

FIRST OF A TWO-PART SERIES

## Part I: How globalization strengthens the tech economy

By Scott Duke Harris  
Mercury News

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### Vote

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- Do you agree that the valley's leadership in technology is enhanced by globalization?
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A popular 21st century economic maxim holds that "the world is flat" - or at least flattening.

Yet as countries, companies and individuals have begun to compete on a more level playing field, Silicon Valley's status as the world's pre-eminent tech center has been strengthened by the evolving global market, not weakened.

The same high-tech tools that radically diminished the significance of location and distance have, ironically, enhanced the valley's position as a test lab and marketplace for innovation and industry, say many executives, entrepreneurs, economists and scholars.

Just a few years after a tech crash wiped out 200,000 jobs in the valley, the region is riding high on a global market it helped create. The rise of tech hubs in China, India, Israel and elsewhere has

reinforced the valley's leadership, not threatened it.

Consider the evidence:

- **Homegrown giants are thriving.** Revenues to valley icons such as Hewlett-Packard and Cisco Systems are soaring from the expansion of global markets. HP's non-U.S. revenue climbed from \$43.9 billion to \$59.5 billion from fiscal 2003 to 2006 and now comprises 67 percent of total revenue. In its most recent quarterly statement, HP highlighted how revenue from the "BRIC" countries - Brazil, Russia, India and China - had grown 37 percent compared with the same quarter in 2006. And Cisco, for its fiscal year 2007, reported 45 percent year-over-year growth in "emerging markets," a broad category that includes Russia and 129 smaller nations.

Meanwhile, the valley's software, computer chip and Internet companies are also enjoying strong growth. Google leads the way. Its market value over the past three years has soared from \$45.8 billion to \$211.7 billion.

The valley has long been home to the world's largest collection of tech companies, including 17 of 30 listed on the Amex Computer Tech Index. Many of those are racking up strong revenue, both in the United States and abroad, enabling them to invest in research and development, make acquisitions and fund start-ups.

- **The start-up culture is flourishing again.** In the third quarter of 2007, venture capitalists invested more than \$2.48 billion in more than 260 valley companies.

The numbers reflect a longstanding pattern: Venture funding to valley companies - from VCs inside and outside the region - has long dwarfed

SECOND IN A TWO-PART SERIES

## Valley's edge: Success hard to copy

By John Boudreau  
Mercury News

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- Do you agree that the valley's leadership in technology is enhanced by globalization?

**HONG KONG** - Four years ago, Chuck Cheng left Palo Alto to launch a computer chip design company in this city known more for financial acumen than tech prowess.

He was lured by the Hong Kong government's generous incentives, such as subsidized rent in a new science and technology park, and strong intellectual-property laws. Then there were dream logistics: His company is a day trip from mainland China's Pearl River Delta, the world's factory for everything from iPods to personal computers.

But for all its advantages Hong Kong, like much of the rest of the world, is Silicon Valley 1.0. The city lacks the Bay Area's secret sauce - which includes an abundance of high-end engineers, quick access to world-class universities, vast networks of tech and market visionaries, and high-rolling venture capitalists.

"When you talk with the local venture capitalists in Hong Kong and China, all they care about is making a lot of money in a short period. But how can you innovate, how can you take risks?" said Cheng, who in the end launched his 10-employee start-up, AppoTech, with \$1 million of his own money.

Nonetheless, Hong Kong and many other corners of Asia are betting billions of dollars to become incubators of innovation.

China has 56 official - and countless unofficial - technology parks, and President Hu Jintao regularly calls for "independent innovation."

In India, government and industry leaders sponsor start-up incubators and lure venture capitalists in hopes of spawning the next generation of entrepreneurial inventors to lead the country beyond its role as back-end outsourcer.

Malaysia, the Philippines, Vietnam and Indonesia also seek tech riches. Meanwhile, Taiwan, the island of 23 million that many other regions look to for high-tech inspiration, is struggling to move up the tech food chain. Now a silent contract partner that turns the innovation of others into products lining the shelves of Best Buy, it wants to be an original creator of products and services.

But so far no other region rivals Silicon Valley. Though some experts say that day may come, Asia's emerging tech centers face a broad range of challenges.

### Shortcomings: Seen as imitators, not innovators

China and India, for instance, are burdened with hundreds of millions of impoverished citizens whose needs divert from efforts to develop tech hubs. Nandan Nilekani, the co-chairman of Infosys Technologies, one of India's premier

outsourcing companies, has worried openly that a slip in the country's economic growth could trigger social unrest.

Countries like Vietnam lack world-class universities. And though Taiwanese companies collectively receive a slew of U.S. patents every year, they have failed to convert their mental muscle into market-leading technology.

"What new innovations are coming out of India? What new innovations are coming out of China?" asked Bill Barney, chief executive of Hong Kong-based Asia Netcom, whose deep-sea fiber-optic cable network serves companies throughout Asia and in Silicon Valley.

One roadblock, Barney and others say, is that Asian societies tend to embrace strong corporate hierarchy and workers don't voice opinions.

"In Silicon Valley, you can chit-chat and share your views with your boss," said Alfred Kwok, a long-time Silicon Valley entrepreneur in the semiconductor industry who splits his time between San Jose and Suzhou, China. "In Asia, this is considered bad protocol."

While educational systems across Asia turn out smart, disciplined workers, industry experts say they don't promote creative thinking. Learning through memorization may have some benefits, but it can discourage innovative and imaginative thinking.

The economies of Japan and South Korea are overwhelmingly dominated by corporations and banks - conservative institutions that aren't as likely to take leaps of technological faith the way more nimble start-ups and VCs are, observed Johnsee Lee, president of the Industrial Technology Research Institute, or ITRI, a government-backed

non-profit that helped give birth to Taiwan's tech industry more than three decades ago. Many of the new companies in South Korea are spun off of large and traditional companies, he added.

Japan has innovated in the auto and electronics industries, but experts say it has struggled to change its mass-production business mentality. Unlike the valley, where workers spur innovation by jumping between companies, engineers in Japan are less likely to leave.

Some other Asian countries also tend to be imitators rather than innovators.

China's prospering coastal cities have impressive new skylines and numerous technology parks. "But they are still at a stage of doing a lot of copying and process innovation," observed Bill Miller, co-director of the Stanford Program on Regions of Innovation and Entrepreneurship.

Chinese Internet entrepreneurs joke that their companies are based on the "C-to-C model" - Copy to China from Silicon Valley. The country's Internet market is crowded with Facebook, YouTube and LinkedIn knockoffs. Baidu.com, a Beijing-based Internet search and portal company, has not only successfully deployed Google's business model to the Chinese market, but also has launched its version of MySpace, dubbed Baidu Space.

A copycat culture reaches to the highest perches of academia in China. In 2006, a government investigation revealed that a professor at Shanghai's Jiaotong University who declared he had created the first Chinese microchip had in fact inscribed his company's logo on chips made by an affiliate of Motorola.

"Intellectual property as a concept is only 30 or 40 years old in China," said Suzhou-based Kwok. He is

a founding member of the Savantas Policy Institute, a non-profit organization focused on Hong Kong's efforts to transform itself into a tech hub. While he believes the city is well-positioned to create a tech sector, Kwok does not think Hong Kong, or any other region, can replicate the valley's ecosystem any time soon.

### **'Decades away': Traffic backups, backup generators**

Some of the newer tech hubs lack basic infrastructure.

India's tech economy has advanced beyond call centers and simple software outsourcing, but software mecca Bangalore has epic traffic jams, and electrical power is so unreliable that companies must install their own backup generators.

"It's a couple of decades away from really being a country in which people feel comfortable saying, 'I'm going to drive all of my R&D out of India,'" said Matt Burlage, co-founder and chief executive of IRG Limited, a Hong Kong-based telecom media technology advisory and investment management firm.

But even if infrastructure problems were solved, top-flight experienced engineers can be scarce in many regions outside the United States.

Researchers at the Pratt School of Engineering of Duke University have concluded that Asia's assumed advantage in engineering graduates - often cited as 12 times more than those of the United States - is overstated. The 2005 report found that only a small number of universities in China and India can churn out engineers on par with those in the United States.

"In India, they are putting out a lot of tech and

engineering graduates," Burlage said. "But if you need workers with project management skills or more than basic engineering skills, that pool shrinks very, very rapidly."

Serial entrepreneur Wu-Fu Chen shakes his head every time he sees yet another gleaming tech park being erected in Asia in pursuit of creating a start-up culture.

"They are building nice buildings, but that's the least important part," said Chen, a Los Altos Hills resident and successful tech entrepreneur who spends half the year in Taipei as chairman of iD Innovation, an early-stage venture capital firm. "You need experienced entrepreneurs, but China doesn't have experienced entrepreneurs."

Chen believes Hong Kong, China and other regions should develop tech niches anchored to their strengths.

"People think of Silicon Valley as a target, but I don't think anyone can replicate it," Chen said.

But Manuel Costa, chief operations officer of the Hong Kong Applied Science and Technology Institute and a former AT&T executive, does not take it as a given that Silicon Valley will remain at the top.

The sheer size of markets in China and India will create fertile ground for new technology, he said. "Their internal markets will be bigger by a factor of two than the U.S. and European markets combined," Costa said.

A decade ago, the Chinese treated AT&T engineers working in Shanghai and Beijing like celebrities. "They were viewed as gods of telecommunications," he recalled. "Now, the Chinese professors and Ph.D. students are no longer in awe of American technology. They are as good as the Americans. The

question is: When will they be able to transfer their tech ideas into intellectual property and next-generation devices? They will become a powerhouse, no doubt."

Over the past 10 years, China has seen an eightfold jump in unique academic inventions, according to research firm Thomson Scientific. In 2006, the Japanese led the United States in the number of innovation patents filed in Japan, America and in Europe.

Likewise, India is experiencing dramatic uptick in research and development investment as multinational companies increasingly tap young engineers in the South Asian country to do more high-level research and innovation. Valley software start-ups now co-invent around the globe, as engineers in the Bay Area work with teams in Bangalore and other Indian cities.

Already, Nokia and Microsoft rely on China for critical innovation for its products. Huawei Technologies, once just another Chinese me-too company, is now a leading maker of switching equipment for telecommunications and the Internet. And many observers believe India's increasing software sophistication could lead to global companies some day.

#### **Changing cultures: New ideas from Japan**

The conservative business cultures in Japan and South Korea also are changing, according to the Stanford Program on Regions of Innovation and Entrepreneurship. Japan is becoming a cultural innovator through fashion, architecture and pop music.

"People have their heads in the sand if they say Silicon Valley and the U.S. will always be the defining architecture and no other place can touch

us," said Marguerite Gong Hancock, associate director of the Stanford University program.

Successful transplants to the valley from Asia are spreading the tech start-up culture across the Pacific Ocean. And Asian educators are starting to promote creative thinking.

"The question you need to ask is: Why do these people become so productive when they come to the U.S.?" said Vivek Wadhwa, executive in residence at Duke University's Pratt School of Engineering, who researches the role of immigrants in America's economy. "The answer is the fertile environment the U.S. provides for ideas and innovation. Failure is accepted and risk is encouraged."

Even after returning to Hong Kong to launch his start-up, AppoTech, Cheng maintains close links with the Bay Area.

"It's just like with the Olympic Games. The holy fire comes from Greece," said Cheng, who spent 15 years in the valley as an entrepreneur and executive at companies such as National Semiconductor and Sun Microsystems. "It's the same with Silicon Valley. Silicon Valley is like Olympia. It's where the holy fire is, and we always have to go back to it."

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the amounts in other regions, including many large, developed nations.

The valley remains vital to the Web's continuing evolution. In less than two years, YouTube went from an idea to a \$1.65 billion acquisition by Google. Within the bustling social-networking sector, Facebook, LinkedIn and Ning, as well as "virtual worlds" Second Life and Gaia, are headquartered between San Jose and San Francisco.

Social networking

Global audiences,

Bay Area offices

Even several sites that target audiences elsewhere are based in the valley or close by. Bebo - the top social-networking site for the United Kingdom, Ireland, Australia and New Zealand - is headquartered in San Francisco. The top sites for the Philippines (Friendster), Brazil (Google's Orkut) and Turkey (Yoonja) primarily operate from the Peninsula, thousands of miles from their users. Facebook recently disclosed that 60 percent of its users were outside the United States.

• **The valley's magnetism remains strong.**

Multinationals like Nokia and Microsoft have expanded their presence here, and many overseas start-ups are moving operations to the valley to be closer to potential investors, partners, ideas and customers. Recent arrivals include major law firms with global reach, such as DLA Piper, eager to partake in international deal-making.

The city of San Jose's U.S. Market Access Center, designed to help foreign firms do business in the valley, now has about 35 firms as tenants and 100 percent occupancy, up from about 30 percent in spring 2006, its director says.

• **The valley is bullishly diversifying and expanding its influence.** Adapting to the Internet, Apple dropped "Computer" from its name to reflect how it has branched into iPods, iTunes and iPhones. Hardware stalwarts Applied Materials and Cypress Semiconductor, meanwhile, have moved into solar technology, angling for a piece of the huge global energy market.

While the valley may be best known for its computer industry, it also has become a center for biotech, medical devices, nanotech and especially "clean tech" - a sector covering energy generation, storage and efficiencies, as well as water purification and air pollution.

Valley executives predict a tenfold increase in solar power jobs locally over the next decade.

For veteran valley technologists, the most recent waves of innovation and entrepreneurial action fit a pattern. Since the 1950s, the valley economy has ridden a succession of powerful waves: semiconductors, software, personal computers, networking, the Internet.

"That's just the way the valley works," said Doug Henton, president of Mountain View-based Collaborative Economics.

Melting pot

Ideas, investments

shared in valley

In an age of converging technologies, Silicon Valley - a nickname coined in the early 1970s from the silica used in semiconductors - is at the vortex. It's a technocratic melting pot where ideas are sparked, shared, blended and refined; where bootstrapping and angel investing may ultimately

lead to multibillion-dollar companies; and where personal relationships are forged that lead to payoffs years down the road.

"Proximity matters," explained Marguerite Gong Hancock of the Stanford Project on Regions of Innovation and Entrepreneurship. For all the business handled via the Internet phone system Skype and teleconferencing, "the highest value-add is face-to-face," she said. "When you're doing your ultimate negotiation, it's face-to-face and unscripted."

Even the most sophisticated video-conferencing tools, such as HP's Halo or Cisco's TelePresence, can only approximate eye contact, much less a handshake.

The existing bedrock of older tech companies, collaborations with research universities, venture funding and supportive legal institutions all contribute to the valley's success. Another critical ingredient, many agree, is the valley's bold, risk-taking culture, including a high tolerance for failure.

"Intellectual audacity" characterized by open dialogue and collaboration is a valley hallmark, said Georges Nahon, chief executive of Orange Labs San Francisco, a 75-employee research outpost of France's equivalent to AT&T.

"People don't think about the guy on the other side of the restaurant as a competitor. It's always a potential partner," Nahon said. For those and other reasons, he added, the valley is "evolving in a way that is not predictable."

A few years ago, Nahon said, few people would have predicted how concerns over climate change would prompt such a dramatic jump in clean-tech investment. Similarly, few would have foreseen

presidential candidates taking voter questions via YouTube, or Apple selling 1.4 million iPhones. Few would have anticipated how VMware would go from a niche software company to an industry leader.

Bestselling book

Writer Friedman

popularized idea

The notion that globalization was leveling the peaks and valleys of the world's economy was popularized in the 2005 bestseller "The World Is Flat" by New York Times columnist Thomas Friedman. Inspired by a visit to Bangalore tech companies like Infosys and Wipro, Friedman described how the collapse of the Soviet Union, the advance of freer markets and new communication technologies had fundamentally altered the global economy.

Friedman's metaphor is a source of debate. While tech-driven globalization is credited for raising the standard of living for millions of people in disparate regions, critics say it also has left many regions behind and has widened the gap between rich and poor. Even in Silicon Valley, residents understand how the buying power of tech millionaires contributes to high real estate costs, making it harder for low-income families to make ends meet.

But few question that technology has profoundly reordered the world's economy and prompted a reconsideration of 20th century notions about us-vs.-them rivalries between nations. In a new era of capitalist collaboration, observers such as Cisco Chief Executive John Chambers and University of California-Berkeley scholar AnnaLee Saxenian say emerging tech hubs are more partners than rivals. One tangible measure is the rise of cross-border

co-patenting: The valley has participated in a sixfold increase in such filings from 1993 to 2005.

Globalization in the second half of the 20th century was mostly driven by large multinational corporations, including HP and Intel, notes Saxenian, dean of the UC-Berkeley's School of Information.

But now, Saxenian says in her book "The New Argonauts," globalization is increasingly influenced by foreign technologists who came to the valley as students or engineers and returned home to start companies.

The Plug and Play Tech Center in Sunnyvale caters to that need to be here. An international array of flags hang in the lobby of this unusual incubator, founded in January 2006 in handsome quarters that became available after the Danish electronics giant Philips Electronics decided to sell its semiconductor business. Its cubicles are a hive of more than 100 business entities, ranging from field offices to headquarters.

Every cubicle tells a story: Peerant's CEO commutes between Silicon Valley and Mexico City. The Dutch company STS Wireless and the Swedish Internet security firm YuBico both moved their chief technology officers to Plug and Play.

A search start-up called Ketady - French slang for "what did you say?" - is comprised of founder Fabien Degaugue and two colleagues back home in Lille, France. Ketady's aim is to allow users to anonymously ask questions of experts who happen to be online at a given moment. Ketady, Degaugue says with a grin, would be an ideal acquisition for Google.

One large cubicle is the home of Zephyr, a software testing start-up. Zephyr was founded by Samir Shah,

a native of India who has worked in valley since the early 1990s. His hometown happens to be Bangalore, the tech hub that inspired Friedman's "flat world" epiphany.

Differing goals

Start-up culture

unique in valley

A closer look, Shah said, would reveal that most techies in India aspire to the security and steady pay offered by big companies. But the dream in the valley, he said, is to guide a start-up to glory in a job with long hours, modest pay and stock options that might lead to riches.

"The cool thing is to work for a start-up," he said.

The founder of Plug and Play agrees. Saeed Amidi came to the United States from Iran at age 14, and prospered in Persian rugs and real estate before succeeding as a technology investor. Amidi said his travels had taken him to 40 countries, and the "flattening" effects are obvious.

"But I think for start-ups," Amidi said, "the beginning and end of the world is here."

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