

Social innovation and theories of innovation in various economics paradigms

Attila Havas
Institute of Economics, CERS, HAS

ISIRC
York, 6-8 September 2015

Outline

Motivation

Models of innovation

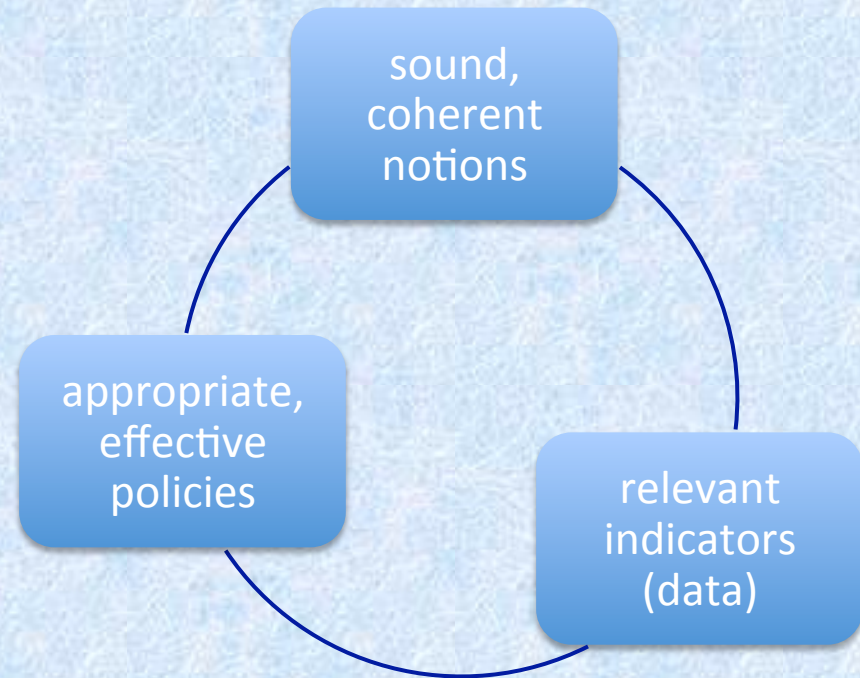
Innovation in economics paradigms

Notions used in economics – their relevance for
analysing social innovations

Conclusions

Motivation

Holy (unholy?) trinity of theory, measurement, and policy



Achievements & several severe weaknesses

Different schools (theoretical frameworks) in isolation:
crossing borders \Rightarrow mutual learning?

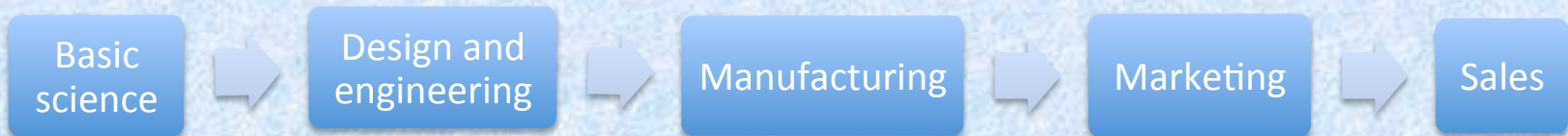
“There is no single model of the innovation process: enterprises can differ very significantly in their approaches to innovation.” (Smith, 2002)

MODELS OF INNOVATION

Models of innovation

Linear models

science-push: basic research is the main source of innovation



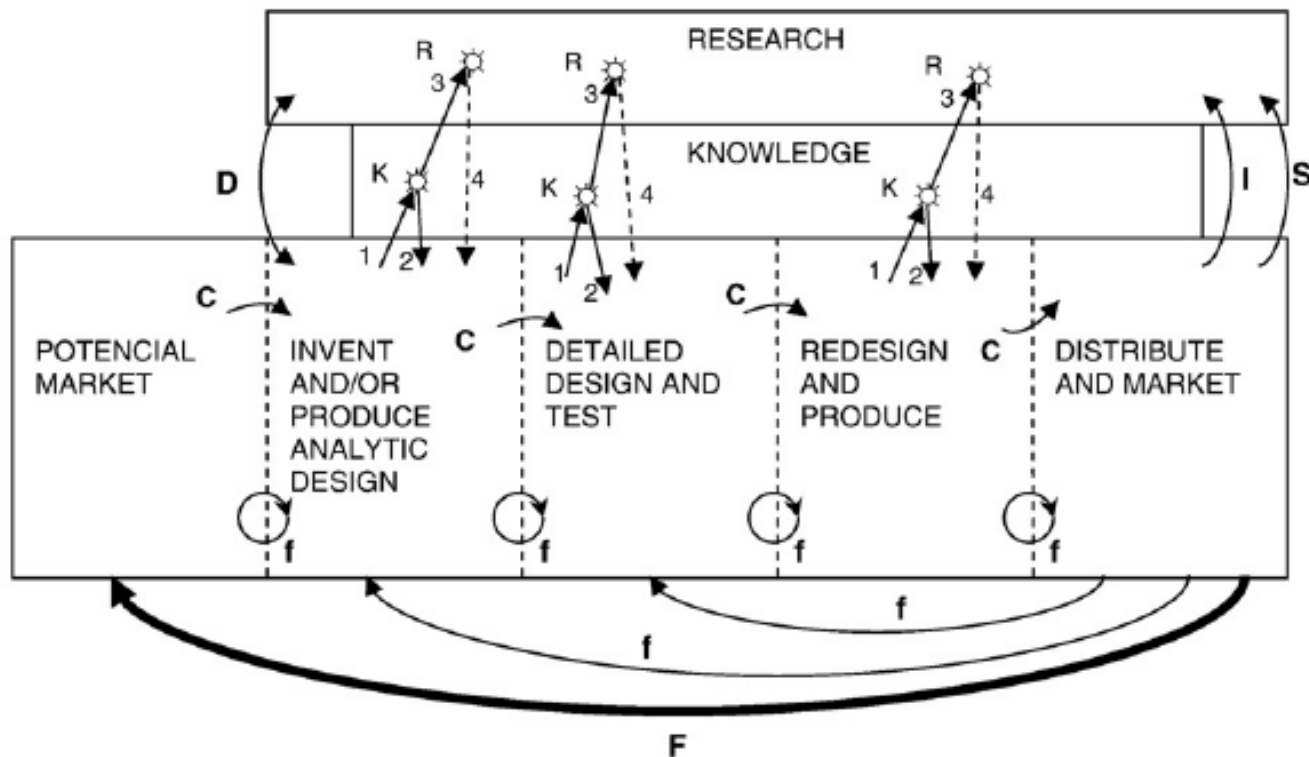
market-pull: demand is the main source of innovation



Models of innovation (2)

Systemic (or: networked) models

- 'chain-linked' model
- 'multi-channel interactive learning model'



Chain-linked model showing flow paths of information and cooperation.

Symbols on arrows: **C** = central-chain-of-innovation; **f** = feedback loops; **F** = particularly important feedback.

K-R: Links through knowledge to research and return paths. If problems 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.

Fig. 2. The chain-linked model. Source: Kline and Rosenberg (1986), [10].

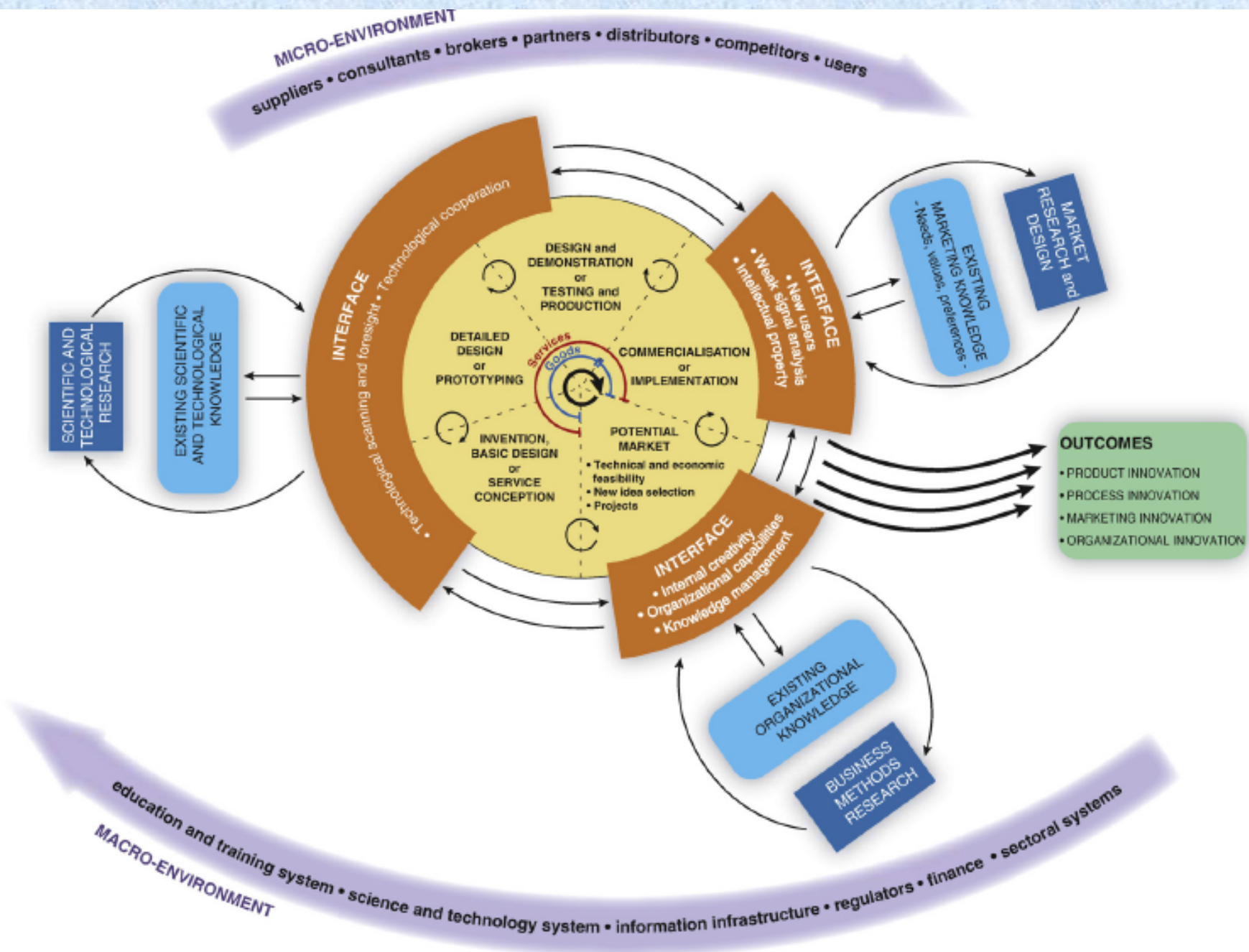


Fig. 3. The multi-channel interactive learning model. Source: J. Garaça et al. (2006), [1] and text.

“From a theoretical perspective, there must be doubts about whether any general theory of innovation is possible.” (van de Ven et al., 1999)

ECONOMICS OF INNOVATION

Classical economics

Technological, organisational, institutional and market changes – including their co-evolution – were central research themes for classical economists

- Adam Smith (1776)
- David Ricardo (1817)
- John Stuart Mill (1848)
- Karl Marx (various years)

Neo-classical economics

Allocative efficiency is in the centre of their analysis, that is, a short-term issue

Technological, organisational, institutional, and market changes are exogenous variables

Their main new objective was to develop sophisticated models of general equilibrium and by doing so to turn economics into a 'hard science', exemplified by Newtonian physics in the 19th century

Walras (1874/1954, p. 71), for example, perceived "the pure theory of economics or the theory of exchange and value in exchange" as a "physico-mathematical science like mechanics or hydrodynamics" (cited in Clark and Juma, 1988: 206)

Classical vs. neo-classical economics

Two functions of decentralised markets:

- allocation of resources
- transmission of impulses to change

Classical economist had inclined to focus on the latter

“Fundamental dynamic properties such as the relationship between expansion of markets, division of labour, and productivity growth in Smith, or the ‘increasing organic composition of capital’ in Marx, are examples of a class of propositions argued on the grounds of the *irreversible transformations* originated by processes of what we could call ‘dynamic competition’. Moreover, their neglect of explicit microfoundations was justified on the grounds of what we may term a ‘holistic’ or ‘macroinstitutional’ assumption about behaviour: it seemed obvious to them that, for example, given an opportunity, capitalists were ready to seize it, or that their ‘institutional’ function was to invest and accumulate the surplus.” (Dosi and Orsenigo, 1988: 14)

Mainstream vs. evolutionary economics

Risk **vs.** uncertainty (optimisation)

Ahistorical models **vs.** 'history counts'
path-dependent, cumulative processes
learning by doing, using and interacting

Information **vs.** knowledge (codified, tacit) & skills
learning capabilities
many types and sources of knowledge \Rightarrow collaboration

Representative agents **vs.** heterogeneity
learning, path-dependence \Rightarrow diversity

Linear **vs.** networked (interactive) model of innovation
V Bush, 1945: science-push model
(Say's Law: supply creates its own demand)

**DISCUSSION: THE RELEVANCE OF DEFINITIONS
(NOTIONS) USED IN ECONOMICS**

Social innovations are ...

New solutions that simultaneously meet social needs – more effectively than other ones – and create new social relationships or collaborations

Solutions for exclusion, deprivation, alienation, lack of wellbeing; leading to significant human progress and development

Changes in the cultural, normative or regulative structures (or classes) of society that enhance its collective power resources and improve its economic and social performance

⇒ The unit of analysis is different in the above definitions

Types of innovations

New or significantly improved ...

- goods (products, services) and processes [*technological* innovations]
- organisational methods (business practices, workplace organisation, firms' external relations) [*organisational* innovations]
- marketing methods (product design, packaging, product placement, product promotion, pricing) [*marketing* innovations]

OECD: Oslo Manual (concerned with the business sector only)

Market innovations: entering new markets (inputs, outputs)

Financial innovations

- not mentioned by the Oslo Manual; could be classified as a new service, or business practice
- the 2008 global crisis
- access to capital from the angle of inclusion

Public service innovations

efficiency **and/or** social goals?

Further notions (with many uses, definitions; debates among authors)

Frugal innovation: serving people with little means

Responsible research and innovation

a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products in order to allow a proper embedding of scientific and technological advances in our society

Further notions (with many uses, definitions; debates among authors)

Inclusive innovations

- *process*: including disadvantaged groups in production
- *outcome*: meeting previously unmet demand or need
- *systems of production and delivery*: integration of different market and non-market mechanisms
- *inclusion in the innovation system*: including marginalised knowledge systems and practices in the innovation process

Sustainable innovations, innovation for sustainable development

Systems of innovation

National and regional

- actors (boundaries of the system)
- functions of the system (Edquist)
- interactions (various flows) among the actors
- the institutions ('rules of the game') guiding/ influencing their behaviour and interactions
- dynamics (evolution) of a system
- sub-systems (by functions, actors, regions ...)

Ecosystems

Freeman (1987), Lundvall (1992), Nelson (1993),
Edquist (1997), Metcalfe, Georghiou, Malerba (2002), Cook,
Bergek, Jacobsson, Carlsson, Lindmark and Rickne (2008),
Hekkert et al. (2007), ...

Degree of novelty

Used in surveys; new to the

- firm (CIS, Community Innovation survey)
- market (CIS)
- world

Used in qualitative analyses (unit of analysis)

- goods, processes
 - incremental
 - radical
- technology systems
 - a set of technologically and economically interconnected goods and processes, affecting several companies or an entire sector in the same time, occasionally leading to the emergence of new industries (e.g. canals, gas and electric light systems, plastic goods, electric household devices)
- techno-economic paradigms
 - examples: the (first) industrial revolution; steam and railways; steel, electricity, and heavy engineering; oil, automobile, and mass production; info-communications

CONCLUSIONS

Economics paradigms – social innovation

Neo-classical cannot accommodate social innovations

- the major goal is not optimisation in a strict economic sense
- they do face uncertainty, too, not only calculable risks
- dynamic aspects are crucial
 - changes in the environment, in which social innovations take place
 - to induce this change is among the major goals of social innovation
- various types of changes – economic, technological, organisational, social (e.g. structural, behavioural) and political – are endogenous from the point of view of social innovations, and co-evolve. Policy governance sub-systems and the level of governance need to be considered, too.
- social innovators are neither ‘representative agents’, nor do they act on their own
 - have their own specific features, partly shaped by the context, in which they operate
 - need to interact with several other actors, and often form formal or informal networks to do so

Economics paradigms – social innovation (2)

Mainstream economics does not provide an adequate theoretical framework, either

Evolutionary economics offers some hints that can be relevant when analysing social innovations

- dynamics
- heterogeneity, generating diversity
- systemic view (actors, interactions, 'rules of the game')
- types, sources and forms of knowledge, distributed knowledge bases
- context (**vs.** an ahistorical, highly abstract approach)

Several notions used to analyse innovation in economics could be useful to analyse social innovations

- stress important features
 - e.g. degree of novelty: IPR **vs.** prestige?
- identify types of innovation (leading to a taxonomy?)
- be conscious of the unit (level) of analysis

Measurement issues

Be aware of the differences between measuring

(a) social innovation activities (efforts) themselves

(b) the framework conditions (pre-requisites, available inputs, skills, norms, values, behavioural patterns, etc.) of being socially innovative, and

(c) the economic, societal or environmental impacts of social innovations

Thank you!

attila.havas@krtk.mta.hu

Cr | E | S | S | I

Creating Economic Space for Social Innovation



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 613261.

Financial support from the CRESSI project is gratefully acknowledged.

APPENDIX:

EXAMPLES FROM CLASSICAL ECONOMISTS

Technological, org'l, inst'l and market changes in classical economics

Adam Smith (1776)

Division of labour: organisational innovation (using modern terminology)

Also: learning, invention and introduction of machinery, the emergence of sectors, 'philosophers or men of speculation'

Co-evolution of transport technologies, markets, and division of labour, leading to economic development (Book I, ch. III)

examples stretch from the case of ancient Egypt to his contemporary Holland in time and cover Africa, Asia and Europe in space

Technological, org'l, inst'l and market changes in classical economics (2)

David Ricardo (1817)

Technological and market innovations (using modern terminology)

“Sudden Changes in the Channels of Trade”, “the influence of machinery on the interests of the different classes of society” on output, trade, profit, and employment (ch. 19 and 31)

John Stuart Mill (1848)

Technological (product and process), organisational and financial innovations (using modern terminology)

Invention vs. innovation (introduction)

Labour: “skills and knowledge”, “general diffusion of intelligence”