

Innovation and Production Systems: limitations in the use of the approach as opportunities to advancement

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- Limited and outdated notion of **innovation & system** and of its analytical and policy backgrounds
- confusion between **knowledge and information and between technology and equipment**
 - bias towards radical innovations occurring only in high-tech sectors, as a result of R&D performed by big firms in DCs, correlation with patents
 - promoting innovation opposed to the promotion of local development or social inclusion
 - use of ISs **and local innovation and production systems (LIPSs)** as a synonyms for industrial districts, clusters, chains, networks... at research and policy-making spheres

- Is catch-up good enough to replace development in research and policy agendas?
 - Development implies a qualitative transformation and should not be conceived as merely following and catching-up with the leading countries, even if this was possible. Each country's historical experience is a unique process and differs from any other (Cassiolato et al, 2005)
 - Is the idea of countries catching-up with the most advanced countries **real and desirable**? (Arocena and Sutz, 2005)
- Is IS an ex-post concept, which has not been applied to system building?
- Is the IS framework compatible with the supposition that **there exist ideal models to be followed by all?**
- Should typologies classify IS in different 'stages': dynamic, potential, incipient, stagnating, mature, world class, etc.?

To what extent

1. most of the ICSs analytical and policy frameworks in use
 - are not static?
 - remain actually limited by the sectoral focus?
 - do not ignore **local contexts**, geopolitics and power conflicts?
 - are indeed capable of capturing the specificities of **real production structures**?

2. derived policy frameworks and prescriptions
 - escape the criticism of representing only a new icing on very traditional forms of policy-making? (Reiner and Reiner, 2003)
 - do not work in a truly **Procustean fashion**? (Lastres and Cassiolato, 2004; Arroio, 2012)

- Procrustes, "he who stretches", kept a house by the side of the road where he offered hospitality to passing strangers, who were invited in for a pleasant meal and a night's rest in **his very special bed**
- Procrustes described it as having the unique property that its length exactly matched whomsoever lay down upon it
- What Procrustes didn't volunteer was the method by which this "one-size-fits-all" was achieved
- As soon as the guest lay down Procrustes went to work upon him, stretching him on the rack if he was too short for the bed and chopping off his legs if he was too long
- Theseus turned the tables on Procrustes, fatally adjusting him to fit his own bed

Procrustes and his "magical" bed. ([zoom](#))

Reductionism can lead to serious negative consequences

- in the analytical dimension, a failure to perceive and understand local conditions
- in the policy dimension, a trend to submit local conditions to inappropriate models and to blame/punish them not to conform to the models

IS and the LIPS are powerful and complex concepts

- consist on very useful tools to **analyze and mobilize** the means of acquiring, using and disseminating knowledge in production spheres
- **are broader, more flexible and advanced** concepts than those on individual organizations, sectors, industrial complexes, production chains and agglomerations

Importance of perceiving and exploring these advantages

A focusing device

- Geographical and historical context matters - emphasis on national and local specific trajectories
- Ability to address
 - diverse conditions,
 - formal and informal activities and actors
 - social, economic and political spheres
- Focus on the importance of mobilizing knowledge and capabilities for **sustainable development**
- Innovation policies can and should also contribute to reduce regional and social inequalities and exclusion
- ✓ Despite the advances in the understanding of innovation in the last 3 decades – from the development of concept of IS – **most frameworks, models, taxonomies have not been entirely capable assimilating them**

History and specific territorial conditions are essential to explain how production and innovation capabilities are acquired, used and developed. Analytical models, taxonomies and policy prescriptions that disregard these parameters put their usefulness seriously in risk (Lastres and Cassiolato, 2005)

‘General history (social, political and cultural) economic history and industrial history are not only indispensable, but really the most important contributors to the understanding of our problem. All other materials and methods statistical and theoretical are only subservient to them and worthless without them’ (Schumpeter, 1939 apud Freeman, 1982)

‘to develop a general theory of IS that abstracts from time and space would undermine the utility of the concept both as an analytical tool and as a policy tool’ (Lundvall, 2006)

New way to look, think and implement policies for production and innovation development, capable of focusing activities:

- with different levels of maturity and dynamics, from the most intensive in terms of knowledge to those that use internal or traditional knowledge
- with different actors, sizes and functions, deriving from the primary, secondary and tertiary sectors, operating locally, nationally or internationally

Possibility to boost the potential of policy efforts, redirecting them to the territory and to the interactions among actors to encourage

- learning, innovation and competence building processes
- fostering and enrooting sustainable local development

Five main policy implications deriving
from the knowledge accumulated
about innovation, innovation systems,
LICSs and LIPSs
in the 3 last decades

1 – Differentiation between **Invention from Innovation**

Inadequacy and obsolescence of traditional indicators for science, technology and innovation in measuring performance and guiding policy - **Patents, publications and R&D activities**

- Development and use of new indicators
- Revision of policy emphasis
 - from the support of infrastructure, R&D activities and intellectual property – **big corporations**
 - to the effective mobilization of means to acquire, use and accumulate knowledge in a vast array of activities

2 – Differentiation between **Knowledge from Information**

Acquisition of knowledge, equipment and technology developed abroad can never replace the need to create and foster local and national capacity-building opportunities

Selection, purchase, copying, incorporation and use require considerable capacity

A crucial learning dimension relates to the capacity of putting into practice the knowledge and technologies acquired

- the capacity to generate and internalize new knowledge depends directly on use

- **Revision of policy emphasis**

- from technology imports
- to fostering the creation of absorptive capabilities and the promotion of solid and dynamic local and national production structures

3 - The production and innovation capacity of a country or region reflects historical, territorial, political, economic and socio-cultural conditions

Different contexts - cognitive and regulatory systems as well as means for articulation and learning - lead to

- different ways of generating, assimilating, using and accumulating knowledge
- specific policy requirements

Importance of contextualizing concepts, indicators, methodologies and policies

Contextualization of analytical and policy frameworks

- Type of insertion of a country or region within the wider geopolitical context and the role of:
 - ✓ **implicit policies** (Herrera, 1971) and
 - ✓ **malign macroeconomic regimes** (Coutinho, 2003)
- Opportunities to incorporate social inclusion and sustainable development in research and policy agendas

Proper and adequate policies, capable of

- **stimulating the formulation of contextualized solutions for development from the micro to macro level and of**
- **stimulating local protagonism, formulation and commitment**

4 - Production and innovation dynamics strongly

✓ relates to capacities in the production of raw materials, equipments, final good and commercialization segments, besides involving a series of other activities and organizations that are responsible for

- their promotion, regulation, financing and representation
- assimilating, using and disseminating knowledge and capabilities

✓ depends on these economic, political and social actors and on the environments where they are located

Development of the concepts of national systems of innovation (Freeman, 1982 and 1987; Lundvall, 1985) and local innovation and production systems (Cassiolato and Lastres, 1997)

Main policy implications

Focus on the different production and innovation systems as well as their territories

Policies capable of:

- fostering articulations and synergies among actors performing different functions within one or more LIPs
- stimulating their capacity of generating, assimilating, using, accumulating and diffusing knowledge

Importance of

- de-mystifying the supposed antagonism of economic, political, regional and social development goals, and of
- associating the different **inseparable** dimensions of development

Policies capable of:

- putting into practice integrated strategic priorities
 - instead of selecting cases “by definition”
- breaking invisibilities and exclusions
 - informal actors and activities
 - gender, racial and other power imbalances
- focusing on inclusive, cohesive and sustained development

5 - Production and innovation are not limited to specific groups of companies, sectors and regions

There are reasons as to why policies for production and innovation tend to focus on the manufacturing activities of leading corporate groups

But it is also recognized that

- they constitute only a part of the national systems of innovations
- policies should not be restricted solely to these firms and sectors

‘Narrow definitions of the national innovation system are of limited relevance ... (and) misleading when it comes to inform innovation policy strategy everywhere.’ (Lundvall et al., 2011)

Policies fostering production and innovation systems for the provision of food, health, education, housing (with sanitation and access to water and electricity), solid waste treatment, culture and other essential public services

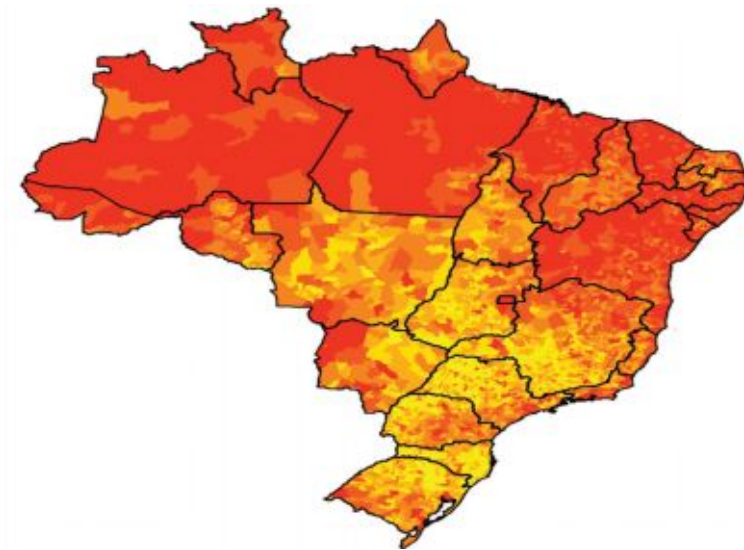
Example: education system usually involves:

- ✓ means of transport: buses, bikes, boats, etc.
- ✓ buildings and other facilities: furniture
- ✓ information and communication technologies and systems
- ✓ food – provided by family agriculture
- ✓ clothing and shoes
- ✓ services, etc.

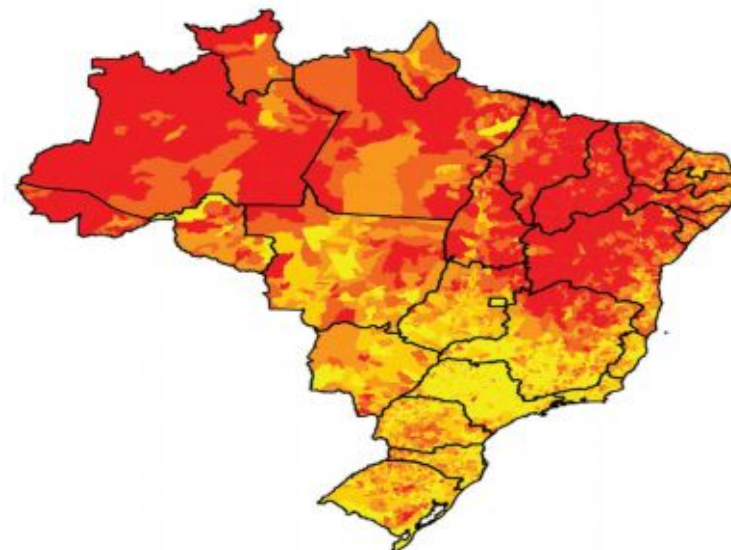
All these items can represent important lessons of inclusive and sustainable development

The role of teaching and research in exploring these opportunities

Income inequalities



Insufficiency of public services



Brazil's Zero Misery Plan

Challenges and opportunities for adequate and proper policy alternatives for sustainable development

There are significant consequences of the adoption of policies that favor the development of production and innovation capabilities related to expanding the provision and the quality of these essential public services

- ✓ access to knowledge as the main asset in the Third Millennium
- ✓ logic compatible with the cooperation and dissemination of knowledge, experiences and capabilities
 - ✓ differently from those sector where competition is based on the appropriation and privatization of knowledge
- ✓ considerable expansion of the policy agenda for the support of a vast array of local production and innovation systems spread across the different regions of the world
- ✓ promising results in reducing social and regional imbalances

Opportunities and urgent need to choose and use concepts, indicators and policy models that:

- Put into practice plans and strategic priorities
 - instead of selecting cases 'by definition'
- Associate economic and social development
 - breaking invisibilities and exclusions
 - helping to cut down inequalities instead of reinforcing them
- Recognize and mobilize potentialities and capabilities particularly in the least developed areas
- Emphasize the capability to acquire and use all sort of knowledge - formal, informal, traditional, scientific etc. - promoting their integration



Thank you!

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