



Institutional interventions in complex urban systems: Coping with boundary issues in urban planning projects

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Urban planning projects are planned and organized through arrangements between actors. These arrangements are institutional interventions: they intervene in the institutional landscape as existing organizational boundaries are (temporarily) redrawn. Such boundary decisions are intended to simplify complexity. However, these boundary decisions also produce new complexities as new boundary issues arise. Our contribution investigates these boundary issues by studying and comparing three urban planning projects in the Rotterdam urban system (the Netherlands). The analysis shows that the boundary issues are often underestimated and that coping strategies are required to deal with them. Because boundary issues pose serious threats to the success or even survival of projects, management should invest in increasing the capacity to deal with (often unexpected) boundary issues.

Introduction

The management and organization of urban planning projects is accompanied by institutional interventions to deal with the complexity of the projects. Institutional interventions are materialized organizational arrangements between the managing actors of the urban planning project. They are interventions in the existing institutional order as they impact on or redraw existing organizational boundaries. For instance, a public-private partnership (PPP) comes in between the existing public and private line organizations as an additional organizational structure is created (Verweij, 2012). From a system perspective, these institutional interventions imply certain boundary decisions and underlying boundary judgments (Van Meerkerk *et al.*, 2013) about what is included and what is excluded in the arrangement, e.g., regarding the participation of certain actors. On the one hand, the institutional interventions reduce the complexity and uncertainty of urban planning projects by confining the number of

elements and relations in a system and rearranging them in a comprehensible manner. For instance, tasks, responsibilities and activities are differentiated between a PPP and the line organizations. This enables action in complex urban systems. On the other hand, the interventions produce boundary issues that have to be coped with (cf. Fellows & Liu, 2012; Verweij, 2012). It is not uncommon that these issues are underestimated or unexpected, whilst they may pose serious threats to the project's success or even to its survival (e.g., Fellows & Liu, 2012; Van Meerkerk *et al.*, 2013).

This contribution aims to gain more insight in how institutional interventions deal with the complexity of urban planning projects. We are particularly interested in the boundary issues which could arise following the institutional interventions, and how actors cope with them. Our guiding research question is: what boundary decisions do institutional interventions imply, what are the underlying boundary judgments, which boundary issues arise, and how are these issues coped with? To answer this question, we analyze the boundary decisions that guided three institutional interventions in the Rotterdam urban system in the Netherlands. In the next section we provide a framework for studying the cases, followed by the research approach and methods in the section thereafter. The section "Institutional Interventions In The Rotterdam Urban System" contains the case analyses and in the sections "The Taming Of Complexity: Three Institutional Interventions Compared" and "Concluding Remarks" we draw conclusions and reflect on our findings.

Institutional interventions and their boundary decisions in coping with complexity

Urban planning projects are embedded in complex urban systems, in which different interdependent governmental agencies, commercial actors, non-for-profit organizations and residents reshape urban areas. Institutional interventions are based on boundary decisions about the content of the institutional arrangement, about who is part of the planning process and about how it is going to be realized. These boundary decisions enable action in complex urban systems: "boundaries serve to seal off the productive core, buffer it, level or smooth variability inputs and outputs, forecast variations and uncertainty, and impose rationing to protect the delineated territory from environmental penetration" (Van & Louis, 1999: 31). Basically, boundary decisions determine which elements, relationships and operations (cf. Rescher, 1998) are included and which are excluded. Boundary judgments are the beliefs, rationalities and expectations underlying these decisions (cf. Pel, 2009). They are mental constructs of actors that refer to the assumptions about what should belong to the institutional intervention and what should belong to its environment

(Ulrich, 1987). Boundary decisions are the specific manifestations of these boundary judgments. To structure our analysis of the boundary decisions of the institutional interventions, we distinguish between participation, territorial, functional and structural boundaries (Van Meerkerk *et al.*, 2013).

Participation boundary decisions concern the inclusion and exclusion of actors in/from the urban planning projects and the way in which these actors are involved (Ashmos *et al.*, 2000; Edelenbos & Klijn, 2006). Which actors are involved in the institutional intervention, and how does the institutional intervention deal with the involvement of other actors in the urban system? *Territorial boundary* decisions are demarcations concerning the geographical area that is the focus of the institutional intervention. *Functional boundary* decisions concern the substantive scope that is the focus of the institutional intervention (cf. Edelenbos *et al.*, 2013), e.g., infrastructure, housing, nature, or some combination of these spatial functions. *Structural boundary* decisions concern demarcations about tasks and responsibilities (Ashmos *et al.*, 2000), e.g., whether there is a strict and clear division of tasks and responsibilities between actors in the institutional intervention or whether institutional interventions are rather aimed at sharing responsibilities and tasks (cf. Teisman & Edelenbos, 2011; Verweij, 2012). Obviously, these four types of boundary decisions are interrelated, e.g., territorial and functional boundaries codetermine which actors are taken into account, but participation boundaries can also influence the scope of the project.

The four different boundaries are defined by actors in the intervention. They are initially decided upon in e.g., plans, formal decisions, contracts or informal agreements. Boundary decisions are not necessarily shared among actors. They are based on judgments that only partly oversee the interdependencies and dynamics of a complex urban system. Therefore, these decisions will only to a certain extent succeed in internalizing and controlling complexity (Teisman *et al.*, 2009). As a result, boundary issues will arise: the effects of existing or newly created interdependencies that cut across newly drawn boundaries and new interdependencies. These issues may initially not be acknowledged by the actors involved, but may influence the effectiveness and legitimacy of the boundaries drawn. For instance, actors excluded from the intervention by the participation boundary decision may hamper the smooth development of an urban planning project. Confronted with boundary issues, actors will deploy coping strategies so as to keep the project manageable (Van Gils *et al.*, 2009). Coping strategies are improvised responses to the unintended and unexpected effects of earlier interventions that jeopardize their effectiveness or legitimacy (Steenhuisen, 2009; Koppenjan *et al.*, 2011).

Approach and methods

Our research is guided by the conceptual framework that is presented in the previous section. In the next section we will present the cases according to this framework. We start the case presentations with the moment the institutional intervention was formally anchored in e.g., a contract. Subsequently, we describe the four types of boundary decisions and the underlying boundary judgments. Then we focus on the main boundary issues that consequently arise, followed by an analysis of how the actors involved coped with them. We engage in pattern matching: we examine whether the three cases can be understood in terms of the concepts as suggested by our framework. Hence, we do not cross-compare the three cases; rather, we compare them with our framework. Yin (2009) refers to this as analytical generalization. We use the framework to select, order and interpret the empirical data, and to check if the framework allows doing so in a meaningful way.

Case selection and data collection

For purposes of comparison and researcher accessibility, all cases are institutional interventions in the Rotterdam urban system. Because we are interested in the generalizability of our framework (Yin, 2009), we selected dissimilar institutional interventions within the Rotterdam urban system. The first is a PPP project in the realization phase (A15 Maasvlakte-Vaanplein); the second is a PPP project in the planning phase (Heart of South); the third one is an intergovernmental arrangement to deal with strategic planning issues (Traffic Management Agency). A PPP is a partnership between a public principal and a private contractor in which both partners bring some kind of resources to the partnership and in which responsibilities and risks are shared, for the purpose of delivering public-infrastructure based products (cf. Grimsey & Lewis, 2004). Within these cases the institutional interventions raised various boundary issues. To keep our comparison manageable, a selection of the boundary issues and coping strategies is presented in the present contribution. The criterion for the selection was that the boundary issues were exemplary for the boundary judgments underlying the institutional intervention cases. In the A15 Maasvlakte-Vaanplein project the misinterpretation of responsibilities between government and contractor are typical; in the Heart of South project the unanticipated need to compete with other projects for survival was the dominant issue; and in the case of the Traffic Management Agency the main issue concerned the difficulty to realize horizontal coordination between the actors.

The main data source is secondary interview data which were collected by different authors for different research projects. In total, 36 interviews were conducted

between 2010 and 2013 with (senior) project managers, project directors, politicians and stakeholders. Additional data include policy documents, websites and media coverage. The data were organized in case descriptions.

Institutional interventions in the Rotterdam urban system

As explained above, in this section we present the three separate case analyses according to our framework. Table 1 provides a summary.

The A15 Maasvlakte-Vaanplein corridor

The extension of port of the Rotterdam with the Second Maasvlakte requires additional traffic capacity on the A15 highway corridor between the Maasvlakte and the Vaanplein highway junction.

The intervention: Boundary decisions

In December 2010, Rijkswaterstaat, which is the executive agency of the Dutch Ministry of Infrastructure and the Environment responsible for managing the main highway network, closed a PPP contract with the contractor A-Lanes A15 for the expansion and reconstruction of the 37 kilometer highway connection between the Maasvlakte and highway junction Vaanplein (*territorial boundary*). The PPP contract constitutes the *structural boundaries* of the institutional intervention: A-Lanes A15 is responsible for the design, build and maintenance, and partly for the finance, of the project. The purpose of the project is to enhance traffic flow and safety on the corridor. Construction started in April 2011 and should be finished in December 2015. The project includes (*functional boundary*) the construction of additional traffic lanes, a dynamic traffic management system, the renovation and the construction of civil structures (including the design and construction of a large new vertical lift bridge), and the maintenance of the infrastructure system up to 2035. The total project volume is approx. € 2 billion, the largest ever tendered by Rijkswaterstaat. Leading up to the contract closure, Rijkswaterstaat closed an administrative agreement with 14 (semi-)public stakeholders and adherent implementation agreements (*participation boundaries*). The rationale behind these agreements was to get consensus between the actors beforehand so as to smoothen implementation in the next phase.

Boundary issues

Rijkswaterstaat included the implementation agreements with its local stakeholders in its PPP contract with A-Lanes A15. The responsibility for stakeholder management was transferred from Rijkswaterstaat to A-Lanes A15 a few months before the construction

		Expansion A15 Corridor	Redevelopment Heart of South	Traffic Management Agency
Moment		2010: closing of the PPP contract.	2010: decision to commission the project organization to prepare a PPP.	2008: establishment of the Traffic Management Agency.
Boundary decision	Territorial	A15 corridor between the Maasvlakte port area and the Vaanplein highway junction.	Planning area and neighborhoods in its environment.	Rotterdam municipal territory including the port area.
	Functional	Infrastructure development.	Infrastructure development and social policy measures.	Traffic management.
	Participatory	Principal-contractor arrangement; local stakeholders participate via implementation agreements.	Principal-contractor arrangement; absence of stakeholder involvement.	Formal cooperation between the public actors in the Agency.
	Structural	Design, build, finance and maintenance of the infrastructure system are the responsibility of the contractor.	Project organization aimed at realizing the project; the city council is placed at distance due to PPP arrangement.	Horizontal coordination among various authorities with separate jurisdictions.
Boundary issue		Role conflicts between contractor and local stakeholders; the division of responsibilities between principal and contractor as arranged in the contract does not match the local stakeholders' interpretation of the implementation agreements.	During political decision making the boundaries of the project shift. The debate focusses on prioritizing municipal projects rather than judging the project on its own merits as was foreseen by the project organization.	The consensus about the urgency of horizontal coordination does not match the actual judgments of actors of each other's roles. One public actor fears that the functional boundary will jeopardize coordination with its other projects and interests.
Coping strategy		The principal temporarily takes back coordination role so as to give the contractor room for adjustment to new roles.	The project organization engages in intensive information and support building activities towards the city council in order to safeguard the project.	One actor temporarily takes the lead in the Agency. Performance measures are agreed upon in order to give direction to the activities of the Agency and to be able to document its success.

Table 1 *Summary of the case analyses*

started. The rationale behind this and the contract in general can be summarized by the term “the market unless”, which is a strategic vision that Rijkswaterstaat embraced from 2003 onwards (Metze, 2010). Whereas Rijkswaterstaat expected to be relieved of the tasks and responsibilities of stakeholder management, A-Lanes A15 expected the management of stakeholder relations to be more or less a done deal because an administrative agreement was achieved between Rijkswaterstaat and local stakeholders beforehand. Initially, thus, these redrawn participation and structural boundaries simplified matters.

However, a boundary issue emerged quickly. First, respondents of both Rijkswaterstaat and A-Lanes A15 told of multiple cases in which A-Lanes A15 was in conflict with stakeholders over certain geographical areas or civil structure and road designs in the project. The PPP contract encouraged the contractor to meet deadlines since exceeding those results in missing out on periodic payments by Rijkswaterstaat, which are crucially important for A-Lanes A15. Getting approval with local stakeholders—as A-Lanes A15 is contractually required to do—to implement the designs is then sometimes forgotten or rushed. This, in turn, led to conflicts between A-Lanes A15 and the local stakeholders. For instance, A-Lanes A15 constructed a temporary road for transporting hazardous substances without coordinating the design of the road with the Port of Rotterdam Authority; consequently, the Port of Rotterdam Authority disapproved of the road which could thus not be used by A-Lanes A15. Second (and consequently), this also created frictions between Rijkswaterstaat and its stakeholders. According to Rijkswaterstaat respondents, these stakeholders argued that they do not have a contractual relationship with A-Lanes A15, but with Rijkswaterstaat instead. Hence, stakeholders such as the Port of Rotterdam Authority called Rijkswaterstaat to account, and at some point even refused to consider designs made by A-Lanes A15 that they had to approve of. They had lost confidence in the contractor.

Coping strategies

The actions of the contractor resulted in friction between the contractor and public stakeholders, and between Rijkswaterstaat and those same stakeholders. Interestingly, contra its “the market unless” vision, Rijkswaterstaat (temporarily) stepped forward to manage the relationships between A-Lanes A15 and the stakeholders. More specifically, in an attempt to restore the relationship between A-Lanes A15 and local stakeholders, it started to verify the designs and plans of A-Lanes A15 before they would be sent to the stakeholders. The underlying rationale was that this would enhance the “role maturity” of A-Lanes A15 in the long run, i.e., that Rijkswaterstaat could then take a step back again and leave the infrastructure system to A-Lanes A15’s responsi-

bility. The interview data strongly suggest that the coping strategy by Rijkswaterstaat is starting to pay off (although rebuilding confidence is a slow process); interviews with A-Lanes A15 demonstrate that its managers are increasingly aware of the importance of taking the time to coordinate designs and plans with stakeholders.

The redevelopment of the Heart of South

The Rotterdam south bank city districts (approx. 200,000 inhabitants) have the largest social-economic problems in the city. These include low educational levels, high unemployment and crime rates and a high concentration of migrants and social problems.

The intervention: Boundary decisions

In order to redevelop and revitalize the center area of the south bank thereby contributing to the socioeconomic recovery of the surrounding areas (*territorial boundary*), in February 2010 the Municipality of Rotterdam ordered the responsible project organization of the municipal Project Management Bureau to prepare a PPP for the development of the Heart of South project. An analysis identified the disconnectedness of various parts of the area as a problem (Projectbureau Heart of South, 2011). The large numbers of people using the local public transport hub in the area do not actually access the area to use its available facilities. The project is aimed at connecting and upgrading the various facilities in the area, in order to create "a mature center of Rotterdam-South" (Projectbureau Heart of South, 2011: 3). The project combines the physical interventions with the "social heart" program (*functional boundary*) in an integral, area-oriented program. The decision for a PPP is based on the judgment that only in this way the integral nature of the project can be sustained in times of budget constraints. This decision implied that the project would be developed by a project organization that strives for a successful realization of the project. It needed to do so by preparing a competitive dialogue tendering process, during which three private consortia would develop PPP master plans (*participation boundary*). As a result, as with the A15 Maasvlakte-Vaanplein project, a new division of roles in area development was foreseen: the financing and designing of the project, and the coordination with local stakeholders, is no longer a responsibility of the Municipality but of the prospective private consortium. Furthermore, the city council is expected to agree with a generic project plan after which the project is placed at arm's length (*structural boundary*).

Boundary issues

In March 2010 the Municipality published its intention to start the tendering process. After a market consultation the tender document was prepared. In January 2011 a cost-benefit analysis was completed and the investment proposal was finalized. Public decision making could commence. Because the tendering had to start one year after the intention announcement, the executive board of the Municipality and the city council were asked to ratify the investment proposal by February 1st. Although these bodies were sympathetic to the plan, they first wanted to decide on the long-term investment plan for the whole municipality. When decision making finally was due in August 2011, the city council disagreed to take the investment decision based on generic information. The city council challenged the previous made structural and functional boundary decisions. Regarding the structural boundaries, being put at distance of the project, the city council had difficulty accepting its role and consequently requested detailed information and adjustments of the original structural boundary decisions. Regarding the functional boundaries, the political decision makers drew the boundaries of the decision making quite differently than the project organization: the issue was not whether or how a PPP should be realized; the project was weighted against other projects. The precarious budgetary situation required the Municipality to set priorities among the various projects up for decision making, of which the Heart of South is just one. In this debate, the issue was not whether the PPP should be realized, but whether the project and its integral format would be selected in the first place.

Coping strategies

Unexpectedly, the project manager had to compete with other projects, convincing the decision makers of the added value of the project. In this struggle for survival he could not mobilize support from local stakeholders because the boundary decision to develop the project content in the next phase with the private developers implied that stakeholders had not been included. Their participation was foreseen after the project content would be defined. Eventually, the Heart of South project survived the political decision making, partly due to the positive cost-benefit analysis that other projects lacked. Only after considerable persuasive efforts, which include various sessions and the concession that it would be involved in future decision rounds, the city council was prepared to accept the conditions and idea of the tendering. In September 2011 the searching for private partners could start. These coping strategies succeeded due to the competencies of the project leader, due to his direct access to his political superior who backed the project in this difficult phase, and due to sheer luck: the competitive advantage of the availability of a positive cost-benefit analysis.

The Traffic Management Agency in the Rotterdam region

Rotterdam is Europe's largest logistic and industrial hub (Port of Rotterdam Authority, 2011). In 2007, the national government decided to invest in enlarging the container handling capacity of the port area. This 1000 acres enlargement, named the Second Maasvlakte, is achieved by land reclamation from the North Sea. The expansion will lead to an increased growth of the number of containers which have to be transported to the hinterland. However, the handling capacity of the port is restricted by the transport capacity of the available infrastructure system (Geerlings *et al.*, 2009). Although most containers are transported by road (which is an important reason for the A15 Maasvlakte-Vaanplein project), the ongoing expansion of the road capacity with additional traffic lanes is not considered a sustainable solution in the long run.

The intervention: Boundary decisions

To this purpose, under the political pressure of the Ministry of Infrastructure and the Environment and in close cooperation with the Port of Rotterdam Authority, the Traffic Management Agency was created in 2008. The somber forecast for the accessibility on the medium term future led to a shared sense-of-urgency that actions were needed to guarantee the accessibility of the road network and that the present decision making between the stakeholders with their own jurisdictions was too fragmented, too inert and too complex to address the challenge. The aim of the institutional intervention was to deal with the traffic management capacity challenge (*functional boundary*) in the Rotterdam region (*territorial boundary*). The Traffic Management Agency consists of four organizations: Rijkswaterstaat, the Municipality of Rotterdam, the Rotterdam Metropolitan Region, and the Port of Rotterdam Authority (*participation boundary*). All actors have a common interest regarding the accessibility of the port by road, but Rijkswaterstaat is responsible for managing the main highway network, the Port of Rotterdam Authority for the roads in the port area, and the regional authorities for the regional infrastructure (*structural boundaries*). With the creation of the Traffic Management Agency these responsibilities are rearranged. The aim is to tackle the traffic issue via horizontal alignment to realize a more efficient coordination of actions. The activities and instruments of the Agency are very diverse, varying from PR-activities to financial incentives aimed at behavioral change. The Agency operates through a uniform program with several projects to improve the accessibility on and around the A15.

Boundary issues

Initially, tackling the traffic capacity challenge was hampered by functional and structural boundaries judgments which could be coined "turf conflicts". The actors had dif-

ferent ideas about the solutions; especially the Port of Rotterdam Authority was very critical. On the one hand, it was dissatisfied with the existing situation as it could not influence the policies on and around the A15 corridor. The Traffic Management Agency would allow the Authority to have influence on policies that did not belong to its jurisdiction before. On the other hand, the Agency was a difficult experiment because it required the Port of Rotterdam Authority to share responsibilities with other actors, especially Rijkswaterstaat (both are traditionally monopolists on their territory). In short, initially some frictions between these actors occurred.

Coping strategies

To cope with the boundary issues, Rijkswaterstaat was pushed by its Ministry to cooperate as they were rather unwilling to share power. Therefore the first director of the Traffic Management Agency was recruited from Rijkswaterstaat; the Port of Rotterdam Authority is more single-issue driven and therefore less equipped to the task of coordinating the cooperation. At first, there were no indicators to measure the success of the Traffic Management Agency institutional intervention, which made its participants unconfident about the efficiency and effectiveness of the arrangement. After the startup problems, the institutional intervention did lead to increased interaction and trust between its participants. "Working by doing" became the leading paradigm. The functional and structural boundary issues were coped with by operationalizing the intention to cooperate, i.e., by setting concrete indicators for success.

It may be too early to say if the coping strategy led to better results but, based on evaluation reports and interviews with stakeholders, the opinion seems justified that the institutional intervention is a success. Originally, the existing boundary judgments hampered efficient and integral policy making. However, since the summer of 2011 there were six places in Rotterdam that were placed under de jurisdiction of the Traffic Management Agency, and from March 2012 onwards the Agency is also responsible for the "Better Utilization Program" in the Rotterdam region. This indicates the success of the Agency, and its model will be transplanted to other regions in the Netherlands as well. It is striking, though, that whilst transportation is a derived effect from e.g., logistic demand, the business community does not participate in the intervention. A better understanding of the motivation of companies could be a potential coping strategy. It may be argued that this is an overlooked and potentially relevant partner to participate in the intervention, but as of yet it is too early to say what kind of boundary issues the absence of the business community may produce.

The taming of complexity: Three institutional interventions compared

We started with an interest in how institutional interventions deal with the complexity of urban planning projects. To that purpose we formulated the following research question: what boundary decisions do institutional interventions imply, what are the underlying boundary judgments, which boundary issues arise, and how are these issues coped with? In this section we answer the research question and give some final reflections on our findings.

Boundary decisions and issues in institutional interventions

The cases show that various boundary judgments underlie the boundary decisions of institutional interventions. Each of the interventions involves the redrawing of functional, territorial, participatory and structural system boundaries in order to align the arrangement with the existing institutional landscape so as to enable action in complex urban systems such as Rotterdam. It is assumed that by internalizing complexity in a new arrangement, the adherent new internal coordination mechanisms will increase control over the urban problems that the projects intend to solve. Our cases show, however, that the redrawn boundaries go hand in hand with the rise of new boundary issues that need to be coped with.

Our cases show that judgments underlying the boundary decisions are not necessarily shared or understood by the actors that participate in the institutional intervention. Although Rijkswaterstaat and the Port of Rotterdam Authority concluded an implementation agreement regarding the construction of the A15 corridor, their structural boundary judgments diverged. The case of the Traffic Management Agency shows that even though its participants had explicitly agreed upon the boundary decisions, in practice they had a hard time to let go traditional divides and ways of doing. Despite a shared urgency to horizontally cooperate, Rijkswaterstaat did not judge its partners in the Traffic Management Agency to be able to act truly cooperatively, given their interests and responsibilities. In the case of the Heart of South, politicians and administrators commissioned the project organization to prepare a PPP at arm's length without fully realizing the consequent implications for their own involvement.

Moreover, the boundary decisions underlying the institutional interventions highlighted specific interdependencies between the actors, but neglected or externalized others. This makes for often unexpected boundary issues. While arranging its respective relationships with the contractor and the Port of Rotterdam Authority in the A15

Maasvlakte-Vaanplein project through the PPP, Rijkswaterstaat insufficiently coordinated the relationship between the contractor and the Port of Rotterdam Authority. The project organization of the Heart of South focused on preparing a PPP and a tender process in the form of competitive dialogue. These decisions implied that the local stakeholders were not involved in the preparation phase and that the city council had to agree to be placed at distance during the rest of the project. Consequently, stakeholders could not be mobilized to defend the project when its survival was at stake during the political decision making. Also it was not self-evident that the city council would agree with giving up decision making power as planned. The Traffic Management Agency aimed at coordinating the interactions of its participants, leaving the relationship with the business community unattended.

Coping strategies

The cases show various strategies that actors used to cope with the boundary issues that often unexpectedly arose. In the case of A15 Maasvlakte-Vaanplein project, Rijkswaterstaat coped by reverting to its initial role as manager of the relationships with local stakeholders. In other words, its structural boundary judgments were somewhat redrawn again towards the situation prior to the PPP contract. Rijkswaterstaat expects that this is only a temporary setback, and that contractor and local stakeholders will gradually readjust to their new roles. In the case of the Heart of South, the project organization coped by engaging in management efforts aimed at convincing political decision makers of the added value of the project. It succeeded, partly because the positive cost-benefit analysis that was developed in preparation of the tender process provided the project with an advantage relative to competing projects that lacked such a cost-benefit analysis. In the case of the Traffic Management Agency, the boundary issue was temporarily solved by letting Rijkswaterstaat chair the Agency, so that the participants in the intervention could adapt to their new roles and develop trust. Specifying success indicators contributed to this process, giving directions to the participants and providing an instrument to make their joint successes visible.

Contemplating the cases, various coping strategies can be identified. They vary from efforts in convincing others to comply with the suggested boundaries, to engaging into interface management, to temporally redrawing the boundaries or to make new boundary decisions all together. Copings strategies are not necessarily successful and may require yet further coping.

Concluding remarks

Institutional interventions may simplify complexity in urban planning projects by drawing boundaries, but by the same token they also neglect matters, making for the often unexpected occurrence of boundary issues. Unexpectedness is a fundamental aspect of urban planning projects (cf. McDaniel & Driebe, 2005; Söderholm, 2008). As far as things are certain, it can be expected that boundary issues will arise. In our cases, actors succeeded in overcoming these issues by applying various coping strategies (cf. Ashmos *et al.*, 2000), sometimes referred to as interface management (e.g., Fellows & Liu, 2012), adaptive management (e.g., Edelenbos *et al.*, 2009) or boundary spanning (e.g., Van Meerkerk & Edelenbos, 2014).

Our findings show that institutional interventions do not resolve complexity once and for all by internalizing it. Rather, interventions require investments in management capacity aimed at dealing with unexpected boundary issues (Weick & Sutcliffe, 2007; Koppenjan *et al.*, 2011). This means that management efforts should also be focused on guiding the learning process by which participants in the intervention gradually accept the new boundaries, capture their new roles or engage in coping strategies (cf. McDaniel *et al.*, 2003). This includes increasing awareness of and explicit reflection on one's and each other's boundary judgments (cf. Ulrich, 1987). After all, boundary judgments are social constructs, and their legitimacy and effectiveness may increase when these judgments are made explicit and are negotiated.

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