

An Asian – European perspective on Social system of innovation and diversity of capitalism

Why does it matter for health?

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Motivation

- (Re) introducing the CTSH (Capitalism, Technology, society, and health) research program from the perspective of diversity of capitalism
- Trying to connect diverse contributions to this webinar
- Introducing my past research
- Connecting the CTSH research program to my on-going research

Content of this presentation

- The core question of the CTSH (Capitalism, Technology, society, and health) research program: how to reconnect socio-economic and technological dynamics, in the case of health?
- Conceptual and theoretical background : Social system of innovation
- Example 1: Care-led innovation in the case of eldercare in France and in Japan
- Example 2: Personalized Medicine and Data. Technologies, Welfare System, and Ethical Issues

**The core question of the CTSH research program:
how to reconnect socio-economic and
technological dynamics, in the case of health?**

Capitalisms, technologies, societies and Health. An Euro-Asian research project

- The general goal of our project is **to revisit the relations between technologies and societies, by focusing on health issues**. This is in partial continuity with our previous research agendas but is also characterized by strong discontinuities.
- On the side of the partial **continuity** is the book *Innovation beyond technology. Science for Society and Interdisciplinary Approaches (see below)*, which helps us to define our research questions

Capitalisms, technologies, societies and Health. An Euro-Asian research project

- How to make sense of the Covid-19 crisis and its aftermath? The Covid-19 crisis is an **important source of discontinuities** that forces us to rethink our concepts but also that acts as a source of stimulation to put health issues at the center of our research agenda.
- **From a regulationist perspective**, it is possible to interpret the Covid-19 crisis as the crisis of an emergent “anthropogenetic” model of development, which is based on health, education and culture (see session 1 of the webinar: R. Boyer)
- Besides the analysis of this emergent model of development and its contradictions at the origin of the crisis, **our aim is to propose a comprehensive analysis of the health sector and its internationalization**

Capitalisms, technologies, societies and Health. An Euro-Asian research project

- The expected originality and contribution of our proposal of EIT in a nutshell is **therefore to look at issues of health policies and practices as the cornerstone of a dialogue between STS and political economy of innovation *from a Eurasian perspective***
- A preliminary condition is to establish the basis for a dialogue between us
- The aim of today's presentation is to introduce the potential contributions from:
 1. The research agenda on the diversity of capitalism and social system of innovation
 2. The on-going research on socio-economics of innovation

Innovation beyond technology. Science for Society and Interdisciplinary approaches



Content of the book

Part I Critical views on innovation from economics and history of science, and law

Part II Case studies 1: Health and medicine

- Chapter 5: Robert BOYER : ‘How scientific breakthroughs and social innovations shape the evolution of the healthcare sector’
- Chapter 6: Jean-Paul GAUDILLIERE: ‘From integration to reformulation? The crisis of innovation in the drug industry and the alternative modernization of Ayurveda’
- Chapter 7: Shintaro SENGOKU: ‘Consortium-Based Open Innovation: Exploring a Unique and Optimal Model for Regional Biotechnology Industry’

Part III Case studies 2: Environment

Part IV Innovation for whom and for what?

Some theoretical commonalities among the diverse authors and approaches

- A “**post-Schumpeterian**” approach: We are all Schumpeterian...and it might be a problem
- A critical discussion of the Neo-Schumpeterian approach of innovation as **creative destruction** is required
- Definition: “Technologies are neither neutral instruments not passive objects: they rather do materialize norms and values; they shape the behaviors, the actions, and the perception of human beings” (Dalibert 2016)

Deconstructing some myths about innovation (July, 2019)

MYTHS	OBJECTIONS/PROBLEMS
Innovation is always good	There is a possibility of destructive creation (Soete, 2013)
Actors who contest innovation are laggard	Role of controversies and contestations in the innovation process (Callon, 1981)
The solutions will be found in new technology, not improvements to old ones	Frugal innovation, grassroots innovation, reverse innovation or innovation from the bottom of the pyramid (Prahalad 2005)
Focus on technological innovation	In many cases, solutions are to be found in the society (societal changes), not new technologies

The crisis of innovation is the crisis of the relationship between technological innovation and society

- For a few decades now, **innovation** – mainly derived from technological advances – **has been considered a driving force of economic and societal development and prosperity**
- However, the last two decades, which can be regarded as the golden age of innovation, saw a gradual shift in ideology. **We started off by embracing (technological) innovation as the solution to the crises of our times, but ended up seeing our model of innovation become yet another problem to solve**
- Technology may affect social dynamics and society may influence the direction of technological change
- However, **social and technological dynamics are largely disconnected. How to reconnect them?**

Innovation beyond technology (1/2)

- Simply speaking: beyond technological innovation (but without arguing that technology is not important), our book promotes **social innovation** and looks for some **of the non technological sources of innovation**
- We have to rethink what is innovation and certainly to change some of our practices

Innovation beyond technology (2/2)

- Technology is a critical source of **differentiation** for companies (i.e. a source of competitiveness). However, it is not enough in the long run, it will be a source of **comparative advantage** only if it affects positively the **well being** of consumers and/or the productivity of processes
- **From well-being to care**: the next step is to define and develop a concept of **care-led innovation** (see below)
- This is in relation with the development of **stakeholder** (\neq shareholder) **capitalism**

Conceptual and theoretical background : Social system of innovation



Reminder: Keun Lee's presentation in session 1

- Part 1: on diversity of capitalism & Asian capitalisms
 1. A key result: end of Asian capitalism through convergence towards LMEs
 2. Mechanisms: series of shocks and stronger path-dependence and institutional complementarity in European capitalisms than in Asian ones > implication for patterns of institutional change
 3. Major cause : financialization (lower investment > lower growth ; rising inequalities)

Reminder: Keun Lee's presentation in session 1

- Part 2: Varieties of the NIS (National Innovation Systems) and Alternative Pathways for Growth beyond the Middle income stage : Catching up vs. Trapped NIS
- Part 3: Re-balancing of Capitalism since the Pandemic: shareholder capitalism vs stakeholder capitalism, revisited

Context: technology, globalization, and diversity

- From a mainstream perspective, technology and globalization are interpreted as the most powerful forces towards convergence
- However, researchers on systems of innovation and capitalisms – with different backgrounds and theoretical perspectives - show that there is no convergence
- Why does it matter?

Social System of innovation

- National systems of innovation (Nelson, Lundvall, etc) ≠ Social systems of innovation
- Social systems of innovation and diversity of capitalism: Amable B. (2004) The Diversity of Modern capitalism, OUP
- Key characteristics:
 1. Schumpeterian and Non Schumpeterian approaches;
 2. Technology is important (complementarities with labor and financial markets) but does not determine everything
 3. Diversity

Diversity of innovation systems

- Innovation is not “in the air”... It is deeply conditioned by and embedded in diverse institutions (education system, labor market, finance, etc.)
- To put it differently, innovation is not only a matter of R&D expenses; this is also a matter of organization and ecosystem (innovation system) ► **importance of the relations between science and society**
- This is why one observes **different patterns of innovation and innovative capabilities across countries**
- This is why, when you compare countries, you cannot do it for specific domains. You need to adopt **a systemic approach**

The dominant view regarding innovation and its role in the prosperity of advanced nations

- Major Hypotheses/conclusions:
 1. Innovation is the driving force of growth and this is all the more true in the emerging knowledge-economy
 2. The **Silicon Valley “model** (entrepreneurship, venture capital, collaboration firms/universities) has been the best set of institutions to promote innovation in the new technological environment (ITC or biotech) that has emerged from the 1980s-1990s
 3. In particular, **startups** are the drivers of innovation and should be the focus of public policies

A France – Japan comparison as an example: the dominant view

1. Japan and France are lagging behind in terms of innovation because of their backward institutions
2. Their innovation capabilities have declined
3. More specifically, inadequate innovation system explains the poor performance of Japan and France in the manufacturing industries related to the “new economy”

A France – Japan comparison as an example: Our view

- The dominant view underestimates the changes that occurred in the French and Japanese innovation systems during the last 20 years
- The right “model” (e.g. Silicon Valley) for innovation does not exist: it depends on the sector, the technology and the overall environment of the economy
- Innovation capabilities in France and Japan have not declined in general
- However, we should recognize that:
 1. The global competition is more intense than ever and some countries/firms are rapidly catching up. It requires developing some specific answers
 2. There were some problems in these two systems; reforms that have been done should be continued in a coherent manner

Insights from my previous research (1/2): Is convergence towards the Silicon Valley model the only way for the Japanese innovation system?

- **Mainstream argument:** the world has entered into a new era, that 'external' conditions – technological and international – in each type of capitalism have changed and that socio-economic systems should therefore adapt, in the same direction > structural reforms (similarities with the Lisbon strategy in Europe, but with more means)
- It has been the basis for the reform of the JIS (university, property rights, financial and labor markets), very much inspired by the reform of the US innovation system in the 1980s and one specific outcome (SV model) but **no convergence**
- Increase of R&D expenditures with disappointing results to say the least (OECD, 2005): decreasing returns
- The Japanese firms have forgotten the reasons of their past success: organizational rather than technological innovation

Insights from my previous research (2/2): the emergence of new industries – the case of personal robotics in Japan (RP, 2014)

- **How do economists understand the emergence of new industries?**
 1. Very much influenced by the experience of the 1990s (and early 2000s) = bias: specific industries (biotech, ITC), specific national/regional innovation system = **Silicon Valley model**
 2. Based on these cases, the general conclusion of the literature is that new industries emerged from creative-destructive knowledge and are therefore in need of “entrepreneurial regimes”, characterized by the role of startups and generally by high turbulences in firms dynamics (Audretsch and Thurik, 2007)
- Is the above argument general enough? Does it cover all the cases of emergence of new industries?
- We argue that new industries possess different **technological properties** (cumulativeness Vs non cumulativeness) and are need of different **institutional regimes** (entrepreneurial vs. “**intrapreneurial**” regime). Therefore, simple “matching hypothesis” is not true

Insights from my previous research (2/2): the emergence of new industries – the case of personal robotics in Japan (RP, 2014)

- “**Intrapreneurial**” regime is characterized by a stable hierarchy of innovative firms with a high degree of stability and a low rate of innovative entry, implying less need for risky capital and mobile labour markets.
- The Emergence of the Personal Robot Industry in Japan
 1. Part of machinery industry (**continuity**): cumulative, coordinative industry;
 2. This is a **new industry** (≠ industrial robots; turning point: from the mid-1990s):
 - **Knowledge** (whole match of existing knowledge and new knowledge=next generation robot technology=NGRT);
 - **Market** (uses: interaction with humans in random environments);
 - **Players**: Continuity: large firms (start-ups play minor role) but change: among leading firms (from Fanuc and Yaskawa to Sony, Honda and Toyota) + role of universities

Example 1: care-led innovation in the case of eldercare in France and in Japan

Context : increasing longevity and long-term care

- In the context of increasing longevity, **the issue of long-term care** has become a privileged area for the application of technologies, in the spirit of promoting a "silver economy", in particularly in Japan and France
- In general, **the potential contribution of several technologies** (notably robotics, artificial intelligence, information and communication technologies [ICT]) should be recognized, which can partly solve **problems of autonomy and vulnerability**, whether it concerns communication, mobility or cognitive abilities
- However, several important **limitations** (see Wright, 2019, in the case of personal robotics in Japan)
- A fundamental question: **are they always technological solutions to social problems (see Society 5.0)?**

Hypothesis & proposal

- Our hypothesis is that this is not a one-off problem, but a **fundamental impasse** related to the way in which social needs and technological responses are articulated, in line with the dominant paradigm of innovation, marked by a Schumpeterian perspective
- There is an urgent **need to reconnect social and technological dynamics**, by proposing concepts and practices of innovation that make well-being (and not competitiveness) the ultimate criterion for innovation
- Our proposal is that **care-led innovation** is one possible response
- **Note: this project is very much connected to the HARP project developed by Naonori Kodate**

Meaning and benefits of care-led innovation

- The concept of care-led innovation is in the logical continuity of our previous work on the innovation beyond technology, which emphasizes well-being as the ultimate criterion for innovation
- **The notion of care allows us specifying the social needs**, in focusing on interindividual and social relations and in taking into account at the same time the material and affective dimensions
- From an empirical perspective, our aim is **to establish criteria to qualify a care-led innovation**, in mobilizing a protocol to analyze the technologies that are mobilized for elderly care

Research agenda

- Do technological innovations, which are applied to elderly care, correspond to the needs that have been identified and to the prescribed uses? If so, how?
- Do these technological innovations correspond to a form of care-led innovation? Or, are they mainly introduced because of industrial policy concerns, with the goal to find new uses and markets for them?

French and Japanese fieldworks

- The mobilization of French and Japanese fieldwork seems relevant to us, in view of:
- Their commonalities from the points of view of longevity dynamics or the innovation paradigm;
- But also of their differences : social definition of ages of life, social contract between generations, family dynamics, forms of social protection, role of the State, types of technologies mobilized, etc.
- Divergent patterns in the context of the COVID-19 crisis

Example 2: Personalized Medicine and Data. Technologies, Welfare System, and Ethical Issues

Technological premises in the field of health (1/2)

- Tremendous progress in the application of new technologies to health
- **Rising expectations that major health issues can be technologically managed** and that we will observe further increase of human longevity.
- In particular, it allows us ambitioning the development of **personalized medicine**, i.e. diagnosis and treatment that are tailor-made for each patient (Schleiden et al., 2013).
- A key is the **accumulation of data** in order to increase our knowledge of each patient through the statistical management of individual heterogeneity.

Technological premises in the field of health (2/2)

- In this context, the potentialities of data management by extended intelligence or by **artificial intelligence** (AI) have attracted a lot of attention (Morley & Floridi. 2020, 2019).
- AI is just one example, among many others that deserve our close attention, as they have in common to mobilize **personal data on health**, with the goal of developing a personalized medicine, in the same spirit than what was allowed by past personal relationship between doctors and patients.
- The **range of application is also very wide** from delivery of oxygen at home for a patient suffering from various kind of respiratory problems to diagnosis of cancer or the conception of drugs. It concerns medical care in institutions (hospital, clinics) and at home.

Contextualization of technological premises and concerns (1/2)

- These technological premises cannot be realized in putting aside the functioning of our health systems.
- They also lead to **several concerns** that are diverse in nature (Dalgarrondo & Hauray, 2018):
 - 1) the development of personalized medicine is at odds with the logic of **health insurance systems** that are built on a socialization of risks and on a normalization of diagnoses and treatments.

Contextualization of technological premises and concerns (2/2)

2) Besides the insurance issue, which is a condition for the solvability of personalized medicine, the **organization of health systems** themselves is an important factor that may promote and impede the development of personalized medicine

3) **the use of personal data raises ethical and political concerns.**

The access to and the use of these data are a condition for the development of personalized medicine. However, it lies on the consent of patient and is conditioned by a certain level of trust for the institutions in charge of storing, sharing, and using these data. Is it possible to give this responsibility to the private sector? Is the leadership of public institutions the guarantee of the absence of any misuse or abuse?

Questions and contribution

- What are the limits of the mandatory health insurance?
- How personalized medicine can contribute to a public policy of prevention?
- How to conciliate the development of personal medicine and the protection of personal data?
- Research program coordinated by the FFJ
- Contribution from French and Japanese data scientists, sociologists, economists, and specialists of legal studies

Wrapping up

(Expected) takeaways

- How to connect macro and historical visions of capitalism and its diversity with case studies on health system issues?
- Learning from crises : a regulationnist research agenda
- Beyond techno-determinism & techno-centrism but technology is at the center of our investigation, in particular from the perspectives of its relationship with society and capitalisms
- **Care-led innovation & stakeholder capitalism**

Thank you for your attention

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