THE IMPORTANCE OF BEING A BOUNDARY WORKER

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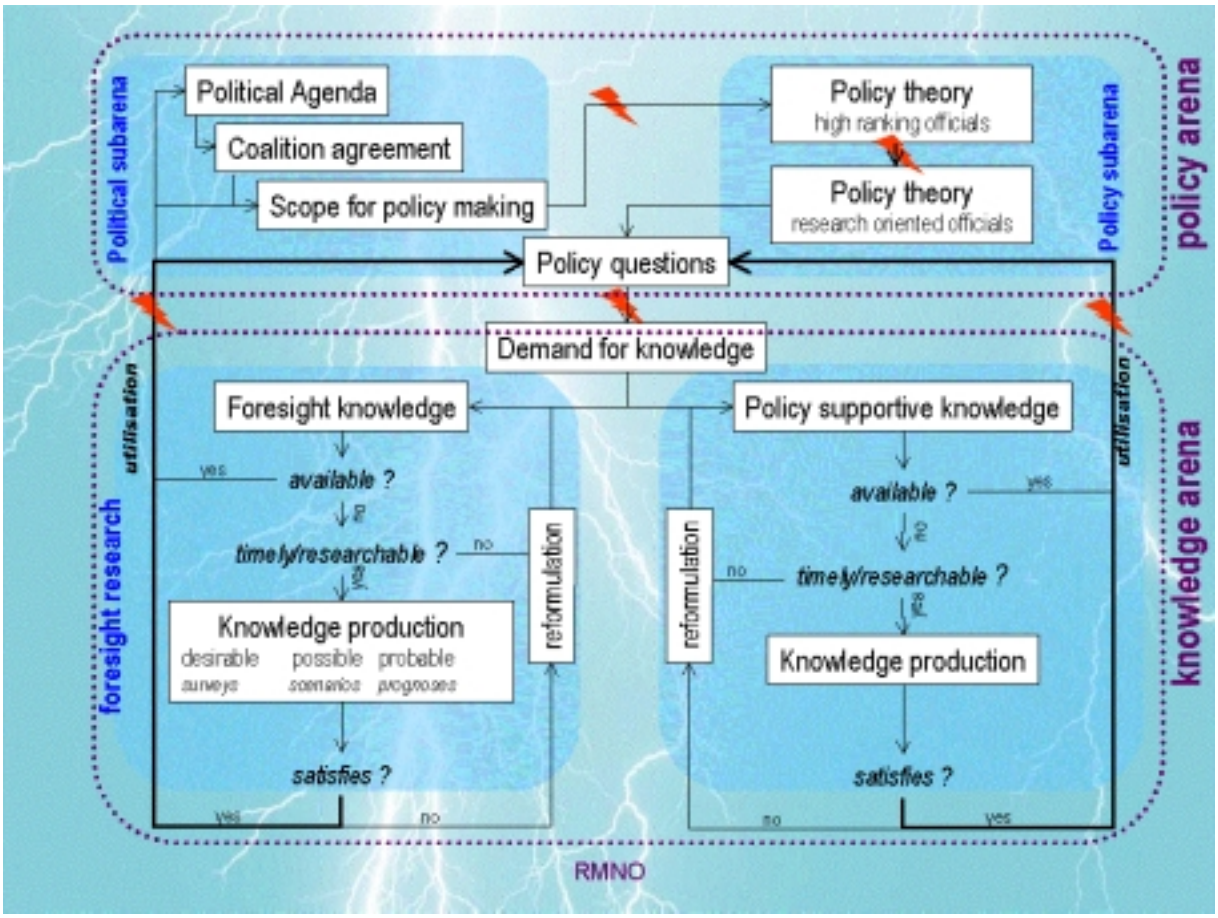
Do we need more communication?

The idea that knowledge that is available, will be put to use in policy, is in general not correct. Policy-makers only take that knowledge into consideration that does not cause too much tension with their values. These values are embedded in "policy frames" or "policy theories". Knowledge that does not fit in these policy theories is not agreeable and will be discarded. Often an attack on the credibility of the knowledge producer is the result.

Considering how information for action can be mobilised, one has to perform an analysis of the ways in which communication between the scientific and policy-making arenas occurs. In a heuristic scheme we have tried to find out what mismatches and misconnections might occur in the interactions between the policy arena and the knowledge arena.

The heuristic scheme of interactions between the policy arena and knowledge arena



Mismatches may occur for example between the policy theories of high ranking officials and civil servants who do their job as research coordinators in a department. Some policy questions are formulated in such a way that they may even resist any attempt to research them (they are not "researchable"), or the research question is formulated in such a way that competing knowledge claims are excluded beforehand. Often the solution of the policy problem is already known to the policy-maker and he just wants some additional "sound"scientific evidence in support of his or her views.

The translation of policy questions into knowledge questions and research questions is a special sport. It is often during these translations that alternative ways of thinking are implicitly or explicitly excluded. Selecting the right premises for your research question is very important. Strategic use of

knowledge is often the result of manipulating these premises in such a way that agreeable answers will come to the research questions.
So the question should not be how to prevent mismatches, the usual answer being: by improving communication, but rather: under what circumstances will scientific knowledge be used or discarded by policy-makers?
The role of knowledge in policy-making not only depends on these interactions being adequate and in time and with the right actors, as marked in the scheme above. The role of knowledge is also linked to the nature of the problem and the discourses behind these interactions. We even think the role of scientists, policy-makers and societal groups should be tuned to the nature of the problem and the discourses that the people involved explicitly or implicitly adhere to.

Problem Analysis First: Structured and Unstructured problems
If the principal actors involved do no agree on the problem definition, the values that are at stake and the knowledge that is thought to be relevant, we consider the problem *unstructured*. You cannot deal with these problems in the same way as structured problems, just ordering research into the problem to get the best kind of solution by experts.
When dealing with this kind of problems, improvement of communication between scientists and policy-makers and society at large will not make any difference unless the actors involved realise they are dealing with different perceptions of the problem and with different kinds of knowledge, often competing. Uncertainties due to the complexity of the problem(s) are also very important because they not only can be exploited to undermine the credibility of the opponent, but they can also provide room for negotiations. Unstructured problems ask for another process, another way of handling than structured problems. If you want to get to some sort of consensus, or at least get the differences clear, you will have to perform a stakeholder analysis, analyse problem perceptions, configurations, and map the formal and informal knowledge and uncertainties that are relevant.
When taking these kinds of things into account, a common knowledge base, being a kind of "negotiated truth" or "serviceable truth"(Jasanoff), may emerge. The knowledge that is disputed might become the input for a joint fact finding exercise. This joint fact finding exercise will show whether there is any reason to believe that further research may help to solve the conflict or not. Whether conflicts are in fact clashes of different value systems or that conflicting knowledge is really asking for further research – under certain conditions.
Knowledge and values are of course in several ways linked one to the other. It all depends on how deep you dig. Some convictions are so strong ("creedal beliefs") that it is very hard to alter these convictions. What is needed then is a kind of paradigmatic shift which can only be obtained under very hard external pressure and in a completely new setting. Instrumental beliefs can be altered much easier.
So it won't be a surprise that we stress the importance of first analysing the nature of the policy problem before starting the whole process of research and synthesising knowledge for policy purposes. Put in a scheme, one gets the following result (see also Hisschemöller, 1998, for a description of the typology):

		Consensus on relevant values	
		Yes	**No**
Consensus On Relevant Knowledge	**Yes**	**Structured problem** Method: matching supply and demand, translation, contextualisation	**Badly Structured Problem** Method: make value orientations explicit. Find means of pacification
	No	**Moderately Structured problem** Method: expert hearings Joint Fact Finding	**Unstructured problem** Method: (learning) dialogue (process) Joint Fact Finding, etc.

Wanted Additionally: A Typology of Interactions

A typology of the problem should be supplemented by a typology of the interactions between policy-makers, scientists and society at large. A typology of interactions can be very useful for characterising the situation, because it indicates what role an actor wants to or is expected to play. These stories about who should do what and why, are known as discourses.

Discourses are story lines about who (policy-maker or scientist) has primacy, is in charge. About who should do what and why. Who is responsible for producing what kind of knowledge and who is responsible for putting it to use.

For example, when the interactions between scientists and policy-makers can be characterised by the Enlightenment discourse, science has primacy. Scientists will formulate the problem, they do not tolerate any interference by policy-makers. Their research should be curiosity driven. The results of the research will then sooner or later, in one form or another, be utilised. The metaphor of knowledge creep is appropriate for this discourse. So: what about communication? It's just a matter of picking things up, you stupid!. In the Technocratic Discourse, Scientists are thought and expected to produce knowledge that can be put to use immediately in policy-making. The policy-maker should just do what the scientists tells him to. When the policy-maker on the other hand thinks knowledge can be bought from anywhere on the market and selects the knowledge producer that best suits his needs, the primacy clearly is with policy in the so-called Engineer Discourse. Quite a lot of bureaucratic organisations however prefer to have experts in-house. That's the Bureaucratic Discourse: scientists are integrated in the policy system in such a way that their knowledge can be put to use whenever needed for policy purposes. Scientists have to deliver their information at the right place and at the right moment. The communication problem in that discourse is simply: how can we get the right person, scientist, in the organisation involved and make him deliver the information in time and in a way the policy-maker can understand. That should be easy if the scientist is part of the policy-making community and communicates in the same kind of office or policy speak (paradigmatic uniformity).

Put in a scheme, the following result appears:

DISCOURSES ON BOUNDARY WORK BETWEEN SCIENCE AND POLITICY, POLITICS

Operational Code	**Primacy for science**	**No primacy; dialogue**	**Primacy for politics**
Diverging Functions	(1) Enlightenment Discourse (science as a provider of new ideas)	(2) Advocacy Discourse (science as a provider of arguments)	(3) Bureaucratic Discourse (science as a data provider)
Converging Functions	(4) Technocratic Discourse (science as a [virtual] power)	(5) Learning Discourse (community of researchers as a political role model)	(6) Engineer Discourse (science as a market for [social] technologies)

(see Hoppe, Huijs, 2003)

A Combination of Problem Typology and Interactions Typology

The point is of course, how the problem typology can be combined with the discourse typology. Evidently, if a problem is unstructured, a Bureaucratic discourse will not do, neither will an Enlightenment discourse or an Engineer discourse or a Technocratic discourse. RMNO not only advocates another approach when dealing with so called unstructured problems, emphasising process architecture, but also points to the fact that a dialogue setting (between policy-makers and scientists) is most appropriate in these cases. A common process for finding the relevant knowledge is started. Communication in that case is not just stating what is the truth according to Actor 1 or Actor 21, but is part of the process of finding the common knowledge base.

The responsibilities and roles of scientists, policy-makers and societal groups are thus reformulated. Instead of being the problem solvers, scientists are just one of the parties involved in the process.

The Role of Boundary Organisations

RMNO sees itself as an intermediary organisation performing its boundary work under different conditions. From the above it is clear that *before* one can determine what kind of role an intermediary might or should play, *an analysis of the problem at hand* is necessary. When the type of problem and type of interactions (actual and ideally needed) have been determined, you know how to handle knowledge management in a specific case.
When dealing with unstructured problems, this will lead to iterative processes in practice. Each next step enlightens further the scope of the problem formulation(s) and the necessary boundary work. As a consequence, the demand for new knowledge will be reformulated again and again. Therefore, continuous interactions between knowledge producers and policy-makers and other stakeholders are necessary. An intermediary organisation can be of great help as a neutral mediator. Of course for doing its job properly, this intermediary organisation should not only be good in finding the relevant knowledge, formal and non-formal, and integrating these different types of knowledge, but also have skills in transdisciplinary research and mediation techniques. It is quite surprising how fragmented the available knowledge about these techniques and skills is.

Future Scenarios for Boundary Organisations
Several future scenarios for the role of boundary organisations can be envisaged. The classic role of a boundary organisation, bringing together the demand and the supply sides, producing "knowledge" as a package to be transferred, is more and more replaced by more subtle ways of interaction. This classic role is more or less a product of the old linear innovation model that probably never existed in reality, but only in the mind of people. Nowadays we know that the articulation of knowledge demand is a special sport and specific skills are needed by boundary organisations. Of course, when the policy problem is unstructured, an interactive and iterative process is needed as stated before. The most interactive intermediaries are those that work in a transdisciplinary way, producing "Mode-2" science, involving stakeholders, mobilising formal and informal knowledge from different sources and organising the process of joint fact finding and the creation of a common knowledge base.
Apart from the way a boundary organisation sees its position on the scale from classic to "Mode 2" (see Regeer, forthcoming), there are other, external factors of influence. For example one of the questions is: 1) will the future bring about more unstructured problems and a second one: 2) do politicians, scientists and other stakeholders really want these problems to be solved or not? The answer to the first question may be positive, based on general expectations that policy-making is only getting more complicated nowadays. The answer to the second question however might be quite ambiguous. Furthermore, there are other factors that influence the role and position of boundary organisations in future, for example the point whether or not there is a clear-cut science policy in a country or in the European Union as a whole. Or whether or not interactive policy-making in general is winning ground. A clear science policy is important for the way institutes and intermediaries see their role in relation to other players in the field. Top down assignment of roles and responsibilities creates conditions for structured collaboration. Intermediaries may yes or no get a clearly defined role in the framework.
On the contrary, when in fact there is no science policy other than subsidising scientific research, self regulation by the scientific community is thought to be the panacea for science – policy - society interactions. Then one may readily doubt what role boundary organisations may play. This is the scenario of "grabbing floating proposals" (Rip, 2000). Proposals consisting of complete research programmes including quality control. If an intermediary organisation gets involved in this market of floating proposals, it will lose its neutrality and become one of the vested interests. Of course, other boundary workers can fill the gap and propose themselves as a kind of auditors seeing to a proper process and evaluating the scientific and or societal quality of the research being done.
Quite a lot of policy-makers are not conscious of the pitfalls in this field of science – policy – society interactions in general, although the seemingly never ending disputes about knowledge in relation to controversial policy issues in the news papers should make them rethink these relations. So, even in a "self regulation scenario", some of them will feel a need for a neutral auditing body, that has the knowledge and skills to operate in this field.

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