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Abstract

Researchers are increasingly expected to deliver “socially robust knowledge” that is not only scientifically reliable but also takes into account demands from societal actors. This article focuses on an empirical example where these additional criteria are explicitly organized into research settings. We investigate how the multiple “accountabilities” are managed in such “responsive research settings.” This article provides an empirical account of such an organizational format: the Dutch Academic Collaborative Centres for Public Health. We present a cross-case analysis of four collaborative research projects conducted within this context. We build on (and extend) Miller’s notion of “hybrid management.” The article shows that the extended concept of hybrid management is useful to study the different accountabilities encountered in such settings. We analyze how the collaboration developed and which conflicts or dilemmas arose. We then focus on the different hybrid management strategies used in the collaboration. The empirical material shows how the different aspects of hybrid

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management feature in various configurations in the four projects. We highlight that hybrid management strategies may be used by different groups or at different moments, may reinforce or contradict each other, and may be more or less effective at different points in time.

Keywords

other, politics, power, governance, engagement, intervention

While the role of scientific knowledge has grown in importance for a range of complex problems, the value, trustworthiness, and relevance of scientific knowledge are, at the same time, increasingly controversial (Bijker, Bal, and Hendriks 2009). As a consequence, the realms of scientific knowledge production and scientific governance have become more open to external performance and audit measures (Braun and Kropp 2010; Power 1997, 2000; Wouters 1999). In many cases, these audits go further than assessments of academic performance. In addition, researchers are assessed on the societal relevance of their work as they are expected to deliver “socially robust knowledge” (Nowotny 2003) that takes into account demands from societal actors outside academia (Etzkowitz and Leydesdorff 2000; Etzkowitz et al. 2000; Hessels, van Lente, and Smits 2009; Gibbons et al. 1994; Nowotny, Scott, and Gibbons 2001; Funtowicz and Ravetz 1993).

The increasing emphasis on the criterion of “social robustness” gave rise to a plethora of (novel) organizational formats and forums, often transdisciplinary in character, including multiple stakeholders. Within such settings, a precarious balance between these multiple—and often competing—criteria or accountability demands needs to be maintained. They form a “growing patchwork” (Irwin 2006) of institutional innovations in science governance and knowledge production. Traditionally, boundary organizations (Guston 1999, 2001) are seen as promising new organizational mechanisms to address such multiple accountability demands from different principal actors.

However, as Parker and Crona (2012) have recently argued, while the concept of boundary organization has received considerable attention, much less research has addressed the questions of *how* members of these organizations facilitate collaboration between researchers and policy makers, coordinate their activities and relationships, and meet the diverse needs of stakeholders. Their article clarifies the challenges boundary organizations face from the sometimes incommensurable demands that the organizations are subjected to, leading to tensions that continuously need to be negotiated by the actors conducting boundary management.

The analytically interesting puzzle then becomes how the actors involved in boundary organization deal with the multiple “accountabilities” that confront them. These may be incommensurable, but are also not always considered equally important (Holland 2009; Hessels and van Lente 2010). What kinds of challenges do the participants face and what strategies, methods, and negotiation tactics are used in conducting boundary management?

This article focuses on a specific empirical setting in which these additional criteria of “social robustness” are explicitly organized into a novel organizational format. The Dutch Academic Collaborative Centres for Public Health (ACCs) are settings where the multiple accountabilities (traditional scientific criteria as well as criteria of professional/policy relevance) are explicitly mentioned as quality criteria. The ACCs form an infrastructure for structural collaborations between researchers, policy makers, professionals, and other stakeholders within the field of public health. They have been funded by the Netherlands Organization for Health Research and Development (ZonMw) for two periods of four years each. The ACCs are an infrastructure comprising formal, long-term collaborations between a Public Health Service (PHS)¹ and a university department, but also frequently involve other stakeholders, such as research institutes, youth health care organizations, or municipal departments.

Theoretically, we reconceptualize and enhance the concept of boundary organizations by building upon work by Miller (2001) and Parker and Crona (2012). Both works emphasize the need to extend the concept in order to adequately incorporate the *processes* that actors involved in boundary organizations need to engage in, and the continuous work this leads to. Both authors also recognize the limitations of the boundary organization concept in understanding settings where science and policy communities considerably overlap, and settings where more than two stakeholders are involved. They argue that it is more realistic to conceive of such settings as hybrid spaces “in which science and politics co-mingle and constituents embody elements of both” (Parker and Crona 2012, 265).

For our analysis, we build on (and extend) Miller’s (2001) notion of “hybrid management.” According to Miller (2001, 480), hybrids are “social constructs that contain both scientific and political elements, often sufficiently intertwined to render separation a practical impossibility.” With the concept of hybrid management, Miller (2001, 480) refers to “the processes by which [hybrids] are constructed, taken apart, and ordered in relation to one another.” He distinguishes between four hybrid management strategies (which will be elaborated in the theoretical part of this article). We also follow Parker and Crona’s (2012, 267) approach by placing at the center of attention the

“continuous process of negotiating among tensions derived from inconsistent demands placed on the boundary organization by different stakeholders.” We argue that an extended focus on *configurations of hybrid management strategies* (which is an important addition to how Miller uses the concept) adequately captures the dynamics of this process.

Theoretically, this article shows that the extended concept of *hybrid management configurations* is useful to study the different accountabilities (including the tensions between them and their process of development) encountered in “hybrid spaces” such as the ACCs. The empirical research for this article focuses on four case studies of collaborative research projects conducted within the context of the ACCs. Crucial in this collaboration process is the balancing act that actors need to perform, between working toward mutual coordination and consensus seeking among the different perspectives and goals of the main actors involved in the collaboration, while simultaneously maintaining legitimacy among the different stakeholders (not only the respective universities and PHSs involved in the ACC but also external stakeholders such as the funding organization). In the discussion, we show whether and how the structure of the ACCs is able to provide the space necessary for the collaborative projects to develop in a collaborative and mutually satisfying way, reconciling various demands.

Next, we describe the Dutch ACCs, exploring some of their main characteristics, and then discuss recent critiques of the boundary organization concept and explore some of the conceptual enhancements provided by Miller (2001) and Parker and Crona (2012). After a description of the methods used, we analyze and interpret four collaborative projects conducted in the ACCs in terms of the hybrid management strategies the different actors use, showing how potential *configurations of hybrid management strategies* are shaped. The discussion elaborates how the diverse accountability demands for hybrid research spaces such as the ACC work out in the collaborative projects and with what consequences. The conclusion summarizes our contribution to the boundary organization and hybrid management concepts.

The National ACC Program

The ACCs were developed in 2005, after several national reports criticized the lack of integration among the research, policy, and practice of public health (Raad voor Gezondheidsonderzoek 2003; Wetenschappelijke Raad voor het Regeringsbeleid 2004). In 2005, the Netherlands Organization for Health Research and Development funded the development of nine ACCs

on diverse topics and fields (health promotion, youth health care, elderly care, infectious diseases) within public health. The ACCs are an infrastructure comprising formal, long-term collaborations between a PHS and a university department, but also frequently involving other stakeholders. They are designed to function as “coordination structures” between local public health policy, practice, and research, with an overall purpose of structurally strengthening and anchoring demand-driven research activities as well as facilitating an evidence-based attitude with professionals and policy makers in the area of public health (ZonMw 2005). Similar formats are receiving attention internationally, such as the Canadian National Collaborating Centers for Public Health and the UK Collaborations for Leadership in Applied Health Research and Care (Medlar et al. 2006; Martin et al. 2011). In public health literature, the development of partnership structures is increasingly seen as a promising way of exposing researchers, policy makers, and professionals to each other’s needs (Lomas 2000; Nutley, Walter, and Davies 2003; Innvaer et al. 2002; Jansen et al. 2008; Mitchell et al. 2009; Young et al. 2002; Elliott and Popay 2000).

The actors involved in the ACCs are explicitly expected by the funding organization to balance a number of different accountability demands. Their work is expected to be of high scientific quality, but other quality criteria (such as practical and policy relevance) are important as well. For this purpose, many ACCs established dual appointments, such as professionals working toward a doctorate in a relevant field and supervised by university researchers. Although the ACCs operate in diverse ways and differ in terms of organizational structures, they share several characteristics.

Within all ACCs, joint research projects are conducted by university researchers and public health professionals. Many ACCs have also developed a more detailed infrastructure aimed to increase interactions and collaboration among university researchers, professionals, policy makers, and other stakeholders. Brainstorming groups, workshops, seminars, dual appointments, and advanced courses for professionals and policy makers are examples of instruments and formats that have been developed.

In 2009, a second period of ACCs was funded by ZonMw, with a further emphasis on the criterion of societal relevance. For example, one of the explicit criteria for additional funding was that new proposals should be clearly practice-based and/or policy-relevant. Much emphasis is, as a result, also placed on this new criterion, making the ACCs an interesting example of a hybrid research space (Parker and Crona 2012) to investigate empirically.

From Boundary Organizations to Hybrid Management Configurations

Although Guston's notion of boundary organizations proved to be tremendously useful for scholars to conceptualize the wide range of organizations and advisory committees that are positioned somewhere "at the interface" between science and policy, more recently scholars have begun questioning the concept's suitability to analyze the increasingly dynamic, fluid, and shifting coalitions (or "boundary configurations," Van Egmond and Bal 2011) that arise between science and policy actors. Moreover, recent work of Parker and Crona (2012) has critically investigated some of the key assumptions within boundary organization theory and suggested a significant reconceptualization. This section first outlines the common characteristics of boundary organizations and investigates the main shortcomings of this concept, building mainly on the works of Parker and Crona (2012) and Miller (2001). We argue that the ACCs are better conceived of as hybrid research spaces and that an investigation into the continuous processes of negotiating and the "balancing act" among the tensions involved in such research spaces is best done by a further enhancement and specification of Miller's hybrid management strategies. We are extending the work of Miller by focusing on the *configurations* of hybrid management strategies, recognizing that the questions of who uses them, with what goal in mind, when, and with what effects are crucial questions for understanding the full dynamics of collaborative attempts within hybrid research spaces such as the ACCs.

Characteristics of Boundary Organizations

The main aim of original boundary organization theory was to analyze how the "potential chaos" of the science/policy boundary can become stabilized in organizations located at the interface of these domains. Boundary organizations "internalize the contingent character of the science/politics boundary" (Guston 1999, 90–91) and, by doing so, stabilize the interface between these domains. Negotiating such contingencies is an important element in the work of these organizations and the more successful the organization is in doing this, the more stable the boundary appears. According to Guston (1999, 93), boundary organizations have three characteristics: (1) they provide a space that legitimizes the creation and use of boundary objects and standardized packages; (2) they involve the participation of both principals and agents, as well as specialized (or professionalized) mediators; and (3) they exist on the frontier of two relatively distinct social worlds with definite lines of responsibility and accountability to each. In

sum, Guston (2001, 401) argues, the boundary organization fulfils an important function in its distinctive accountability lines to two sets of principals.

Recent Critiques of Boundary Organization Theory

While Guston's ideas have been influential, some scholars point to a number of unresolved issues, assumptions, and tensions within the boundary organization concept. Specifically, in their recent work on contemporary university-based boundary organizations, Parker and Crona (2012) discussed three key assumptions that require adjustment. First, boundary organization theory assumes the existence of two clearly separated groups of principals. This distinction—which is also still highly dominant within public health discourse (see Wingens 1990 and Lin and Gibson 2003, for critical examinations)—has become increasingly problematic to maintain, as in many settings there is considerable overlap. Another problematic element in this assumption is that this bilateral approach cannot address complex situations with an increased number of stakeholders. The second assumption of boundary organization theory is that it considers the accountability relationships between different stakeholders as equal (Parker and Crona 2012). However, this assumption does not take into account potential role tensions that influence the organization's efforts to fulfil multiple demands that may be difficult to integrate (cf. Holland 2009; Hessels and van Lente 2010). Third, boundary organization theory assumes that lasting stability can be achieved through the (symmetrical) reconciliation of stakeholder demands, thereby neglecting the potential incommensurability of these demands (which can lead to tensions and forced choices between incompatible outcomes).

The authors conclude that there has not been sufficient attention to the *processes* of boundary management, which is not, they argue, about “stabilizing the ‘boundary’ between abstract sets of principals in either the science or policy domain, [but rather about] a continuous process of negotiating among tensions derived from inconsistent demands” (Parker and Crona 2012, 267). It is exactly this continuous process our analysis focuses on. The most useful concept to explore these issues, we argue, is an extended notion of *hybrid management* (Miller 2001).

Hybrid Management Strategies

In his well-known article, Miller (2001) argued for a refocus of the boundary organization concept in order to explain the activities of such organizations in more complex, contingent and contested circumstances. Miller proposes a

reorientation of Guston's boundary organization concept toward the study of *processes* of hybrid management. This theoretical approach is more explicitly concerned with processes and dynamics. The context of the ACCs shows clear similarities with the context in which Miller distinguished the hybrid management strategies (the boundaries between science, policy, and professional practice are not given in advance, but actively negotiated, and a more complicated set of principals is involved than assumed within boundary organization theory).

The hybrid management concept enables us to analyze how the ACCs work as hybrid research spaces and how the actors involved in the collaborative projects try to balance their perspectives while also trying to handle the different forms of accountability they are confronted with. Miller distinguishes four of these strategies of hybrid management:

1. *Hybridization*: the integration of scientific and political (or normative) elements, for example in economic forecasts or Health Impact Assessments.²
2. *Deconstruction*: the "opening up" of these hybrids to reveal the value-laden assumptions embedded in them (e.g., critically examining assumptions in climate models).
3. *Boundary work*: the establishment and maintenance of dynamic boundaries between science and other domains (e.g., explicitly designating certain activities as political or scientific, cf. Gieryn 1995; Jasanoff 1990).
4. *Cross-domain orchestration*: the coordination of activities within multiple domains, even if they appear to be separate (e.g., informal working groups).

Based on this concept, we investigate how the actors involved in collaborative research projects within the ACCs balance the different perspectives and their associated accountability demands, and what the role of hybrid management strategies is in this process. In addition, we investigate the potential consequences of these strategies (in terms of who uses them, with what specific goal in mind, and with what effects).

Method

Our cross-case analysis compares four collaborative projects conducted within the context of the ACCs. Cases were selected on the basis of variation across several criteria, including theme, duration, and history of collaboration between the partners. On these bases, four cases were selected:

1. the “Healthy in the City” study (conducted within the ACC Centre for Effective Public Health in the larger Rotterdam area);³
2. the “PreCare” project (conducted within the ACC Youth Health Care North-Holland);
3. the project “Acceptance of vaccination among orthodox Protestant groups” (conducted within the ACC Amphi);
4. the “Primus” project (conducted within the ACC Public Health Northern South-Holland).

The methods for data collection included document analysis (project proposals, draft reports, newsletters, and e-mails), observations of meetings and interviews with the main actors, and representatives of the relevant groups in each case study. The document analysis had an exploratory function: we were able to trace the development of the project and identify key actors to interview. We analyzed the documents with this purpose in mind, focusing on items that seemed remarkable (in terms of how the project developed) and required further explanation through interviews (e.g., important changes in the project, shifting goals of the project, changes in composition of project members, differences in research approach, etc.). In addition to the document analysis, we held about ten to fifteen interviews per case study with all relevant actors. In total, we conducted fifty-two interviews with fifty-three persons. We conducted the interviews between April 2008 and December 2009 (depending on the case study). All interviews were transcribed and coded, based on both the topic list and the emerging topics from the interviews. The interview questions focused on gaining a detailed picture of how the projects developed, whether the participants faced problems, how they tried to handle them, their project views and expectations, and their opinions about the final product and process. The coding of the interview transcripts was also based on these themes. The interview transcripts and the thick descriptions (Geertz 1973) that we made for each of the case studies were sent back to the (key) respondents for “member checking” (enabling respondents to read and comment on these transcripts and descriptions, cf. Yanow and Schwartz-Shea 2006).

The subsequent analysis focuses on reconstructions of the four collaborative projects. This requires some methodological justification, as such reconstructions highlight particular elements in the collaboration while leaving other aspects invisible. For example, the analysis mainly centers on the balancing act between mutual adjustment and different accountability demands that the actors within the projects need to conduct. Such an empirical focus necessitates analytical attention to the tensions, dilemmas, controversies, and changes that

are made in the projects, while the process focus makes it harder to draw firm conclusions about how the final outcomes of the projects are perceived. However, despite the inevitable consequences such choices have, we believe that much can be learned from a focus on how the actors in the research projects deal with the multiple “accountabilities” they are confronted with and the strategies and negotiation tactics they use for this purpose.

Organizing Responsive Science in Four Collaborative Research Projects

As described in the introduction, the main goal of the article is to provide an empirically grounded analysis of how the ACCs work as “hybrid research settings” where various accountabilities need to be balanced. We focus on how this balancing of different accountabilities is handled in practice. Below we present the reconstructions of the four collaborative projects, analyzing them in terms of the various “configurations of hybrid management strategies” that can be seen in the data. For each case, however, we start with a quick overview of the projects in order to provide the necessary background information.

The Healthy in the City study

Box 1. Characteristics of the “Healthy in the City” project.

Goals:

To investigate which policy measures are necessary to reduce the health disadvantages of the Rotterdam population in comparison to the average Dutch population.

Through combining known effects on important determinants of health and epidemiologic studies investigating the connections between determinants and public health, the researchers drew up a ‘disease model’ describing the relations between determinants, the prevalence of various diseases, and the consequential mortality caused by these diseases.

This model enabled the researchers to calculate which effects potential policy measures can have on the determinants of public health and, accordingly, what the consequences are of the changes in these determinants.

Duration:

As this project occurred within a specific policy-oriented research format ('Small But Beautiful') aiming to scientifically investigate questions of policy makers and professionals within a relatively short time period (Kreuger, 2007), the duration of the project was no more than six months.

Actors:

Head of research team from the Erasmus Medical Centre (Public Health department)

Diverse range of people from the PHS Rotterdam-Rijnmond

Supervisory group including several PHS-employees from different departments (including the coordinators of the ACC and several heads of departments) who met with the researchers on a regular basis.

Healthy Cities policy group (responsible for broader policy program of the PHS)

Accountabilities:

The *Healthy Cities policy group* is directly accountable to local councillors and aldermen (as the project based on a political vote from local council member) who expect quick results that are usable.

Both the supervisory group and the policy group are accountable to the directorate of the PHS (who expect the research results to be usable for new policy program of the PHS).

The main researcher is accountable to the directorate of Medical Centre (who expect scientific quality and high-level peer reviewed publications).

The researcher and the supervisory group are most directly accountable to the funding organization (ZonMw) of the ACCs (who expect projects within the ACCs to adhere to several criteria and who see the Small But Beautiful-format as a successful way to reconcile scientific research with policy demands).

Acronyms:

PHS: Public Health Service

ACC: Academic Collaborative Centre

MC: Medical Centre

Expectation Management and Researchers “On Stage:” Hybrid Management Strategies in the “Healthy in the City” Project

Important elements in this case study relate to the political setting in which the study has been conducted, as well as the short time period that was available for the researchers. As box 1 shows, a political vote formed the starting point of the project. This vote was assigned to the PHS, who contacted the public health department of the Erasmus Medical Centre (one of the partners in the ACC) to ask whether they would be willing to concretize the proposal to a scientific research project. Local councillors and aldermen were thus important stakeholders in the project. Whereas the main researcher is primarily accountable to the Erasmus University Medical Center (Erasmus MC), the PHS (and especially the policy group that became involved later, see below) is primarily accountable to these councillors and aldermen. The actors in the project thus faced different accountability demands they needed to reconcile.

In terms of hybrid management strategies, we see a strong emphasis on the strategy of *boundary demarcation and maintenance*, which was jointly pursued by the supervisory group of the PHS and the researchers of the Erasmus MC. Both groups felt comfortable with this strictly maintained (formal) role division, in which the researchers of the Erasmus MC were responsible for the *scientific content*, whereas the PHS was responsible for the *policy translation* of the findings. This can be seen as an attempt to divide the different accountabilities the actors in the project faced.

However, while Miller does not discuss to what intended and unintended consequences this may lead, this case study shows how the boundary demarcation strategy had mixed effects on the collaboration. While the strategy proved to be useful for certain legitimization purposes (and gave the PHS the opportunity to release some of the pressure of the challenging proposal they faced⁴), it also led to a divergence of the accountability criteria the project needed to adhere to that were set by the funding organization (i.e., projects needed to be of high scientific quality as well as have clear practical and/or policy relevance). As the criteria of “evidence” and “relevance” became officially separated by the role division, their conceptualizations diverged as well. While “evidence” gained a strong scientific connotation (a focus on a small, demarcated, scientifically sound study), “relevance” became strongly policy oriented (the project had to incorporate as many relevant policy issues as possible).

After the established role division, the researchers from the Erasmus MC conducted the study. During this period, the coordinator of the ACC, together with the supervisory group consisting of several PHS employees,

worked closely with the researchers, meeting on a regular basis. While this collaboration worked smoothly and only led to minor discussions about the structuring of the research design,⁵ the *Healthy Cities policy group* within the PHS only became involved when an internal meeting was organized to present the preliminary results of the study. Here, however, the divergent conceptualizations of the quality criteria rose to the surface, as the meeting proved to be the most important source of disagreement in the project. According to the *Healthy Cities policy group*, which was directly accountable to the aldermen and councillors, the study did not meet their expectations and the results were not considered very useable for the policy program:

This first meeting [...] was like a Babylonian confusion of tongues of researchers on the one side and policy makers on the other side. The research clearly didn't give answers to their questions, and they didn't know what to do with it. In short: it was two hours of chaos. And there was disappointment: the research did not answer the great questions Healthy City stands for—what should we do to make the Rotterdam population healthier? (Interview project coordinator, May 27, 2008)

Here we see how the different primary accountability demands the different groups in the collaboration were facing (i.e., the focus on evidence by the researchers and supervisory group, in contrast to the focus on policy relevance by the policy group of the PHS) led to problems with regard to mutual coordination and adjustment *within* the collaborative. Many of the respondents saw this meeting as a crucial turning point in the project.⁶ The supervisory group consequently tried to manage this issue in two ways: through “expectation management” and through the development of a “scenario approach.” The “expectation management” consisted of a range of informal discussions among the actors involved that took place after the critical meeting discussed above and helped to clarify—and make explicit—the expectations of the different groups. In the scenario approach, specific interventions (and their effects on known health determinants) were clustered into scenarios that were closely connected to the PHS policy program.

In terms of hybrid management, we see that the strategies shifted from boundary work to a combination of cross-domain orchestration and hybridization. Expectation management is a nice example of *cross-domain orchestration*. It consisted mainly of the two coordinators spending much time discussing the aims of the project and making explicit the underlying expectations about the kind of results the project would produce. The development of policy-relevant scenarios shows how successful *hybridization* can take place. The scenarios consisted

of both scientific elements (they are based on the model of the Erasmus MC) and political elements (they are linked to the policy program of the PHS), which were fully intertwined. In this sense, the scenarios reconciled the various accountabilities in one instrument. The scenario approach clustered a wide range of interventions and their potential health effects into coherent packages of policy-relevant scenarios. This proved to be a very successful strategy that most respondents saw as a highly positive adjustment.⁷ The program manager of the PHS policy group embraced the practical usability of the scenarios:

[The Healthy in the City project] was very much research-oriented. But in the end we have sought to translate that [research] to certain images. It's best if you can turn that [research] into images that people can relate to, something they can literally imagine. *A Healthy Youth Has a Healthy Future* [the title of one of the scenarios, RW]: that sounds splendid. That is a nice headstand to reveal a whole story about which things are most effective to emphasize with youngsters. (Interview manager PHS policy department, July 30, 2008)

When these issues were solved, the joint group needed to convince the local aldermen and Councillors of the results of the project. After the internal consensus, this became the primary line of accountability for the actors to focus on. Interestingly, the hybrid management strategies shifted again in the latest phase of the project. In this phase, the strategy of *boundary demarcation* again became crucial: the scientists were—almost literally—put on stage (cf. Hilgartner 2000) and much effort was put into separating the responsibilities of the PHS and the Erasmus MC again. This became apparent when one of the members of the policy department within the PHS discussed how the PHS organized a presentation for the local councillors at the Erasmus MC:

They [the councillors] found it to be very interesting. They also liked very much to be put back into the college banks again. *We purposely did that*. We even literally tried to arrange one of those classical round college rooms, but we did not succeed in that. (Interview policy maker PHS, June 26, 2008, italics added)

Interestingly, through the setting the actors tried to invoke the familiar notion of scientists “speaking truth to power.” It is also a very revealing example of the strategy of boundary work. Partly, this strategy was successful: the quality of the results was not questioned by local policy makers. However, some respondents questioned to what extent these policy makers used the results and the councillor triggering the study argued that in the end, the cost-effectiveness question he was most interested in was not addressed.⁸

The PreCare Project

Box 2. Characteristics of the “PreCare” project

Goals:

The main aim of the total PreCare program is prevention of child neglect by high-risk teenage mothers.

The goal is twofold: first investigating the effectiveness of the PreCare intervention in the Dutch context through a randomized trial design, and second, to implement the PreCare intervention (nationally) if it is shown to be effective.

More specifically, the goal of the intervention is to improve pregnancy – and birth – outcomes for both mother and child, improve the health and development of the child, and improve the personal development and opportunities for education and work for the mother.

Duration:

In the intervention, risk factors for child abuse and severe growth and development problems are systematically dealt with (through an extended series of +/- 60 home visitations) in a period of 2 ½ years (starting during pregnancy and lasting until the child is two years old).

The research follows a ‘traditional’ time-schedule of four years.

Actors:

Researchers and interviewers of the Free University Medical Centre conducting the trial

Employees of the Netherlands Youth Institute coordinating the implementation

Managers of the involved youth health care organizations (20 in total) facilitating the program in their organizations

Nurses conducting the intervention

The trainers of the nurses

Accountabilities:

The researchers conducting the trial are directly accountable to the US program developer (who placed tight restrictions on the Dutch

version of the intervention, as he sees ‘PreCare’ as fourth major trial, in which there are several non-negotiable criteria).

The researchers are also accountable to the Free University Medical Centre (‘robust’ scientific quality through trial design is considered of crucial importance, not only to maintain strong position in area of youth health care, but also to be able to make large-scale implementation of PreCare in The Netherlands possible).

All actors are accountable to the municipalities funding (parts of) the program (who are less interested in strict evidence criteria but mainly want to see visible results, in terms of number of participants included in the intervention). This accountability is most directly experienced by local nurses and managers.

The nurses are directly accountable to other (local) professionals (who are called upon to refer potential candidates to the PreCare-nurses; they want to see the result of their efforts rather than seeing potential candidates ‘disappear’ into the control group).

Acronyms:

NFP: Nurse Family Partnership

MC: Medical Centre

RCT: Randomized Controlled Trial

While the “Healthy in the City” project entailed collaboration between researchers and policy makers, the “PreCare” project mainly focused on collaboration between researchers and practitioners (although, as Box 2 shows, there are distinctive accountability lines to municipalities as well). Compared to the policy-oriented format of the previous case study, this case study also saw scientific accountability criteria being relatively strictly defined, as one of the conditions the US initiator of the program imposed on the Dutch research team was that the implementation of the intervention in the Dutch context should be rigorously investigated by means of a controlled trial design.

Flexibility within Strict Boundaries: Hybrid Management Strategies in the “PreCare” Project

One of the things that makes the PreCare project a fascinating case is the mutual dependency of researchers and professionals (nurses). The

researchers need the professionals to comply with the randomized controlled trial (RCT) design and to provide feedback on the intervention design, but at the same time the professionals need the researchers to legitimize the costly intervention to municipalities and other care professionals. The clear accountability demands placed on the researchers by the US developer, as well as the Free University's demands, necessitated a strict research design in which potential candidates are randomly distributed to a control group or an intervention group. Furthermore, the intervention program is highly structured: the nurses have three extensive manuals (containing detailed protocols for each visit) to work from.

The project is characterized mainly by a clash between the strict character of the trial design (necessitated by the accountability demands outlined above) and the practical situations the nurses saw themselves confronted with (i.e., facing a group with multiple problems, such as poor housing, substance abuse, and violence). The fundamental difficulties nurses experience are explained by one of the nurses:

I think it is very difficult. At the same time you offer something, a very nice program, and actually you offer help [. . .], but it can also be that you have to say, "I am sorry, but you are in the control group." [. . .] So you offer something, and at the same time you take it away. That is very strange. [. . .] Morally or ethically I do not find this a good way of conducting research. (Interview PreCare nurse, July 28, 2008)

These fundamental difficulties proved to be unsolvable, as the nurses continuously kept questioning the trial design. In terms of hybrid management strategies, we see that the nurses continuously try to *deconstruct* the RCT design (especially the accompanying distinction between a control group and an intervention group). They aim to reveal the assumptions of this design (the idea of a universal application of the intervention and the assumption that the highly complex and problematic practices can be standardized) and point to the ethical implications incorporated in the design (high-risk teenage mothers in need of care are withheld from a potentially very successful intervention). In essence, they try to show that *every* choice in the design is necessarily political or ethical.

The continuous difficulties can be explained by one of the accountability lines the nurses had to take into account. In the context of the program, the nurses were dependent upon other professionals (e.g., midwives) to have potential candidates for the intervention referred to them. This means that the nurses were also partly accountable to these other

professionals, who expected to see the clients they referred included in the program. Although in no way formalized, many nurses highlighted the importance of this line of accountability: if too many potential candidates “disappear” into the control group, other professionals might feel less inclined to continue referring potential candidates to them. However, while the nurses question the design as such, they are not able to generate many changes.

Although the nurses were not able to find alternative ways to conduct the trial, it does not mean that the researchers were completely oblivious to their complaints. As the researchers are also dependent on the motivation and “goodwill” of the nurses, the research team tried to find ways to manage this “fidelity-flexibility dilemma” (cf. Cohen et al. 2008; Glasgow, Lichtenstein, and Marcus 2003; Godwin et al. 2003; Jansen et al. 2006; Kendall and Beidas 2007). They did so in several ways. First, by relying on an extensive formal infrastructure, such as regular management meetings, case conferences (to bring together Pre-Care nurses of different organizations) and basic trainings, and local peer groups. These attempts can be seen as examples of *cross-domain orchestration* and consist of a large variety of procedures and meetings (which are all elements in the coordination of activities and the “orchestration” of professional behavior in line with research demands; see Wehrens and Bal 2012).

The strategy of cross-domain orchestration was not the only strategy used by the researchers. Perhaps even more effort was put into preventing the deconstruction of the research design through *boundary demarcation and maintenance*. For one, the boundaries of the trial design are hard and nonnegotiable. Even though flexibility is emphasized, this can only take place within the limits of these strictly set boundaries (which, as explained above, stem directly from the accountability line from the researchers to the US program developer). Another instance of boundary demarcation can be seen in the establishment of a specific expertise group (a small group of key actors, such as the program developer in the Netherlands), who decided on “ambiguous cases” not fitting all selection criteria. The rigid criteria—needed to ensure the program fidelity—sometimes clash with both the practical situations the nurses find themselves confronted with and the pragmatic application of the multi-interpretible criteria. Nurses could sign up these ambiguous potential candidates for discussion in the expertise group. While the nurses were positive about this, it can also be read as an attempt to *scientifically legitimize* whether potential candidates in the “gray area” can be

incorporated in the program or not. It thus serves a clear purpose: the demarcation of this choice from nurses to experts, thereby scientifically legitimizing the decisions. Although both the case conferences and the expertise group were highly appreciated by the nurses, the project still encountered an uneasy fit between scientific accountability demands and local support. In some cases, despite the boundary demarcation strategy employed by the researchers, the nurses considered the accountability lines to local professionals and municipalities to be more important. Some of the involved youth health care organizations experimented with alternative, “watered down” versions of the PreCare program for candidates that were attributed to the control group (obviously not favored by the researchers, who nevertheless could do little to prevent this).

The preceding analysis mainly addressed the ways in which the actors in the PreCare project tried to balance scientific accountability criteria and the concerns of the nurses (which also related to other accountabilities, such as local professionals and municipalities). The accountability to local municipalities is also important for the researchers and other actors in the project, however. The main question here relates to the costs of the program. How do the researchers legitimize these costs to the local sponsors—in this case, the municipalities? Here, two main strategies can be distinguished. First, the researchers offered the program as a “package-deal” only, which means that municipalities interested in the program commit themselves to participate in the RCT. Municipalities wishing to engage with the intervention thus had to participate in the trial as well. However, the deal also entailed that interested municipalities only had to pay for the costs of the personnel. As long as they are part of the trial design they do not have to pay for the intervention itself. In a way, this approach can be interpreted as an instance of *hybridization*: the preventive program and the accompanying research become intertwined. Second, the project team made clear arrangements with the local youth health care organizations about when to establish contact moments between the researchers and municipal actors. The rationale behind this was that local youth health care organizations would be best suited for maintaining productive contacts with municipalities. Direct contact between the researchers and local municipalities was considered counterproductive.^{9,10} Interestingly, this reflects the hybrid management strategy of *boundary demarcation*. We then see that the actors involved need to conduct different forms of hybrid management, at different moments and for different purposes.

The “Acceptance of Vaccination” Project

Box 3. Characteristics of the “Acceptance of vaccination” project

Goals:

The project Acceptance of vaccination amongst orthodox Protestant groups aims at mapping the motives of (different denominations of) orthodox Protestants to apply for – or refuse – vaccination against common infectious diseases.

As a high percentage of these orthodox Protestants refuse to apply for vaccination against common infectious diseases, this frequently leads to infection outbreaks (Ruijs et al., 2011).

Duration:

The research follows a ‘traditional’ PhD-trajectory of four years.

Actors:

PhD student from PHS Tiel-Rivierenland

Researchers (PhD supervisors) of the UMC St. Radboud

Advisor from the Netherlands Patient Organization (a large patient centered organization with a Biblical foundation)

External advisory committee consisting of a diverse range of people (including professors in various departments, as well as a director of a Public Health Service and ‘respectable’ persons from the target group – such as an ex-mayor and a general practitioner)

Accountabilities:

The PhD student and researchers are directly accountable to the target group of orthodox Protestants (many of whom are skeptical about the research and need to be convinced about the usefulness of the project).

They are also accountable to the Netherlands Patient Organization (that needs to be ensured that the researchers are respectful towards their target group).

Acronyms:

NPO: Netherlands Patient Organization

PHS: Public Health Service

UMC: University Medical Centre

While the issue the “PreCare” project aimed to address was appreciated by both researchers and practitioners, the third case study showed a more ambivalent attitude toward the added value of the collaborative project—at least from the perspective of the target group. As Box 3 shows, this critical target group is one of the main stakeholders to whom this project needs to be accountable. This target group of orthodox Protestants is extremely difficult to enter as an “outsider.” The project is also characterized by a high level of political sensitivity and receives much media attention. Although the project is characterized by its politically sensitive question, there is little immediate political (time) pressure behind the project, as was the case in the “Healthy in the City” project. The target group, however, fearing stigmatization, was critical about the project and therefore needed to be convinced about the usefulness and added value of the project. Therefore, the main accountability work in this project consisted of convincing this critical target group, for without their participation the project would be doomed to fail. There is another important accountability line to the Netherlands Patients Organization that was willing to help the researchers, but needed to remain convinced about the respectful and sincere approach of the researchers.

Seclusion While Showing Sincerity: Hybrid Management Strategies in the “Acceptance of Vaccination” Project

In terms of coordination and mutual adjustment, however, the project members had to balance a wide range of issues. The PHS, the intermediary groups, and the university researchers had different motivations to participate in the project. For the researchers, the main goal of the project was to gain *insights* into the extent of vaccination acceptance of orthodox Protestants, as well as their motives (social as well as individual) to accept or refuse vaccination. However, the nonprofit organization (NPO) mainly aimed to inform the members of their organization, to enable them to make a *well-informed* decision with regard to vaccination. These different goals were coordinated by the NPO and the researchers by accentuating common ground between these groups (while downplaying differences), but also by developing a digital questionnaire, which became an important boundary object (Star and Griesemer 1989). Star and “Griesemar” (1989, 393) define boundary objects as “objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites.” The web-based questionnaire, which was developed in close cooperation with the NPO,

clearly resonates with this concept. The questionnaire also has a solid basis that makes it robust enough to be recognizable: it is a questionnaire aimed to gain insights into the target group of orthodox Protestants. At the same time, the questionnaire is plastic enough to adapt to diverse needs. For the researchers, it was an important research method that led to reliable information that could be used to answer the research questions, whereas for the NPO, it was more important as a PR tool to gain insight into the information needs of the target group:

With these youngsters we actually only wanted to know: what is your denomination, and which vaccinations did you get? But the NPO [...] wanted to know what their information needs are. So a couple of questions were added. That is also the “decoration” of the question: if you only ask these two questions, people will obviously become suspicious. But if you add these kinds of questions concerning information needs, than the questionnaire will only become more acceptable for the target group, while at the same time the NPO could also make use of it. (Interview senior researcher, March 25, 2009)

This quote also illustrates the *scientific importance* of the additional questions (or the “decoration” of the survey) the NPO asked—not in terms of content but in terms of acceptability: more acceptability will lead to more respondents, which increases the “robustness” of the findings. In terms of hybrid management strategies, the development of this questionnaire can be seen as a particularly successful instance of *hybridization*.

One of the main characteristics of the project became the struggle for legitimacy by a critical target group. The target group can be seen as the most important stakeholder to whom this project needs to be accountable. This group, having grown weary of research into their motivations and fearing policy and media controversy, needed to be convinced about the researchers’ intentions. One of the main critiques and fears of the target group is that the research was an attempt to force orthodox Protestants to become vaccinated. In a way, the target group thus employed the strategy of *deconstruction* by criticizing the research because of its perceived “hidden,” normative dimension. One of the accountability demands that members of this target group therefore implicitly placed on the researchers concerned a withdrawal of any intervening measures based on the findings. This demand can, however, be seen as conflicting with the general aim of PHSs in the Netherlands, which seeks to promote health and to implement interventions and programs to facilitate

this. Some respondents expressed that the final aim of the project should be to develop target-specific approaches to increase vaccination coverage among this group.¹¹

The strategy used by the project group to counter these criticisms of perceived normativity is *boundary demarcation*: they tried to establish and maintain clear boundaries by walling off the project. The project team aimed for seclusion as much as possible without becoming too suspicious.¹² Seclusion was not the only strategy used, however. At some points in the project, other strategies became important. One of these moments necessitated crucial changes in the project and made the importance of the accountability demands quickly visible for the researchers. In the second year of the project, the original method of a questionnaire for pupils of orthodox Protestant secondary schools had to be abandoned by the researchers, as the schools refused to participate. Consequentially, the project team needed to change its original research protocol while “selling” the research as sincere and genuine toward their target group. Collaborating with intermediaries was important for the project team, as it positively influenced the ways in which the research was perceived by the target group.

The involvement of the NPO was crucial in several ways. First, they provided detailed insights into how the target group should be approached, including subtle, tacit knowledge about which formulations to use and which ones to avoid. For example, the scientific phrase “chance reduction” (a perfectly legitimate scientific way of describing the prevention of infectious diseases) was considered highly problematic for the target group, since the phrase leaves no space for the Providence of God. Therefore, the NPO recommended using the term “precautionary measure” instead.¹³ Second, the researchers could build upon the trustworthy status of the NPO and the advisory committee. In this, we can see the strategy of *cross-domain orchestration*: even though the research is secluded as much as possible, the project team closely collaborates with representatives from the target group.

The continued involvement of the NPO could not be taken for granted, however. As an organization that has firm roots within the target group, they expected the research team to refrain from judgments about this group. While the cooperation with the NPO was of strategic importance to increase the acceptance of the target group, the trust the NPO put in the integrity of the research team needed to be continuously guarded as well. For example, the “leaking” of the research to public media could have direct repercussions.

The Primus Project

Box 4. Characteristics of the “Primus” project

Goals:

The main aim of the ‘Primus’ project is to develop evidence-based programs for health promotion in older people, based on the needs of the various target groups and the state-of-the art in international literature.

The project specifically focuses on the development of a preventive health centre for the elderly.

Duration:

The research follows a ‘traditional’ PhD-trajectory of four years.

Actors:

Researchers located at the LUMC (one with a background in psychology and epidemiology and the other a trained MD, specialized in social medicine)

Scientific committee referred to as ‘Large Primus’, in which five experts participate, among which the supervisors and co-supervisors of both researchers

A diverse range of people from the 3 participating Public Health Services (The Hague, Holland Central; and Western South-Holland)

Senior researcher with expertise in elderly care from TNO Quality of Life (a national health care expertise centre)

Accountabilities:

The researchers and (part of) the scientific committee are directly accountable to the Leiden University Medical Centre (as the public health department involved in the collaboration within the ACC was a new department in the Medical Centre, this department still needed to establish itself).

The researchers and the participants from the PHS’s are accountable to the directorates of these PHS’s (who expect practical tools in order to establish preventive health centres).

Acronyms:

ACC: Academic Collaborative Centre

LUMC: Leiden University Medical Centre

PHS: Public Health Service

The previous case studies discussed collaborative projects that all struggled to deal with the multiple accountability demands, which are often perceived as unequal in terms of their importance, that they are facing in the context of the ACCs. Working within hybrid research spaces turned out to be difficult, but we also saw that solutions were possible. In the fourth case study, however, workable solutions proved difficult to find.

Rigid Scientific Quality Criteria and Limited Room for Consensus: Hybrid Management Strategies in the “Primus” Project

Within this project, it proved difficult for the actors involved to balance their different perspectives with the accountability demands with which the project was confronted. The different perspectives relate to the different backgrounds of the PhD researchers (one with a health promotion background, the other trained as a medical doctor), which gave rise to different *scientific* perspectives. In terms of accountability demands, this project was mainly occupied with the dominant accountability demands of the Leiden University Medical Centre (LUMC). As this research project is conducted within a newly established department, which therefore still needed to establish itself within the LUMC, the researchers and supervisors felt the need to rigidly maintain the quality standards usually entertained by LUMC research projects (i.e., a narrow, medical orientation toward evidence).

The difficulties in balancing the different scientific perspectives in the project became most visible during the remarkable decision within the course of the project to have the two main researchers and their supervisors pursue different trajectories. The main causes for this separation related to the difficulties of coordinating the different scientific perspectives as well as the dominant accountability demands (and these difficulties were enhanced by the strategic interests of the LUMC). The first cause relates to the *different scientific perspectives* (which can be labeled a “medical perspective” and a “health promotion perspective”) that prevailed in the project. These perspectives did not match very well, due to their different focus (a narrow focus on preventive screenings vs. a broader focus on acceptability and outreach). During the project, these differences led to several discussions among the researchers and their supervisors about important issues, for example, with regard to screening (where to screen for, which screening methods are evidence-based, but also how to motivate people to take appropriate actions based on the screening results). It also led to ongoing discussions on other elements, such as the definition of the notion of “intervention:”

That was the cause of miscommunication all the time, because when we were discussing the intervention, the question was always: “in which setting are we going to do that?” And that is something else than [the question of] *what* are you going to do specifically? [...] You can think about which group you want to reach and where you want to screen them for. [But] you can [also] think about how you are going to motivate people to show up [and] do something with the screening result? That were things that were less relevant [from a medical perspective], but should have a key role from a [health promotion perspective]. (Interview supervisor PhD student 2, March 16, 2009)

From the medical perspective, the most relevant question was what to screen for, whereas from the health promotion perspective this question was not relevant unless the target group was properly reached and motivated. While these different questions seem to complement each other quite well, in this project they remained examples of diverging perspectives.

Another important example in which the diverging perspectives become visible relates to the ways in which the accountability criteria of “scientific quality” and “practical relevance” are conceptualized. As discussed before, both are important criteria according to the organization funding the ACCs. During the project, however, there was a lack of agreement between participants on the interpretation of these criteria. According to some respondents, the project was not science-driven at all, since it originated from a question that was put forward by one of the PHSs.¹⁴ However, other respondents argued that although the project may have originated from a practical question, the role of the LUMC had become too dominant. From their perspective, whether a project is “practically relevant” or not depends on more than “who asks the question.”¹⁵ While one of the main accountability demands (from the PHSs) related to the practical tools for developing preventive health centers the project should lead to (see Box 4), within this project the strict scientific accountability demands of the LUMC superseded these professional demands.

In terms of hybrid management strategies, the project is characterized by an overarching focus on the strategy of *boundary demarcation*. Interestingly, in this project, it is not mainly boundary work in terms of cultural groups (distinguishing “science” from “professional practice”) that is being enacted, but boundary work *between scientific disciplines* (the diverging medical and health promotion perspectives). Especially during the later phases of the project (with the development and testing of pilots), this boundary work became prominent. Whereas the researchers from the “medical group” focused primarily on evidence-based medical screening methods, the “health promotion group” emphasized issues of lifestyle and proper design of the pilots.

The reasoning behind this approach becomes clearer when taking the context of the ACC and the still relatively unstable position of the public health department into consideration. With regard to the collaboration between the LUMC and the different PHSs within the ACC, several respondents noted that the lack of preexisting relationships made the starting conditions suboptimal.¹⁶ The unstable departmental position led to an overarching emphasis on the (rigid, medically oriented) accountability criteria of the Medical Centre, leaving little to no room for concessions. For the researchers of the public health department, it was crucial that their new department gained a strong and stable position in the organization. Although the ACC could count on support from the strategic level of the LUMC, this support was also fragile—and in terms of overall performance based on research output, the ACC did not rank high.¹⁷ This explains the unequal attention given to the different accountability demands this project needed to reconcile (and failed to do).

The difficulties in reconciling different scientific perspectives (as well as the different accountability demands) in the project then do not only depict an unwillingness (or unease) to engage in transdisciplinary science, but also reflect limitations through rigid and dominant accountability lines to the LUMC. For the public health department, the need to rigorously maintain scientific criteria was particularly high, given their relatively unstable position. At the same time, however, the participants did not put much effort into the strategy of *cross-domain orchestration*. There was for example little contact between the PHSs and the Medical Centre. The researchers only provided an occasional newsletter to keep professionals from the diverse PHSs informed, but this newsletter appeared very infrequently. From the other side, many professionals from the PHSs did not seek active involvement (or stopped doing so). Possibly because of this lack of mutual involvement, we see no traces of hybridization or deconstruction in this project.

Discussion

The case studies reveal various hybrid management strategies, often applied by different groups and with different aims in mind. All case studies highlighted the dual process (to coordinate the activities and relationships between the participating actors while simultaneously struggling with the sometimes incommensurable accountability demands they are subjected to) the actors involved in hybrid research spaces such as the ACCs needed to engage in. Hybrid management is what constitutes the work that is done to manage or balance these tensions.

Configurations of Hybrid Management Strategies

The analysis showed how hybrid management strategies featured in *various configurations* in the case studies. They were not employed in isolated ways. This is an important addition to the way in which Miller (2001) explored the concept. While Miller distinguishes between four forms of hybrid management, he hardly explores how they relate to each other in different contexts, how they were used, and for what specific purposes. Each case study provides valuable insights that enrich our understanding of the hybrid management concept.

The first contribution of this article to the hybrid management concept is that it showed how hybrid management strategies can lead to *different results in different moments*. The *Healthy in the City* case study, for example, showed how the strategy of boundary demarcation and maintenance was more effective at the end stages of the project (the results were never questioned by the local councillors due to the emphasis on scientific rigor) than at the starting phases (where it led to the exclusion of the crucially important policy group within the PHS). In contrast, the *Primus* case study showed how the strategy of boundary demarcation became increasingly problematic during the course of the project, as several groups began to feel more and more excluded.

The second contribution of this analysis is that it highlighted how hybrid management strategies can *simultaneously be useful and problematic* for different aspects. The “Healthy in the City” case study showed how the boundary demarcation strategy had clear disadvantages (a divergence of accountability criteria), but it also had the advantage that the PHS was able to release some of the political pressure behind the proposal. A related example can be seen in the “Acceptance of vaccination” case study. In order to prevent the research from becoming too politicized and open to critical scrutiny from the target group, the project group employed the strategy of boundary work to seclude the research as much as possible. Whereas this worked quite well in “sealing off” the research to the critical target group, the project group was also very much aware of the need to carefully apply this strategy in order to avoid becoming too secretive (which would lead to more scrutiny). Furthermore, cross-domain orchestration with some representatives of the target group was needed as well.

The third contribution of our work is that it showed how *hybrid management strategies can be used for divergent or even opposite goals* when they are used by different groups. In the “PreCare” case study, we saw how the nurses continuously tried to deconstruct or open up the RCT design, while the researchers countered this strategy with a combination of cross-domain

orchestration and boundary work. In addition to Miller, this observation shows that different hybrid management strategies may be used simultaneously by different actors who are pursuing different goals. A second example of this could be seen in the “Acceptance of vaccination” case study, which also showed how different strategies are employed by different groups. The strategies of the participants collaborating in the project are examples of cross-domain orchestration and hybridization (e.g., the questionnaire). However, with regard to the relation between the participants and the target group, a different set of hybrid management strategies can be seen. Here, boundary work was the main strategy used in order to seclude the research as much as possible. In this case study, hybrid management strategies are not so much directly opposed to each other, but rather enacted for divergent purposes toward different groups.

The Potential and Limits of Hybrid Research Spaces

When reflecting on these findings, it is important to position them within the specific context of the ACCs. The ACCs need to take into account different criteria (academic quality *and* “socially robust knowledge”), which may not always be easily intertwined or considered equally important. In theory, however, they do provide the space necessary for the collaborative projects to develop. We argue, however, that there are also clear limitations to what hybrid research settings such as the ACCs can achieve.

One of the main issues that appears from our analysis is the paradoxical and disproportionate character of how these different accountabilities work out in the context of the ACCs. The paradoxical character relates to the balance between reaching consensus and maintaining the legitimacy that such collaborative projects need to establish. When the processes and products of such settings are put under a magnifier, however, this may have counterproductive effects, because the balance shifts to issues of legitimacy and the room for negotiations and mutual adjustments becomes threatened. This is exemplified most clearly in the “Primus” case study, where due to the overarching emphasis on issues of legitimacy for the Medical Centre (as seen in the rigidly maintained accountability criteria) very little room remained for balancing the different goals and perspectives the actors in the project had. However, the “PreCare” case study also continuously highlighted how the actors needed to deal with quite strict accountability demands (exemplified by the demands from the US program developer) without sacrificing the space to make practical adjustments (see Wehrens and Bal 2012, for a fuller exploration of this).

On the more general level of the ACCs, this can also be seen during the first funding period, when the ACCs faced challenging accountability pressures from the funding organization (such as regular annual progress reports, visitations, and journalists), all focusing on showing immediate achievements and results. In other words: when each decision needs to be legitimized, it is hard to reach consensus about anything.

The cross-case analysis also showed the *disproportionate* ways in which the different accountabilities were weighed in the ACCs. The criterion of societal relevance is expected to be a primary part of the ACCs, as the funding criteria and the official documents accompanying the program explicitly mention. However, our analysis showed that scientific quality criteria are still decisive in many instances. Whereas adjustments to scientific criteria are often seen as *improvements* to the collaborative study design, adjustments to policy and/or practice quality criteria are often seen as (potential) *deteriorations* of the design and usually required a substantial crisis before they were included. This resonates with the analysis of Parker and Crona (2012), who show that actors within hybrid research spaces often face tensions between different demands, some of which are considered more urgent, and therefore some demands are prioritized over others.

The ACCs have high potential as hybrid research settings that come together and reconcile a variety of demands from different stakeholders. There are, however, also inherent limitations to what can be achieved. The different accountability criteria are not so flexible that any compromise is possible in the collaborative projects. In theory, the ACCs are able to provide an experimental and relatively “sealed” safe interior space in which the different actors can freely discuss and balance their different perspectives in order to reach a compromise that would satisfy all involved. However, the case studies show that the structure of the ACC has not been sufficiently positioned as such an experimental space, which would consequentially assess projects on different criteria than regular research projects. Such a more explicit acknowledgment of the experimental character of the ACCs would render the different accountability criteria more equally important. Now, the emphasis on scientific quality criteria (which were also decisive in the funding of new collaborative projects) and the continuous involvement of ZonMw provided policy and practice actors in the case studies with little opportunities to incorporate other criteria.

Conclusion

This article started with the observation that additional criteria of “social robustness” in science governance gave rise to a plethora of

(novel) organizational formats and forums in which multiple, often competing demands need to be balanced. Such formats are often trans-disciplinary in character and include various stakeholders. Traditionally, Guston's (2001) notion of boundary organizations has been seen as one of the major concepts to make sense of such settings. In this article, we questioned whether this concept is able to explain in detail how the actors involved in such boundary organization settings actually deal with the multiple "accountabilities" they are confronted with. We followed the recent contribution of Parker and Crona (2012), whose article explicates the kind of challenges boundary organizations face due to the sometimes incommensurable demands they are subjected to. Similarly, in our analysis of the collaborative projects within the ACCs, we focused on the tensions that continuously need to be negotiated.

Extending Miller's (2001) analysis of hybrid management strategies, our empirical material highlighted the various *configurations* in which these hybrid management strategies occur. The main theoretical contribution lies in its in-depth empirical exploration of these configurations. This article showed that hybrid management strategies can lead to different results in different moments, that they can simultaneously be useful and problematic for different aspects, and that they can be used for divergent or even opposite goals when they are used by different groups. An analytical focus on the various hybrid management configurations in collaborative research projects deepens our understanding of what is going on within hybrid research settings such as the ACCs.

Future empirical analyses of these kinds of settings need to pay more explicit attention to such hybrid management configurations, as they provide a lens through which to understand the different accountabilities that are present in different levels and equalities. We showed that the hybrid management concept can be used to explore much more of the "balancing work" within collaborative research settings than hitherto has been the case. There remain several future challenges for this kind of work. One of the most interesting avenues for future research is to investigate whether it is possible to distill or differentiate between more and less successful strategies. Can we find regularities in which hybrid management strategies work best at which moments? The complexities and divergence in the empirical case studies do not allow for a synthesis of this kind, but future work may be better equipped for this.

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Notes

1. Public health in the Netherlands is largely organized on a local level, where municipalities are obliged to set four-yearly policy plans that are then executed by Public Health Services. Except for the larger cities, like Rotterdam and Amsterdam, most PHSs serve several municipalities.
2. See for examples the work of Van Egmond and Bal (2011) and Bekker (2007).
3. See Wehrens, Bekker, and Bal (2010, 2011) for specific analyses of this project.
4. Interview project coordinator (May 27, 2008).
5. Interview main researcher (May 14, 2008).
6. Interviews project coordinator (May 27, 2008) and second coordinator Centre for Effective Public Health in the larger Rotterdam area (June 10, 2008).
7. Interviews project coordinator (May 27, 2008), main researcher (May 14, 2008), and manager PHS policy department (July 30, 2008).
8. Interviews senior researcher PHS (June 11, 2008) and member of city council initiating the study (June 24, 2008).
9. Interview Dutch initiator of PreCare (October 1, 2008).
10. Interviews senior researcher Vu University Medical Center (July 3, 2008) and (former) project coordinator (July 22, 2008).
11. Interview senior researcher (March 25, 2009a).
12. Interviews senior researcher (March 25, 2009a) and professor of Public Health (March 25, 2009b).
13. Interview external advisor, NPV (April 21, 2009).
14. Interview head of Public Health department (February 27, 2008).
15. Interview head of department Health Promotion, PHS (February 13, 2009).
16. Interviews program manager Tno (April 6, 2009) and head of department Health Promotion, PHS (February 13, 2009).
17. Interview head of Public Health department and ACC coordinator (June 25, 2010).

References

- Bekker, Marleen. 2007. *The Politics of Healthy Policies. Redesigning Health Impact Assessment to Integrate Health in Public Policy*. Delft, the Netherlands: Eburon.
- Bijker, Wiebe, Roland Bal, and Ruud Hendriks. 2009. *The Paradox of Scientific Authority: The Role of Scientific Advice in Democracies*. Cambridge, MA: MIT Press.

- Braun, Kathrin, and Cordula Kropp. 2010. "Beyond Speaking Truth? Institutional Responses to Uncertainty in Scientific Governance." *Science, Technology, & Human Values* 35 (6): 771–82.
- Cohen, Deborah J., Benjamin F. Crabtree, Rebecca S. Etz, Bijal A. Balasubramanian, Katrina E. Donahue, Laura C. Leviton, Elizabeth C. Clark, Nicole F. Isaacson, Kurt C. Stange, and Lawrence W. Green. 2008. "Fidelity versus Flexibility: Translating Evidence-based Research into Practice." *American Journal of Preventive Medicine* 35 (5, Supplement 1): S381–89.
- Elliott, Heather, and Jennie Popay. 2000. "How are Policy Makers Using Evidence? Models of Research Utilisation and Local NHS Policy Making." *Journal of Epidemiology and Community Health* 54 (6): 461–68.
- Etzkowitz, Henry, and Loet Leydesdorff. 2000. "The Dynamics of Innovation: From National Systems and "Mode 2" to a Triple Helix of University–Industry–Government Relations." *Research Policy* 29 (2): 109–23.
- Etzkowitz, Henry, Andrew Webster, Christine Gebhardt, and Branca Regina Cantisano Terra. 2000. "The Future of the University and the University of the Future: Evolution of Ivory Tower to Entrepreneurial Paradigm." *Research Policy* 29 (2): 313–30.
- Funtowicz, S. O., and J. R. Ravetz. 1993. "Science for the Post-normal Age." *Futures* 25 (7): 739–55.
- Geertz, C. 1973. "Thick Description: Towards an Interpretive Theory of Culture." In *The Interpretation of Cultures*, edited by C. Geertz, 3–32. London, UK: Hutchinson & Co.
- Gibbons, M., C. Limoges, H. Nowotny, S. Schwartzman, P. Scott, and M. Trow. 1994. *The New Production of Knowledge*. London, UK: Sage.
- Gieryn, Thomas F. 1995. "Boundaries of Science." In *Handbook of Science and Technology Studies*, edited by Sheila Jasanoff, Gerald E. Markle, James C. Petersen, and Trevor Pinch, 393–443. Thousand Oaks, CA: Sage.
- Glasgow, Russell E., Edward Lichtenstein, and Alfred C. Marcus. 2003. "Why Don't We See More Translation of Health Promotion Research to Practice? Rethinking the Efficacy-to-effectiveness Transition." *American Journal of Public Health* 93 (8): 1261–67.
- Godwin, Marshall, Lucia Ruhland, Ian Casson, Susan MacDonald, Dianne Delva, Richard Birtwhistle, Miu Lam, and Rachelle Seguin. 2003. "Pragmatic Controlled Clinical Trials in Primary Care: The Struggle Between External and Internal Validity." *BMC Medical Research Methodology* 3 (1): 28.
- Guston, David H. 1999. "Stabilizing the Boundary between US Politics and Science: The Role of the Office of Technology Transfer as a Boundary Organization." *Social Studies of Science* 29 (1): 87–111.
- Guston, David H. 2001. "Boundary Organizations in Environmental Policy and Science: An Introduction." *Science, Technology, & Human Values* 26 (4): 399–408.

- Hessels, L., and H. van Lente. 2010. "The Mixed Blessing of Mode 2 Knowledge Production." *Science, Technology & Innovation Studies* 6 (1): 65–69.
- Hessels, L., H. van Lente, and R. Smits. 2009. "In Search of Relevance: The Changing Contract between Science and Society." *Science and Public Policy* 36 (5): 387–401.
- Hilgartner, Stephen. 2000. *Science on Stage: Expert Advice as Public Drama. Writing Science*. Stanford, CA: Stanford University Press.
- Holland, Dana G. 2009. "Between the Practical and the Academic." *Science, Technology, & Human Values* 34 (5): 551–72.
- Innvaer, S., G. Vist, M. Trommald, and A. Oxman. 2002. "Health Policy-makers' Perceptions of their Use of Evidence: A Systematic Review." *Journal of Health Services Research & Policy* 7 (4): 239–44.
- Irwin, A. 2006. "The Politics of Talk." *Social Studies of Science* 36 (2): 299–320.
- Jansen, Maria W. J., Nanne K. De Vries, Gerjo Kok, and Hans A. M. Van Oers. 2008. "Collaboration between Practice, Policy and Research in Local Public Health in the Netherlands." *Health Policy* 86 (2-3): 295–307.
- Jansen, Yvonne, Roland Bal, Marc Bruinzeels, Marleen Foets, Rianne Fenken, and Antoinette De Bont. 2006. "Coping with Methodological Dilemma's: About Establishing Effectiveness of Interventions in Routine Medical Practice." *Biomed Central, Health Services Research* 13 (6): 160.
- Jananoff, Sheila. 1990. *The Fifth Branch: Science Advisers as Policymakers*. Cambridge, MA: Harvard University Press.
- Kendall, Philip C., and Rinad S. Beidas. 2007. "Smoothing the Trail for Dissemination of Evidence-based Practices for Youth: Flexibility within Fidelity." *Professional Psychology: Research and Practice* 38 (1): 13–20.
- Kreuger, F. A. F. 2007. *Klein maar fijn: Kortdurende onderzoeksprojecten. Voortgangsrapportage*. Rotterdam, the Netherlands: CEPHIR.
- Lin, V., and B. Gibson. eds. 2003. *Evidence-based Health Policy. Problems and Possibilities*. Oxford, UK: Oxford University Press.
- Lomas, Jonathan. 2000. "Using 'Linkage and Exchange' to Move Research into Policy at a Canadian Foundation." *Health Affairs* 19 (3): 236–40.
- Martin, G. P., V. L. Ward, J. Hendy, E. Rowley, S. Nancarrow, J. Heaton, N. Britten, S. Fielden, and S. Ariss. 2011. "The Challenges of Evaluating Large-scale, Multi-partner Programmes: The Case of NIHR CLAHRCs." *Evidence & Policy* 7 (4): 489–509.
- Medlar, Barbara, David Mowat, Erica Di Ruggiero, and Frank John, 2006. "Introducing the National Collaborating Centres for Public Health." *Canadian Medical Association Journal* 175 (5): 493.
- Miller, Clark. 2001. "Hybrid Management: Boundary Organizations, Science Policy, and Environmental Governance in the Climate Regime." *Science, Technology, & Human Values* 26 (4): 478–500.

- Mitchell, Penelope, Jane Pirkis, Jane Hall, and Marion Haas. 2009. "Partnerships for Knowledge Exchange in Health Services Research, Policy and Practice." *Journal of Health Services Research Policy* 14 (2): 104–11.
- Nowotny, H. (2003). "Democratising Expertise and Socially Robust Knowledge." *Science and Public Policy* 30 (3): 151–56.
- Nowotny, H., P. Scott, and M. Gibbons. 2001. *Rethinking Science: Knowledge in an Age of Uncertainty*. Cambridge, MA: Polity.
- Nutley, Sandra, Isabel Walter, and Huw T. O. Davies. 2003. "From Knowing to Doing: A Framework for Understanding the Evidence-into-practice Agenda." *Evaluation* 9 (2): 125–48.
- Parker, J., and B. Crona. 2012. "On Being All Things to All People: Boundary Organizations and the Contemporary Research University." *Social Studies of Science* 42 (2): 262–89.
- Power, Michael. 1997. *The Audit Society. Rituals of Verification*. Oxford, UK: Oxford University Press.
- Power, M. 2000. "The Audit Society—Second Thoughts." *International Journal of Auditing* 4 (1): 111–19.
- Raad voor Gezondheidsonderzoek. 2003. *Kennisinfrastructuur public health: Kennisverwerving en kennisoepassing*. Den Haag, the Netherlands: RGO.
- Ruijs, W. L., J. L. Hautvast, K. van der Velden, S. de Vos, H. Knippenberg, and M. E. Hulscher. 2011. "Religious Subgroups Influencing Vaccination Coverage in the Dutch Bible Belt: An Ecological Study." *BMC Public Health* 11 (1): 102.
- Star, Susan Leigh, and James R. Griesemer. 1989. "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of Science* 19 (3): 387–420.
- Van Egmond, C., and R. Bal. 2011. "Boundary Configurations in Science-policy: Modeling Practices in Health Care." *Science, Technology, & Human Values* 36 (1): 108–30.
- Wehrens, Rik, and Roland Bal. 2012. "Health Programs Struggling with Complexity: A Case Study of the Dutch 'PreCare' Project." *Social Science & Medicine* 75 (2): 274–82.
- Wehrens, R., M. Bekker, and R. Bal. 2010. "The Construction of Evidence-based Local Health Policy through Partnerships: Research Infrastructure, Process and Context in the Rotterdam 'Healthy in the City' Program." *Journal of Public Health Policy* 31 (4): 447–60.
- Wehrens, Rik, Marleen Bekker, and Roland Bal. 2011. "Coordination of Research, Policy and Practice: A Case Study of Collaboration in the Field of Public Health." *Science and Public Policy* 38 (10): 755–66.

- Wetenschappelijke Raad voor het Regeringsbeleid. 2004. "Bewijzen van goede dienstverlening." Rapporten aan de Regering 70, WRR, Den Haag, the Netherlands.
- Wingens, Matthias. 1990. "Toward a General Utilization Theory." *Science Communication* 12 (1): 27–42.
- Wouters, P. 1999. *The Citation Culture*. Amsterdam, the Netherlands: University of Amsterdam.
- Yanow, Dvora, and Peregrine Schwartz-Shea. eds. 2006. *Interpretation and Method: Empirical Research Methods and the Interpretive Turn*. New York: M.E. Sharpe.
- Young, Ken, Deborah Ashby, Annette Boaz, and Lesley Grayson. 2002. "Social Science and the Evidence-based Policy Movement." *Social Policy and Society* 1 (3): 215–24.
- ZonMw. 2005. *Programma academische werkplaatsen publieke gezondheid 2005-2008. Aan tafel!* Den Haag, the Netherlands: ZonMw.

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