

Summary of: Technological innovation systems and the multi-level perspective:
Towards an integrated framework

Authors: Markard & Truffer, 2008

Summarized by: Pim Peters

The main aim of the article is to investigate whether or not and to what extent the *technological innovation systems* framework and the *multi-level perspective* framework can be integrated. The first relevant statement of the authors for the exam is probably their claim WHY it is a good idea to integrate these two frameworks. Their arguments of why this is so are the following, they:

- both “*study far reaching technological change*”
- both “*draw on common theoretical roots*” (evolutionary economics)
- both “*analyze similar empirical phenomena.*”
- “*have complementary strengths ... for certain analytical tasks*” THIS IS ARGUED AS PARTICULARLY IMPORTANT BY THE AUTHORS. In more simple words they here argue that combining the two will lead to a result that is more than its parts...

A major part of the article is concerned with discussing the strengths and weaknesses of both frameworks. I will skip this part because I argue that only the relevancy – discussed above – and the relation between the two frameworks are the things to remember from this article for the exam. If you want to study all other strengths and weaknesses read the article 😊. Furthermore the different frameworks are also exhaustively covered in other papers.

So let’s turn to the comparison part. The table below shows how the concept of a TS relates to the two main concepts for analysis of MLP, Regime and Niche. I will now elaborate a bit on whats non-obvious in the table.

Table 3
Comparison of key concepts

	Basic concept	Level of aggregation	Role for innovation
Technological system (TS)	Actors, networks and institutions (Jacobsson and Bergek, 2004)	High to medium (technologies, multiple application contexts)	<i>‘Innovation part’</i> : generation, diffusion and use of new technologies <i>‘Production part’</i> : diffusion and utilization of established technologies
Regime	Set of rules carried by different social groups (Geels, 2002)	High (industries, sectors)	Guidance of innovation processes: Selection of incremental improvements of established products over entirely new products or technologies
Niche	Knowledge, practices and procedures, user needs, institutions, technologies and infrastructure (e.g. Hoogma et al., 2002) Actors, networks, supportive institutions (external) (Hoogma et al., 2002)	Low (innovation networks, single application context)	Provision of alternative selection environment and thus protection of innovations

I assume that you know what is explained in the *Basic concept* column. *Level of aggregation* refers to the scope of analysis, how much actors, companies, etc. are involved in the analysis of a TS, Regime or Niche. The text in the in this column is very straight forward so I will not elaborate any further.

The final column *role for innovation* does need some more explanation. By this is meant *what form can or does innovation have in a TIS, Regime or Niche?* The table shows in TIS innovation can have two forms, the *innovation part* and the *production part*. The former refers to what most scholars would refer to as radical innovations, the latter refers to incremental innovations following a trajectory – only optimizing existing methods. The important thing to note here is that this is implicit in TIS. TIS analysis includes both of them but does not clearly distinguish them. In a TIS understanding the innovation and production part are dependent on the degree of maturity of a certain innovation system. But the method of analysis does not change with it, TS thus analyzes radical innovations in a similar ways as incremental ones.

In contrast, in the MLP these two are clearly separated in regime (incremental) and niche (radical). The authors emphasize this as an important weakpoint of TS, “*a more clear-cut identification of the innovation part of systems may be necessary.*” Or how I read it, the concepts of regime and niche can enhance the TS because they do exactly this.

Nonetheless, with this clear distinction – between regime and niche also comes a drawback. The MLP lacks in its understanding of the system dynamics that connect / constitute these two analytical concepts. Here TIS can complement the MLP because its framework covers the meso-level well beyond the micro focus of niches.

Whereas TIS can enhance the understanding of system internal processes, the fact that it views innovation through a systems lens implies that it excludes the environment. (This is intrinsic to systems analysis if this is unfamiliar to you and you want to know more, use Google. In short this is true because if you include something into your analysis it becomes part of the system, doesn't belong to the environment anymore). This also means that TIS is rather myopic and it cannot explain transition processes. TIS is internally focused, on the system. The success of innovations is understood as being dependent on performance of the TIS in which it is embedded. In contrast the regime concept can give a better understanding how system external factors create pressures on the system and can trigger a transition.

Although the paper makes numerous other claims about the relation between TIS and MLP, I will now conclude my summary. I think this summary captures the essence of the authors argument. Which is that there is a both a reason and supportive evidence to think that combining these two frameworks will lead to a better understanding of innovation processes. Nonetheless they also stress that much more structured research is needed on this topic before a combined framework could be developed.

If you want to study for a 10, read the paper.

A final note, the article itself also has a summary. You can read that in addition to this summary if you want. Although I think it doesn't add much, or at least it shouldn't otherwise I did a shitty job.

Good luck with your exam(s)!