Innovate Japan!

December 6, 2007
Stanford University

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Incunabula

Innovation

Innovation almost equals National Competitiveness

- US Initiatives and Policies, eg, Innovate America   (2004)
- European Initiatives and Policies, eg, Lisbon Strategy (2000), Aho Report (2006)
- Japan Initiatives and Policies, eg, Innovation25 (2006)

- 'Innovation' is everywhere, but why?

'An Innovation Mantra' per K Kurokawa,
                    Science, April 13, 2007

Scholarly Articles with "Innovation" in the title 1955-2004

Per 10,000 social science articles
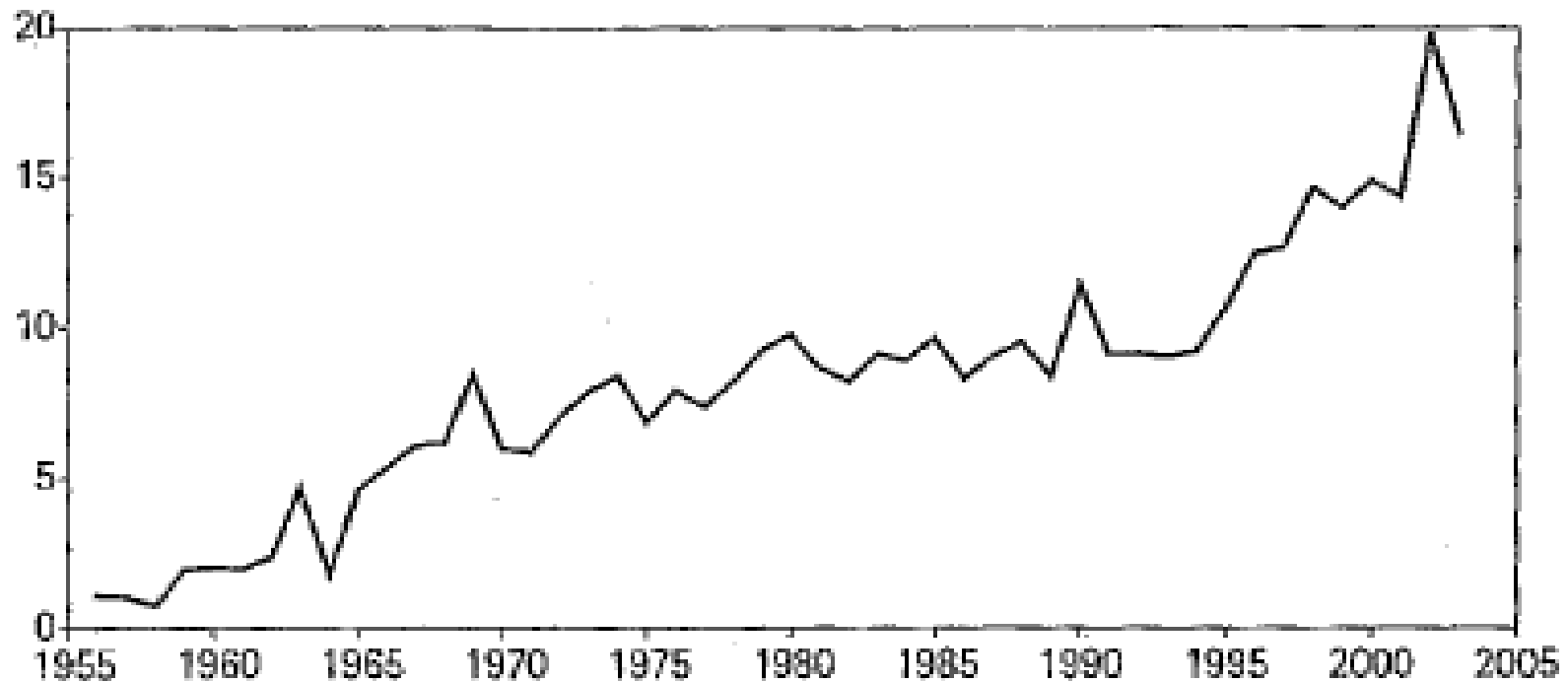
Nobel Peace Prize

2006   **Grameen Bank and Mr Yunus**

2007   **IPCC and Mr Albert Gore**

Two Reasons for Innovation Mantra

Globalization: The world is flat

Sustainable Development or
Constraints for Growth

Disparity between those who have and those
who have not

Constraints

- Growing human population
- Climate change/climate crisis

- Environment deterioration, pollution
- Water and foods and other natural resources

- Perception by the general public of wide North-South disparity
  - Sense of inequity, frustration, violence, identity, etc,

   ---Is Our Society Sustainable?

Why innovation now?

Forces at Work

JAPAN
- Declining population and rapid ageing

ASIA
- Rapidly Growing, but with pressing Issues

WORLD
- Further development of a knowledge-based network society
- Accelerating progress of globalization
- Explosive population growth
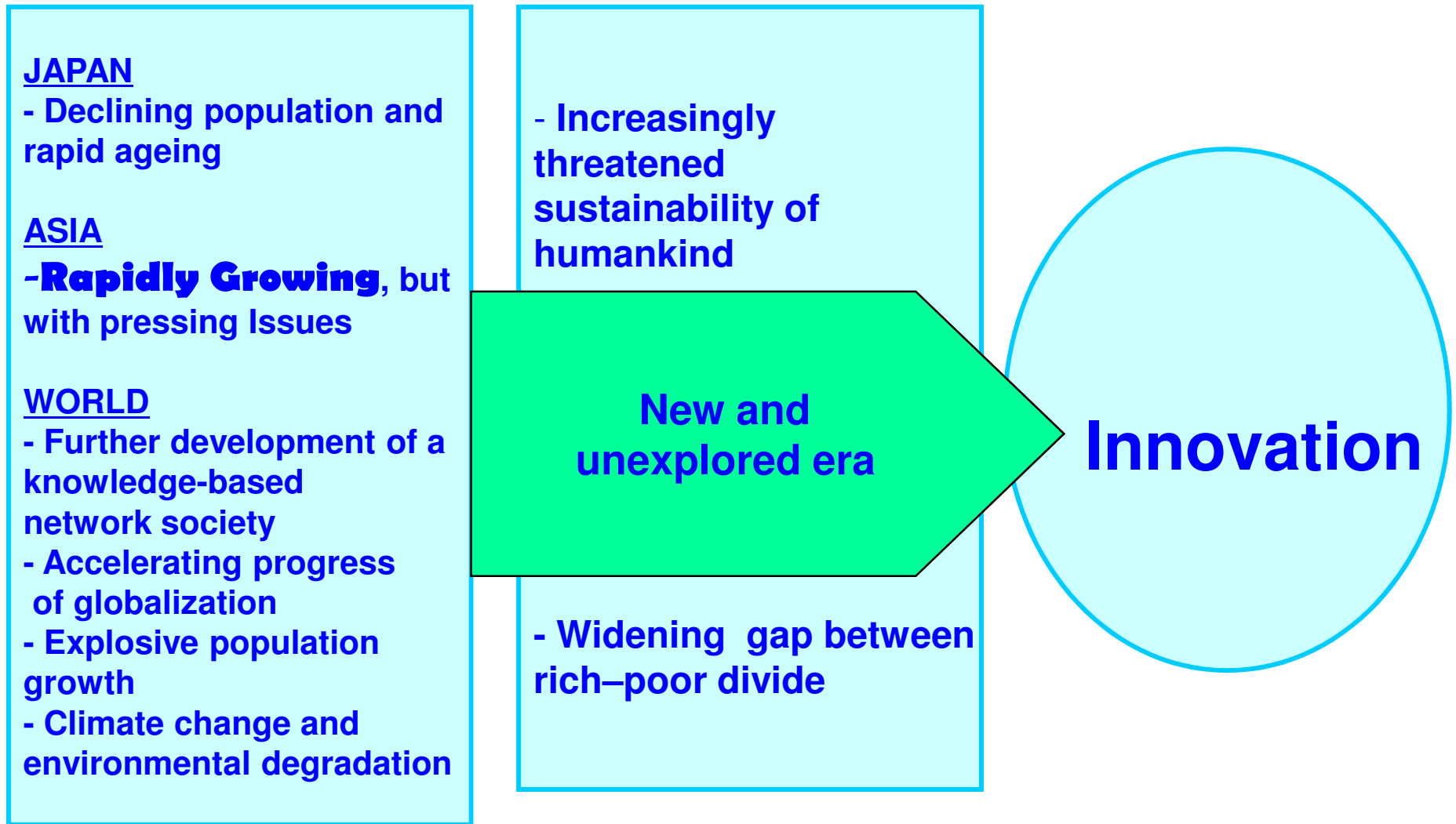**- Climate change and environmental degradation**

Issues

- Increasingly threatened sustainability of humankind

New and unexplored era

- Widening gap between rich–poor divide

Innovation

Key words in Globalized World

1.   Personalization
        Collaboration
        Innovation
                The Economist Intelligence Unit, 2007
        INSEAD

2.   International vs Global
3.   Human resource vs Human capital
4.   Civil society and social entrepreneurship
5.   Think locally, act globally
6.   Wikinomics

Technological Revolution and Techno-Economic Paradigm

C Freeman and C Perez

- **First: Industrial Revolution;** UK, 1769-1830
- **Second: Age of Iron and Railway;** UK, 1829-1873
- **Third: Age of Steel, Electricity, and Heavy Engineering;** UK and US to Euro, 1875-1918

- **Fourth: Age of Oil, Automobiles and Mass Production;** US to Euro, 1908-1974
- **Fifth: Age of Information and Telecommunication;** US to Euro and Asia, 1971-20??

# Fourth: Age of Oil, Automobiles and Mass Production:
1908-1974

- Mass production, mass markets, consumerism
- Economies of scales (product and market volume)/
  horizontal integration
- Standardization of products
- Energy intensity (mostly oil-based)
- Synthetic materials

- Functional specialization/hierarchical pyramids
- Centralization/ metropolitan centers-suburbanization
- National powers, Int'l agreements and confrontation

    -Linear Innovation, Supply-side dictates
    -National, Bi-lateral, International
    -Human resource development

Anglosaxon: Order by the function
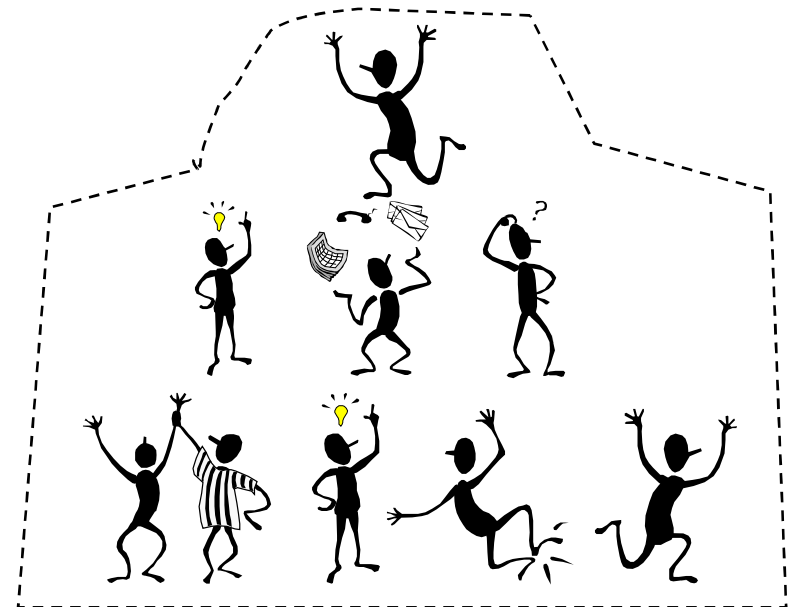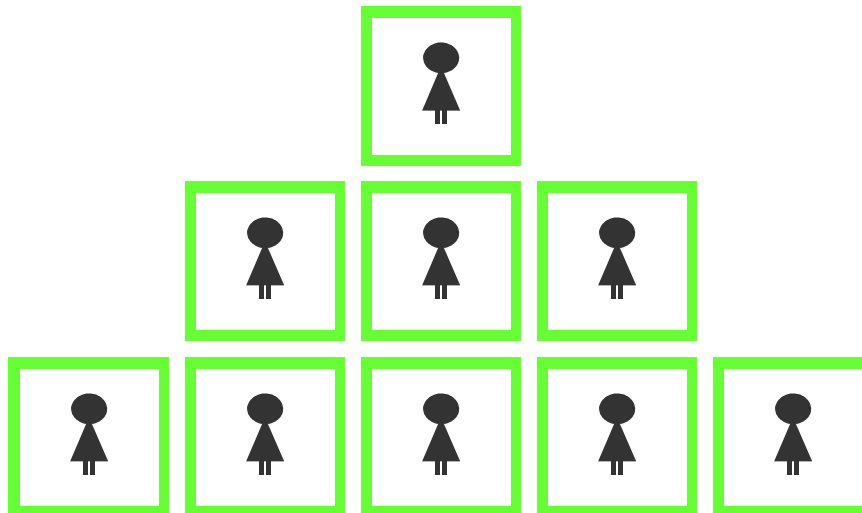
Japan: Order by the structure

Upper limit — chances

Lower limit — risks

Less inequality
Convoy system

More inequality
Risk-taking and Competition

Technological Revolution and Techno-Economic Paradigm
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Innovators and Innovations

- **Internet:**
  www (92); Netscape, Yahoo, Amazon (all 94); Windows95; Linux, Google (97)
- **Mobile phone of Japan**
  -Nokia, Motorola, Samsung, Sony-Erickson
- **Email**
- **iPod to iPhone- what Apple sells?**
- **D/S, Wii- Nintendo vs PS3 of SONY**

- **Technology? Regulation? Idea? Social infrastructure?**
- **Demand-driven Innovation!**

Industry Contributions to Productivity Growth

Domar weighted productivity.

	Non-IT Industries	IT-Using Industries	IT-Producing Industries
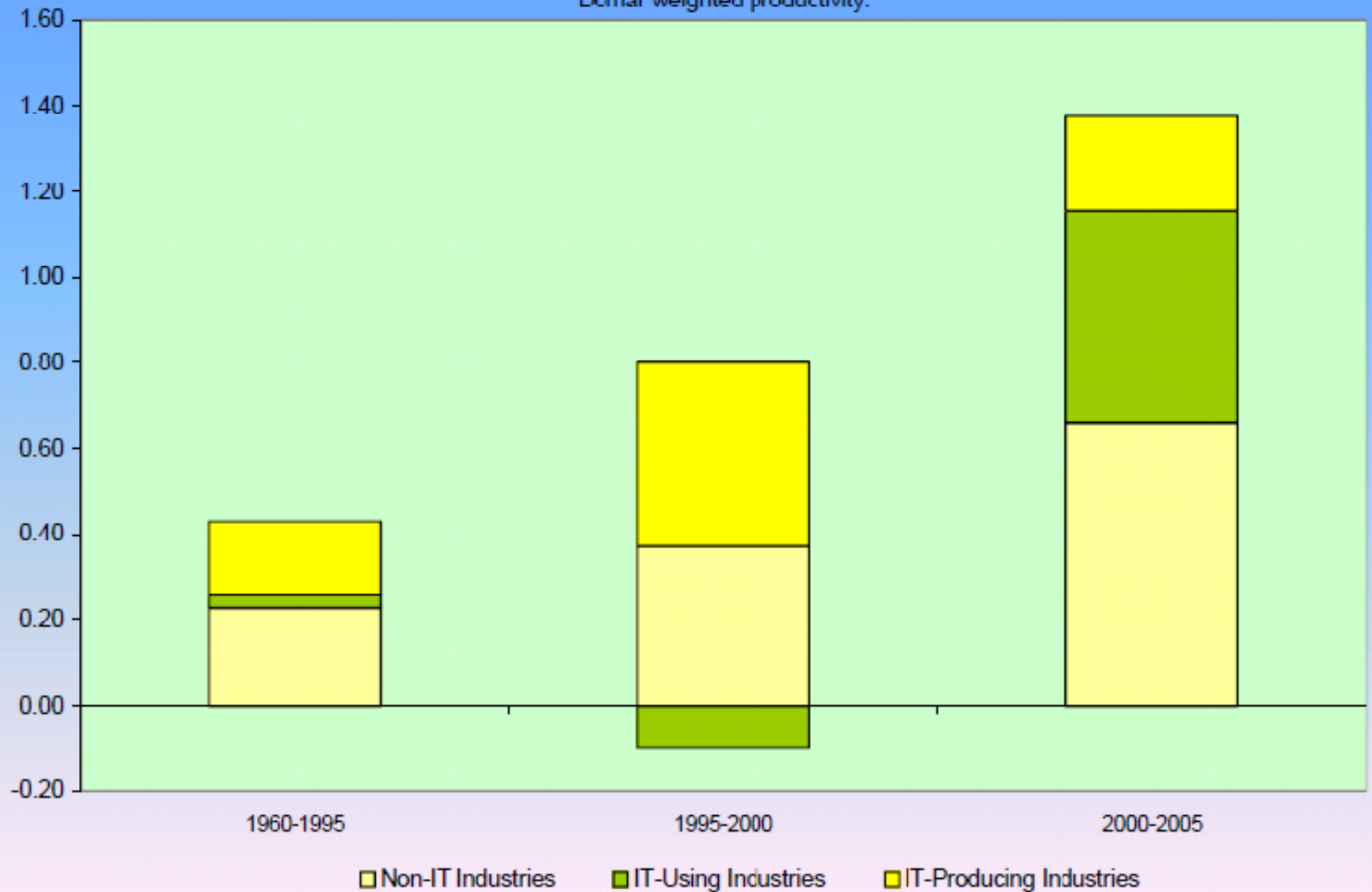
# Age of Information and Telecommunication
1971-20??

- **Information-intensity (microelectronics-based ICT)**
- **Decentralized and integration / network structures**

- Knowledge as capital / <u>intangible value added</u>
- <u>Heterogeneity, diversity, adaptability</u>

- Segmentation of markets / <u>proliferation of niches</u>/ <u>branding</u>
- Economies of scope and specialization combined with scale

- Globalization/ interaction between <u>the global and the local</u>
- Inward and outward cooperation/ power of <u>clusters</u>
- <u>Instant</u> contact and actions/ <u>instant</u> global communications

Innovation in Globalized World

- Invest on Human 'Capital' vs Human 'Resource'
- Nurture Entrepreneurship
- Heterogeneity, Diversity, Adaptability

- Focus on the Strength and the Core competence
- Recognize the Weakness- and Collaborate

- Speed is the Essence of the Game
- Think locally, Act globally

human capital vs human resource
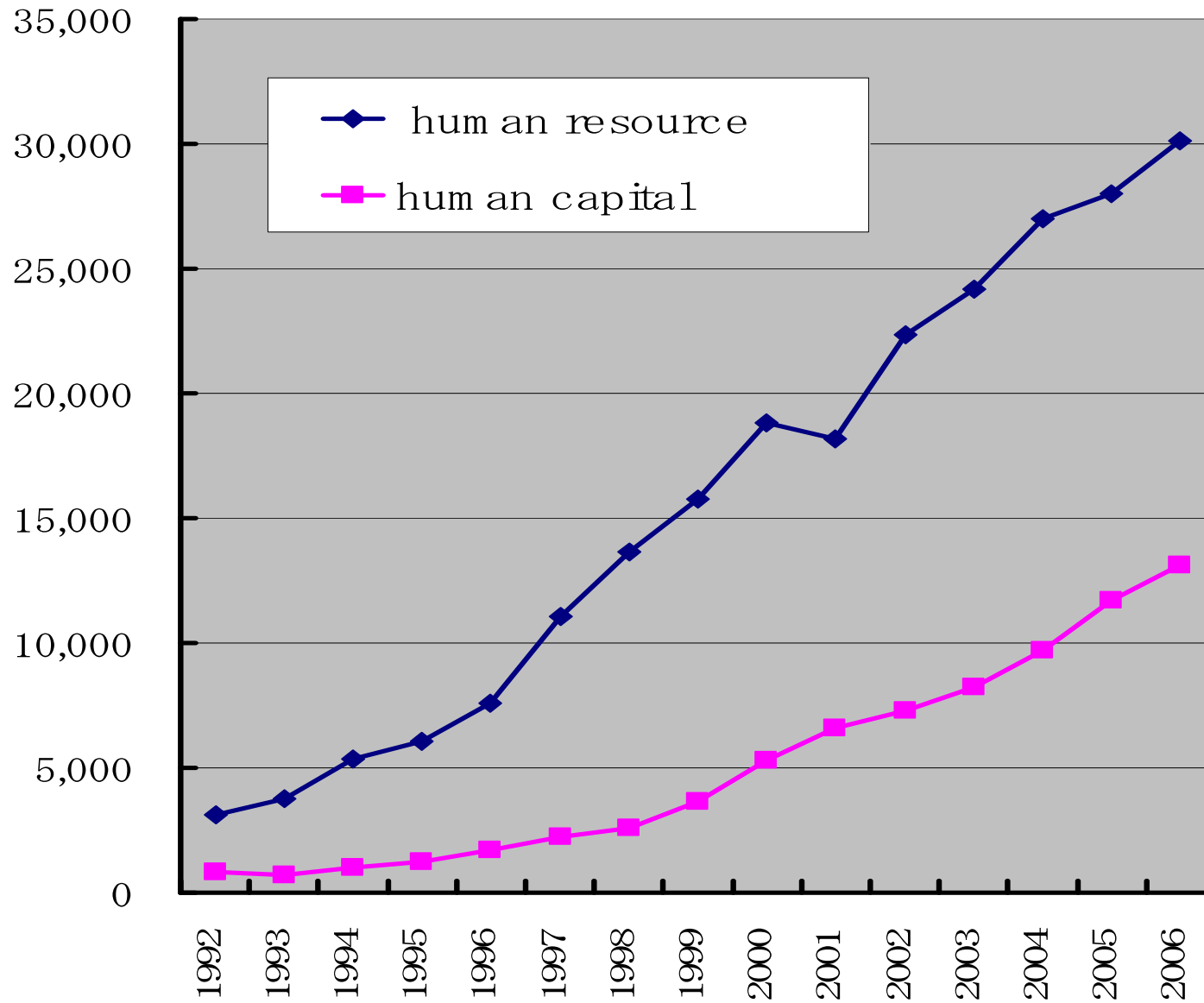
- **Green to Gold, by Daniel Esty***

- **Helios project at LBNL by Steven Chu****

- **Gold rush to Carbon rush**

*   **Dr. Daniel Esty, Professor of Environmental Law and Policy, Yale University, formerly with U.S. Environmental Protection Agency, Fellow of the World Economic Forum**

** **Dr. Steven Chu: Director of Lawrence Berkeley National Lab since 2004, Nobel Prize in Physics 1997, formerly Professor at Stanford**

Capital investment in Silicon Valley:
Green Tech and Clean Energy

500 million USD	2005
1,000	2006
4,000	2007

Ref: 4,000 million USD on ICT in 1995

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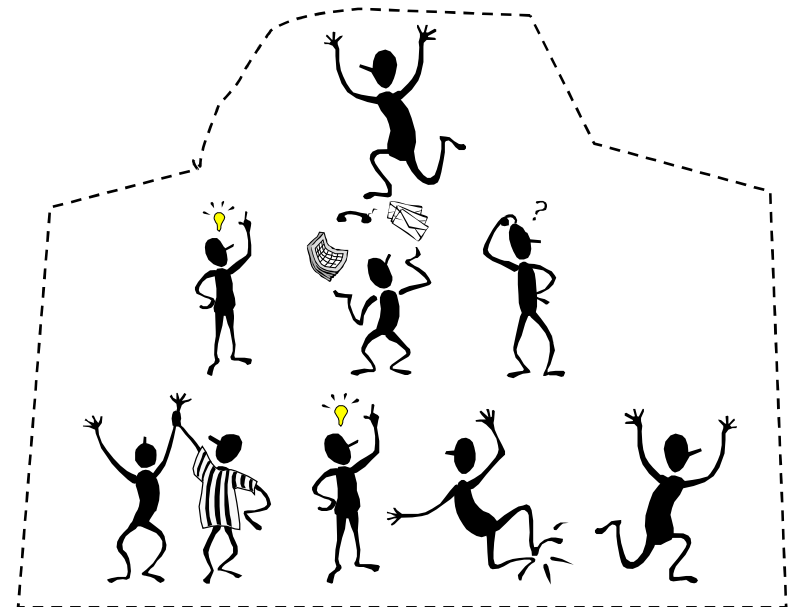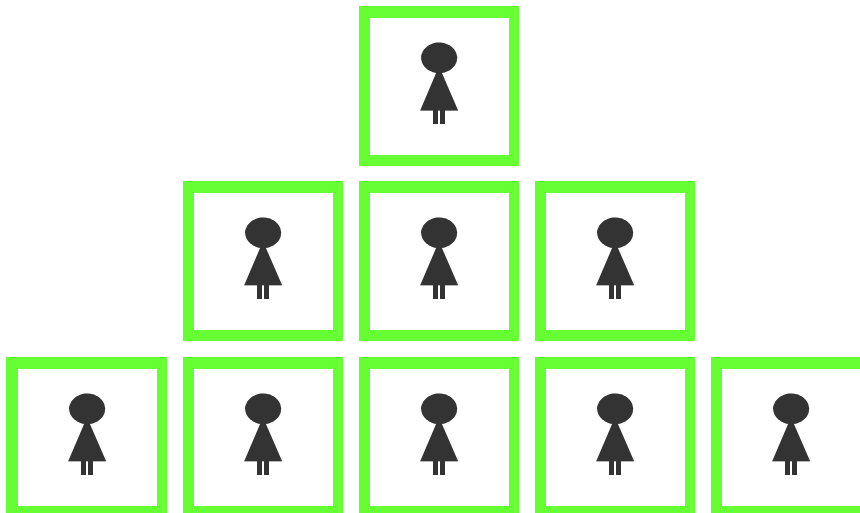   The Economist Intelligence Unit, 2007
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Anglosaxon: Order by the function

Japan: Order by the structure
Who are missing here?

Upper limit — chances

Lower limit — risks

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Convoy system

More inequality
Risk-taking and Competition

- you can't connect the dots looking forward; you can only connect them looking backwards. So you have to trust that the dots will somehow connect in your future. You have to trust in something —

- You've got to find what you love. Don't settle.

- Death is Life's change agent.

= >   STAY HUNGRY, STAY FOOLISH!
    -Steve Jobs, CEO Apple & Pixar Animation
        At Stanford University, Commencement in 2005

Thank you

and

Type my name and Google!

You will find my messages