



Comments on Aubert and Dutz

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Outline

- Broad overview of the innovation systems literature by Jean-Eric Aubert, and the more focused illustration of inclusive innovation by Mark Dutz on India
- Broadly in agreement, give maybe a slightly different angle of new importance of inclusive innovation
- Discuss some of the implicit trade-offs between high-tech innovation and social inclusion in bio-pharma and sanitation



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S&T and industrial research

- Long before, industrial R&D emerged, experimental development work on new or improved products was already carried out in ordinary workshops. Technical progress was rapid but the techniques were such that experience and mechanical ingenuity enabled many improvements to be made as a result of direct observation and small-scale experiment. Most of the patents in this period were taken out by "mechanics" or "engineers", who did their own "development" work alongside production or privately.
- What became distinctive about modern, industrial R&D was its scale, its scientific content and the extent of its professional specialisation. Joel Mokyr calls "tight" S&T...
- Older arts and crafts technologies continued to exist side by side with the new "technology". But the way in which more scientific techniques would be used in producing, distributing and transporting goods led to a gradual shift in the ordering of industries alongside their "technology" intensity.
- Thus, typical for most developed and emerging industrial societies of the 20th Century, there were now high-technology intensive industries, having as major sectoral characteristic the heavy, own, sector-internal R&D investments and more low-technology intensive, more craft techniques based industries, with very little own R&D efforts.



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“New” characteristics of innovation

- Shift in the nature of knowledge accumulation: from industrial, “tight” to more undetermined outcomes, trial and error science and technology
- Traditional industrial R&D was based on:
 - Clearly agreed-upon criteria of progress, and ability to evaluate ex post
 - Ability to “hold in place” (Nelson), to replicate, to imitate
 - A strong cumulative process: learn from natural and deliberate experiments
- New technological change appears more based upon:
 - Flexibility, hence difficulty in establishing replication;
 - Trial and error elements in research with only “ex post” observed improvements
 - Problems of changing external environments: over time, across sectors, in space
 - Particular role of users in the R&D process itself and much larger role for entrepreneurial based innovation



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From industrial to innovation policy

- Distinction between novelty and routine reflected in essential features of R&D definition and its policy support:
 - Professional R&D with professional S&E manpower versus routine production with routine high/low skilled manpower
 - Dominance in-house R&D over outsourcing, licensing, “open” innovation
 - STS activities such as design, engineering, etc. outside of R&D
- At innovation side blurring distinction between innovators and users:
 - Innovation outside of R&D system, associated with entrepreneurs
 - Innovation as novelty with respect to firm’s market, country’s market, world market?
 - Role of knowledge management, organisational innovation, social innovation
- Most obvious In agricultural innovation:
 - Long tradition of extension schemes as way to diffuse new knowledge
 - Strong recognition of central role of users, only “discovered” more recently in industrial research and services innovation
 - Close link with local Innovation, local entrepreneurship and local context conditions



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Innovation for development

- Inclusive innovation vs “appropriate technologies”, not purely technically based (K/L) but primarily organisationally
- Successful location of BoP innovation activities will have to be close to BoP users.
- The innovation process is likely to be reversed, starting with the design phase which will be confronted most directly with the attempt to find functional solutions to the BoP users framework conditions.
- Need to bring the product on the market at a substantially lower price than existing goods, but also adaptation to poor local infrastructure facilities: e.g. with respect to energy delivery systems, water access, transport infrastructure or digital access.
- Feedback from BoP users and from design developers upstream towards more applied research assistance, is an interesting new example of reverse transfer of technology (from the South to the North), re-invigorating and motivating the research community in the highly developed world increasingly “in search of relevance.”



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Knowledge on the move

- Developing markets raise in some areas most motivating innovation challenges:
 - Autonomy, unwired to high quality infrastructure (energy, water, roads, terrestrial communication);
 - Low education hence necessity of simplicity in use;
 - Less maintenance/repair facilities, so an intrinsic need for long term sustainability;
 - Extreme income inequalities with strong needs in urban slums and poor rural villages, but little current purchasing power and high living risks, hence low willingness to invest or borrow money in the long term.
- These features appear also of value to consumers in developed countries:
 - Autonomy of high quality infrastructure as “freedom of movement”;
 - Shift in the democratization of innovation: from the needs of sophisticated, beta users to the needs of (digital) illiterates;
 - Need for zero maintenance and ecological sustainable: cradle to cradle
 - Relevance of new financial products such as micro-credit and micro-insurance in poor urban areas.



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Innovation and social inclusion

- Is there a tradeoffs? In high tech sectors, probably yes.
- Social inclusion implies need for accessible price: in the case of vaccines e.g., which are highly complex and now more recombinant vaccines or biotech based, to ensure social inclusion government buys from firms but at cheap prices, which do not allow for margins. For instance, they are selling to Indian government the human rabies vaccine at Rs 130 or 2.5 Euros.
- With TRIPS, those firms are no longer able to have technology transfer at cheap prices or do re-engineering. Any new vaccine, they have to make themselves. So, on the one hand, in the name of inclusion, prices have to be low. On other hand, there is no money to make major innovations.
- Unless there is some national program for innovation creation and extension of it to cooperation with developing countries, the innovation capabilities for such essential goods like medicines, which are hi-tech are likely to suffer.



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Regulatory barriers

- Example of bio-pharma in India which its high potential for health: before for medicines with re-engineering, one had only to establish bioequivalence for re-engineered drugs at Central Drug Control offices. Now they have to go for the whole thing
- At the same time there is no clear regulatory norms for safety of recombinant vaccines. No Indian company has launched a biotech vaccine yet some are in the clinical stage and there are no clear regulatory rules.
- There is understaffing of regulatory offices. They don't have people who understand biotech and so they don't know what to do. There is actually a regulatory problem of absence of regulation for vaccines which are essential for health.
- A sanitation example: “invisible market of toilets”
 - Indian government policy = no sanitation policy; China had ten year plans for sanitation about 10-15 years back. No deep thinking on how targets will be attained.



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FINISH (Financial INclusion in Sanitation and Health)

- FINISH project attempting at integrating sanitation (water, sanitation and hygiene) into main activities of micro-finance institutions, including enhanced livelihood opportunities arising from sanitation interventions (soap manufacturing, composting, fertiliser usage, construction activities etc).
- Increase scope of financial services offered to rural and peri-urban poor through linking micro-insurance (life and health) with micro-credit expanded to include sanitation. The underlying assumption is that health insurance does have a demand which is based on studies indicating that health costs are one of the largest unplanned perils that low income households encounter.
- By having the MFI distribute micro-insurance as well as sanitation loans their grass root relationships can be maximised. TATA-AIG already distributes and services life Micro insurance across the country with MFI relationships and hence its interest in the health insurance distribution through these channels. Insurance of health through partners will need field underwriting interventions for which capacities are easier built with existing relationships.
- Second aspect of MI partnership deals with claims data on mortality and morbidity which might provide information on the difference sanitation and clean water practices are making on the community.



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Rural Life Markets – Products and Distribution

