008.
Demetri Kofinas:	00:36:41	To what extent though was that a response to what were perceived to be the failures of government in the 1970's, and as I said to you, I think that's one of the most unappreciated, at least sort of, if not studied then certainly studied by the public times, in 1974 in particular, resignation of Nixon, the Vietnam War, the stagflation, depression of that period, all of that I think communicated some sense of illegitimacy and failure on the part of the government.
Bill Janeway:	00:37:08	Absolutely right. Absolutely right. Couldn't agree with you more, but there's a big irony built into what actually was going on. There's no question that coming out of the, and we have another example of this, of trying to finance wars by borrowing rather than by taxes. Which financing them by stealth, financing a war that was big enough economically to make a difference as Vietnam was, and refusing to pay for it, was a terrible error. And, it did feed into domestic inflation and wages rising and pushing prices up.
Bill Janeway:	00:37:44	And second, there was Nixon's, how can you put it, characteristically extreme opportunism in employees and price and wage controls, before the 1972 election, we knew what the consequences of that was gonna be. And, at the same time in Britain, in Britain the labor government was trying to make an income's policy, voluntary restraint work across the labor market. It failed as well.

Bill Janeway:	00:38:10	But, there was something else going on. It was actually arguably one of most effective insertions of government power in the history of the last 250 years. It was called the first oil crisis.
Demetri Kofinas:	00:38:21	In the Yom Kippur War.
Bill Janeway:	00:38:24	OPEC, well the Yom Kippur War was an excuse for what was a massive power play by the oil producing states. Now, let's think about what its economic consequences were, that actually served as a huge tax increase on the developed countries which had relatively high propensities to consume out of income. So, you were shifting billions and billions and billions of dollars away from the developed countries of the world, from the US to Japan, by way of Europe, and they couldn't avoid paying the tax, because oil, to heat the house, to run the car. You couldn't avoid paying the tax. As we economists would say, "The elasticity of demand with respect to price was almost zero in the short run, in the relevant short run."
Demetri Kofinas:	00:39:14	Right.
Bill Janeway:	00:39:15	And, it was being shifted to the countries in the world like Saudi Arabia with the lowest propensity to consume. So, you had an enormous negative impact of effective demand.
Demetri Kofinas:	00:39:26	Globally.
Bill Janeway:	00:39:27	Right. At the same time, the only way you could increase the elasticity of demand with respect to price, was by making major investments. You had to rebuild the entire automobile stock of the United States, and take it from 12 miles a gallon to 24 miles a gallon. That wasn't gonna happen overnight and it was gonna take massive investment.
Demetri Kofinas:	00:39:49	Well, that's when a lot of that initial investment was being made by GM, right?
Bill Janeway:	00:39:52	Well, it was only in consequence, and it was only particularly when the government said appropriately, it was Republican government, "We're going to have mileage requirements for automobiles, because we must reduce the energy content of GDP. We must reduce our dependence on oil wherever it comes from, but particularly when it's coming from an authority that can arbitrarily raise price whenever it wants to."
Bill Janeway:	00:40:20	So, I just said, "Effective demand declines sharply while taxes raise the cost of everything." What does that mean? Higher

inflation, lower employment. That was stagflation. So, it wasn't just the endogenous, it was the internal workings of the system in the western world. It was also the impact of the government initiative from OPEC, that as you say correctly demonstrated the incapacity of governments in the western world to provide for their people.

Demetri Kofinas: 00:40:59 How much of that was also pent up inflation from the LBJ administration?

Bill Janeway: 00:41:04 Well, there was some, there was some.

Demetri Kofinas: 00:41:06 The Great Society.

Bill Janeway: 00:41:06 But LBJ had been gone from 68, right? So, five years later, it's hard to ... Look. We can blame everything on Barack Obama right now of course, 'cause he's only been gone for two years. Whatever's wrong it's that Barack Obama's fault.

Demetri Kofinas: 00:41:18 Well, no, no, no, my point wasn't, no my point was not to exculpate ... I think you've laid out a great analysis. My point was simply also to point out the fact that there was all this spending that happened in the 1960's, and that the Vietnam War began in that period.

Bill Janeway: 00:41:31 Yeah. And, the Vietnam War ... Look. Many of us worked very hard to try to shorten that Vietnam War as much as we could. And, I always will remember, this is an example of the three player game in action, 1971, Nixon had been elected two years before to basically end the war, he had a secret plan to end the war. And, in 1971-

Demetri Kofinas: 00:41:50 He had a secret plan to end the war.

Bill Janeway: 00:41:52 1971, we opened the newspapers, and we turned on Walter Cronkite and we find out that we're going into Cambodia.

Demetri Kofinas: 00:42:00 Yeah.

Bill Janeway: 00:42:01 The stock market collapsed the next day, the bond market soared. I wrote an article, the headline was, "The bankers strike for peace."

Demetri Kofinas: 00:42:07 That's-

Bill Janeway: 00:42:08 Wall Street voted for peace.

Demetri Kofinas:	00:42:09	Right. Do I remember this correctly? And I think Kissinger was involved in this as well, but certainly it was at Nixon's directive that they were intervening to prevent the peace talks that were going on with the LBJ administration and the government in South Korea, in order to prolong the war in order to help them win. I mean the Nixon administration-
Bill Janeway:	00:42:27	South Vietnam, south Vietnam, yeah.
Demetri Kofinas:	00:42:28	Yeah. The things that came out about the Nixon administration, I don't know to what extent, 'cause LBJ was certainly an amazing political operative. I don't know to what extent this was simply a result of some slight excesses of-
Bill Janeway:	00:42:39	Well, there's been a lot of speculation about it and some of it is, is-
Demetri Kofinas:	00:42:43	Fascinating history.
Bill Janeway:	00:42:44	Yeah.
Demetri Kofinas:	00:42:44	An incredibly history.
Bill Janeway:	00:42:45	It is. And, you know, I was gonna get into this but you're making me jump the gun. We talked about different configurations of the three player game, and in the book, I talk about where we are now. And, I've got a whole lot of motivations for why I went in and really rewrote and extended this book for the age of Trump and Brexit, and one of them is this: I said the Digital Revolution, somewhere between 1985, 2005, reached take off velocity. Now only that, it matured to the point where as we've seen in the last 10 years, it's kind of turned back and at multiple levels through multiple channels, is attacking the authority of the state that spawned it in the first place.
Bill Janeway:	00:43:29	We can see it at the micro level, the Uber, Airbnb, transformation of local markets, well that transforming those local markets, disrupting those markets means also disrupting regulatory structures, cultural patterns that evolved over hundreds of years. Very disruptive. And, at the macro level, at the macro level we can see the impact of the second great globalization, the first one peaked just before the first World War, that's not a coincidence. Automation, this further every, to generate wave of automation, digital automation, attacking jobs, bringing skill-based technical change, and financialization. The enormous increase in the scale of the financial sector and the value of financial assets and the manner in which managers

of business, of large businesses, in particularly of public companies, have seen their compensation tied directly to the share price, which does not lead to long-term decision making.

Demetri Kofinas: 00:44:28 I get it. Well intentioned initially, certainly some aspects of it and-

Bill Janeway: 00:44:32 We can talk about specifics of how thank to a paper by a business school professor at Harvard in 1986, what we'd invented in Silicon Valley, we called it Silicon Valley socialism. If you wanted to attract talent, managerial talent, technical talent out of the safety of Hewlett-Packard in 1980, 1975, 1985, you ought to give those people tickets to the lottery. Now, like all tickets to the lottery, most of them expire worthless, but if you win, the incentives, the rewards are enormous. Well, to take that from the world of massively risky technical startups, to the world of companies with billions of dollars of revenue, assets, cashflow, money in the bank, let alone take it to the banks, where their liabilities are guaranteed by the taxpayers, I think that was an error-

Demetri Kofinas: 00:45:28 Massive abuse.

Bill Janeway: 00:45:29 Massive abuse.

Demetri Kofinas: 00:45:30 Massive abuse.

Bill Janeway: 00:45:30 Massive, and we're paying for that.

Demetri Kofinas: 00:45:31 Massive abuse.

Bill Janeway: 00:45:32 So, these ideas that as I put it, rendered the government illegitimate as an economic actor, that came out of the 1970's and spilled over in the '80s, were rendered, and this is where we are today, where you've got a government, not just in the United States, that has proved incapable of buffering its constituents from the Digital Revolution that it was responsible for launching. No wonder, no wonder we have anger, rage, outrage, et cetera. And, there are lots of other aspects of this, but that's kind of a central story that I think is really important to address, particularly when we come to what has to be one of the great frustrations available.

Bill Janeway: 00:46:22 Okay. The US, you know, we talk about US exceptionalism, the US is exceptional for the structure, the depth and breadth of the denial of climate change. Now, forget about-

Demetri Kofinas:	00:46:35	You know we're gonna get a lot of shit mail as a result of-
Bill Janeway:	00:46:37	That's fine.
Demetri Kofinas:	00:46:38	It's a remarkable thing and I'm gonna let you finish. What's sad for me is that any of this is political, that it's viewed through a political lens but it speaks to the loss of trust in the state-
Bill Janeway:	00:46:49	That's right.
Demetri Kofinas:	00:46:49	The loss of trust in media institutions.
Bill Janeway:	00:46:51	And that's reality. There is a massive loss of trust.
Demetri Kofinas:	00:46:54	And with good reason.
Bill Janeway:	00:46:55	That's right.
Demetri Kofinas:	00:46:56	With good reason.
Bill Janeway:	00:46:56	Look, from Vietnam to the second Iraq War, by way of the war on drugs, the language of war, for Nixon, Nixon declared war on cancer. That became the vehicle, that language said not just in computers, but in genetics, we're not gonna judge the NIH on a short-term basis of which grant worked and which grant failed, this is grand national mission, like going to the moon.
Demetri Kofinas:	00:47:25	We're willing to accept massive amounts of waste.
Bill Janeway:	00:47:27	The necessary waste that comes from trial and error, exploration and experimentation at the frontier. In between Vietnam and the Iraq War we had the war on drugs, right?
Demetri Kofinas:	00:47:39	Right.
Bill Janeway:	00:47:40	Totally forgotten, the United States Senator named Ralph Flanders, Republican for Vermont, 1968 he says to Lyndon Johnson, "Mr. President, declare victory and get out." Well, that's what we're finally doing in the war of drugs it seems, from the right-wing and the left-wing.
Demetri Kofinas:	00:47:56	And, 10 episodes we could devote to that, it's something that we haven't talked about on the show, the level of malinvestment, of waste, of discombobulation in the economy that that has resulted in. Just the prison population alone-
Bill Janeway:	00:48:08	Exactly.

Demetri Kofinas:	00:48:08	Remarkable and something that we will have to reckon with at some point.
Bill Janeway:	00:48:12	Right.
Demetri Kofinas:	00:48:12	And, we are reckoning with but really not-
Bill Janeway:	00:48:14	But, so the frustration today is stand back, even stand back from the science, when you think about it, if you wanted to create jobs and profits into this economy, what would do a better job of that than rebuilding the infrastructure of this country to reduce the production and the consumption of carbon. If we wanted to greenify the physical infrastructure of this country, to rebuild the electricity grid so it can run off intermittent sources of power, we need the science of new styles of energy storage technologies, new kinds of batteries, all that, it's a grand program.
Bill Janeway:	00:48:55	And guess what? Unlike the previous one, you don't have to kill anybody to do it. To drive, to create conditions of high growth, high profit, high employment economy for a generation. That's what's so frustrating about the failure to take climate change seriously.
Demetri Kofinas:	00:49:12	So, let's stick on that a little bit, but let's go deeper, 'cause we touched on it, which is the loss in legitimacy and trust. Also, the phenomenon of identity politics in the United States versus common identity politics, which is that we, there's been a breakdown in a sense of common identity, and not that that has ever been perfect, but that we're going in the other direction. I think all of these forces make it difficult for people to even being to look at this as a problem that they can trust, that they can trust the experts, right? So, how can we even begin to assess whether it's something that we want to devote national resources towards? To ask people to forgo spending, to be taxed more for some national mission requires that they believe in the state that's putting that forward.
Bill Janeway:	00:49:56	I think we are in a very dark place. It's why the conclusion of this new version of my book is called, The Dark Side of The Three Player Game.
Demetri Kofinas:	00:50:05	Well, you are a venture capitalism, so there is some optimism in that, but-
Bill Janeway:	00:50:08	Well, we can do that now or we can talk about China.

Demetri Kofinas: 00:50:11

You know, I have to say I hope that, I mean this is a fantastic conversation. I've interrupted you a little bit too much lately, and I do this sometimes when I get excited, so I wanna ask, so far what we've discussed, what have we left off that you think we should at least touch on before we get into China, which I think is another way to look at the expression of the three player game.

Bill Janeway: 00:50:33

Right. I think what we haven't discussed, what we haven't discussed is the return of post 2008 speculative interest focused not on the next green tech revolution, not in this country at any rate, but focused instead on extending the scope and scale of the Digital Revolution. In other words, focused on the fangs in the public market, Facebook, Apple, Netflix, Google, and focused on this extraordinary phenomenon, the unicorn bubble in the private sector.

Bill Janeway: 00:51:11

Now, there are two conditions, to contextual conditions for these which we should take seriously. One is technical. Thanks to the internet, thanks to the Digital Revolution, the ability in a very short period of time to build a startup into a company generating billions and billions in dollars of revenue, tens, hundreds of billions of dollars of revenue with billions of customers worldwide, and to monetize that is absolutely phenomenal. It is phenomenal. It is the evidence, the existence proof of the new economy. That's one.

Bill Janeway: 00:51:47

The second, for nine years from the failure of labor, of Lehman Brothers 10 years ago, for the first nine years that followed, effectively the risk-free real rate of interest was zero. Now, low interest rates, declining interest rates mean that the future comes to be valued more highly. That's the power of discounting. And it's exponential, it's not linear. It's why when interest rates rise, bond prices decline. Because bond prices represent claims on future payments. Payments of interest in the future, repayment of the principle in the future. When interest rates decline, the value of those future payments goes up. When interest rates rise, the value of those future payments go down.

Bill Janeway: 00:52:34

Stock prices for high growth companies go up when interest rates are low, they go down when interest rates rise. When you have companies that are burning cash, that make no profits, but are growing their revenues and out in the future, you can see that they may become the next Google, you'd pay a lot for them today. You'd pay very high prices. And in fact, the unicorn bubble, the first vulnerability it has is precisely to what the fed is doing now, normalizing interest rates. As interest rates rise, those future hopes and expectations will decline in the price that people will pay for them today. What's distinctive and unique about the unicorn bubble is that not venture capitalists, but institutional investors whose mandate is to invest in the public market, have actually be paying super high prices to buy securities that they can't sell in private companies.

Bill Janeway: 00:53:33 So, the second fundamental point that you learn in any finance course, in any business school in the world, is that liquidity is valuable. The right to change your mind and sell the asset, the security that you bought has real value. But here, these public market investors, these mutual funds, are buying securities that they can't sell. They're locked in. So, the second vulnerability, the first is higher interest rates, the second is some of these companies fail. Some of these companies fail visibly. And, you've got some examples of companies whose public market values are clearly way below what their private market value was. Snap is an example.

Bill Janeway: 00:54:18 The third vulnerability is that in order to try to get into the next Facebook or the next Google, these investors have been granting the founders extraordinary rights to own and control their businesses, no matter how much money they raise. Governance rights. This can produce real embarrassment. Benchmark Capital, Benchmark Partners is a great venture firms. One of the best. They had to go to court to sue Travis Kalanick at Uber when it was clear there needed to be a transfer of leadership there. And, probably the saddest most pathetic failure of all these unicorns was Theranos and Elizabeth Holmes controlling the company, no matter after raising a billion dollars.

Bill Janeway: 00:55:07 So, the unicorn bubble is a kind of classic example of how investors in pursuit of super growth, super future, will let their fear of missing out, the FOMO, the famous FOMO, overcome the most basic common sense of investors. There's something like 250 to 300 of them, unicorns valued at more than a billion dollars of equity value, nominal equity value, and some number of them will prove to be sustainable, real valuable businesses over time, most of them won't. And, there will be some kind of shock and dismay when that happens, but there's no systemic risk. It's really more kind of symptom than a source of fundamental problem for the economy. There's no leverage, you can't borrow money against, I mean if can, you can borrow a little bit. It's not like 2007 in the banking system with the leverage, the borrowing against those subprime derivatives --

Demetri Kofinas:	00:56:12	The question is what kind of contagion is there from what's going on in your private placement portfolio versus the rest of the economy.
Bill Janeway:	00:56:18	Yeah, it's gonna be trivial. I don't worry about the unicorn bubble bursting. I kind of think that that's kind of a sideshow.
Demetri Kofinas:	00:56:26	It's also difficult though to know entirely right? Because, I mean how much do we know about the amount of capital versus ... Well, in any case.
Bill Janeway:	00:56:32	We know, we know because these investors remember are public market companies and they have to report their portfolios. So, we know something about that. We know that most of them are losing lots and lots and lots of money. And, some of them, they'll tell you how much they're losing. Uber tells you. They borrow money. Uber remember has three and half billion dollars’ worth of debt, so it has to issue reports to its creditors about that debt. So we know how much money Uber is losing.
Demetri Kofinas:	00:56:58	So, what about crypto currency? 'Cause I think that was gonna be your second point.
Bill Janeway:	00:57:01	Yeah. Well crypto, this is a very interesting one. So, first of all, as my friend is a great brilliant political scientist, political economist at Brown University called Mark Blythe, and he's the only guy in academia I know who once upon a time was a stand-up comic. Mark likes to say, "If you have to ask if it's money, it's not money."
Bill Janeway:	00:57:24	The whole point about money is that it's good and goes wherever without questions being asked. But, I think probably three or four points, I mean the first thing is indeed to recognize that the crypto currencies, the Bitcoin phenomenon represent another specific example of the Digital Revolution attacking the authority of the state, in this case the authority of the state as the, and in fact the provider of money to the economy and to the financial system.
Bill Janeway:	00:57:53	The second of course, which is now pretty commonplace to say, is that you should break apart discussion of the infrastructure, the blockchain, the distributed ledger technology from the different kinds of applications that run on it. Now, the first thing about the infrastructure, the blockchain, the distributed ledger technology is that by design, by construction, it's really slow. It's really inefficient. If you have to trail along behind you every

		transaction that's ever happened to maintain the record, of course it's gonna be slow. And, that's why the most efficient cryptos, you know, they run around seven-
Demetri Kofinas:	00:58:35	Seven transactions per second.
Bill Janeway:	00:58:37	Yeah.
Demetri Kofinas:	00:58:37	Well, I mean it has to be slow not only to defend the network but also, it's a leader based system. They have to choose what the ledger is that they're gonna build on, otherwise it would fork to death.
Bill Janeway:	00:58:45	Well, it's also because when you don't have a source of trust, therefore you have to demonstrate trust in this painfully arduous way. So that's why it looks like, I mean this is hypothetical, but it's beginning to seem that in a way the huge irony that the places where the use cases, where this kind of technology will be put to work, is most likely to be at least as experiments between very large, very visible, regulated institutions that know each other really well. We usually call them banks. Sometimes it's things like depository trust. And they're trying out the technology to see if it will make ... Because they do know each other and they trust each other.
Demetri Kofinas:	00:59:28	Those aren't permission to use cases you're describing.
Bill Janeway:	00:59:29	Exactly. Exactly.
Demetri Kofinas:	00:59:31	Right. Not permissionless.
Bill Janeway:	00:59:31	So then they can be more efficient-
Demetri Kofinas:	00:59:32	Right.
Bill Janeway:	00:59:32	In the use of the, what's really just distributed database technology. You don't have to go through all the rigor morale of the proof tests.
Bill Janeway:	00:59:40	So, there's also a sort of different thing that's hit me, and I've written about this a bit. I haven't seen much of it in the literature yet, but one of the features of this kind of technology, particularly I think represented by Ethereum, is the notion that you can't repudiate a transaction. So, if the transaction is a contract that you and I enter into, that means that that contact's gonna execute no matter what the hell else happens in the world.

Bill Janeway:	01:00:12	Well, a couple of year ago a really brilliant economist got the Nobel, the guy's named Oliver Hart, for a conclusively proving, mathematically, logically, that in this world in which we live, Keynes was right. You can never have a complete contract that can in advance provide for all of the contingencies that might ever occur during the life of the contract. Now in the real world, we know that. And so, you renegotiate contracts when it's clear that nobody's gonna win, and if you enforce the contract against someone because the world has changed in your favor in an unexpected way, then never expect to do business with that person again or maybe with a lot of other people.
Bill Janeway:	01:00:56	But if the contract is gonna execute no matter what, no matter what the parties to the contract decide that they want, that they wanna change the deal, is that feature or a bug? It sounds to be like a bug.
Demetri Kofinas:	01:01:08	Well, you're not the only one that thinks that. I think you saw in my notes, there's a platform I don't know if you're familiar with it-
Bill Janeway:	01:01:13	Yeah. That looks really interesting.
Demetri Kofinas:	01:01:13	Yeah.
Bill Janeway:	01:01:13	I didn't know about that.
Demetri Kofinas:	01:01:15	Leemon Baird. I mean, disclosure, the audience knows this, but I'm a seat investor in it, and it started really as a company called Swirlds and Leemon is ... I think you'd actually hit it off with him. But it was really born out of a consensus algorithm that he developed, that he patented in 2012 I believe it was. But the entire platform is built off of that consensus protocol, which is basically I shorthand describe it as a compression algorithm for a voting protocol.
Bill Janeway:	01:01:41	Yeah.
Demetri Kofinas:	01:01:41	But, that's what Hedera is built on, but that's an interesting point because I had talked to Leemon about that and in fact he agrees entirely with your concerns.
Bill Janeway:	01:01:50	That's great to hear because it's a real world validation of a concern that I kind of had in a purely theoretical level.

Demetri Kofinas:	01:01:57	Yeah. It's something that it's not talked about at all in the industry whatsoever. In fact, it's as you say, it's seen as that code is law, is seen as feature-
Bill Janeway:	01:02:06	Right.
Demetri Kofinas:	01:02:06	Whereas you call it a bug. But I think the larger interesting, the reason why I brought it up, not 'cause I know we could go into the details of permission of state of basis, but I was bringing it up because I think in some ways the crypto currency movement is the incarnation of the dog eating its own tail or snake eating its own tail sort of idea, which is that, and the challenging of the legitimacy of the state, that's what crypto currencies are, right?
Bill Janeway:	01:02:33	Right. Exactly right. And that was one of the micro motivations for really taking seriously the need to go back and really look at this stuff. And, there's another aspect of this as well that I've been chewing on and that is that the hope and attempt to create a new means of raising capital, the ICO? Oh my God.
Demetri Kofinas:	01:02:57	It's been a disaster.
Bill Janeway:	01:02:58	I've been a student of financial bubbles, you know, I went back 'cause I was such a beneficiary of the bubble of the late 1990's. You go all the way back the south sea bubble of the 1720's in Britain, this is apocryphal. Supposedly, supposedly, there was an offering of stock for real money, you know, it was offered for real money, not for tokens, and the prospectus said, "A project of great value but no one to know what it is."
Demetri Kofinas:	01:03:26	That was a south sea bubble.
Bill Janeway:	01:03:27	Yeah. Well, that was supposed to be one press, probably apocryphal, but oh they had others that were for paving all the roads in England, for a service that as going to provide burial services across England. This is at a time, you know, a hundred years before the railroads. So, ICO's, okay I take real money and I buy a token and the token gives me the right to receive a service that hasn't been developed or even designed or maybe even defined. So, I buy this token and I give that money to people who have said, "Well, we'll take your money, we'll take your money." Well, I mean what do you expect to happen?
Demetri Kofinas:	01:04:04	That's an interesting thing though.
Bill Janeway:	01:04:06	What do you expect to happen?

Demetri Kofinas:	01:04:06	This is an interesting point though, because I think this intersects with the wealth gap that we discussed before and the problem of regulations, right?
Bill Janeway:	01:04:13	Yup.
Demetri Kofinas:	01:04:14	So, as you know, regulations in the United States forbid a certain class, the vast majority of people from investing in early stage, right? And, this huge change in the distribution of wealth has made it so that a lot of the opportunities increasingly that people wanna invest in, are coming at a state where they're not allowed to actually get in. I feel like what the ICO's have done, and of course this has been a huge place of abuse, because people have as you say FOMO. But, I think there's an intersection of all these different aspects that create this, which I think makes it such an interesting phenomenon to behold.
Bill Janeway:	01:04:50	Well, I used to know a guy who was a kind of professional director of this sort of company whose headquarters was in the Cayman Islands, and he used to say about the private retail investors in these companies, he used to say, "If God had not made them sheep, they would not have been born to be shorn." Sheep follow mindlessly where they're led, and they follow and they, wool on their backs is clipped off and made into sweaters, and so, the investors who follow mindlessly into ICO's or into speculative investments, that their money is their wool and it's shorn.
Demetri Kofinas:	01:05:32	And, it's also, I mean it happened in the late '90s in the equity market.
Bill Janeway:	01:05:34	It happened in the 1920's.
Demetri Kofinas:	01:05:35	Every time there's a mania.
Bill Janeway:	01:05:36	And that's why we had the securities laws. And, you know, you wanna repeal the securities laws, I don't. I think that the need to provide transparent financial reporting where those who issue the reports are personally criminally liable for those reports. I think that's a good thing.
Demetri Kofinas:	01:05:54	Sure. But why-
Bill Janeway:	01:05:55	Do you wanna built trust-
Demetri Kofinas:	01:05:56	Why should people without a certain amount of net worth not be able to get into --

Bill Janeway:	01:05:59	You can buy a mutual fund. You can buy a mutual fund company for a buck, you know, you buy into a mutual fund for a buck.
Demetri Kofinas:	01:06:04	Right. But why for example would someone who doesn't have let's say five million dollars in net worth or some particular income, revenue stream, not be allowed to invest in companies that are in early stage. It seems-
Bill Janeway:	01:06:13	Well, put it the other way. Why should entrepreneurs be allowed to sell scams without reporting it to uninformed investors who can't afford to lose the money.
Demetri Kofinas:	01:06:23	No, I'm not saying they should. My point's simply is that there are-
Bill Janeway:	01:06:24	There are two ways to look at-
Demetri Kofinas:	01:06:25	There are imperfections. Oh absolute-
Bill Janeway:	01:06:27	Two ways to look at it.
Demetri Kofinas:	01:06:28	Well, they're different aspects of the regulation.
Bill Janeway:	01:06:29	But-
Demetri Kofinas:	01:06:29	But we could go-
Bill Janeway:	01:06:30	No, no, no. Let's-
Demetri Kofinas:	01:06:31	Sure.
Bill Janeway:	01:06:31	You can't walk away from it.
Demetri Kofinas:	01:06:33	Okay.
Bill Janeway:	01:06:33	You can't walk away from this. If we first of all, we just went through an exercise with enormous sponsorship from the NBCA, National Venture Capitalist Association, called the Jobs Act, you know, it's a cute name, just start our business startups.
Demetri Kofinas:	01:06:46	2012, when was that?
Bill Janeway:	01:06:47	Yeah. And, it really loosened up the rules as to how many stockholders you could have before you had to become a reporting company, as to the barriers you had to go over to be able to do private placement, it really got loosened up a lot. This

isn't about private placement, this is about scam artists ripping off whomever fools they can find.

Bill Janeway: 01:07:09 There's a great book, great book written by Nobel Prize winner George Akerlof and Bob Shiller I think, two Nobel Prize winners. Phishing. P-H-I-S-H-I-N-G. Phishing For Fools, about the perpetual motive and incentive to develop spellbinding opportunities for uninformed investors, especially those who can't afford it, to give their money to opportunistic game players.

Demetri Kofinas: 01:07:39 Not disagreeing with that. My point simply had to do with one particular thing, which I find it hypocritical to prevent people to invest based on how much money they have, what their net worth is. I think that that in particular given the fact that we have this growth of income and wealth inequality, the fact that there are certain investments that are off limits to people just based on other regulations aside-

Bill Janeway: 01:07:59 If you wanna increase, if you wanna increase the inequality of wealth, let poor people lose their money to scam artists.

Demetri Kofinas: 01:08:05 I hear what you're saying. I understand what you're saying. And, I'm not advocating that.

Bill Janeway: 01:08:08 Turn it the other way around. turn it the other way around. Another great economist Raghuram Rajan who was all too briefly Governor of the Bank of India, he's the guy who made the presentation for the assembly of all the central bankers three years before the crisis and said what's going on in the subprime market, what's going on in the mortgage market, what's going on with derivatives is gonna produce a catastrophe and he was laughed out of the meeting. He's a really good guy. Wrote a book called Fault Lines. And, I'm particular about the huge mistake made by trying to address the disparity of income and wealth, the inequality of income and wealth in the US, by making it easy for poor people to borrow money that they couldn't afford to pay back.

Demetri Kofinas: 01:08:53 Due mortgage market you're talking about.

Bill Janeway: 01:08:54 Exactly. Exactly.

Demetri Kofinas: 01:08:55 Yeah, no question about it. Look, I'm-

Bill Janeway: 01:08:56 Let's attack, let's attack the inequality of income and wealth directly, not by trying to give poor people, uninformed poor people who don't have the equipment to evaluate projects where they're not even told what the project is going to be.

Demetri Kofinas: 01:09:14 Well, there are people that are very smart, they can evaluate these technologies that don't have the net worth that would put them ... In any case, but I'm not trying to argue that point because we've been talking now for a while and I don't wanna miss out the opportunity to talk about China.

Bill Janeway: 01:09:28 Yup.

Demetri Kofinas: 01:09:29 And, the dark side of the three player game, well we kind of touched on that already, but let's discuss China. What is your insight, what is your sort of opinion about that country and related to what you talked about in the book?

Bill Janeway: 01:09:40 Okay. Well we can do it within a framing of the three player game. So first of all, you have an unquestionably legitimate state, which has missions which it is aggressively pursuing in order to mobilize technology for economic development and growth. That's obvious.

Bill Janeway: 01:09:57 Second, it's done a remarkable job of managing a transfer of resources from the big unproductive state owned enterprises, to the new growing private enterprises of which Alibaba, Baidu, Tencent, you know, they call them the bats. We have the fangs, they have the bats. They're the exemplars but there are many more of them.

Bill Janeway: 01:10:24 There's been an enormous shift over the last 25 years within the Chinese economy whereby now 50% of employment is in the private sector, not the public sectors. In 25 years, when it was 100% just so long ago.

Bill Janeway: 01:10:36 Third, they certainly have opened up a dynamic, speculative, financial sector. In 2017, including Hong Kong, there was something like four times as many IPO's in China, as there were in the United States. They'd had speculative bubbles that they burst, but they didn't destroy the economy and there's been some back and forth between government regulation and financial speculation and the IPO market. So, that's all one aspect of it.

Bill Janeway: 01:11:08 Now, part of that mission-driven state as we were saying before, has indeed been the most aggressive, blood-based, centrally directed, appropriation of other people's intellectual property and history. But, as they get to the frontier, they're starting to be innovators themselves. Clearly in the world of machine learning which is once again in my view mislabeled as artificial intelligence, but the new approach to extracting meaningful, actionable information from data, the Chinese are right pretty close to the frontier if not there, and they have more data. And, more data is more important than better algorithms because the more data you have, the better your algorithms are.

Demetri Kofinas:	01:11:52	And, they have more data you're saying because of the lack of consumer protections that the United States has?
Bill Janeway:	01:11:56	First of all, they just have more people.
Demetri Kofinas:	01:11:57	More people, yeah.
Bill Janeway:	01:11:58	And three times as many people is an important factor, but second yes.
Demetri Kofinas:	01:12:02	Is that important though?
Bill Janeway:	01:12:02	Sure it is.
Demetri Kofinas:	01:12:03	The reason I ask, I'm curious, because the data set isn't a data set of 300 million people sufficiently large to be replicated on a scale of a billion?
Bill Janeway:	01:12:11	See, you keep breaking it down. In order to make those algorithms really relevant, you break it down, it's not-
Demetri Kofinas:	01:12:17	Right. You can segment. That's interesting.
Bill Janeway:	01:12:19	That's right. But in any case, there's a debate. There's a debate. I'm kind of a source of reading lists, and I've been trying to be really good about not just throwing book titles out at you and your audience. These books, they're all in my [crosstalk 01:12:34]
Demetri Kofinas:	01:12:34	All they need to do is buy your book and go through the-
Bill Janeway:	01:12:36	Bibliography.
Demetri Kofinas:	01:12:37	Bibliography.
Bill Janeway:	01:12:37	But, there is an important book written by two academics, Daron Acemoglu and James Robinson called Why Nations Fail. And, it has a fundamental thesis which is that, to succeed at the

frontier involves the ability to tolerate trial and error and error and error, creative destruction. The winners of the last generation lose and they get out of the way whether they like it or not, for the new generation. And that that in turn depends on having economic and political institutions that are inclusive, that are open, and available for new people to participate. And so, they're very skeptical that China will ever open up its political institutions and therefore its economic institutions won't be open enough to enable them to become a genuine innovative leader.

Bill Janeway: 01:13:35 Well, a problem with that is again, as you know, I'm a real student of history. I can go back to 1820 in the United Kingdom, in Britain. There's this new movie called Peter Lou, a great British director that's just come out in 1819.

Demetri Kofinas: 01:13:49 I'm not familiar.

Bill Janeway: 01:13:49 It was a massacre of peaceful demonstrators by the army because they appeared to be a threat to the ruling corrupt establishment, the cabal of leaders in Britain who were exercising authority nationally in intimate partnership with the national religious establishment, the Church of England, not the communist party, and it reached into each village where they were aligned with the local landowners, the local power center. And, on the one hand, the legitimacy of this ... Oh, by the way, they had what was called the bloody code, there were more than a hundred crimes that were defined as felony. A felony meant it was punishable by death or transportation to Australia, six months on a rotten ship.

Bill Janeway: 01:14:40 And, their authority was justified because you could look over your shoulder, within a generation, you could see what happened in France and the French Revolution, the terror, the guillotine. As in China, you could look over your shoulder and see the Cultural Revolution and the effective terror. But, they're trying to hold the lid in Britain in 1820, on the greatest explosion of economic energy and creation of financial wealth in the history of human kind.

Bill Janeway: 01:15:06 Over the next generation, long generation, you have the first political reform, the Great Reform Act, you eliminate the tax on food so that it becomes, real living standards increase, the corruption, it was incredibly corrupt. The corruption is largely eliminated through big reform of the civil service in the 1850's and then in 1868, there's a big much more democratic movement towards political democracy.

Bill Janeway:	01:15:36	And so you could say, "Well, which comes first? Leadership of the innovation economy or political openness?" So, the point of … it's, I say about this three player game, the outcome is indeterminate. We don't know, we can't know how China's gonna evolve over the next five, 10, 15, 20 years.
Demetri Kofinas:	01:15:56	What's the trend?
Bill Janeway:	01:15:57	Well, the trend is very conflicted. On the one hand, and you know, she gives with one hand, takes away with the other, you read at speeches, and it's great, this big, big, big important speech in December of last year, about 10 months ago, on the one hand he said that Chinese people demand and have earned the right to have the rule of law and democracy, and then on the other hand he says, it's the duty of every Chinese person to follow out and force the policies of the party.
Bill Janeway:	01:16:28	So, I don't know if he knows. And he certainly can't control how things are gonna evolve. What we can see I think are two things. One, there's an enormous amount of momentum in China of investing internally in innovation, at the upstream science levels, all the way down through deployment. They're certainly absolutely determined to have their own semi-conductor industry to complete the process of replicating America's history of industrial development over the last 100 years. And they have a lot of people, they have a lot of really smart well-trained people.
Bill Janeway:	01:17:07	In genetics, they've got the largest gene sequencing facilities in the world. They have scientists who are now doing original work, not just copying others.
Demetri Kofinas:	01:17:17	Much of that also again having to do with regulatory differences between the United States and China.
Bill Janeway:	01:17:21	It's somewhat in the genetics.
Demetri Kofinas:	01:17:22	We under the Bush administration, I think we had, didn't we put regulations on even embryonic research?
Bill Janeway:	01:17:27	Yeah.
Demetri Kofinas:	01:17:27	So, there are differences.
Bill Janeway:	01:17:28	There are some. But, you know, with the US we worked a lot of ways around the guys worked away, had to be able to do original research.

Demetri Kofinas:	01:17:35	So, you don't think that's a big part of the difference?
Bill Janeway:	01:17:38	I think there are some aspects of it that clearly nudge and push in a more direct way than in the US. It is around this next technological revolution that I think that China clearly has the edge. Since 2010, they've been the world's leaders investing in green technologies, upstream and deployment.
Demetri Kofinas:	01:17:58	On an absolute ... Is that on an absolute basis?
Bill Janeway:	01:18:00	Yes. Yes. The incentives of the three player game are operating here. It's clear that about three years ago, they realized that the unspeakable pollution being generated, not directly in response to climate change, but in response to the pollution in Beijing and Shanghai was such, it was actually beginning to undermine the legitimacy of the regime. So, the regime, the central powers have an enormous incentive to respond to this by reducing burning coal, shifting from coal to non-pulling, non-carbon generating resources. Will they succeed in doing it? They have a lot of incentives and they certainly have been moving resources into it. At the same time as, you know, we've abdicated.
Demetri Kofinas:	01:18:46	One of the great things about having you on the show is that we get to talk about the other side I think of a number of issues that we've covered, but we've covered let's say, in terms of China, what we've covered with China, well with Elizabeth, economy from the SFR, we've dealt with the political dynamics in China, but two particular episodes we dealt with the banking system and what I think both guests expressed as a massive amount of misallocation of capital.
Demetri Kofinas:	01:19:11	The malinvestment in China could threaten to derail their growth, right?
Bill Janeway:	01:19:16	Yup.
Demetri Kofinas:	01:19:17	I mean how do we think about that, which is the, on the one hand, the mission-driven state and again we didn't really express and I wonder what you would say the mission of the Chinese state is, as I understand it, post-Tiananmen it is really where we will elevate the living standards of the Chinese people, to what extent do the positive forces of a mission-driven state interact negatively with the efficiency problem, but then also of course something maybe you've talked about which is that this isn't some monolithic thing, it is subject to regulatory capture, the capitalist aspect, the private aspect of the economy comes into the public aspect.

Bill Janeway:	01:19:54	Well, and it's a very big county. There's a well-known cliché when you're out in somewhere like Xi'an, you know, Beijing very far away. And, one of their big problems, one of their big problems has been the local incentives in the local governments to rip off the public, to rip off the peasants, and to align with property developers, to force the sale of land at knock down prices, I mean this is nothing that didn't happen in the United States in the 19th century or even in the 1920's or maybe even more recently.
Bill Janeway:	01:20:28	But, it's corruption. It's corruption that undermines legitimacy of the state, it clearly has generated a response from Beijing. The war on corruption in China is a big big deal, and it must be, because it's been extreme. And, it's involved, you know, all sorts, enormous quantities of waste. Well, I just can't get very excited about worrying too much about wasted investment because nobody knows what the future's gonna be. I think about the wasted investment going on right now, you know, the only cars that it's really profitable to make in the United States are SUV's. Talk about stranded assets if we ever do get serious about climate change.
Bill Janeway:	01:21:12	There clearly can be an impact on longer term economic growth from resources being devoted to building see-through apartment houses that are being brought as bubble speculative assets and never occupied, and that could have gone into better rail service or just making it easier to move population for people to work in one place, to grow the economy more generally. I'm sure there's an enormous amount of waste in China, as there was in the United States.
Demetri Kofinas:	01:21:45	Right.
Bill Janeway:	01:21:45	It kind of comes with the territory. I'm not a world expert on China, I would never represent myself, but I've been reading a lot of the literature recently, the academic literature, and there are two things I'd hold out, there's a terrific professor, a financial economist at Princeton named Wei Xiong, very interesting series of papers on the financial risks within the Chinese economy. His concern is not that there's gonna be a big crash crisis, financial blow up, but that there will be, there will be a tax on growth from inefficient investment. I think that's legitimate.
Bill Janeway:	01:22:21	There's another very recent paper and I frankly can't remember the author, if you want I could send it to you.
Demetri Kofinas:	01:22:26	I would love that. Sure.

Bill Janeway:	01:22:27	It's a positive read on the effect at the local city level, of the attack on corruption. Where it shows that a much more efficient allocation of resources where local officials have been punished for corruption and where money allocated at the city level, at the provincial level, to support new companies, new private companies, is much better after there's been a corruption attack. It's just about a month old or so but I'll be happy to send it to you.
Demetri Kofinas:	01:23:00	I think your point about waste is valuable. I mentioned at the start, I think a number of times the point about the business cycle and putting the state, where the state fit in this innovation economy, I think this idea of waste I think is valuable because so often I, but I think generally we hail efficiency, understandably so, but your point about not knowing the future, and so many great technologies and innovation and paradigm changing technologies have come out of what would have at some time been considered waste.
Demetri Kofinas:	01:23:30	We've gone on for so long, I don't wanna take up any more of your time. The one thing we didn't have a chance to talk about too much I don't think is, the current state of politics and populism and the war language, particularly with the United States and China, these are all concerning trends. I wanna give you the last word here, and maybe you can take as much time as you like to discuss whether you wanna pick up on that thread or whether you just wanna talk about anything else that we didn't have a chance to get to in this conversation.
Bill Janeway:	01:24:00	Well, you know, first of all, those are very legitimate concerns and they're real and I have a fellow Marshalls Scholars, great scholarship program, Graham Allison at Harvard has written a book called, The Thucydides Trap, about what happens when you have a rising power, a meeting of power that's been in place and maybe beginning to lose it, and the potential for conflict. And, it's real. It's not the focus of my work. My work has been on if you like, how things really worked well in this country when they did work well, and how it came that we got to this position where as I say, the American state at any rate has proved incapable of serving its constituents, buffering them from the disruptive consequences of the Digital Revolution that it launched.
Bill Janeway:	01:24:50	You made a reference some time ago to the fact that, "Hey, I survived as a venture capitalist for 35 years, I must be an optimist." So, let me close with my source of optimism. Because you're right, I am a temperamental optimist and I do think that there is one genuinely legitimate and extremely important

source of optimism. I already said that I think the world of ideas played an enormous role in getting us where we are now by making it illegitimate for the state to be a positive economic actor, that its only role was to screw up markets. And now we've had markets that did a pretty good job of screwing themselves up.

Bill Janeway: 01:25:30 So, my message is that the global financial crisis of 08, the great recession that began then and ran for six, seven, eight years, have actually proven in a kind of perverse way to be the gifts that keep on giving, to the academic disciplines of economics and finance. They have so shocked the intellectual, theoretical foundations of those disciplines. They forced the two disciplines back together, we can't talk about financial markets without talking about the real economy and vice versa. They've induced a major shift towards real deep empirical work on understanding how the world works, how the markets work or don't work, versus premature theorizing about how they ought to work to make our models come out, come out neatly. And that work is beginning to show up, it's not gonna happen overnight.

Bill Janeway: 01:26:27 It took a generation for the ideas from Vienna 1943 to become Milton Friedman 1980, and then Ronald Regan 1981. But, the work that's coming out now is really promising, really exciting. It's complicated, it's harder to construct models that can be tested with data when you recognize and accept the reality of people with different resources, different attitudes towards risk, different endowments of wealth and extreme wealth, and try to model that kind of complex behavior, it's much harder to do that. But that is the world we live in. And if we can get a better handle on that and recognize that markets will fail, that there is a role for government, in making both frontier investments that the private sector can't contemplate on the one hand, and supporting the private sector as it does its best under hard, difficult, uncertain conditions, to provide jobs and incomes on a broader basis, on a fairer basis, then there's a path forward.

Bill Janeway: 01:27:41 And, I'm hopeful, I may not live to see it, but I'd like to hope that we've got some momentum going in that direction beyond these elections, beyond this administration and out to the world that my son and perhaps his children will have the chance to thrive in down the road.

Demetri Kofinas: 01:27:59 Well, I'll leave it at that. I thank you so much for taking the time to speak with us, so much time actually, I really appreciate it Dr. Janeway.

Bill Janeway:	01:28:06	Demetri, I could talk to you for another hour and a half at your request. It's a great pleasure, most stimulating, I'm really delighted to have had this opportunity.
Demetri Kofinas:	01:28:15	Thank you.
Demetri Kofinas:	01:28:17	And that was my episode with Bill Janeway. I wanna thank Bill for being on my program. Today's episode of Hidden Forces was recorded at Edge Studio in New York City.
Demetri Kofinas:	01:28:28	For more information about this week's episode or if you want easy access to related programming, visit our website at hiddenforces.io and subscribe to our free email list. If you're a regular listener of the show, take a moment to review us on Apple podcasts. Each review helps more people find the show and join our amazing community.
Demetri Kofinas:	01:28:52	Today's episode was produced by me and edited by Stylianos Nicolaou. For more episodes you can check out our website at hiddenforces.io. Join the conversation at Facebook, Twitter and Instagram at @HiddenForcesPod or send me an email.
Demetri Kofinas:	01:29:14	As always, thanks for listening. We'll see you next week.