Why Regional Foresight?
An Overview of Theory and Practice

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1. Introduction

Why do (should) regions conduct foresight? The answer(s) to this question are sometimes found eloquently articulated in public policy documents (at the sub- and supra-national level, as well as at the level of the state), in academic papers, and in the writings and presentations of foresight practitioners (e.g. the recently published FOREN *Practical Guide to Regional Foresight*). However, upon closer inspection, the evidence upon which such arguments are made is often flimsy, since little work has been done to date that examines the theory and practice of foresight at the regional level. Most work, including the FOREN Guide, is of a more conceptual nature, with empirical underpinnings often rooted in foresight practice elsewhere (e.g. at the national level). FOREN made some effort to address this information deficit by gathering together real experiences of regional foresight as case studies. However, there was little time to interrogate this data critically, particularly as to why regions conduct foresight, how objectives translate into practice, and how practice delivers results and benefits that meet expectations (or otherwise).

The purpose of this paper is therefore to provide an overview on the state of knowledge concerning regional foresight activities through an examination of existing theory and practice. As such, it builds upon and consolidates some of the findings to emerge from the FOREN initiative, but also draws upon other existing foresight and regional development literatures. The paper will attempt to address the central question 'why regional foresight?' by looking at the rationales offered for 'doing' foresight at the national and regional levels. Such rationales should, we expect, have their own rationalities (or 'theories of action'), whereby rationales, objectives and activities associated with foresight are somehow linked in 'chains' of causation. At least this is the theory.

We believe it is instructive to first examine foresight in the national context, on account of this being more developed and better documented than at the regional level. National foresight is also often a catalyst for regional activities – sometimes, similar rationales, objectives, and approaches are in evidence. Thus, the first part of this paper examines the foresight experience at the national level, in order to critically examine whether activities on the ground, i.e. practice, have met those expectations unleashed by stated rationales and objectives. The second part of the paper looks at some of the drivers for a growing regionalism and critiques a selection of 'theories' put forward in support of this. Part 3 summarises five actual cases of regional foresight in Europe, and reflects upon foresight's potential at the regional level.

1 The authors are particularly grateful to James Gavigan and Meirion Thomas for comments made on earlier drafts of this paper. Of course, the contents of the paper are the sole responsibility of the authors.

Part 1 – Foresight at the National Level

2. Explaining the popularity of foresight

Before accounting for foresight's growing popularity, it is perhaps worth providing a working definition of what we mean by the term 'foresight'. According to the FOREN *Practical Guide to Regional Foresight*, foresight is said to involve five essential elements (2001: 4):

1. "Structured **anticipation** and **projections** of long-term social, economic and technological developments and needs.
2. **Interactive** and **participative methods** of exploratory debate, analysis and study, involving a wide variety of stakeholders, are also characteristic of Foresight (as opposed to many traditional futures studies that tend to be the preserve of experts).
3. These interactive approaches involve forging new social **networks**. Emphasis on the networking role varies across Foresight programmes. It is often taken to be equally, if not more, important than the more formal products such as reports and lists of action points.
4. The formal products of Foresight go beyond the presentation of scenarios (however stimulating these may be), and beyond the preparation of plans. What is crucial is the elaboration of a guiding **strategic vision**, to which there can be a shared sense of commitment (achieved, in part, through the networking processes).
5. This shared vision is not a utopia. There has to be explicit recognition and explication of the implications for **present day decisions** and **actions**" (emphasis original).

The 1990s have seen an explosion in foresight activities across the world, with most industrialised countries now conducting national foresight exercises of one sort or another. By the late 1990s, this wave of foresight activity had started to wash over other levels of government, from international bodies such as the EU and OECD, down to regions, municipalities and cities (Keenan, 2001a). That is not to say that these other levels of government constitute only recent converts to foresight-type studies – on the contrary, many have experimented over the last 30 years when national governments showed little interest in foresight. But it would be fair to say that this activity was somewhat patchy. By contrast, at the turn of the twenty-first century, many regions in the EU are looking to conduct some sort of foresight-type activity. National level exercises are perhaps the biggest catalyst here, although the role of the European Commission should not be underestimated – both DG RTD and DG REGIO are heavily promoting foresight in the regions.

For now, we focus upon explaining why and how foresight has been widely adopted at the national level, since the national experience is being used as an exemplar to promote foresight's adoption at the regional level. To begin to do this, it is worth revisiting some of the early writers who argued for the use of foresight in a national setting. Prominent among these are Ben Martin and John Irvine, who published books in the 1980s on *research* foresight (Irvine & Martin, 1984; Martin & Irvine, 1989). They offered the following rationale for research foresight:

> "Research foresight is one response - and in our view the only plausible response - to resolving conflicts over priority-setting caused by escalating experimental costs, limited resources, complexity in scientific decision-making and pressures to achieve 'value for money' and socio-economic relevance. (…) Foresight provides, at least in principle, a systematic mechanism for coping with that complexity and interdependence as it affects long-term decisions on research, in particular facilitating policy-making where integration of activities across several fields is vital" (Martin & Irvine, 1989: 3).

Writing more recently and referring to *technology* foresight, Martin has sought to explain national foresight's rapid diffusion through the 1990s. He has identified the following three drivers (Martin & Johnston, 1999; Martin, 2001):

1. ***Escalation in industrial and economic competition*** – for industrialised countries to compete in the global economy, knowledge-based industry and services are becoming ever more crucial. These are reliant upon innovation and the development of new technologies, which in turn are underpinned by strategic research. According to Martin (1996),

> "The primary rationale [for doing foresight] is the widespread recognition that emerging generic technologies are likely to have a revolutionary impact on industry, the economy, society and the environment over coming decades. These technologies are heavily dependent for their development on advances in science. If one can identify emerging technologies at an early stage, governments and others can target resources on the strategic research areas needed to ensure rapid and effective development."

   It is interesting to note that public support for S&T spending is now largely couched in terms of national economic competitiveness (Slaughter & Rhoades, 1996). As we will show below, this has had a significant bearing on the rationales and scope associated with national foresight exercises.

2. ***Increasing pressure on government spending*** – science and technology, with their dependence upon public funding, have been subject to the same probing questions as other areas of public spending. At the same time, escalating costs mean that governments cannot afford to fund all areas of research and technology that their scientists and industrialists would like them to support. This demands selection, with foresight seen as a process for systematically assessing the choices that have to be made. In other words, foresight is presented as a process that helps in the identification of funding priorities.

3. ***Changing nature of knowledge production*** – Gibbons et al (1994) have argued that a far wider range of knowledge producers are now implicated in the innovation process. This so-called 'Mode 2' form of knowledge production is characterised by its application-orientation and growing trans-disciplinarity. According to Martin & Johnston (1999):

> "These developments point to the increasing need for communication, networks, partnerships, and collaboration in research, not only among researchers but also between researchers and research 'users' in industry, government, and elsewhere. (…) [F]oresight offers a means for developing and strengthening those linkages."

   Martin and Johnston (ibid.) develop this theme further by arguing that foresight is a useful means for 'wiring-up' and strengthening national systems of innovation (NSI). It is perhaps worth saying a few words about systems of innovation before presenting the arguments associated with foresight's systemic benefits. The concept of systems of innovation has proved popular with academics and national policy-makers alike over the past decade, and is now also being picked up by regional policy-makers (see below). Rather than focus upon the constituent actors within the system, the strength of the NSI approach is said to lay in its emphasis upon the relationships and linkages between the actors. If we accept the Mode 2 thesis, this emphasis on linkages and networks is important. Thus, a NSI marked by actors that are not "particularly strong but where the links between them are well developed may operate more effectively (in terms of learning and in generating innovations) than another system in which the actors are stronger but the links between them are weak" (Martin, 2001).

   This brings us to perhaps the most commonly cited rationale for foresight today – that of correcting 'system failures'. The foresight process itself is said to enhance communication between actors within a system, providing a means of coordination and generating commitment to action. As Martin and Johnston (1999) contend,

> "Technology foresight offers a means of 'wiring up' and strengthening the connections within the national innovation system so that knowledge can flow more freely among the constituent actors, and the system as a whole can become more effective at learning and innovating."

Knowledge flows and system-wide learning are important to emphasise here. For instance, knowledge of other actors' strategies and positioning vis-à-vis a given issue (e.g. through foresight) can reduce uncertainties, thereby enhancing a system's innovative capacity. The potential for system-wide learning, which is also said to enhance a system's capacity for innovating, is related to the level of interdependence between the various system actors. The degree of interdependence is, in turn, dependent upon *processes* that stimulate, nurture, encourage, and strengthen interactions between actors so that they become more permanent – processes such as technology foresight (ibid.).

According to Keenan (2001b), other drivers to explain the wide adoption of foresight include:

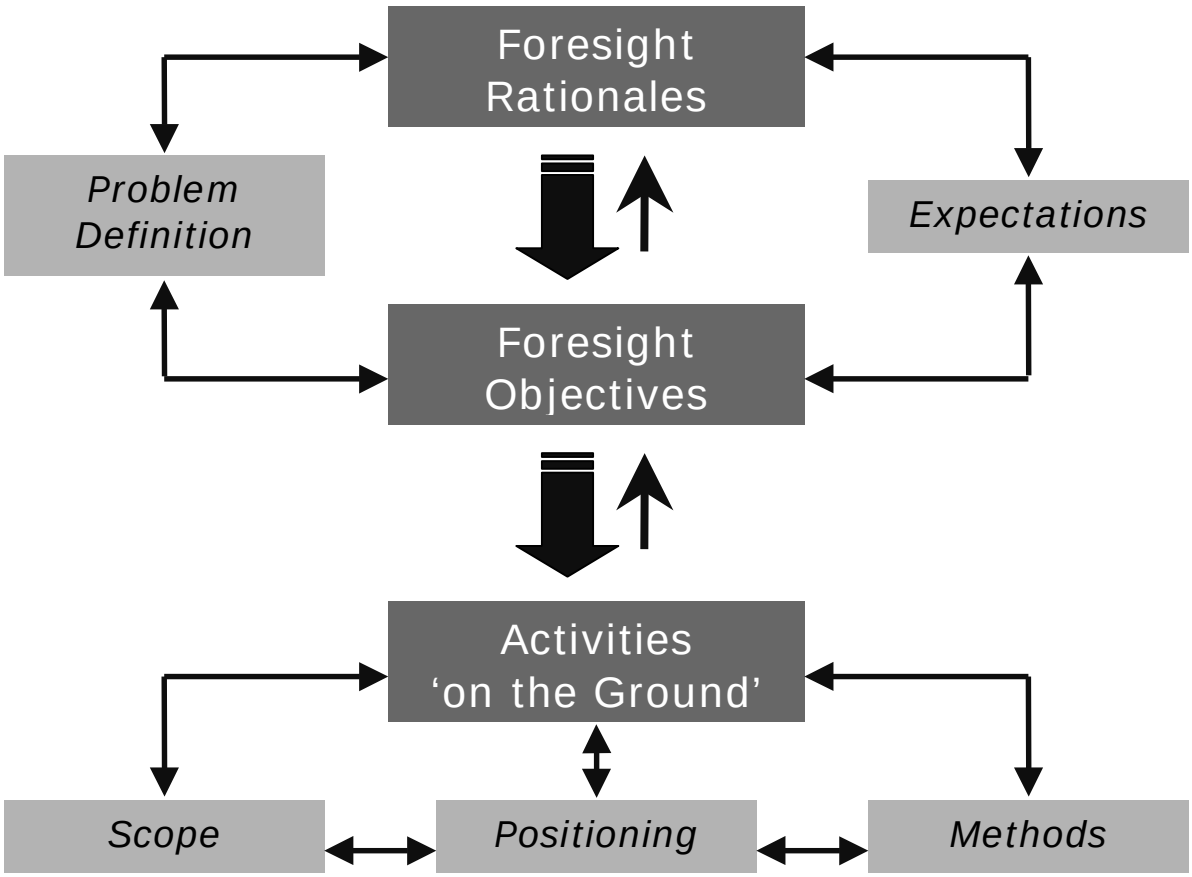
- ***Emergence of new styles of policy-making*** – it could be argued that the 1990s have witnessed the emergence of a new, more inclusive style of policy-making, mostly in an effort to bridge the perceived 'implementation gaps' associated with earlier policy interventions. This is sometimes described as a shift from top-down government to a more distributed 'governance' model. Foresight exercises, with their inclusiveness and emphasis on processes, would seem to be part of this trend.
- ***Bandwagon effects*** – as one country has undertaken a technology foresight exercise, 'competitor' countries have felt the need to follow suit. Foresight 'promoters' have told good stories along the lines of those outlined by Martin and other academics (although some of these are very difficult to verify – see below), and these have proved irresistible to those who do not want to be 'left behind'. In addition, the activities of international organisations, such as UNIDO (e.g. in Latin America) and the EU (e.g. in Eastern Europe), have played no small part in this diffusion process. Indeed, over the next 2-3 years, the EU is set to extend this diffusion role down to the sub-national regional level.
- ***'Millennium Effect'*** – governments all over the world have sought at least to appear to be preparing for the new opportunities and challenges that lay ahead in the twenty-first century. This could explain an explosion in futures-type studies in the run-up to the new Millennium but probably cannot account for foresight's continuing popularity.

We will return to some of these drivers below when we come to compare foresight theory with practice 'on the ground'.

3. From rationales to objectives

Many of the drivers outlined above have been adopted, in one way or another, as specific rationales for using technology foresight in national settings. These rationales are encapsulated in arguments put forward by the promoters of foresight, and elaborated in the formal objectives set for such activities. Taken together, these rationales constitute 'theories of action', since they set out (or implicitly assume) the mechanisms by which foresight will solve the problems that are said to beset a given territory. The question is, how reliable are these accounts of foresight's action when compared to foresight activities 'on the ground'? Are those expectations aroused by the promises made on behalf of foresight realised in practice? Figure 1 outlines some of the elements to consider when thinking about how foresight theory relates to practice.

Figure 1: Links between foresight 'theories of action' and activities 'on the ground'



3.1 Problem Definition and Rationales

Defining problems and determining/administering solutions is the mainstay of public policy making. Yet problems are rarely 'natural' and 'obvious' – rather, they are mediated and shaped through socio-technical processes. By extension, who defines a problem, and how, where and when this is done, have a significant bearing on the shape of the policy solutions that come to be proposed. Moreover, it is not unusual for this mechanism to work in reverse, with existing policy tools ('ready-made' solutions) in search of 'new' problems to address. In fact, this mechanism works in both directions in most cases, with policy problems and policy solutions constituted in a dynamic state of co-evolution. Foresight is no exception in this regard. Shifting from an original (although not exclusive) emphasis upon priority setting, foresight is now more commonly promoted on the basis of its ability to correct system failures. The latter was not initially proposed as a problem for foresight to address, since few people during the 1980s were thinking about innovation in terms of national systems. However, as the NSI concept has taken root in the 1990s, both academics and policy makers have reframed the innovation problematic in terms of the need to develop and strengthen linkages between a wide variety of national actors, including firms, universities, and government. As we have seen above, Martin & Johnston (1999) have already articulated a 'new' rationale for technology foresight in these terms.

Implicit in accounts of how a particular policy tool or intervention will solve a given problem are what we have called **'theories of action'**. These refer to the causal mechanisms and dependencies contained within 'stories' of how a policy is said to work. If we were to conduct an impact

evaluation of foresight exercises, we would most likely take these causal relations as our starting point. In this regard, some of the so-called 'drivers' identified earlier can be considered to suggest theories of action for foresight.

3.2 Expectations and Objectives

We have already spoken of foresight rationales (and the 'theories of action' contained therein) in terms of the promises they afford. We will now consider these in terms of the expectations they raise for foresight. It has been said in the past that a country undertaking a foresight exercise amounts to an 'act of faith', since little evidence exists of the impacts of such activities at the national level (Martin, 1996). Even if unproven, however, the claims made on behalf of regional foresight must be taken seriously in their own right, since they play no small part in structuring actors' expectations of foresight. Expectations are often ignored in studies of socio-technical phenomena, mostly on account of their intangibility – analysts prefer to deal with 'harder' phenomena, such as institutions, programmes and artefacts. But research has shown (e.g. van Lente, 1993) that expectations can play an important part in framing action, not only in terms of their influence on formal objectives, but also because they relate to how actors (users, promoters, participants, etc.) interact with an activity like foresight. Indeed, expectations can often 'bypass' the formal objectives set for foresight and instead relate directly to activities 'on the ground'. If, in such a situation, the promises made on behalf of foresight are more ambitious than the formal objectives set for a given activity, the former may hold greater sway if they have been instrumental in shaping actors' expectations. This can lead to potential problems, because even if a foresight activity meets its stated objectives, an 'expectations gap' will exist that could lead to disappointment and possible disenchantment with the whole process. It is for this reason that we caution against the 'loose' use of language and concepts when presenting the benefits of foresight.

Much of the problem here is tied to our poor understanding of how foresight works 'on the ground'. In part, this can be put down to the claims made on behalf of foresight, which, we would contend, are largely hypothetical and often pitched at such a high level as to make their realisation non-verifiable. This situation can also extend to the formal objectives set for an exercise. On the other hand, we must acknowledge that some of the benefits that are said to accrue from foresight are going to be difficult to demonstrate through conventional evaluation approaches. This is especially true of the softer, more process-oriented impacts. Therefore, we must be careful not to abandon a set of novel practices on the basis of our inability to measure the full extent of their impact. But over-stating the case for foresight, whilst providing an initial respite from demands for evidence of worth, is an equally dangerous strategy, since a process that appears to fail to deliver on its promises could easily lead to disenchantment. In our view, the most effective way to deal with this apparent conundrum is for much more research to be conducted on foresight processes and impacts.[2]

[2] Whilst our proposed solution might be expected, given that it comes from two academic researchers (!), it is remarkable how little research has been conducted around national foresight. This is even more remarkable if one considers the extent of human and financial resources devoted to these activities over the last decade.

4. National foresight in practice

Returning to Figure 1, we will now consider foresight activities 'on the ground' in terms of their scope, positioning and methods. Our aim here is to highlight some of the salient features of national foresight exercises so that we might investigate the 'reality' against the promises made.

4.1 Scope

The scope of foresight refers, primarily, to the actors involved and the issues covered and the time horizon adopted. Scope is evidently dependent upon the objectives set for a given foresight activity, although not necessarily confined by them. Most national foresight exercises have tended to **focus** upon technological innovation issues and have therefore been organised along technology and/or industrial sector lines. Some attempts have recently been made to introduce a greater social orientation to foresight – what Georghiou (2001) has called 'Third-Generation' foresight – on account of a number of reasons, notably (a) an acknowledgement of the importance of societal issues in technical and economic development; (b) a growing interest in using foresight to think about societal issues, such as education, ageing populations, crime, etc.; and (c) the recent deployment of national foresight in countries where social issues are more widely debated (including with regards to the development of new technologies), e.g. in Scandinavia.

The depth and breadth of **participation** depends upon a given activity's objectives, focus, and the resources available. Reaching out can be expensive and time-consuming, and therefore tends to be orchestrated at fixed points in the process. On the other hand, it is typical for some actors to be closely involved in national foresight throughout its duration, for example, as members of expert panels. It should be noted that enrolment has been largely confined to existing elite and lobby groups, with a premium on expertise. This is now beginning to change, with more interest in engaging wider groups, including citizens in some cases, although again, this has been largely confined to those countries where such traditions already existed. For instance, new and emerging national foresight exercises in Southern and Eastern Europe are tending to follow a 'Second-Generation' foresight path, with a focus upon industrial competitiveness and technological innovation. This has meant that these exercises have remained mostly the preserve of scientists, engineers, business interests, and public policymakers.

As for **time horizon**, this tends to vary according (mostly) to foresight's focus and coverage. Thus, an exercise focused upon energy and resources will nearly always have at least a 10-15 year time horizon (often longer), whilst a foresight looking at ICTs, for example, might look no further than 5-10 years out. Since national foresight exercises tend to address a number of sectors, technologies, and/or societal issues simultaneously, it is not uncommon for variable time horizons to be found across a particular exercise (although officially, a 'fixed' horizon date or time span tends to be presented). The **duration** of national foresight is quite variable, with relatively short (1-2 years) 'punctual' exercises being the norm. However, a number of countries have now established more continuous (though lower 'intensity') foresight capabilities at the national level (e.g. Germany and the UK).

4.2 Positioning

National foresight tends to be 'located' in public agencies, i.e. these agencies are the sponsors, promoters and/or managers of the activity. It can often be difficult to speak of foresight being located anywhere, since by its nature it is a distributed activity that aims to facilitate a bottom-up approach to policymaking. Nevertheless, it is unusual for an activity not to be strongly associated

with a particular agency, authority and/or group of interests, and this shapes the way actors view and relate to the foresight exercise.

Given their S&T focus, most national foresight exercises have tended to be 'located' with a science ministry or agency. This can create problems in implementation of foresight findings, especially if non-S&T issues are being addressed, since such agencies tend to be peripheral in the organisation and working of national government. Moreover, other government agencies are often implicated in national foresight in terms of the demand for a response, yet this is not always forthcoming, especially if the agencies in question have been peripheral to the exercise. A further related problem is that these national foresight exercises have rarely enjoy wide visibility outside of the S&T community.

4.3 Methods

All national foresight exercises make, more or less, extensive use of 'expertise', the premise being that experts have a better insight into future technological (and social) developments than non-experts. Eliciting and marshalling this expertise has seen the use of panels, questionnaires, interviews, and Delphi. The latter has figured particularly prominently in national foresight exercises, although there is a discernible trend away from this method as some national exercises move towards trying to engage wider stakeholder groups, including citizens (Georghiou, 2001). More creative methods include scenarios, which are almost universally used. Formal forecasting methods, such as trend extrapolation, also figure, although usually as inputs to the more creative elements of the process.

It should be noted, however, that there are a number of tasks associated with conducting a foresight exercise, and that discussions of the relative merits of Delphi, scenarios, etc. only touches upon some of these. Examples of these tasks include:

- Raising awareness of the exercise throughout its life time
- Scoping the exercise to see what is possible and feasible
- Locating participants (experts and stakeholders)
- Gathering background information
- Identifying drivers and perspectives
- Open consultation
- Presenting future developments
- Managing diversity of opinions and/or integrating views
- Defining key actions and priorities
- Dissemination of findings

It is beyond the scope of this paper to discuss these tasks but they do need to be borne in mind when examining (and designing) foresight exercises.

5. Lessons from national foresight?

Recalling Figure 1, a thick arrow is running top-down through the flow diagram, whilst a thinner arrow is running bottom-up in the opposite direction. This represents our belief that a knowledge flow asymmetry exists between the 'theory' of foresight and activities 'on the ground'. In other words, there are a lot of claims made on behalf of national foresight, especially in policy documents, but little supporting evidence flowing back from actual experiences. We would like to begin to redress this imbalance by critically assessing some of the so-called 'drivers' identified earlier. These drivers encapsulate some of the stated rationales for conducting foresight. Based on our (admittedly limited) knowledge of activities 'on the ground', we will 'interrogate' these drivers for the assumptions contained therein. Beginning with the first two outlined earlier, i.e. (1) an escalation in industrial and economic competition, and (2) increasing pressure on government spending, the following assumptions can be inferred:

a. Emerging generic technologies will have a revolutionary impact on most aspects of our lives in the coming decades
b. Foresight can help in the early identification of emerging technologies
c. Emerging generic technologies are heavily dependent for their development on advances in sciences
d. Governments and others can target resources on the strategic research needed to underpin the development of emerging technologies
e. Governments are unable to fund all areas of research and technology that their scientists and industrialists would like them to support
f. Foresight provides governments with a process for systematically assessing funding options with a view to identifying priorities

These statements make claims on behalf of foresight and the wider socio-technical context. We would argue that many of these claims are in fact contestable, although it is well beyond the scope of this paper to investigate these in any detail. Instead, we will limit ourselves to a few general remarks. Firstly, if we consider (b), which refers to foresight's ability to help in the early identification of emerging technologies, it would be reasonable to say that national exercises conducted to date have not really fulfilled this promise. Technology watch and weak signal analysis are proven approaches for early identification of emerging technologies, but for the most part, these have not been used in national foresight. This is because these approaches demand different organisational configurations to those commonly encountered in national foresight exercises. Whereas the latter have typically made use of volunteer panels of experts and stakeholders within a tightly defined programmatic timeframe, technology watch and weak signal analysis tend to be long-term and continuous undertakings carried out (or at least coordinated) by dedicated units.

Turning to (d) and (f), which refer to a government's ability to systematically identify funding priorities through foresight and to then target resources accordingly, foresight's promise is again largely unfulfilled. The main problem here is that both of these claims are underpinned by a rationalistic understanding of the policy process, which has been largely discredited in the policy studies literature. Thus, the foresight process is rarely as systematic (thorough) as it could be, often because of time constraints (Keenan, 2002a). In fact, we must acknowledge that terms such as 'systematic' are, to some extent, relative – what may appear to be a thorough process to one group of actors may seem inadequate to others. Moreover, the process of identifying priorities, which is often thought of as a distinct political activity separate from the main foresight stages, is marked by partisan interests vying with one another for influence. This means that the prioritisation process does not have some overall rationality governing its conduct. Rather, the outcomes of such processes are the result of bargaining and negotiations between actors with disparate interests. The

same conditions apply to resource allocation decisions, where foresight priorities tend to be re-assessed, sometimes by the same actors, but often by different groups. Thus, rather than targeting resources along the lines set out in Foresight priorities, funding agencies tend to 'cherry-pick' the few they like most.

For sure, virtually all national exercises can point to examples where funding has been made available for a given area that might not otherwise have been financially supported. But this tends to be at the margins of existing funding regimes. More commonly, national foresight priorities 'reveal' (or make explicit) the directions in which actors are already moving (Rip & van der Meulen, 1996). Under these conditions, it might appear that resources have been redirected over time as a result of foresight priorities, but this would be an inaccurate conclusion. Instead, foresight priorities should, more often than not, be considered an 'effect' of existing dynamics rather than their cause (Keenan, 2000; 2002b). The UK Research Councils' response to the first UK Technology Foresight Programme is a case in point. Through some creative accounting, they could claim in 1997 that a significant proportion (57%) of their research spending was 'aligned' with Foresight priorities. These figures are often cited in international reviews of national foresight (e.g. Martin, 2001), yet their reliability as indicators of Foresight's influence is questioned in the UK. This is because it is widely acknowledged that the Research Councils would have supported these areas of research in any case, largely irrespective of their identification as priority areas in the national Technology Foresight Programme (POST, 1997).

As we indicated earlier, 'new' rationales for foresight have shifted away from a 'product' emphasis (e.g. the identification of priorities) towards a more 'process' orientation (e.g. establishing new networks, building forums for public debate, etc.). This movement has been largely captured by two further drivers outlined earlier, i.e. (1) the changing nature of knowledge production, and (2) the emergence of new styles of policymaking. From what has been written on these drivers, the following assumptions can be inferred:

a. A wider range of knowledge producers are implicated in the innovation process (Mode 2)
b. Foresight offers a means for developing and strengthening linkages among researchers and between researchers and research users
c. The efficiency of a NSI is dependent upon the nature and strength of the linkages between its constituent actors
d. The foresight process can enhance communication, provide a means of coordination and generate commitment to action, thereby reducing uncertainty
e. Foresight can be used to address system failures in a NSI
f. Good connections within a NSI improves knowledge flows between constituent actors
g. Improved knowledge flows can enhance a system's effectiveness at learning and innovating
h. Earlier policy interventions were marked by implementation 'deficits'
i. Since the 1990s, the views and experiences of users and 'street-level bureaucrats' have played a fuller part in shaping policy formulation and delivery
j. Foresight is a process that emphasises inclusiveness
k. Foresight is part of a growing movement away from top-down government to a more distributed governance model of policymaking

Again, it is beyond the scope of this paper to meaningfully question these assumptions, so we will confine ourselves to a few general remarks. The first of these concern the NSI concept and foresight's role within it. A number of issues remain largely unresolved concerning the notion of NSI and system failures, namely: What are the constituents of the system? What makes the arrangements between a set of actors systemic? How does the system learn? How does a system evolve? How can it be assessed? Looking at the literature on NSI, it is evident that difficulties arise in trying to pin down the concept of 'system', in bringing together the different dimensions, layers or subsystems, in specifying the components of the system, and in assessing system

efficiency. Also, homogeneity and stability of the system is implicitly assumed. It is not explained how systems emerge, develop and change. Moreover, it is necessary to address which system designs work better as stimuli for certain innovation developments and which are constraints.

System learning is seen as unproblematic and homogeneity seems to be assumed in learning processes among agents. This is in contrast with the actual diversity in knowledge creation and knowledge accumulation among actors. In this respect, an important point for future research is a better understanding of the relationships between national and sectoral systems of innovation. An approach is needed that integrates the various notions of systems of innovation and that reflects how these interact with the innovation behaviour of firms.

All of these points need to be borne in mind when using the NSI concept to justify the use of foresight to correct system failures. This caution needs to be extended to the regional level, where regional systems of innovation and 'learning' regions are concepts that have grown in popularity over the last five years.

Turning to (j) and (k) in our list of assumptions, the shift from government to governance has coincided with an erosion of the state's monopoly on policy formulation and service delivery. This has seen business and other non-governmental groups (NGOs) play an increasingly significant role in the policy process, often in partnership with state actors. Reflecting this, most national technology foresight exercises have seen the involvement of groups of actors that would not normally be engaged in discussions of government funding priorities. However, this widening circle of inclusion is usually still quite limited. For example, only in those countries with existing traditions of public participation, e.g. in Scandinavia, do we see serious attempts to engage citizens in these national exercises. By contrast, the norm tends to see enrolment largely confined to existing elite groups. Thus, the value-added of these exercises tends to lay with their propensity to bring together, in a novel forum, elite groups that would not necessarily interact in their normal modes of operation.

Part 2 – The Regional Problematic

6. Regions as sites of policy articulation

The interest that foresight initiatives are receiving at the regional level has to be seen in the context of recent processes of devolution/regionalisation of public policies. These processes are reconfiguring the political landscape of Europe and placing regions as important decision-makers at the European and global scale. The rise of regionalism can be seen as linked to current discourses on globalisation and competitiveness (Keating, 1998, Rodriguez-Posé, 2002). The greater capacity of regions to participate in the global economy, together with the increasing inability of nation states to govern it, are supposedly transforming regions into key actors in economic policy. New competitive challenges posed by globalisation, such as economic integration, changes in industrial competitive dynamics and the ICT revolution, are allegedly undermining the capacity of nation states to effectively respond to these changes, leading to accounts of the death of the nation state (Ohmae, 1993) or a 'hollowing out of the state' (Jessop, 1994). By contrast, the regions are emerging as more important modes of economic and technological organisation.

Thus, against predictions of the 'end of geography', it has been asserted that global economic restructuring is reinforcing the region or locality as a fundamental basis of economic governance in

this new age of global, knowledge-intensive capitalism. Regions are now said to be able to play a role in the global economy and shape their own economic prosperity if adequately mobilised politically.

The demise of the nation state may have been overstated, yet there is little question of the increasing importance of regions. A process of decentralisation of policies in Europe has seen a shift towards a more complex form of governance. However, this process is uneven, with regions in different countries differing greatly in the degree and nature of devolved powers. These range from the relatively autonomous federal states of Germany and Austria to the little decentralisation of Nordic countries.

The arguments for regionalisation are mainly economic and for reasons of political efficiency. Regions, it is claimed, are in a privileged position to design policies that respond better to the real needs of citizens if compared to national policies. This relates to the concept of *subsidiarity*, whereby decisions should be taken by those public authorities that stand as close to the citizen as possible. Moreover, it is believed that regions offer opportunities for achieving greater participation in policymaking, which, in turn, allow for greater policy innovation and experimentation (Keating, 1998).

However, parallel to these opportunities, important challenges and threats exist. The regionalisation process can potentially bring the risk of increasing interregional inequalities and rivalries, as more advanced regions will clearly be at an advantageous position. The decreasing dependence on transfers from the state level and the increasing competitive pressure to obtain ever limited resources (e.g. foreign direct investment) leads to the adoption of 'active competition policies', which results in increasing interregional competition (Rodriguez pose, 2002). At the level of the individual regions, this can lead to a greater complexity of intervention and the proliferation of diverse and (even conflicting) policies (Keating, 1998). A lack of transparency in decision-making may also result, with policy areas being taken over by local elites.

7. Drivers in the regionalisation of technology policy

Technology policy is one of the spheres in which regions have been more active players in recent years. Regions are now articulating and implementing policies that used to be the sole remit of national government. This shift can be explained by three converging factors outlined below.

7.1 Changes in the theory and practice of technology policy

Science and technology policies have been traditionally under the sphere of national government interventions. Under the so-called 'linear model' of technology policy, technology policy was identified with science and research policy, which was normally implemented at the national level. These technology policies devised by national governments sought to promote national competitiveness, but they were often seen as ineffective in tackling specific regional needs and problems.

Recent changes in the nature and orientation of policies towards a greater emphasis on *innovation* have brought about a turn towards a greater importance being placed on the regions. Innovation promotion has triggered a shift in objectives, from targeting strategic technologies towards effective technological diffusion, covering a broader range of sectors and technologies. Moreover, policies for industrial competitiveness and innovation promotion are based to a greater extent on the capabilities necessary for innovation, and not so much on existing resources (Dodgson and Bessant,

1996). Thus, technology policy presents a greater user-centred and demand-based approach, in contrast to the supply-side approach that previously dominated (Branscomb and Florida, 1998). This has led to a greater emphasis being placed on the ultimate users of technology (with an important focus on SMEs), which has also implied that policies should be implemented at a level where the needs of firms can be better articulated and addressed (e.g. in regions).

7.2 Incorporation of innovation-related objectives in the articulation of regional policy interventions

Regional policies, in turn, have also undergone significant changes, departing from an earlier approach focused on re-distributive objectives, infrastructure building, and attraction of foreign capital. Now the emphasis is more geared towards a 'softer' type of intervention, e.g. building firms' absorptive capacity. As a result of these changes in priorities and objectives, regional policies are increasingly incorporating measures directed at enhancing technological infrastructure, and promoting R&D activities and the adoption of innovations by firms. This can be clearly observed in the evolution of EU Structural Funds intervention. From an initial dominance of infrastructural investments, the promotion of research and technological development interventions has been increasingly incorporated in single programming document guidelines, with increasing financial resources being allocated to innovation promotion from the first (1989-1993) to the second programming (1994-99) period (CIRCA, 1999).

More recently, this has been extended to encouraging innovation and launching experimental initiatives aimed towards enhancing regional systems of innovation, e.g. through the RTP/RIS/RITTS (RIS hereafter) initiatives. Thus, under the auspices of the European Commission, many regions have started to engage in strategic planning activities for innovation promotion. The objectives of the RIS exercise are twofold (European Commission, 1997:15): (a) to improve the capacity of regional actors to develop policies taking into account the needs of the industrial fabric and the characteristics of their Regional Innovation System; and (b) to provide a framework within which the regional, national and Community authorities might be able to optimise their decisions on future investments in R&D and innovation at the regional level.

7.3 Trend towards increasing devolution of political authority to the regions

This convergence in objectives and tools between technology policies and regional policies has been aided by the general trend towards devolution of autonomy to the regions described above. The increasing autonomy granted to the regions allows them to develop and incorporate initiatives and policy mechanisms hitherto under the sphere of national policy. As we will see below, foresight is one example of this. Some policies, such as science policies, are still under the responsibility of national governments, although increasingly, regions are designing their own science plans (e.g. Basque region, North-west England). This trend towards regionalisation of S&T policies is thus made evident by the proliferation of science and technology plans, the mushrooming of agencies and organisations of innovation support in the regions, and the adoption of strategic planning and strategic intelligence mechanisms, such as technology foresight initiatives. Nevertheless, as mentioned, this development is not homogeneous across regions, and therefore the extent of devolved powers and particularly of financial autonomy clearly conditions the effectiveness of implementation of such autonomous policies.

7.4 Some theoretical concepts

From a theoretical viewpoint, the merits of regional innovation policies have been informed by accounts of the 'new regionalism', encapsulated in concepts such as 'innovative millieu' (Cagmani, 1991, 1995, Aydalot, 1986), 'institutional thickness' (Amin and Thrift, 1994, 1995), 'learning regions' (Morgan, 1995, Florida, 1995), 'regional innovation systems' (Braczyk et al, 1998), 'network paradigm' (Cooke and Morgan, 1993) and 'untraded interdependencies' (Storper, 1995, 1997). Informed by successful cases in Europe and North America, these views depict the region as a 'collective order', characterised by an interplay between localised systems of territorial governance and business innovation dynamics. Such arguments thus revolve around networks or localised clusters of collaborating companies, embedded in global knowledge networks, all of this nurtured by the presence of a regional support infrastructure. In this context, the region is seen as the most adequate unit of economic governance capable of bringing about the development of a 'reflexive' system of economic monitoring and institutional learning.

These ideas are becoming influential and increasingly adopted in the configuration of regional policies. Moreover, in this context, foresight type initiatives are seen to fit neatly into this trend, in complementing, legitimising and rendering these strategic planning initiatives more effective. The incorporation of foresight-oriented tools can allegedly aid in providing legitimacy to the strategic planning process, better guide innovation support policies (Capriati, 2001), and provide greater legitimacy to and effectiveness of regionally based strategies (Gavigan and Scapolo, 2001:2).

However, a word of caution is necessary as regards this optimism in economic renewal of regions through institutional building and networks, both at the general and more 'on the ground level'. At the general level, some problems are encountered. Firstly, little effort has been made in evaluating the impacts of these policies. As Keeble et al (1998:p. 5) suggest, "few if any of the studies which advocate a 'learning region' (…) appear to have made any attempt yet to test these ideas against empirical reality". Secondly, the virtues of 'proximity' should not be taken as a 'full-blown *explanation* of local-regional competitive advantage" (MacLeod, 2002:813). This caution stems from a limited understanding of industrial innovation dynamics and poor appreciation of the dynamics of knowledge creation. Communication and learning do not occur automatically in proximity. Moreover, whilst learning processes are seen as unproblematic in these accounts, the wide diversity of learning modes, organisational contexts, and communication costs due to barriers, cultural, geographical or otherwise, need to be accounted for.

The problems here relate to the difficulty of pinning down the notion of the 'region'. The region is a somewhat 'elusive concept' (Keating, 1998). Sometimes regions are referred to as administrative entities: "We may define all such regions as territories smaller than their state possessing significant supra-local governance capacity and cohesiveness, differentiating them from the state and other regions" (Cooke et al, 1997:480). At other times, regional innovation systems are identified with regional clusters, which is highly problematic (Breschi and Lissoni, 2000). Together with the regional delimitation, cultural or social proximity and certain internal uniformity is assumed. However, "social networks are never as wide as to include all members of a community, and in many cases not even a significant minority of them. Therefore, knowledge may be far from accessible to most of those who are located nearby its sources" (Breschi and Lissoni, 2000:20).

Additionally, these policy concepts and prescriptions tend to be informed by ex post observations of the success of certain regions, where *consequences of success might be mistaken with preconditions for development* (Storper, 1997). The discourse is inspired by dynamic regions, where active and dense networks of cooperation, business service support and local pooling of expertise can be found. This poses problems regarding the *transferability* of these models to less successful regions.

These observed cases have been formulated in one time-space context (Hudson, 1998) and are the outcomes of contingent historical processes (David, 2000), hence cannot be transferred to other sites without taking into account the specificity of regional trajectories underpinning the identified 'success'.

At the more 'on the ground' level, it is worth drawing some lessons from the experience of regions formulating regional innovation strategies in the framework of the RTP/RIS/RITTS initiatives. This is what we do in the next section.

8. Regional policy in action – the case of RIS

Since 1994, more than 100 European regions have received support from the European Commission for the formulation of regional innovation strategies through RITTS and RIS projects. Albeit modest in scale and budget, important benefits and impacts of these initiatives have been identified in the regions concerned (ECOTEC, 1999; Boekholt et al, 1998; Charles et al, 1999), particularly in the policy formulation process and in the development of a policy planning culture. These pilot activities have helped to develop strategic thinking for innovation-oriented regional development, placing innovation higher on the political agenda of regional organisations in regions lacking experience in innovation policy. This has been translated, in practice, into the building up of specific mechanisms or institutions and an increase in public expenditure on innovation promotion. Moreover, they have aided in achieving, through the assessments carried out and the consultation exercises, an enhanced knowledge of the region, helping to assess the efficiency and roles of existing institutions, thus favouring institutional learning and institutional building. Additionally, they have brought about the development of more effective social public-private partnerships and enhanced coordination between public innovation support organisations.

However, some gaps have been identified in terms of effective implementation and effective monitoring of these policies. The RTP/RIS exercises gave much more importance to the process than to the output. They were meant for network building and thus no great emphasis has been placed on the outputs or the actual implementation. Thus, a disconnection has been identified between the design and implementation phases, where the strategies have not clearly materialised in operational actions, which has in some cases led to a loss of interest and momentum in the project. Although the process of consensus and network building has obvious effects, such as the enhanced knowledge of the problems of the region, engaging private and public actors into constructive discussion, and forging new partnerships, the participants need to see tangible outcomes and identifiable results in order to maintain interest and commitment. Otherwise, an erosion of trust in the public sector and loss of momentum can set in, which can hamper future initiatives.

The mechanisms of *partnership and consensus building* have been useful in bringing together different stances and have been a means of sensitising stakeholders on the importance of innovation. However, mechanisms for consensus building are often led by funding requirements, which means that they have been set up during the programme design and have in most cases not showed continuity, as the management structures have often not remained or been incorporated in political decision-making channels. Once the incentive from the Commission was gone at the completion of the exercise, often no mechanisms were set in place in the region to ensure the continuation of the stimulus provided by the RIS in the region. The outcome of this has been in some cases the loss of momentum and a certain disenchantment about the exercise on the part of the actors involved. Thus, consensus building has been achieved at the process stage at the expense of implementation (Tsipouri, 2000). This has led to more conservative decision making about programmes and measures, often involving continuity in existing policy tools.

RIS has been also identified as lacking effective evaluation and monitoring mechanisms, particularly in-depth *ex-post* evaluation. Evaluations have been carried out at the very end and in a somewhat *ad hoc* fashion. This lack of monitoring mechanisms has been seen as due to a lack of experience in evaluation, an absence of political will, the pursuit of broad objectives difficult to quantify, a lack of appropriate indicators, and problems with the availability of statistical data (Uyarra, Haarich and Castillo, 2002).

Moreover, concerns have been raised regarding the participation bias in some of the exercises, in terms of actors (dominant firms or innovation service providers), sectors of activity (manufacturing vis-à-vis service sector), geographical locations (in favour of central areas) and policy levels (with less participation of local tiers of government). Some critical accounts regarded the exercise as another form of 'elite networking' (Lovering, 1999).

In light of these experiences, it is necessary to learn from the lessons of the RIS exercises before rushing to implement foresight-type initiatives. Foresight exercises are costly and cumbersome to carry out, and will not be useful unless performed correctly. In the light of the conclusions of the RIS, certain recommendations can be put forward as to what conditions are needed in order to guarantee some degree of success:

- Ensure a balanced participation, across locations, organisations and sectors
- Despite the often greater emphasis on the process than the results, firms need to see tangible, identifiable results of their mobilization in order to keep their commitment
- Ensure an adequate evaluation of the exercise
- Ensure a certain degree of continuity of the exercise in order for it to be an effective learning exercise, but in turn avoiding the danger of 'foresight fatigue'

Part 3 – Some Examples of Foresight in the Regions

Whilst foresight is now only beginning to attract wide interest in regions, there are some early examples of regional foresight exercises, five of which we outline here. We begin with two cases that were largely catalysed by (and made extensive use of) the results of national foresight exercises. The first case is the West Midlands in the UK, which is a relatively new exercise that has received seed funding support from the EU Structural Funds. Its focus is on instilling longer-term thinking within SMEs with a view to improving their competitiveness. The second case is Lombardy in Italy, where the results of a national foresight exercise have been used to identify technological gaps in local industrial sectors and districts. The third case is Catalonia in Spain, where the prospective method developed by Michel Godet and colleagues was deployed in the early 1990s. Thus, this landmark study was completed at the time when foresight methods were just beginning to take hold at national level, and is one of the first 'global' regional prospective exercises to be carried out in Europe. The fourth case is Grand Lyon in France, where the regional government has used foresight to elicit greater democratic participation by its citizens in urban planning policy debates. Finally, we provide an overview of a transnational exercise between bordering regions in Germany, Denmark and Sweden. Known as Baltic STRING, this exercise sought to reach a common vision and strategic action plan for cross-border co-operation and regional development. The case material provided in this section is based upon more detailed accounts in FOREN (2001) and Keenan (2001a).

9. West Midlands, UK[3]

The West Midlands became involved in regional Foresight in 1999 as a direct result of the UK national programme implementing a policy of encouraging regions of the UK and small- and medium-sized enterprises (SMEs) to adopt Foresight. The development of a programme within the region was also one of the first initiatives set up by the development agency, Advantage West Midlands (AWM), established in April 1999, and was a delivery mechanism of its Regional Innovation Strategy (RIS). The programme is managed by AWM and Coventry University Enterprises.

The central **objective** of the regional programme has been "to utilise the proven and respected methodology adopted by the UK Foresight programme and to build on this for the development of a regional Foresight programme which actively involves the SME community in the region". The programme sought to demonstrate that regional Foresight could encompass clear and tangible **benefits** for industry in adopting long term visionary planning for the region as a whole. It was designed to act as a first concrete step to begin to change the culture of business planning which currently exists in many of the region's business and industries (i.e. short term focus).

The 10-20 year time horizon of the national programme was thought to be 'off-track' – if the regional project can push SMEs to think 3-5 years out, then they consider themselves to be doing well. For this reason, the exercise has a relatively **short time horizon** of 5-10 years. The **budget** for the project was £472,000 (approx. €750,000) over two years (2000-02), with 50% funding coming through ERDF.

The UK's national Foresight programme was used as the **benchmark** for the regional project. Accordingly, a **steering group** was appointed and a **sector panel** approach adopted. In selecting sectors to be targeted, Advantage West Midlands and its partners identified five sectors that were characterised as a mixture of strategic and traditional industries for the region and 'areas' of business activity that are expected to grow rapidly on the basis of current 'predictions'. The panels were comprised predominantly of leading industrialists and business sector representatives from within the region.

The methodology involved initial **reviews** of the chosen sectors. These were carried out by a university research group and provided an overview of the Strengths, Weaknesses, Opportunities and Threats (SWOT) faced by each sector and the Social, Technological, Economic, Environmental and Political (STEEP) issues. Key **driving forces** for the development of each sector and for the region were then identified by each foresight panel. Further research was then undertaken in these areas. Research groups were established for this purpose and were briefed to assimilate the results of existing research and to incorporate this information into a 'knowledge pool', which included new empirical and primary research commissioned by the project. Using all of this regional intelligence, the panels developed regional scenarios. These **scenarios** focused on a period of between 5 to 10 years and included a time-line identifying key events and interventions. In addition to a direct focus on sector developments, the scenarios also included consideration of more social issues, including the ageing population and issues such as health in inner city areas.

The programme has linked its activity to the work of local business groups, ensuring that the needs of their member SMEs are met. This was achieved by relating the seminars and workshops to

[3] This text is based upon C Winters (2002), "Methods to improve the efficiency and effectiveness of regional foresight activities", Paper to the EC STRATA-ETAN Expert Group on Mobilising the Regional Foresight Potential for an Enlarged European Union.

topical issues, including accessing new markets or developing new products, and sessions were designed to ensure that every SME left with a either a new technique they could apply, a view of their future markets, or a new business idea. This activity was supported by the development of an SME Foresight toolkit.

On a programme level, the West Midlands approach to regional foresight has resulted in over 3000 SMEs advised, over 500 SMEs assisted and nearly 200 SMEs 'improved'. On a more visible level, the project has created 33 jobs and levered around €3.5 million of investment in two years. Thus, the programme to date has been deemed a success, so much so that AWM has committed itself to the **continuation** of Foresight in the region until December 2004.

10. Lombardy, Italy[4]

In the Lombardy region, there has been a partial use of the main results of the Technology Foresight exercise carried out at national level by Fondazione Rosselli (a private foundation based in Milan). The national exercise 'located' and 'evaluated' *critical emerging technologies* and these were confronted with the technological structure of some industrial sectors within Lombardy, in order to assess their relevance for the medium range dynamics of competitiveness for the firms in these sectors. The study was initiated in 1997 by a number of organisations, including a local technical university, an industry association, the Milan Chamber of Commerce, and a leading banking group. Results were made available in a final Report in 1998.

The objectives of the study were set by the initiators, its aim being the identification of the actual level of technological competitiveness of the most important sectors of Lombardy's industry. It was anticipated that this information would aid interventions by the initiator organisations. The study's prospectives took into consideration the role and the weight of technology in determining economic competitiveness, as well as the most relevant future developments of technology affecting the structure (products, processes) of the region's industrial sectors.

As a methodological scheme, the following steps were taken:

1. Selection of the first 6 sectors to be analysed, according to their international competitiveness (export sales/total sales), size (total employment) and their technology level.
2. Evaluation of the most important (strategic) factors affecting actual level of competitiveness of the firms of these sectors and the role of technology among them.
3. Identification of the dynamics of the importance of these factors in the medium term.
4. Identification of those technologies that were foreseen to be critical in determining the industrial structure (in terms of products and design and manufacturing processes) of the selected sectors.
5. Screening of the strategy adopted by the firms to cope with these technological innovations.

The study was carried out by a team of researchers at the Politecnico di Milano, who relied on strong co-operation with the entrepreneurial Industry Associations, either of the sectors or of the spatial areas where the firms were concentrated. The methodology used was based upon brainstorming meetings, data analysis and extrapolation, and interviews of top managers from a sample of the most innovative and competitive firms in the region.

[4] This text is based upon Fondazione Rosselli (2000), "Position Paper for First FOREN Workshop", Manchester, April 2000. Available online at http://foren.jrc.es

Results were presented to the Regional Government of Lombardy in order for it to define economic policies suited to the development needs of the firms of the selected sectors. Moreover, the banking group (involved from the outset) also used the results as guidelines for giving financial support to Lombardy industry. The results also served to orient the applied research activities within the Politecnico di Milano. More specifically:

- The Regional Government of Lombardy has set up a programme supporting the establishment of "Centres of Excellence " in some areas of the region (including one of the industrial districts analysed by the study).
- The banking group involved has set up a specialised fund supporting initiatives (projects and structures) for technology transfer to SMEs in Lombardy.

The interaction among researchers, technologists and top managers that the study activated proved to be quite useful in inducing the latter to think in an organic and strategic way about the future of their firms, especially with regards to the new and often unexpected technologies that were foreseen to be critical for their future economic performance. As a consequence, the sponsoring institutions decided to support the extension of the study, in order to include further relevant sectors.

11. Catalonia, Spain[5]

The primary impulse for this major regional Foresight exercise was the need and desire felt by the Catalonian Regional Government (Generalitat) in the late 1980s to anticipate future developments and generate a wide-ranging debate on the long-term positioning of Catalonia as a key Mediterranean region - in terms of both the internal view of what constitutes Catalonia for Catalonians, and the outwardly projected image and interconnections with the rest of Spain, Europe, and especially with the Maghreb on the South-western shore of the Mediterranean.

The study was **co-ordinated** by ICM and Futuribles International and had a **lead working group** of 13 people. It was **very broad** covering all aspects of Catalonian society - culture, politics, economics, demographics, spatial planning, etc. Direct sponsorship by the Presidency of the Generalitat gave the project a high degree of visibility and buy-in by the many stakeholder groups with a vested interest in the project - both within the political and policy-making institutions and the wider economy and society.

The study was conducted in **four main phases**. The first phase consisted of a systems analysis of Catalonia looking ahead **20 years** to 2010 to identify the main variables impacting on the development of the region. The so-called **MICMAC**[6] method was used to do this. The second stage consisted of studying and analysing the **morphology** of the Catalan system projected ahead 20 years. This resulted in the identification of the six sub-systems listed in the table above, which then defined the main architectural elements for the subsequent parts of the study. The third phase consisted of a detailed **analysis** plus the elaboration of a series of **hypotheses** and associated **micro-scenarios** for each of the sub-systems. This was the longest and most difficult part of the study, and involved desk research, opinion surveys and a single-round Delphi. The fourth phase was devoted to the elaboration of **global scenarios**. The main working group took charge of this final global scenario definition phase.

[5] This text was provided by James Gavigan for the FOREN *Practical Guide to Regional Foresight*

[6] MICMAC means "cross-impact matrix - multiplication applied to classification" - see Godet (1993) From anticipation to action - A handbook of strategic prospective, UNESCO Publishing

The report and the findings of the study became virtually **obligatory reading** for all political and institutional actors in Catalonia - not just within the regional government, but also at the level of city councils and municipal authorities all over Catalonia, and in the private sector. It became a **highly used reference** in all aspects of political and policy discussions, and in a very explicit way, introduced a whole new vocabulary and set of concepts into the political debate. A series of 24 debate and diffusion **seminars** took place all over Catalonia tailoring each time the content and delivery to the geographical location, the situation in which the seminar took place and to the profile of the participants involved.

12. Grand Lyon, France[7]

Millenaire3 is an **ongoing** activity that has an annual budget of €1.4 million, which is provided exclusively by the Grand Lyon public authority. The time horizon used is variable but stretches as far out as **20 years**. With its participative emphasis, thousands of people from many walks of life have been engaged in Millenaire3 through a variety of means (see below).

Millénaire3 has enjoyed the personal **endorsement** and support of the nationally, internationally, and locally influential Mayor, Raymond Barre. He personally initiated the project in 1997, two years after his election to office. The project is therefore not without resources and top-level political support, as reflected in the administrative structures put in place to deliver it (see below). A further significant point is that Millénaire3 is not a separate or isolated initiative, but the **evolutionary** child of a 'futures' perspective, which can be traced through previous administrations.

Millenaire3 is intended to contribute to realising the following overall broad **objectives** for Grand Lyon:

- Reducing social disparities and reconciling the city's historico-cultural identity with today's realities.
- Creating systems facilitating project-style approaches to ongoing development and increased employment opportunities.
- Providing access to information and communication technology, encouraging their appropriation and promoting recognition of the resultant new forms of social bonding.
- Working towards a system of local government more open to dialogue and partnership, more propitious to effective public-sector action and aimed at restoring local government to its rightful place.
- Turning the Lyon Urban Community into a European metropolis of the first rank in terms of environmental management and business activity relating to environmental issues and markets.

Millénaire3 is entirely co-ordinated, managed, resourced, and reported on by officers and politicians of Grand Lyon – the conurbation scale of government. The Unit responsible for the execution, communication and (importantly) promotional aspects of Millénaire3 is the 'Mission Prospective et

[7] This text is based upon S Randles (2000) *Cities in Evolutionary Perspective: Diversity, Reflexivity, Scale, and the making of Economic Society in Manchester and Lyon* PhD thesis, University of Manchester; C Hooge (2001), "Millenaire3 – a light on development strategies in European cities", keynote presentation to the EC Strata project FOREN conference, Creating Vision in the Regions, Dublin, December 2001; and various documents available on the Millenaire3 web site.

Strategie' (MPS) – the **Forward Planning and Strategy Unit**. The Unit reports directly to the Secretariat General where cross-departmental co-ordinating activities are typically located.

The approach adopted has seen the establishment of **working groups** for key phases of the project, whilst at the start, a **committee of 'wise ones'** was assembled to deliberate on the strengths, weaknesses, opportunities and threats facing Grand Lyon. A great deal of emphasis has been placed on the participatory involvement of a large number of Lyon citizens. The methodology has taken the form of the slow build up, over 3 years, of a **database** of participating groups and individuals, who have responded to 'trawls' or requests sent out across Lyon through the **press**, **leaflets**, and targeted **letters** to attend various **meetings**, **'open forums'** and group discussions. These are supplemented by in-depth **interviews** (almost 'journalistic' in style) with key 'experts' from the city across the various themes. A set of proposals for the development of the city over the next 20 years was produced following this 'reflective' period, under a Committee comprising the six vice-presidents of Grand Lyon, chaired by Raymond Barre. It is interesting to note that little attempt was made in the 23 'themed' reports produced by the exercise to derive a single 'shared' vision. Rather, the future is glimpsed through a **range** of perspectives and viewpoints.

In September 2000, Millenaire3 presented Lyon's civil society with the document, *Conurbation Project: A Competitive, United City – 21 Priorities for the 21st Century*. The Urban Community Council also debated the outputs of the project at this time. This has resulted in the establishment of a **Development Council**, which involves civil society in conurbation development. Comprising representatives of official bodies, well-known specialists, representatives of community associations and residents from economic, social, cultural and environmental circles, the Council works closely with the President of the Urban Community. With more than 300 people involved in the Council, its work has been divided five working groups, each of which addresses one of the strategy lines set out in the Conurbation Project document. As a permanent monitoring tool, the Council will warn of any new challenges that arise in terms of the conurbation's overall development performance.

13. Baltic STRING, Denmark, Germany & Sweden[8]

In the South-western part of the Baltic Sea, a diverse group of regional authorities have recently concluded a two-and-a-half-year strategy process on how to jointly create a sustainable basis for growth and development in an increasingly globalised world. This project is called the STRING project (South-western Baltic Sea Trans Regional Area Inventing New Geography), and the strategy process it involves has been guided by a regional foresight approach to ensure that the articulation, execution and exploitation of joint efforts were coordinated across three national borders.

As cross-border cooperation has become more common and acquired more and more concrete contents, the need has arisen for adequate organisational forms and actors capable of taking the initiative, deciding on actions and implementing them. In many border regions, activities have often tended to be framed by national interests and not by a broader cross-border outlook. In long-term cross-border cooperation activities, misunderstandings and conflicts may arise due to information gaps, as knowledge about systems, rules and norms is embedded in national identities. In such circumstances, it is anticipated that foresight methods (in the sense of participative exploration of joint interests) can offer a more promising way of addressing the sensitivity of the national border and for giving meaning to the construction of cooperation across borders and

[8] This text is based upon B Holst Joergensen (2001), "Foresight in Cross-Border Cooperation", *IPTS Report*, vol.59, November 2001

boundaries. With this in mind, the main aim of the STRING project was to develop a common strategic platform and jointly address common conditions, options and challenges. Networking among specialists, planners and decision-makers was another explicit aim of the project. An implicit aim was to influence the political agenda on a possible future link across Femer Belt between Denmark and Germany. Thus, target groups for the project included regional and local authorities, universities and research institutions, centres of education and vocational training, trade unions, chambers of commerce, business development organizations, cultural institutions, Agenda 21 actors and other NGOs.

The project had a total budget of €1.3 million, €0.7 million of which was provided by INTERREG IIC. It had a duration of 30 months (January 1999 – July 2001), which may seem a long time, but experience from various bilateral cross-border cooperation programmes in the region taught the STRING partners that it takes time to develop a common language and give meaning to the common vision and strategic action plan. The time horizon for the exercise was ten years, to 2010.

One thing that turned out to be an important feature of the STRING strategy process was the cautious building of democratic legitimacy, linking each step of the Foresight process to the democratic institutions of the region. The idea was not to build yet another political-administrative structure – rather, the idea was to create a dynamic political forum where political representatives of the STRING partners could meet, discuss and give direction to the project. The broader public was informed through political resolutions, together with newsletters, reports and a project web page. The STRING partners agreed at the outset that public ownership would be closely related to implementing decisions and producing concrete results affecting daily life. Therefore, it had to offer flexible solutions to everyday problems in a cross-border region, such as transportation, recognition of diplomas and credit transfer systems, tax systems, cultural life, integrated coastal management, etc.

Language, in the literal sense of the word, was one of the first things to agree on as the cooperation crosses three countries, each with its own language. From the very beginning it was agreed that the common language should be English so that all participants could communicate on equal terms. The overall process was managed by a **steering group** consisting of regional administrative leaders and a small **project secretariat** whose officials were appointed by each STRING partner from their own staff. They met regularly and communicated in between meetings by e-mail. This project secretariat, which was not tied to a particular physical location, was the driving force throughout the whole process.

The formulation of joint interests and actions was made in an open process involving more than **100 experts** from universities, research institutes, chambers of commerce, local and regional authorities, associations and organisations. The experts came together in **thematic working groups**, each of which was chaired by a key official from one of the STRING partners. The experts were appointed by each STRING partner on the basis of their personal merits, and not, as it is often the case, on the basis of the organisations they represented. This meant that new networks were created, and old ones were given new meaning.

Within thematic workshops, experts identified **driving factors** for the future development (10-year time horizon) of business and industry (local versus global spatial orientation; learning capabilities oriented towards tradition; history and stability versus rapid change and innovation) and later elaborated four equally plausible **scenarios** (The 'ellipse of change'; 'global province'; the 'local gold rush'; 'home sweet home'). The scenarios were used as a starting point for developing a **preferred vision** of a STRING region, characterised by a high quality of life based on innovation,

entrepreneurial spirit and sustainability. The vision was agreed by all thematic working groups and later presented to the political forum of the STRING partners in the form of a **strategic action plan**.

The **outcome** of the strategic process has been the development of a common vision and strategic action plan comprising a number of strategic action fields, such as business development, education, infrastructure, and culture. In addition, a number of concrete projects – the so-called "lighthouse" projects – have been planned (and some have even been implemented) and are useful for testing and illustrating the ambitions of the project. Thus, the STRING partners are continuing to cooperate and build on the established process and structure to undertake key projects within the strategic action plan.

14. Case lessons?

The first thing to note from these case examples is their diversity in rationale and objectives. The first two cases from the UK and Italy are closest to the rationales of national foresight, which is not surprising given their genealogy. But the other three cases are broader in scope, to incorporate things like international relations and democratic renewal. This also means that there is not the same preoccupation with technological innovation, with social and institutional innovation moving more to the fore. A greater diversity of actors thus tend to be involved, particularly citizens and social groups.

The time horizons used are similar to those found in national exercises, ranging from as little as five years in the West Midlands to as long as twenty years in Catalonia and Grand Lyon. The duration of these exercises is more difficult to ascertain – if anything, they appear to be continuous in the four most recent examples we have outlined. The methodological approaches are a little more diverse than those typically found at the national level, reflecting the enrolment of a broader (non-expert) participation base. Nevertheless, scenarios remain very popular, as does the use of panels, surveys, workshops and conferences.

Of the impacts of these exercises and whether they meet expectations aroused by their rationales, little is known. Indeed, even less is known about regional foresight than the national exercises that have proliferated over the last decade. We are still at the stage of identifying and describing relevant regional activities and are probably some way off from understanding the processes and products associated with foresight at this level. Nevertheless, from the accounts given here, there would appear to be tangible outputs and outcomes. In the business-oriented exercises of West Midlands and Lombardy, these have included the creation of new jobs, the adoption of longer time horizons in strategic planning, and shifts in spending priorities of some key regional actors. The other three cases, with their greater emphasis upon political issues, have tended to lead to the production of action plans demanding political action. New forums for debate and decision-making have been established, the emphasis being on communication between different regional perspectives.

As with national foresight, many of the goals of regional foresight are quite ambitious, although it is too early to say whether objectives have been met. However, an interesting distinction between national and regional foresight is the maturity of the rationales offered for conducting foresight at these levels. Whilst we would contend that some, if not many of the rationales offered for conducting national foresight are slightly dubious and unsophisticated, they have nevertheless been around now for at least a decade. By contrast, no such articulation has yet occurred at the regional level. In other words, the benefit of foresight for regions is under-theorised. The activities of FOREN started to address this knowledge gap, and a number of rationales for conducting regional

foresight are set out in the FOREN *Practical Guide*. However, it is the papers of the HLEG-RF, as well as those to be presented at the Brussels Regional Foresight Conference in September 2002, that offers the real prospect of developing initial 'theories of action' for regional foresight. In our view, these 'theories' should take account of existing and emerging activities 'on the ground'. They should also be critically scrutinised – as Part 2 of this paper suggests, we should bear in mind that concepts such as 'regional systems of innovation' and 'learning regions' are problematic and should not be accepted uncritically as the basis for the adoption of regional foresight.

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