

Learning for Sustainable Futures

The Sustainability Oriented Innovation Systems Approach

Pieter van Heyningen

School of Public Leadership, Stellenbosch University





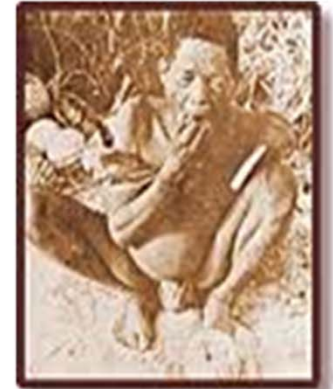
Brief History of Innovation

- **Innovation has several drivers:**

- Need (*Most often*)
- Circumstance (*Often*)
- Chance (*Rarely*)

- **Innovation does not happen in isolation**

- Usually a network of people bring the idea, invention or novelty into 'being' or to 'market'
- Tradition shows innovation is supported by networks of societal actors and technological components/artifacts.





Characteristics of Innovation

- Usually requires Organization
- Is usually Directed
- Serves some purpose for society (Good & Bad)
- Innovating can be seen as the activity of creating and renewing tools and processes for human development.
- Stone age tool to the Atom Bomb





Innovation Today



- **Multiple understandings / Definitions**
 - Product; Process; Incremental; Radical; Systems;
 - Organizational; Social
- **Formal definitions are embedded in mainstream orthodox economics**
- **Profit, corporate and national competitiveness have become the primary drivers of innovation through the economic system.**





Formal Definitions of Innovation

- Measured by R&D, Patents
- Primarily refers to technology
 - ↳ Products & Processes
- When a new product or process is brought to market = it is an innovation
- Once again, does not happen in isolation but rather through a network of people and technology.





“Process by which an idea or invention is translated into a good or service for which people will pay. To be called an innovation an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater or different value from resources, and encompasses all processes by which new ideas are generated and converted into useful products.”

<http://www.businessdictionary.com>”





Innovation Systems

- **Logic:**

- Return to concept of innovation is organized through social networks and technology
- Various components and functional relationships

- **Innovation Systems refer to these components and relationships that enable innovations.**

- **Can be used to talk about productiveness and competitiveness of regions or even nations.**

- **Definitions**

- International, National, Regional, Sectoral, Micro
- National: Freeman & Lundvall 1980's





“The network of institutions in the public- and private-sectors whose activities and interactions initiate, import, modify and diffuse new technologies (Freeman 1987)”

“The elements and relationships which interact in the production, diffusion and use of new, and economically useful knowledge... and are either located within or rooted inside the borders of a nation state (Lundvall 1992)”

“That set of distinct institutions which jointly and individually contribute to the development and diffusion of new technologies and which provides the framework within which governments form and implement policies to influence the innovation process. As such it is a system of interconnected institutions to create, store and transfer the knowledge, skills and artefacts which define new technologies (Metcalfe 1995)”





Innovation Paradigms

- Khune's meaning of 'scientific' paradigms and 'normal science'
- Popular and practical use of the term paradigm
- Current innovation paradigm = Economic Growth & competitiveness, technological advancement for its own sake.
- Arguably environmental forces are driving a new 'need' for innovation = requiring a new paradigm for innovation: human survival!

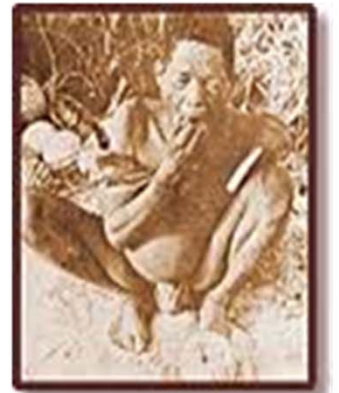
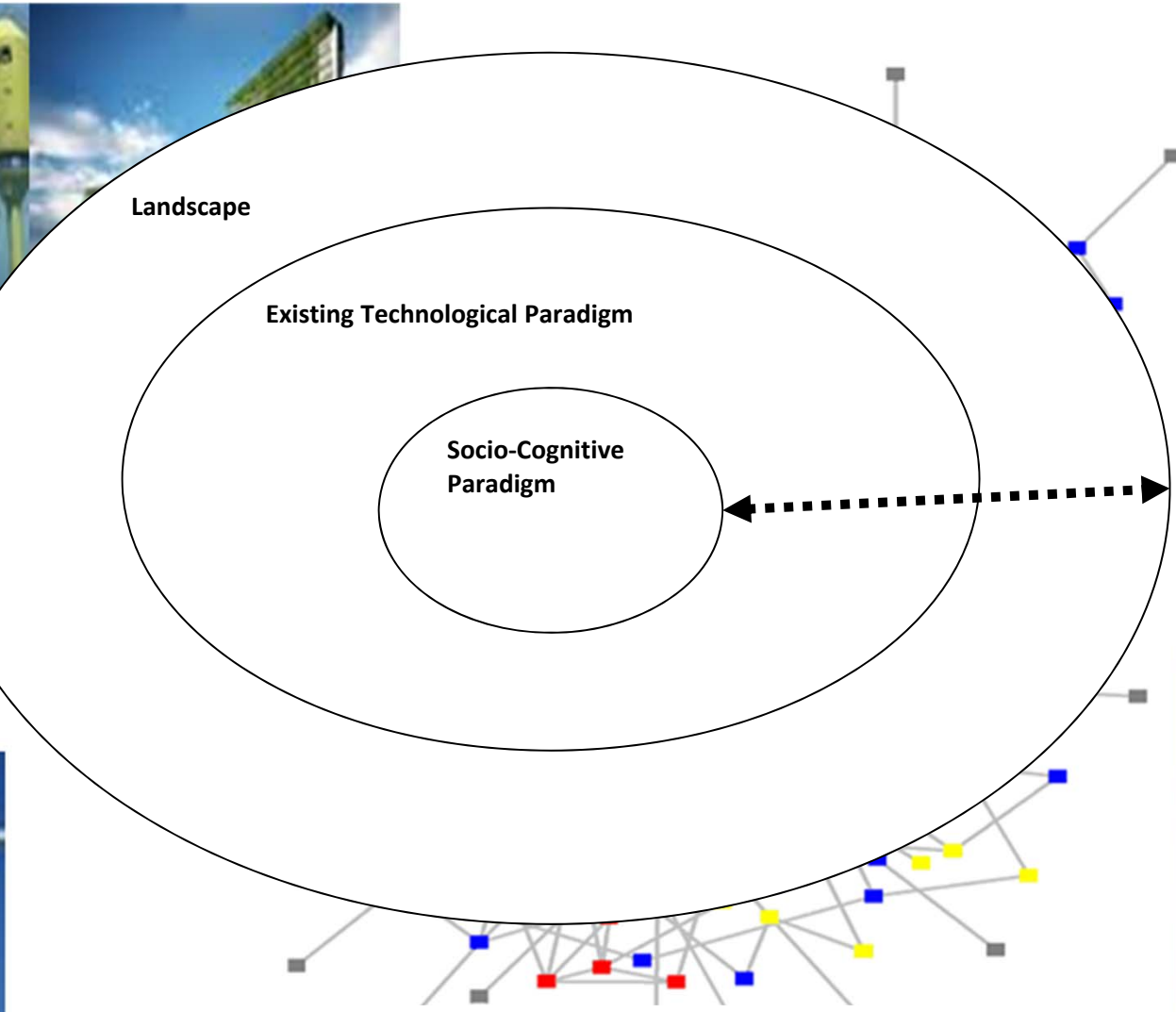
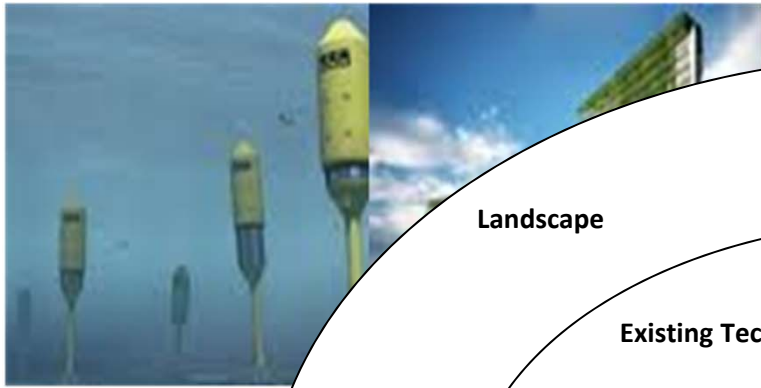




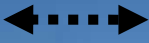
Sustainability Oriented Innovation

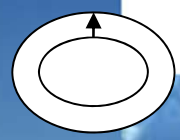
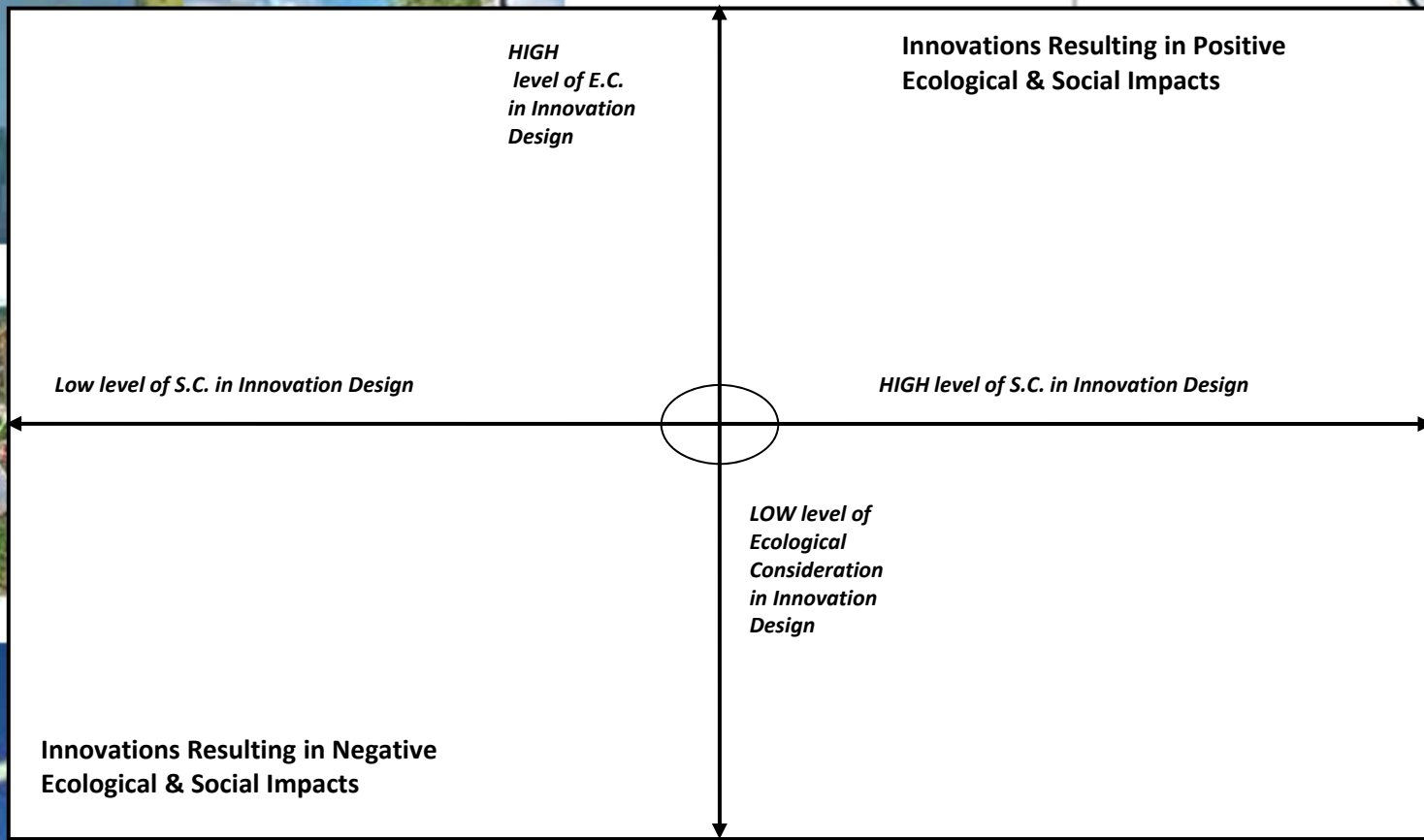
- Requires a new paradigm of thought – ‘socio-cognitive paradigm’
- Requires a wider understanding of what innovation can be and how it can be measured
- Technology and Society and Ecology = heterodox economic drivers
- Socio-technical-ecological innovation





Influence dynamics: From the Socio-cognitive to Techno-economic paradigm and external varieties within various landscapes. Ranging from 'Soft' to 'Hard' factors at multiple levels.





Expanding Level of Economic Growth, represented by concentric circles. Measured i.t.o GDP growth and number of Innovations.
S.C. = SOCIAL CONSIDERATIONS (IMPACTS; EFFECTS)
E.C. = ECOLOGICAL CONSIDERATIONS (IMPACTS; EFFECTS)

The Case for “Innovvironments” for Sustainability



- Niche Environments for Innovation & Sustainability (MLP_Dutch Transitions)
- Provide Knowledge Clusters for Sustainability
- Knowledge Sharing and learning
- Innovative Milieux
 - Showcasing
 - Replicability
 - Scalability = regime change = Transition



The Sustainable Innovation Stellenbosch Network



- Transdisciplinary PhD Intervention
- Technopark Stellenbosch
- New Vision for TP



THANK YOU



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvenoot • your knowledge partner

- Pieter.vanheyningen@spl.sun.ac.za

- www.technopark.co.za

- <http://blogs.sun.ac.za/sisn>

