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Making research relevant to policymaking: from brokering boundaries to drawing on practices

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ABSTRACT

While urban policy makers and social scientists both aim to successfully address societies' most pressing problems, their interactions are frequently strained or even counter-productive. A case study describing a collaborative research project on Cost Benefit Analysis shows that shifting from a representational perspective on knowledge transfer towards a performative understanding of problem structuring highlights how differences between research and policymaking can be made conducive to learning instead of frustrating it. To this end knowledge development is analysed in terms of Translations in institutionally embedded knowledge practices. This approach supplements the two-community approach by opening up collaborative practices where problem structuring and group formation coevolve. Depending on circumstance and design, such practices can both reproduce or transform real-world urban problems. Furthering academic understanding of these practices can strengthen the capacity of cities and universities to successfully address unstructured problems.

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Introduction

Cities are gaining in political and administrative importance. As Barber (2013) argues, the most challenging problems of our time such as climate change, terrorism, poverty, and trafficking of drugs, guns, and people are too vast, interrelated and contested for national governments. Having to deal with such complex issues can safely be considered a knowledge-intensive enterprise for which one requires state-of-the-art scientific insight. Yet it is precisely in relation to wicked, or rather unstructured problems, that outcomes of traditional scientific practices fall short of societal expectations and often are contested as being normatively biased (Fischer 1990), ineffective (Weiss 1980) or counterproductive (Van Buuren and Edelenbos 2004). It is against this backdrop that this paper inquires into new ways for making scientific research relevant for addressing unstructured urban problems.

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Although there are contending views on the best ways to improve the relevance of research with regard to unstructured problems (Hoppe 2011), there is a common thrust towards extending, deepening and strengthening boundary-crossing collaborations (Campbell and Vanderhoven 2016; Biegelbauer 2016; Mead 2015; Newman and Head 2015; Daviter 2015; Van der Arendt 2014; Marsh and Evans 2012; McCann and Ward 2012). Policy scholars stimulate collaborations between universities and governments as they are expected to provide knowledge which is relevant in terms of society and rigorous in terms of science (Evans, Karvonen, and Raven 2016). Surprisingly little work has been done on how actors involved in collaborative practices of knowledge production actually come to develop a congruent approach to unstructured urban issues. The commonly used Transfer model has serious shortcomings in understanding knowledge sharing between practices (Stone 2012): its inadequacy in accounting for the subjective perceptions involved in different sites (Dolowitz and Marsh 1996, 357) remains an empirically and conceptually under-explored aspect (Benson and Jordan 2011, 374). In this article, through studying how policy adversaries develop scientific research on Cost Benefit Analysis, we come to a better understanding of how collaborative knowledge generation by practitioners and researchers works. While such collaborations between research and policymaking are traditionally analysed in terms of cross-boundary interaction between two communities separated by institutional boundaries, we will adopt a different, performative, approach here (Meyer & Kearnes 2013).

A rich environment for investigating science-policy interactions with regard to urban issues is the Dutch Nicis[1] *Kennis voor Krachtige Steden* (*Knowledge for Vital Cities*, KKS) research program. This article draws on observations and other data on specific projects from that programme. The KKS research program, founded in 2006 (and closed in 2014), was aimed at stimulating "state-of-the-art" scientific research on urban problems in the Netherlands, as well as promoting the contribution of universities to the economic, social and governance capacities of cities (Nicis 2006). Within the programme, more than four hundred scientists and policymakers cooperated in over fifty research projects in an eight-year period, with a total budget of forty million euro. Nicis strove to attain socially relevant research by organizing each project around a consortium of scholars, municipalities, and local stakeholders. In fact, in addition to the usual criteria of scientific quality, originality and the projected contribution to the literature, Nicis made the establishment of such a consortium a requirement for obtaining research funds. The partners in the consortium would share the responsibility for designing the research project, specifying its objectives, research problem and questions, but also for collaboratively executing the project and disseminating and valorizing the results. The expectation was that in this way the research objectives, research questions and project design would reflect not only each party's specific interest but also a more conjoined interest that is shared by both academic and municipal practices. The work processes during the execution of the research were self-assembled by academic and officials in regular project meetings and workshops moderated by Nicis. To underline this joint responsibility each consortium is financed in equal measure by the participating parties: Nicis, cities and the university.

In our case study, we will come to see how the conditions provided by the programme work out in shaping new knowledge practices and problem structures. We will first elaborate the rationale and outline of the performative analytical perspective.

Problematizing boundary work

Making policy research relevant to policymaking

Since the nineteen seventies scholars have scrutinized the science-policy interface and argued for a collaborative design to connect these " … separate communities with different and conflicting values, different reward systems, and different languages" (Caplan 1979, 459). Such arrangements should contribute to making researchers aware of policy needs and to making practitioners more sensitive to the demands of academic knowledge. These two interdependent communities essentially require an intermediary in order to cooperate. How such intermediary actors and arrangements contribute to knowledge development continues to inspire research and debate.

In a recent debate, Mead (2015) lists a number of pertinent reasons for the limited influence of policy analysis on policymaking. He finds that academic research is out of touch with political ideologies, provides little in the way of supporting strategic decision-making, prioritizes academic publishing and uses a language that is different from that of policymakers. These assertions are followed by a number of recommendations to scholars. Their " … research would be more compelling to officials if it were done inside government rather than outside it" (265); it should focus on problem articulation because "[o]nly when the problem definition comes from within the organization does research address problems as they appear there" (266). In other words, Mead who is concerned over the limited relevance of research, urges scholars to improve their capacity to collaborate in policymaking – more specifically to improve their ability to "translate" research findings to be of use in everyday policymaking practice.

Newman and Head (2015) in a response to Mead claim that his lamentations result from using Caplan's two-community approach, wherein relevance for policymaking is conflated with being instrumental to it. Policymakers, however, are not a homogenous group but a varied collection of people. Depending on task and function they can appreciate knowledge for either its instrumental, conceptual or symbolic use to everyday policymaking. Reducing "relevance" to instrumental utility leads to missing out on "quite significant use of academic research by policy makers" (Newman and Head 2015, 383). Appreciating that research has a broader impact, Newman and Head argue against Mead's recommendations for "re-engineering" the ways problems are articulated. Instead, they advise to invest in cross-boundary collaborations; improving knowledge transfer and knowledge brokering to intensify interactions and convey knowledge from research in formats digestible in the course of regular policymaking (Newman and Head 2015).

Following up on Stone (2012) I propose applying an alternative conceptualization of "translations", to meet points raised in the debate outlined above. In writing off the two-community metaphor – as Newman and Head suggest – we let go of a common setting for studying knowledge sharing between researchers and officials. Doing away with the two-communities, we no longer assume boundaries separating them and we can forgo the notion of knowledge brokers who span this boundary. By tracing researchers and policymakers as they struggle and tinker with multiple knowledges, values and interests we come to see how knowledge and groups shape each other. To describe what actors do when they come together to develop knowledge, I will describe what Hoppe (2011) refers to as *problem structuring*. Within this process, I will focus on how *Translations*

are established. The setting in which this takes place is conceptualized as *embedded practices*.

The italicized concepts will be elaborated in the next section after which they are applied on a case study.

An alternative approach to knowledge development

Problem structuring

University researchers and municipal policymakers come from different institutions and have diverse backgrounds. These backgrounds provide them with differing conceptions of the problem that is addressed in a collaborative practice (Hisschemöller and Hoppe 1995; Hoppe 2011). Their first challenge is to define problems "properly", i.e. in a way that takes into account the problem perceptions of societal stakeholders, problematic conditions as well as potential policy solutions (Hoppe 2011). By all accounts, this is a deeply political process – although sometimes tacitly so. Policy makers are prone to formulating problems such that they can solve them with the instruments they have at their disposal. Researchers are wont to formulate problems that are researchable within the paradigm they work in and that will result in papers respected by their peers.

By taking problems to be discrepancies between an actor's representation of the actual (or anticipated) and a desired situation, problem structuring provides a useful concept to map interactions between actors from differing backgrounds. If all parties involved agree on what knowledge is relevant and which values apply, the actual and the desired situation are uncontested. Problems may then be treated as structured problems that can be dealt with by traditional science. However, where consensus on knowledge or values is absent (and maybe most common: when a problem considered structured by some is being contested by others) application of traditional scientific research easily leads to scientists becoming a party in a political struggle for defining the problem (Van Buuren and Edelenbos 2004). When communication between policy makers and researchers breaks down, scientific research can be considered irrelevant: science as just another opinion (Latour 2013). Collaborative knowledge generation, with collaborative problem structuring at its core (Hoppe 2011, 231), is a more productive way to deal with such problems.

Translation

Scholars writing on knowledge utilization and boundary work have come to use "translation" uncritically as a synonym for making something technical or otherwise unintelligible comprehensible to laymen or a wider audience, i.e. " … by translating scientific knowledge into usable knowledge and translating users' questions into research questions." (Turnhout et al. 2013, 355) and " … simply translating between the worlds of science, policy and the market … " (Meyer and Kearnes 2013, 424). Based on studies in Science and Technology Studies, however, Translation has acquired a more sophisticated meaning (Callon 1986; Latour 1987).

The concept points attention to, and provides insight in, the process by which problems are redefined in such a way that others perceive it in their interest to cooperate on them

(Callon 1986; Latour 1987). Translations are simultaneously a linguistic process and a displacement: to include or exclude certain knowledge and values in a problem design has consequences for their use to those involved. As perspectives converge or diverge the relations between actors change, increasing or decreasing the possibility to share insights, interests and resources. Tracing actors as they deliberate and decide on (re-)structuring a problem in terms of Translations shows how structuring problems are related to making interests con- or diverge and re-assembling the relations between the practices the participating actors are embedded in. It is for referring to this multi-layered understanding of Translations that I write it with a capital T.

Embedded practices

Rather than assuming "two communities", "boundaries" etc, I will consider academics and policymakers as being engaged in collaborative problem structuring in a shared practice (Hamilton 2011; Shove 2010). Practices are

> … a routinized type of behaviour which consists of several elements, interconnected to each other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge (…) a practice is thus a routinized way in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood. (Reckwitz 2002, 249)

Actors in a collaborative knowledge practice draw on both scientific and policy-making practices to shape the way in which urban public problems are addressed, understood and approached. Actors participate in them by virtue of being part of a different practice (in casu, a university or municipality); what I will call their, *home-practices.* Thus collaborative knowledge production practices must be seen as essentially *embedded* in a set of different home-practices, which beyond the organization one works for can consist of professional, cultural or social settings which provide the discursive, institutional and material structure an actor is part of.

In order to describe and understand such embedded practices as they develop, they should not only be approached or appreciated in terms of the academic or administrative communities that surround them, but rather sui generis, in terms they come to constitute in and for themselves. It is for grasping the emergence and enactment of these terms that an embedded practice can best be described as one that " […] continually supplies and defines its own contexts and resources in the practical attempt to grasp and extend a research situation" (Knorr-Cetina 2007, 363). In short, they can best be analysed in a performative manner (Meyer and Kearnes 2013).

Research design

In this article, we will present a case study of such an embedded practice: one of the consortia from the Nicis programme discussed in the Introduction. A performative understanding of its activities was established by tracing the actors as they move between knowledge and home-practices (Latour 1987). The research underlying this case study consisted of document analysis (proposals, agenda's, minutes, reports, articles produced

by or for the knowledge practice as well as external documents, articles, papers and publications), multiple interviews with four of the central researchers, three municipal and two national officials who provided the material for describing this case-study.[2] The first round of analysis was explorative, drawing on sensitizing concepts derived from the literature on the role of experts in structuring problems (Bowen 2006). The second round of analysis concerned several iterative rounds of written and verbal checking of the "integrity" of the case study (Blaikie 2010, 90) by verifying and validating the reading provided by the actors who were engaged in the described consortium.

The case study addresses three questions:

(1) How do we understand problem structuring as a process of Translation?
(2) How are different home-practices drawn upon in these problem-structuring practices?
(3) How do characteristics of the home-practices influence the problem structuring process?

Case study: the consortium Cost Benefit Analysis in physical planning

In 2007, the Dutch national government has made Cost Benefit Analysis (CBA) a legally mandated condition for its contribution to regionally funded infrastructural and planning projects exceeding 125 million Euros. With this rule, this policy analysis instrument acquires considerable influence in designing and assessing such projects. One of the effects of this procedure has been the emergence of frequent tensions between central government and regional parties as well as between economists and planners. Economists analyse the benefits of a proposed infrastructure project by monetizing the public costs and benefits of its realization, for example by calculating how much the project will contribute to shortening travel times to shops and suppliers and so increase accessibility of markets. A number of politicians and policy makers believe that such an approach leads to a bias towards solving traffic problems without regard for the underlying spatial economic rationale. This tension becomes explicit in the preparation of a CBA. According to local and regional plan makers, CBA discussions on calculations, future scenarios and zero alternatives (a CBA score is relative to the costs and benefits of an alternative in which the proposed planning project is not executed; this is the so-called zero-alternative) require a lot of resources without contributing to improve a project. As a result, the CBA, which was introduced to provide objective information, is seen as a contested policy instrument that frustrates instead of helps a project planning process.

At a Nicis meeting, problems with the application of CBA in local planning projects are introduced by a municipal civil servant. A recent planning experience taught this policy maker how the instrument significantly narrowed down the relevant effects of their plan; benefits of a landmark bridge, for example, are quantified in travel minutes gained, neglecting the expected aesthetic and thereby the commercial value that an artful bridge would provide in *branding* the designated area. In effect, the CBA seemed to determine which knowledge and values are of consequence in weighing the public cost and benefits of a planned problem solution in their city. Discussions on this topic with national policymakers proved unproductive, stimulating the municipality to quickly acquire knowledge and expertise on the use of CBA.

A professor in planning at the Nicis meeting is interested in investigating the problems that municipalities experience with CBA's. Scholars since the nineteen eighties have generally judged the instruments' central principle as sound – that in making a decision one should way its costs against its benefits – but have taken issue with its operationalization (Hansson 2007). The criticism centres on the mechanism of monetization which can not sufficiently capture the environmental outcomes and social values that are considered relevant by stakeholders (Turner 2007; Lahdelma, Salminen, and Hokkanen 2000).

The professor in planning starts assembling a research consortium. He suggests to write a proposal together with a professor specialized in economics and infrastructure from a different university. Their research design is a combination of theories from economic science and urban/regional planning. Instead of a single definition, it contains multiple problem definitions which are derived from experiences in planning practice. In a separate section of the proposal, suggestions are put forward from a planning and from an economics perspective on what are possible sources for the problems policymakers experience with CBA. The planners suggest it has to do with the role of CBA in the decision making procedure. The economics perspective focusses on the instruments' inner workings.

This dual approach attains two goals. First, the research problem is left sufficiently open for actors with diverging perspectives and stakes to collaborate on a problem is such a way that they can appreciate it as familiar and relevant. Secondly and in consequence, the consortium represents familiar knowledge practices for both planners and economists as it includes preeminent professors from established universities in their respective networks. Through this problem design, a coalition is assembled that incorporates policy adversaries who are willing to participate in a new knowledge practice.

In the absence of an unambiguous definition of the research problem, aim and question, the research design includes a section drawing on organizational learning theory to organize the collaboration between the two universities and the interested municipalities and stakeholders. The civil servants from the ministry's research institute concerned with CBA policy and calculations refrain from formally entering the consortium, but agree to be a guest member. The ministry is most directly involved with institutionalizing CBA's policy and procedures in guidelines and law. By their own account, they have agreed to cooperate in order to supply the consortium with the relevant information and keep an eye on what they see as the correct representation of CBA policy and practice.

At this point, we see interdependent policy makers working at the municipal and national level who oppose each other's perspective on the role of CBA in large planning projects. Officials responsible for CBA development and application relate positively to the consortium project as it applies concepts and ideas familiar to them on an issue at the heart of their work, enacted by economics researchers well known to them. They acknowledge that planners have a creative role in developing projects but find the planners' analysis of a project's value in contrast to their "objective" analysis. In contrast, the municipal planners are of the opinion that the economists can contribute to analysing the consequences of a project but find their valuation too limited. However, they relate positively to the consortium project as it takes a planning perspective they are familiar with on their issues with CBA. Two out of the three municipal lead partners are acquainted personally or professionally with the planning department of the university involved. They are interested in investigating ways to better deal with CBA as part of realizing their projects. It is by structuring the problems with CBA through familiar disciplines and research departments that it makes sense to

collaborate both to the local and national policy-making practices involved. It is not likely that planners would invest in an economics research project as it is the stringent application of economics on planning that they are opposed to. Similarly, the national officials are not eager to collaborate on a project that would only take the planners' approach to issues with CBA. However, the policymakers recognize they are interdependent actors whose interactions are strained due to differences they are not able to overcome by themselves and both are interested in researching the issues as presented in the research proposal. We see that with the re-articulation of the problem, crosscutting working relations can be established between municipal and national policy makers and the researchers from urban planning and economics. In terms of Translation, we see that the policy problem is restructured in such a way that the actors perceive it in their interest to cooperate through the consortium.

The first year of research is dedicated to establishing a more precise common problem definition by organizing consortium meetings. Every three months one of the consortium partners hosts a meeting where they present the CBA casus that motivated them to participate in the consortium. The researchers and local practitioners collaboratively organize the logistics and content of the meetings in the cities they concern. In addition to the consortium members, local stakeholders are invited and stimulated to share their experiences. The workshops focus on issues with CBA in a local example, brought forward by one of the practitioners. After researchers in economics and researchers in planning propose their respective ways to address the practitioners' CBA problems, discussions ensue on the local consequences of each approach. It is by the situated contrasting of perspectives from the academic and policymaking practices that the actors structure the problem. There is a marked difference between the deliberations as conducted by the economics and the planning researchers. Illustrative for this is the workshop dealing with the so-called zero-alternative. The economic researchers explain how the zero-alternative is formally established in a CBA by economic formulae. Based on this explanation, he presents a number of ways to offset a proposed projects' benefits in the most favourable manner.

The stakeholders present at the workshop respond to these solutions by emphasizing local complexities. They argue that given their peculiar political, natural, governmental or technical exceptionalities, the proposed solution won't yield the desired results. In other words, applying the formulae as suggested, will not solve their problems. The researcher in response presents alternative solutions, to which the policymakers and stakeholders respond by bringing in more peculiarities, et cetera. The researcher from the planning department, treating the same zero-alternative topic in a parallel session, introduces a different approach to structure the problem. The planners do not explain CBA, and neither do they propose solutions. Instead, they present the origin and consequences of different rationalities (e.g. technical and communicative rationality). Subsequently, these rationalities are employed for describing the problems that stakeholders experience when using CBA. In this workshop the participants do not scrutinize the limitations of the measurements made by a CBA, instead, they discuss their troubles with the zero-alternative in terms of different rationalities They collaboratively reflect on the benefits of a communicative space facilitating learning around the use of CBA in planning processes.

In terms of problem structuring, the separate workshops illuminate the intricacies of two different trajectories. In the economics' workshop the researcher is dealing with CBA problems as if it concerns a structured problem. The economists offer explanations for CBA's inner workings, but don't acknowledge that certain characteristics of the

problem (planning) situation are relevant to the stakeholders but cannot be captured in economic terms, nor be addressed by them. Suggestions to do so are disqualified by the economist as partisan and biased and therefore invalid arguments for revising the CBA. As the stakeholders and researchers both reproduce the problem structure common to their home-practice, the issue nor the relations or the interests involved are changed. Contrary to the technocratic attempt to structure the problem by getting the facts straight, the planning researchers provide a perspective that helps to acknowledge ambivalence and ambiguity of the problem and suggests concepts to better deal with these. As a result, this workshop makes direct progress in restructuring the problem: the stakeholders start articulating their problems with CBA as an obstacle to what the researchers have labelled as "just, informed and efficient decision-making", and start discussing the conditions for a learning approach to urban planning decision-making.

In a joint closing session, the planning professor concludes – in reference to the obstacles encountered in the economists' workshop – that planning projects feature "elusive effects" that are relevant for establishing its costs and benefits, but which cannot be grasped in the terms of economic science. Reminiscent of the workshop proceedings, planning and economics scholars, as well as local and national policymakers, can agree to this restructuring of the problem. Through it, an avenue of research can be set out that is relevant to all practices involved. It does so by touching upon a subject upon that is at the core of the policy controversy without adding to the conflict. In other words, it transcends the common points of view and opens the door for collaboratively answering the question: how can we best deal with that which cannot be measured? This constitutes a purposeful adjustment of the relations between the policy adversaries by restructuring the problem in a manner that leads to their interests becoming aligned – in answering the question – where contestation used to prevail.

The researchers rewrite their research design. Or rather, the PhD students specify how they are going to research the questions established during the first year. In this endeavour, the planning researchers follow up quite directly on the consortiums' interactions. Their specification of the central research problem is that some aspects of planning cannot be calculated and should, therefore, be collaboratively assessed in a more qualitative way. Both in providing arguments for framing the problem in this way, as well as for developing solutions to it, the researchers draw on the insights gathered in the workshops with the local and regional stakeholders in the consortia. Pursuing the alternative rationalities perspective, a hypothesis is developed on the scientific notions of "high levels of communication" and "high levels of trust" as a requirement for decision making that involves phenomena that present limits to measurement. A growing scientific interest in this line of thinking enables the PhD student to publish the first research findings in a high-ranking peer-reviewed international scientific journal. The research continues by developing empirical testing of the hypothesis. The research team organizes experiments in real-world settings with municipalities.

Viewed as Translations we see that the adversaries were able to jointly articulate the limits of CBA reasoning and restructure the common problem in terms of "elusive effects". Moving the debate beyond the merits of monetizing planning projects, the emphasis shifts to evaluating CBA in terms of good decision-making. Sharing this approach with academic peers in high-ranking journals, contributes to wider recognition of the problematics involved when using CBA as part of a decision-making process. In

addition to over ninety citations in scientific papers, the findings of the planners' research also lead to the organization of experiments where policy makers and stakeholders can experience working with a learning approach to CBA.

Beside the planners' study, the economics researchers have conveyed a survey which focused on the question: what is a good zero-alternative? Lacking examples of these the research is based on a survey in which experts judge the value of CBA for good planning decisions. Each interview is protocolled and the respondents are carefully selected. The report is a benchmark of good zero-alternatives that is ceremonially welcomed by the ministry. Subsequently, the researchers are involved in further developing the national CBA guidelines. Here, in terms of Translations, we see a restructuring of the problem that reinforces established relations.

For the economic researchers, the situated consortium meetings do not provide valid data: the relevant variables nor the participant selection is scientifically controlled and the "respondents" are primed by an on-topic lecture before the panel discussions start. Including these proceedings as data would compromise the validity and representativeness of their research. Not only for the scientific community they belong to, but also to the national governments economics bureau they work with. It is exactly by establishing knowledge that is valid and representational on a national level that CBA is considered relevant for national policymaking. By sticking to the same scientific criteria for validity the researchers and policy makers reinforce a problem structure that is central to both research and policymaking, re-establishing the relationship between their practices.

Analysis

Structuring problems in an embedded practice

The case study described how researchers and policymakers attempted to make research relevant to policymaking. Instead of describing actors working across boundaries, we analysed how researchers and policymakers collaborated in an embedded practice. Such a practice was formed when through restructuring a problem, the policy adversaries who come from different institutes are re-assembled into partners in a consortium. As these actors bring different approaches to the research to the table, we see them collaborating to simultaneously find a workable articulation of the research and real-world problem they are engaged in.

We noted in the case that actors' proposals to restructure a problem (or their rebuttals to those of others) were initially linked directly to governmental or academic institutions. We also noted that along the way actors also start to look beyond the requirements of their particular home-practices. Struggling to find new ways forward multiple knowledges, values, discourses and interests started to merge. Interacting with each other and the situation at hand, the actors developed a collaborative practice that provides its own context (Knorr-Cetina 2007). From such a setting a problem approach like "elusive effects" can emerge: a restructuring of the research problem that does not follow from, nor directly fits within the home-practice involved, yet is meaningful in terms of them. Clearly, analysing the interactions leading up to such a transformative approach of the research problem is key to understanding how research is made relevant to policymaking. As it is the capacity to transcend academic or governmental home-practices that is at the

heart of this process, it is obvious that we could not have fully grasped it in terms of the (two) communities involved.

To better understand the process of problem structuring in an embedded practice we will delve deeper into the process of Translation.

Translations

How problem approaches and relations are restructured through Translations is analysed here by contrasting the two workshops introduced in the case study. Their analysis shows actors drawing on different conceptions of validity and relevance to shape different trajectories of problem structuring. The Translations thus achieved are solidified by the (re-)production of specific problem structures within actors' home-practices. For example, in academic proposals and articles, in new guidelines on CBA policy or as part of collaborative experiments. It is by tracing actors as they suggest, judge, move and solidify Translations that we come to see how – over time – a problem approach is shaped by participating actors' home-practices. We will now explore more precisely how this has played out in our case.

Contrasting the two workshops illustrates how exactly the characteristics of home-practices are involved in Translations. The participants in the economics workshop established whether the solution proposed by the researcher is acceptable by projecting it on the problem situation in their home-practice. The rebuttals put forward at the workshop are answers to the questions put to themselves in performing that exercise: "Which problems could I address if I employed the proposed solution in my home-practice?", "What would be the results of this?", "Do I like these results?". The rebuttals, the policy makers provided to the solutions of the economist researcher are actually representations of the feedback the policy makers expect to receive when acting on these suggested solutions in their home-practice.

The policy makers indicated, however, that the solutions proposed in the economics workshop do not directly enable them to address the problems they face within their home-practice. The municipal policy makers were reluctant to accept solutions that a CBA has to offer as these do not allow them to include the values they deem relevant to their plans. In short, the proposed problem structure did not meet their criteria for relevance. Their objections did not lead the researchers to restructure the problem so as to include the locally preferred values. From the economics perspective, the local wants and needs were seen as situation-specific, interest-driven and subjective. Including these particularities was seen as incompatible with the epistemological validity criteria in their discipline, which are aimed at establishing objective and representative knowledge. Maintaining these scientific standards of rigour are coupled to the way that the discipline of economics articulates its relationship with national policy makers: scientifically-based criteria produce the "objective" evaluation that makes CBA an authoritative policy tool. From their side, local policymakers did appreciate the value of the economics workshop. It informed them on the workings of the national CBA policy practice. Becoming more knowledgeable about the CBA formulae, provided them with new leverages to address their local problems: building on these insights they understood how to emphasize certain characteristics or conditions in their plans in order for a CBA to better capture its value.

The planners' workshop succeeded more directly in contributing to the policymakers' capacity to deal with problems in their home-practice. It provided a perspective (through the different rationalities) that enables policy makers to legitimately argue for including alternative values into a planning process in general and the CBA in particular. Interestingly the answer provided by the research did not directly enable them to change the application of CBA in their home-practice: they still had to conform to the CBA procedure designed at the national level.

So restructuring of the problem did not directly meet their criteria for relevance. However, it did enable the municipal officials to problematize their issues with CBA's in a new manner, which they expected to be successful. Restructuring the problem of CBA in terms of decision-making has provided them with new options to act on in their deliberations with the national government on the value of CBA's. The municipal officials now had a rebuttal to the compelling rationality of the CBA; they could discern between equally legitimate rationalities and propose to apply the correct one depending on the circumstance and type of judgement required. The planning researchers successfully restructured the problem by providing an answer to a question the policy makers did not know they had. Through this consortium, the planning researchers were able to extend their methods to studying CBA's. This is a successful Translation: interests converge as the problem is restructured.

When proposing and discussing problem structures, actors applied criteria for determining the restructured problem's relevance and validity in terms of their home-practice. By analysing the problem structuring trajectories we see that depending on the problem structure employed and home-practices involved, this yields different results. This leads to a perspective on knowledge development that enables the de-trivialisation of the phenomena through which academic and governmental practices structure a knowledge practice: we come to see more precisely how structuring the knowledge and values applied to a problem situation is related to structuring the relations between the practices involved. The case showed how the different criteria in a discipline influence the capacity for structuring a policy problem. It draws attention to the way actors draw upon the characteristics of different policy and academic practices in establishing the knowledge relevant for addressing a problem.

From intermediaries to moderators

Analysing the relevance of research for policymaking in terms of two communities – as discussed in the introduction – goes hand in hand with an emphasis on intermediaries; both as an empirically definable object of study and a focal point for recommendations on how to make research relevant (Horst and Michael 2011). In this paper, we do not explicitly discuss knowledge brokers, boundary spanners or other intermediaries (Meyer 2010), yet this analysis can improve our understanding of the work done by actors who view themselves in such terms. How such actors come to successfully establish a problem approach that transcends the received view in their home-practice is analysed here by distinguishing between *intermediaries* and *moderators*. It is a distinction that provides an appropriate focus point for recommendations on how to make research relevant to policymaking.

We return to the workshops. Being satisfied with an answer to a question they didn't know they had – as we've seen in the planning workshop – illustrates that actors do not just look for compatibility of a new problem structure with their home-practice in terms of the latter's standard criteria. For the researchers and policy makers involved it is about coming to an understanding of issues that are of interest to them in terms of their own academic or administrative practices. In interacting, processing the feedback from the problem under investigation and the response from each other and their related practices, their joint practice could come to incorporate a diversity of criteria and discourses for establishing congruency. Congruency refers to a problem structure that makes sense in terms of the practices of those involved (Grin and Van de Graaf 1996).

The establishment of "elusive effects" illustrates this point. By acknowledging the existence of elusive effects as a phenomenon that is relevant for a good CBA but cannot be monetized, a problem design is accepted by the economist-researchers and – policy makers, that does not comply with problem structures or validity criteria common in (or compatible with) their home-practices. The lesson is that for a Translation to succeed, actors require a new problem approach to enables successful action in their home-practice. To establish this, the actors might commonly draw on the problem-structure and criteria from their home-practice. The case study however also showed actors can defer this "drawing on" when it does not contribute to realizing their aims; the desired new actions. How does this come about? In judging whether a proposed restructuring of a problem is acceptable, actors can check whether a redesigned problem is compatible with their home-practice, i.e. asking colleagues or a superior; drafting a memo. An alternative route is for an actor not to check for compatibility but to assess whether a redesign leads to a restructuring of the problem that can bring about closure (Wagenaar and Cook 2011) within or with regard to their home-practice.

The municipal actors collaborated on restructuring the problem in a manner that did not comply with their home-practice. This might be related to them being frustrated by a policy instrument which is important for judging the outcome of their project but remains unresponsive to locally valued costs and benefits. As we have seen the economics researchers and policymakers seemed less inclined to deviate from problem structures embedded in their home-practices. A phenomenon which we ascribed to the coupling between researchers maintaining specific epistemological standards of rigour and policy makers who depend on these standards for the authority of their policy instrument. In their recognition of elusive effects, however, we see that these actors made an exception. From this instance we can tentatively outline two situations within a knowledge practice within which actors collaborate on restructuring a problem in a manner that deviates from their home-practice:

- being offered a more productive route to realize one's interests in a situation where one's routine approach does deliver the desired outcome
- being offered an alternative approach to a recognized problem that does not (seem) to conflict with established interests or approaches

The distinction between actors who do and who do not deviate is conceptualized in terms of *intermediaries* and *moderators* (Latour 1987). An intermediary is an actor structuring a problem by only cooperating on actions that address the formal problem as it is

established in their home-practice. An actor is labelled a *moderator* if and when a proposal for an alternative approach leads to a reflection upon employed preferences and occasions a restructuring of the original situation, potentially opening up new actions and decisions. Both types are seen to be present in the case study. Distinguishing one from the other contributes to pinpointing where problems common to certain home-practices will be reproduced or can be transformed and which situations contribute or detract from this happening.

Making research relevant

The consortium in the case study provided an *avant le lettre* illustration of how currently debated recommendations for improving the relevance of research (Mead 2015; Newman and Head 2015) actually work out. This case study contributes to this discussion by suggesting that making research relevant does not result from organizing it "inside" government (as suggested by Mead 2015). First of all, because (urban) policymaking and implementation is increasingly developed outside of, and between, institutions. Second, because the value of research for the policy does not result from their integration as such, but by organizing them in such a way that they can complement, enlighten, conflict with, and inspire each other. In short, by connecting practices in a manner that acknowledges the need for Translation. The case study provides some insights on how this can be organized. These can be drawn out best in reference to the contribution by Daviter (2015) to the debate listed above.

In his paper, Daviter (2015) emphasizes the distinction between the political and substantive use of knowledge and relates this to a policy system's susceptibility to knowledge creeps and shifts: where new knowledge is at odds with an organizations' epistemology, it cannot always enter the policy-making process through learning, verification or experimentation. In those cases, Daviter argues, knowledge take-up results from contestation.

The case study indeed showed actors drawing on home-practices to judge the relevance and validity of problem structure and decide on their worth. As interdependent (governmental) actors in a problem field each maintain connections to a particular disciplinary research community – with its own particular knowledge practices – analysing how these interact, is key to understanding how research contributes to addressing unstructured problems. As noted in the case study, the stalemate in the economists' workshop is related to the researchers limited freedom in redesigning the problem without compromising widely accepted criteria for scientific rigour within their discipline. Urban Planning as a science has a broader epistemological scope of what is considered good science; these researchers can suggest redesigning the problem by applying different rationalities and opening up new venues for actionable options without compromising scientific validity.

Clearly, the home-practices in which the participating actors are embedded are sources for motivating, informing or legitimizing decisions in a process of collaborative problem structuring. However, the characteristics of this practice differ in the extent to which they allow for synthesis with those of others.

Beyond sites for problem structuring, the embedded knowledge practices have also been shown to be a source for motivating, informing and legitimizing (re-)structuring of a problem in home-practices. Think of the municipal actors who embrace the multiple

rationalities that the urban planning researchers provide to legitimately criticize CBA in a constructive manner; without denouncing the value of economics yet not supporting or investing in it. Embedded practices as such are both sites of, and sources for problem structuring. They can be drawn upon to do both. This means that they can be instrumental to institutionalized problem structuring through "learning, verification or experimentation" but can also be enacted to contest, disrupt or change them in unexpected ways.

In the case study, we saw adversaries willing to participate in an embedded knowledge practice. This was due to the problem definition being left open and acknowledging both urban planning and economics as relevant knowledge practices to draw upon. It is by acknowledging the relevance of multiple knowledge and practices that a dialogue situation is provided where contestation used to prevail; by simultaneously tinkering with problem structure and relations between practices, the conditions are (re-) established for knowledge development through experimentation, verification and deliberation. These observations contribute to our understanding of the role of officials and researchers involved in the governance of problems (Hoppe 2011). Hoppe (2011) states that where established relations between *power* (governing) and *puzzling* (researching) lead to routine reproduction of problem-solution couplings, a shift in *participation* is key to enabling a transition in the governance of a problem. By studying actors drawing on practices for structuring problems, this paper shows how exactly (re-)designing participation is made more or less successful in finding new ways forward in situations where power and puzzling maintain a dead-lock. It is through the rethinking of the design and the sorts of embeddedness of a shared knowledge practice that it can provide conditions for *moderators* (instead of intermediaries) to collaboratively work on making research relevant.

Conclusions

This paper inquired into the question how actors collaboratively generate knowledge that is relevant to both science and policymaking. To this end, we analysed the interactions between researchers and policymakers developing knowledge to better address an unstructured urban problem. Interactions were portrayed as problem structuring in an embedded knowledge practice, in which actors draw on their home-practices for establishing, changing or amending the content and outcome of research on urban problems. We analysed such embedded practices as performing Translations; moments where knowledge, values and interests intertwine and reproduce or transform the relations within and between the practices of the policymakers and researchers involved.

This paper has shown how exactly actors are enabled and constrained by the problem structures embedded in their home-practices. Looking at moments of Translation contributes to clarifying how epistemologies are tied to specific practices and the collaborations between them. In addition, it points out that an "organisational" conflict over which knowledge to apply can, at least partially, be opened-up: an embedded knowledge practice can (re-) enable learning instead of contestation to inform policymaking. In the case study this was enabled by starting out with emphasizing problem manifestation (instead of definitions); involving both the practitioners and the scholars involved in a policy controversy; organizing situated deliberations where actors could draw equally on the presented disciplinary insights and the situation at hand; proposing translations which provide an

alternative route to realize the interests of one group without compromising those of the other. The point here being that while organizational characteristics help distinguish between sites more likely to experience knowledge creep or shift (Daviter 2015), embedded practices can provide a niche outside them; allowing for different modalities to develop relevant, transformative knowledge.

The performative approach applied in this paper led to reflections on and refinements of recently made recommendations that were aimed at intensifying interactions between researchers and policymakers (Newman and Head 2015); translating research findings to everyday policymaking (Mead 2015) and grasping both the substantive and political dimension of knowledge use (Daviter 2015). Additionally, we drew lessons on how to organize research which is relevant for society and sufficiently rigourous for science (Evans, Karvonen, and Raven 2016). Following up on Stone (2012) we found that analysing Translations indeed allows us to address previously noted deficiencies in the transfer model with regard to analysing knowledge sharing between practices (Dolowitz and Marsh 1996; Benson and Jordan 2011).

Interestingly, the approach presented in this paper also allows for a pragmatist contribution to be made to a dilemma recently revived by Biegelbauer (2016, 129) who stated that "analytical limitations" force researchers to focus on either learning as "problem-solving oriented form of political activity" or "a more interest-oriented understandings of policy-making"; although these types of learning are acknowledged to co-occur and interact. (2016, 142) The dilemma relates to a will versus cognition approach to comprehending the establishment of authoritative expertise in policy settings (Hufen and Koppenjan 2014). Stone (2012) touched upon this issue when reviewing the knowledge transfer literature which she saw moving its focus " … from the idea as the main source of explanation, one inevitably propelling change, to an explanatory position that highlights uncertainty, where the acceptance of the idea is more politically relevant than the idea itself" (2011, 489). Now, the performative approach as employed in this article does not only allow researchers to simultaneously describe and analyse multiple forms and modalities of knowledge and power, but also how they interact and transform each other. This enables policy analysts to take a third position relative to the two above contrasting rationality and power or cognition and politics, et cetera. Following Mol (2013, 380) studying knowledge (governance) practices is not about spreading the rationally best idea, nor is it about the agency or structure legitimizing or willing what counts as such. The challenge for the policy analyst lies in describing how actors in new, shared hybrid practices enact their own version of a problem by drawing on their home-practices, while being challenged by others and the situation that talks back (Schön 1983).

Following up on the performative approach employed in this article it is suggested that further research be aimed at answering these questions:

- How do the characteristics of surrounding practices enable and constrain Translations in an institutionally embedded knowledge practice?
- How do actors drawing on an institutionally embedded knowledge practice coordinate the governance of a problem within and between home-practices?
- How do actors structuring problems in knowledge practices enable and constrain their home-practices in governing real-world problems?

Notes

1. Nicis Institute was a temporary research platform established to run a government funded research program aimed at developing state-of-the-art scientific knowledge for improving Dutch social and economic urban policy.
2. A Dutch report made by the author of this paper for Nicis Insitute (Nicis 2014) contains an extensive version of the case study and details the interviews and observations on which it is based. This report is available on request.

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