



Transfer of University Innovation to Industry: Paths and Pitfalls

Silicon Valley Goes Global

Stanford guidelines and policies in the global innovation economy

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Abstract

Founded in 1891, Stanford University is a private research and teaching university modeled after Cambridge and Oxford but with a strong element of basic and applied research.

The success of Silicon Valley arose out of the culture created by Hewlett Packard more than 60 years ago. Today, the Silicon Valley economic model has been adapted and is going global. The Stanford - Silicon Valley interactions have evolved over the past 20 years. This talk explores the guidelines developed two decades ago at Stanford to manage conflicts at the interface.

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SPIE Innovation Summit
San Francisco Airport Marriot Hotel



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The Future



From Berkeley to Silicon Valley to Stanford

Completed studies in physics at the University of California, Berkeley - 1964
Took position at Start-up Company in Mountain View, CA

Spectra Physics - employee at first Laser company	1964
Stanford University - PhD in Applied Physics	1969

Chromatix	Start-Up company	1969
Assistant Professor at Stanford		

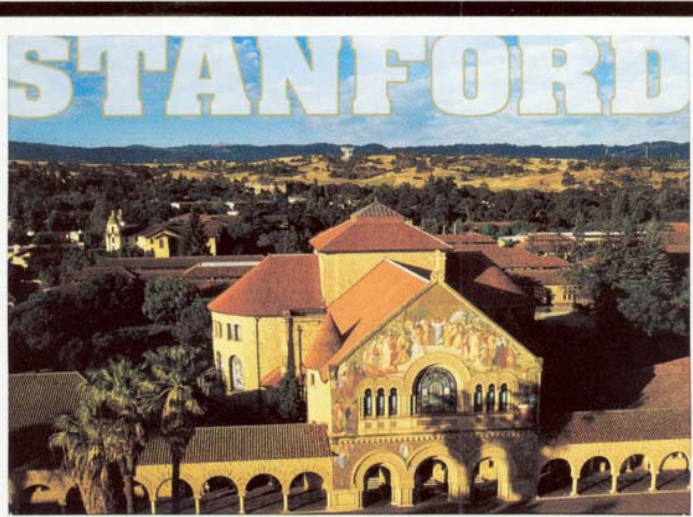
Quanta-Ray Inc	Co-founder	1974
Lightwave Electronics	Co-founder	1984
Dean of Research Stanford		1987
Return to teaching and research		1992
Mobius Photonics		2005

Contribute to Professional Societies and to Science and Technology
Policy in California - Chair, *California Council on Science and Technology*

*An academic career can be combined with outside entrepreneurial
and service activities if conflict of commitment and interest issues
are properly managed.*



The Spirit of Stanford University



Founded in 1891, at first Stanford emphasized a **"practical education"** to assist industry to build the economy of the West. Stanford was open to both men and women.

"Of all the young men come to me with letters of recommendation, the most helpless are college young men." Senator Leland Stanford.

Later, Stanford modified his stance on a "practical" education and observed that

"a man will never construct anything that he cannot conceive."

and extended the curriculum to include liberal arts.

Stanford - a Private Research University

The University was viewed as an organization of "Technical Scholars" by Terman who promoted interactions and connections with industry

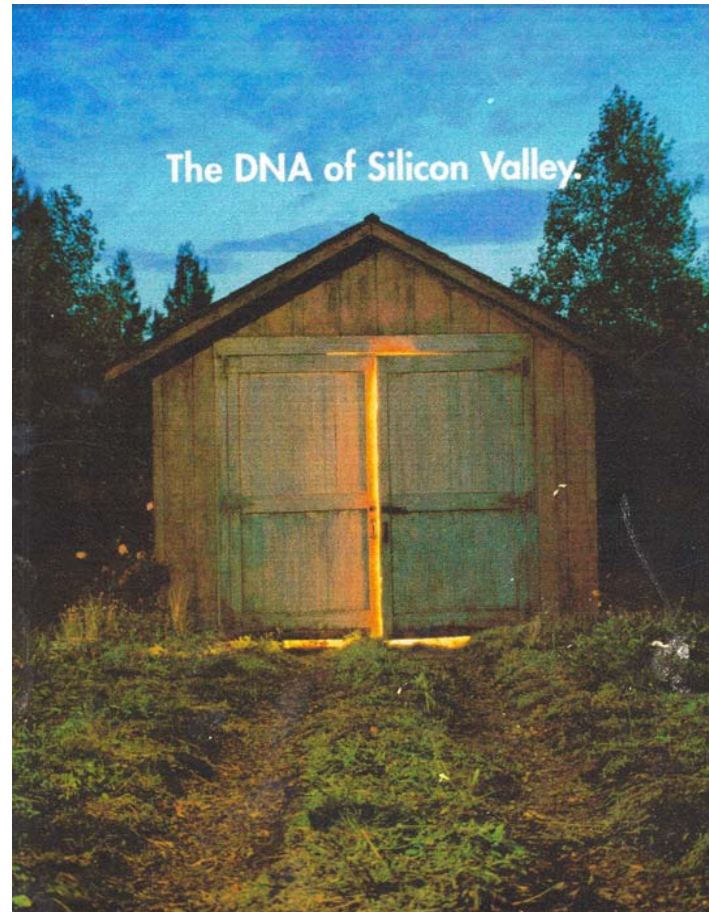
Stanford followed a model of investing in new faculty by promoting
"Steeple of Excellence"

Stanford is an international university with students from all parts of the globe.
(1/2 of graduate students are from outside US)

6753 undergraduates 8093 graduate students 1410 faculty members



Hewlett Packard—The DNA of Silicon Valley



Founded in 1939 after Terman suggested that David Packard and Bill Hewlett return to the West Coast to start a new company. HP set the unique culture of Silicon Valley by investing in the community and the university.



HP Mission Statement regarding Stanford - 1987

Mission Statement:

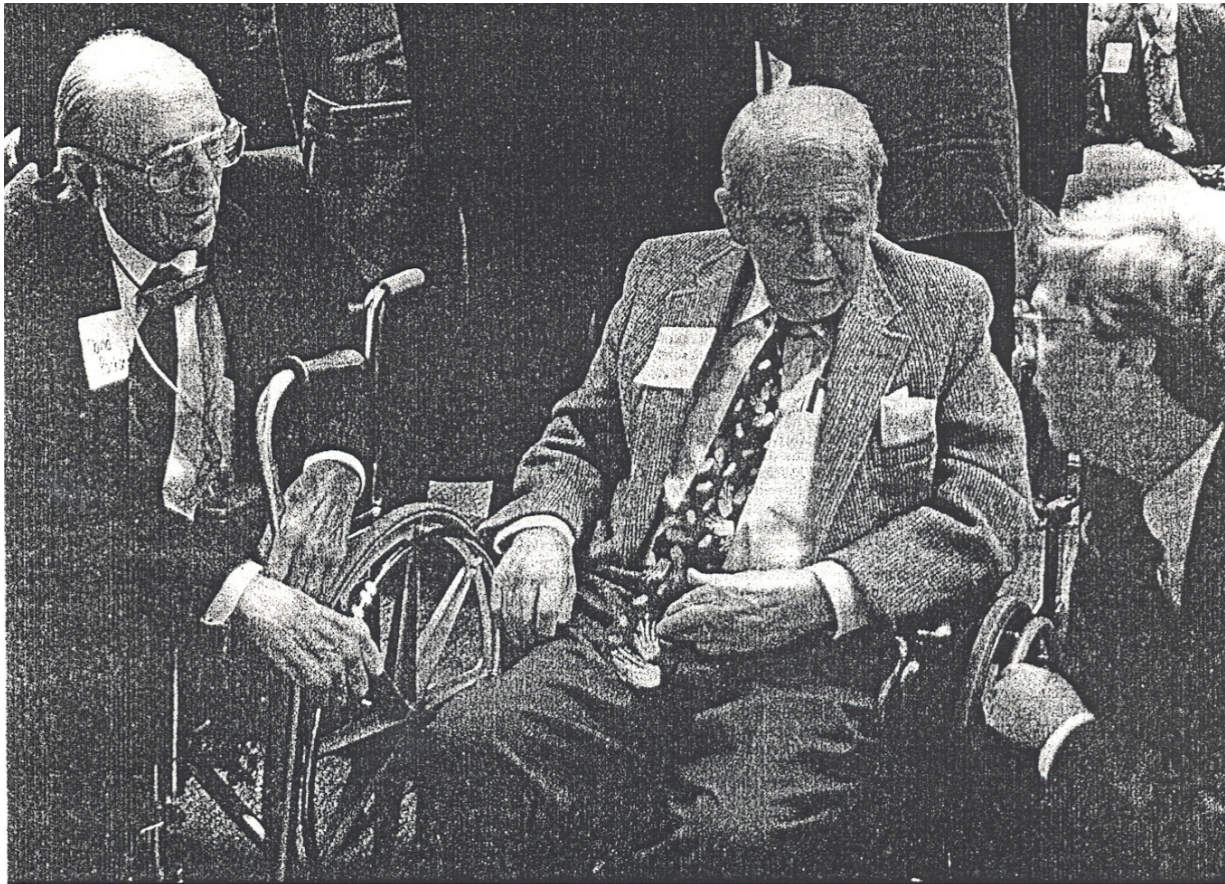
- Hewlett-Packard is committed to enhancing and supporting the mutual and strategic interests of Stanford and HP; building new partnerships on the base of our traditional relationship with Stanford students, faculty and administration. We expect to continue and expand our efforts to increase Stanford's position as a premier educational and research Institution in keeping with Stanford's strategic priorities.

AE-STAN1.GAL (11/5/87)





David Packard, Bill Hewlett, and Bill Gates 1996



Passing the torch to the next generation.

David Packard and Bill Hewlett met with Bill Gates at the dedication of the Gates Computer Science Building.



Silicon Valley loses a mentor and friend

The valley loses cornerstone, benefactor, mentor and friend

By GOMES
EVE KAUFMAN
Staff Writer

Packard, a pre-eminent businessman and philanthropist of the 20th century — as a Silicon Valley founder and guiding spirit — died at morning at Stanford Center, surrounded by family.

and was a co-founder of H-Packard Co. and, as the creator of the H-P which for two generations defined how much of the in Silicon Valley gets

as 83 and had been hospitalized for 10 days with pneumonia. Packard has played a role in both the business and history of the region, that was the product of historical timing. When H-P with college buddy Hewlett in the 1930s and Packard was lucky enough to be the first generation of businessmen able to start becoming an out-of-American electronics and then sell it into a new economy in which the States was suddenly as

result, H-P is now not only Valley's largest company just employer, it also has as in 180 other countries, a brand name company ranked as one of the most valuable. Its products are everywhere in the everyday sight in of old homes all over the

There also was a great deal of Packard and his company reflected not merely the history but instead Packard's character; indeed, a detailed survey of chief executives rated Packard the nation's most admired living business

because of Packard and that H-P had the commitment to technical excellence and renowned for treating employees with respect and giving them something close to lifetime employment than technology workers will now. Because of Packard, was conservative and business in its business operations. It eschewed corporate greed, for example, even a conventional wisdom in had it that taking on a prudent

It back
million fortune

to help others. He was also a philanthropist, the first order, leaving millions of dollars to the Jerry Bay Aquarium, University Hospital and University. On his entire fortune of \$6.6 billion, expected to go to the Lucile Packard Foundation, which will make the country's largest major corporations



1989: David Packard and Bill Hewlett returned to the one-car garage where H-P was founded to join ceremonies designating the 12-by-18-foot building as a California historical landmark.

co-founder Hewlett said in a brief statement. "As far as the company is concerned, the greatest thing that he left behind him was a code of ethics known as the H-P Way. That will serve to guide the company in the years to come."

How it began
Stanford acquaintances helped cultivate, nurture

Hewlett and Packard built their first product, an audio oscillator, in 1939. A young technology-savvy animator in Southern California named Walt Disney bought eight of them, for \$71.50 each, to use in an experimental cartoon he was working on "Fantasia."

The two men continued their work, stopping when Hewlett was drafted for World War II. They formally incorporated in 1947 and went public 10 years

spending his days at the firm, quizzing employees and making recommendations, even though he had left day-to-day management. The firm rebounded and is now one of the most prosperous in all of technology.

First products
Calculators, computers weren't added till later

were in some ways the loss of the aspect of its founders' legacy. Hewlett and Packard created management style that had been so unremarkable only cause it has been so widely copied; it is how most of the top companies in Silicon Valley operate.

Critics said "the H-P Way" was paternalistic; it certainly broadened the vision, but it was also non-hierarchical and valued the contributions of all employees; no one thought nothing of arguing with their bosses. Workers were treated well, even today, the H-P workforce generally does not suffer the day-to-day angst about loss that seems a fact of life for the rest of the rest of the whole world.

The company's informal, common sense management style was captured in a famous business school phrase: "Management walking around." And the company's offices were laid out to facilitate that; H-P also helped give birth to the standard issue Silicon Valley cubicle. If today, that management seems impersonal and privacy-depriving, it was far conceived as an expression of Packard's egalitarianism and casualness.

Uneasy bureaucrat
At Defense Department, he lambasted spending

Packard, always a staunch Republican, served newly elected President Nixon as U.S. deputy secretary of defense from January 1969 until December 1971. And 14 years later, he chaired the President's Commission on Defense Management and produced a scathing assessment of the nation's defense spending practices. Three years later, he told a co-

“Dave wanted to give all of his people — not just managers — a chance to have a fulfilling career.”
— David Pressing, ex-H-P Region

gressional committee that the Pentagon would do just as well with its weapons systems if it eliminated its procurement bureaucracy and simply picked names from hat.

Yet another noteworthy aspect of H-P's legacy is the extent to which it became the thick trunk of a huge tree of spinoff companies that today can be found throughout Silicon Valley. An executive of those firms, many of them H-P veterans, responded to the question of how they got there by describing a keen sense of business.

Their stories also suggest what kind of man Packard was. "David Packard created whole new way of conducting business," said William Krause, H-P's vice president of technology.

David Packard wanted to give all of his people - not just the managers - a chance to have a fulfilling career.



From HP to Google

Prelude

Cyrus Elwell, immigrant from Australia founds Federal Telegraph 1911

The \$100 Idea

Sigurd and Russel Varian invent the Klystron start Varian 1935

Fred Terman persuades Hewlett and Packard to return to Bay Area

Bill Hewlett and David Packard start HP in garage in Palo Alto 1939

Stanford Research Park established by Terman 1951

Stanford Shopping Center created an income source 1955

Disk Storage

IBM - 1955

Integrated Circuits

Fairchild 1957

Laser company

Spectra Physics 1962 (R. Byer joins SP in 1964)

"Silicon Valley" coined by Don Hoefler in 1971

Adv Computing

SUN, Silicon Graphics Inc 1982

Biotechnology

Genentech

Software

Adobe (S. Byer joins in 1987)

Personal Computer

Apple

Internet

Yahoo! 1994

Search Engines

Google

Silicon Valley Goes Global 1990's



Example of Stanford Spin-off companies

Company	Annual Revenue
Hewlett Packard	\$80 billion
Cisco Systems	\$22
Sun Microsystems	\$11
Yahoo	\$3.6
Google	\$3.2
KLA-Tencor	\$2.1
Varian	\$0.9
Silicon Graphics	\$0.7

Dozens of companies formed at the PEAK OF THE BUBBLE in 2000 are no longer in existence.

Of all start-up companies, only 1 in 10 are profitable, 3 in 10 stay alive and the balance go out of existence.



Silicon Valley Today

Total revenues in the Valley	\$1250 billion
The 10 largest companies	\$ 600 billion
The ~3000 small companies	\$ 90 billion

Stanford University spin-offs

Of 3500 small companies 1000 are spin-offs

Average # employees	~20
Revenue per employee	~250k
Revenue for small spin-offs	\$10 billion

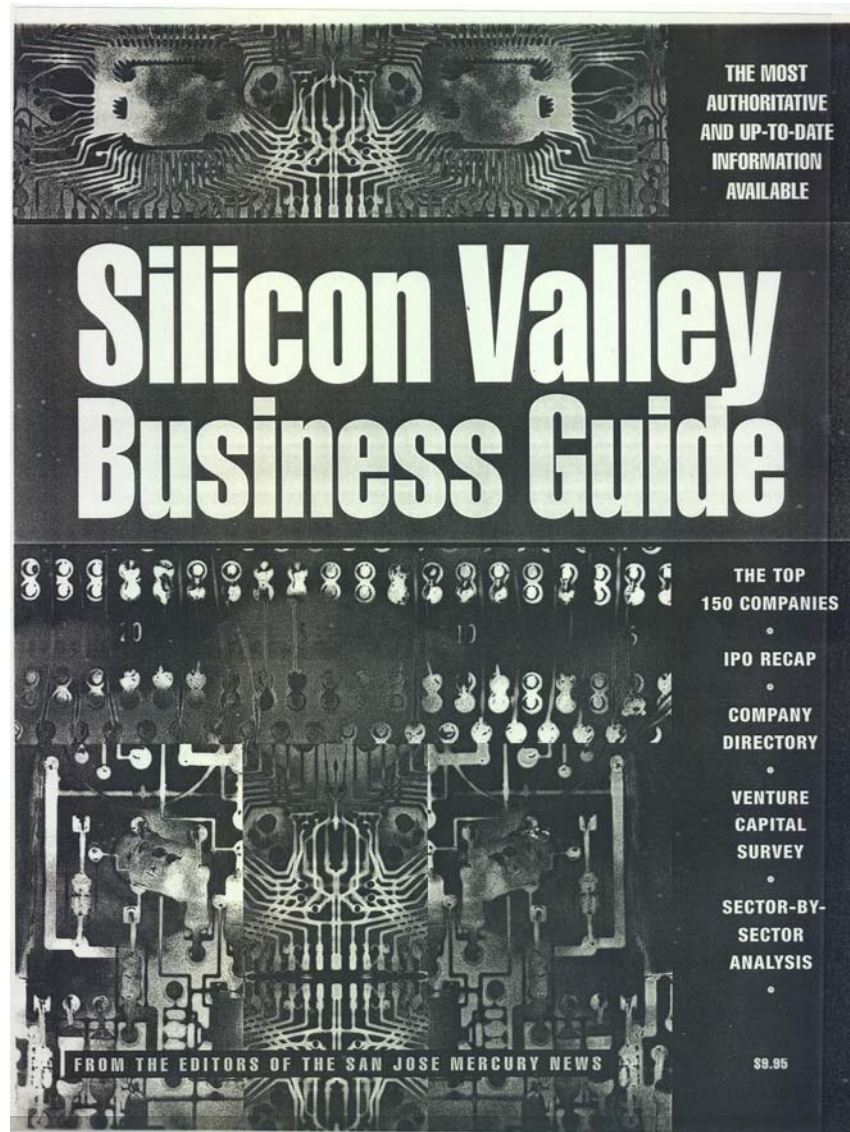
Of all large companies ~1/3 are spin-offs

Revenue for 100 large Co's \$ 200 billion

~ \$ 400 billion dollars in revenue or approximately one-third of the Silicon Valley revenue is spin-off from Stanford University.



Silicon Valley Business Guide





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The Myth

Technology transfer from Stanford
to companies fueled the growth of
Silicon Valley

The Question

*What fraction of companies have used Stanford Technology
either directly or indirectly in their business?*



Stanford's Contribution to Silicon Valley

The Answer

Of the >1000 Companies SPUN-OUT from **Stanford University**

ONLY 5%

Or

1 in 20

HAVE USED TECHNOLOGY
DERIVED FROM **Stanford University!**



Stanford's contribution to Silicon Valley

<<technology>>

the *myth*

<<educated students>>

the *fact*

Probably the single most important contribution **Stanford University** has made to the development of **Silicon Valley** was to attract and to educate talented students, many of whom elected to remain in the Bay Area.



Silicon Valley—Factors for Success

FACTORS for SUCCESS

Entrepreneurial Attitude

Land Resources

Educated People

\$ Venture Capital \$

Lawyers!

*Risk taking encouraged—
FAILURE allowed!!*

*Government R&D Labs
(LBNL, LLNL, AMES, SLAC)*

DIVERSE

and mobile work force with global reach!



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SUCCESS is CELEBRATED!



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Internationalization of Silicon Valley

The Silicon Valley model is successfully adapted to regional economies

- Seed the region with young entrepreneurs who have studied and worked abroad
Associations with scientists, engineers and business leaders have led to presentations and discussions around the world.

The University and Silicon Valley - education at the interface.

Examples of Global Regions visited

Quebec, Canada	1992
Minnesota, USA	1993
Sendai Japan	1994
Hinschu, Taiwan	1996
Sydney, Australia	1996
Oslo, Norway	1997
KSVF, Osaka, Japan	1998
RIKEN, Tokyo, Japan	1999
CREOL, Orlando, Florida	1999
Bay Area Economic Forum	2000
Vienna, Austria	2000
Barcelona, Spain	2001
Agilent, Palo Alto	2003
Sendai, Japan	2006
Ottawa, Canada	2007
Barcelona, Spain	2008
Venezuela, South America	2008



Creating New Global Valleys

The Globalization of Silicon Valley

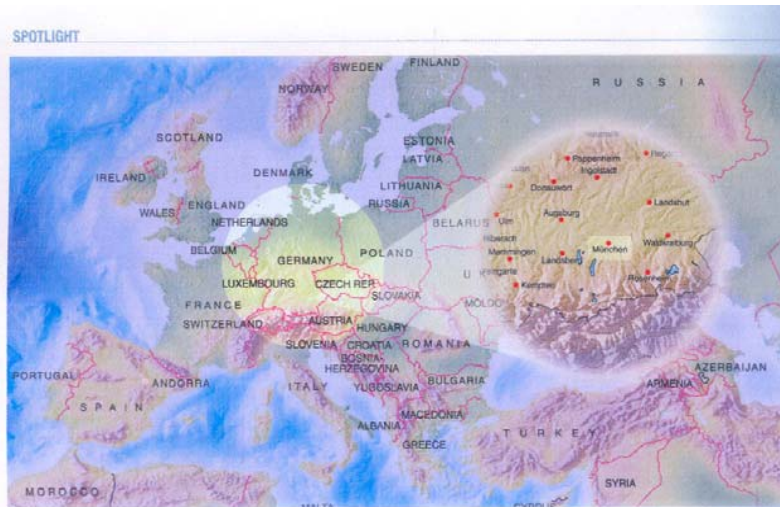
Creating New Valleys

- Adapt the model to reflect regional history, customs and practices
 - *Build on regional strengths*
- Form associations to facilitate university, industry, and government interactions
- Seed the region with young entrepreneurs who have studied and worked abroad
 - Encourage a **DIVERSE** and mobile work force with a wide range of skills
- Create a knowledge society by **investments** in the regional educational institutions at all levels

Encourage risk taking, tolerate failure, **CELEBRATE SUCCESS**



Spotlight on Munich



Spotlight on Munich

IN THIS SECTION we will take you on a tour of some of the main areas of Munich's Scientific Community, with an analysis of the country's growing biotech industry. We will introduce you to companies, institutions and universities showing their strengths, specialties and recruitment opportunities available.

<http://helix.nature.com/spotlight/munich>

This is part of a continuing series profiling companies and institutes in specific regions.



Can Kyoto become a version of Silicon Valley?

International Business

TECHNOLOGY

JAPAN'S HIGH-TECH HOPE

Can Kyoto become a version of Silicon Valley?



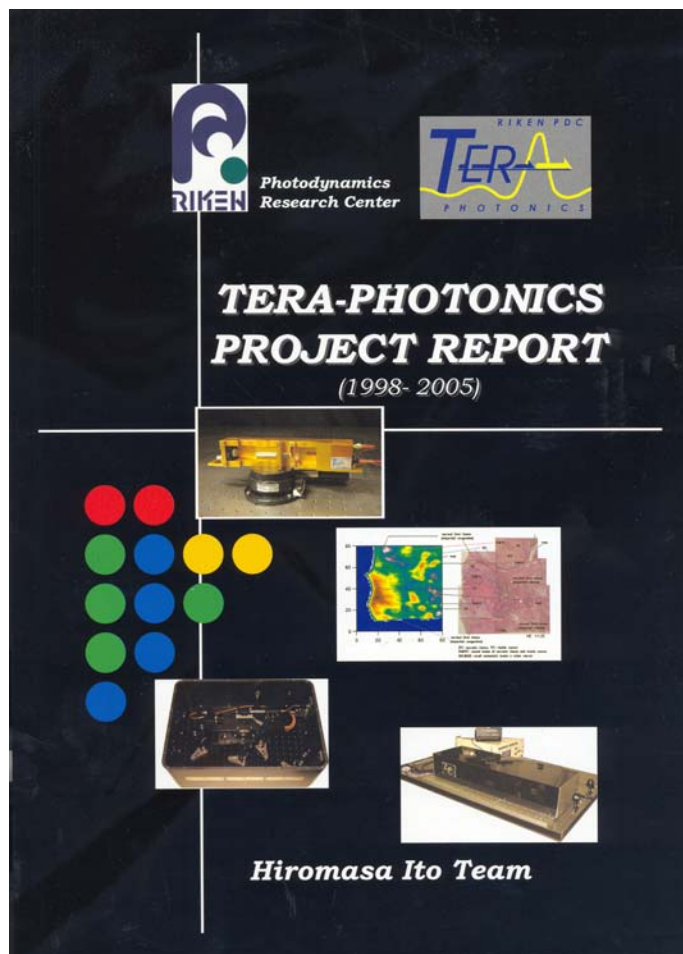
Osamu Murata, armed with little more than a junior-high education, saw the future in ceramics. Sickly as a child, he dropped out of school to work as a salesman for his father's ceramic shop in Kyoto. But the enterprising son soon steered the company away from traditional tableware. As electronics boomed in the 1970s, Murata churned out innovative ceramic components to control the flow of electricity in household products and electronics. Murata Manufacturing Co. is now the world leader in such components, found in notebook computers, palmtops, cell phones, and handheld audio gear. Last year, Murata had almost \$3 billion in sales, posted about \$500 million in operating profits, and has a market capitalization of \$9.2 billion.

Murata is a legend in Kyoto. And Kyoto itself is a city of many legends. Japan's former capital has a historic reputation for traditional arts, scenic beauty, and austere sensibilities. But a new spirit has infused Kyoto's narrow streets and cloistered gardens. It's a mood of high-tech entrepreneurship and can-do exuberance unmatched by any other city in Japan. At a time when Tokyo-

58 BUSINESS WEEK / MAY 31, 1999



SENDAI - The Tera-Photonics Project



Build 'Steeple of Excellence'

Be international in scope.



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The Research Park & the Stanford Shopping Center

Terman established research park in 1951 -- only 50 acres at beginning

Idea was not considered of value; but Varian and then HP moved into the park.
50 years later the Stanford Research Park is 660 acres and over 40 companies

However, use has moved from light manufacturing to legal firms and offices
Some space set aside to facilitate start-up opportunities
Revenue taxes go to City of Palo Alto

Terman conceived of the Stanford Shopping Center in 1955

Today, one of the most successful centers in Bay Area
Provides ~1/3 of Palo Alto City income from taxes on sales proceeds

Joint ventures with local cities are of value to the broader community
and to the region. However, success takes time ~ 50 years.



Industrial Relations Program

First industrial relations program established in 1955

Aeronautics and Astronautics forms joint activities with companies

In 1961 EE Department starts Solid State Industrial Affiliates Program

Goal of Industrial Relations program is to support teaching and research and facilitated access to ideas and to students

University provides

- Facilitated Access to research

- Introduction to educated students

- Neutral meeting ground for companies

Companies provide

- Annual support for teaching and research

- Motivation for promising research topics

Students benefit by interactions with company scientists and engineers

University benefits by new ideas and support for interactions

Companies benefit from facilitated access to ideas and students



45 Separate Programs reach more than 400 companies

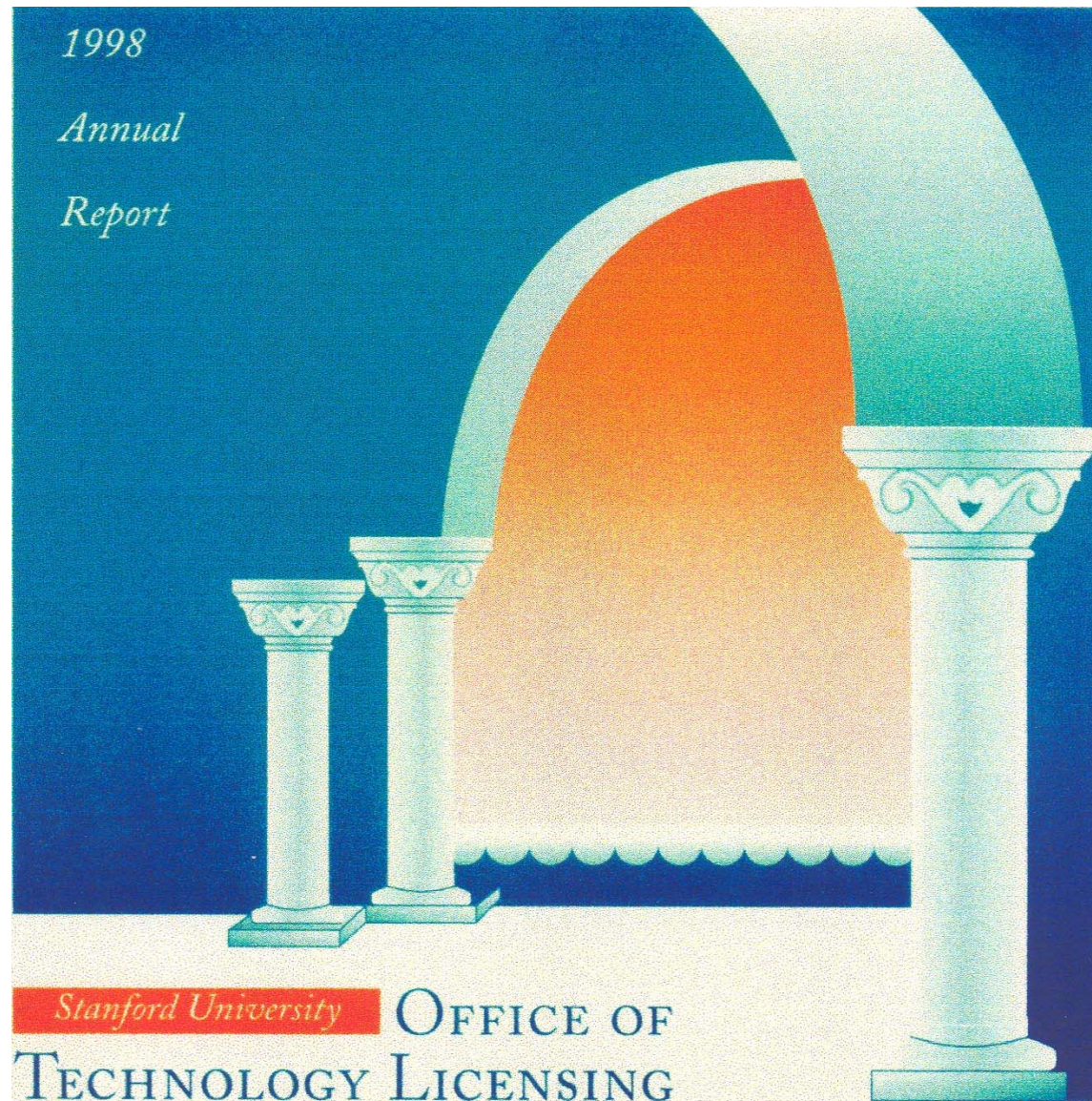
Stanford adopts de-centralized Industrial Affiliates model
with faculty members responsible for forming and
operating the Programs

Today more than 45 separate programs on Campus involving
more than 400 companies with a global reach.



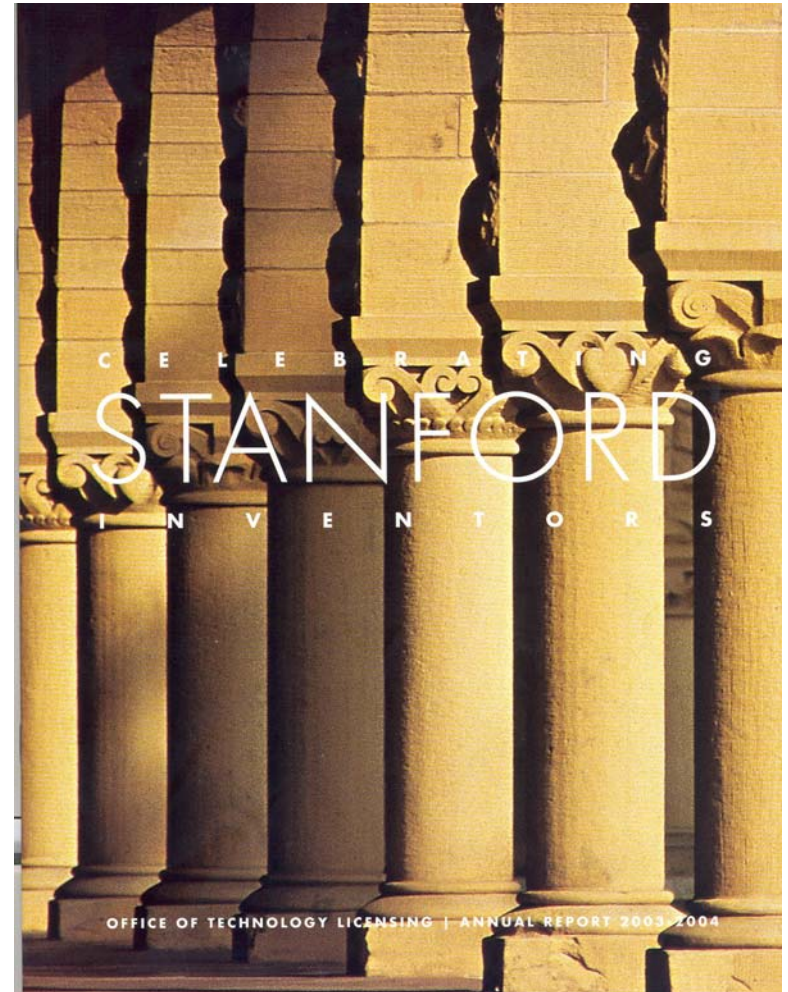
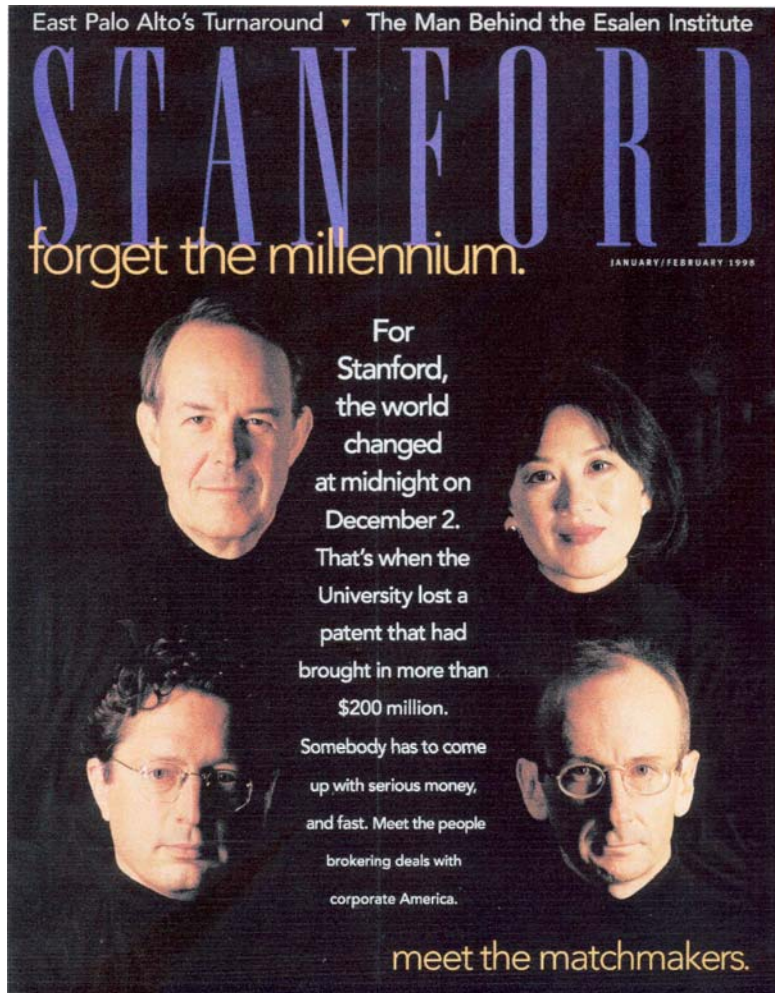


Technology Licensing - OTL






Technology Transfer - Building relationships





Professor Richard Zare, Chemistry - Inventor

A portrait of Professor Richard Zare, a man with a beard and glasses, wearing a dark suit, red shirt, and striped tie. He is standing in front of a stone wall with columns.

"I'm someone who dreams about making revolutionary changes in the world through science."

Richard Zare describes himself as a frustrated inventor. "I'm a person with all types of ideas and enthusiasms, most of which don't work. But that's the nature of discovery and research," he concedes.

Yet with 83 invention disclosures received at OTL, Professor Zare can claim approximately three invention disclosures a year since his arrival at Stanford in 1977. That's hardly the stuff of failure. Still, he insists, it always comes as a surprise when something works.

An invention that has proven to work perfectly is laser-induced fluorescence detection. Professor Zare first became interested in lasers as a graduate student at UC Berkeley. "People said the laser was a solution in search of a problem," he recalls. But he was keenly interested in the action of light, and he thought if he could use lasers to bring molecules from their unexcited ground state to an excited state, they would fluoresce, revealing their structure. This would also offer a way, he thought, to separate and detect the molecules in a mixture.

His patent for the laser-induced fluorescence detection was licensed by Beckman Coulter, which sponsored the research program and has used the invention in its commercial electrophoresis instruments for more than a decade.

Another of Professor Zare's inventions that allows for extraordinarily sensitive sampling of materials is a means of detection called "cavity ring-down." By placing a sample between two mirrors, he explains, you can create an optical cavity that causes light to bounce back and forth, which amplifies the presence of whatever absorbs in the sample. Using a pulse of light, scientists can observe the rate at which the light inside the optical cavity dies away or "rings down," providing a way to precisely measure the concentration of the components in the sample.

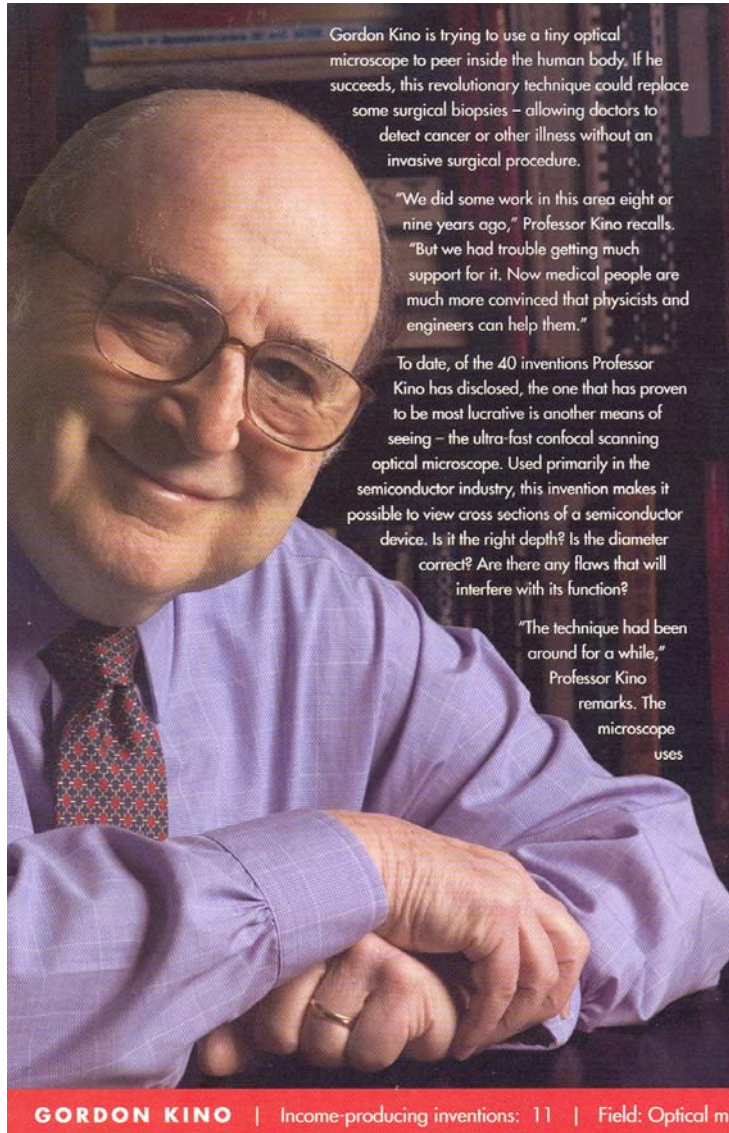
Licensed to Picarro, a company Professor Zare and one of his graduate students started for the purpose of commercializing this invention, this tool could have almost unlimited uses, from health care to agriculture to bioterrorism. Using a simple breath test, for example, we might be able to detect whether a person has a cold or the flu – even before the symptoms are evident. "In the confined quarters of a submarine or a ship, say, it could matter a great deal to know whether someone is going to become sick. I'm someone who dreams about making revolutionary changes in the world through science," he reflects.

Richard Zare is the Marguerite Blake Wilbur Professor in Natural Science with an appointment in the Department of Chemistry and a courtesy appointment in the Department of Physics.

"I am someone who dreams about making revolutionary changes in the world through science."



Professor Gordon Kino - Ginzton Lab - Inventor



Gordon Kino is trying to use a tiny optical microscope to peer inside the human body. If he succeeds, this revolutionary technique could replace some surgical biopsies – allowing doctors to detect cancer or other illness without an invasive surgical procedure.

"We did some work in this area eight or nine years ago," Professor Kino recalls. "But we had trouble getting much support for it. Now medical people are much more convinced that physicists and engineers can help them."

To date, of the 40 inventions Professor Kino has disclosed, the one that has proven to be most lucrative is another means of seeing – the ultra-fast confocal scanning optical microscope. Used primarily in the semiconductor industry, this invention makes it possible to view cross sections of a semiconductor device. Is it the right depth? Is the diameter correct? Are there any flaws that will interfere with its function?

"The technique had been around for a while," Professor Kino remarks. The microscope uses

a Nipkow disc with multiple pinholes through which light is projected, and an objective lens that receives the light and illuminates the object. But previous versions relied on a single pinhole, which made for a slow, laborious process. By dramatically increasing the number of pinholes and making improvements that eliminated the need to re-align the microscope for each new view, Professor Kino and his students were able to patent a new and improved invention that is still in widespread use nearly two decades later.

Still, the road between invention and commercial application is often marked by detours. Professor Kino's optical recording system utilizing a solid immersion lens is a perfect example of how much can go wrong before something goes right.

Intended to significantly increase the amount of information that can be written on an optical storage medium, the technology was first licensed to a startup that hoped to commercialize a new class of rewritable mass storage products. But insurmountable technical difficulties halted the project. Now, the technology is being considered by a large corporation for future generation storage products and has potential to be incorporated into a standard. Professor Kino points out that the experience "certainly illustrates the fact that what you demonstrate in a university is one thing. In industry if you want to make thousands and thousands of something that are exactly alike, it's a different story."

Gordon Kino is the W.M. Keck Foundation Professor of Electrical Engineering, Emeritus (active)

GORDON KINO | Income-producing inventions: 11 | Field: Optical microscopy



Professor Robert Byer - Applied Physics - Inventor



"We've learned how to make our lasers as low noise as possible," he explains, "which allows us to make very difficult, very precise measurements."

ROBERT BYER | Income-producing inventions: 23 | Field: Lasers and nonlinear optics

Bob Byer is using a laser he invented to detect gravitational waves in the universe.

"We've learned how to make our lasers as low noise as possible," he explains, "which allows us to make very difficult, very precise measurements." And while his research is motivated by fundamental questions, it often turns out to have wide-ranging applications.

"I received a call from a friend at a large corporation one day," he recalls. "Their lasers were too noisy for the measurements they required, and he wondered whether we could help. He was impressed by our

demonstration, so we loaned them an optical component from our lab that, when attached to the end of a laser, reduced the noise by an order of magnitude."

The application? Measuring the composite panels on a military joint strike fighter aircraft wing to make sure they are not delaminated or fractured. The laser that was being used was so noisy it masked the sound waves needed to observe the defects in the panels.

"We invented this laser to allow us to do fundamental research. Yet when applied to the production line of the joint strike fighter aircraft, it allowed very precise measurements

and doubled the production rate, saving \$250 million over the production run of the aircraft. The National Science Foundation was thrilled that fundamental research made a significant contribution in the real world," he says.

As Professor Byer surveys his other 40-plus inventions, he notes that he would never have guessed that the most lucrative invention to come out of his lab would be the "diode end pumped laser and harmonic generator." A way of improving the efficiency and changing the output color of a laser, it uses a semiconductor to "pump" the laser and a nonlinear element to generate visible light.

From laser light shows to semiconductor manufacturing and more, Professor Byer's laser and non-linear optical material inventions have found an enormous variety of applications. Now, a laser he invented 20 years ago is slated to be part of USA - Laser in Space Antenna - when it launches in 2012 on a mission designed to measure the gravitational waves of massive black holes in the universe. What will the next discovery lead to? "I don't know," he says. "That's the fun part."

Robert Byer is the William R. Kenan, Jr. Professor and Professor of Applied Physics.

Never undertake a project unless it is manifestly important and nearly impossible



OTL reaches \$1 billion cumulative income Nov 2005

CUMULATIVE INCOME

\$643,615,000

START-UPS

While Stanford entrepreneurs are still starting companies, the economy clearly has negatively affected the Silicon Valley entrepreneurial ecosystem. Venture capital investments dropped dramatically and investors are becoming more stringent. Yet licenses to nine start-up companies involved equity: Brion Technologies, General MEMS, Lumen Therapeutics, Lyncean Technologies, Optimedica, PharmacoFore, Rox Medical, Spinal Kinetics, StemCor.

NEW DISCLOSURES

In calendar year 2004, we received 350 new technology disclosures. Approximately 48% were in the life sciences and 52% were in the physical sciences, including computer science technologies. Our work with the Stanford Biodesign Network's Biomedical Technology Innovation Program class generated 14 disclosures from students as part of their coursework.



STANFORD TRADEMARK ENFORCEMENT FUND

The Chief Financial Officer and General Counsel of Stanford recommended that Stanford provide a permanent source of funding for extraordinary cases associated with the protection of the Stanford name and associated logos and trademarks. Based on their recommendation, the President and Provost approved the creation of the Stanford Trademark Enforcement Fund (STEF). Initial funding for the STEF comes from 1% of the department and school shares of net revenue OTL receives. For FY03-04, we transferred \$235,314 to STEF.

BIRDSEED FUND

The OTL Birdseed Fund, administered by the Dean of Research, has provided small amounts of money (typically up to \$25,000) to fund prototype development or modest reduction-to-practice experiments for unlicensed technologies. This year, the Birdseed Fund funded six new projects, for a total of 39 projects funded to date. The rate of licensing of Birdseed funded inventions is about the same as unfunded inventions (20-30%) but without this funding, many of these inventions would likely have remained unlicensed.

RESEARCH INCENTIVE FUND

In the past seven years, the Dean of Research has used the OTL research incentive funds to fund over 140 seed research projects in all parts of the University. Primarily for assistant professors, research grants of \$20,000 to \$30,000 were used to fund 24 projects, including Professor of Communication Jeremy Bailenson's *Digitally-Mediated Person Recognition*, Professor of Mechanical Engineering J. Christian Gerdes' *A Race-Track Inspired Approach to Self-Stabilized Vehicles*, and Professor of Neurology Christine Wijman's *Selective Cerebral Hypothermia in Acute Stroke*.

Office of Technology Licensing was founded In 1969

The model for the Office is to bring technologies to the commercial market by building long term relations with companies.

More than 400 companies have licensed from Stanford since inception.

Successful inventions include:
The Cohen-Boyer gene splicing

FM frequency synthesizer (Yamaha)

Fiber amplifier (Litton)



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Equity in lieu of cash as compensation

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Conflict of Commitment and Interest

The University is an institution of public trust that must maintain integrity in all aspects of its mission to educate students and to gain and apply knowledge through research and innovation.



Guidelines for Technology Licensing to 'start-up' Companies

(approved by the Senate on November 8, 1990)

Goals

- Recognize and manage conflict of interest questions
- Remove focus on exclusive or non-exclusive licensing
- Allow equity in lieu of cash in licensing deals

Principles

- Faculty are committed to teaching/research at the University
- Quality of interactions with faculty and students is maintained
- Recognize and establish procedures for managing conflicts
- Conflict of interest issues:
 - Commitment of time and intellectual energy
 - Financial decisions
 - Student training
 - Hiring decisions
 - Independence of the department or program
 - Possible coercive influence over colleagues

Procedures

- OTL determines that technology is to be licensed
- OTL informs faculty member, chair, and dean of potential deal
- Faculty member prepares written statement that addresses conflicts of interest
- Chair consults with OTL and makes recommendation to Dean
- Dean makes decision on suggested licensing arrangement



Guidelines for Stanford University Investments in 'start-up' companies involving Stanford faculty

Stanford may **not** invest if faculty member has line management role.

Stanford may invest if faculty member has equity position if:

1. Stanford is a passive investor.
2. Stanford investment is limited to 10%.
3. No Stanford officer is a member of the board, or an officer, or has equity in the company.
4. Subject to case by case approval of the Provost;
Any future licensing requests subject to approval.



Equity Acquisition in Technology Licensing Agreements

Stanford University may accept equity as one form of compensation for license rights, subject to a conflict of interest review if appropriate.

One third (1/3) of the Net Equity will be issued to the Inventor(s) as the Inventor(s)'s Shares. Following issuance of Net Equity, it shall be the sole responsibility of the Inventor(s) to manage the Inventor(s)'s Shares.

The remaining two thirds (2/3) of Net Equity will be issued to the University as the University Share. The OTL Research and Fellowship Fund, administered by the Vice Provost and Dean of Research and Graduate Policy, will receive the University Share,

All equity received by the University will be managed by Stanford Management Company.



Stanford University Conflict of Commitment - Faculty

Conflict of Commitment

Stanford faculty members owe their primary professional allegiance to the University...

Conflict of Interest

A conflict of interest depends on the situation, and not on the character or actions of the individual.

Conflicts of interest are common and practically unavoidable in a modern research university.

Faculty members should conduct their affairs so as to avoid or minimize conflicts of interest, and must respond appropriately when conflicts of interest arise.

Stanford University is an institution of public trust:
Faculty must respect that status and conduct their affairs in ways that will not compromise the integrity of the University.



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The Future



Global Economic Growth Through Innovation

Sustained economic growth through Visionary Innovation
was the
paradigm of the 20th century.

From railroads to air transportation,
the radio to cellular telephones,
The internet to world wide telecommunications.

Innovation is the engine that will fuel
future economic growth.

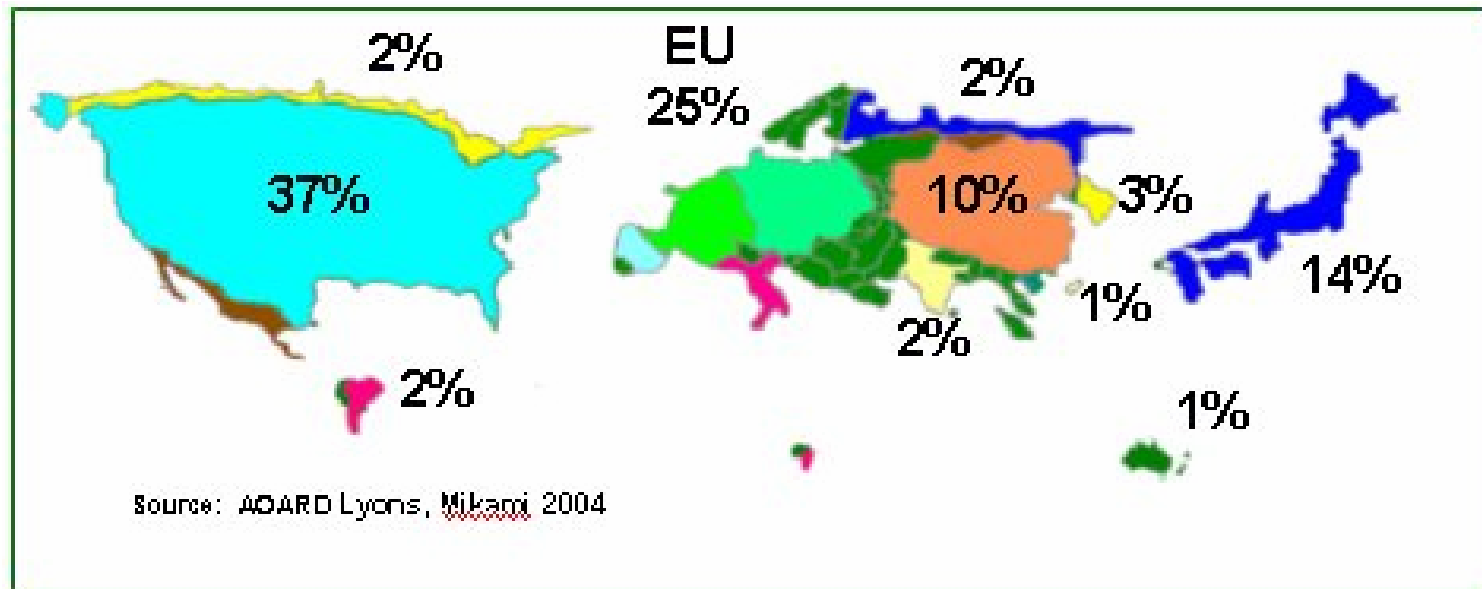
The Bottom Line

A role of the Universities, Industry and
Government in the Knowledge Society is to
Create Wealth on a global scale
through visionary innovation.



The R&D World Map - Today and in 20 years

Research - a global perspective



Today: 1/3 of R&D in the US

1/3 in Europe

1/3 in Asia

20 years: ~ 1/4 in US

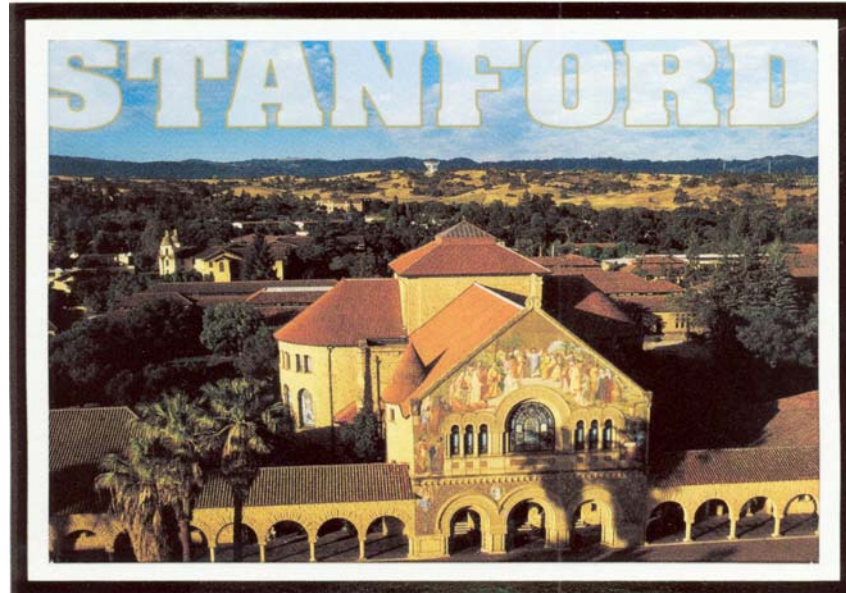
1/4 in Europe

1/2 in Asia



Transfer of University Innovation to Industry: Paths and Pitfalls

Silicon Valley goes Global
Stanford University - a Global reach



The spirit of Stanford University
Steeple of Excellence

Support global economic development

Educate Students with a global reach