Institutions

« Introduction

» Innovation

On-campus lecture

Markku Sotarauta: On institutions (incl. introduction to the course) (88:45) / 13 January / PDF

Pre-recorded presentations

James Robinson (2014) Why nations fail. TEDxAcademy. (18:33)

In 2024, James Robinson, Daron Acemoglu and Simon Johnson were awarded the Nobel Memorial Prize in Economic Sciences for their comparative studies on prosperity between nations.

How Singapore got so crazy rich (2024) Bloomberg Originals (7:99)

Innovation and innovation policy

« Institutions

» Innovation geog.

Pre-recorded presentations

Bill Aulet (2014) What is innovation (4:17)
- Widely used definition of the concept of innovation, very clearly explained

Bill Aulet (2014) Varietes of innovation (4:29)
- Continues the introduction of the basics of innovation

Debate on mission-oriented innovation policy (2021) Druid Debate (82:07)
- A very topical debate on what we need innovation policy for
- Complements the article by Schot and Steinmueller

On-campus lecture

Markku Sotarauta: Innovation and innovation policy (xx:xx) / January 20 / PDF
- Supports the article by Schot and Steinmueller

Markku Sotarauta: Innovation and innovation policy continues (xx:xx) / January 27 / PDF

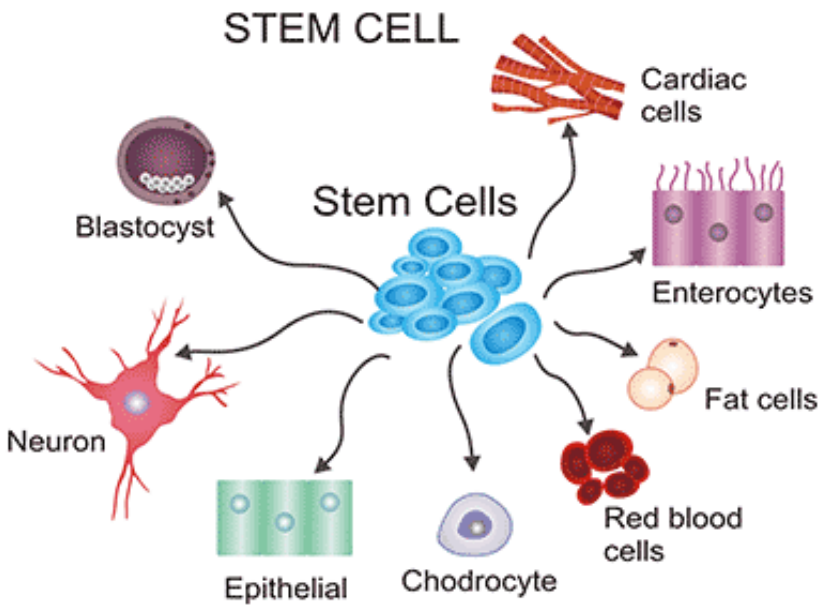
Reading

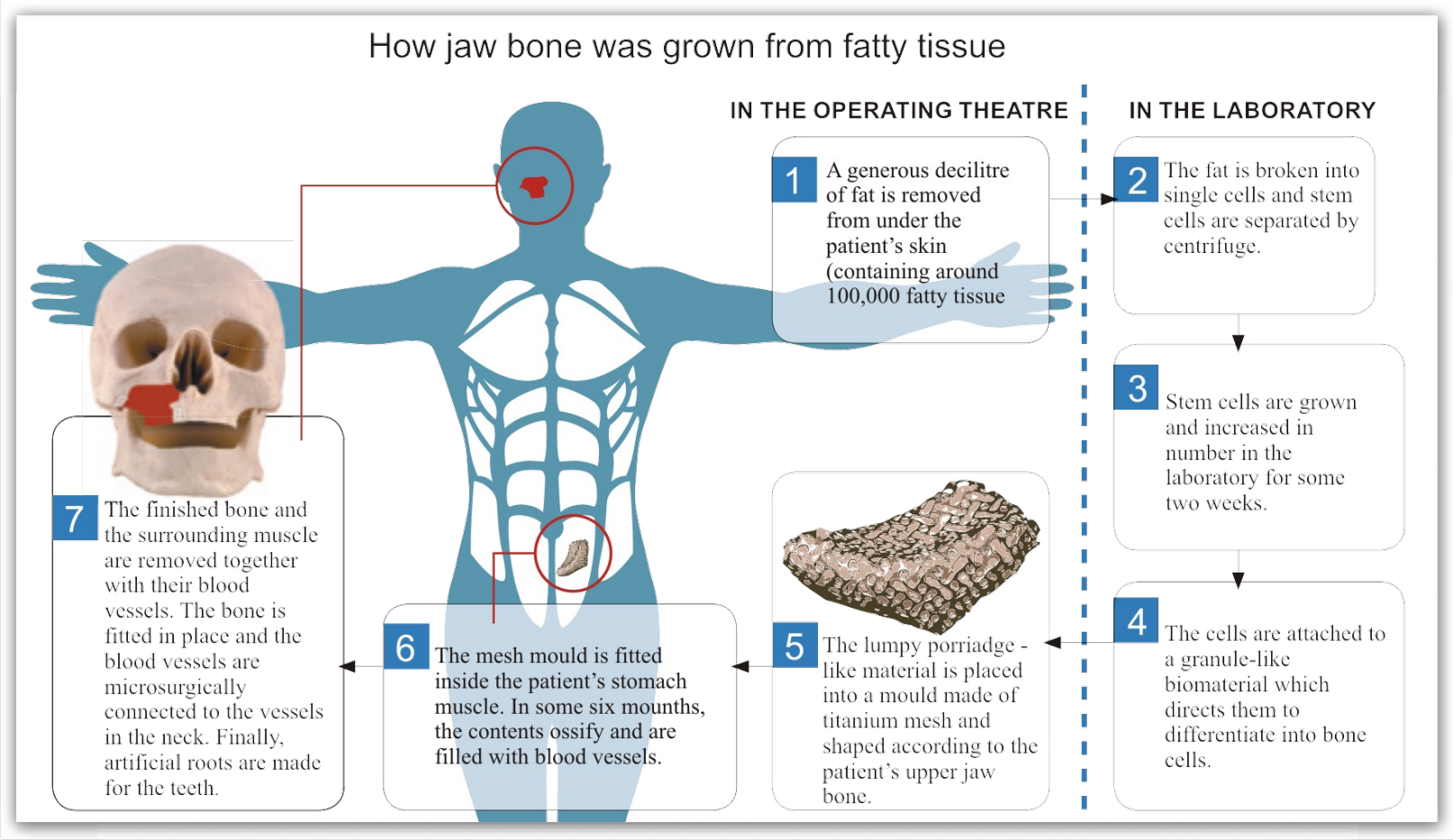
Schot, J. & Steinmueller, W.E. (2018) Three frames for innovation policy: R&D, systems of innovation and transformative change. Research Policy, 47, 1554-1567

Sotarauta, M., Kolehmainen, J. & Laasonen, V. (2023) Evolving innovation policy rationales in Finland. In Pekkola, E., Johanson, J-E. & Mykkänen, M. (eds) Finnish Public Administration: Nordic Public Space and Agency. 197-214. Palgrave Macmillan.

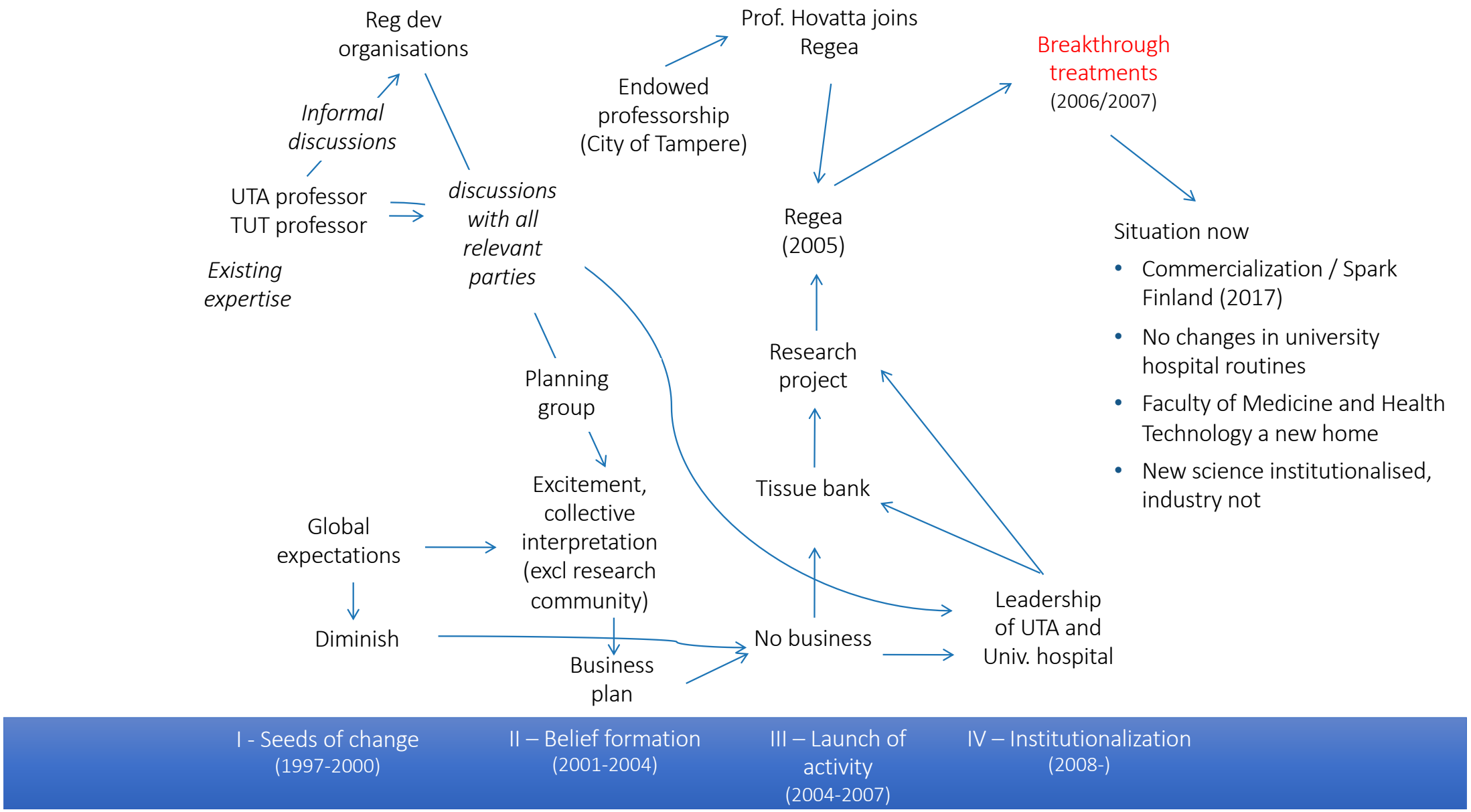
Stem cells

- **Stem cells** are undifferentiated or partially differentiated cells that can change into various types of cells
- The prevalent view was that mature cells were permanently locked into the differentiated state.
- In 2006, Shinya Yamanaka generated induced pluripotent stem cells from specialised cells.

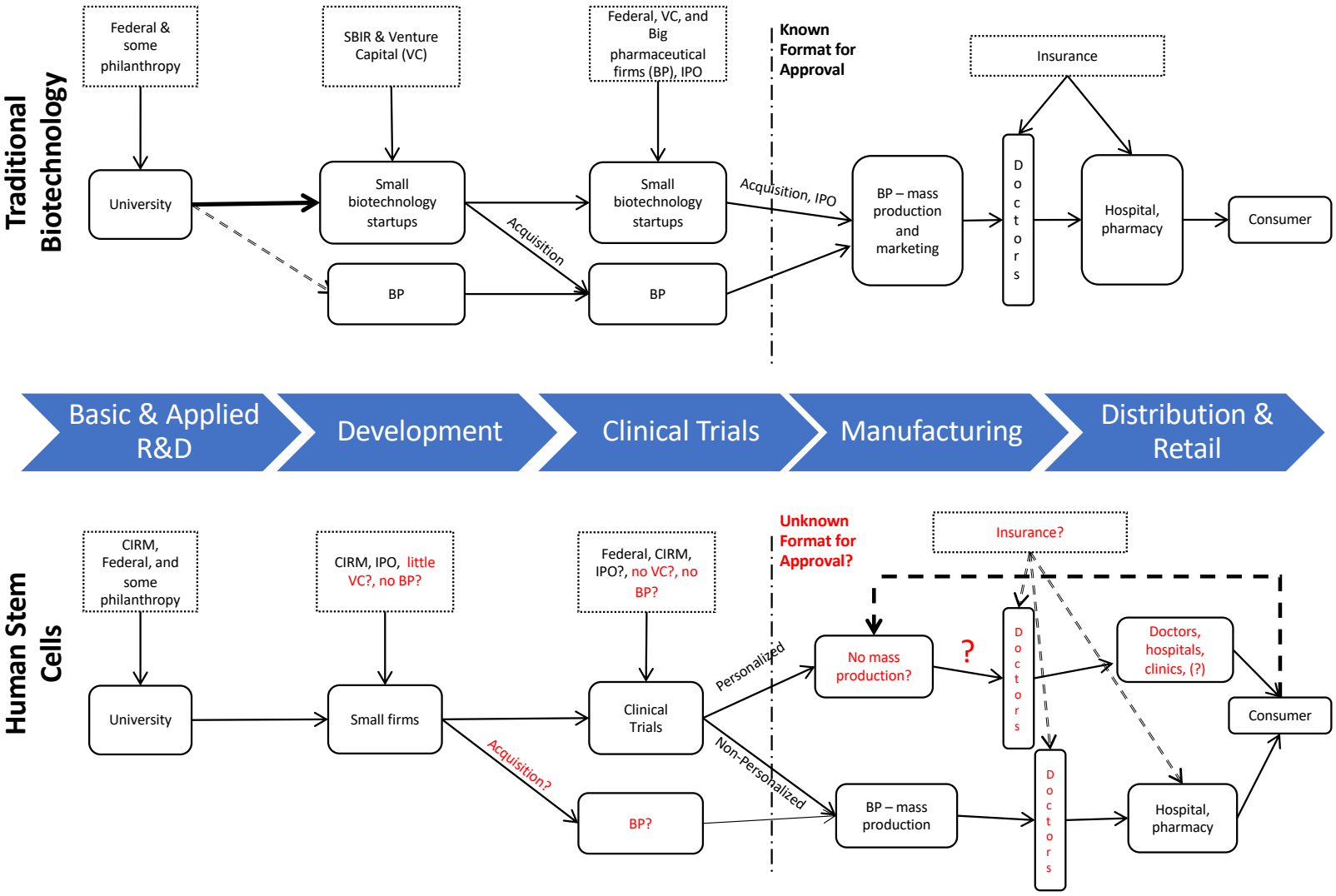




Lähde: Markus Pentikäinen / Suomen Kuvalehti


Reg dev organisations
Prof. Hovatta joins Regea
Breakthrough treatments (2006/2007)
Informal discussions
Endowed professorship (City of Tampere)
UTA professor
TUT professor
discussions with all relevant parties
Regea (2005)
Situation now
Existing expertise
Research project
Planning group
Commercialization / Spark Finland (2017)
No changes in university hospital routines
Faculty of Medicine and Health Technology a new home
New science institutionalised, industry not
Excitement, collective interpretation (excl research community)
Tissue bank
Global expectations
Diminish
Business plan
No business
Leadership of UTA and Univ. hospital
I - Seeds of change (1997-2000)
II – Belief formation (2001-2004)
III – Launch of activity (2004-2007)
IV – Institutionalization (2008-)

Traditional Biotechnology VS Stem Cell Value Chain/Development Chronology in California (Martin Kenney)



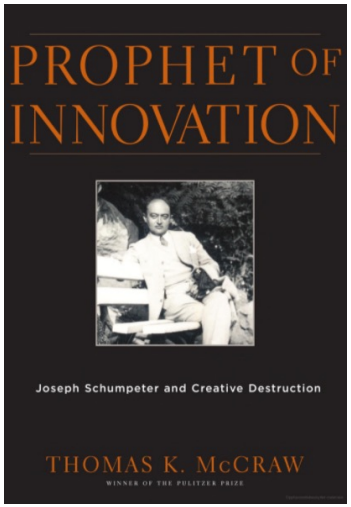
The basic tenets of innovation policy and innovation systems

Photo by Atwena Goodman Unsplash, modification by MS

Joseph Schumpeter: The Father of Innovation Studies

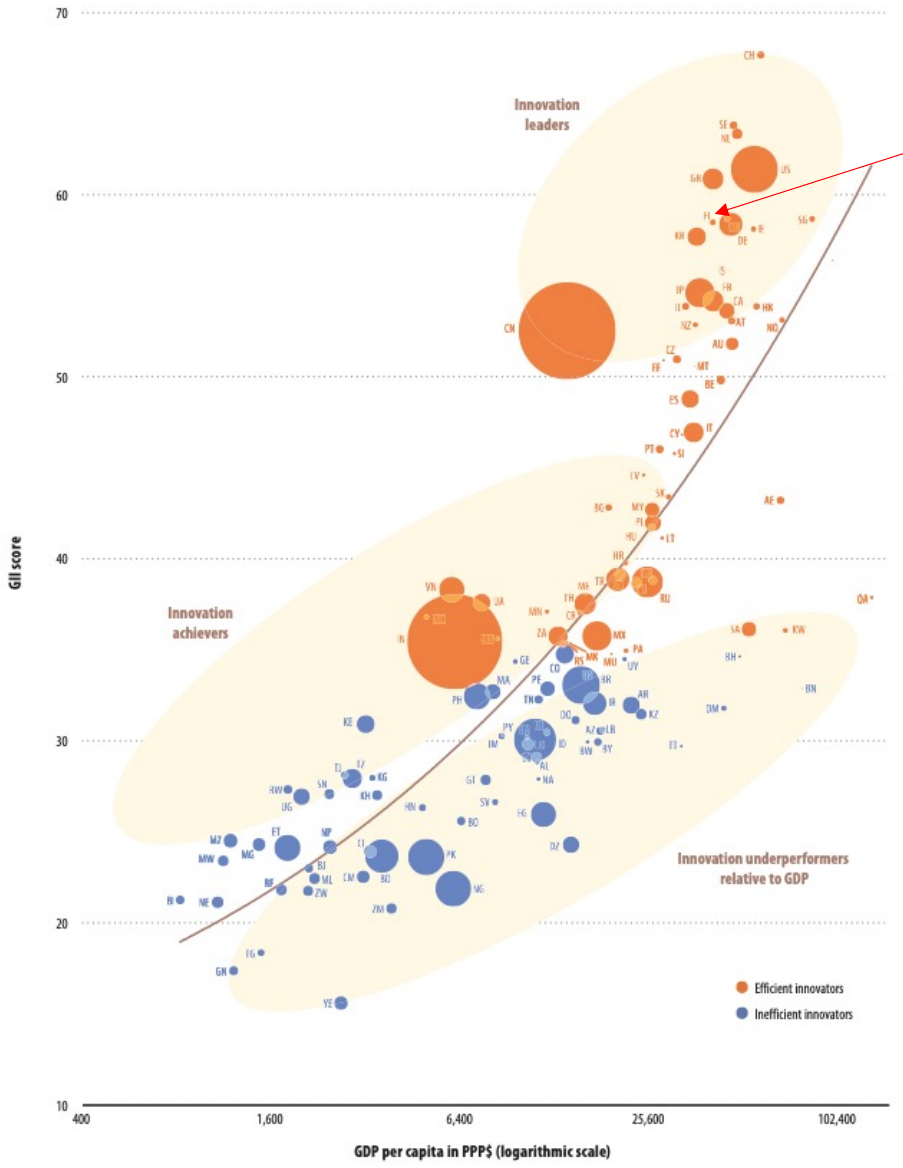
The primary point of his work is that capitalism is to be understood as an evolutionary process of continuous innovation and creative destruction

He argued economic change revolves around innovation, entrepreneurial activities, and market power



Ingredients of economic development

- Human capital
- Innovation – research and development
- Distance from markets
- Infrastructure
- Spatial effects



https://www.globalinnovationindex.org/UploadedFiles/Indepths/Files/Indepths_48eb307c08434750a0b4ecaf49fb3697.PDF

Innovation and related studies tell us about

- Big ideas underpinning regional development
- The social side of various production systems
- Learning, interactions and regional cultures
- Evolutionary dynamics of regional development and related innovation systems
- Knowledge foundations of (regional) cultures

Joseph Schumpeter primarily developed his ideas to apply to private-sector entrepreneurs but the use of his theory and ideas have expanded.

An innovation displaces older products, services or processes and thus leads to creative destruction.

Very basics

Innovation = something new + implemented + value added (Ståhle & Sotarauta 2003; Schumpeterian view)

Innovation policy is actions by public organisations that influence innovation processes (Edquist 2008)

Innovation system consists of interacting private and public firms, universities, and government agencies aiming at the production of new knowledge and exploitation of it (Freeman 1989)

Innovation seeks to reorder society

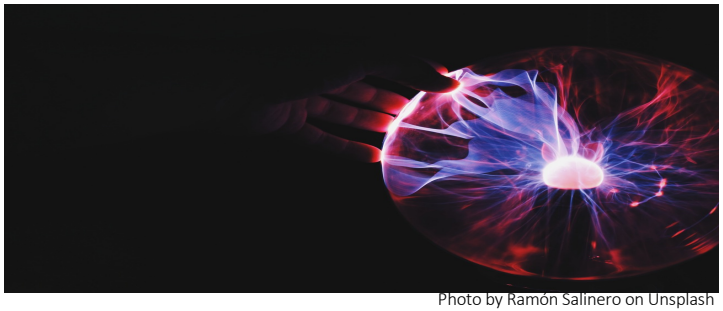


Photo by Ramón Salinero on Unsplash

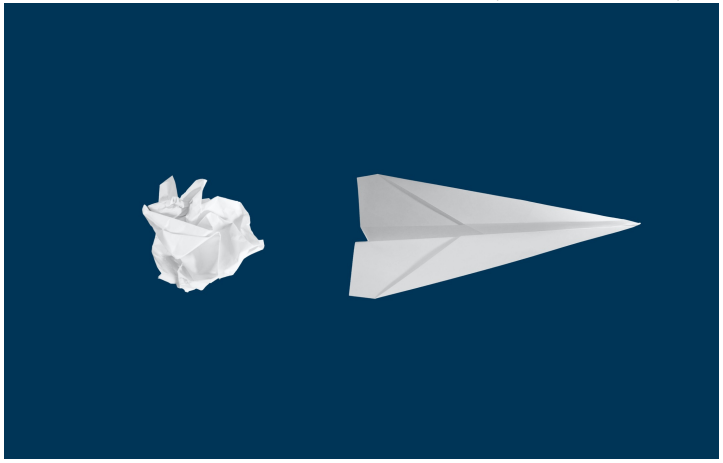


Photo by Matt Ridley on Unsplash

Generations of innovation policy (framings)

1. R&D & Regulation, technology push (1950s ->)
2. National systems of innovation (1990 ->)
3. Transformative innovation policy (mission–oriented) (emerging)

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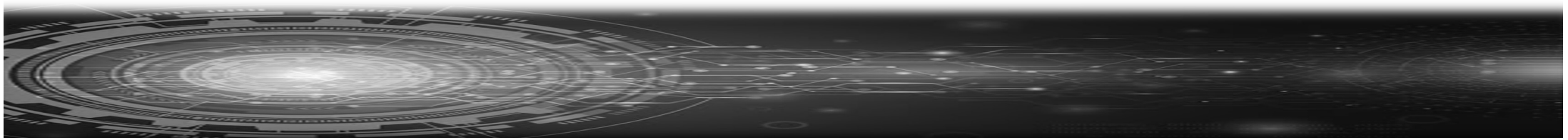
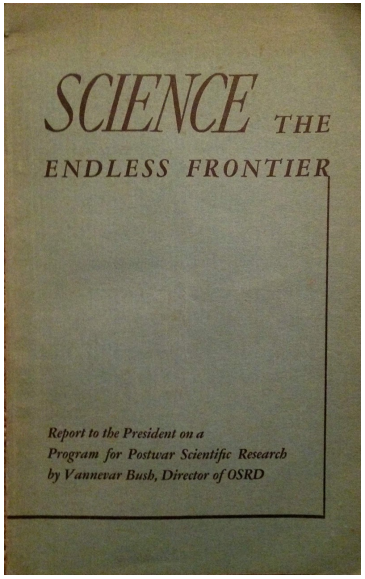
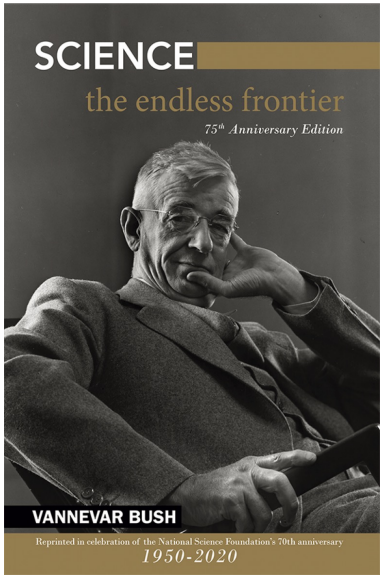


1. Technology push policy (1950->)

- Research and development >>> innovation >>> economic growth
- Focus on scientific breakthroughs, technology development and commercialization of new technologies
- Key actors: Universities, research institutes, companies





R&D → DESIGN & ENGINEERING → MANU-FACTURING → MARKETING → SALES

Technology push policy

- **Rationale for innovation policy: correct market failures**
- Suboptimal investment levels in research and development
  - Financing public research
  - R&D subsidy – directly or through tax deductions
  - Establishment of IPR system

Technology-push policies aim to enhance the supply of technologies by providing incentives that reduce the costs of their development (e.g., through direct subsidies to research and development efforts).

(Stefano, Gambardella & Verona, 2012)

2. Innovation systems approach

- Innovation as key for competitiveness
- High-road strategy of innovation vs. low-road strategy of cost competition
- From linear to interactive model
- Innovation comes in many shapes involving variegated types of actors and networks
- Open system – local & global – interdependencies
- A focusing device
- New language in the 90's

National innovation system is a network of institutions in the public and private sectors whose activities and interactions initiate, import, modify, and diffuse new knowledge (technologies)

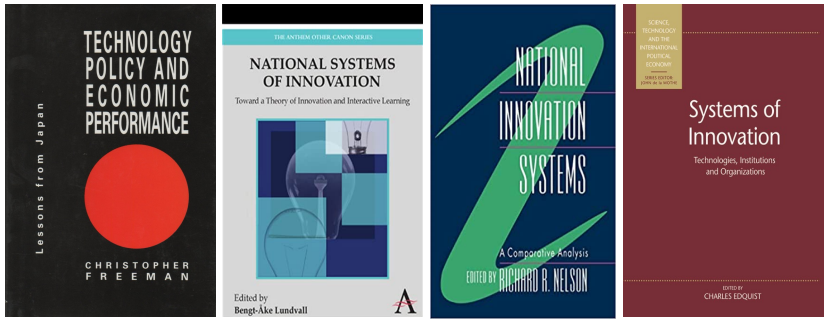
Freeman 1987

Also, regional and sectoral systems of innovation

Origins of the innovation system approach

OECD work in 1982 (’Science, Technology and Competitiveness’)

- A dynamic perspective on innovation and learning in the promotion of economic growth with an active role of government



Freeman (1987): Technology policy and Economic Performance: Lessons from Japan

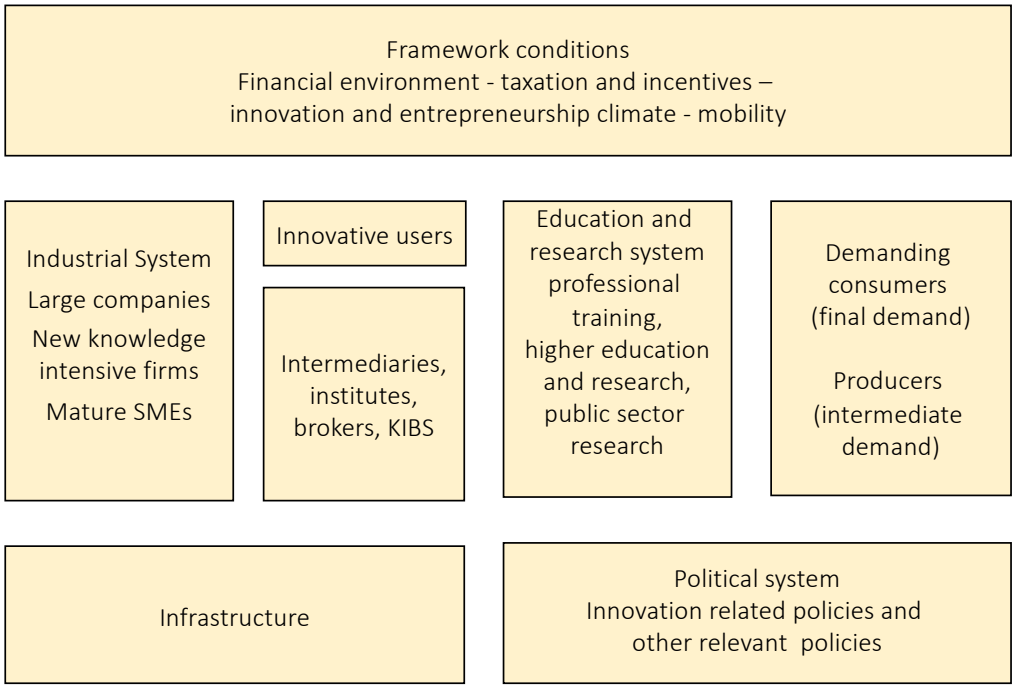
Lundvall (ed.) (1992): National Systems of Innovation: Towards a theory of innovation and interactive learning

Nelson (ed.) (1993) National Innovation Systems: A Comparative Analysis

Edquist (ed.) (1997) Systems of Innovation: Technologies, Institutions and Organizations

Innovation systems approach

- Innovation as a systemic process – collaboration and interaction
- Actors - networks - institutions
- Key actors
  - Universities / research institutes/ firms
  - Users
  - Intermediaries
  - Public organizations
  - Educational organizations
- Science push & demand pull



(Modified from Autio 1998, den Hertog 2000; Smits & Kuhlman 2004; Kautonen)

Innovation system policy

Rationale: correct innovation system failures

- Infrastructure failures
  - Insufficient infrastructures – ICT, transport, research etc.
- Capability failures
  - Lack of appropriate competencies, especially relating to emerging technologies
- Institutional failures
  - Formal institutions hindering innovation
  - Informal institutions hindering innovation (e.g. lack of risk-taking behaviour)
- Network failures
  - Weak network failure: limited interaction > poor exploitation of complementary sources of knowledge and processes of interactive learning
  - Strong network failure: Cooperation in closely tied networks leads to lock-in into established trajectories and a lack of infusion of new ideas, inward-looking behaviour