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Challenges and Opportunities of Community-Engaged Research in Construction Management

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CHALLENGES AND OPPORTUNITIES OF COMMUNITY-ENGAGED RESEARCH IN CONSTRUCTION MANAGEMENT

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ABSTRACT

In recent years a growing number of academics have proposed new ways of engaging with practitioners and other individuals and groups outside the academic world. The main aim of the movement towards more engaged research is to foster and establish forms of knowledge production in which different professional domains interact and co-operate. Community-engaged research seeks to overcome the separation of the knower from what is to be known and, by doing so, to produce knowledge that advances both science and practice. This paper reports on the experiences the authors made with the adoption of community-engaged research in a longitudinal study (2006-2010) at the Dutch Highways and Waterways Agency. It discusses the nature of the research activities employed, the evolution of the researchers' relationship with the practitioners, and the extent to which the gap between CM research and practice could be bridged.

KEYWORDS: community-engaged research, construction management, relationship building

INTRODUCTION

Typically, research in construction management (CM) aims at the development of new insights into socio-technical problems of construction organizations and seeks to improve performance and decision making within these organizations. However, there seems to be a large gap between the daily practice of construction managers and the scientific world of CM researchers. Academics and practitioners alike have the perception of belonging to two diametrical communities with their own and disparate languages, discourses, methods and institutional norms (Bartunek, 2007; Hodgkinson and Rousseau, 2009). The research community at one side is primarily interested in the production of contextually independent knowledge and the practice community's main concern is the application of knowledge for the immediate solution of context specific problems. As a consequence, the knowledge produced by academics only slowly diffuses into construction practice and affects the way of working within the industry. Although researchers in CM constantly refer to the applied nature of their discipline in scholarly publications by highlighting the benefits of their conducted research for industry, practitioners often find it difficult to access the relevance of the generated knowledge for their everyday work (Sexton and Lu, 2009).

It is argued that the still prevailing positivistic tradition in the social sciences is difficult to apply in disciplines dealing with complex socio-technical problems (Checkland and Holwel, 1998; Seymour et al., 1998). In this tradition the existence of value-neutral, deterministic and objective problems is asserted which can be detached from their contextual settings and which obey general and immutable patterns of causality. Research endeavors then first and foremost are dominated by the search for justified approaches and methods to obtain valid and reliable results and are often steeped in attempts of easy generalization and reductive explanation. They not only

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simplify social reality by playing down the complex and dynamic nature of real-world problems, but also favor distance between researcher and practitioner (Reason, 2001). By doing so, they diminish the practicality and legitimacy of the research and contribute to the further manifestation of two divided knowledge domains (Dainty, 2008).

In recent years more and more voices have been heard that advocate a redefinition of the relationship between the researcher and the researched in the management-related sciences and also in CM. They call for participatory research approaches that addresses the complexity of socio-technical problems by locating research activities in the communities that both support and are to benefit from the research (Green et al., 2010). The production of knowledge should be initiated, informed, or otherwise actively driven by those directly involved in the dynamic process of problem solving and organizational change. The researcher should collaboratively engage with community members (e.g. users, clients, sponsors) in this process to understand the nature of the immediate problem at hand (Van de Ven, 2007). Community-engaged research seeks to overcome the separation of the knower from what is to be known and, by doing so, to produce knowledge that is able to advance both science and practice (Minkler, 2005). However, achieving the dual promise of theoretical and practical contributions is quite challenging. The strong perception of science and practice as separate and distinct cultures establishes and reinforces an asymmetrical relationship between the two worlds. It is thus essential to allow for permeation of science and practice by creating an environment of mutual learning.

Although research with community-engaged approaches has been already adopted by CM researchers (e.g. Fernie et al., 2003; Sexton and Barrett, 2003; Hartmann et al., 2009), there is little understanding of the opportunities and challenges that are associated with the creation of such a learning environment and to our knowledge there have not been any detailed accounts on the interaction of researchers and practitioners in investigating and solving CM problems. The aim of this paper is to shed more light on the emergence of collaborative relationships between academics and practitioners in the knowledge production process of CM research projects. The paper focuses on the different engagement modes during this process and the extent to which they are able to constitute an environment in which researchers and practitioners recognise themselves as partners in knowledge production. Its main argument is that relationship building and research activities are intertwined and that through this interdependency different engagement modes evolve. The argument is supported by the insights and experiences the authors gained in a longitudinal research project for the Dutch Highways and Waterways Agency. The four-years project (2006-2010) was part of the agency's program for infrastructure management (PIM) that aimed at innovating the agency's contracting and planning practice for road and waterway maintenance and included the scientific monitoring of the innovation process. Since at the outset of the monitoring researchers and practitioners formulated the ambition to collaboratively work on infrastructure management problems, the project is a rich source for the quandaries and possibilities of community-engaged research in CM.

The paper is structured as follows. In the next section we briefly introduce community-engaged research. The paper then offers insights into the research activities employed in the project and the evolution of the researchers' relationship with the practitioners. Based on that we discuss the challenges and opportunities the community-engagement in the project entailed and the extent to which the gap between academia and practice could be bridged. The paper finishes with some general conclusions on the application of community-engaged research in CM.

COMMUNITY-ENGAGED RESEARCH

Types and opportunities

The realization that the knowledge creation process is strongly fragmented spans many academic disciplines from education and health care to business management and information technology. The reasons for this fragmentation are seen in the hierarchical order of knowledge domains privileging basic science above applied research (Boyer, 1990) and in the recognition that science and practice produce two distinct forms of knowledge (Van de Ven and Johnson, 2006) which lead to self-referential and self-reinforcing activities within these domains (Senge and Scharmer, 2006). However, a growing number of academics propose new ways of engaging with practitioners and other individuals and groups outside the academic world. They do not regard practitioners as mere informants and data providers, but redefine and broaden their role by involving them as partners in defining and conducting research projects as well as in questioning and sense-making of approaches and findings. The degree of engagement can vary and several forms of engagement research have been defined. For example, in its seminal work Van de Ven (2007) proposes four types of engaged research depending on research purpose and perspective of the study:

- (i) Informed basic research represents the lowest form of engagement. The researcher adopts a detached outsider perspective to describe and/or explain problems and only solicits feedback and advice from practitioners. He/she keeps control of the research process.
- (ii) Collaborative research also tries to describe and/or explain social problems, but the research activities are jointly shared by researchers and practitioners to co-produce basic knowledge.
- (iii) Evaluation research goes beyond the description or explanation of problematic issues. It seeks to examine the effectiveness and efficiency of policies, programs, or practical solutions. Hence, researchers take an outside perspective to be able to compare different cases and produce impartial and legitimate evaluation findings.
- (iv) Action research is highly cooperative inquiry of researchers and practitioners which brings together action and reflection, theory and practice with the aim of developing practical knowledge that change organization processes (Reason and Bradbury, 2006). By taking an inside perspective, researchers take into account the specific context of practical problems and seek to solve these problems by intervening and changing practice.

Despite the diversity of engagement the underlying goal of the movement towards more engaged research is to foster and establish forms of knowledge production in which different professional domains interact and co-operate and which advance both science and practice. The transition from "research on practice" to "research in practice" (Friedman, 2006: 132) is based on the assertion that understanding and solving practice problems require an interdisciplinary attempt to create learning communities of researchers and practitioners that co-produce and integrate theoretical knowledge and practical know-how (Senge and Scharmer, 2006). As such, the communities relocate dispersed activities of discovery and understanding, connection and integration, application and change, as well as teaching and capacity building from institutionally isolated disciplines to arenas of participatory actions (Boyer, 1990). Knowledge emerges from and is embedded in the context within which the research was conducted (Green et al., 2010).

Although community-engaged research is seen as an answer to the fragmented nature of traditional knowledge production, it is not intended to replace other modes of research. Rather, its aim is to extend the possibilities for closer interaction and stronger relationships between academy and practice (Barker, 2004) and by doing so to meet the double hurdles of rigor and relevant research (Pettigrew, 2001).

Principles and challenges

In order to design community-engaged research projects with dialectical learning environments, Van de Ven and Johnson (2006) suggest four design principles: (i) address complex and striking problems that are grounded in the experience of practitioners, (ii) involve practitioners as co-investigators so that complementary perspectives are shared, (iii) build relationships of trust and candor through extended project duration, and (iv) employ multiple models and methods to juxtapose and compare alternative explanations for the complex problem.

In response to Van de Ven and Johnson's (2006) guiding principles for engaged research, McKelvey (2006) doubts that these principles would be simultaneously achievable. He sees his skepticism nurtured by the pluralistic perspectives and conflicts the engagement of different stakeholders in research would necessarily entail and the difficulties for the researcher to maintain a position that allows for the generation of novel and significant scientific knowledge. This view is supported by Minkler (2005) who stresses the challenge in defining the practical problem which can deviate from the initial assumption of the researcher and which is burdened by conflicting interests. She furthermore points to additional challenges associated with (i) tensions between researcher and practitioners that evolve from different reward systems, (ii) constraints on involvement which may include the inability or unwillingness to donate time for the research and use the research methods, (iii) the release and sharing of results, and (iv) the implementation of actions which may be constrained by the nature of funding, policy regulations and different timeframes. For Bartunek (2007) the challenge particularly lies in establishing academic-practitioner relationships which require relational skills to span the boundaries between both groups, which often hold preconceptions and stereotypes. Cultural identity and separation and their continuous reproduction may additionally lead to power differences which excel at expert-client relationships (Wallerstein and Duran, 2006).

Collaborative environment

It appears that developing an environment conducive to collaboration between researcher and practitioners is a critical but challenging part of any community-engaged research, and it may take time for such an environment to emerge and which can even span multiple projects. Van Marrewijk et al. (2010) suggest to engage practitioners in a dialogue as a suitable way to understand the underlying values of an organization and, by doing so, to become a change reflector and co-owner of managerial problems. Based on the continuous feedback of emerging insights the research design should then allow practitioners to challenge their way of working and to create new knowledge for instrumental use (Green et al., 2010). However, despite the awareness of the challenges associated with forming cooperative research environments, little is known about how engagement processes unfold over time and how the contextual setting of the research influences the course of these processes. Here, the assertion is made that the relationship building cannot be separated from the actual research. Rather, research activities themselves form the social context through which researcher and practitioner interact and make sense of their roles in and contributions to the research (Reason, 2004). It seems thus essential to

approach and initiate community-engaged research in a way that facilitates the development of a trusting relationship and simultaneously works towards the intended research goals.

In the following we report on a longitudinal research project which intended to base its research design upon the principles of community-engaged research. Rather than elaborating on the findings of the research project itself, the focus of our account is on the emergence of different engagement modes during the project and the interactive nature between relationship building and research activities. That implies a reflexive stance towards the experiences and insights we gained in the project and it is this sensemaking of our interaction with practitioners which represents the main source nurturing our understanding of community-engagement in CM research.

ENGAGEMENT IN A LONGITUDINAL RESEARCH PROJECT

The setting

Rijkswaterstaat (RWS), the Dutch Highways and Waterways Agency, is the executive arm of the Dutch Ministry of Infrastructure and Environment. In 2009 RWS was responsible for managing 5,701 kilometres of carriageways and 65,250 square kilometres of the main water system in the Netherlands. Since 2004, RWS has been undertaking tremendous efforts to develop into a professional public-oriented network manager by focusing on the needs of the infrastructure users and increasingly engaging the private sector in the design, construction and management of its infrastructure. Part of this reorientation has been the realignment of RWS's procurement strategy and organizational structure in order to move from the role of a executing organization into that of a commissioning authority. RWS initiated a number of programs and projects to facilitate the change process. One of these program was the Partner Program for Infrastructure Management (PIM) which was launched in 2006. The aim of PIM was to search for innovative ways of working in the operation and maintenance of road and water infrastructures. The learning and innovation process of PIM was organized around 5 pilot projects which were located in different regional business units of RWS and a program team at central level which facilitated the work of the pilots. The pilot projects covered three topics: traffic management (2 projects), asset management (1 project), and maintenance procurement (2 projects). Four pilot projects started in February 2006. One pilot project joined the program in 2007. PIM officially terminated in September 2010.

The guiding principle of PIM comprised the development of new knowledge and practices on the operational level of RWS. PIM provided the freedom and support for operational staff members to experiment and learn in their direct working environment. Besides the strong involvement of operational staff in the research and development process, PIM was aspiring to share knowledge and experience with other countries (UK and Belgium) and the construction market (engineering firms, contractors and industry associations). In addition, in 2006 a scientific consortium including 5 universities from the Netherlands, Belgium and the UK was asked to monitor the innovation processes of the pilot projects and actively support the learning of the project teams.

At the outset of our involvement as scientific partners of PIM we agreed with the program team to apply a research approach which allows researcher and practitioners to jointly engage in the development and implementation of new work practices for infrastructure management. There was the common understanding that such an approach would be perfectly in line with the bottom-up learning approach of the program. Accordingly, our first research design was structured around three phases: orientation, monitoring and reflection. The orientation phase

(6 months) was meant to get involved in the work of the pilot projects. The monitoring (12 months) was planned to be the main phase of the research. We intended to design, test and evaluate new work processes and tools together with the pilot project teams. The reflection phase (6 months) aimed at drawing implications from the monitoring for the future development of RWS. However, shortly after the orientation phase the research process got stuck. Although we continued engaging with members of the program team and the pilot projects in different forms throughout the research, our initial ambition to establish a collaborative inquiry and change process at RWS was hardly to achieve. It took us more than two years before we were able to develop and implement the first intervention together with members of one of the pilot projects. From an engagement perspective the actual research process we run through can be divided into four phases the characteristics of which are depicted in Table 1. In the following sections we elaborate more on these phases and pay particular attention to the organizational and relational mechanisms that let to emergence of and the transition between the phases.

<i>Engagement phase</i>	Orientation (2006-2007)	Evaluation (2007-2008)	Reflection (2008-2009)	Intervention (2008-2010)
<i>Engagement level</i>	Program	Program	Project	Project
<i>Engagement mode</i>	Collaborative/ informed	Collaborative/ evaluative	Collaborative/ reflective	Collaborative/ participative
<i>Engagement scope</i>	Research Initiation	Research Design	Data Collection	Problem Solving
<i>Engagement role of the researcher</i>	Outsider/ Interpreter	Outsider/ Evaluator	Insider/ Reflector	Insider/ Facilitator
<i>Engagement role of the practitioner</i>	Insider/ Advisor	Insider/ Provider	Insider/ Annotator	Insider/ Interventionist

Table 1 Engagement characteristics

Orientation

During the first engagement phase we intended to become acquainted with the pilot projects, their objectives, and organizational structures. We aimed at understanding the problems the pilot projects dealt with and in doing so we adopted two different perspectives. From the first perspective we examined the role and usage of performance indicators within the pilot projects. Central questions were:

- What is the role of performance indicators for the success and evaluation of infrastructure management?
- How can performance indicators be used in the pilot projects and how can they be used as benchmark?
- What is the effect of the new business processes on infrastructure performance?

From the second perspective we investigated the learning capability of the pilot teams. Questions to be answered were:

- What is learnt in the pilot projects?
- How can the learning be facilitated?
- How can other business units of the RWS and market parties learn from the pilot projects?

The engagement in this first phase had a strong focus on initiating the research and can be best characterized as informed collaboration. We jointly developed the research questions with the PIM program team. The program team members also introduced us to the pilot projects, delivered background information about the RWS organization and provided pilot and program

documents. In addition, several meetings with the PIM program team took place to discuss the progress of the research and first findings. However, we remained outsiders of the pilot projects who merely got the task to answer a number of jointly formulated research questions. In this sense we followed a typical research process in which we mainly kept control of the research design. Our contacts with the 4 pilot project teams were restricted to those moments when we interviewed the team members and hold a workshop on performance measurement in infrastructure management with the pilot team members involved in the interviews. We completed this first phase of the research in November 2006 with a report and a presentation of the results at the PIM progress conference.

Evaluation

In our final report, based on the results of the orientation phase, we proposed research activities for the second phase, which was planned to start in February 2007 and finish in December 2007. The main idea of the second phase was to identify the most important problems the pilot projects were dealing with and to jointly work with the pilot teams on these problems. For some of the problems identified in the orientation phase, we suggested a methodological approach through which co-operation with pilot teams could take place. However, already in December 2006 a general discussion within the program team about the focus of PIM in 2007 emerged. It became clear that in November 2007 the program would arrive at an important milestone. Based on the results that had been achieved thus far, the future direction and structure of the program had to be determined. A critical question that needed to be answered was: Should the results of the pilot projects be rolled out or should the pilot projects continue experimenting? At the beginning of 2007 the pilot projects were at different stages. Two of them had already achieved concrete results which could be easily implemented, since they did not require additional changes in the way of working at the RWS. The two other pilot projects had a more systemic character because they affected the entire work processes at the RWS with considerable changes in the competencies of employees, the relationship with market parties, the contractual arrangements and the infrastructure management tools. Moreover, these two pilot projects were in a conceptual phase. New ways of working were modeled but had yet to be implemented. The program team decided to pay more attention to these two pilot projects. However, that did not mean that we could apply our proposed research to the two pilot projects. From the perspective of the program team, the two pilot teams were struggling a lot with the complexity of their projects, and we would increase the complexity and introduce additional disturbance. In order to facilitate the discussion of crucial issues which the pilot projects bring forward for the RWS organization but to keep the direct disruptions for the pilot projects as small as possible, the program team was planning to set up working groups at the program level. The intention was to involve people from other regional business units in the ongoing work of the pilot projects and to give feedback from other experts. Program team and scientific consortium agreed upon a research approach in which we participate in the working groups by contributing to content-related issues and by methodologically facilitating the learning process of the groups. The first working group was expected to start in June 2007. However, none of the working groups was established. In other words, we could not continue any of the research concerning the topic of performance measurement. Moreover, although we tried to stimulate discussion about alternative research questions, the program team did not see any potential areas for our active involvement. One of the reasons was that the focus of the program team shifted from content-related to process-related issues. Another reason was that the program team regarded its own work and the

process of the program as very dynamic which made it difficult for them to determine our direct participation. They suggested a more reflective contribution of the consortium, which according to them should comprise the writing of essays scientifically contrasting the work of the program. We did not see the practical and scientific benefit of essays without any empirical grounding. Although an intensive discussion about possible research topics and approaches took place, three partners of the scientific consortium were not involved in any research activities in 2007.

In order to answer their question on diffusing the pilot results with the RWS organization the program team was interested in the way of structuring the learning from the two pilot projects to the RWS organization. In April 2007 two universities of the scientific consortium received the mandate to conduct research in order to support the PIM program team in this regard. We were asked to evaluate the learning processes in the two pilot projects and the consequences that follow from the lessons learnt for the future learning in and from these pilot projects. Again the research took a more traditional form including focus group meeting with project team members, interviews with people from other innovation programs at RWS and a case study comparing the learning at RWS and the Highways Agency in the UK. In December 2007 we completed the evaluation with a final report.

Reflection

The transition to the reflection phase was initialized through our participation in a three-day visit of one of the pilot teams at the Highways Agency in the UK in July 2007. This project was already at the implementation stage when it became a PIM pilot project. It was the first project that implemented an integrated performance contract for road maintenance at RWS. The underlying intention was to establish a partnering relationship in which all team members collaborate and learn from each other. We were asked to accompany both organisations and evaluate the effectiveness of the UK visit for the partnering development. The journey allowed us to obtain first insights into the reasons for the dynamics of the relationship building between the two parties by observing the partnering workshops and the social events. Apart from these first insights, the informal setting of the journey was important to us. It allowed us to get to know and personally talk to every team member in conversations which were not merely work related. As such, the journey represented an initial contact moment with intensive and different forms of interaction between us and the practitioners, which were a fertile breeding ground for initiating the further research in 2008.

After finishing the research in December 2007 and based on the unsatisfactory involvement of the scientific consortium, a general discussion was held regarding the content and structure of future scientific input. The program team decided to assign research questions to single universities instead of a consortium of universities. One of these research questions pertained to the learning of the partnership project in road maintenance. We again suggested a research approach in which we actively participate in the partnering process by analysing maintenance problems together with the project team and jointly designing and evaluating interventions that stimulate a collaborative environment for solving these problems. Although the program team agreed upon the research proposal, they wanted to discuss it beforehand with the pilot team. Since we again expected slow and difficult communication, we suggested direct communication with the project team. In January 2008 we approached the regional business manager of the region where the pilot was located and suggested the monitoring of the collaboration between RWS and the contractor. The fact that we knew the regional manager from the UK journey, that the manager was an advocate of the idea of performance-based

contracts and a closer collaboration with the private sector, and that the project had pilot status within the organisation helped us gain entry to the project. However, our suggested approach raises the manager's concern. From the manager's perspective our proposal for a strong engagement with the project team represented rather an additional burden than a beneficial undertaking. On the one hand this appraisal had its origin in the nationwide attention that was given to the first application of the new generation of maintenance contracts at this time. On the other hand, the new contract was seen as a considerable change in the work of the operational staff members, and introducing extra interventions would ask too much from them. We negotiated with the manager about the appropriate research approach which restricts the additional workload of the project team members but guarantees research results which are able to inform the immediate practice of the project team. The outcome of this negotiation process was an approach which started off with passive observations of the interaction between RWS and the contractor with the offer to the project team to provide feedback on what has been observed. In other words, we had to adjust our ambition of engaging with the project team right from the start of the research. The negotiated approach was also discussed and approved by the two project managers of RWS and the contractor.

In April 2008 we started with our first observation. On a regular basis we attended 31 regular meetings included the bi-weekly meetings of the operational staff of RWS and contractor and the meetings of the middle and top management of both organisations every six weeks. The observations aimed to determine the group-level behavioural aspects of the interaction between RWS and the contractor, uncovering the underlying perceptions and values of both contract parties and identifying the ways problems in daily work were dealt with. In a little while it became natural for the project team members that we were present and very soon they started to ask for feedback after the meetings. We always came earlier and stayed longer than the actual meetings lasted. That gave the possibilities for informal talks with single team members which facilitated our transition from outsiders to insiders of the project. More important they broadened our contextual view by pointing to individual motives, beliefs and attitudes. As mentioned above, after each meeting we were asked to reflect on what they noticed. At the beginning these reflections remained uncommented, but in the course of time they were increasingly received as contributions to the ongoing discussion about the collaboration between both parties.

Participation

Gradually, project team members started involving us in this discussion, confronting us with their perception of problematic issues and asking for advice. That was a critical moment for the research, since it offered the opportunity to actively participate in the partnering process but simultaneously entailed the risk of being regarded as mere adviser and getting caught between conflicting views. Due to the developed relationship between us and the project team and the recognised benefits of our critical reflections, it was possible to refine our role from passive observer to active participant, which cumulated in an intervention session held in June 2008.

The intervention session addressed specific problems which related to opposing positions taken by team members that had become apparent during the regular meetings. Before the session interviews were used to explore, at the individual level, the expectations and motivation of each team member from the RWS side and the contractor side and contrast them with the findings from the observations. In the intervention session, a conflict-laden issue was used as the starting point in order to raise awareness of the perceptions of each contract party and the emergence of divergent interpretations. The project team and the researchers tried to understand

why this issue was difficult to address by having a dialogue about the reasons for taking up certain positions towards the problem. The main aim of the session was not to provide a solution for the particular problem at hand but to understand the circumstances that prevented the project team from dealing with the problem in the first place and to allow the project team to identify advanced procedures for coping with similar situations in the future. Both organisations recognized their inactive position, the lack of coordination between them and the vicious circles of reinforcing perceptions. The team members started to think about possible interventions which might help their perceptions to converge. Interventions that were developed included small and immediately applicable changes in the daily interaction of the two organisations, such as providing work places for contractor staff at the RWS office. Other interventions included more substantial improvement such as training of RWS team members in applying the new method of controlling the contract, and a procedure for the timely reporting and handling of unexpected events. The intervention session also created an awareness of the importance of being open to the interests and opinions of the other organisation and of the need to maintain constructive dialogue. Of course, even after the intervention session some unexpected situations led to contrary positions being taken. But with the above change measures and the openness to dialogue that was created, it was possible to deal more effectively with these conflicts in a way that prevented opposing interpretations and mistrust and which generated continuous confirmation of the new way of collaboration.

Based on the project team's valuation of our involvement we were asked to monitor the relationship building in the second PIM pilot project in the same regional business unit of RWS which were introducing the first generation of an integrated performance-based contract for water infrastructure. In March 2009 we again started off with passive observations during project team meetings and giving feedback on what we observed, and again this approach helped us in establishing a participative research environment and changing our role from the passive reflection on to the active facilitation of the partnering process.

DISCUSSION

Getting engaged

Construction management research describes, explains, evaluates and designs solutions for complex, socio-technical problems. However, it seems to be difficult for researchers to produce knowledge that practitioners recognize as being practically relevant. Many scholars and practitioners propose a closer collaboration between both communities in all research phases to bridge the gap between theory and practice. Van de Ven (2007) suggests several design principles for community-engaged research. Our experiences and insights gained during the four-year research project at the Dutch Highways and Waterways Agency (RWS) are in line with Van de Ven's arguments. Engagement was possible, since the problems that were addressed in the research were directly related to the challenges RWS as public organization encountered. There was a strong and explicit expectation that our involvement should contribute to the objectives of the PIM program. Second, the research team was partner in the PIM program and the people from the RWS organization contributed to the research in several ways and at different stages. The program team was involved in formulating research questions, setting up the research design, and discussing theoretical concepts and research results. The project teams supported the data collection and implemented interventions. Third, the long duration of the project helped to build up trusting relationships which made it easier to get access to data and people within the organization. Fourth, a multi-perspective approach was used: The research team members came

from different disciplines, and through the involvement of people with different backgrounds and organizational functions the complexity of the problems were addressed. Notwithstanding the presence of these principles the engagement evolved through the research activities embedded in the organizational peculiarities of the research setting. Particularly our transition from outsiders to insiders of the PIM program took place through a gradual process from passive involvement on the program level to active participation in the pilot projects.

Passive involvement as engagement barrier

Our initial idea was to apply a research approach which allow practitioners and researchers the joint development and implementation of interventions. Collaboration in problem solving played an important role in this approach which went beyond the typical ex-post discussion and evaluation of problems and solutions. Our ambition was to intertwine research and practice activities. However, in the first two years of the research, we remained outsiders of the immediate working practice of the pilot projects. Although we described and explained problems, evaluated processes, and gave advice for improvements, the data collection was mainly based on interviews, documents, group discussions, and feedback sessions but not on the design and implementation of interventions. It became obvious that the PIM program team were willing to provide information and participate in formal and informal discussions and valued our feedback if they regard our input to be relevant for their work. Their work was to support and evaluate the pilot projects but not the direct participation in the pilots. The joint design and implementation of solutions to immediate work problems do not fit into their own agenda and their perception of what researchers should do. Our intended engagement in the activities of the pilot projects was seen as an additional burden rather than a valuable contribution. As a result, the program team acted as a barrier between us and the pilot projects. Moreover, we experienced some dependency on the PIM program team. Although there was a strong engagement during the formulation of problems and research questions, the internal decision making of the program team was very slow. We had to wait for feedback on proposals, and several meetings were postponed. We became dependent on the program team's own planning – with negative consequences for the research activities. In 2007 the program team planned to set up working groups, and a main part of the research design was related to these working groups. Because none of the working groups were established, three universities of the scientific consortium did not conduct any research in 2007.

Passive involvement as engagement enabler

The observations and informal talks over a longer period at the beginning of our involvement in the pilot projects were suitable means to understand and gain in-depth insights into the highly localised nature of the interaction between the two organisations. These micro-cultural aspects of the project team could not have been obtained by only interviewing team members at selective times, since they were embedded in the everyday routines and manifested themselves in the actions of the team. This in line with Pink et al. (2010) who state that ethnographic practice is able to "dismantle the facades that obscure different levels of [...] local knowledge" (p.658) and, as they further argue, it is this learning about the local knowledge which enables them to generate appropriate recommendations for informing practice. The creation of actionable knowledge for the pilot project, that is to say, the development of effective interventions of immediate practice change required the understanding of the implicit mechanisms in the collaboration of RWS and the contractor. In addition, these micro-cultural

aspects broadened the view on the change process which took place at different interpretative layers internal and external to the project.

The fine-grained insights generated by the observations and informal talks did not simply inform change of the collaborative practice. Rather, they helped in articulating the need for and the direction of change by revealing hidden beliefs and conflicting values underlying the perceived problems. In this sense, the insights generated raised problem awareness about the issues faced by the project team members and sensitized them to possible causes. They formed the input for a problem-solving process of the project team which started with analysing the situation and continued with developing possible improvements. The trigger for this process was the mere fact that we were regularly present at and around meetings, which created an environment of mutual interest in each other and perception of the interaction between RWS and the contractor. Our reflections and questions stimulated self-reflection of the team members. This provided the basis for the reflection of researchers and practitioners which in turn initiated the change process.

CONCLUSION

In CM, as in other management-related sciences, more and more scholars argue for a redefined relationship between the researcher and the researched and a closer collaboration between both communities science and practice. The notion of community-engaged research more and more pervades research projects and programs in CM. Although the engagement of researchers and practitioners promises to increase the relevance of research results for science and practice, establishing a collaborative environment appears quite challenging. In this paper we reported on a longitudinal research project and the emergence of the relationship between the practitioners and us which became intertwined with the research activities and manifested in different engagement modes during the project. Based on our experiences, it can be argued that informed, collaborative and evaluative forms of engagement are fruitful ways for the advanced understanding of complex, real-world problems and as such are a prerequisite for changing and improving practice, but the researcher remains an outsider of the actual work processes which diminishes the chance of results being implemented. The transition from an outsider to an insider and towards the design and implementation of intervention remains difficult and asks for research approaches that gradually allow researchers and practitioners to recognise themselves as partners in the process of knowledge production. In our project it was the passive involvement at the beginning which enabled us to analyse and reflect on the developmental changes in the pilot project and, by doing so, to provide the basis for joint interventions which were a suitable means of uncovering interpretations about the nature of the problems within the pilot project and of allowing discussion on possible ways to respond to and overcome the perceived problems. Thus, our negotiated research approach facilitated the learning process of the project team and in doing so it uncovered the benefits of a joint knowledge construction of researchers and project team.

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