

**THE NEXT GENERATION IN STI STUDIES :
KEYNOTE FOR THE 50TH YEAR
OF SCIENCE AND INNOVATION STUDIES
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A l'occasion du cinquantième anniversaire des Etudes de science et de politique de l'innovation et gestion de la recherche à l'Université de Manchester, Philippe Larédo a été appelé à prononcer un discours sur le futur des études sur la science, la technologie et l'innovation. Nous reproduisons ici cette intervention.

Dear colleagues,

I am both honoured and frightened by the task given to me for this anniversary: to discuss the next generation in STI studies. I shall not address the ambiguities surrounding the field, whether or not it is a discipline, whether it is adequately institutionalised. I shall take for granted that it exists with its recognised journals, conferences and, last but not least, its established research centres. And I shall take advantage of the ambiguity of the title, and the flexibility it offers, discussing both people and themes.



CAPACITY BUILDING

The next generation is first and foremost about people. Without new entrants in the field, well trained and engaged, it is not even worth discussing its research agenda. And I am very optimistic about it. I have been in a privileged position to witness the regular increase of the share of young researchers in our meetings. I only have anecdotal evidence but my own measures of the average age of meetings for the conferences on science and innovation policy studies have moved from over 45 in the early 2000 (when we started the PRIME network of excellence) to less than 40 (and nearer to 35) in the last EUSPRI conferences. This is for me the most important indicator of good health.

But this requires investments from all of us in the field. And I would like to reflect about our achievements here in Manchester, in the wake of European transformations linked to the Bologna process.

When I joined the institute at its creation under the present format, I was left free about the focus I wished as my contribution to the collective, or as US universities call it, my service duties. My choice was by default, i.e. focus on what I had never done before in my position in France as full time researcher: taking care of the doctoral studies. Discovering this at 55 was a shock and soon became a passion. With Maria Nedeva, with Kate Barker, with Sally Randles, and now with John Rigby, we have pushed for a radical transformation in the supervision, in the balance between teaching and research, in overseeing, in building 'transferable skills', and in promoting a dual articulation of doctoral studies with on-going research in the institute and with teaching in the business school. We were even lucky, as the model we developed became the standard for the university.

And this is continued now by the investments Phil Shapira is doing in building a specific path for policy studies.

In parallel, when a field remains in flux, as discussed earlier by Jakob Edler, it is important that issues of the next generation are also addressed at a wider level. We started this with the PRIME Network of excellence, developing doctoral conferences, summer schools and the circulation of PhD students between places. When the Commission decided to stop this experiment in social sciences, all of us —members of this large network— fought to keep this investment. Each of us succeeded in convincing our own institutions to support the creation and funding of a new 'society', EUSPRI. Today, EUSPRI is supported by 20 institutions all over Europe and it enables students to exchange on their projects in doctoral schools, to circulate for a period of up to 6 months in other labs, or to participate to the suite of summer schools, recently devised by Johan Schot and others.

This shared investment is probably one of the strongest signals about the health of a field in those times of hard budgetary pressure.



THE RESEARCH AGENDA

Let me turn to the other side: the research agenda. What is in front of us, not looking at today but rather taking a long-term perspective?

The STI studies have always been at the encounter of studies of dynamics and studies of policies to support or orient them. This duality will be further illustrated by the themes of this afternoon session. Here, in Manchester, we are in a management school, and it would be foolish not to remember that

the most cited work about innovation – the famous book by Everett Rogers, *The diffusion of innovation* – was written at the beginning of the 1960s at the same time when the OECD countries initiated its very influential work on science and technology policies, which supported de facto the emergence of the first research units dedicated to ‘science policies’. This lasting companionship is for me critical of the specific development of our field of research.

It always entails the existence of two complementary analytical entry points: to look at actors and their self-dynamics; to look at policies and their capacity to transform perceived situations.

Also, it always mobilises both quantitative and qualitative studies, generating specialists of measurement and of data building.

A third very important aspect of STI studies lies in the intrinsic links with other disciplinary developments: sociology, particular the sociology of science that has had strong influence on the way we consider processes, and the sociology of organisations that has driven to reconsider many of the initial approaches of actor strategies and capabilities; political science, of course, even though cross-references are often strangely very limited; and, economics where the link is particularly strong with evolutionary economics and its founding paper published in the core journal of the field, *Research Policy* (Nelson and Winter, 1977).



SCIENCE OR RESEARCH, TECHNOLOGY OR/ AND INNOVATION?

The title of the journal – *Research Policy* – is interesting per se. It translates the fuzziness through which we characterise this ‘field’: we spoke then of science policy studies.

My personal angle to it has been —and still is— through policy studies. I have been devoting time to the agenda of the field for now nearly 15 years, starting with the efforts to create the PRIME network of excellence. Looking retrospectively to it drives me to a well-known saying in energy studies: long term visions change at short-term notice! So I shall try to be bold while recognising the high level of uncertainty surrounding any such attempt.

Let me say in a few sentences my views on the agenda. I shall use a categorisation created from the very beginning by the OECD (since the Piganiol report, 1963) and which I consider still relevant. It considers that policies in our field combine three overarching rationales: nurturing the science base, dealing with the R&I needs of public missions, supporting the innovation capabilities of firms.

Let me see what we are faced with in all the three dimensions.

- Point 1: Firm innovation capacities have always been high on the agenda. Since the 2000s, the focus has been on high tech start-ups and small manufacturing firms. Nonetheless, I believe this continuity is turning into blindness, and policies may well miss the structural changes our economies are facing —here, I am referring mostly in the ‘old world’, the US included.

- Point 2: In the policy discourse since the mid 2000s, there has been a growing emphasis on grand societal challenges, and we, as academics, have played a significant role in pushing this agenda. I remember, in particular, the EC High Level Group on Rationales for Innovation Policy, chaired by Luke Georghiou, in which we were 9 out of 12 from the PRIME network. And since then —as well as other colleagues in SPRU and in other institutions throughout Europe—, we have been active in promoting the need for new encompassing innovation policies, that OECD calls “system innovation”. Now the question ahead is: how do we transform our understanding into new policies where the portfolio of instruments and the policy mixes lag behind massively?

- Point 3: My plea today is that we have to completely revisit the old ‘science policies’, not because of lasting issues, but mainly because of the structural failures that universities and academic research are already facing, in access and quality of training, in career management, and the impacts all these failures have on ‘ways of knowing’ Following J Pickstone (2000).

Let me say a few more on each in the next 10 minutes.

Starting with innovation processes and policies

Here, in Manchester, we are in a place that has extensively discussed policy instruments and policy mixes supporting the innovative capacity of firms. The “Compendium” (see Edler et al., 2016) is a marker of this. It highlights the long-time investment on collaborative programmes, on intellectual property or on direct supports to firms. More recently Luke Georghiou, Jakob Edler and many others have been very active in the rebalancing of policy portfolios, with their work on demand-based policies. Revisiting the work of OECD over the last 20 years, also shows clearly the important contributions on ‘behavioural additionality’ or on enlarging policy to knowledge intensive business services. Still are we not missing the core of job creation in Europe today, largely articulated around culture, leisure and tourism? More widely, what do we know about services to ‘the person’ (as opposed to businesses) or innovation in amenities, to use the focus of the last forecasting report by the US OTA at the

beginning of the 1980s? This is, I consider, the first massive structural change that innovation policies are simply ignoring.

A second major shift derives from globalisation and its lasting impacts. Can we still go on forgetting that international trade is no longer based on comparative advantages, but on absolute advantages? That they drive economies on the longrun, and produce drastic redefinitions of our manufacturing landscape? France is a good example, with agro-food and luxury industries, its two main industries still creating jobs, and where nobody seems able to see how this impacts our innovation policies.

A third, and probably, more critical structural change may come from the combination of a set of on-going transformations. Five keywords help capture them: crowd sourcing, political consumption, social innovation, DIY with fablabs and 3D printing, and the sharing economy. Taken one-by-one, these changes may be considered marginal, but don't they, combined together, drive to a deep reconsideration of the role of innovation in society? Or even to a reconsideration of innovation as the central source for renewed and enlarged markets?

All these structural changes question the nature of the changes themselves, but also the implications they will have on innovation policies.

Turning now to public 'missions' and their innovation requirements

Reviewing the early times of the OECD, with Luisa Henriques (2013), we highlighted how critical was 'mission-oriented' research, and the model whereby each 'mission' was linked to one Government department, that created its own applied research institution, in agriculture, health, transport, construction, fisheries or environment. This created silos, which proved later unable to address new issues that mostly sit at the interface of the established boundaries. It all became clearly evident with climate change or the multiple health safety crises (global health issues) faced year after year in this last decade. Colleagues, following Arie Rip, Frank Geels or Johan Schot, agree that these require 'systemic change' and address at the same time technological, social, infrastructural, behavioural and regulatory dimensions. Furthermore, it is clear that the dynamics are distributed with the emergence of new actors, mostly civil society organisations, that add a 'third arm' to the classical opposition between technology push and market pull, which we can call a societal pull. Thus, new governance mechanisms are needed to enable wider participation and co-creation. Finally, all this tells us about the limited relevance of national frameworks on which most of our policy work is implicitly grounded. Transition studies are powerful in shaping a new understanding. However, they remain still in their infancy when it comes to shifting policies and shifting loci of policymaking.

Where to go from there? I take from Dominique Pestre the importance of distance and the role of history to help us reconsider and learn from past situations. I take from Michel Callon the power of following new actors and their capacity to propose new societal arrangements. And I will add that we often underestimate the political content of these collective endeavours. Can we discuss transitions without taking into consideration the local egoisms of rich places like the UK or Catalonia, for instance? Or, on the contrary, can we take the US Federal positions as representative of the whole country position when most large US cities have decided to stick to the Paris agreement? Are not transitions, first and foremost, questioning the functioning of our democracies and the new forms of citizenship?

Reconsidering science policies

One year ago, I might have stopped my talk here (cf. IFRIS, 2015), considering that science policies are just an issue of progressive evolutions, that the overwhelming role of universities is now fully assumed in all countries, that the questions about the balance between core and competitive public funding are stabilising, that the professionalisation of funding bodies is on-going, and will progressively enable a greater variety of their portfolio of funding instruments, and last but not least, that we shall have to live with a variety of situations, in Europe, dealing with the autonomy and governance of universities. In hindsight, these topics appear mostly as interesting but not fascinating. A much more challenging task is already to capture the relations of universities with society, to question the notion of the third mission of universities and research. But, for me, what drives us to completely reconsider science policies lies in two developments that may completely undermine the framework of academic research. How can one discuss open access (especially under present policy terms) without considering its impact on the premises about the certification of knowledge? How can one discuss the reproducibility crisis in life sciences (that is now pushed in the media – see for instance the long article in *Le Monde*, 29 October 2017) without discussing the role of publications in careers and the intrinsic drift associated to it?

Finally the science base goes hand in hand with education, and, there, universities will face a complete revolution in the ways they define curricula and in the ways students acquire knowledge and competences. These issues build a crucial agenda for the years to come.

With this, I can return to my first point: capability building. The field will thrive if only we attract and prepare well doctoral students. After a decade of work with doctoral students, I see this as an endless fight for our programmes to be both relevant and attractive, and to remain institutionalised when most universities still work in disciplinary silos. Probably here in Manchester, it is the greatest challenge we face for the coming years.

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Ses recherches portent d'une part sur les innovations de rupture et la construction des marchés, et d'autre part sur les politiques publiques de recherche et d'innovation, plus particulièrement leur caractérisation et leur évaluation. De 2004 à 2009, il a coordonné le réseau d'excellence européen PRIME sur les politiques de recherche et d'innovation (devenu depuis le Forum EU SPRI, financé directement par une quinzaine d'institutions académiques européennes). Depuis le début 2014, il coordonne le projet d'infrastructure européenne distribuée de recherche sur l'innovation et la recherche (RISIS).