STSM Report

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Visit to the UK
(Imperial College, University of Warwick, University of Sussex, etc.)
, May 8-17 2008

The aim of the STSM

The aim of the visit to the US, mostly to London, was to work on the topic of "sectoral systems". The objective was to kick-start a new research project on an applied sectoral systems view and for this close contact with Dr. Nalan Gulpinar, an expert in stochastic operations research, and the direct access to university and museum libraries was indispensable.

Substance of the work: The "sectoral systems" approach

There are major differences between sectors but the same sectors often share the same features across national and regional environments. These commonalities are market structure, corporate organisational characteristics, institutional set-up, sources of innovation, regulatory frameworks, etc.

Although conventional economics textbooks are based on simplistic assumptions, industries cannot be reduced to a number of producers active in supplying the same consumers with competing products. Firms in an industry are not alone and locked in into competition with each other, rather:

a) Business firms rely on a vaster and richer ecology of different agents (including firms, industry associations, professional bodies, universities, suppliers, users, partners, public laboratories, government, etc.);
b) These actors develop dense and overlapping, market and non-market relationships;
c) These connections have a degree of stability but are complex and dynamic, they can change in uncertain directions as time move on.

So, firms are not the only originators of innovation in a particular line of economic activity. The sources of innovation are distributed across a range of actors and institutions, so that establishing the right networks of innovators matters.

New (empirical) proposal: Mapping and measuring sectoral systems

The idea now is to carry this approach forward by deploying a methodology, which enables the projection of actors and networks in a bi-dimensional strategic space.

The idea was calibrated thanks to the interactions with experts and thanks to research carried out in a number of documentation centres on innovation and engineering professions in the UK.

Interactions with researchers in Britain

I took advantage of my stay to interact with a number of members of a variety of research institutions:

- Imperial College
- Warwick University
- CENTRIM, Brighton University
- SPRU, University of Sussex

During my stay I was able to interact and address a number of questions to researchers, those questions were:

1) What do think of the "sectoral systems of innovation" approach?;
2) What would be the potential of this approach to guide a scoping study of a given media sector (e.g. the Portuguese printed press industry)?;
3) What do you think of its potential in connection with this business advice potential?;
4) Strong and week points of the approach;
5) Experiences you know about its application to other countries and other sectors.

Dr. André Campos, and economist and management scholar working in CENTRIM, Brighton University, believes this is a "useful tool to capture the meso level of innovation systems". An advantage of this approach, one that is highlighted by Dr. Paul Nightingale, Senior Research Fellow at SPRU, University of Sussex, is that there is a "whole range" of different businesses to which the framework can be applied. Moreover, there can be room to use it conjunction with other frameworks as well, like those emphasising the complexity of products delivered to the market.

Dr. Ammon Salter, Senior Lecturer at the Tanaka Business School, Imperial College, and author of two recent textbooks on innovation management, implies that the approach is geared towards communities of more interested in industry-studies approaches than management journals. This is a it is highly descriptive, rather than prescriptive, approach "will be most used to say that sectors differ with respect to fundamental properties of innovation."

Thus, while it may provide a "picture of the system", to use Dr. André Campos' words, it also has some drawbacks: *a*) if the system is not very consolidated it may provide an excessively positive picture, thus not helping to spot problems; *b*) it does not really make any "statements that are testable in an empirical study", as Dr. Ammon Salter puts it, and therefore seems to offer little in terms of new research questions; *c*) according to Dr. Nalan Gulpinar, researcher at Imperial and senior lecturer at Warwick University, it is not clear the way in which uncertainty in the relationships and in overall innovative performance may enter this approach.

Drawing on his knowledge about Brazil, Dr. André Campos, finds that a recent book was published (edited by two eminent scholars, Cassiolato and Lastres) and that it "worked well". It enables researchers to construct a map of the whole industrial ecology (who are the organisations, companies, and other members of the sector in general). But it is still longing on analytical devices geared at capturing the flows of knowledge between the elements of the system. More work could, although, be channelled to

depicting more effectively the "knowledge flows" that go on among players in a sectoral system: What kind of knowledge flows? Among whom? What are the mechanisms for knowledge flows, with which intensity and with at which frequency? Why these flows happen? Do they follow the financial and normal business flows? What are the flows of knowledge towards the outside of national borders? Finding ways to answer this question is a challenge for further research in the future.

To sum, up this new approach adds to the toolbox of industrial economist and the business analyst. It has advantages (descriptive power, potential for combination with other approaches, etc.) and disadvantages (lacks predictive power, underscores uncertainty, etc.). Our new view on the "sectoral systems approach", as shown in the attached powerpoint, attempts to build of its strengths while going beyond its weaknesses.

Resources exploited

During m stay in Britain I had the chance to exploit the possibility to study resources available at a great number of learned societies documentation centres and academic libraries:

- Institution of Mechanical Engineers library
- Institute of Civil Engineers library
- Science Museum Library
- Lloyd's Register corporate library
- Institute of Marine Engineering, Science & Technology library
- King's College
- Keith Pavitt Library, SPRU
- University of Sussex Library
- Imperial College library
- Warwick University library

Outcomes of the visit

The basis for validating the "sectoral systems" approach was achieved thanks to the close dialogue established with experts and to the direct access to the abundant research resources in and around London. A first presentation of the scoping study was completed and this will be circulated in coming EconTel meetings, namely those taking place in Working Group 2. This preliminary work is conceived as proving the starting point of a paper to be published, first as a working paper in electronic form (such as in obercom.pt, the Portuguese independent media observatory) and the as an academic paper.

The interaction with Nalan Gulpinar was fundamental as revealed the need to take into account uncertainty in a number of aspects: actor behaviour, of relation stability and overall performance. Interaction with other aspects helped to calibrate the course of future work, namely the need to take into account knowledge flows. Further wok in the future would be also related to the need of coming about with an adequate representation of network power, i.e. the degree of leverage of one element on its relations with other elements that is derived from its location in the structure of relationships.