

The New Global Context for Technology Innovation And Your Part in It

Ladies and Gentlemen: Good evening [or afternoon]! It's both a pleasure and a privilege for me to address you tonight [or today] in what I know is a very FINE place. I was reading somewhere that there are more than forty THOUSAND illegal offenses in Singapore, many of which carry some very large FINES. Is that true? [Pause briefly, with a smile.] I hope that giving a boring speech is not among the list of punishable offenses. The thought of that made me so nervous, while putting my thoughts down on paper, on my flight over, that I began to have visions of Michael Fay. [Pause.]

I also understand that Singapore is known as "The LION City." At first, I wasn't sure why. I think there used to be tigers in Singapore about a hundred years ago — and there is certainly a lot of tiger BALM here in Singapore today — but lions are said to be only found in Africa. After learning a little bit about you, though, the illustrious members of this audience, I now have a better understanding: There are in fact many lions before me in the audience tonight.

I know you're all very busy — you lions of industry — building vast fortunes and empires, as you make giant contributions to commerce, technology and culture. So I want to limit my remarks to three basic points: First, Silicon Valley's "secrets" for maintaining its edge in innovation for the past few decades . . . second, why YOU here may have the edge in the future . . . and third, why this means that Stanford needs your support, now more than ever, at this critical point in world development.

I think the main reason behind Silicon Valley's success has been the infrastructure that supports innovation and risk taking. It is not just the entrepreneurs who have skin in the game. Every step of the way, there are people willing to help, in exchange for an equity share of an interesting start-up. Attorneys and accountants, for example, tend not to charge for services until a company is funded. Attorneys often serve as the founder's personal advisor. They are deal brokers, advising not only on legal matters but also helping with fund-raising and providing important introductions, often just in the nick of time.

Even landlords often prefer an equity share over cash rent — and for this reason, the tenant's prospectus or business plan can be much more important than its credit rating!

I think the entrepreneurial spirit of the Valley is best exemplified by the man most closely associated with the founding of Silicon Valley, Professor Frederick Terman, the Electrical Engineering department Chair and later Dean and Provost of Stanford, from the '30s to the '60s. Professor Terman took advantage of his connections with the military and brought substantial government funding to the West coast for the first time, after the war. He systematically created an environment that attracted the best people to Stanford. He recruited Shockley from Bell Labs and brought 11 engineers from Radio Research Lab, where had had served as the director during the war, to join the faculty at Stanford. He took steps to unite Stanford's interests with those of private companies. He encouraged his graduate students to start companies, the foremost examples of which are probably William Hewlett and David Packard. Terman created Stanford Industrial Park and brought in companies such as HP, GE, Varian, Lockheed and Kodak, making the mid-Peninsula the hotbed of innovation that eventually became known as Silicon Valley.

I think another major factor that has kept Silicon Valley on top during the past five decades has been the notion that "failure is OK." Failure is OK, because it's understood that a certain amount of failure

is a necessary precursor to success. Almost everywhere else in the world, failure is not so easily forgiven or forgotten. In Silicon Valley, where there is less of an onus attached to failure, people have been more willing to take risks . . . and it is this type of risk-taking that creates an atmosphere conducive to success. In this way, those with the courage to try can “follow their bliss” and give it their best shot. I myself am clearly a beneficiary of this supportive environment and am grateful to all of those who helped make my success possible.

We are here today because we are all related to Stanford in one way or another. Many of the most successful Stanford alum hail from the Asia Pacific region. The past three decades have witnessed tremendous progress and growth here, much of this being a direct contribution made by you, Stanford alumni. The Asia Pacific area now represents one of the best environments for innovation in the world, a function of several key factors.

Just as Silicon Valley’s enduring success has relied heavily on the infrastructure that makes starting up companies as painless as possible, the Asia Pacific region, in its own way, has created the most efficient infrastructure for complex machinery, fast prototyping and supply chain management — a key ingredient in fostering innovation. So far this infrastructure has benefited young companies around the world as they compete against their larger and more established competitors. But I believe that this advantage could also be used to provide local companies with an edge over their counterparts overseas.

[NOTE: The data points in the paragraph that follows have been updated since the time of the speech.] The second key factor is human resources. Asians have traditionally valued education more than those in any other region in the world, a legacy of the Confucian heritage. China is now the world’s largest producer of scientific knowledge, having overtaken the U.S. in 2020, as many had predicted. China’s Gross Expenditure on R&D now ranks second in the world, trailing only the U.S. And China’s recent year-to-year Gross Expenditure on R&D has been DOUBLE that of the U.S. The fact that China is typically discussed in terms of its consumer market obscures its position in recent years as an emerging scientific powerhouse.

This should be a good thing for both Asia and the entire world. Why? Because a scientific emphasis is conducive to rational behavior . . . and it’s in everyone’s best interests that China behave rationally. Even more importantly, perhaps, China is not conducting its research behind closed doors. On the contrary, the level of international collaboration is rising. A significant percentage of publications originating from Chinese institutions have at least one US-based co-author. China's expanding regional collaborations show that Asia-Pacific nations no longer rely exclusively on links to the European and American institutions that have traditionally led the scientific world. This rich pool of knowledge and human resources will undoubtedly continue to be key to innovation for the region.

The third factor relating to the region’s conduciveness for innovation is highly Asian. Recent years have witnessed the explosion of social networks and their increasing influence on people’s daily lives. One has to admit that Asia has a lot of people! For this reason, Asians have a strong understanding and appreciation of human interaction, in both positive and negative ways. The U.S. has so far provided the technologies and the stage for social networks. It has been in Asia, however, that these technologies really shine, and have made the deepest inroads into everyone’s lives. Asian companies have been, since early on, the leaders in gaming and software for virtual worlds.

If we consider the possibilities of a future as represented by the movie Matrix, we come to realize that it is a very Asian idea that all thoughts are but illusions — the same way that in Buddhism the self is

purely an idea, a mental construct — the Asia Pacific region will lead the world through the uncharted territory where realization of expression and creativity is limited only by imagination . . . for the first time in the human history, no longer constrained by the laws of physics. What could be more exciting?

These thoughts on Silicon Valley’s “secrets” for maintaining its edge in innovation for the past few decades — and why YOU may have the edge in the future — lead us naturally to the conclusion that Stanford needs your support, now more than ever, at this critical point in human history.

For even if the locus of innovation and entrepreneurship in a scientific context shifts from the U.S. to Asia, the world will need an institution like Stanford, to creatively serve the function of facilitator and interlocutor, to educate and inspire the leaders of the future, as it brings together disparate cultures and regions. And it is through the support of people like you, the LIONS of the blossoming Asia Pacific region, from your vantage point in Singapore, that this grand vision will become a reality. If that appeal is not direct enough, let me put it another way: [Pause] You are important and . . . WE . . . NEED . . . YOUR . . . HELP! [Pause.]

With all this in mind, I pass the baton to my very able colleague, Professor [name redacted].