

Systems of Innovation and Development

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Advantages of the approach on system of innovation - SI

Underlying the SI approach is a:

- characterization of innovation and learning in a broader context and as **interactive processes with multiple sources**
- emphasis on the importance and complementarity between **incremental and radical, technical and organizational innovations**, as well as their **different sources**, both internal and external to firms and national boundaries
- re-conceptualization of the firm as organizations embedded within **specific socio-economic-political environments**, reflecting different historical and cultural trajectories

Advantages of the approach on system of innovation - SI

Underlying the SI approach is a:

- focus on the **localized (and national)** nature of the generation, assimilation and diffusion of innovation, as opposed to the simplistic idea of a supposed techno-globalism
- resurgence of the interest **in historical and national development trajectories** and in the role of technical change
- observance of the systemic nature of innovation and the need of taking into account the productive, financial, social, institutional and political spheres, as well as micro, meso and macro dimensions

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Alleged weaknesses of the SI approach

1. was created and used in the North as an ex-post concept and has not been applied to system building
 - the importance of not ignoring that concepts & theories are never neutral
 - is this conclusion based on a supposition that there exists ideal models of system of innovation to be pursued and that in LDCs there are no SI ?????
 - the SI approach was also developed to understand:
 - the process of catching-up
 - how national systems of innovations can benefit from the opportunities offered when knowledge appropriability regimes are low (Freeman)

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Alleged weaknesses of the SI approach

2 - is 'under theorized', needs to be made more precise in its terminology and in its definition and there is a need to advance in the understanding of the formation, boundaries (local, national or supranational), strengths and vulnerabilities of innovation systems, as well as the role of power relationships

- this could be considered rather as a weakness of the research effort than of the concept

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Alleged weaknesses of the SI approach

3. lacks rigor and formalism

- there is not one unique 'model' to be imperatively followed
- each case must be considered - according to its peculiarities, its characteristics and the constraints and opportunities international context - in order to evaluate what could be the most appropriate strategies and mode of development

4. is not easy to implement

- one has to learn how to work without the guidance of closed models
- use leads to refinement

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- flexibility allows specificities to be taken into account
- importance of and basic assumptions
 - broader understanding of innovation
 - focus on social, economic and political agents and contexts
 - systemic approach, observance of micro, meso and macro relationships
- emphasis on the importance of accumulating capabilities and knowledge for the sustainable competitiveness versus low costs based on depreciation of labor and natural resources 'spurious competitiveness' (Fajnzylber)
- encourages analysts and policy-makers to take a broader perspective on the opportunities for learning and innovation in LDCs, SMEs and in both traditional & frontier areas (that work as innovation diffusers e.g. ICTs)

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- the IS approach contrasts with the hypotheses that in the “new economy” technologies would become global, local and national attributes would disappear and the role of policies - in general, and government policies, in particular - would have no relevance
 - ‘in the *knowledge era*, it seems at least naive to think that anyone would be willing to transfer or to share precisely its main strategic competitive asset’
 - ‘ideas that technology is becoming a global commodity run totally against the trends observed nowadays, with the pressures to privatize, control and create *artificial scarcity* of knowledge’
 - *NSI* versus “*benchmarks*” and “*best practices*”

'globalization is very far from conducting to the adoption of uniform policies. The mirage of a world behaving under the same rules dictated by a super IMF exists only in the imagination of some people. The disparities among economies are due not only to economic factors but, most importantly to diversity in cultural matrices and historical particularities' (Furtado)

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By emphasizing particular historical, political and national trajectories, the SI approach:

- reinforces the thesis that the generation of innovation is localized and bound to national and regional frontiers
- makes clear that external acquisition of technologies and knowledge **is not a substitute for local efforts**
- contrasts with the standardization and convergence trend suggested by the globalization theses
 - **'the knowledge era does not result from any natural, uncontrollable or progressive force'**

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- the need to consider questions such as power structure and specific geo-political, social and economic contexts to properly understand the evolution of SIs
- the emphasis on micro, meso and macro dimensions and their linkages
 - hyperinflation, high external debt and high interest rates have been significant constraints to development in LDCs
 - since the 1960s, it has been recognized that macroeconomic contexts are of much greater importance than specific innovation policies
 - 'implicit' technology policies (Herrera, Sagasti, Girvan, Katz, Coutinho, Cassiolato)
 - challenges posed by the increasing financiarization, the new forms of global geo-politics and the need to implement policies to cope with them (Furtado, Tavares, Fiori, Bacelar)

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- main objective: to capture the particularities of those existing learning, innovation and competence building systems in order to be able to suggest the best forms to enhance them, rather than to build new innovation systems
- importance of adding to - instead of replacing - the tacit knowledge already accumulated by the groups of researchers working in different regions of Brazil
- empirical research will always benefit from the knowledge already accumulated about the historical, economic, social and political environment of these LPISAs

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Conclusions:

- the use of SI approach
 - has proved to be a valuable tool in analyzing how knowledge is generated, acquired, used and diffused
 - focus not exclusively on economic agents, but also on **their interactions** and with other social and political agents, as well as the environment where capabilities building and learning processes take place
 - in different countries and regions may bring fundamental new insights (First Globelics Conference web-site) that could help to build a 'grounded critical theory'
 - represents an important policy approach
 - **the dangers of becoming only the icing of the cake**