Evolutionary economics: main concepts, current research and challenges for the future

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Research seminar

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Introduction:
a very short history of evolutionary economics and innovation studies

- 30s: Schumpeter and the creative destruction process

- Post WWII: growing interest for technology

- Fifty past years : exponentially growing activities related to innovation: i) analysis, ii) management, and iii) policies

1966 : SPRU
(Brighton, UK)

1972: BETA
(Strasbourg, France)

1972: Fraunhofer ISI
(Karlsruhe, Germany)

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uPenn@Upper Rhine

06.06.2016 A group of MBA students (University of Pennsylvania, USA) came from Philadelphia to the Upper Rhine trinational region for studying creative, scientific and innovative activities in Strasbourg, Freiburg and Basel. This one week course was organised under the supervision of Jean-Alain Héraud and Emmanuel Muller from the evoREG team.

Objectives

The **evoREG** initiative is the result of a common reflection of the *Région Alsace*, of the Fraunhofer-Institut für System- und Innovationsforschung (ISI), Karlsruhe and of the *Bureau d'Economie Théorique et Appliquée* (*BETA*), Strasbourg. More precisely, this reflection expresses the willingness of the regional authorities to reinforce the governance capacity of the Upper Rhine Area in the field of innovation-based development policies. This should be achieved by taking advantage of ISI and BETA complementary competencies.

evoREG was supported by the European Union in the frame of the Upper Rhine INTERREG IV programme (2009-2011).

Since January 22 2013, date of the celebration of the fiftieth anniversary of the signature of the French-German Elysée Treaty, evoREG takes the form of a French-German research chair devoted to innovation economics and supported by the Urban Community of Strasbourg (CUS), the Alsatian Chamber of Commerce (CCI Alsace), the Eurodistrict Strasbourg-Ortenau and the consulting companies Absiskey and Strasbourg Conseil.

www.evoREG.eu

I. Main concepts

Schumpeter‘s five forms of innovation

- New consumption objects
- New production and transport methods
- New markets and market positions
- New sources of production materials
- New forms of organisation

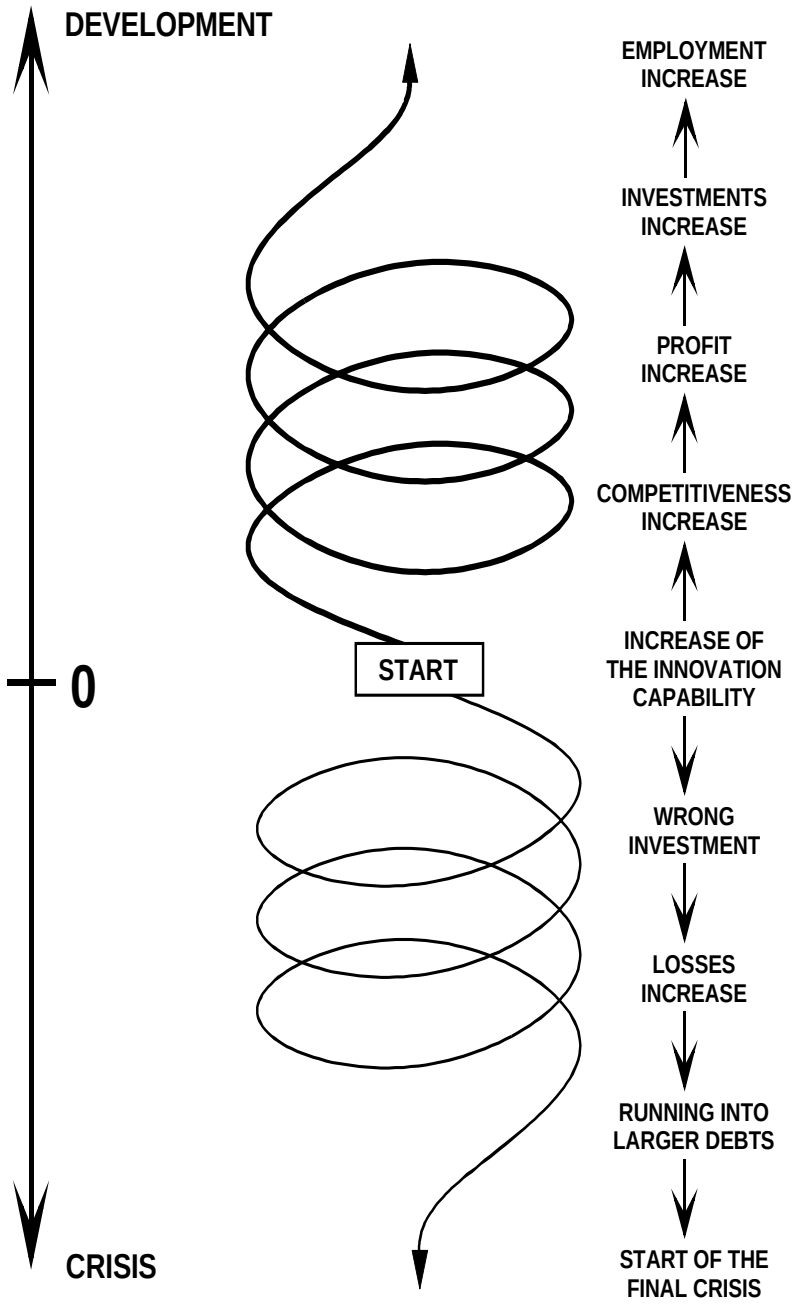
Innovation seen as a virtuous or vicious cycle:

For postschumpeterian economics innovation is seen as a process which is:

- **non maximising,**
- **interactive,**
- **cumulative,**
- **specific, and**
- **Institutionalised.**

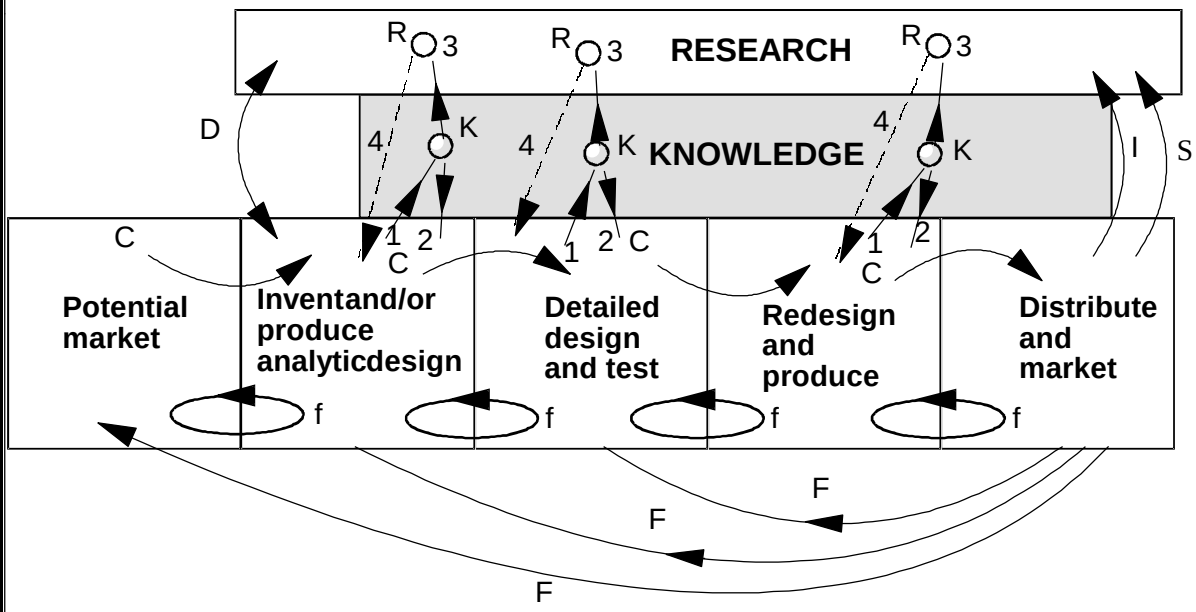
The innovation capacities of a firm can be seen as:

- **the capacity to "perform“,**
- **the capacity to "learn“, and**
- **the capacity to "mobilise" external resources.**



Source: Capaldo, Corti and Greco (1997), p.6

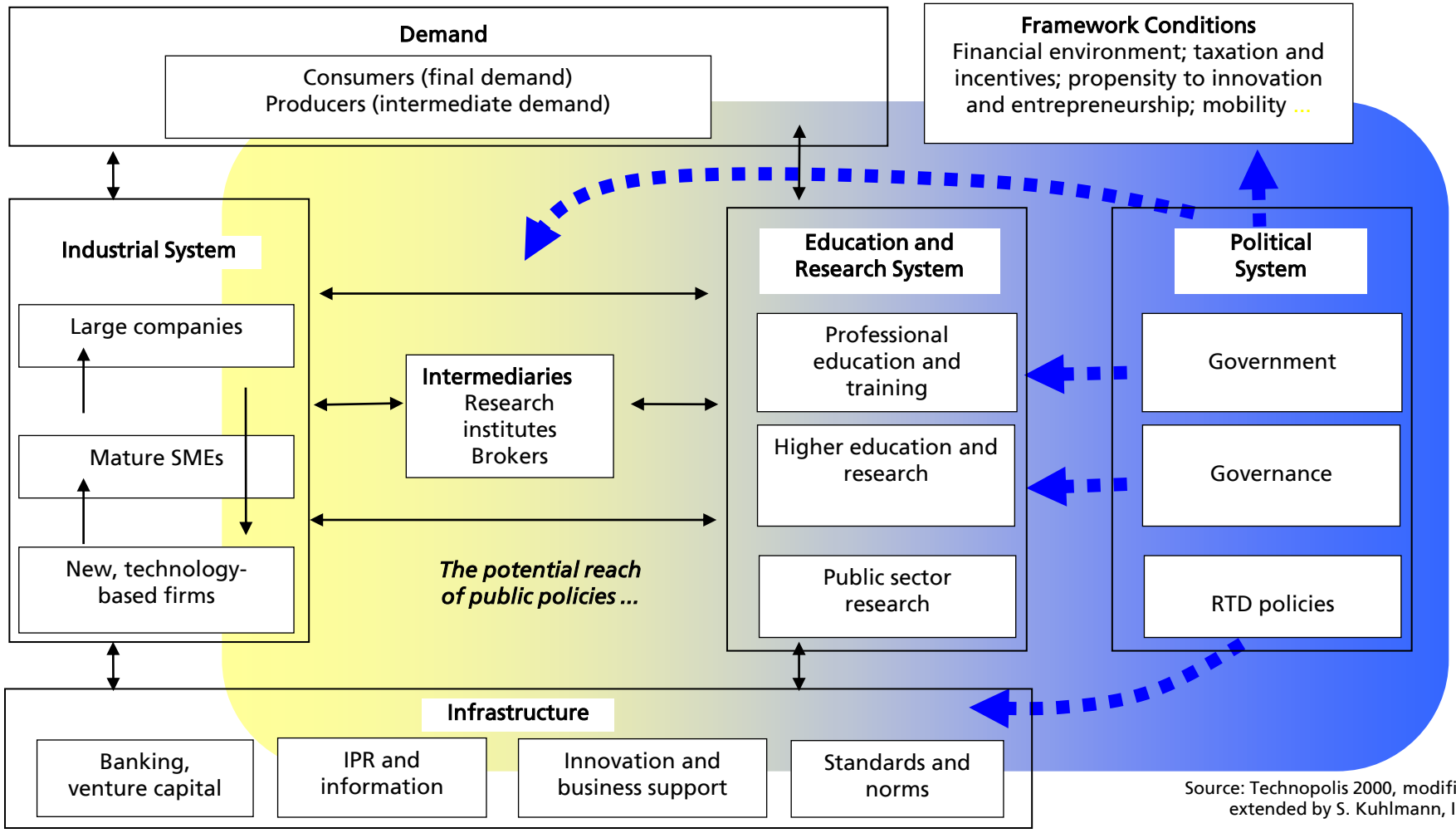
The chain-linked model by Kline and Rosenberg



C = Central-chain-of-innovation
f = Feedback loops
F = Particularly important feedback
K-R = Links through knowledge to research and return paths. If problem solved at node K, link 3 to R not activated. Return from research (link 4) is problematic - therefore dashed line.
D = Direct link to and from research from problems in invention and design.
I = Support of scientific research by instruments, machines, tools, and procedures of technology.
S = Support of research in sciences underlying product area to gain information directly and by monitoring outside work. The information obtained may apply anywhere along the chain.

Source : Kline and Rosenberg (1986)

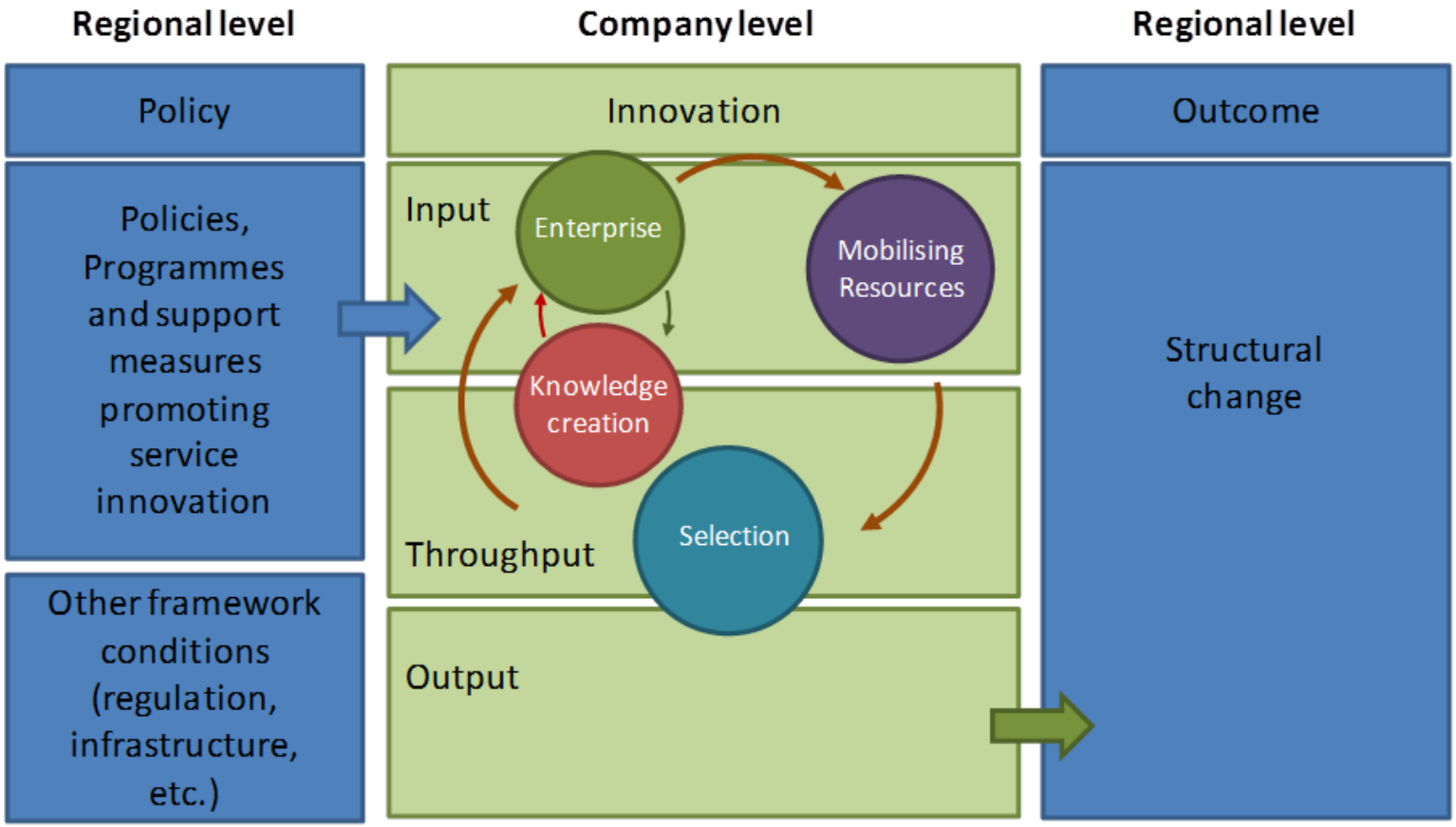
National innovation systems



Source: Technopolis 2000, modified and extended by S. Kuhlmann, ISI

An exemple of European application at regional level: ESIC

ESIC (ESTABLISHMENT OF A EUROPEAN SERVICE INNOVATION CENTRE)
Research contract for the European Commission (2012-2014)



The transformative power of services …

Twenty advances in science policy (Martin, 2015) 1/2

1. From individual entrepreneur to corporate innovators
2. From *laissez faire* to government intervention
3. From two factors of production to three
4. From single division to multidivisional effects
5. From technology adoption to innovation diffusion
6. From science push to demand pull?
7. From single factor to multi-factor explanations of innovation
8. From a static to a dynamic model of innovation
9. From the linear model to an interactive 'chain-link' model
10. From one innovation process to several sector-specific types

Twenty advances in science policy (Martin, 2015) 2/2

11 From neoclassical to evolutionary economics

12 From neoclassical to new growth theory

13 From the optimising firm to the resource-based view of the firm

14 From individual actors to systems of innovation

15 From market failure to system failure

16 From one to two 'faces' of R&D

17 From 'Mode 1' to 'Mode 2'

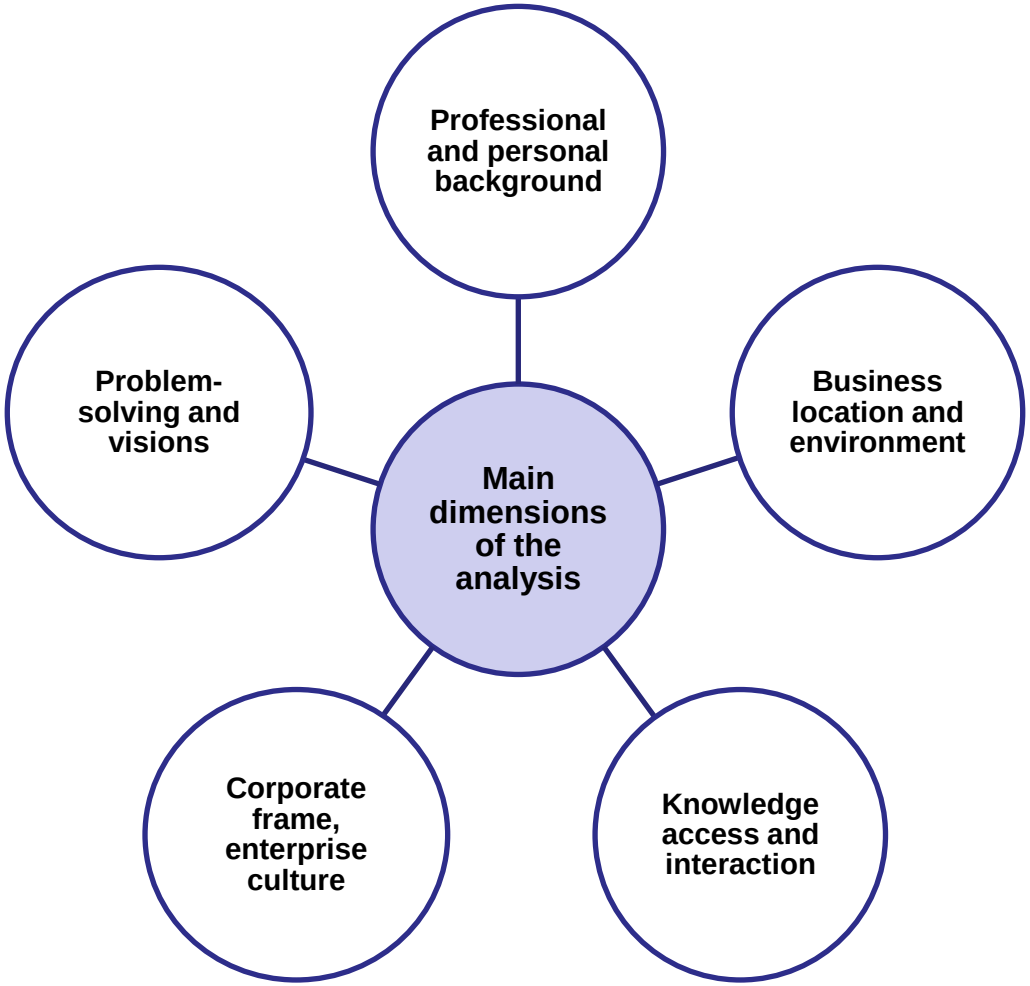
18 From single technology to multi-technology firms

19 From national to multi-level systems of innovation

20 From closed to open innovation

II. Current research

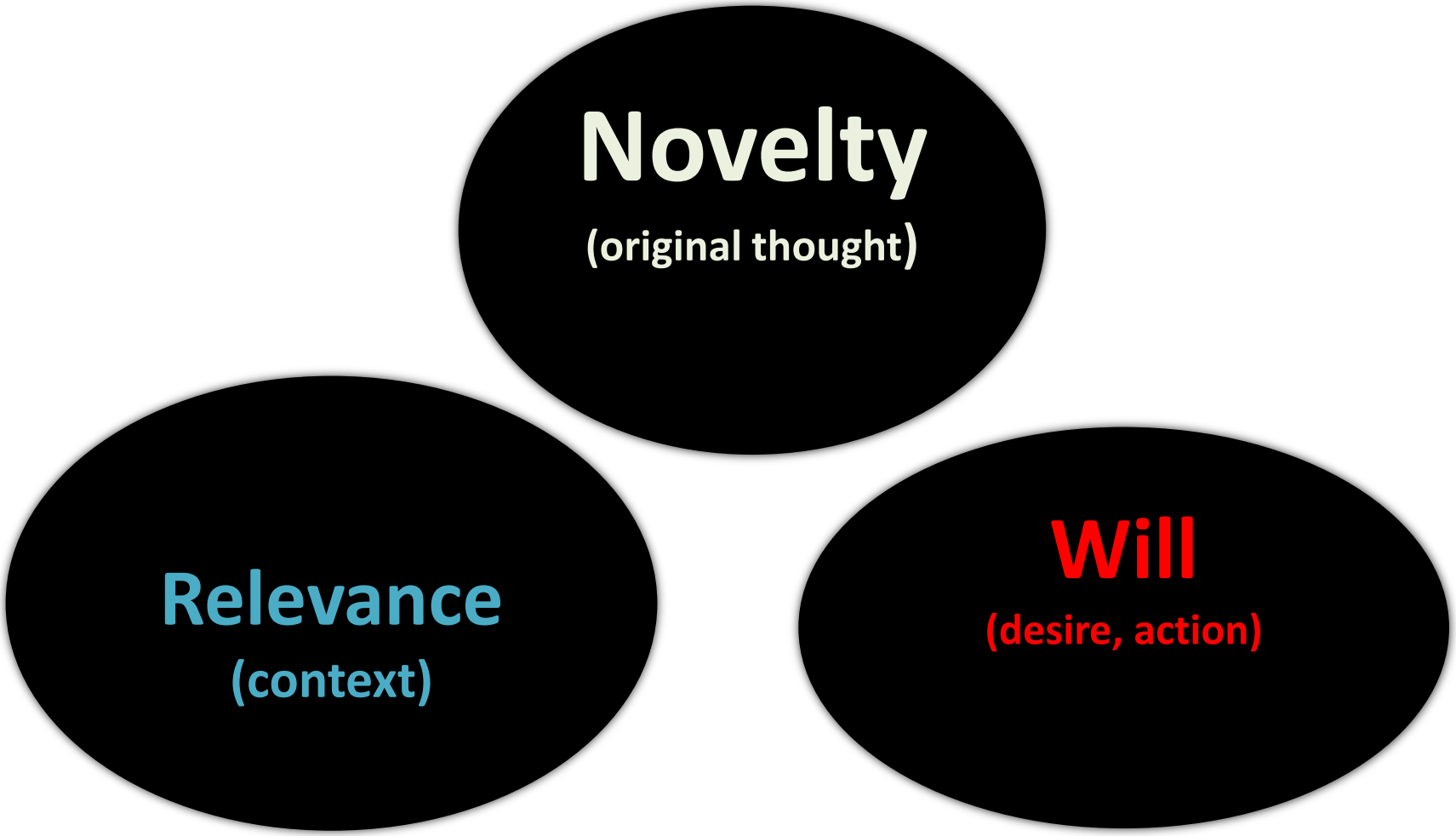
Creativity and knowledge angels



Creativity and knowledge angels

Type of angels Characteristics	Business angels	Knowledge angels
Core resources	Money and business experience (and to a lesser extent ideas)	Ideas and visions (and to a lesser extent business experience)
Strongest motivation for action	"Fun factor" and financial interest (and a willingness to support younger entrepreneurs)	Quest for freedom and self-realization (and a willingness to support co-workers)
Main forms of knowledge support	Supporting already existing knowledge creation processes and situations	Initiating new knowledge creation processes and situations

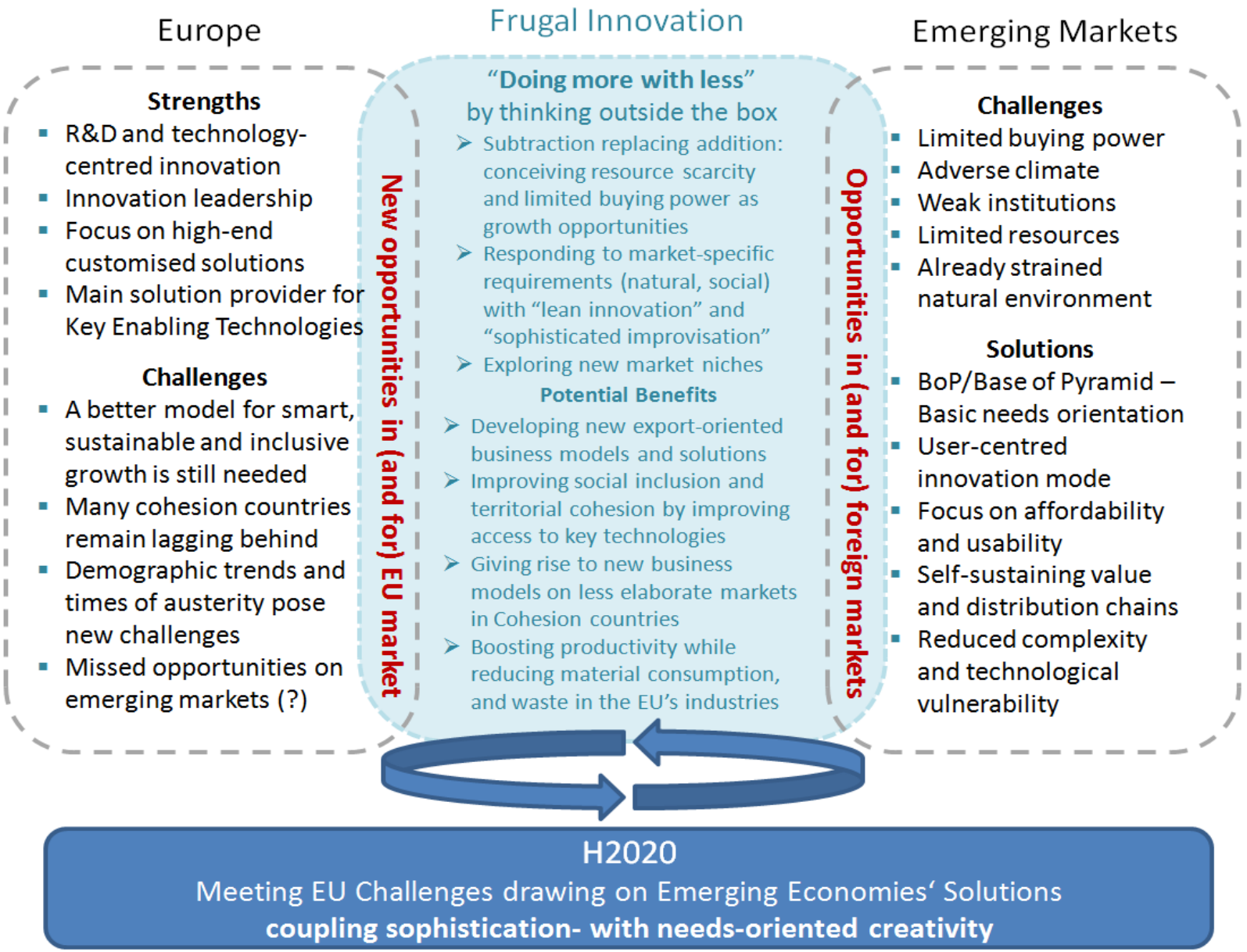
Effectuation and will : revisiting the link between creativity, innovation and action



Managing the *will* factor: examples of incentives and hindrances

Core dimensions affecting the will factor:	Incentives	Hindrances
(1) Desire and determination	• Pushing out of the comfort zone • Diversity of the population (co-workers)	• Hierarchy and bureaucracy • Corporate clones and cast system
(2) Decision making	• Right to fail • Garbage can model	• "Employee of the month" • Benchmarking
(3) Competencies and skills	• Experimentation and fun factor • Curious minds	• Need for hyper specialization • Rational minds

Frugal innovation : doing more with less for more people



III. Challenges for the future

Twenty challenges in innovation studies (Martin, 2015) 1/2

1. From visible innovation to 'dark innovation'
2. From innovation in manufacturing to innovation in services
3. From 'boy's toys' to 'women's liberation'
4. From national and regional to global systems of innovation
5. From innovation for economic productivity to innovation for sustainability ('green innovation')
6. From innovation for economic growth to innovation for sustainable development
7. From risky innovation to socially responsible innovation
8. From innovation for wealth creation to innovation for well-being (or from 'more is better' to 'enough is enough')
9. From 'winner take all' to 'fairness for all'?
10. From government as fixer of failures to the entrepreneurial state

Twenty challenges in innovation studies (Martin, 2015) 1/2

11 From faith-based policy (and policy-based evidence) to evidence-based policy?

12 Balancing the intrinsic tensions between intellectual property and open source

13 Balancing the intrinsic tensions between exploration and exploitation

14 Balancing the intrinsic tensions between closed and open innovation

15 Balancing the intrinsic tensions between competition and cooperation

16 Pricking academic bubbles

17 Identifying the causes of the current economic crisis

18 Avoiding disciplinary sclerosis

19 Helping to generate a new paradigm for economics – from Ptolemaic economics to ???

20 Maintaining our research integrity, sense of morality and collegiality

Conclusion:
research challenges and opportunities
for cooperation between us

- Servitisation and industry 4.0 related policies
- Happinomics, innovation and triple transition (energy, big data and society)
- Systemic emerging properties, catalytic effects and multi-level governance