

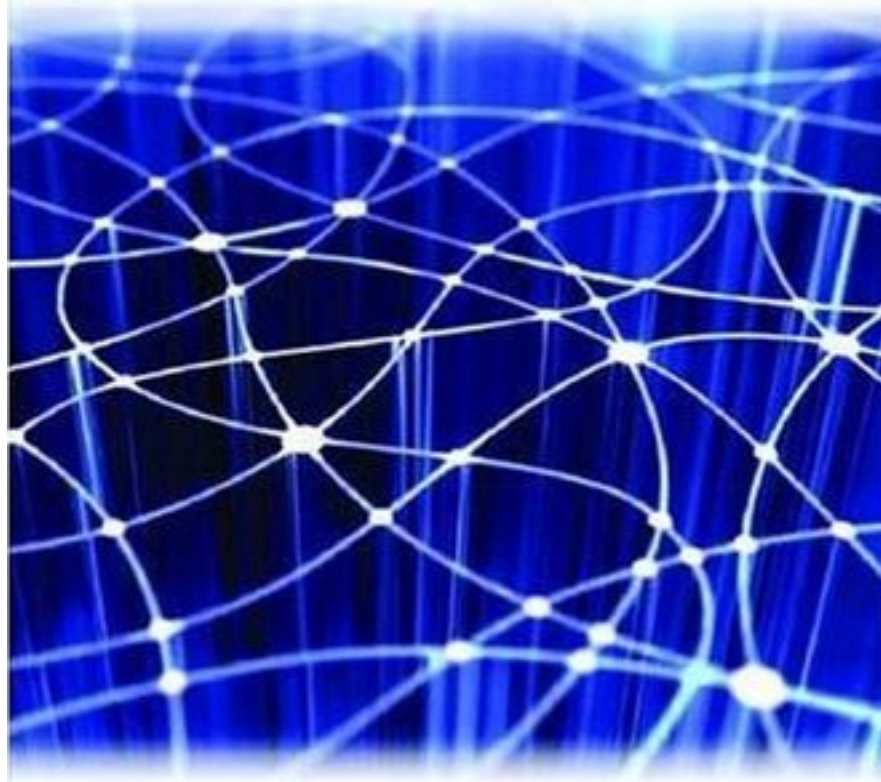
America's competitiveness shift, opportunities for Brazil

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CULTURE &
MANAGEMENT
IN THE AMERICAS



Alfredo Behrens

Topics

- America's dwindling creativity/competitiveness
 - Based on views by Florida and Pisano, HBR, 2004 and 2009, respectively
- Quantitative assessment
 - Shifting arena: emerging Davids
- What this means for Brazil
 - The case of AdeS
 - And how this may inspire a shift in innovation funding

**AMERICA'S DWINDLING
CREATIVITY AND
COMPETITIVENESS?**

America's Looming Creativity Crisis

by Richard Florida

HBR, October, 2004

The Dawn of the Creative Age

There's a whole new class of workers in the U.S. that's 38 million strong: the creative class. At its core are the scientists, engineers, architects, designers, educators, artists, musicians, and entertainers, whose economic function is to create new ideas, new technology, or new content. Also included are the creative pro-

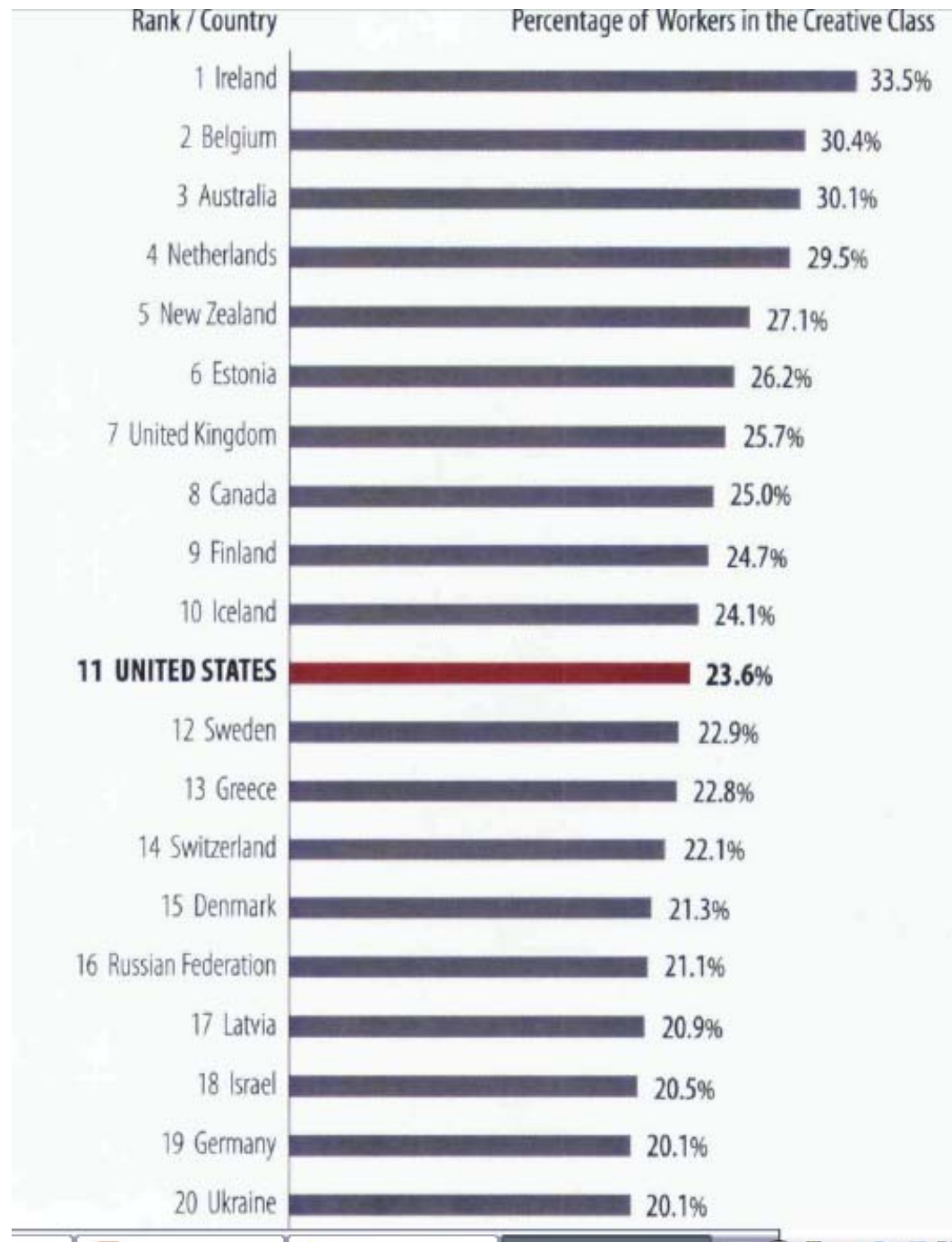
30% of the workforce

**BUT, FLORIDA BELIEVES AMERICA IS
LOOSING ITS COMPETITIVE EDGE IN
CREATIVITY**

Richard Florida:

The United States may well have been the Goliath of the twentieth-century global economy, but it will take just half a dozen twenty-first-century Davids to begin to wear it down.

How many are they? Who are these Davids?





Creativity Not Central?

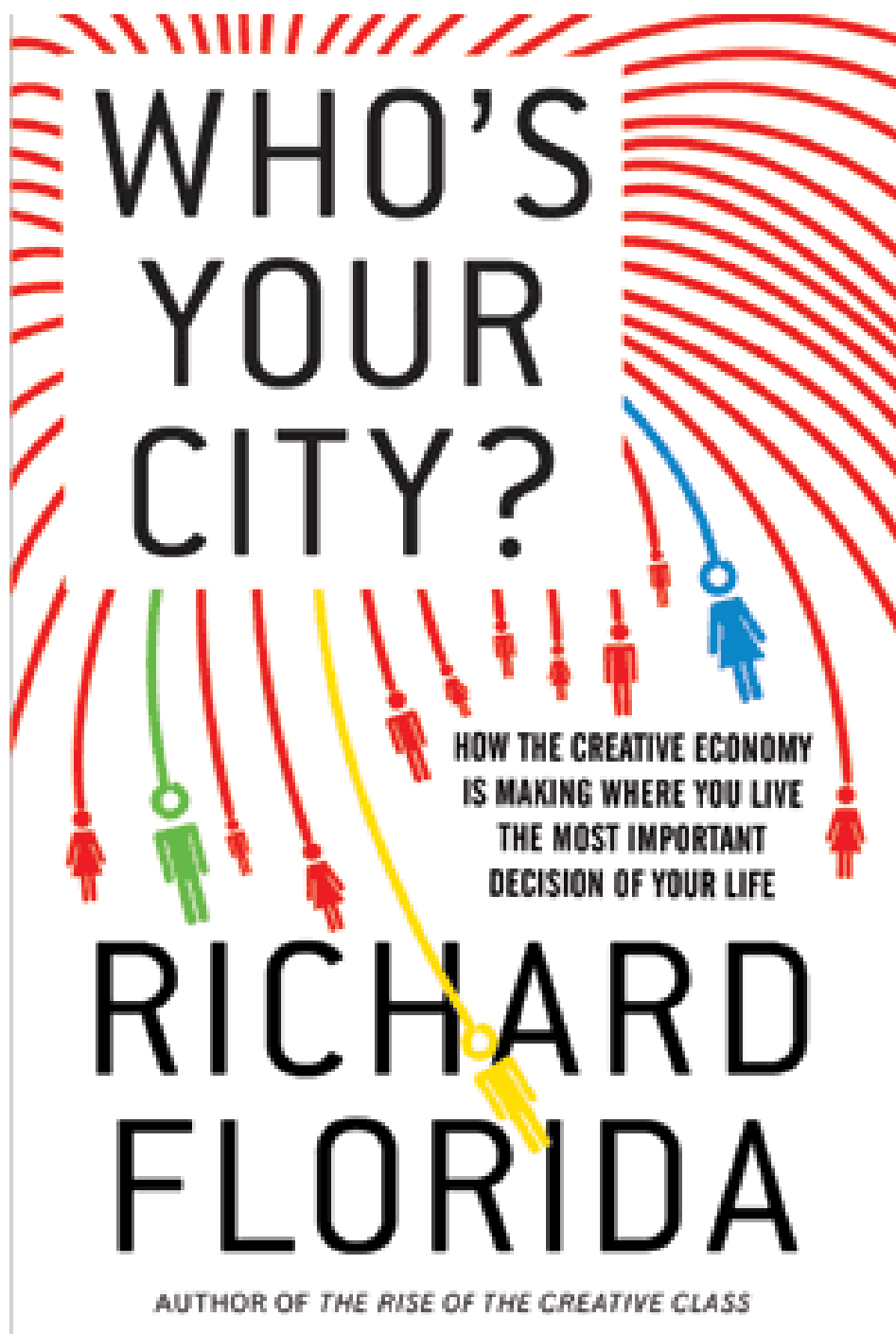
The United States must invest generously in its creative infrastructure. Education reform must, at its core, make schools into places that cultivate creativity. Americans revel in the legendary stories of young creators like Michael Dell building new businesses in dorm rooms or in garages in their spare time. The question is: Why are they doing these things in their *spare* time? Isn't this the real stuff of education in the Creative Age?

WHO'S YOUR CITY?

HOW THE CREATIVE ECONOMY
IS MAKING WHERE YOU LIVE
THE MOST IMPORTANT
DECISION OF YOUR LIFE

RICHARD FLORIDA

AUTHOR OF THE RISE OF THE CREATIVE CLASS



Author: 'Talent, technology and tolerance' key to attracting creative workers

Published: Tuesday 25 August 2009



A leading thinker on creativity believes attracting talented people is the driving force behind successful cities. In an interview with EurActiv, Richard Florida, author of 'The Rise of the Creative Class', said European countries are battling to attract and retain innovative people.

Richard Florida is author of 'Who's Your City?' and director of the Martin

Prosperity Institute at the Rotman School of Management, University of Toronto.

Tolerance is the relatively new one

Tolerance?

- Yes, it is important
- Because it indicates a predisposition to accept what is different.
- Without that, creativity will have a harder time.
- Can tolerance be mapped?



CENTER ON URBAN & METROPOLITAN POLICY

Technology and Tolerance: The Importance of Diversity to High-Technology Growth

Richard Florida, Carnegie Mellon University, and Gary Gates, The Urban Institute¹

June 2001 • The Brookings Institution • Survey Series

People in

Overall diversity is a strong indicator of a metropolitan area's high-technology success. Eleven metropolitan areas with the highest levels of overall diversity (based on gays, bohemians and foreign-born people) are among the top 15 high-technology areas. San Francisco,

*“People in
technology
businesses
are drawn to
places known
for diversity
of thought
and open-
mindedness.”*

Creative Regions

Competition for talent occurs not only between nations but also between cities and regions, just as competition in many industries occurs at the business-unit, rather than the company, level. New York, for instance, is pitted against London and Hong Kong; San Francisco is up against the likes of Dublin, Vancouver, Stockholm, and Sydney. While comprehensive regional data do not exist, several studies do give a detailed picture of areas inside Canada and Australia.

According to data amassed by Kevin Stolarick, Meric Gertler, Gary Gates, and Tara Vinodrai, the percentage of workers in the creative classes in Toronto (36.4%), Montreal (35.0%), and Vancouver (35.2%) rival those in the leading American regions. Of America's ten most populous regions, only the Washington, DC (39.8%), and Boston (36.5%) areas do better. Toronto and Vancouver have the highest concentration of immigrants in North America, with 43.7% and 37.5% of their respective populations hailing from other countries. By comparison only 24.4% of New Yorkers were born outside the United States and only 30.9% of Los Angelenos. Of course, percent-

Richard Florida, 2004

1st factor In the USA, concentration of gays

The leading indicator of a metropolitan area's high-technology success is a large gay population. The five metropolitan areas with the highest concentration of gay residents are all among the nation's top 15 high-technology areas: San Francisco, Washington D.C., Austin, Atlanta, and San Diego. Gays not only predict the concentration of high-tech industry, they are also a predictor of its growth.

2nd factor In the USA, concentration of bohemians

A high concentration of artists or “bohemians” follows gays as a significant indicator of a metropolitan area’s high-technology success. Ten of the top 15 “bohemian” metropolitan areas (those with the highest concentration of artists, writers, musicians, actors, etc.) also number among the nation’s top 15 technology regions. These areas include: Seattle, Los Angeles, New York, Washington D.C., San Francisco, and Boston.

3rd factor In the USA, concentration of foreigners

Metropolitan areas with high concentrations of foreign-born residents also rank high as technology centers. Eight out of the top ten metropolitan areas with the highest percentage of foreign-born residents were also among the nation's top 15 high-technology regions: Los Angeles, New York, San Francisco, San Diego, Chicago, Houston, Boston, and Washington D.C.

Gay-bashing cities unlikely to support creativity

- In many developing countries, and particularly in some cities among them
- Gay bashing is seen as some sort of sport
- Quite apart from the incivility and ruthlessness of it
- One may wonder what the attitude means for creativity and international competitiveness

Yes, Tolerance in America has dropped and there are foreign Davids coming of age, while Americans are no longer being trained as highly as necessary to sustain its traditional rate of innovation.

**ARE THERE MORE SIGNALS OF THE
LOOMING CRISIS?**

1.3 Emerging Markets Have Large Supplies of Young Professionals

Source: McKinsey Global Institute, The Emerging Global Labor Market: Part II— The Supply of Offshore Talent in Services (June 2006)

Large professional workforce in emerging markets

YOUNG PROFESSIONALS, 2003, THOUSANDS

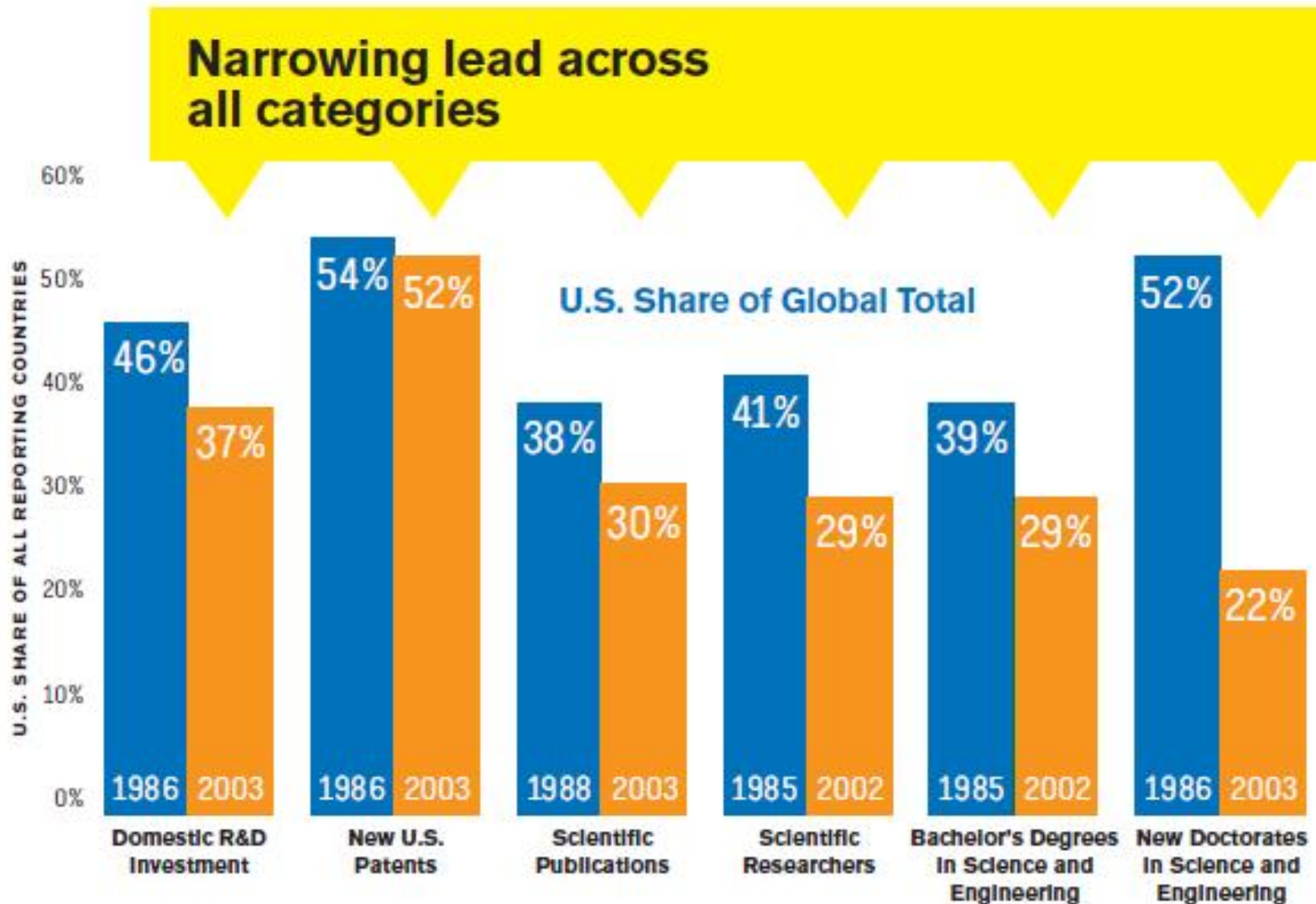
	Engineers	Finance/ Accounting	Life sciences researchers	Analysts
China	1,589	945	543	202
United States	667	1615	852	175
India	528	2273	674	537
Russia	486	1082	108	107
Japan	317	702	180	55
Philippines	290	423	14	16
Brazil	158	355	75	16
U.K.	150	165	100	27
Germany	128	137	31	26
Mexico	115	319	23	8
Poland	82	231	25	22
Canada	81	150	89	18
Malaysia	49	83	19	11
Hungary	27	59	2	1
Ireland	22	32	4	3
Czech Republic	15	33	2	5

Emerging Markets

Developed Economies

4.1 U.S. Share of Global Output Has Fallen Across a Range of Science and Technology Metrics

Source: NSF, Science and Engineering Indicators (2006), OECD, Main Science and Technology Indicators (2006), U.S. Patent and Trademark Office



1.4 Emerging Markets Now Number Among the World's Leading Technology Exporters

Source: Global Insight, Inc.

Emerging economies now lead

Top Ten High Tech Exporters (1986)

Billions of 1997 U.S. Dollars

1. United States \$65
2. Japan \$53
3. Germany \$31
4. United Kingdom \$24
5. France \$14
6. Netherlands \$9
7. Italy \$8
8. Switzerland \$8
9. Taiwan \$7
10. South Korea \$7

Emerging economies

Developed economies

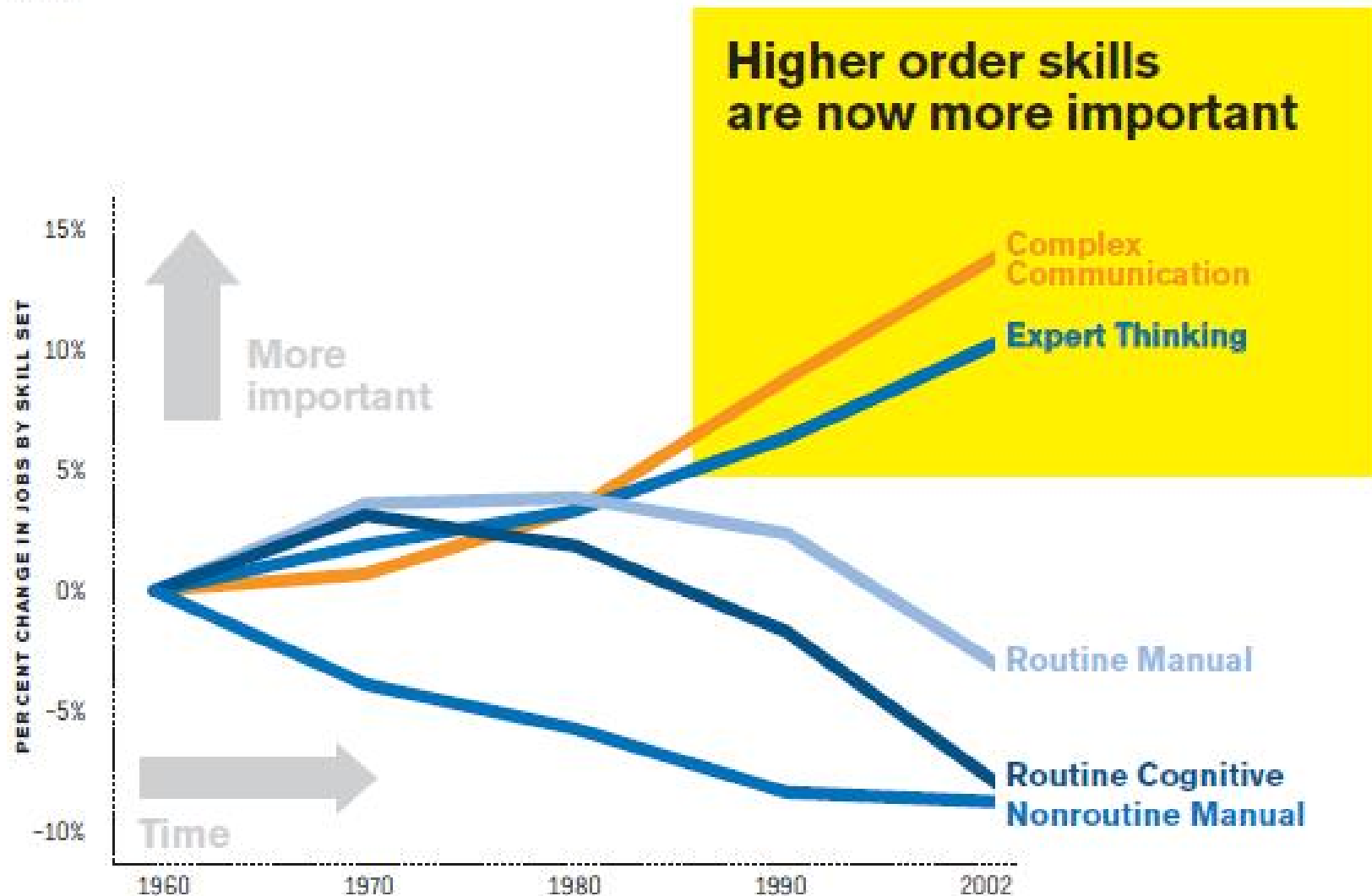
Top Ten High Tech Exporters (2005)

Billions of 1997 U.S. Dollars

1. China \$406
2. United States \$284
3. Japan \$212
4. Germany \$183
5. South Korea \$167
6. Hong Kong \$157
7. Taiwan \$145
8. Singapore \$126
9. Malaysia \$99
10. United Kingdom \$95

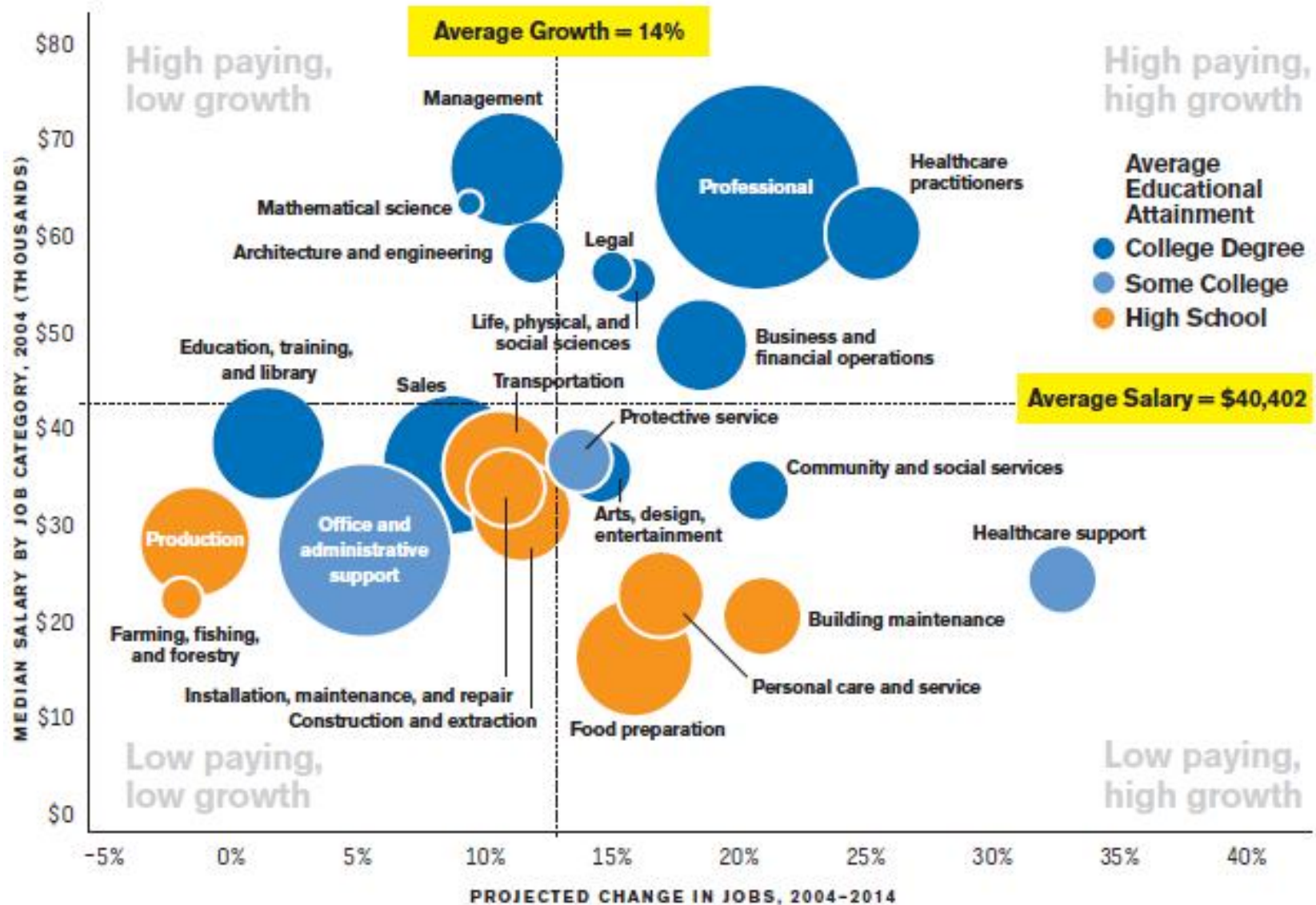
4.28 Higher-Order Skills Have Grown in Importance, Driven by Technological Change and Globalization

Source: Updated version of Figure 1 in David H. Autor, Frank Levy, and Richard J. Murnane, "The Skill Content Of Recent Technological Change: An Empirical Exploration," *Quarterly Journal of Economics*, 118(4), November 2003. See also Frank Levy and Richard J. Murnane, "How Computerized Work and Globalization Shape Human Skill Demands," (May 31, 2006)



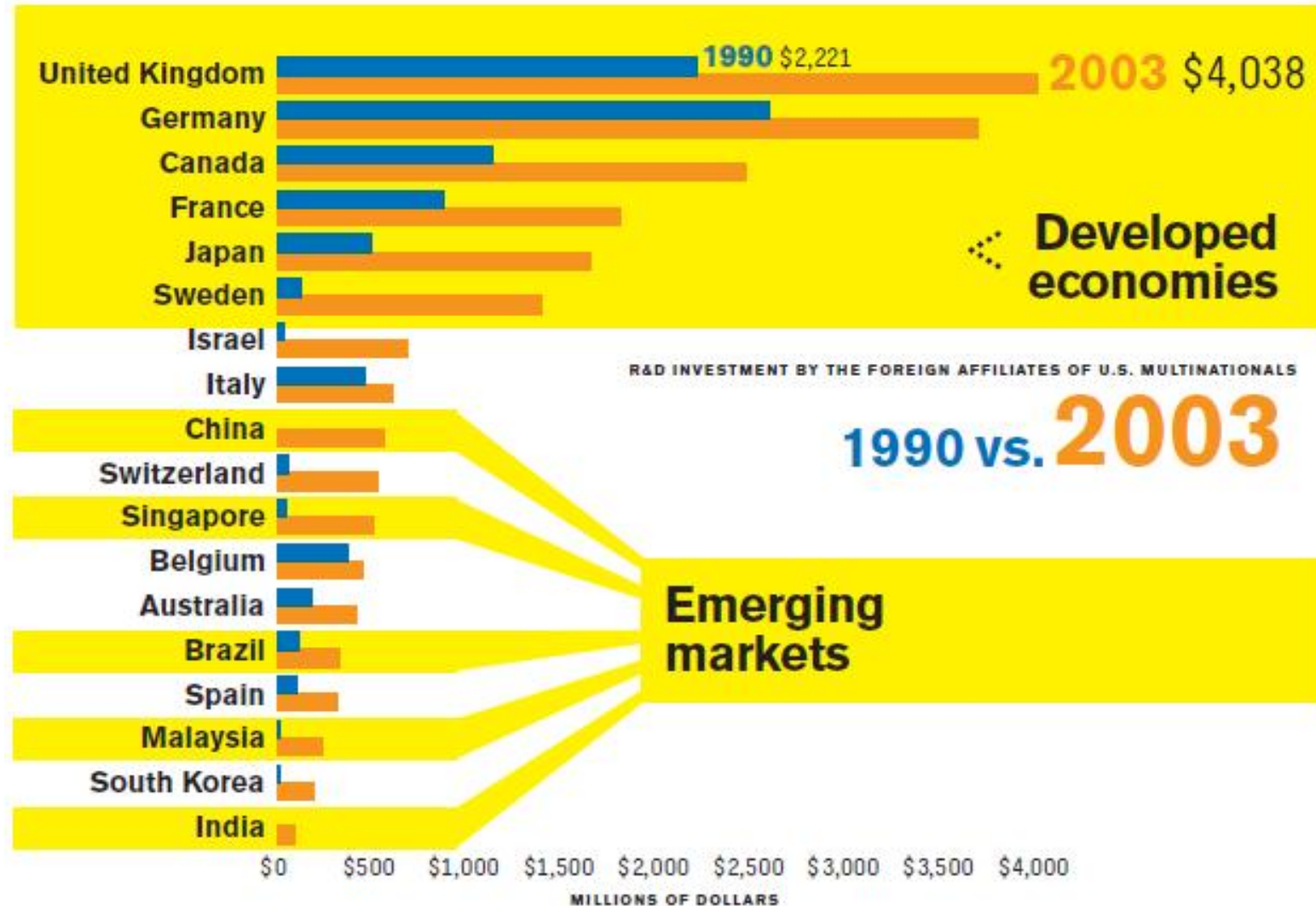
4.27 High-Wage, Fast-Growth Occupations Require Higher Levels of Education

Source: U.S. Bureau of Labor Statistics



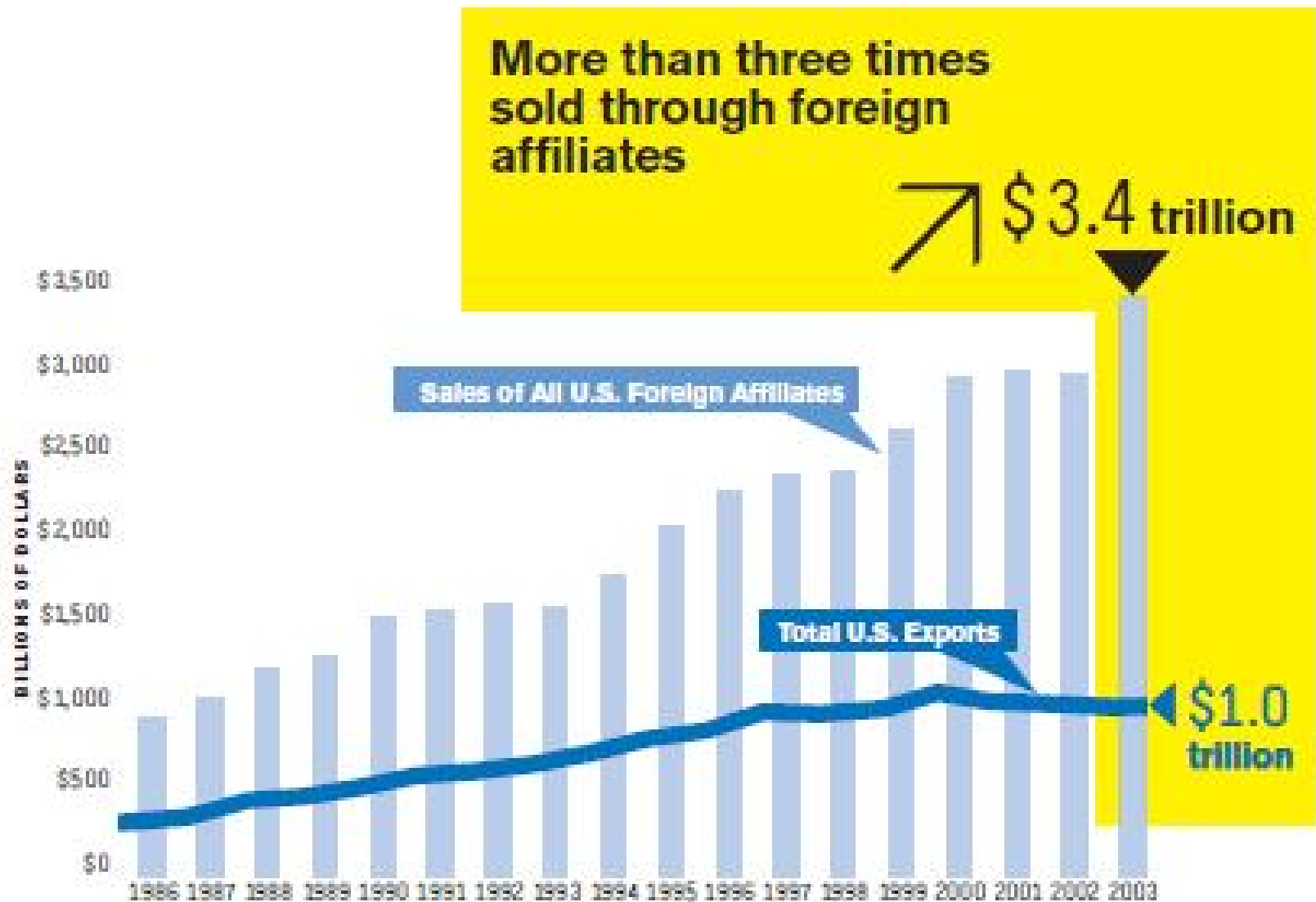
4.3 U.S. Companies Perform Most Overseas R&D in Developed Economies, but Are Increasingly Turning to Emerging Economies

Source: U.S. Bureau of Economic Analysis



1.5 U.S. Multinationals Sell Three Times More Through Foreign Operations Than Through Exports

Source: U.S. Bureau of Economic Analysis



Porter, Pisano and Shih are strongly arguing from Harvard Business School to restore the American Scientific Commons.

RICHARD FLORIDA IS FAR FROM ALONE.

IN DEPTH October 30, 2008, 5:00PM EST

Why America Needs an Economic Strategy

The Harvard Business School competitiveness guru offers his prescription for long-term prosperity

By Michael E. Porter

**PORTER TOO DOES NOT THINK THE
USA IS DOING WELL.**

IN DEPTH October 30, 2008, 5:00PM EST

Why America Needs an Economic Strategy

The Harvard Business School competitiveness guru offers his prescription for long-term prosperity

By Michael E. Porter

on the rise. Few Americans know that the U.S. ranks only 20th among countries in openness to capital flows, 21st on low trade barriers, and 35th on absence of distortions from taxes and subsidies, according to the 2008 *Global Competitiveness Report*. We are fast becoming the kind of distorted economy we have long criticized.

IN DEPTH October 30, 2008, 5:00PM EST

Why America Needs an Economic Strategy

The Harvard Business School competitiveness guru offers his prescription for long-term prosperity

By Michael E. Porter

U.S. colleges and universities are providing access to them by our citizens' educational attainment) over the past 30 years, u

the economy. The job receives less and less

A final strategic failure is in many public education system is a serious are better educated than the young

**Porter:
Americans leaving the
workforce today are
better educated than
the ones they are
replaced with.**

(an to improve higher) his vital area nd in an

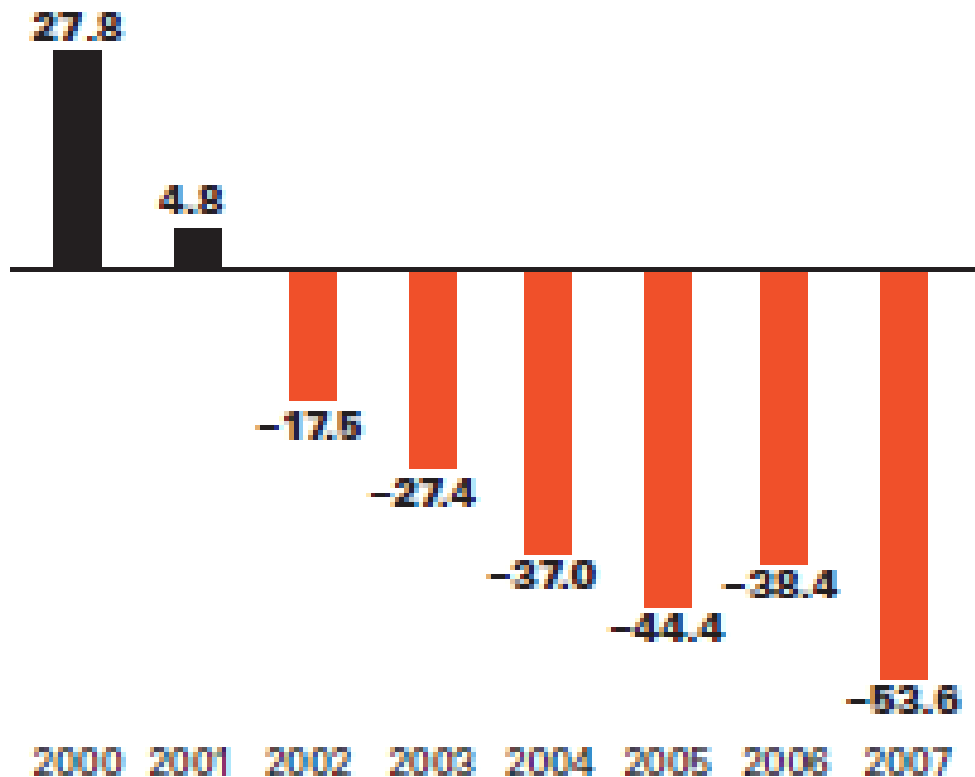
Americans know that the realize that citizens retiring today are the workforce. In the global economy, just

Restoring *American Competitiveness*

Decades of outsourcing manufacturing has left U.S. industry without the means to invent the next generation of high-tech products that are key to rebuilding its economy. | **by Gary P. Pisano and Willy C. Shih**

A Sign of Trouble

The U.S. trade deficit in high-tech products (\$ billions)

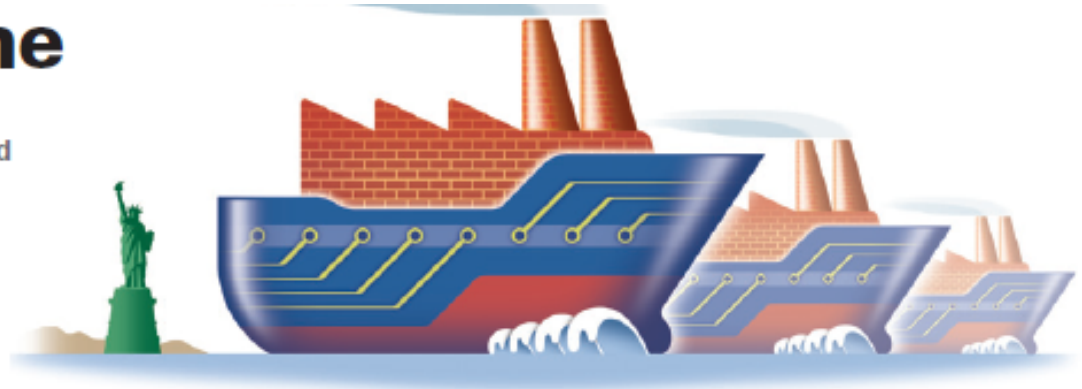


Note: Sectors included are: biotechnology, life sciences, optoelectronics, information and communications, electronics, flexible manufacturing, advanced materials, aerospace, weapons, nuclear technology, and computer software.

Source: National Science Board, "Science and Engineering Indicators 2008"

Going...Going...Gone

Many high-tech products can no longer be manufactured in the United States because critical knowledge, skills, and suppliers of advanced materials, tools, production equipment, and components have been lost through outsourcing. Many other products are on the verge of the same fate.



Semiconductors

ALREADY LOST

"Fabless" chips

AT RISK

DRAMs

Flash memory chips

Electronic displays

ALREADY LOST

LCDs for monitors, TVs, and handheld devices like mobile phones

Electrophoretic displays for Amazon's

Energy storage and green energy production

ALREADY LOST

Lithium-ion, lithium polymer, and NiMH batteries for cell phones, portable consumer electronics, laptops

Computing and communications

ALREADY LOST

Desktop, notebook, and netbook PCs

Low-end servers

Hard disk drives

Advanced materials

ALREADY LOST

Advanced composites used in sporting goods and other consumer gear

Advanced ceramics

» Thanks to destructive outsourcing and faltering investment in research, the U.S. has lost or is on the verge of losing its ability to develop and manufacture a slew of high-tech products.

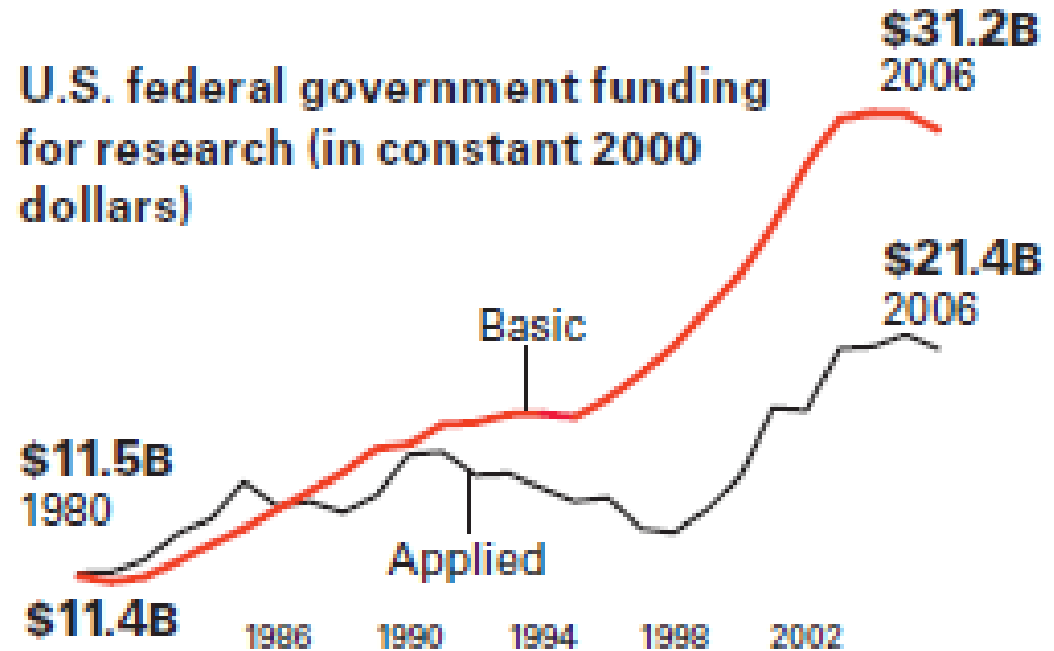
» Only by rejuvenating its high-tech sector can the U.S. hope to return to the path of sustained growth needed to pay down its huge deficits and raise its citizens' standard of living.

» To address this crisis of government and

America must rebuild the country's collective R&D, engineering, and manufacturing capabilities that sustain innovation. Instead, applied research is flagging **... decisions.**

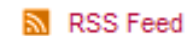
A Flagging Commitment to Scientific Research

The federal government has been the dominant provider of funding for basic research in the United States and a major underwriter of applied research. But in recent years, the gap between the two has widened. This disparity could undermine the competitiveness of the country's high-tech sector over the long term.



Source: National Science Board, "Science and Engineering Indicators 2008"

IS THE U.S. KILLING ITS INNOVATION MACHINE?



Why the U.S. Tech Sector Doesn't Need Domestic Manufacturing

10:14 AM Monday October 5, 2009
by David B. Yoffie

I
I

**YET, NOT ALL THINK THAT SHEDDING
MANUFACTURING JOBS IS A SIGN OF
WITHERING COMPETITIVENESS.
AMERICA'S FUTURE LIES IN SERVICES.**

In their article "Restoring American Competitiveness," my colleagues Gary Pisano and Willy Shih assert that excessive outsourcing has undermined the competitiveness of the U.S. high tech sector. I disagree. The loss of some manufacturing in a high cost country such as the U.S. is inevitable and need not lead to a decline in competitiveness. Indeed, the future of U.S. competitiveness in high tech industries such as computers, software, communications, and electronics may depend more on the transition to services than trying to retain the country's manufacturing base.

Take IBM, Google and Amazon, for example

Maybe the most important point to make is that U.S. has been moving towards a service economy for the last 100 years. In the long run, services will become the core of the U.S. tech world as well. The most successful U.S. computer, software, communications, and electronics companies are adding services on a global scale to complement and, in some cases, replace their core product businesses. IBM, for example, has moved from being a product company to the world's largest technology-services company. Google, which is widely perceived to be the leading technology company in the world today, generates all of its global revenues as a service. And Amazon and Salesforce.com are but two of the many U.S. firms positioned to prosper as cloud computing and software-as-a-service (SaaS) cause high tech services to accelerate.

In short, the decline of manufacturing in the U.S. will not necessarily bring about the decline of the U.S. high tech sector. Ultimately, more and more technology will be delivered via services, where American firms can and should play a world-leading role.

David B. Yoffie

Max and Dorris Starr Professor of International Business Administration

Harvard Business School

Loss of competitiveness might not be that great in the aggregate, and in any case (Rappaport) , it is a shift all for the better.

ECONOMISTS ALSO TAKE A MORE SOBER VIEW.

Think U.S. High Tech Isn't Healthy? Look at the Data

8:33 AM Friday October 16, 2009

by Laura D'Andrea Tyson

- The U.S. retains significant shares of global markets for high-tech products and services.
- The reduction in costs and prices made possible by outsourcing upstream component production to low-cost foreign locations
- Has helped U.S. companies maintain their competitiveness in high-value-added downstream products.

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IS THE U.S. KILLING ITS INNOVATION MACHINE?

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Outsourcing Isn't a Problem for Silicon Valley But Is for Detroit

12:30 PM Friday October 9, 2009
by Andy Rappaport

Tags: Auto industry, Global business, Tech industry

**RAPPAPORT ILLUSTRATES WHY
LOOSING MANUFACTURING JOBS IS
NOT THE ISSUE.**

http://www.augustcap.com/team/andy_rappaport/

Outsourcing: The Culprit Is Capitalism,

11:08 AM Monday October 26, 2009

by Andy Rappaport

Tags: Competition, Global business, Innovation

If the trend toward outsourcing of critical technologies was a response to quarterly earnings pressure from Wall Street, it would stand to reason that U.S. technology companies' R&D budgets should fall with rising dependence on outsourced components and processes.

But the opposite is true, which demonstrates that outsourcing is being employed not simply to cut costs, but as a means to direct capital to its most productive long-term uses — the very essence of free-market capitalism. So if all we care about is

PRODUCT

Managing

This article
create, and
for moving

- Competition to deliver products
- Makes them more plentiful and cheaper
- The knowledge to adapt and articulate products becomes relatively less abundant and more expensive.

markets. Apple enjoys predictable and unfettered supply of leading edge technology because its software, design, marketing, and now retail prowess give it ultimate control over customer spending. Amazon, Google, Hewlett-Packard, IBM, AT&T, and Qualcomm have successfully used their investments in software, services, infrastructure, and intellectual property to do the same. All use their market power to force upstream vendors to invest for them to make the inputs to downstream innovations and transformations cheaper and more plentiful. As long as

Dynamic random access memory (DRAM), nos anos 80

- Para não perderem capacidade produtiva nos chips de memória os EUA se protegeram.
- O setor de IT beneficiou-se da abundancia de chips, inclusive asiaticos.
- Mas não os fabricantes dos chips, que, premidos pela concorrência asiática
- Apenas conseguem lucros para se manter no lugar em vez de avançar.
- Não é valido so para IT, vejam o caso das celulas fotovoltaicas.

Photovoltaic cells, mine or yours?

- Installed in California, a solar module will generate electricity at 100 times more value than its production in China.
- There is much room for innovation in photovoltaic cells.
- But as the absolute cost of photovoltaic conversion falls over the economic value of opportunities around applications will swamp the payback on marginal innovation in the panels themselves.
- Ownership of manufacturing assets will not be required for the most valuable innovations.

The key is to control the client relationship

- When you don't, like in the American car industry
- Think of electric cars, they need better batteries, but
- Innovation in batteries is likely to help Toyota and Honda more than GM.

Summing-up

- Yes, there is a loss in the relative size of the creative class in the USA
- Which trains people less in the tech field
- High tech companies are doing more R&D abroad
- But, some say, the shift is not that large, though the trend may be there
- Perhaps the USA might do better in services than in manufacturing, if they can protect their rights
- Nonetheless, there is an opportunity for emerging markets and some are already exploiting it.
 - GE reverse engineers products from India and China

▀ **How GE Is Disrupting Itself**

by Jeffrey R. Immelt, Vijay Govindarajan, and Chris Trimble

For decades, GE has sold modified Western products to emerging markets. Now, to preempt the emerging giants, it's trying the reverse.

In May 2009, General Electric announced that over the next six years it would spend \$3 billion to create at least 100 health-care innovations that would substantially lower costs,

Examples: GE will market low cost high tech goods developed in India and China

- Hand-held electrocardiogram:
 originary rural India
- Ultrasound health testing:
 originary rural China
- What is the nature of the environment in India and China that allows this to happen?

Is Reverse Innovation Like Disruptive Innovation?

9:49 AM Wednesday September 30, 2009

by Vijay Govindarajan and Chris Trimble

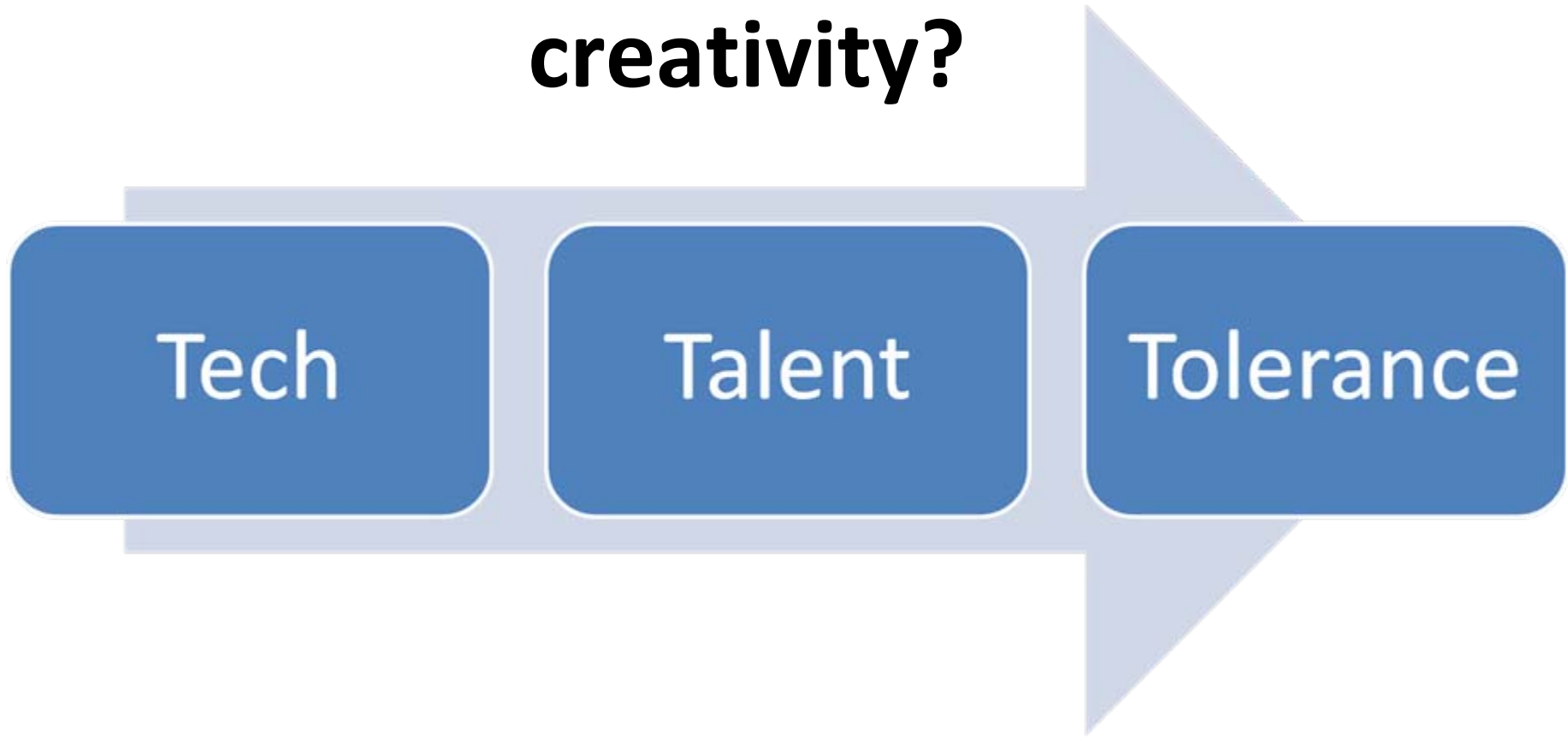
Tags: [Disruptive innovation](#), [General Electric](#), [Global business](#)

- Because incomes are so low in emerging markets, innovations tend to be low priced – competitive.
- Infrastructure limitations spur innovations not as intensive in infrastructure
- Environmental degradation hits India and China earlier: other examples, desalination technologies

Creativity clusters and allows innovation to happen. The latter is more productive when sustained in market power.

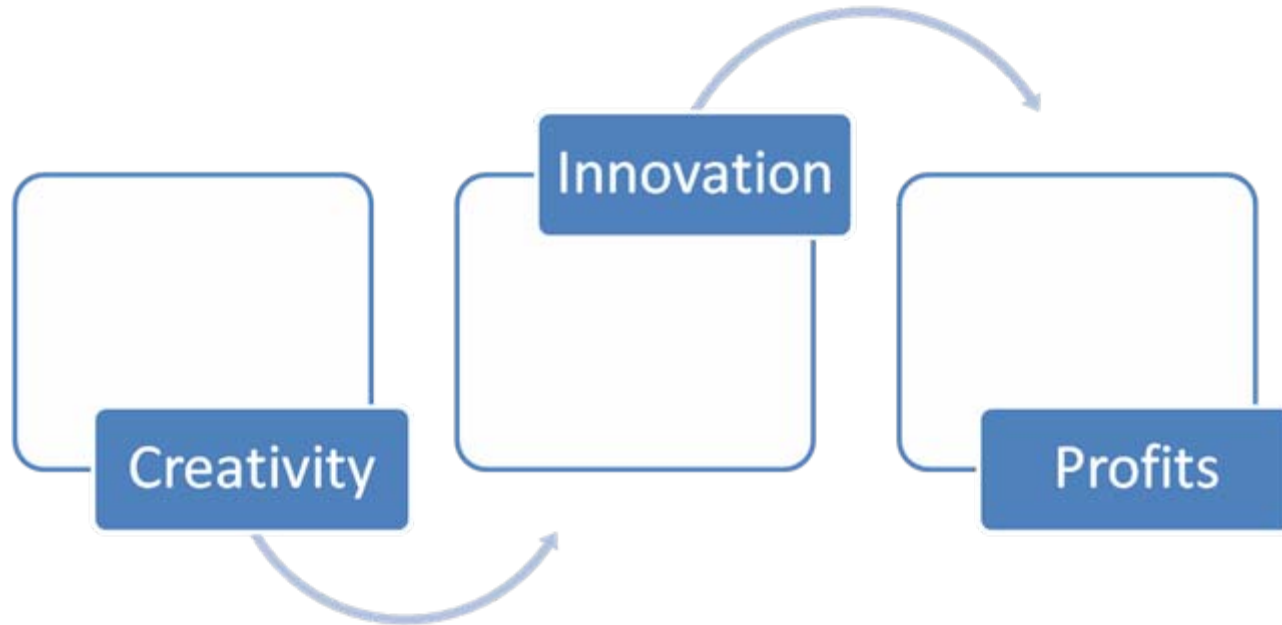
SUMMING-UP, WHAT CAN WE LEARN?

Richard Florida: what fosters creativity?



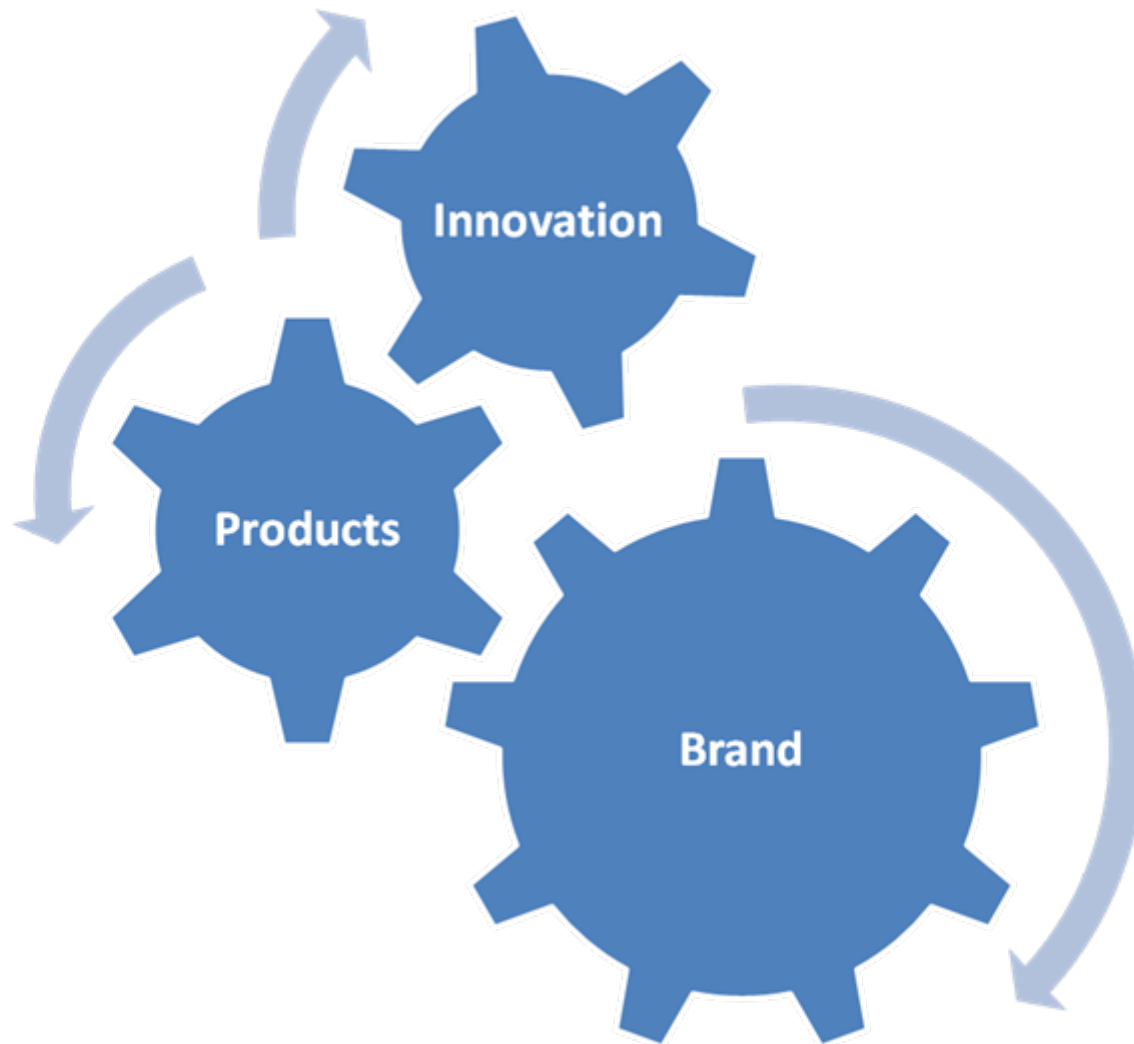
Creativity flows into a pool of talent that nurtures innovation

Profits fund creativity, rather than innovation



**As long as market power
allows high profits to be extracted**

Market power requires you control downstream operations



**In business, success is not in innovating
but in making money out of it.**

**And you are unlikely to milk profits from
an innovation a consumer did not ask for.**

**When they ask for it, you have to make
sure they will only want it from you.**

Brand it!

The success of Apple's Ipod lies on its branding a product based on innovation that Apple controls though it does not develop AND on its business model:

Itunes

Think of the light bulb, it also disrupted a market.

Edison didn't just invent a light bulb.

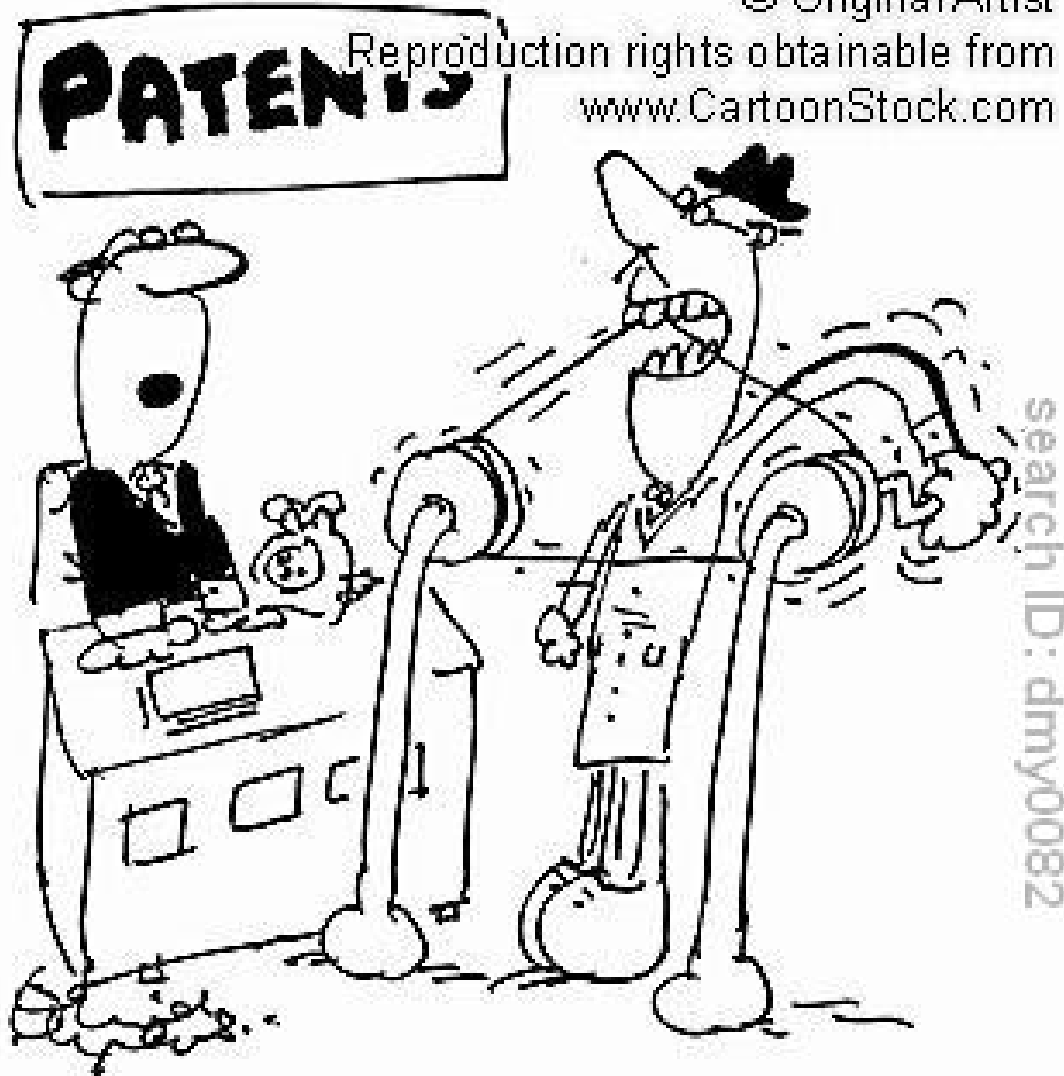
- He created a coherent commercial system to support it.
- He designed a technical platform that included generators, meters, and transmission lines;
- He piloted the project in an ideal test market (lower Manhattan, teeming with enthusiastic early adopters);
- He used his clout to get the regulatory support he needed,
 - fighting off the lamplighters' union, among other things.
- He imagined the business ecosystem his light bulb would need and set about methodically creating it.

Johnson and Suskewicz:

<http://hbr.harvardbusiness.org/2009/11/how-to-jump-start-the-clean-tech-economy/ar/1>

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Search ID: dmy0082

"Frankly, I'd say it's a slightly elaborate way to use dental floss."

Unilever's AdeS profits on a product whose market is USD\$1 billion/year
Brazil takes pride on having developed a mechanical cow.

INVESTING IN TECHNOLOGY WITH NO CONTROL OF THE CLIENT IS LIKE FEEDING A COW THAT CAN BE MILKED BY ANYONE.

**WHY WE WERE LEFT WITH A
MECHANICAL COW WITH DRY UDDERS?**

Brito Cruz na Fapesp

Cientistas e Engenheiros em P&D (rev. 2003)

	Brasil		USA	
Docentes em univers.	90.631	72%	128.000	13%
Universidades Federais	43.494			
Universidades Estaduais	25.299			
Universidades Privadas	21.838			
Inst. de Pesquisa	5.924	5%	70.200	7%
Empresas Privadas	29.086	23%	764.500	79%
Total	125.641	100%	962.700	100%

Fontes: Brasil: Sinopse do Ensino Superior 2001 e Indicadores MCT, 2000
 EUA: R&D in Industry, 1998

Early signs of a need and the technical response

- First Lady of Cuiabá requested university help to extract soy-milk to supplement nutritional intake
- Professor Moretti delivered the mechanical cow
- The professor deservedly earned a technological award from the Governor of São Paulo
- The innovation rendered a foul tasting and smelling drink
- Only fit to be swallowed as part of a mandatory school nutritional program

Meanwhile, a business lawyer...

- A decade later
- Mr. Allende, from Buenos Aires
- Funded market-oriented research to develop a soy-milk-based drink
- He mixed fruit juice to pasteurized soy-milk
- Branded the product
- Distributed it through commercial partners
- Including to Paraguay through Unilever

Bestfoods bought AdeS

- Expanded to Brazil
- Overcame resistance to product
 - Resulting from President Figueredo's faux pas
- Invested in local production
- Unilever bought Bestfoods
 - “Discovered” a low-fat uncarbonated drink in AdeS
- Positioned the product in that modern market
- AdeS is now everywhere in Latin America where it has 60% of a \$1billion dollar market,
 - the mechanical cow is also in Cuba and Angola

AdeS now has about a dozen competitors in Brazil, many are local companies

- Meaning there was no significant barrier to entry into this market
- Did we not have the fruit juice?
- Did we not have the soy-milk?
- Did we not have the distribution network?
- But AdeS in Argentina had almost nothing.
- What did we miss in the opportunity to transform soy-milk into a winning product?
- Might we still miss the next chance?
- We might if we continue to fund technological research without an eye in the market, see allocation of talent.

HBR EDITORS' BLOG

How Do Innovators Think?

5:21 PM Monday September 28, 2009

by Bronwyn Fryer

Tags: Creativity, Innovation, Leadership

Gregersen: You might summarize all of the skills we've noted in one word:

"inquisitiveness." I spent 20 years studying great global leaders, and that was the big common denominator. It's the same kind of inquisitiveness you see in small children.

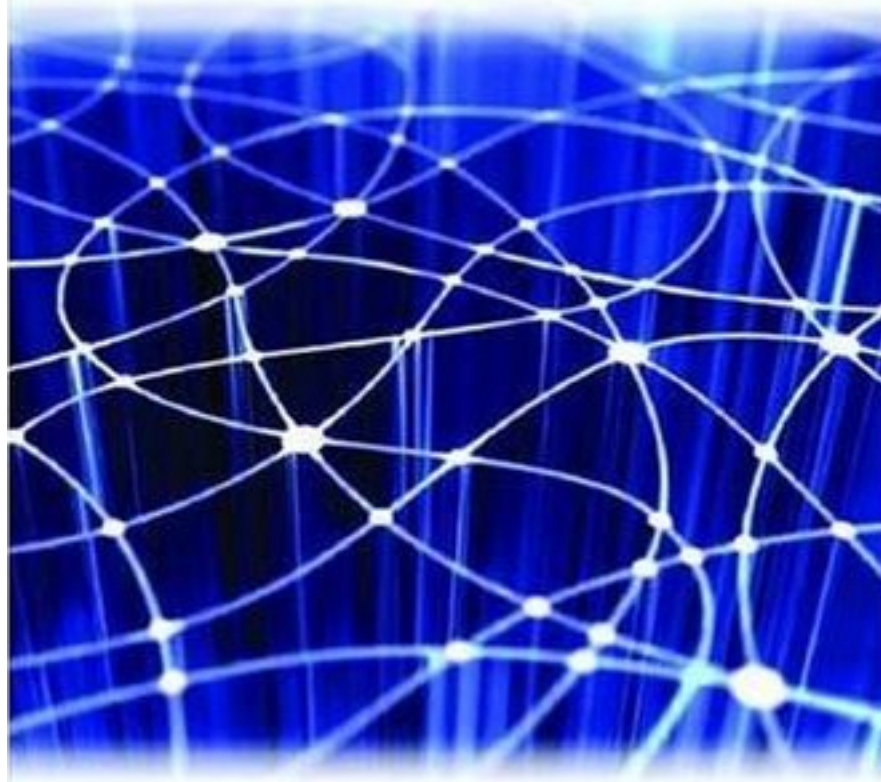
Why aren't organizations more inquisitive?

Dyer: We think there are far more discovery driven people in companies than anyone realizes. We've found that 15% of executives are deeply innovative, meaning they've invented a new product or started an innovative venture. But the problem is that even the most creative people are often careful about asking questions for fear of looking stupid, or because they know the organization won't value it.

Research among Brazil's largest exporting entrepreneurs

**SHOWED THAT LOVE OF LEARNING
IS NOT AMONG THE MOST PRAISED
VIRTUES**

CULTURE & MANAGEMENT IN THE AMERICAS



Alfredo Behrens

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