



## Stanford eCorner

### The Price of the Decline of Innovation

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How did the floodgates of research, development, and innovation slow to a trickle, and how will the nation as a whole suffer as a result? Judy Estrin, CEO of JLABS, outlines the depletion of the resources behind engineering, technology, and science, and how these areas of study have been denied the necessary nutrients to thrive. While we can't go back and recreate the great research labs of past decades, we can close the innovation gap. Should we fail to do so, says Estrin, entrepreneurs will no longer be able to find the talent to develop new ideas - or the science-minded middle-class consumer market to buy them.



#### Transcript

So I'm going to finish up by talking about the national issues for a couple of minutes and then I'll take questions. I mentioned earlier that I believe that the national ecosystem has been in decline for several decades. And that we have come to a place where we have essentially an innovation deficit. Now, you could say why does this matter? We're in Silicon Valley. We're all entrepreneurs. We're going to go out and start companies. It does matter. It does matter because no business operates in a vacuum. And venture startups are influenced by big companies, because that has to do with where liquidity comes from. They are influenced by the capital markets.

They are influenced by policies; whether it's something like Sarbanes-Oxley or patent laws. So, we do not operate in a vacuum and the national ecosystem really does matter to the success of Silicon Valley and the entrepreneurial ecosystem in it. So if you think about where innovation has been done historically in the research community and startups, in large corporations, innovation in research started to close in in the 70s as funding for research started to decline and the way it was allocated became very almost bi-model, meaning things like physical sciences and environmental science, areas that we need so badly today, were absolutely starved in the 70s and 80s. While a lot of the funding went to IT and life sciences. Good for IT and life sciences. We needed it, but we needed it across the board. And when investing in research and basic science, you really want it to be very broad based. The other thing that happened is research funding became more risk-averse. The high risk, high return type of research that created the Internet is not as available today as it was once. Innovation and startups thrive through the 80s.

But in the 90s, as we accelerated into the bubble, again, chasing money replaced the actual innovation. So I believe we became less innovative in the bubble. And then in the crash, we all know what happened in the Valley. And then innovation in large corporations started in the 70s as everybody focused on efficiency started to back out of investing in advanced technology and research to the degree. So the results of all of this, and these are leaves, and they go from green to brown that means that they're dying, and so I assumed that everybody got that because you're all Stanford students. So we were going yellow to begin with when we hit 2000, 2001. And the combination of the bursting of the bubble; corporate scandals, 9/11, and actually how the country responded to those problems. It wasn't just that we had the problems. But it was the response to them that turned all of these brown. And what do I mean by that? Well, after 9/11 and the corporate scandals, there were a lot of

knee-jerk reactions in terms of regulation.

One of them, for example, is Sarbanes-Oxley. But also, we didn't take advantage of the threats to really rally the nation. And if you go back to the 50s and 60s and look at the reaction of national leaders to the Cold War, to Sputnik, the reaction to those threats were to rally the nation and invest in broad-based science, work with industry to really encourage a lot of innovation. After 9/11, the reaction was to acknowledge the threat but to tell everybody to keep shopping. And that is a very different type of leadership style. I'll come back to this again in a minute. So, I have question marks in 2010. There is no way we can be green by 2010. But my hope is that we're going to be back yellow. So what does it take to be going back in the right direction? First we have to acknowledge that there are a lot of things that are changed.

We can't go back to the 50s and 60s and recreate Bell Lab and Xerox Park. There's just a lot of things that are different today. Now, some of those changes, we need to embrace. We need to embrace globalization. It's not us versus them. Innovation is not a zero-sum game. People ask me what the title of my book means. What does the gap mean? It's not the gap between us and other countries. It's the gap between where we are and where we were. And where we are and where we should be; where our potential is as a country.

So we need to accept and embrace globalization. If the whole world is innovative, that is what we want. What we don't want is for the whole world to be innovative and for us to be in decline. That's not a good situation. There's an accelerated pace of everything. Of business, of the way the world works. But that should not be used as an excuse not to stop, think and analyze. You have to stop, think, and analyze more quickly, but the accelerated phase is not an excuse to just have knee-jerk reactions to things and come up with short term solutions. Obviously, the Internet and the web has changed our lives. The problems we faced are much more complex and interdisciplinary in nature and we need to embrace that in our education systems, in the way we build teams and companies, in the way we do research.

And then there are some changes that we need to figure out how to solve, how to combat. One of them is we have a lab gap. You can do a lot of really interesting research in the university environment, in academia. But there is a gap between taking those technologies and proving whether or not they scale. And this gap has been hidden somewhat because in the software industry, it doesn't matter. If you're Google, you can go from academia directly to a venture finance company. But if you're in life sciences or if you're working on alternative energies, or semi-conductor technologies, there's a gap in the middle. The things that Bell Labs or Xerox Park or IBM Research used to play a role in terms of proving out that technology, we actually don't have a solution for it today. And we have to figure out how we're going to do that if we're going to solve some of the problems in these other fields. The vanishing middle class in this country, let me just say that the common wisdom has been you are either pro-business or you are a populist; and that those are two very different things and at odds with each other.

The fact of the matter is if you think long term and not short term, the needs of business and the needs of a healthy middle class are actually the same, because without a thriving middle class in this country, we won't talent and we won't consumers for our products. And this has been hidden for the last five years, ten years because so many large businesses have grown internationally because the middle classes have been growing in China, in India, in Russia; everything that has created globalization. But the fact of the matter is our middle class has been going the other way and we need a healthy middle class in this country to make sure that we have the consumers and the talent that we need. The short-sightedness that I talked, I believe, that we have to combat is not easy to do. And then the other thing that has happened over the last, certainly, eight years is an anti-science focus in the country; an increasing decline for respect for science and respect for scientific evidence in terms of making decisions.