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TITLE

**Learning two coins one-side-trick
Interaction of social science and policy – On the
importance of policy learning**

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<p>ABSTRACT</p> <p>The paper outlines a systemic based approach to policy learning – to the development of policy making capabilities and competences – and the role of social science and related policy analysis to the policy making process.</p> <p>The accompanying essay, Hauknes and Koch (R-18-2003), outlined some paradoxes and implications of these that the authors have observed in the interaction of industrial and other economic policy systems with social scientists and researchers supporting policy making in these areas. The paper argued for the need of an improved understanding of the communication process and the concomitant coevolution of competences and capabilities. The purpose of this note is to outline an approach to these issues – to policy learning. The framework outlined below has been used in a small scale research project on policy learning within the framework of a large scale European project on the supply and use of innovation services in Europe, RISE – RTOs in the service economy, see Hales et al (2001). The project was partially funded by the European Commission within the Framework Programme. Support is gratefully acknowledged.</p>			
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Policy learning

Definition of policy learning

We define policy learning as the process underlying any changes in the political ‘behaviour’ of an agency, its portfolio of policy vectors (institutions, programmes, funding schemes, regulatory frameworks etc.), objectives and management for or of these, their constitution and the relative weight of vectors in the portfolio.

We broadly regard policy learning as having taken place within a policy agency when the agency alters its policy behaviour, i.e when it

- alters specifications and orientations for subsidiary institutions, programmes, or the policy legitimisation of these, etc.
- introduces new or altered policy vectors or
- new internal and external monitoring or management systems,
- expands or contracts its main constituencies.

The process underlying these changes is a complex process including various forms of learning, types of competences and sources of knowledge.

Models of learning

An organisation’s ability to develop relevant knowledge-based policies is to a large extent based on its ability to develop relevant competences, i.e. it is based on learning. We suggest four generic modes of learning, which formed the analytical basis for case studies in several countries in the aforementioned project,

- *Explicit conceptual delivery and acquisition*
An explicit and direct interaction between the policy making agency and an external institution, furnishing new analytical perspectives, presenting and performing research to policy makers, contract work to commissions, agencies on specific issues or suggestions in new or altered policy initiatives or objectives etc.
- *Learning networks*
Policy agencies are often involved in permanent or long-term networks where a primary objective is the sharing of information or other conceptual resources among its members. Such networks may include individual experts’ formal and informal professional networks, long term institutional networks, dialogue with the members of the constituency the relevant policies address, intra- or inter-ministerial networks, and international networks (e.g. EU and OECD-based working groups).
- *Benchmarking and other indicator-based or best-practice approaches*
At one end of the spectrum are formalised indicator based reporting systems, at the other ‘one shot’ or sporadic assessments, evaluations and analytical studies.
- *Continuous improvement*
Of informal processes, most notable is learning-by doing, which generates capabilities and competences that are operational and experience-based. These processes and capabilities are shaped by the impact of an evolving policy ‘culture’, including the ministerial or departmental perception of the organisation’s policy agenda; the governing, more general, political objectives and how they are operationalised, and divisions of labour between ministries and departments.

Individual and organisational learning

Some of the case material respondents pointed to the discrepancy between individual learning and the learning processes of the whole organisation. For instance: Although the Research Council of Norway employs highly competent policy makers – in formal terms – with experience from science as well as industry, the organisation seem to lack an overall strategic competence building. In some respects the competences of the organisation are not much more than the sum of the competences of its employees. Respondents from the Norwegian ministries gave the same impression: There is a lot of individual ‘learning by doing’, but the ministries as a whole seem to lack long term plans for strategic competence building.

Individual learning

A policy maker in a ministry or policy agency is normally set to administer and monitor existing policy vectors and to develop new ones. In doing so she or he will have to take a lot of factors into consideration. Among these are:¹

- the wishes, ideas, worldview and ideology of the political leadership of the ministry, or – in the case of subordinate policy organisations – the political signals and demands coming from the relevant ministry or ministries
- the wishes, ideas, worldview and ideology of the non-political superiors (civil servants)²
- public opinion, including social movements and organisations
- the media
- regulatory restraints
- financial restraints
- scientific expertise

One must also take her or his personal and cultural background and interests into consideration – the *lifeworld* of this individual, to use the hermeneutic expression³,

- personal experience
- education
- worldview and ideological background
- networks and contacts

And finally, there are various sources of information. These are of limited value if the individual does not now how to find, understand and use this information. On the other hand, the process of learning becomes much more difficult if relevant information is not readily obtainable.

Policy makers tend to use a wide array of information sources:

- newspapers and magazines

¹ Cp. Arthur Edwards: 'Scientific expertise and policy-making: the intermediary role of the public sphere', *Science and Public Policy*, June 1999.

² This does not apply to ministries in countries where large parts of the staff is politically appointed, as in the USA.

³ As used by J. Habermas

- newsletters
- World Wide Web
- specialist databases, including relevant statistics
- books and periodicals acquired by the policy maker or her department
- books and periodicals from the library of the institution (if it has one)
- books and periodicals from public libraries
- government reports (including white papers and budget documents)
- reports commissioned by the government (green papers)
- reports from research institutes and consultants, including evaluations of institutions, programmes and other policy vectors
- in-house memorandums and reports
- conferences, seminars, national and international organisations and working groups

Although scientific knowledge does play an important role in policy development, any 'linear' model depicting the policy maker as a person who designs new policy vectors purely on the basis of expert advice must be false. Not only is the policy maker forced to take other factors into consideration – in a democracy he or she is expected to do so.

However, many respondents emphasised the need for contacts in policy agencies, industrial organisations and research institutes that can assist the policy maker in gaining access to relevant competences. Hence researchers often play an important role as competence providers also outside the traditional relationship of commissioner/report producer.

The competence need of the policy makers

Policy makers look for various competences when hiring new employees or asking researchers for help. In interviews policy makers expressed a need for

- An understanding of the different cultures of industry, universities/university colleges and industrial institutes. Work experience from the respective organisation types was mentioned as a major contributor to such competences,
- Knowledge about relevant science and technology,
- Factual knowledge about the relevant industrial sector (structure, organisation etc.),
- Awareness of what is currently going on in research, industry and policy development,
- Knowledge about what it is possible to do and how to do it (available instruments and the limitations inherent in the policy area, system or technologies),
- Experience from large development projects,
- An inclination to act, even if one have a partial and imperfect understanding of all the dimensions of the topic at hand,
- An insight into the policy development in other countries,
- An insight into the present interests of managers on various levels in the relevant industries or parts of the system.⁴

⁴ RISE: Swedish results of interviews on policy learning.

As one can see the policy maker has to develop a theoretical and factual insight into the nature of the industrial innovation system. This they have in common with researchers studying industrial innovation. However, the policy maker must also know the workings of the political system and the relevant policy vectors. Moreover, this knowledge must go far beyond an understanding of organisational charts and formal procedure. They must develop an intimate knowledge of the cultural aspects of the political and administrative environment, and learn what is possible within the present administrative structure and political context.

Researchers have the duty to give their advice on a more independent basis, regardless of whether this advice is ‘politically correct’ or politically feasible at the present time. If they do not, research will very easily be reduced to simply a ‘legitimising’ agent of status quo. The researchers still need to gain a better insight into the political and administrative processes in the public sector, however, and into the everyday life of the policy maker. They need this knowledge in order to understand the competence needs of the policy maker and in order to produce a realistic analysis of the consequences of the various findings and suggested policy vectors.

The learning processes of policy makers

Our studies of policy learning cover only a few countries and a few institutions. Hence it is impossible to generalise the results, across countries, cultures and policy-making institutions. What became clear during the project that variations in national specificities, going far beyond formal structures of organisation and divisions of labour, are extremely important in explaining trans-national variations in operations and procedures – including way social science is used. Nevertheless, innovation policy makers in Europe all face some of the same challenges, a reflection of their shared basic responsibilities and tasks; to design, fund, implement, administer, control and evaluate public policies, institutions, programmes and regulations.

Recruitment

The formal background and previous experience of policy makers are important. Some policy institutions tend to hire predominantly QSEs [Qualified Scientists and Engineers] from universities, colleges, RTOs, firms and from other policy institutions. This should in and of itself contribute to enhancing the policy systems absorption capabilities of scientific and other research, not just as a consequence of the competences, but equally as a result of their personal and professional networks.

In some countries salaries of ministerial officials - or civil servants – tend to be lower than those of comparable positions in the industry sectors. Hence it comes as no surprise that labour mobility from industry to the policy systems are weak. In institutions with closer contact and interaction with industry, salaries tend to be higher and the labour flows of QSEs and similar categories from industry to the public sector is generally more extensive⁵.

Networks

The major source of competence building is day-to-day practice and collaboration with colleagues and other people involved in the processes of policy development. Hence interviewees mention networks and personal contacts as the most important sources of information and knowledge.

⁵ Nås (1998). See also OECD 2001

From the interviewees we gather that this contact building primarily is an individual activity with little managerial input, although programme steering committees and budget reference groups may be perceived as institutionalised instruments for networking.

Educational background

The educational background of policy makers is of importance. Most of them have a university or college background, normally at a graduate level.

Many of them consider themselves generalists, and claim that the particular disciplines taken are not as important as the fact that higher education gives them the ability to take part in the political culture and find, understand and utilise relevant literature and research.

In other institutions and departments, the management tends to prefer recruits with a specific type of education. There is, for instance, reason to believe that Ministries of Industry, Economics or Finance tend to have a larger proportion of economists than many other ministries and public institutions.

Researcher/policy maker interaction

Our studies have shown that one of the most important impediments for an effective utilisation of innovation research in policy organisations is time – or, rather, the lack of it. The hectic pace of modern ministries and directorates leaves often little time to reflection. This does not mean that there is not room for learning. Policy makers develop their competences through their day-to-day practice, but they often lack the time needed to read through long reports or follow theoretical debates in the research community. Consequently, learning tend to be dominated by single loop learning – to use Argyris' concepts – while opportunities for second loop learning is severely constrained and third loop learning is virtually absent.

Moreover, many policy makers say that they need information and advice of direct relevance to the development of concrete policy vectors. Their patience often runs out when researchers start deliberating what they perceive as 'purely theoretical aspects' of certain hypotheses or issues.

In order to make certain that research is used and understood it is therefore important to find other avenues for communication of research results. Several of the policy makers interviewed reported that they found an active dialogue with researchers very useful. Discussions in workshops and seminars seem to be efficient, more so than large conferences where participants passively listen to selected speakers.

Commissioning research – phases

The most important meeting place for researchers and policy makers seem to be the process of commissioning research and evaluations. Such processes are divided into several phases:

- **The preliminary phase**, where policy makers try to determine the nature of the question that is to be asked. Informally, policy makers may get in touch with researchers that are part of their network of contacts. Moreover, the issue at hand may be caused by questions raised by other reports or evaluations made by researchers. In general, however, researchers are not much involved in this phase.
- **The commissioning phase**, where policy makers get in touch with one or more research institutions in order to get suggestions on how this research can be carried out. This can be an important learning phase for policy makers as well as researchers. The researchers must try to understand the needs of the public institution in order to target the research or

evaluation process as accurately as possible. The policy maker need the expertise of the researcher to map the status of research in this area, to decide what can be done, within a certain period of time, to a given price. By discussing these matters with researchers the policy maker may learn more about research in this field.

- **The research phase**, when the research is carried out. The policymakers may follow this part of the process through follow up meetings, preliminary reports, workshops, seminars, participation in reference groups etc. The feedback they give may teach the researchers more about the needs of the policy makers. Furthermore, as the policy makers often are experts in the field of active innovation policies, they may give the researchers useful feedback on the content of the preliminary material, and input on how to proceed.
- **The finalising phase**, where the research results are delivered, normally in the form of printed material, seminars and conferences. Several policy makers told the RISE researchers about reports and evaluations that have ended up i a drawer, never to be used in policy development. Others felt that the dissemination of results through seminars and conferences is more important than the final reports in themselves. One reason for this is the lack of time for reading. Some policy makers admitted that they often read executive summaries only. However, if the reports are to be used in the development of new policies and new policy vectors the results will often be included in policy documents written by the policy makers. If this is the case, the chances are that the reports will be thoroughly read by these policy makers.
- **The post-publishing phase**, where policy makers may contact researchers in order to clarify information given in the reports, where researchers may be asked to present the results in meetings with the policy institutions, and where researchers may be asked to carry out new research based on the previous mission. Often policy organisations have agreements with R&D institutions, where the policy makers are allowed to discuss relevant issues with researchers, without making a new payment or signing a new contract. This service is often part of agreements made in connection with basic funding or long-term contracts for competence building.

The fact that an interaction between policy makers and researchers *may* take place during these various phases does not mean that it necessarily *does* take place. The process does show, however, that there are potentially many stages where researchers and policy makers may interact and learn from each other.

Strategic learning

Among those we have had contact with in the course of this work and at other times, few institutions was able to demonstrate a strategic approach to learning – as a way of improving the strategic orientation and the operations of the policy system. Policy learning is rather an indirect side effect, recognised but insufficiently focussed. There are several reasons for this, but nevertheless they point to a rather fundamental paradox. Policy makers in the area of industrial and innovation policies have generally assimilated the message of the importance of ‘learning’ – for focussed development of techno-economic capabilities and competences – for innovation performance, and hence for improving the operations and effectiveness of the firm. It is a paradox that policy systems – generally highly knowledge intensive and strong pressures for change – tend to deemphasise, or even neglect, the implications of the arguments for their own activities.

Interaction vs. independence

The role of scientific advice

Arthur Edwards points out (Edwards 1999) that although the sciences have lost their authority based on knowledge and unanimous expertise, this has not led policy-makers to reduce their appeal to scientific advice-giving.⁶ Edwards points to Habermas, who gives science a role in the communication between citizens and policy makers in the ‘public sphere’. Edwards argues, however, that both the appeal of the policy-makers to science and their uses of scientific expertise are often tactically motivated and dependent on a variety of factors that bear on the ‘political attention’ an issue receives. Hence the potential impact of scientific insights on the public sphere is anticipated or used instrumentally by policy makers. On the other hand scientists participate in public agenda-setting and make use of media attention in furthering their normative stands on issues as well as their own strategic aims.

The use of policy oriented research

‘Deconstructivist’ research within the sociology of knowledge, philosophy and the history of ideas have increasingly interpreted the use of science, research or any form of communication as tools in struggles for power and influence (Aarnes 1987). However, one should be careful reducing all uses of research input into tools of opportunism.

Interviews and workshops we have organised do indicate that policy makers may commission, select or use results that strengthen their own position and arguments. We have often witnessed policy makers (and scientists from the universities!) focusing on indicators that seem to support an analysis of reality that strengthens their position in the struggle for R&D funding. Indicators that point in another direction are not discussed with the same enthusiasm. There is reason to believe that policy makers commissions evaluations, not solely to gain insight into the present state of affairs, but to be able to legitimise reorganisation or political reform. Hence one can clearly argue that policy makers do not always use research results in a balanced, fair and ‘objective’ way.

On the other hand, there is no reason not to believe policy makers when they say that they commission research in order to gain insight into the workings of the innovation system or the effectiveness of various policy vectors. Not only are many of these policy experts genuinely interested in the ‘academic’ aspect of innovation and learning, they also need this knowledge in order to develop new, effective policy vectors. Their legitimacy as civil servants rests to a certain degree on their ability to produce effective policy actions that can strengthen the political credibility of the politicians.

Politicians may also be genuinely concerned about finding solutions that might help industry, and even if this is not always the case, their success as politicians rests on their ability to be perceived as competent and pro-active. This does not guarantee a realistic utilisation of relevant research – like most human beings, politicians may find it useful to suppress information that does not strengthen their own cause – but it may also stimulate their interest in the topic at hand, making them more receptive to new research.

Several of the policy makers contacted in this study are very aware of ethical problems related to the use of research in policy development. Their interest is partly grounded in pragmatic concerns. They argue that the credibility of the research and the use of it depend on trust. If any party can raise doubt about the validity of a report or an evaluation, it might easily become useless from a policy perspective.

⁶ Cf. Weingart 1999.

This line of reasoning often brings up the role of public opinion or the public sphere mentioned by Edwards. These policy makers argue that the best defence against abuse of research or a lack of impartiality on the side of the researcher is an open public debate where alternative research bodies may criticise the findings.

Others perceive a possible conflict with more classical ideas of what science and research should be. This is often based on the ideal of the disinterested natural scientists. Many researchers hesitate when asked to give concrete policy advice, often on the grounds that it is the task of policy makers to do so – researchers shall only supply the factual base for this decision-making.

The neutrality of the researcher

There is also the idea that researchers should stay neutral in political matters, and that their objectivity may be threatened if they engage in the development of policy vectors. This understanding is based on traditional views of the ideal university researcher as a person that stands on the outside of society, looking in, giving the necessary corrections to ‘manoeuvring politicians’ and ‘predisposed policy makers’.⁷

The policy makers are presumed to be too immersed in the complexities of social leadership to get the overview needed to make unbiased judgements. And interestingly enough, when policy makers commission research from researchers, it is often to get an independent view and a more refined understanding of the problem at hand. An independent review may also give a political legitimacy.

There may indeed be a possible conflict between the need for dialogue and understanding between policy makers and researchers on the one hand and academic independence on the other. This conflict must be taken seriously and should be discussed thoroughly.

Our results indicate, however, that it is very hard – if not impossible – to uphold the ideal of the isolated observer. Not only are researchers – like all human beings – influenced by ideological trends and personal preferences, ambitions and prejudices, they also need a close dialogue with the users in order to understand the commission, and to produce relevant and useful research. As we have seen, this dialogue is also needed to strengthen the learning processes in the political apparatus.

There is, on the other hand, a danger that researchers may be ‘held hostage’ by policy makers that deliberately or unconsciously try to influence results in a way they find useful, for instance in order to legitimise a certain policy. Policy makers may also interpret results in a certain way in order to achieve political goals.

There may also be instances when the researchers have their own political agenda or when they consciously or unconsciously try to please the commissioners in order to get more funding. Hence it is essential that applied research of this kind uphold the same methodological and ethical standards as other forms of science and research. One must make certain that there exists several alternative research institutions or environments studying related fields, so that there might be fruitful discussions and scholarly criticism.

Several policy makers have argue to us that researchers should be careful suggesting one – and only one – policy solution. The complexity of both innovation systems and political systems gives reason to believe that there are no optimal solutions to specific policy problems. There is rather a wide array of various combinations of possible policy vectors and

⁷ Often called the ‘Weberian ideal’ after the German sociologist Max Weber.

organisational structures. When asked for concrete policy advice, it is probably better that researchers map possible avenues of action and give an analysis of potential consequences following the various alternatives. It can be useful to give examples from other countries, these policy makers argue, although one should always discuss the main similarities and differences between the relevant national innovation systems.

As there is no single solution that can be objectively characterised as ‘the best’, it must eventually be up to the policy advisers and policy makers to use their experience, expertise and faculty of judgement to suggest concrete policy vectors. The researcher has the luxury of withholding his or her final judgement arguing that there is need for more research. It is the task of the policy maker to make decisions, in spite of a lack of knowledge.

Systemic failures in the policy apparatus

Even if researchers and policy makers in the field of innovation policy have succeeded in developing a common frame of reference and are able to discuss these matters in a constructive and useful manner, there remains another stumbling block for the development of a modern and flexible innovation policy. This is the struggle that takes place within the policy apparatus.

The political system consists of a large number of institutions, organisations and ministries. Each institution is divided into various departments, and each of them may have their own culture, ideology and policy. Several of the interviewees pointed to the importance of the leaders of the relevant departments; their interests, opinions, contacts and psychology. In a small organisation one person may to a certain extent shape the development of policies within its own field of interest. The researchers often communicate with lower or medium level civil servants and policy advisers. Whether the managers of these units absorb and make active use of the competences in the organisation depends on their ability to communicate with the rest of the staff.

These managers must also be able to explain the policies suggested by this unit to managers and politician higher up in the system. If there is a struggle for influence and funding going on inside the organisation, the fate of a policy vector may rest on the manager’s ability to convince the upper echelons of its usefulness.

Policy vectors based on systemic innovation theory often conflict with traditional economic thinking and research policies. The manager cannot take a common frame of reference for granted. The struggle for influence will therefore often become a struggle to establish a new worldview and a new vocabulary. From a didactic point of view this is a very difficult task, especially as the senior managers and political leaders often are older, experienced men and women. Through a long life they have developed their own perspective and their own ways of doing things, and they can find it hard to abandon these in favour of new and seemingly radical ideas. Even if they do accept the new way of thinking, they may avoid using arguments based on these theories in fear of losing the struggle for money and influence.

There may also be a conflict with other departments and organisations that are not involved in innovation policy formulation. This is particularly the case in the central government. In the annual budget cabinet meetings, the ministers will have to convince his or her colleagues about the wisdom in funding their particular policy vectors.

Although it seems that the success of a certain policy to large degree rests on the competences of individual managers, their competences are interconnected with the competence flows in the policy system. The preliminary studies made by RISE may indicate that there are large differences between organisations as well as countries in this respect. It seems, for instance, that the culture of Norwegian and Swedish ministries are characterised

by a rather ‘flat’ command structure, meaning that junior civil servants and policy advisers can communicate with the managerial level in a fairly efficient way. This means that the competences developed in co-operation with researchers more easily will reach the political level of the system.

Moreover, innovation policy is not that politically or ideologically charged in these countries. There seems to be a broad consensus as regards the overall policy goals. This leaves more room for civil servants to suggest and implement new policy measures. Both Norwegian and Swedish R&D and industry policies are increasingly based on innovation systems theory, and this development is to a large degree based on bottom up initiatives, i.e. the new policy vectors are often based on suggestions made by the bureaucracy, not by the parties or the politicians.

In other countries, like Germany, policy development is to a larger extent characterised by a top down culture. This may restrict the flow of new ideas from research and lower level civil servants.

The ministerial memo, a didactic experiment

Having met several policy makers involved in innovation, industry and R&D policies in Britain, Sweden, Germany, Portugal, the Netherlands and Norway, we decided to make a didactic experiment, to give an illustration of what goes on beyond the interaction of scientists and policy makers in this area. A fictitious Directorate of Innovation Services in an Ministry of Innovation in some European country. The Minister of Innovation needs some briefing on backgrounds before a budget conference in the Cabinet – the point being to defend the positions made by the ministry to ensure sufficient allocations of funds for the next fiscal year.

The Minister is to defend the Government's funding of certain policy vectors against a more traditional Minister of Finance that wants to curb public spending and keep a balanced budget. By doing so the Minister will have to articulate some selected basic concepts (what is!) and implications of these for Cabinet decisions (what ought to be!) for an audience of Ministers that are not necessarily familiar with this kind of thinking.

This is by no means an unlikely scenario. Although no European countries have a separate Ministry of Innovation, there are always one or more ministers that are responsible for innovation policies, normally ministers of research, industry, the economic affairs or – even – education. These ministers have to legitimise funding of policy vectors aimed at knowledge development and competence building. Traditionally these ministers have focused on the importance investments in R&D and higher education when doing this, and they have often used arguments based on a linear understanding of innovation in addition to theories of market failure. Similarly the organisation of the Min of Finance function varies.

Our discussions with policy makers and our own experience indicate that the acceptance of systems approaches may rest on several factors.

- It is normally easy for non-economists to accept a ‘systemic view’ of innovation, it appears as more ‘common sense’ than the alternatives. The memo tries to emulate a common sense approach, coloured by the civil servants’ familiarity with the arguments and research literature – and hence possible difficulties in identifying the level of common sense. But the basic approach suggested is that the Minister appeals to the other member of Cabinet’s own everyday experiences with learning and networking.

- Some policy makers are unfamiliar with the cluster concept. This is especially true in Britain, where policy makers tend to think of clusters as a regional phenomenon. Hence we suggest that the Minister explain the various forms of clusters, naming regional clusters as one of them.
- The idea of a hybrid economy of innovation services is problematic. Many may find the inclusion of government funded programmes within the category of ‘innovation services’ confusing, even if they provide financial services and facilitation components (e.g. consortium-building) that are unavailable in commercial forms of innovation-services provision. Many policy makers focus on the *institutional structure*, not on the services these institutions supply. This is why we feel that the Minister must stress the functional role the institutions have in the innovation system. What counts is what the institutions are doing, not their historical role or what they are called.
- On the other hand, policy makers that *do* focus on the services these institutions supply, tend to find the distinction between RTOs and KIBS disturbing. From the firms perspective it is not important whether an institution is called a research institute or a consultancy. The firm is looking for competences, and it does not matter much whether these competences are based on research or work experience. Policy makers, however, are obliged to look beyond these institutions' roles as research and technology services. There may, for instance, be a need for government laboratories and publicly funded research for cultural, social or welfare reasons. Governments must also consider the need for a stable, long-term development of competences; research that is not directly relevant for companies today. The Minister must therefor remind his colleagues of the broader perspective.
- We suggest that the policy maker normally use the word ‘competences’, as this includes the idea of *learning processes*. European policy makers often use words like ‘knowledge’ and ‘information’ instead, in spite of the fact that these terms lack the dynamic aspect of ‘competences’. Our use of ‘competences’ reflect a similar drift in educational policies, away from a word like ‘teaching’ – signifying diffusion of knowledge – towards ‘learning’ – pointing to the interactive aspect of competence building. The minister should not spend too much time on this point, however, as the message is more important than the terms used. He or she may, however, use the distinction to make a point. By explaining the use of terms, the minister may draw the listeners’ attention to an important aspect of new innovation theory.
- There is no absolute division between innovation services and operational services (production services) involving the deployment of technology, or between innovation services and manufacturing supply (e.g. of capital equipment or intermediate products within a supply chain). Acquiring new ‘things’, machinery included, implies the acquisition of new competences, partly as the employees must learn how to operate the technology and integrate it into the innovation process and partly because the functionality of the ‘thing’ is based on competences. However, the minister must choose his points with care and not make his exposition too complicated. We therefore suggest that he or she does elaborate on this. We have, however, decided to use the term ‘innovation services’ in order to encompass RTOs and KIBS as well as regular suppliers of machinery and technology.
- International and inter-sectoral comparisons and benchmarking for R&T services may be viable. But because of historical differences in institutions, cultures and industrial structures and trajectories there can be no generic, abstract model of a successful

innovation services operating strategy. Unless the minister feels that his audience has grasped the gist of systemic thinking, he or she should not complicate matters by going into concrete examples from other countries. However, in another context concrete examples may be a useful didactic instrument.

- We suggest that the Minister introduces the term *systemic failure*. Some of his listeners may already know this term; to others it will represent a new way of thinking. On the other hand it may also strengthen the traditional understanding of market failure, giving the listeners the impression that there may exist a social state of affairs where this failure is totally absent ('perfect market conditions'). In order to draw the listeners' attention to the systemic nature of systemic failure, we therefore suggest that the minister uses the term, while at the same time explaining that it also can be explained as a sort of market failure.

The world beyond

Our studies of innovation policy system development have shown us that sound innovation policy advice not only depends on a proper understanding of the industrial innovation system. The researchers must also gain insight into the nature of the system of policymaking, its institutional structure, its culture and social framework. Like companies and clusters, this is also an arena for learning and innovation, although the policy makers are operating under different 'market conditions' than company managers and employees.

It should also be said that in one respect this system of policy making is actually part of the overall national system of innovation. This does not only apply to public institutions for R&D, financial support and innovation services. It also applies to the political and administrative apparatus that design these policy vectors. Their understanding and their decisions may have a profound impact on the working conditions of firms.

We therefore believe that innovation research should increasingly focus on 'innovation policy innovation'. Hopefully, this note can function as a starting point for such studies.

References

- Aarnes, A. and Salomonsen, H (ed.) (1987), **Tanke og mistanke**, Aventura, Oslo
- Andersson, T. (1998), *Managing a Systems approach to Technology and Innovation Policy*, **STI Review**, No. 22, pp. 9-29, OECD Paris
- Barbour, I. (1980), *Paradigms in Science and Religion*, in Gutting, G (ed.) **Paradigms and Revolutions**, London.
- Blumenberg, H. (1983), **The Legitimacy of the Modern Age**, Cambridge.
- Carlsson, B. and Jacobsson, S. (1997), *In search of Useful Public Policies: Key Lessons and Issues for Policy Makers* in Carlsson, B. (ed.), **Technological Systems and Industrial Dynamics**, Kluwer Academic Publishers
- Dosi, G. (1988), *The Nature of the Innovative Process*, in Dosi et al (1988)
- Dosi, G. et. al. (1988), **Technical Change and Economic Theory**, Pinter, London
- Edquist, C. (1997), **Systems of Innovations: technologies, Institutions and Organizations**, Cassel
- Edwards, A. (1999), *Scientific expertise and policy-making: the intermediary role of the public sphere*, **Science and Public Policy**, Vol 26:3, pp. 163.
- European Commission (2000), *Innovation policy in a knowledge-based economy*, Enterprise Directorate-General, Luxembourg
- Faulkner, W. and Senker, J. (1993), *Making sense of diversity: public-private sector research linkage in three technologies*, **Research Policy**, vol. 23, no. 6, pp. 673-695
- Foray, D. and Freeman, C. (ed.) (1993), **Technology and the Wealth of Nations**, Pinter, London
- Gadamer, H-G (1968) *Hans Blumenberg, Die Legitimität der Neuzeit*, **Philosophische Rundschau**, vol. 15, pp 201 – 209, Tübingen
- Greenberg, Daniel S. (1967/1999), **The Politics of Pure Science**, The University of Chicago Press, Chicago 1999
- Habermas, J. (1971), **Towards a Rational Society**, Heinemann, London.
- Hales, M. (1999a), *Competences as service products – Interactions and product forms in knowledge-intensive business services*, in Hales (1999b)
- Hales, M. (1999b), **Research & technology organisations in the service economy**, University of Brighton, June 1999
- Hales, M. et al (2001), **Birds were dinosaurs once –The diversity and evolution of research and technology organisations – RISE Final Report**, University of Brighton, January 2001
- Hauknes, J. (1999), *Innovation systems and capabilities of firms*, in Hales (1999b), University of Brighton.
- Hauknes, J. and Wicken O. (2002), *Innovation policy in the post-war period – Trends and mentalities*, KANSAI International S&T Policy Conference, August 2002
- Hübner, K. (1968), *Thomas S. Kuhn. The Structure of Scientific Revolutions*, **Philosophische Rundschau**, vol. 15, pp. 185 – 195, Tübingen

- Kuhn, T. (1962/1970), **The structure of scientific revolutions**, University of Chicago Press, Chicago 1970
- Kuhn, T. (1977), **The Essential Tension, Selected Studies in Scientific Tradition and Change**, Chicago 1977
- Link, A. and Scott, J. (1998), *Assessing the Infrastructural Needs of a Technology-Based Service Sector: a New Approach to Technology Policy Planning*, **STI Review**, No. 22, pp. 171-207, OECD Paris
- Link, A. and Scott, J. (1998), **Cooperative Research and Development: the Industry-University-Government Relationship**, Kluwer
- Lundvall, B. (ed.) (1992), **National Systems of Innovation**, Pinter, London
- Masterman, M (1972) *The Nature of a Paradigm* in Lakatos and Musgrave (eds.) **Criticism and the Growth of Knowledge**, London
- Metcalf, J.S. (1996), **Evolutionary Economics and Creative Destruction**, Routledge, London
- OECD (1998), *Technology, Productivity and Job Creation – Best Policy Practice*, OECD Paris 1998.
- Rosenberg, N. (1994), **Exploring the Black Box. Technology, Economics and History**, Cambridge University Press
- Smith, Keith (1994): *New directions on research and technology policy: Identifying the key issues*, STEP report, Oslo.
- Walsh, J.P. (1995), *Managerial and Organizational Cognition: Notes from a Trip Down Memory Lane*, **Organization Science**, Vol. 6:3.
- Weingart, P. (1999), *Scientific expertise and political accountability: paradoxes of science in politics'?*, **Science and Public Policy**, Vol. 26:3, pp.151