Creativity and New Innovative Projects and Companies

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1. The objective

- **To describe the Virtual Production Line (VPL)
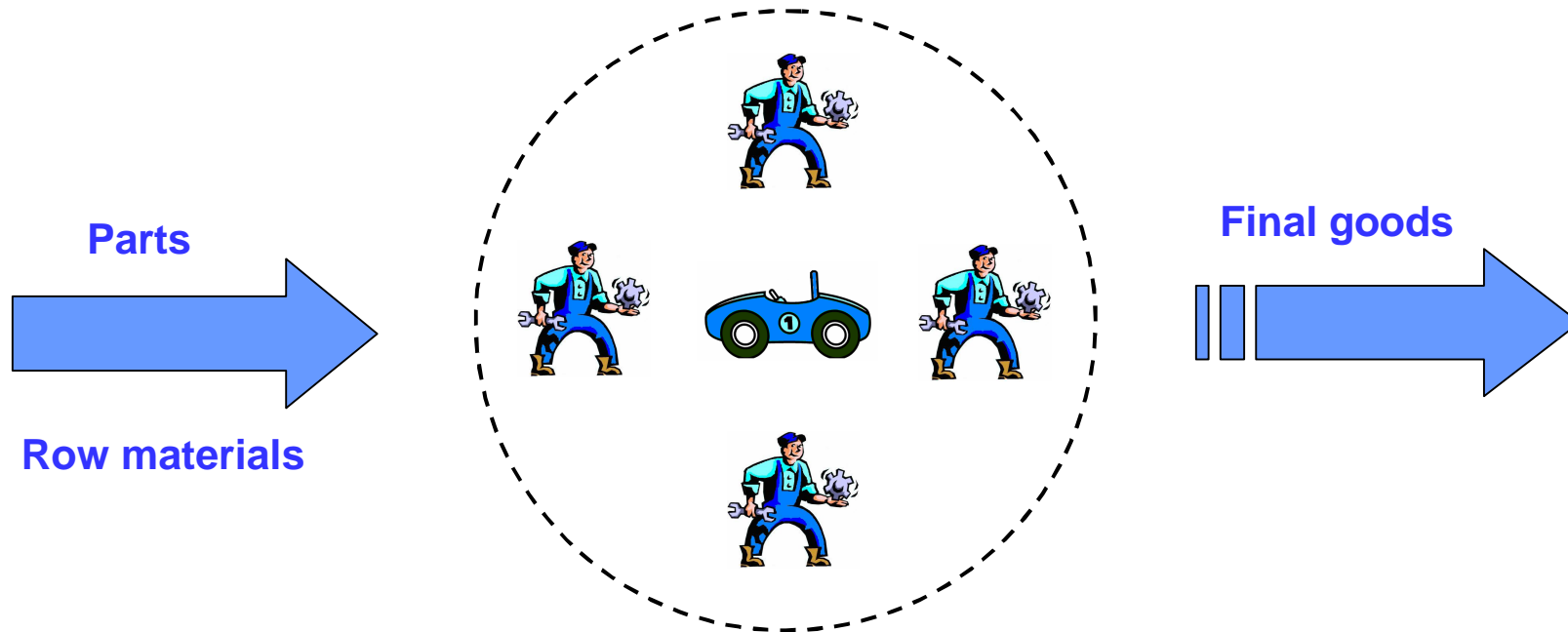 as a new model for analysis of**

Innovation Networks or

Innovation Processes

**and the role Social Capital and Proximity play in
them.**

# 2. Managerial Model for Social Capital Analysis

Production circle

Classical Production/Service Line (CPL)

Definition 1. Classical production line (CPL) is a **partition** of a complex production/service process into a fixed number of simple operations (jobs) described to the smallest detail. Such a division is fixed for a time and does not allow of any **self-organization**.
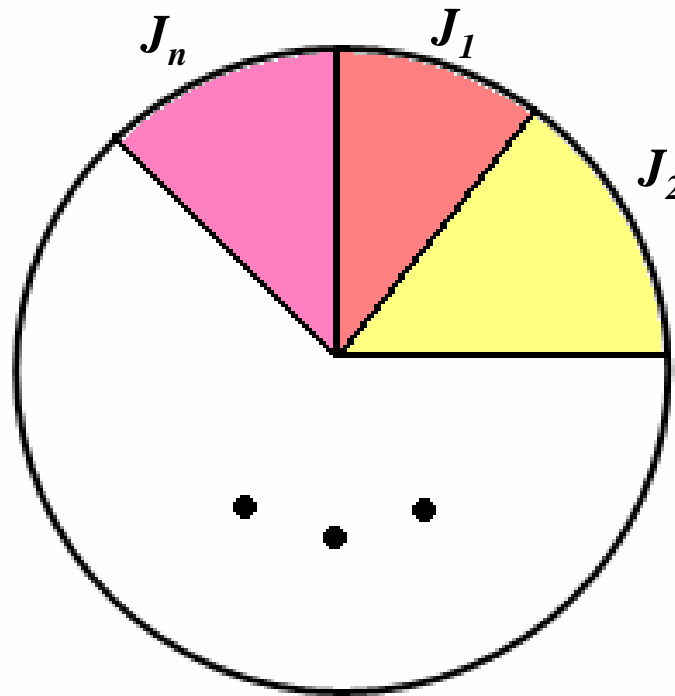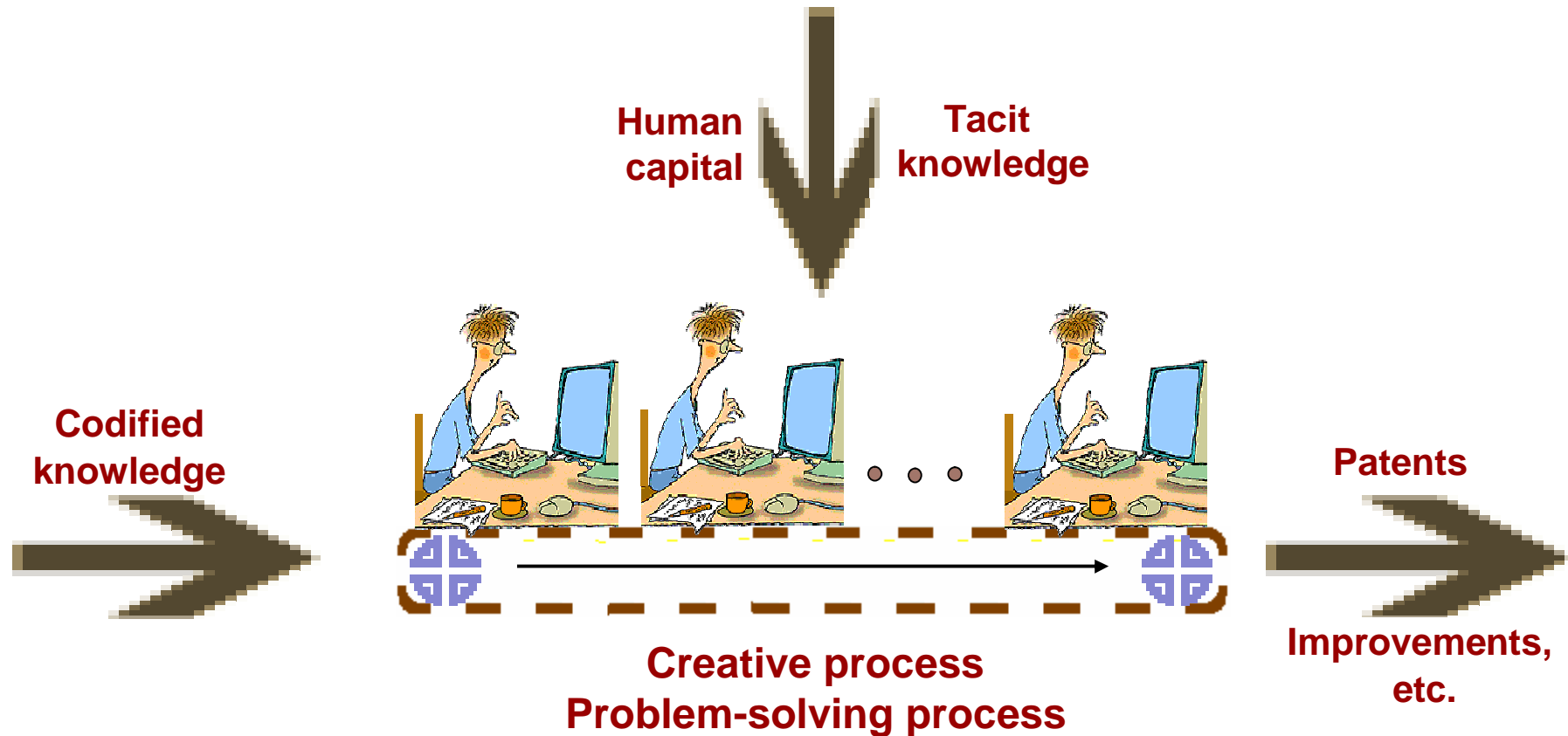
no self-organization
n = constant

Main assumption.

Application of knowledge by teams of scientist, experts, specialists, etc. is always connected with solving a problem. It may not be well-defined or described in a fuzzy way, but **always has a creative, problem-solving nature.**

Virtual Production Line (VPL)

Human capital · **Tacit knowledge**

Codified knowledge →

Creative process
Problem-solving process

→ **Patents**

Improvements, etc.

1. Designing of a new car

2. TV News Room

3. Projects of the 6th or 7th FP

Managerial model for analysis of social capital

Definition 2. **The virtual production line (VPL)** is a **division,**not a partition**,** of a complex, problem-solving process (creative process) into some number of tasks (jobs), combined with modern **ICT**.

The division of labour into tasks as well as the number of tasks may be changed during the creative process by experts involved in the process. Such a modification is called **self-organization of VPL**.

$$\textbf{VPL} \equiv \text{ i) \textbf{division of labour}}$$
$$\text{ii) \textbf{self-organization}}$$
$$\text{iii) \textbf{ICT}}$$

After self-organization
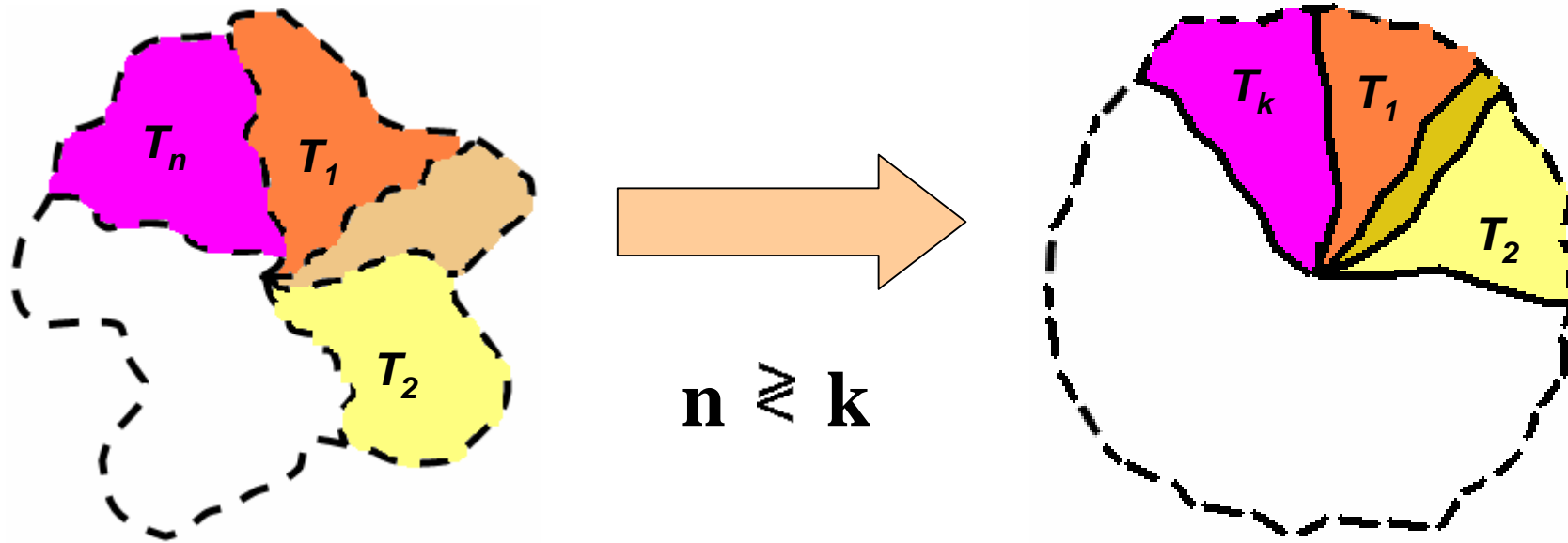
Conclusion 1. (**The Past**). Without modern ICT, the efficiency of VPL is negligible.

Conclusion 2. (**The Future**). The history of improvement/development of CPL delineates directions for research on VPL. In fact, VPL is a natural development (phase) of CPL.

Conclusion 3. **In knowledge-based economy:**
- Big company = many CPLs and VPLs
- SMEs = clusters = VPLs

Applications of VPL at Cisco

- VPL = an acquisition of a company by Sisco

- The acquisition of Scientific Atlanta for $6.9bn in 2005 took 45 days. It was done at „breakneck pace". VPL run 45 days.

- Using videoconferencing, the acquisition of Webex for $3.2bn, 18 months later, took 8 days. VPL run 8 days

- „There was no data room, it was virtual".

- (John Chambers, Cisco's chief, FT, July 16,2007)

3. Proximity

On CPL blue collars work in geographical proximity

On VPL experts work in

Cognitive (technological) proximity

Emotive proximity

Information proximity

Spatial proximity

- Due to ICT face-to-face contacts ocure only when they are necessary

Organizational proximity

Proximity is multidimensional concept (4-dimensional)

Proximity is subjective concept

Proximity has his own history in:

> **the past**

> **the present**

> **the future**

Proximity depends on a given VPL

What is the value/utility of given proximity?

Assumptions:

Problem ≡ project ≡ VPL

Teamwork in the KBE ≡ VPL

Teamwork in the KBE ≡ synergy effect ≡ division of labour ≡
≡ division of knowledge ≡ VPL

Relations on VPL ≡ Proximity

Single expert ≡ Development of Human Capital (HC)

Team of experts ≡ HC&Social Capital (SC)

Four forms of proximity

Technological proximity (TP) or **cognitive proximity** between actors exists, that is they are technologically close, if technology-related cooperation between them is possible for a given moment of time t in the past, present or future, on a given VPL.

Emotive proximity (EP) forms a social environment which always surrounds cooperation. Emotive proximity between two actors exists if such cooperation between them is possible for a period of time t in the past, present or future, on a given VPL.

Four forms of proximity cont.

Spatial proximity (SP) describes the geographical (spatial) context of cooperation, the ability and possibility of actors to engage in face-to-face contacts. We note that in the internet era spatial proximity is not a permanent thing, but generated temporarily, whenever necessary. Spatial proximity exists between two actors when it is possible for them to engage in face-to-face contacts for a period of time t in the past, present or future, on a given VPL.

Organizational proximity (OP) describes the organizational context of a relationship, a structure or framework (like firm, network, cluster, etc.) that defines contacts between actors. Organizational proximity between two actors exists if it is possible for them to cooperate within a given organizational structure at any time t in the past, present or future, on a given VPL.

The first two proximities describe a direct interaction (relation) between actors, therefore we call them **direct proximities DP**.

The last two describe indirect factors that influence contacts between them, so we call them **indirect proximities IDP**.

Definition 3. Utility of technological proximity between actor X and Y equals

$$u\ (TP,X,Y,t) = \begin{cases} 1 \text{ if } X \text{ has a technology-related collaboration with } Y \\ \\ 0 \text{ otherwise} \end{cases}$$
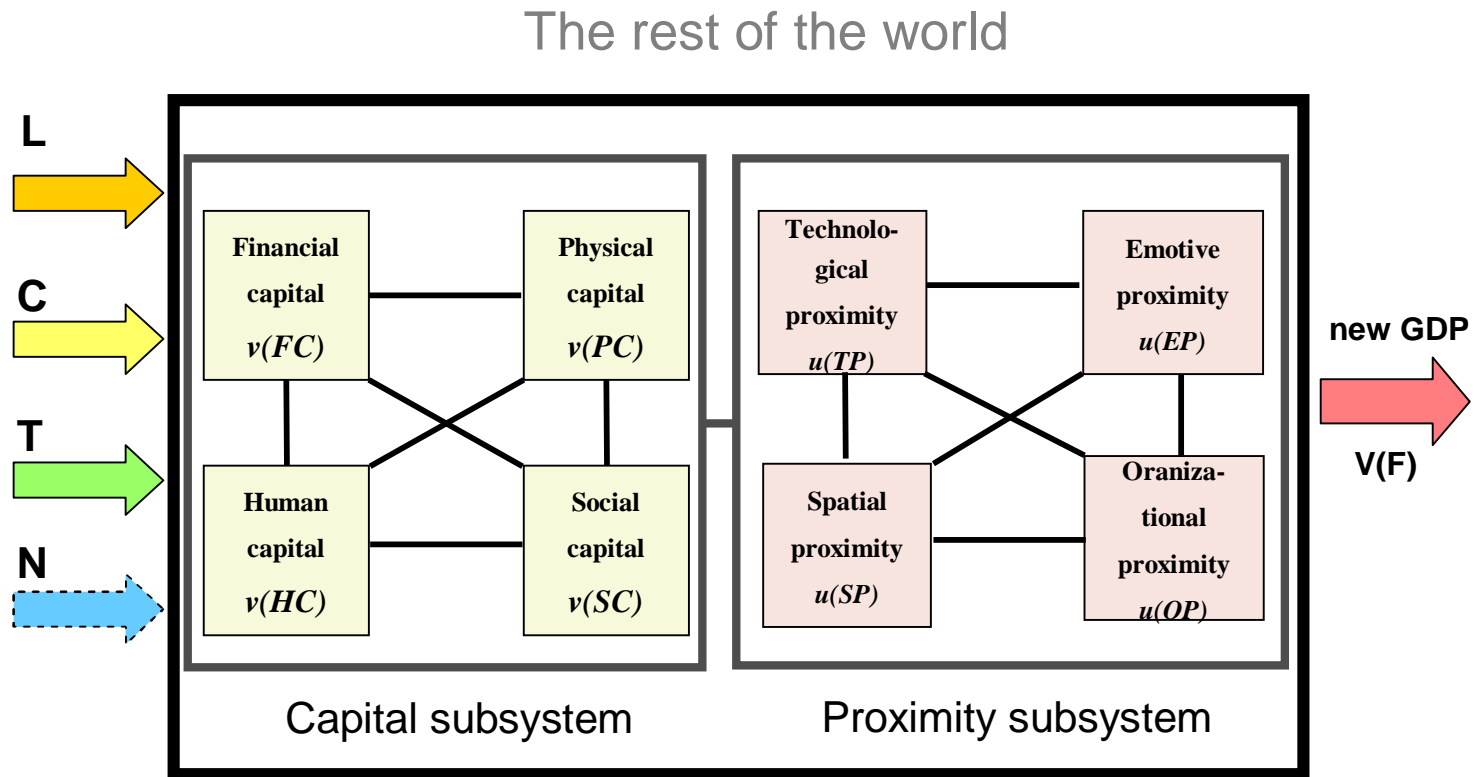
for any time t of their mutual relation in the past, present or future, on a given VPL
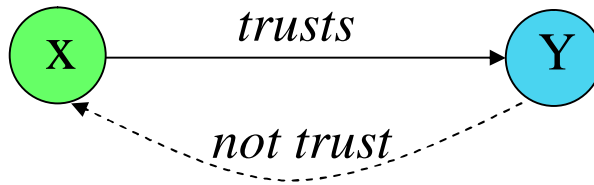
$$u(EP,X,Y,t) \neq u(EP,Y,X,t)$$

Observation 3. Both technological proximity and emotive proximity are asymmetric, therefore direct proximities are asymmetric. Both spatial proximity and organizational proximity are symmetric, therefore indirect proximities are symmetric.

1.4. The system and its subsytems

The rest of the world

L →	**Capital subsystem**
C →	
T →	
N →	**Proximity subsystem**

Financial capital *v(FC)* — **Physical capital** *v(PC)*

Human capital *v(HC)* — **Social capital** *v(SC)*

Technolo-gical proximity *u(TP)* — **Emotive proximity** *u(EP)*

Spatial proximity *u(SP)* — **Oraniza-tional proximity** *u(OP)*

new GDP → **V(F)**

Capital subsystem   Proximity subsystem

The rest of the world

L	⟺	HC
C	⟺	PC & FC
T	⟺	relations between FC, PC, HC, SC
N	⟺	SC

Elements in each subsystem are mutually disjoint

1.5. New GDP vs GDP
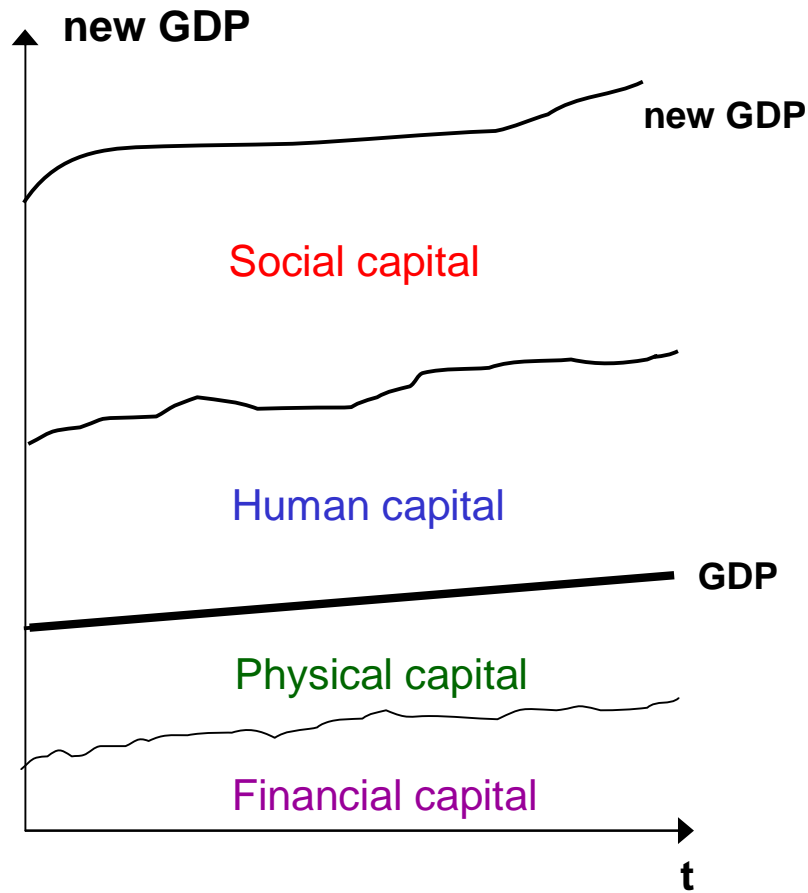
True development
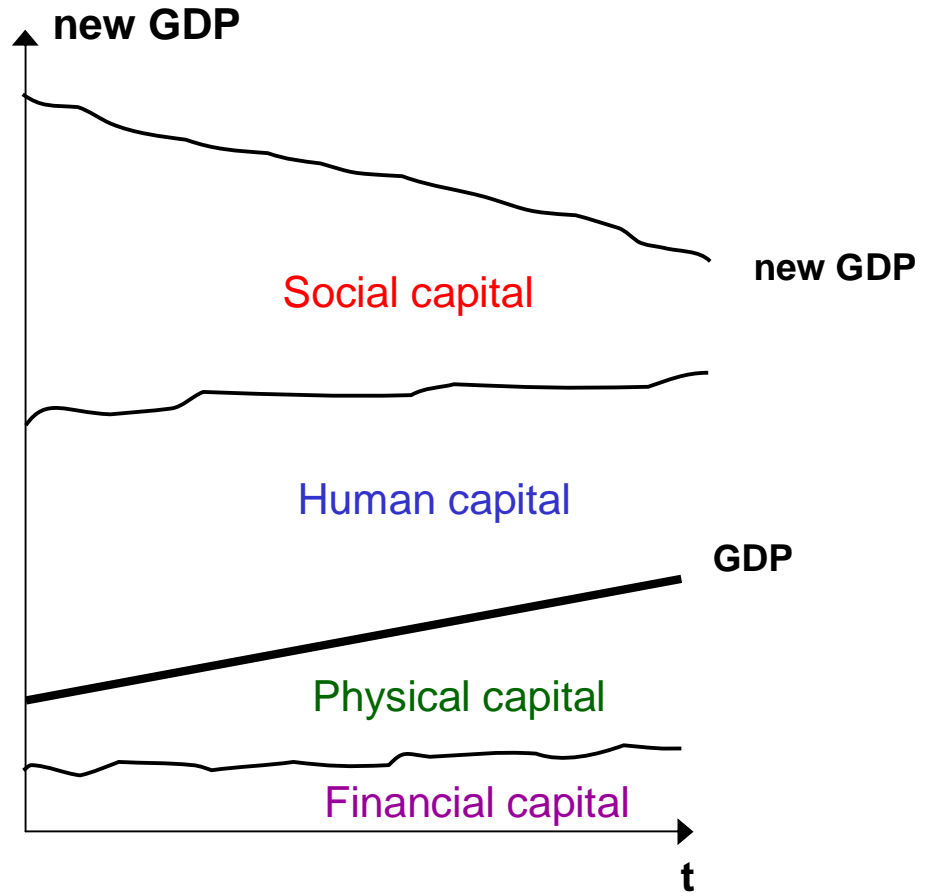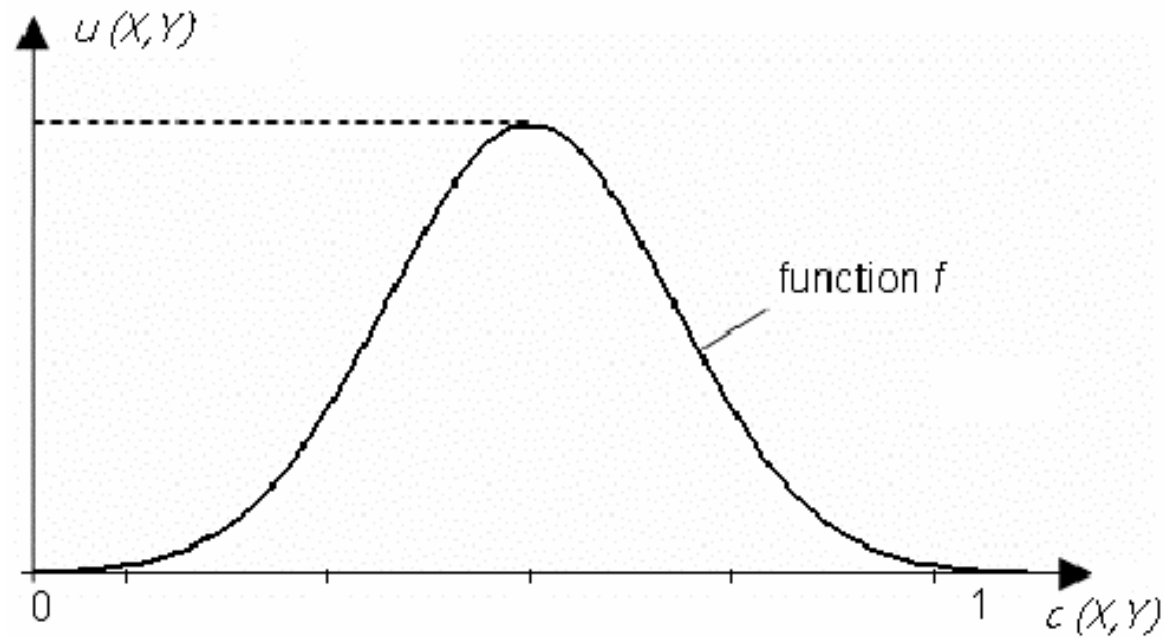
False development

2. Further studies

c(X,Y) – cognitive distance between expert X and expert Y

u(X,Y) – utility of cognitive proximity

The case of Microsoft

- American multinational computer tech. corporation
- Annual revenue in 2006 = US $ 44.3 billion
- 76,000 employees in 102 countries
- April 4, 1975 – founded by Bill Gates & Paul Allen
- March 13, 1986 – IPO at New York Stock Exchange
- Market value of *F: V(F)=number of stocks x stock price*
- *V(Microsoft,15.06.07)=9,566,808,000 x 30.49=*

$$=US \$ 291.7 \ billion$$

Market value *V(F,t)* *vs* **book value** *BV(F,t)*
BV(t)=total assets-total liabilities
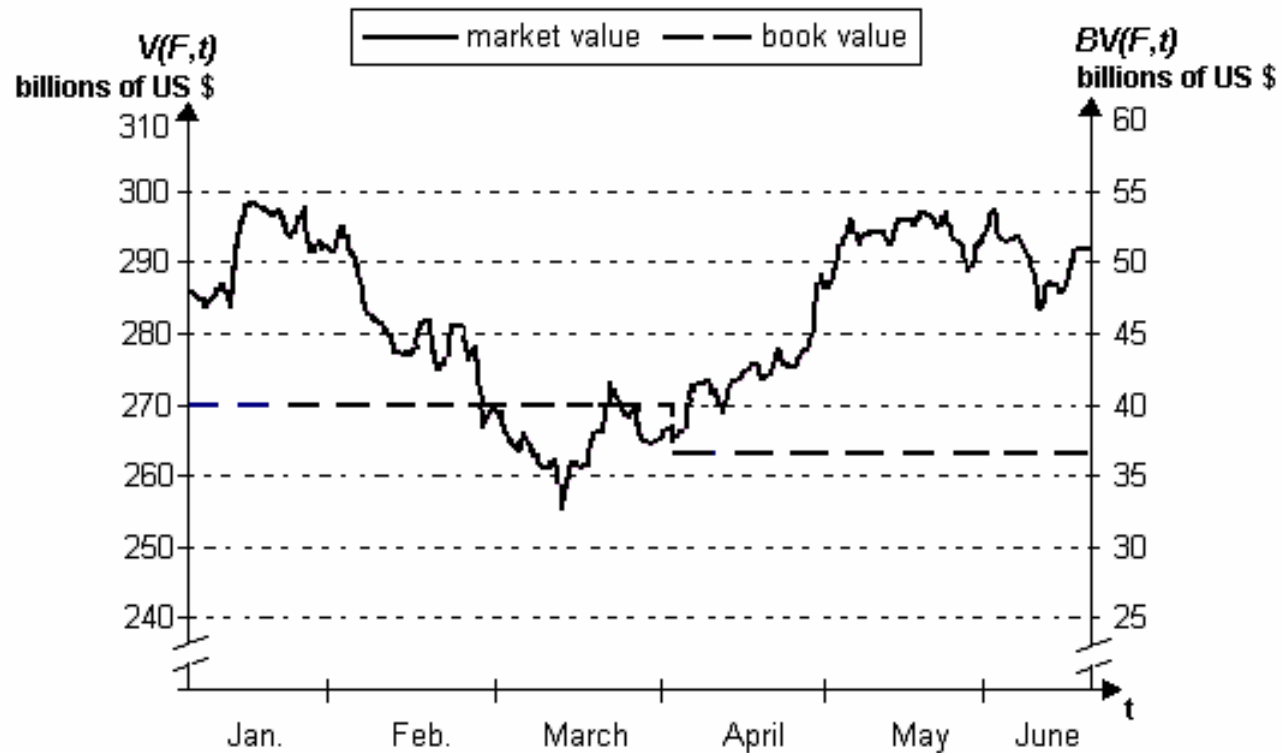
Value gap $\quad g(F,t) = \dfrac{V(F,t) - BV(F,t)}{BV(F,t)} \cdot 100\%$

- The value gap shows how big % of the market value (practice) is uncovered by accounting (thory)

A   B   C

0   12,5%   100%

←   the value gap   →

theory   practice
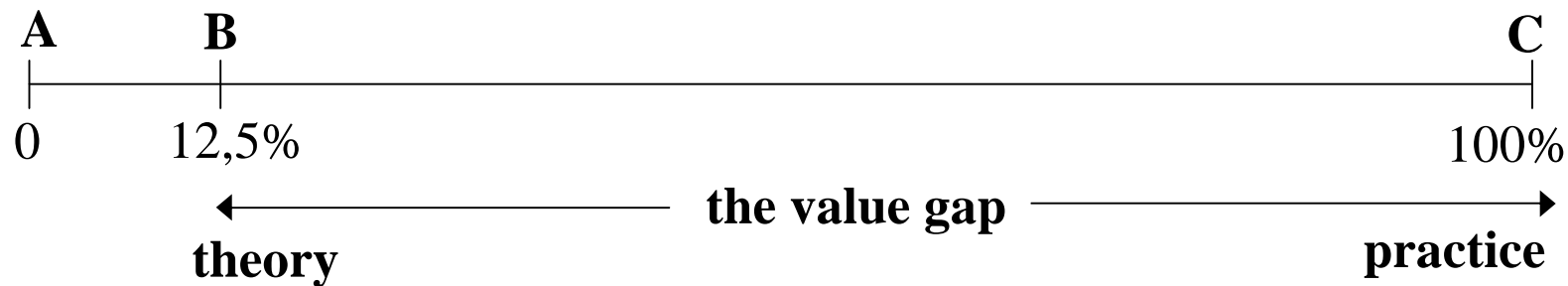
- **Strategic objective of our research:**

  To reduce the value gap as much as possible

Partition of the entire capital of Microsoft

on June 30.2006

FC
15.7%

PC
5.6%

SC
50.4%

HC
24.3%