

What Happens Next – Sunday April 25, 2021
Reinventing Business, Liberty and Rights, Sex and Drugs in NYC, Xerox PARC and Bell Labs

My name is Larry Bernstein.

What Happens Next offers listeners an in-depth analysis of the most pressing issues of the day.

Our experts are given just SIX minutes to present. This is followed by a Q&A period for deeper engagement.

This week's topics include Reinventing Business, Liberty and Rights as Understood by the Founders of the Republic, After-Hour Clubs, and How Xerox PARC and Bell Labs failed.

Our first speaker is Sunil Gupta who is the Edward Carter Professor of Business Education at the Harvard Business School. He is the author of the book *Driving Digital Strategies: A Guide to Reimagining your Business Strategy*. Sunil will discuss reinventing business.

Our second speaker is Brad Thompson who is a Professor of Political Science at Clemson and his also the author of *America's Revolutionary Mind: A Moral History of the American Revolution and Declaration that Defined It*. Brad will discuss how the founders of our republic conceived of citizens' rights and liberties.

What Happens Next historically has focused on Covid, Business, Politics and other academic interests and has shied away from sex and drugs. Well that is about to change when we chat with our third speaker Terry Williams who is a Professor of Sociology at the New School for Social Research. I was first introduced to Terry's ethnographic work when I read Terry's shocking book *Crackhouse* that described living in a NYC crackhouse.

Terry has recently written a book entitled *Le Boogie Woogie: Inside an After-Hours Club* that portrays life in a NYC club where cocaine is used openly. We will learn about what happens when social norms are violated. Terry will also discuss his upcoming book entitled *The Soft City: Sex for Business and Pleasure in New York City*, which depicts public sex acts.

What Happens Next then investigates the success and failures of industrial labs.

Our first panelist is Michael Hiltzik who is a Pulitzer Prize Winning Journalist for the LA Times and author of *Dealers of Lightning: Xerox PARC and the Dawn of the Computer Age*. Michael will explain what Xerox's PARC inventive process and how Xerox failed to capitalize on their innovations.

Our final speaker is Jon Gertner who is a writer for the NY Times Magazine and the author of the book *The Idea Factory: Bell Labs and the Great Age of American Innovation*. Bell Labs had been one of the most successful industrial labs with a host of inventions and patents. Bell Labs

employed some of America's leading scientists who were doing cutting edge, basic and applied research. After Bell Labs was spun out with Lucent, it quickly folded.

I want to learn from Michael and Jon why industrial labs were once successful and why today, most research and new business ventures are coming out of entrepreneurial enterprises and not our largest and oldest firms.

Let's begin with Sunil Gupta who will discuss Reinventing Business.

Sunil Gupta:

Technology has changed every aspect of our life, and businesses are trying to adapt in this new world. Companies improve efficiency, automate processes, enhance user experience, launch e-commerce sites, and create hackathons and scrum teams. All these are good, but have business leaders paused to think if the rules of business have fundamentally changed? Let me highlight one such fundamental change in how we need to rethink strategy. For decades, we've been told that strategy is about focus and competitive advantage comes from making your product better or cheaper. Now take a look at a company like Amazon and ask yourself, "What business is Amazon in?" Is it an online retailer, a cloud service provider, a hardware producer, an advertising giant, automobile producer? It certainly doesn't look like focused strategy to me. Perhaps Jeff Bezos missed his strategy class at Harvard Business School, but somehow he has been able to build a \$1.7 trillion company. What connects all these disparate businesses of Amazon, and is there a general lesson for all of us?

The strategy paradigm of make it better or cheaper is a very product-focused view and assumes that you're selling one product to one customer at a time. But what if you offer multiple products as complements using a razor blade strategy? So you can sell razors cheap in order to make money on e-books. You might say, "What's new? Razor blades have been around for a long time." Yes, but today razor can be in one industry and blades can be in a completely different industry. Take Amazon Studio as an example. Why does it make sense for Amazon to spend billions of dollars to create its own movies and give it away for free? Well, Prime Video is a razor that creates stickiness among Prime customers, who end up buying much more products on Amazon e-commerce site. In other words, Amazon Studio is a razor for its e-commerce business. In fact, Jeff Bezos has publicly said that, "Every time we win a Golden Globe award for our content, we sell more shoes."

This idea of cross-industry complements can be extremely powerful. If Amazon wants to compete with banks by offering loans to small and medium enterprises, it can choose to offer loans at such a low rate that banks just won't be able to compete. How can Amazon do this?

Well, it doesn't have to make money on loans if these loans help its merchants grow on its platform, which provides additional commission to Amazon in the long run. The moment you make a competitor's core business your razor, they will have a very hard time to compete.

So the first dimension of the new strategy is about connecting products as complements. The second dimension is about connecting customers. Take the example of Facebook or Clubhouse. What's the value of Facebook if you are the only person in the world using it? Not much. As more people join Facebook, its value increases for you without any change in the product. So it's not about product. It's about connecting customers, and this is the classic network effect. So the digital economy is about connections, connecting products and connecting customers, and this is true not only for tech companies like Amazon or Facebook, but also for traditional product or service companies.

Take the example of Peloton. Peloton could have used the traditional strategy paradigm to claim that its bikes are more expensive, but they are the highest quality. But over time, competition catches up, and soon it becomes a race of product features with very little differentiation. As we all know well, Peloton chose a very different path. It built complements in the form of on-demand videos, and perhaps more importantly, it created a network of Peloton riders who can ride at the same time to get a virtual gym experience at home. It won't matter to Peloton customers if tomorrow a new competitor comes with a better bike, because the new player won't have the community of riders that Peloton has.

This strategy of connecting products and customers also cuts across traditional industry boundaries and changes the nature of competition. At some level, Prime Video is competing with Netflix and Disney Plus. However, while Netflix has to make money from its content, Prime Video is the razor for Amazon to drive its e-commerce business. When you have players in an industry with very different objective functions, the nature of the competition games changes.

Now, back to the issue of focus, traditionally, we have defined focus based on the industry we compete in. So if you're a bank, you should focus on banking. But today, focus is defined by capabilities, and this focus on capabilities opens up completely new opportunities for growth. Alibaba faced the challenge that buyers do not trust sellers. To solve this problem, [Alibaba created an escrow account where buyers' money is kept safe until its customers are satisfied with the product they received. But once Alibaba developed this capability or muscle to manage money, it went on to develop one of the largest wealth management companies in the world.

MasterCard used the same strategy. It developed the analytical and data analytic and cybersecurity skills to manage its own business and then went on to leverage that muscle to generate almost 25% of the revenue from these new services. Perhaps the best example of this is Amazon. Amazon uses computer vision technology to improve its warehouse operations and

later used this capability to launch its own Go stores. Recently Amazon just last week announced the launch of a hair salon in London. This might seem strange for an online retailer until you recognize that this is the way for Amazon to test and leverage its technology muscle that could revolutionize offline retail the way AWS did in the online world. So let me conclude by saying that business leaders should be not simply thinking about technology to digitize existing operations, but reexamine the fundamentals of their business.

Larry Bernstein:

I want to start out with a competitor of Amazon and try to think about what they did right and what they did wrong. I think the precursor to Amazon was Sears, a broad-based retailer that was able to touch lots of customers. It innovated from a catalog to retail stores, and it started offering all sorts of interesting products. They offered the Discovery credit card. They created Allstate Insurance. They created an auto repair shop. They were revolutionary with Allstate for auto insurance, and they came up with the Sears credit card. Yet Sears is bust or close to bust. When you compare Amazon and Sears as they sort of develop products, why was Sears a failure, why is Amazon a relative success, and is it a matter of time before Amazon falls into the Sears death spiral?

Sunil Gupta:

So I think that's an excellent question, and I would say that Sears leveraged its existing customer base to offer new products. So once I have a large customer base, and by the way, Walmart is doing the same thing. "Once I have this large customer base, I can offer healthcare. I can offer banking. I can offer lots of other services." That's perfectly fine, but they're still using existing technology, existing capabilities to do that. All you're doing is leveraging the large customer base, and you're hoping that this becomes a one-stop shop for all the products that you're offering. What Amazon is also doing in addition to that is sort of understanding customers where the customers are moving.

So, for example, it's saying that, look, one of the biggest challenges for customers in the offline world is the pain that they face when they are standing in line to pay. That's why it leveraged its existing technology to develop completely new stores, the Go stores. So I think part of the difference is Amazon is not standing still, using the same model that has served it well in the last 25 years, which I believe Sears did the same thing, the same store, the same catalog, the same system, and it didn't change that in the 25 years. But having said that, I think that fear still exists for Amazon, but it becomes so big in the existing technology base that tomorrow a completely different world comes, and it might be very hard for Amazon to cope.

Larry Bernstein:

I like the metaphor of razor versus blades and how you applied it across the board. I remember that Warren Buffett used to say he only likes to buy businesses that have a moat, but yours is

not moat-like at all. It's sort of like an interesting way, a way of not having to show a profit in one business to capture another. How do you compare and contrast the razor and blade framework versus the moat model?

Sunil Gupta:

So I think the moat model is the traditional model of differentiation that you're so good at something, either you have a cost advantage, the standard cost leadership, because I have economies of scale, and therefore my costs are so low that nobody else can compete and that's my moat or I have innovation R&D, so I will innovate at a faster speed or I have such fantastic technology or proprietary technology that nobody else can do it. That's fine and nice, and that's still important. A good product is still important. But the reality is that even if you're Apple and you have the best phone in the world, well, Samsung will catch up at some point in time. It becomes a competition of phone features. So Samsung will have three cameras, and the iPhone will come up with three cameras. Samsung will put four cameras on the back, and iPhone will have to put four cameras in the back. That is sort of a strategy that doesn't go very far. So I think having good product differentiation is a necessity, but not sufficient condition to compete in this world.

Larry Bernstein:

We're going to be talking about Apple later in the show as it relates to Xerox PARC. But when you think about Apple's razor versus blades, I can see now that they're caught in an arms race, but how do they breakthrough to crush music, phone or computer competitors? What was their product offering that made it more razor-like?

Sunil Gupta:

So for the longest time, Apple has been focused on devices, right? I mean, a majority of their revenue and profit has been coming from iPhone or MacBooks, et cetera. But now they realize that this has a limit. The number of iPhone shipments over time is not going to be the same that it was 10 years ago. So more recently, in the last five to seven years, they have gone heavily into services, so whether it's Apple Music or Apple TV or other things, it's almost like 20 - 25% of their revenue is now coming from services and that is likely to increase. Many of these services, they will offer at a much lower price, because that helps them lock in the customer on the devices as well. The beauty of the razor blade is that you can always change the way you make money. You can make the razor the blade or the blade the razor as the competition changes.

Larry Bernstein:

I want to ask a question about banking. The regulators have been very fearful of allowing industrial firms or call it non-bank regulated firms to engage in banking activity. They've banned Walmart from having its own bank, but you mentioned that Amazon is considering having a banking-like relationship. Can you expand on the threats from the regulatory state to permit Amazon to expand into that sector?

Sunil Gupta:

No, I wasn't suggesting that Amazon will go into banking. I'm saying that hypothetically, if Amazon were to go into banking, that's what they could do. If I were Amazon, I will never go into banking, because I will be more regulated. What I will do is I'll partner with an existing bank, but think about it. If I partner with an existing bank, who owns the customer relationship? It'll be Amazon. So the bank will become the backend. Therefore, the bank becomes a commodity. So the relationship that Amazon will build with its customers that they can provide other services will make it difficult for the other players to compete in the marketplace, and that was the point. I don't think Amazon will ... or at least as far as I know has any reason to go into banking right now.

Larry Bernstein:

We had a panel on antitrust, and they focused on several of the names that you listed today, Amazon, Facebook, and Google. There's a fear of big tech. As big tech applies the razor and the blades and building and strengthening social networks, there behavior seems both to anger and frustrate the regulators. Is that just inherent in the business model, and is that going to be problematic for big tech if it accelerates?

Sunil Gupta:

No. I think that the challenge is if you look at the typical antitrust policies that have been designed for the last century, they're based on two fundamental principles. One is do the companies do harm to consumers if they become too dominant in terms of raising prices, for example, and the other is do they have a large share of a particular industry? A large share, maybe it could be 30% or 40%. So that's the definition of dominance in the industry, and that may be true, for example, for Google, because Google has a dominant share in the digital advertising business or Facebook in the social network.

But I think it becomes fuzzier in the case of a company like Amazon, because Amazon is in so many industries, it's very hard to define what business it is in and share of what industry are you talking about? Share of retailing? It has a very small percentage. Share of online retailing, yes, it has large share, but they can define, "We are in the retailing business," not just online retailing, because of the omni-channel story. Are they in advertising? Are they in movie production?

So I think the first question is the definition of the industry becomes fuzzy, and therefore the traditional antitrust regulators have trouble defining does Amazon have a dominant share in their industry? Because the definition of industry itself is different. The second basic dimension of antitrust is will it harm consumers? Most consumers love Amazon, because they can get anything they want conveniently, usually in a day or so, at a much lower price. So what's not to like? So I think it feels like Amazon is becoming dominant and it's actually hurting some businesses, but on the other hand, the traditional two dimensions that antitrust looks at, Amazon seems slipping through that criteria.

Larry Bernstein:

So you don't think that the regulators will simply change the rules of the antitrust by changing the You're right. They're not harming customers. They're making it better. Amazon's retail market share is not that large, and Amazon's growth is not fueled by acquisitions, but Amazon's market power seems to anger and frustrate the progressive antitrust movement who want to go after Facebook, Google and Amazon.

Sunil Gupta: I think Facebook and Google are in worse shape, because they have a dominant share of their respective industry. Amazon, because the industry is less well-defined, it becomes a little bit more difficult for the regulators. Some of the small sellers are complaining about Amazon and fear future competition. That marketplace behavior might be considered anti-competitive, because it's basically hurting the small merchants. Amazon many times offers its own private label brands after doing market research to see which products will do well and then Amazon ends up selling its own product. Now, it might get into this trouble if it's using merchants' data to launch its own businesses and compete with them, and I think that has been in the discussion to some extent.

Larry Bernstein:

I want to ask about vertical versus horizontal integration. When I went to business school, we were told that the benefits from vertical integration are illusory that it sounds good on paper, but very rarely has the sort of benefits you predict. But horizontal integration is spectacular. It gets rid of a competitor. We're able to generate more market power, and that's where we run into friction with the anti-trust division. In the examples you were giving with Amazon, you were giving extremely broad examples of vertical integration. We weren't looking at movie theaters making movies. We are looking at a retail store making movies. Why do you think that the vertical integration in this bizarre fashion is actually a good idea relative to the historic vertical integrations attempted by others?

Sunil Gupta:

I think the traditional vertical integration is about control, control of the entire supply chain. So if I'm making computers, I start also vertically backward-integrating into making chips or

forward-integrating into having stores, and that's for the traditional model. But that's still the same industry, and the hope was by having more control, I will actually have better economies of scale, better experience. To some extent, Apple is doing that, right? It's making his own chip. It has his own stores. It makes its own products, et cetera. But by and large, that gives you more control, but that means that if tomorrow the industry shifts and you are still caught in the same innovation, you will have difficulty moving along with the industry.

Amazon's vertical integration, is very different. It's not in the same industry. It's basically connecting dots across industries. But ultimately, if you ask me as to what are the key capabilities of Amazon that defines what business it will get into or not, I will say it has three core capabilities. One is logistics. It's very, very good at logistics, as good or better than Federal Express and UPS. It's very good in technology. Clearly, AWS is an example, but it knows lots of other components of the computer vision of AI or others. The third is it's very good and obsessed with customer focus, both in terms of culture as well as in terms of leveraging data to understand customer preferences. So anything that touches these three things, it will actually get into. Now, you call it vertical integration, but I don't see this the same way as we thought of vertical integration back in the eighties and nineties.

Larry Bernstein:

Then let's go back to the 1910s to 1920s, 1930s for Sears. So Sears goes from a catalog. It goes to a retail store, and not only the retail store. It says, "My God, they're getting here by car. We should really create an auto center." Then when they had an auto center, they said, "Oh, we should probably create our own batteries, Diehard. We should probably offer our tool sets in Craftsman, and then they should sell their own dishwashers called Kenmore. Then they started offering auto insurance and were able to mass market auto insurance. Is that the sort of vertical integration that reminds you of Amazon and when Sears was being successful, and when Sears stopped doing that, it was a big problem?"

Sunil Gupta:

I think your analogy of Sears is very apt. In some ways, you can say Amazon is the new Sears, in some ways. It may face the same fate as Sears did. But I think Sears could have been the new Amazon, because it had all the underpinnings of a great, successful business model for a very long time. But the Internet changed the fundamentals of the business for Sears, and it still remained a retail business. If it had changed the way Amazon changed, it could have been the Amazon. So, again, I mean, in all fairness, we are drawing an analogy from one data point in both the cases of Amazon as well as Sears. But I think what I'm trying to understand is are the principles Amazon applied beyond just Amazon?

So take the example of razor and blade. So I'm on the board of this company called US Food, which is a large food distributor, and we started thinking about, "How do we apply the razor blade analogy to a food distributor like US Foods?" This company distributes food to small,

independent restaurants, like mom and pop restaurant owners. Traditionally, the way the company has been and still sells its product is I go to a restaurant and say, "My fish is better" or "My fish is cheaper." Make it better or cheaper, the traditional strategy and paradigm. Guess what the competition does? The competition does the same thing. They come and say, "Hey, my fish is better" or "My fish is cheaper." Very soon, the quality of fish is the same, and over time, it becomes a price competition and becomes a commodity. That happens to every industry.

So we started saying, "Hey, what might be the razor for our industry?" Now, it sounds strange. What do you mean, razor for a fish? But then the best way to think about this is put yourself in the shoes of a customer. Forget about your product for a while. So if you were to put yourself in the shoes of an independent restaurant owner and ask yourself, "What keeps this restaurant owner up at night?" 70% of restaurants go out of business every year. This is pre-COVID, and that's because these restaurant owners, they love food, they love to cook, but they don't know how to run a business. They don't know how to manage their finances. They don't know how to manage labor. They don't know how to generate traffic. They don't know how to manage inventory, and that's the real problem, not the price of fish.

The moment we realized that, we started offering software services to these restaurants, many produced by the company and some others licensed from third-party. Third-party providers provided a subsidized discount. Now, that's the razor which US Food can offer these restaurants, solving a fundamental problem, and the moment I do that, the conversation shifts on the price of fish, because I'm solving a real problem. So that's a very different way of doing business. Again, I'm using the same analogy of Amazon, but in a very different context.

Larry Bernstein:

Another thing about Amazon which is really unbelievable to me is their willingness to cannibalize one of their own businesses. So, for example, the Amazon Marketplace offers the exact same products that they offer on Amazon, potentially at a cheaper price, by one of their competitors. We didn't see Kodak make the transition between analog and digital, and there was probably resistance internally to doing such. But Amazon seems to be willing to attack themselves in order to expand the pie. Somehow the entrenched bureaucracy that undermined Kodak or AT&T or whoever doesn't exist at Amazon. What makes them special, and why is there no inherency to the existing way of doing business?

Sunil Gupta:

I think it's Jeff Bezos's philosophy of customer first, and he somehow has been able to instill that in the company, even if it means it hurts their other business. So the Prime service is a great example, and there were internal debates when they offered the Prime service, which is two-day free shipping. There was a huge concern that this would eat hugely into the profit of

the company. It was very likely that most people who will use the Prime service initially, these were the heavy buyers to begin with who would order tons of products at basically free shipping and would cost the company a ton. But they tested it, because they say, "Hey, this is actually worth testing, because it'll be good for the customers."

So they have done these things again and again which have cut into their business, and I think you have to truly believe that if you serve the customers well, in the long run, it'll pay off. In the short run, it might hurt. Now, I realize it's very hard to do, because in the short run, it will cannibalize your existing business, which is what happened to Kodak and many other places.

Larry Bernstein:

Sunil, thank you. Moving on to our second speaker is Brad Thompson. Brad is a professor of political science at Clemson. He's written the book *America's Revolutionary Mind: A Moral History of the American Revolution and Declaration That Defined It*, and he's going to talk about liberty and rights from the founding of our republic. Go ahead, Brad.

C. Bradley Thompson:

Thanks, Larry. Fact: The American Revolution is the most important event in American history. It announced the birth of a new nation, defined the noblest ideals and aspirations of the American people, and it created the world's first written constitution and republican governments. Not surprisingly, the revolution is the most studied event in American history, which raises the obvious question is there anything new and original left to say about the American Revolution? That was my challenge when I set out to write my book, *America's Revolutionary Mind*. My goal was to rethink the deepest causes and consequences of the American Revolution. But the key to understanding what my book is about and why it's unique is contained in its subtitle. It's a moral history of the American Revolution and the declaration that defined it. Now, of course, there have been social, economic, political, religious, constitutional, military, and diplomatic histories of the American Revolution, but there has never been a moral history of the American Revolution.

So my book begins with a puzzle. It attempts to unravel the meaning of two well-known statements, one by John Adams and one by Thomas Jefferson. In 1815, John Adams asked a simple question. "What do we mean by the revolution?" He did not think the war for independence was the true revolution. The war, he said, was only an effect and consequence of the revolution. The real revolution, he continued, was a moral revolution in the minds of the people in the 15 years before shots were fired at Lexington and Concord. In 1825, Thomas Jefferson described the Declaration of Independence as an expression of the American mind. This means that the Declaration is a summing up of the moral revolution described by Adams. My book therefore, uses the Declaration as an ideological roadmap, by which to chart the intellectual and moral terrain traveled by American revolutionaries as they searched for new

moral principles in order to combat British tyranny. The book examines the most famous sentence ever written in American history. "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights that among these are Life, Liberty and the pursuit of Happiness."

Now, what did the Founders mean by equality and rights? Let's start with equality. Let me begin by telling you what the Founders did not mean. Equality did not mean sameness. The Founders knew that there is an inequality of measurable human attributes. Not all men and women are equal with regard to speed, strength, and intelligence. The Founders recognized a natural aristocracy of talents and abilities, so in what sense then did they mean that all men are created equal? By equality, the revolutionary generation believed in what I call species equality, which means that all humans share certain fundamental attributes, namely reason and free will that distinguish them from horses and dogs, which means that each person has an equal right to be self-owning and self-governing. That is, there is no natural right to rule. As Jefferson once said, "Because Sir Isaac Newton was superior to others in understanding, he was not therefore lord of the person or property of others."

Now, what does the Declaration mean when it talks about unalienable rights? The Founders always referred to man's unalienable rights as natural rights, which means they do not come from government. Their immediate source is nature and human nature. In the wake of the Stamp Act in 1765, Colonial Americans came to reject the idea of the so-called rights of Englishman, which are the rights of a particular people, at a particular place, at a particular time. The Americans searched, during the 1760s and the early 1770s, for a standard of right that was absolute, permanent, and universal.

The revolutionary's doctrine of rights provided them with a natural standard of right and wrong that defines and protects man's moral requirements in a social context. Natural rights are moral principles that serve as both a license to act and a fence to protect man's freedom in a social context. The rights of nature recognize certain facts of human nature. One, that it is necessary and right for individuals to freely exercise their rational faculty. Two, that it is necessary and right that man should be free to choose and pursue actions required to support life. Three, that it is necessary and right to act in order to acquire, keep, use, and dispose of property, and four, that it is necessary and right to pursue the values required for human flourishing and happiness.

Now obviously, the big question is how could American revolutionaries support equality and rights and yet own other human beings as slaves? In other words, weren't they hypocrites. Now, this is obviously a large and a complex topic, so let me just very quickly give you a few points. First, all of America's Founding Fathers believed that slavery was either a necessary evil or simply an evil. Second, the Declaration's principles represent the greatest force, in my view, in world history for ending slavery. Third, the Founders did not abolish slavery, I think, for three

principle reasons. One, they thought it would die a natural death, and of course they were wrong, particularly after the invention of the cotton gin. Two, and this is the heart of the issue, they could not solve what I call the post emancipation problem, and finally, it was their own moral failing. The failings of people like Thomas Jefferson and Patrick Henry, who understood that slavery was immoral and a violation of the rights of their slaves, and yet they did not free their slaves.

Larry Bernstein:

When you gave the example of the Stamp Act that the critical issue related to the ongoing relationship between the colonial legislature and the British Parliament, where the colonialists felt that they weren't being represented, but their complaint wasn't with the King. The colonialists seem to want an aristocratic executive, but their primary complaint was with their inability to participate directly in parliament.

Do you think that the Declaration was a challenge against both the King and the parliament? Was it really meant to be against parliament only and it only when the King came to defend the parliament's actions that the colonial anger became a unified attack? In our high school classrooms, they emphasized the colonial challenge against King George III, they did not mention parliament per se, as the real problem. How do you think about that?

C. Bradley Thompson:

Yeah, that's a great question, Larry. First, The Declaration of Independence, written in 1776, is really only directed at King George III, but the fact of the matter however, is that between 1765 and 1774, all of the actions taken by the British government were passed by the British Parliament. So the Stamp Act, the Declaratory Act, the Townshend, the Tea, and the coercive acts, of course, were all passed by the British Parliament. The real issue, in the 1760s and 1770s, was who was ultimately sovereign in the colonies. Was it the British Parliament, or was it the colonial legislatures? All of the American arguments between the Stamp Act and the coercive acts were all directed against parliament. They were not directed against the King. It was not until 1775 when the British Parliament, with the support of George III, passed the prohibitory act, which took the colonies out of the King's protection that the Americans then turned their attention to George III.

You don't really get any critiques of George III until January of 1776, when Tom Paine publishes Common Sense, which is directed specifically at the King, but up until that point, all of the American arguments were against the British Parliament. I won't go into details now, there's a very sophisticated argument that the Americans make, but I'll just say this, the first line of defense for the colonists was to disconnect and end their relationship with the British

Parliament. That takes place between 1765 and 1774, and then, the final cut with Great Britain ends with their in effect, metaphorically speaking that cuts off the King's head and is documented in Tom Paine's Common Sense.

That's precisely why, by the time you get to the Declaration that the colonialists have now made the argument that their only connection to Great Britain is through the person of the King, because they've already disconnected their relationship to Great Britain through parliament. That's why the Declaration is directed specifically against George III.

Larry Bernstein:

I want to change the perception of the meaning of the Declaration throughout American history. Immediately after Dred Scott, Abraham Lincoln goes back to the Declaration and uses it as a tool against the supporters of Dred Scott. He emphasizes that sentence that you actually just spoke about. "All men are created equal," because it wasn't written in a way to say that it only applies to former citizens of Britain. How do you think about Lincoln's view of the Declaration and that key sentence? In the Gettysburg Address when Lincoln refers to "Four score and seven years ago," he's referencing that declaration again, as being critical to the founding of the Republic. How is Lincoln an ally of this declaration relative to other politicians of this period?

C. Bradley Thompson:

I think Abraham Lincoln is the single greatest proponent, and in many ways, the great poet of The Declaration of Independence. His reaction to the Dred Scott case, as you noted, his speech on the Dred Scott decision really lays out his view of what the Declaration meant by its core fundamental truths, namely equality and rights. What he says is that the declaration attempts to establish a standard maxim for a free society, which that society will always hold up. Will always look to, and even though it doesn't perfectly achieve the ideal and doesn't put into practice those principles all the time, it is nonetheless that standard maxim that all Americans should be striving to live up to.

I think, without question, that Lincoln's interpretation of the Declaration and his arguments against first, Stephen Douglas, for Senator of Illinois, and then later in his run for the president, and finally when he is president himself. Lincoln always defends The Declaration of Independence. Interestingly enough, so was William Lloyd Garrison, right? In effect, the founder of the abolitionist movement in the 1830s. Garrison believes that the abolition movement, which he founded, was at its heart, an attempt to resurrect, defend, and promote, and realize the principles of the Declaration in antebellum America.

Sunil Gupta:

Brad, this is Sunil Gupta. I have a quick question. You briefly mentioned this about slavery and the Declaration, and how you reconcile, but this has been a puzzle for me for the longest time. That the Founders on one hand say, "All men are created equal," and still, they decided to keep the slaves and the slavery was not abolished for a long period of time. Even today with Black Lives Matter and everything else, it's not clear that our politicians, who on one hand claim that they believe in the constitution, actually live by its basic principle. Are we living in a hypocritical world or is there something else going on?

C. Bradley Thompson:

Let's go back to the period of the American founding, and is the charge that some of America's Founding Fathers were hypocrites, legitimate? Yes, absolutely. Of course, it's legitimate, and we should morally judge and condemn those Founders, I believe like Thomas Jefferson and Patrick Henry who were on the one hand, the most articulate defenders of equality, and rights, and liberty, and yet did not free their slaves. However, there is, I think, a larger context in which to understand the Founder's view of slavery.

The first thing to say is that there was a range of views amongst America's revolutionary generation on the slavery question. On the one hand, you have people like John Adams who their entire lives were morally opposed to the institution of slavery and said so. Then you had certain Founders like Benjamin Franklin and John Jay, for instance, who in their early years, as young men in the 1750s and 1760s owned a slave, but eventually they freed their slaves, and then most importantly, they then founded anti-slavery societies.

Then you get people like George Washington, who was a lifelong slave owner, but freed his slaves in his will after the death of his wife, and then finally the most important, the hardest case, obviously, is Thomas Jefferson. Jefferson throughout his life recognized and wrote, and in fact, in the original draft of The Declaration of Independence, denounced slavery, and he denounced slavery in his summary view of the rights of Englishman, and in private correspondence condemned the evil that is slavery. For Jefferson, the problem, in addition to his, ultimately I think it just has to be said, his moral cowardice. I'm more than willing to condemn Jefferson for his moral cowardice. For Jefferson, the single biggest problem was what I've called the post emancipation problem, right? Let's be frank. It's easy for people in 21st century America to judge and condemn the founding generation for not abolishing slavery, but you have to try and understand it as I've done in my book. From the perspective of 1776 or the perspective of the founding period in general.

The single biggest question that they struggled with was even if we could wave a magic wand and free the slaves today, then what? Right? That was the question that they simply could not wrap their heads around. There were, I mean, genuine challenges to... They had all kinds of, sort of plans or potential plans, colonization plans, for instance, but none of which were really

feasible. They couldn't think their way through the problem. Now that may seem like a cop-out and in the end, ultimately it was. It was a cop-out, I believe, and let me just mention one last thing.

The fact of the matter is after the publication of the Declaration, in July of 1776, every state in the North began the process of gradually emancipating the slaves in those individual states. It took about 25 years, but by 1803, every single state in the North had abolished slavery. It's not that they didn't want to, it's not that they didn't try. In some places they did, so it's a very complex issue, and I think we have to give credit where credit is due, and we have to morally judge and condemn those who fail to live up to their own highest moral ideals.

Larry Bernstein: I want to go back to what people thought of the Declaration through time. At Lincoln, at the Gettysburg address, he defined it as our great moral underpinning, but we're a long time away now, we're 150 years past that point. What has been the view of the Declaration over time? I think it's interesting that you emphasize the necessary right to acquire and use property. You go back to the John Locke definition of life, liberty, and the pursuit of property versus pursuit of happiness. Has the question of right to acquire and use property been under attack for the last 150 years? Does the progressive movement, does the pragmatist movement, the socialist movements, did they apply these same moral guidelines? Or have certain aspects of our society moved away from the basic moral principles of the Founders?

C. Bradley Thompson:

The first critics of the declaration of independence were pro-slavery Southerners. Between approximately 1830 and up to the end of the Civil War, there was a generation of Southern intellectuals who critique The Declaration of Independence. They came to see the Declaration and the philosophy underlying the Declaration as that which they had to fight and condemn, so with the Founding Fathers, their view of slavery was that it was a necessary evil with the emphasis on evil.

By the late 1830s, you get a generation of Southern pro-slavery intellectuals, who now view slavery as a positive good, as they called it, and what was, I think, most interesting about these pro-slavery Southerners, which I lay out in the epilogue to my book, titled, *Has America Lost its American Mind*. This generation of pro-slavery Southerners were drinking deeply from the well of 19th century German philosophy, particularly the philosophy of Hegel, which they then adapted to their situation in antebellum America. With Hegel's doctrine of historicism, which says, "That there are no absolute, certain permanent universal truths, like those contained in the Declaration, but rather truth is situated in a particular time and in a particular place."

These pro-slavery Southerners went through each... Well, first they critiqued the idea of truth. Truth, capital T truth. Truth is absolute, permanent, and universal. Then they denied the fact that all men are created equal. They denied that men have inalienable rights, because they argued that rights evolve, change, progress over time, and they clearly rejected the idea of consent and revolution. Then ultimately, what's most interesting about these pro-slavery Southerners is that by the 1850s, they came to adopt socialism as the preferred form of government. I mean, if you think about it, it's really quite extraordinary. They argued, in the words of the leading pro-slavery Southern intellectual, George Fitzhugh, that, and I'm quoting, "That communism was the beau ideal," of what they call plantation socialism.

Fast forward now to the early 20th century. What's very interesting is that progressive intellectuals, primarily, John Dewey, Woodrow Wilson, Herbert Croly, for instance, they too launched a critique of the principles of The Declaration of Independence, on the same philosophic grounds that the pro-slavery Southerners had done. Namely, that they rejected the idea that there are absolute certain permanent moral truths. That all truth is relative to time and place, and that what was true in 1776 cannot be true in 1912. They too, using arguments remarkably similar to the pro-slavery Southerners, went through and rejected all of the core fundamental principles that come out of the revolution. Namely, individual rights, limited governments, and laissez-faire capitalism.

Larry Bernstein:

Brad, thank you so much. We're going to go on to our next speaker. That's Terry Williams. Terry is a professor of sociology at the New School for Social Research in New York City. He is the author of *Le Boogie Woogie: Inside an After-Hours Club*, and he will be discussing sex and drugs. Go ahead Terry.

Terry Williams:

Come with me. I want to take you to this place I found in Harlem. Do you hear that knock? It's a special knock. Only those in the know will understand its meaning. Without that knock, you would not get in. Two guards won't say anything to you, just nod and follow me down this long hall. Gambling in the back, drinks at the bar, topless dancing in an hour. You hear that music? That's boogie-woogie. Go through those hanging beads and don't bump your head. To the left is the bar. They're all sniffers there. Yes, that's cocaine they're sniffing. They called it blow. That's the owner, Frenchie, standing over there, but as you watch him, listen to me tell you what this place is all about. *Le Boogie Woogie* was a place of continuous emotional release and discovery through drug use, fostering a collective sense of being.

The drug use, the conversations, the sex play, the competition between the girls, each trying at times to outperform the other for tips and attention. Whatever took place in this club was an alternative to life as many people knew it. Drug use, for example, was complicated. People

were high, in a way different from an alcohol induced high, they were stimulated, talkative, nervous, paranoid, sexually excitable and thirsty. The bar maid role was complicated too. She had to take on the crowd and deal with the bartender, and all the hullabaloo going on around her. She had to take orders while the jukebox was blasting with the crowd pulling at her coattails, with men and women feeling her ass. The guy who just gave her a hundred dollar bill was now locked on and whatever he wanted, he got including a body bump and a rub when he got past her.

In this after-hours world, cocaine was an essential element in the quest to stay cool. The after-hours world also regulated its use, even though my research is descriptive and might best be described as a micro ethnography based on personal observations. I made analytical sense of this social world as it existed within the ecological and cultural networks of the city. In other words, this narrative is a theory of how a particular human group makes sense of their world. I continuously asked, what does it all mean? By providing a description of what goes on in the club, I also try to uncover the importance and the meaning of relations, and how those relations are framed and maintained by unwritten rules of established order within the club.

Le Boogie Woogie is an example of what it means to be part of a subculture. A subculture that no longer exists as it once did. In Le Boogie Woogie, the cocaine club's primary group bond was the intimacy among patrons. It was a sharing, touching, a nose to nose relationship where everyone was breaking the law together.

Now, let's go to the Soft City. The Soft City, for business and pleasure in New York, focuses on people who openly and freely experiment with their sexuality. Some might see this as urban degradation, but I see it as that extreme moment when the city awakes the imprint of an identity for good, bad, or indifferent. I see it as that rare moment that invites the voyeur, the stranger, the visitor, the resident, the other to come in and play and be molded by it, when the city goes soft. In the soft part of the city, once you decided who you are, the city would assume a fixed form around you. The Soft City is the place of sex shops and body houses, hotels of assignation, sex worker strolls, gay spots, hip bars, after-hours clubs, burlesque joints, peep shows, and \$5 sex emporiums. The Soft City is a journey of discovery and exploration into a perverse space.

Larry Bernstein:

Terry, I don't even know where to start with this one. Let's go back to the Boogie Woogie, where everyone is intimately connected in breaking the law. How do they think about that? How has their behavior changed from being outside the Boogie Woogie to being inside the Boogie Woogie? Is there a huge sense of relief that they get to do what they want to do

without having to worry about the law? Are they worried about blackmail? Are some of the people there trying to have a dual life, to look clean to the outside world, but be dirty inside where others don't face that shame? How do they think about life inside and outside the Boogie Woogie?

Terry Williams: Well, I mean, that's a good question, but keep in mind that I'm really trying to provide a portrait of the after-hours life at a particular historic moment. What's important, I felt, is to capture disappearing social worlds in the city, because I think through this work, I was searching for a lot of patterns that could bring about a measure of social justice in a way. These patterns need to be made rather explicit, and I was trying to do that in these two clubs. There was also a great deal of self-reflection, so I'm not sure that question is answered here, but that's what I was trying to do.

Larry Bernstein:

Howard Becker has his book, *The Outsider*, where he looks at the marijuana smoker, he looks at homosexual clubs, and he argues that the people who were, the marijuana smoker or the homosexual, felt very comfortable in their own shoes, they just felt uncomfortable in mainstream society. Is that cocaine club some combination of those two examples that they did not feel comfortable outside the club and had to go to this special place to do what they wanted to do? And in that club, in the Boogie Woogie, they felt very comfortable fulfilling their desires. It was like a place of freedom.

Terry Williams:

It certainly was a place of freedom for a lot of folk. It was also a place that people felt that they could come back. But this kind of gets to this whole question about my role as observer and/or participant. I guess I want to mention that as a way to, I don't want to sound too didactic, but I want to talk a little bit about this question about inside or outside it.

Because in many ways what you're asking is a question that relates to this issue of being an observer or being a participant. Because the ethnographer isn't an observer, just like all other social scientists. But the ethnographic immersion also implies participation. That's like the second pole to this dialectical method of participant observation, and probably, I think, it's one of the most discussed questions and issues that we hear in this dimension of ethnographic research. Because by asserting the need to participate in this after-hours club scene, to participate in the field, the ethnographer, and what I'm doing is I make a series of important claims. Let me just mention a few of those.

The first claim is that observation is not enough for yielding knowledge. Second, it cannot be, I think, entirely objective; but rather, it sort of depends on the context. The third point, I think, is that the observer gains knowledge by embracing his or her active presence in the field. As an ethnographer, what do I do? I make claims. I make claims against empirical science. In other

words, that the control of the environment in which it takes place only yields partial knowledge. Remember, the reason for setting up tightly-controlled experiments, it primarily has to do with the need to repeat the experiment several times to validate a hypothesis. This repetition in a similar environment, what does it do? It allows for the observation of constant behavior while the introduction of variation in the environment allows for the observation of a change in behavior and thereby for identifying its cause.

I'm not trying to control what goes on in that club, but rather I'm trying to understand the situation as it unfolds. I'm trying to understand what all these folk are doing at the same time. It's not easy to do that because not just that it would in most situation be impossible to set up a situation where you could control what everybody is doing, but this is not a good business. It is tricky.

It also asserts something else. That is, when you're faced with this complex situation of social persons in this turbulence of actions taking place, of forces taking place, of processes taking place, of interactions taking place that exists well beyond the individual, observation as a standalone method can only allow for a particular glimpse, a partial glimpse of that social world, and that's all I could do. That's where participation comes in because by participating what I am able to, I'm able to reach a deeper understanding of the social world. I'm able to act and look at different modalities that in this particular participation take place; from conversation to actual work, of training side by side with my accomplices.

I have to keep in mind that I live in that world. We, the ethnographers, we live in the world. The world that we are conducting as a matter of daily life. What are we doing? We're investigating and investing our time, and participating through our actions, through our thoughts, through our emotions, in the very situation that I'm observing. That means that this observation implies an active presence. My physical and mental presence can't really remain distinct from this interaction which I'm participating, and of course, influencing as well.

Larry Bernstein:

I want to ask about changing social mores. In 1962, Howard Becker writes his book, *The Outsider*, and chapter one is *The Marijuana Smoker*. The marijuana smoker in that chapter is perceived to be a degenerate by the public, and the marijuana smoker recognizes that. But actually he doesn't really find much wrong what he's doing. But 60 years later, the marijuana smoker is no longer viewed as a degenerate at all, but has become much more mainstream. In your analysis of the cocaine smoker, my understanding is that you did this original research maybe 15 to 20 years ago. Do you think that there's been significant changes in social mores as it relates to the cocaine use or other drug use? Has it gone more mainstream? Are the social mores different now? Does that club still need to be underground that operates in the middle of the night in a neighborhood that is unaware of what is going on at the Boogie Woogie?

Terry Williams:

Well, I think the mores have changed a bit, but they've changed for different reasons and for different folk. I think if you look at the way black folk are treated in their use of these chemicals, it's very different than the way whites are treated, for example, or others are treated. There has been obviously an attempt to make those changes, but it really hasn't happened completely. The after-hours still club is still and there are still after-hours club around, those clubs are, for the most part, still hidden, they're still underground, and you can still find some of these locations that are available for, I guess, the wealthy; but you don't see as much of that world as you used to.

Larry Bernstein:

Who was the clientele in the Boogie Woogie? How did it differ by race, by income, by social class? Did they congregate in the club by race, social class, and interest, or otherwise? How did it work?

Terry Williams:

Well, first of all, you had different kinds of categories of folk there. The after-hours club world was a hustler world, which means that you had most people there who controlled the clubs were people who had enough money to pay hundreds of dollars every night to be part of it. You had the hustle class was the main class of folk who you saw there. But then you had a little bit of everybody who would come. People from the local communities would come and hang out. You had visitors. Once in a while. You even see tourists in the after-hours clubs. There was a variable mixture of different folk who made the after-hours club their home.

Larry Bernstein:

You did an ethnographic analysis of a crack house that I found to be extremely shocking and more disturbing than I expected. But with the Boogie Woogie, you seem to be much more open-minded and, and not horrified or shocked by what you saw. You admit that you sort of thought it was fine. How do you distinguish these two environments?

Terry Williams:

Well, I think what happened after crack cocaine is that it was a change in the way in which people identified with the drug, with the cocaine use. There was a kind of etiquette that existed. People would share. There was an attempt to, there was also sexuality there, but in the crack house, there was no sharing. There was often a lot of bickering that went on. You didn't see the kind of conviviality that you see in the cocaine clubs. It was a different kind of environment that found yourself in when you were watching what was happening in crack houses, as opposed to what was going on in the cocaine world.

Larry Bernstein:

You also explained in the crack house that none of the characters in that environment ever seem to get out and rejoin the real world, in any meaningful way. They always slip back into the crack community. What was the relationship like for the Boogie Woogie cocaine users? Were they able to engage and participate fully in the more normal world or did they fallback into the pure cocaine world?

Terry Williams:

I think it has to do with pharmacology. What happens when one engages with crack cocaine is almost an immediate obsession. The cocaine users didn't have that monkey on their back. They had an opportunity to simply just move from one place to another. They could use the drug at the party level with what the after-hour club was. Then, but the crack user did not seem to be able to control, having any control, over what the chemical did to them. As a result, this kind of addiction, really was rather profound for people who chose to smoke the drug, as opposed to snorting it. That inhalation, the difference between snorting and smoking was really a rather profound change, hinged the mind of the person who happened to be indulgent. It was a very different world if you add it to the smoke.

Larry Bernstein:

You did work on crack. You did work on cocaine. Now, you've moved into ethnographic analysis of sex in public places. How would you contrast that movement of your work? What are the key things to learn in your new work on sex?

Terry Williams:

Well, what I've been doing today, follow the same kind of pattern. That's to say, I am out in the field and I observe and hear and see what goes on, and then I try and record that behavior, or try and find a link to someone who can assist me in learning about that behavior. Basically, I see this as being curious about the world that I happened to be involved in. Every location that I've gone to, from teenage life to housing to crack cocaine, well, this always had an element of sex involved. I thought if I could start to recall, and I took notes, of course, I have lots of field notes and I have journals, and I noticed that this pattern was consistent in all the work that I was doing. That there was an element of sex.

As a result of that, I put those notes together, and this was now over a four decades, and I decided to put it together as a volume. Columbia was interested in it. I started to collect notes from everyone who was involved in some way or another, and that became the Soft City. It's about public sex, of course, but it covers that 40 year period.

Larry Bernstein:

Terry, thank you so much. I have a feeling that once your book comes out, I'm going to have you back on the show to discuss more about it. In the meantime, we're going to segue to

something completely different, which is the industrial lab. I'm going to start with my Mike Hiltzik who'll speak for six minutes, and then to be followed by Jon Gertner. Mike is going to talk about his book, *Dealers of Lightning: Xerox Park and the Dawn of the Computer Age*. Mike, go ahead.

Michael Hiltzik:

The question that Larry asked me to answer, which was, how did Xerox blow it? Meaning, how did it miss the opportunities that it was given by the brilliant scientists and engineers and hired for its Palo Alto Research Center, I think, perhaps isn't exactly the right question to ask about PARC. The right question, it seems to me should be: Did Xerox blow it? The answer requires some nuance.

If you think that Xerox should have exploited PARC's invention of the Alto, the first personal computer, by launching the personal computer market, then you'll think the answer is yes. But if you think Xerox never made any money from PARC, which is sort of the received wisdom, the answer is no. PARC invented the laser printer and Xerox made a ton of money from that technology alone. If you think Xerox blew it because it was in the perfect position to exploit PARC's invention, not only the Alto, but ethernet, and the graphical user interface, and the perfected use of the mouse, the answer is still no. Because Xerox as a corporation was never structured in a way that would have allowed it to change course from dealing copiers to selling personal computers; moving from a market that had dominated outright into one that didn't even exist at the time of the Alto's invention in the early 1970s.

It's also true that the stated goal of Xerox, which was to find a next generation product, was at odds with the way PARC's new employees worked, which was to follow their noses as they worked out the science and engineering of the inventions they wanted to make, not to start with a goal of creating a commercial product. They eventually got frustrated with Xerox's inability to market their inventions, but part of the problem was their own preconception of their own goals.

Let's take a look at the Xerox of 1971 when PARC opened. It was a company that was a prisoner of its own success. Its 914 copier was the most successful industrial product, maybe ever. Xerox had a quarter million sales persons hawking the 914. They weren't really selling the 914, because you couldn't buy it. You could only lease it. The sales force made their money as commissions on the pages put through the copier by their clients. Typically, a 914 was placed in a big room, the copier room in an office, and secretaries would line up to use it. Every time they copied a page, a counter would click. When PARC showed the Alto to the Xerox Salesforce, the first question I heard was: where's the click? That is, how will I count pages to be paid for if no paper is going through this machine? A big company with a quarter million salespeople hawking

a narrow line of products was simply not going to be able to scrap a successful business model and try another untested model.

You might say, "Well, IBM did that." But IBM was a computer company. Xerox was essentially a manufacturing and marketing company with a single product line, which was not a computer. Xerox knew that. It placed PARC on the West Coast so there would be no infection by PARC of the optical and industrial engineers at its main lab in Webster, New York, outside Rochester. The explicit model for PARC was Bell Labs, about which you'll hear in a couple of minutes, but AT&T, which owned Bell Labs, was also a very different company from Xerox.

Xerox did try to commercialize PARC's technology. In 1982, it introduced the Xerox Star, an integrated hardware and software system that would have a central processor, a big machine in a big office, and terminals on every secretary's desk. This was a gorgeous machine. I was present at the last demo of a Star in 1998 when the Star's original engineers came up with all of the little bits and pieces they still had in their basements and their attics and rebuilt a Star for a demo at PARC itself. Its software and hardware was flawlessly integrated in a way you still don't see on today's PCs and it had a high quality graphical screen. But it was Xerox scaled, a big central machine that would cost more than \$16,000 for the central unit alone and in the terminals for a medium size office. You were talking about an investment of \$125,000, even a quarter million dollars, which priced it out of the office market. Then, came the IBM PC, which was a feeble machine compared to the Star. No graphics, no integrated programs, but it only cost \$2,000 each.

Now, let me close by relating what PARC did give us all, some of it through companies that were started by or joined by its alumni as they began to leave in the mid-1980s. Ethernet, PDF formatting through Adobe, the laser printer, and Microsoft word, which grew out of a program called Bravo invented by Charles Simonyi at PARC. Exploiting and marketing those innovations needed not a big over-focused centralized company like Xerox, but a small, hungry company that would come to the market without legacy preconceptions. A company like the one that PARC alumnus Larry Tesler joined in 1980 as employee number 31. That company was Apple. Tesler brought PARC's DNA to Apple, helping to create the Lisa and the Macintosh in the early eighties.

Did Xerox blow it? If you're thinking about the technologies that had spread throughout the world and the spirit of innovation that it gave birth to, the answer is no. The world took a negative lesson from PARC that Xerox failed with PARC, but it's the wrong lesson.

Larry Bernstein:

Now we're going to hear from Jon Gertner. Jon is the author and writer for the New York Times Magazine on science, technology and innovation. He's written the book, *The Idea Factory: Bell Labs and a Great Age of American Innovation*.

Jon Gertner:

I'll jump into just a little bit of history before I get into those kinds of meatier issues of how Bell Labs and the industrial lab of today overlap or don't overlap. As a quick background: Bell Labs was the R&D lab for AT&T back when AT&T had been granted an effective monopoly on phone service by the U.S. government. If we go back a hundred years to pick up a theme that came up earlier in this phone call, AT&T had a vertical and horizontal control of phone communications in the U.S. It controlled all the long distance phone service and phone lines. It controlled either all or part of all these local phone companies, like New York Telephone or Southwestern Bell, which were the direct link to the consumers, or the subscribers, as they were called back then.

AT&T also controlled all the manufacturing through a division called Western Electric. They made all the wires, switchboards, headsets, phones, everything from the smallest component to the largest component in the phone system. Most important to what we're talking about today, in 1925, the phone executives in New York created Bell Labs as a way to plot the future of communications in America. The phone lab, Bell Labs, was going to do near term R&D to solve everyday problems. These were huge problems: how do you increase the capacity for switching or for calls, or how do you speed up connections? But Bell Labs would also employ people who could think about what was possible in the long term. These were much deeper questions, such as: can the current technology of the phone system actually accommodate the needs of a massive number of future users? Or, do you in fact need some kind of breakthrough technology to accommodate that future clientele? Or other deep questions like: Do you actually need operators to connect calls, or can the entire systems function automatically?

The idea of the modern industrial lab really goes back to the German pharmaceutical companies in the late 1800s. But I think one thing that differentiated Bell Labs from its founding in 1925, but especially in the period right after World War II when it hit its stride--especially from other corporate labs, because GE actually has a corporate lab that predates it--is that the scale here was much larger, and the interdisciplinary approach, between engineering, physics, chemistry, and the like, was much more involved. We're talking thousands and thousands of engineers and scientists. If we honed in on Bell Labs in the midcentury, they had about 7,000 people working there. By the 1970s, there were more than 25,000 employees just at Bell Labs.

We see that those weren't all PhDs, but it was an enormous institution with all sorts of depths of knowledge and all sorts of different disciplines. What also differentiated Bell Labs to some extent was that balance between research and development or, more precisely, the balance between the research department, which was heavily composed of PhDs and which made up

about one tenth of the staff, and the development department, which was much more heavily skewed towards engineers.

As Bell Labs' reputation grew, even early on, it could hire the best scientists and engineers in the country. This was aided in part by the Great Depression, which allowed the phone monopoly to hire people. They had money at a time when universities did not. Indeed, some of the people who were hired during the Great Depression or just after really became some of the great stars of Bell Labs, like William Shockley, co-creator of the transistor, and Claude Shannon, father of information theory, and others of that group.

When we look at what came out of Bell Labs, the list is far longer than what I'll go into here. A lot of it is actually knowledge and not products. But they existed during the golden age of telecommunications. There were all sorts of smaller innovations during the early years that allowed for phone calls to actually be dependable and have reasonable fidelity. But beginning from the 20s onward, there were breakthroughs, such as high quality vacuum tubes that actually allowed for a call to go from coast to coast. After that, in the post-war period, there's the transistor, which is probably the most important invention of the 20th century. Certain crucial kinds of lasers, communication satellites, information theory, and visual communications, the whole idea of a cellular phone service, not the actual phone, which came out of Motorola in the early days, but the actual plan for how to create a service like that was a Bell Labs idea.

Also, there were mistakes. This was a big company that did make missteps. Belly flops, like the picture phone, which pre-staged video conferencing by about 20 years. I think being early in that stage is a lot like being wrong. There's a lot of emphasis on what the research department of Bell Labs achieved, a breakthrough of ideas, and that's fitting. But I think it's worth thinking too about its success in terms of development and deployment. In fact, that might be a significant differentiating factor when we look at why Bell Labs succeeded for so long. There's this notion of a monopoly being anti-innovation, and competition as fostering bigger innovations.

But I think it's worth considering that Bell Labs succeeded not just because of its research breakthroughs and its talented staff, but because it had a monopoly whereby it could work on really difficult problems for decades, and fold in hardware into its system that was controlled by its parent company over the course of many years, because it could. It had no competition. That's crucial if we want to look at why Bell Labs could innovate so spectacularly. We should consider that it had these geniuses on staff, but also that it didn't have the risks that corporate labs face today, where they wonder if they can possibly monetize breakthroughs on a short schedule. Is it worth investing in a blue sky idea? Will it pay off in time? Can these expenditures be justified? Those were not problems while Bell Labs is part of the monopoly that it had to face the way that corporate maps do today.

If we want to look at the demise of Bell Labs, I think we have to look at the breakup of AT&T in the late 1970s, which also split Bell Labs also. It went into different places. Parts went with the new AT&T, parts went into Lucent. Ultimately, I think the greatness of this industrial lab was lost for two fundamental reasons. It lost its scale as it was divided up, which meant it lost its huge funding and its breadth of talent. It lost its connection to the monopoly, where it could implement these ideas over long periods of time. Suddenly, the R& D window it used to have, five years, 10 years, even 20 or 25 years, went to three or four years at best.

There are other reasons, too. Telecommunications, the industry was deregulated, a host of competition sprang up, the center of innovation and gravity moved to the West Coast, and Bell Labs, in time, became part of AT&T, part of Lucent, now it's part of Nokia. It still exists as a name, but at the same time, the software and electronics industry have moved to Silicon valley as has the venture capital money, and of course, a lot of the talent too. There are a lot of lessons here that I go into in the book, but I think when I'm asked sometimes: Bell Labs, should we recreate it? I tend to say, "Well, I don't think so. Bell Labs was part of the right industry at the right time." Somebody who once described it to me as that this was a problem-rich environment. You were creating a phone service from scratch, and it necessitated these incredibly significant, challenging solutions to create long-distance service, switching, transmission, capacity, fiber optics, and all sorts of other really difficult problems.

So that question of, "Is it a model for corporate labs today," or, "Is it a model for innovation," I usually say, I'm not so sure. Its scale, its ambitions, and its connections to the government, because it did defense work, were all unique and interconnected. But, on the other hand, I think its culture of excellence and its leaders' decisions to go beyond what was merely sufficient and look for things that were exceptional. I think that's really important, and I think that is something that's aspirational and adaptable, and has, in some ways, moved to other companies where a lot of Bell Labs alumni, or where their influence has been felt, especially Google, Microsoft, and Apple.

So, in some ways, I think Bell Labs' culture isn't dead, even if the lab is not really anything like it once was. I don't think that idea, the far-reaching, insanely-ambitious, hugely-funded corporate lab is going to come around again. If we look at some kinds of huge labs that might spring up in the future to solve problems, I think a different model might obtain, something like a Los Alamos or the Rad Lab, which was set up in MIT in World War II, or even the Apollo Program, where they're following a real specific problem to be solved.

But as for Google, Apple, and Amazon, I'll just read something that these companies, the companies we're used to today, the big, almost near-monopolistic tech companies, they're not part of a highly-regulated national public trust the way Bell Labs was. They're superb at producing a specific and limited range of technology products. But I think scientific knowledge

matters much less to them than the demands of their customers, employees, and shareholders. That's not a knock on those companies, I think it's just a sign of the times.

Larry Bernstein:

All right, let's go straight to Q&A. A few weeks ago, Ernie Freeberg discussed Thomas Edison and the innovative entrepreneur. I took a class at Penn in the history of science department with Thomas Hughes, and he argued that the age of Edison was over, and that we were forever going to be in the age of the industrial lab. But I think, as you were suggesting, Jon, that the age of the industrial lab may have come to an end.

As a country, we're very concerned about both basic research and applied research. Some of these firms, they just couldn't handle competition. When I look at my phone right now, I called in on Skype, I'm using an apparatus, my headset was made by Bose. These certainly weren't made by Western Electric. Why were these firms incapable of making that adjustment to the next technology? Mike, when it comes to you, when you said Xerox was a copier company, it wasn't a computer company, so it couldn't do it--Sunil opened the discussion by saying that Amazon constantly changes what it is. What is it about industrial labs, what is it about these firms, that they are not able to take it to the next level?

Michael Hiltzik:

Let me take on that question because, by studying Xerox, I came to some conclusions about the life cycle of corporations. If you look at big businesses, it's very, very hard for a corporation to survive major changes in technology or markets. We do not have a lot of examples in which that's happened. If you look at the companies that were part of the Dow Jones Industrial Average when it started and the companies that are part of it now, there's only been one that actually survived for almost all of that period, and that was General Electric. It's no longer in the Dow because of some recent changes in its business model. IBM was better than most at accommodating and absorbing major changes in technology. But if you look at IBM now, it looks like its run out of steam.

So most companies live and die in much more limited cycles of technology and markets. Xerox was simply never going to be one of those companies because it inherited the technology that made it so many millions of dollars from outside. Chester Carlson came to Xerox when it was Haloid Corporation and brought it the copier, and then they made a mint from the copier, and were trapped by it. So its ability to move on from that was very, very limited, and I think that's what you see in almost every major company. Even the most successful ones have a limited lifespan.

Jon Gertner:

I think that, certainly, it's very hard to imagine Bell Labs or the AT&T of the 60s or 70s adapting, as they almost could not, to the Internet. The notion that it had, as some of the scientists there

had told me, that their entire model, the entire way everybody there thought, was in a monopolistic system. It wasn't that they were bad at technology. In fact, they were very good, and they weren't any less intelligent or less strategic, but they could not operate in the world as it evolved. They were stuck or trapped, as Mike had said, in a certain world in which the company itself could not evolve quickly enough. That was just impossible.

Michael Hiltzik

I would add, apropos of AT&T, and I think Jon probably knows this very well, is that AT&T's appetite for innovation, it was strong in some places but limited in others. In fact, when the Pentagon wanted to create a network that would tie together all the networks that it was funding at universities all around the country, its major blockade came from AT&T, which monopolized the phone lines and the communication system in the US, and refused to allow data to be transmitted over its lines, or at least really resisted that. As a result, the Pentagon, through Bob Taylor at ARPA, basically had to fund its own network of networks itself. This became the ARPANET, which then morphed into the NSF, the National Science Foundation. Today, we know it as the precursor to the internet. So innovators had to go around, circumvent the monopolists of that era, and find their own ways of doing things.

Jon Gertner:

And I think that, at that point, Bell Labs and AT&T had shifted from, or I don't even know if they had shifted, but certainly the mindset was one not of adaptation or getting in front of a new technology, but of paranoia or of self-defense. I think that's indicative of that kind of big company thought.

Larry Bernstein:

The theory of why the industrial lab would dominate against the entrepreneurial innovator was that you had this group of brilliant, basic scientists in physics, chemistry, you had some of the leading engineers all in the next room. And when they faced a very difficult problem, all they had to do was walk down the hall, explain the situation to another genius, and they could come up with the answer.

My question is twofold. One, you said that during the Great Depression, there was an excess of talent. But today, talent is costly, and I can't imagine that, if we had geniuses at Caltech or MIT, that they want to work for the phone company. They would go to, as you said, the West Coast to work at some venture sponsored firm, where they could probably make millions of dollars. And so, there was also a cost of bureaucracy. Going through the Kodak example, it's difficult to run a digital world in a company that's analog-based. There was also a concern that there was available capital to follow these dreams. Today, capital is very readily available, and it's not clear that GE or AT&T would be the best allocators of capital to these sorts of problems.

Michael Hiltzik:

I think the idea that, in some golden age, geniuses would walk down the hall and collaborate with one another, it's possible to overstate that. At PARC, which is often held up as one of the models, along with Bell Labs, of this collaborative, innovative spirit, there were two major labs working on computer science. One was the systems science lab, and the other was the computer science lab. They were two fiefdoms that, more often than not, were at each other's throats.

I remember asking Severin Orenstein, who was one of the system science lab members, who had also played an important role in developing the Internet in its earliest stage, I asked him about that. Very soon after they set up these separate labs, one was under Bob Taylor, who was the guy from ARPA, brought into Xerox, and another was under Bert Sutherland, who was a brilliant systems computer scientist. He said, "It was very soon that it began to be an us-versus-them." He chuckled, and he said, "I thought, 'This is how wars start.'"

And maybe that sort of competition actually did aid innovation, because they were competing with each other, but they weren't always collaborating with each other. But you're also right, Larry, when you talk about how the center of funding for this sort of work is no longer at the corporate level, because corporations can't get funding for this through their boards of directors. The boards want, "What are you doing that will help us bring out the next product in our business model." It's coming from innovative entrepreneurs themselves, as you alluded to a little bit earlier, and they're accessing venture capital, and they're building their own companies.

C. Bradley Thompson:

This is Brad Thompson, and I have a question for Jon and Mike. I'm wondering if you can identify, either at Bell, or at Xerox, specific decisions by specific people that were bad decisions that hurt the company in some fundamental way.

Michael Hiltzik:

At Xerox, I'm not sure you could really do that. There's certainly, in terms of the development of PARC, there were points at which some of the PARC scientists and engineers went to headquarters and said, "Look, we have this thing. Would you like to bring it out?" And they just faced a corporate bureaucracy. They weren't being refused, but they were being ignored and neglected.

Now, there were points at which people had to step in to save PARC. There was one particular moment when there the board of Xerox was inclined to defund PARC because it hadn't done anything in five years. John Bardeen, who was then on the Xerox board, personally stood in for

PARC, stood in front of the hang man and said, "Don't you dare. You can't do that. This may be your future, so hang in there."

So there were moments at which PARC was really on the skids, and then it wasn't until the 80s, when new management came into Xerox and said, "PARC now has to be much more integrated into our business plan and our business model." That started a whole avalanche of changes at PARC.

Larry Bernstein:

Let me ask the question that Brad just asked in a different way, but it's basically inherently the same question. Mike, when you tell the story about the guys at PARC telling management in Connecticut, that this is the greatest thing ever, they give them a yawn. They don't understand the product, they have no idea how to market, they don't understand it. You contrast that with, Steve Jobs shows up with a couple of other guys, and these guys are just savoring at the insights of this group, and recognize the opportunity available in products to radically change the way we live our lives.

So the executives and how we manage it play a critical role in the success of these products. Xerox didn't have it. It's not enough to have an industrial lab. You also have to have Bill Gates or Steve Jobs or Jeff Bezos, who can then take it and understand what the customer wants. As you said, Mike, when they offered a quarter-of-a-million-dollar computer that had great graphics but was incredibly slow and couldn't run VisiCalc, it's garbage. It doesn't have a commercial product.

Michael Hiltzik:

There are a couple of points you made that I think are really ironic. Number one is, the reason that Steve Jobs got entree into PARC to see what they were doing was because Xerox was an investor in Apple before the IPO. Xerox had a venture arm, and when they came to Steve Jobs and said, "We want to put some money in your company," Jobs said, "Yeah, you're welcome to do that, but there's a lot of competition to fund us. We will let you in if you let me into PARC." So he got his demo, he brought his team, and they saw things that, in many cases, they were already working on. But they got the confidence, by seeing that PARC had implemented these things, to go on and say, "It can be done, and we will do it, maybe not in the same way."

Now, when you mentioned VisiCalc, there's a very interesting story about VisiCalc. As your listeners may know, it was a spreadsheet program. It was the first spreadsheet program, and it was one of the keys to the success of the Macintosh, because it came bundled with the Macintosh. It was great for business because business could do budgets, they could do what-if tests, etc. I asked one of the original PARC geniuses, "How come you never did a spreadsheet?"

How come you didn't invent VisiCalc?" And they said, "Well, we never had to do a budget. We never needed anything like this, so it never occurred to us to do that." But what they did want to do was graphics and new inputs, and that's what they excelled at.

Larry Bernstein:

I have a question for Sunil Gupta. Sunil, when you hear the story about these industrial labs and their inability to take products to market, how would you teach this at the Harvard Business School, of challenges to existing corporations to use basic and applied research?

Sunil Gupta:

I think this goes back to what one of my former colleague, Clay Christensen, wrote about the innovator's dilemma. I think this is what Mike and Jon talked about, which is large corporations, like Xerox, have an existing business, which is a multi-billion dollar business, and it's very hard to self-cannibalize with a new technology. For a new company, new entrepreneurial company, like Steve Jobs with Apple at that point in time, a \$20-million or a \$50-million, \$100-million business was a huge upside, whereas, for Xerox, that cuts into a billion-dollar business. So that's the tip, very classic innovator's dilemma that Clay Christensen showed in multiple industries.

That's why it's very hard for large, established companies to create these industrial labs, because innovation is both invention and commercialization. So they can invent, but they can't commercialize. But I have a question for Jon, specifically, which is, when he talks about the demise of industrial labs. What's your view on Google X, which is trying to be the new Bell Labs, with Moonshot Factory, as they call it? Is it doomed to be a failure?

Jon Gertner:

Early on, I went to visit Google X. I spent some time out there and talked to those folks. As you may know, they're looking at a larger or longer time frame for commercialization. They're looking at 10 years for a time frame, as opposed to, say, two, three, four years at tops. So they're giving themselves more time. I don't know. I think the jury is out. I think that what we've seen so far, it's hard to know if it's actually going to score big. From the start, Google X has said if they have one massive breakthrough that would be great if they have two that will be terrific. So I think we're still sitting and waiting.

One thing that I always point out is that Google itself, or Alphabet now, has enjoyed a spectacularly profitable run. So there's very little pressure, I think, on funding Google X at the moment. Had the parent company faced some serious pressure, I think things would be different. But as for now, I wouldn't make a prediction on failure. They certainly have a lot of interesting ideas, I'm just not sure how they'll be able to commercialize it.

Larry Bernstein:

Sunil, what did you think of Jon's comment about the benefit of monopoly to create innovation and taking near-term profit incentives out to allow for more long-term basic research? If you think about it from a public policy perspective, would you say that maybe we should allow firms to have some excess profits to do this, or would you push this basic research out of the corporation altogether and subsidize it, the way we are currently doing a lot of it, through our university system?

Sunil Gupta:

I think it's probably a provocative idea, because monopolies have the option, because they are not under serious threat from the competition, so they can deploy their resources for long-term innovations. But, at the same time, they can coast along without innovation and return the money to the shareholders. There's increasing pressure from the shareholders to return the money.

Comcast had a monopoly for a long time on the cable in certain parts of the country, and they did not invent until there was pressure from other players. So I'm not quite sure. It's almost like having a benevolent dictator. A dictatorship could be good if you have the right person on board, but it could be terrible if you don't. It may have worked out in the case of AT&T, because you had the right incentive at the top management levels, but I'm not quite sure monopoly will always lead to great innovation.

Jon Gertner:

Yeah, I'd agree with that. I think they had a very unique situation, both in terms of management and mandate. I think that's right.

Larry Bernstein:

Jon, when you think about the future of industrial labs and innovation, whether it be the entrepreneur innovator or large industrial labs making applied and basic research improvements, when we come back 25 years from now, where do you think the industrial lab will be? Will it have a new renaissance, or do you think that its greatest days are behind us, back in the 1930 to 1970 period for AT&T's Bell Labs?

Jon Gertner:

I tend to think the great days are behind us, and I don't say that as a tragedy. I think the system we have in terms of knowledge creation and innovation works very well in a lot of respects. I think we can see significant gaps, specifically, in the energy industry, where I think we have questions and problems of policy and deployment, where we obviously have these incumbency issues. I think that's incredibly problematic, especially to someone like me. I think a lot about climate change and how to accelerate things, and I think we're seeing movement in that sphere, certainly with policy now on the federal level.

I would just say that, in terms of more funding for basic research, I think we're probably going to see that in the next couple of years. But I think, really, those questions are not about "Can we have a renaissance of industrial labs," but, "Can we solve some of the big problems that we're facing," whether they be the next pandemic, or whether they be climate change and cleaner energy system, through development and deployment, especially deployment. I don't think that's an industrial-lab-type question.

Michael Hiltzik:

I'd like to agree with that and augment it a bit. We've talked a bit in the last few minutes about basic research and applied research. I think Jon's made the point, and I would agree, that it's going to be harder and harder for industrial labs even to deal with applied research and fund it, especially if it's open-ended application. I think the real crisis confronting us in innovation is in basic research. Industrial labs are just not going to be equipped or funded to engage in basic research in most places. The problem we have is that government has also been withdrawing from the funding of basic research, and this has been going on for many years. It really intensified under Trump, which just eviscerated the funding for basic research at all sorts of agencies, EPA and elsewhere. When the government steps away from basic research and grants, university grants become harder to find. The question is where is that funding going to come from, because it's probably not going to come from industry.

Larry Bernstein:

This is the part of the show now where we end on a note of optimism. I'm going to go around to each speaker, and you'll tell us what you're optimistic about going forward. Jon Gertner, why don't I start with you?

Jon Gertner:

I'm optimistic about the vaccination trends in the US. I hope we can see that in Asia as well. That's what I think about most of all, and I'm very optimistic about the future of mRNA vaccines.

Michael Hiltzik:

I'm optimistic that the spirit of innovation is still strong in this country, and, in fact, around the world. We may not know where the funding is going to come from. We may see innovation coming from small labs or individual entrepreneurs, but clearly, there are a lot of people out there who are thinking very smartly about where technology and science should be leading us. That is something to look forward for.

Terry Williams:

That we have a change in the way in which people are killed in the United States, and that we have more of an opportunity to work toward a kind of consensus about the way that life is

being viewed in America, in particular for Black males. And so, I think the only optimism here is the belief that things will change for the better than for the worse.

C. Bradley Thompson:

I am bullish about innovation in the education sector. Over the course of the last year, there has been a rise, a dramatic rise in homeschooling, which I view as a very good thing. We are on the verge of great innovation in university, or higher education, education. I'm in conversations with a number of people who are on the verge of starting new colleges.

Sunil Gupta:

I have the privilege of meeting young, passionate people every day, and I'm really optimistic that they will be the future leaders who bring in purpose along with profit in business. So business won't be a ruthless money-making machine, but will have a heart.

Larry Bernstein:

That ends today's session, but I want to take a minute to make a plug for Next Week's show.

Sunday May 2nd Tom Dyja will join us. Tom is the author of New York, New York, New York: Four decades of success, excess and transformation. Tom studies culture and urban economics of Gotham City, and he will explain how the city will revive after COVID.

Zvi Galil is the former Dean of Computer Science at Georgia Tech, where he has started the largest online master's program in computer science. We've heard that online universities are the future, and we will learn from Zvi how he successfully implemented this for tens of thousands of students.

Todd Benson will co-host a panel on the beverage industry. We will have four speakers: Carol Reber, who runs marketing at Duckhorn wines, Carlton Fowler, who previously managed spirits innovation and brand development at Gallo Winery, David Epstein, who founded Tom's Distillery in Kansas City that makes crafted bourbons, and Mike Novy, who is the new CEO of Kendall Jenner's Tequila 818.

I would like to thank today's speakers for their insights. I would also like to thank our listeners both for their time and for engaging with these complex issues. Please stay tuned for next Sunday to find out What Happens Next.