

PARADOXES OF CONTROL: THE (ELECTRONIC) MONITORING AND REPORTING SYSTEM OF THE DUTCH HIGH SPEED ALLIANCE (HSA)

KEES BOERSMA, Vrije Universiteit Amsterdam
SYTZE F. KINGMA, Vrije Universiteit Amsterdam
MARCEL VEENSWIJK, Vrije Universiteit Amsterdam

ABSTRACT

Recently, some the large public (transport) infrastructures became an important issue on the Dutch political agenda. It was especially the High Speed Alliance (HSA), one of the major transport infrastructural projects in the Netherlands that attracted a lot of attention. On one hand, this project was highly advanced from a technical point of view; on the other hand, the HSA was characterized by enormous (budgetary, time, and technical) problems. A large part of these problems was supposed to be covered by a complex (electronic) monitoring and reporting system. The system, which was established to exclude uncertainty and risk, created its own uncertainty. In this paper, the authors examine the role of this system in the process of rationalization and control within the HSA-organization by focusing upon the process of sensemaking. The authors argue that the problems within the HSA can best be understood in terms of a paradox: rationalization and control versus local, individual freedom and initiatives. Three major paradoxes have been distinguished: the cost paradox, the control paradox, and the risk paradox.

Keywords: large infrastructural organizations; electronic project monitoring; paradoxes of control

©2007 by the Project Management Institute
Vol. 38, No. 2, 75-83, ISSN 8756-9728/03

Introduction

During the last decade, public infrastructures became one of the main issues on the Dutch political agenda, closely connected to discussions regarding economic development and growth, welfare, and mobility, especially within the concept of the European community (Koppenjan, 2005). Among the many policy plans on infrastructures that were developed in different policy configurations—strategic (political) think tanks, the department of transport, the Dutch scientific advisory board, etc.—two (initially interconnected) large-scale constructions projects were defined in order to improve mobility and connect major economic cores located in different parts of surrounding European countries, in particular Germany and Belgium: the Betuweroute project initiated in 1995, and the Dutch High Speed Alliance (HSA) train (HogeSnelheidsLijn—HSL) project, which was started in 1996.

It was especially the HSA project that attracted a lot of (international) attention, particularly because it was characterized by major deviations in terms of overspending, incorrect time frames/planning and corruption, which resulted in intensive parliamentary inquiries and a redesign of control models and steering design. In 2004, the situation was so problematic that a Dutch parliamentary committee was established to investigate the cost and time planning problems of the HSA project.

About two years before the committee started its investigations, in 2002/2003, the HSA organization was reorganized in a reaction to the internal tensions caused by technical and budget problems, and the external pressure by the Dutch government to come up with transparent and reliable risk analysis (Koppenjan, 2005; Van Marrewijk & Veenswijk, 2005). The philosophy behind the reorganization that was executed can be characterized in terms of New Public Management (NPM), which has been recently introduced, at least in rhetorical terms, by policy-makers in order to improve the quality and transparency of governmental institutions (Pollitt, 2000). Referring to “the rise of the entrepreneurial state,” Osborne and Gaebler (1992) argued that in many western countries, a (neo-liberal) trend toward NPM leads to a “steer-not-row” division between (strategic) public policy areas and decentralized, separated implementation units with a strong use of market mechanisms.

This NPM philosophy has also been adopted in the Netherlands in many ways (Hendriks & Tops, 2003). For the HSA organization NPM meant a call for flexibility, transparency, and the execution of an unambiguous reporting system.

However, is argued in the following, it was the HSA organization that was established to oversee all kind of problems—technical, budgetary, safety, political, etc.—that became the major perpetrator of technical and budget problems. It is this paradoxical situation that is addressed in this paper by investigating how the (electronic) monitoring and reporting system of the HSA organization functions within the planning process. Additionally, the organizational cultural construction is examined and consequences of these reporting systems of the HSA organization by looking at how relevant actors make sense of these systems is discussed (Weick, 1995). The sensemaking analysis will enable us to understand how individuals within HSA orient themselves in situations that are complex and ambiguous.

The main research question in this paper is: How is the HSA project internally organized, and in what way does the nature of the (electronic) monitoring and reporting systems influence the relations between the central and local actors? Also, how do these actors make sense of the surveillance structure around these contracting/control modes?

In the following sections, attention will be given to the organizational and managerial background of the HSA as a mega-project. Next, the outcome of the authors' empirical study into the (electronic) monitoring and reporting system of the HSA will be presented. In this part of the paper, the use of the systems as a sensemaking process will be looked at. Arguably, tensions caused by the use of these monitoring systems can be seen in view of a central organizational paradox: rationalization and control versus local, individual freedom. At the end of this paper, the authors will argue that this paradox can more generally be considered as characteristic for large-scale infrastructures.

Setting the Scene: The Managerial Culture of Mega-Projects

It has been argued before that cost estimates and control in decision-making and execution of transport infrastructural projects like the HSA are highly systematically and significantly misleading (Flyvbjerg, Holm, & Buhl, 2002). In 2003, Flyvbjerg, Holm, and Buhl presented their findings of a statistical study of more than 250 infrastructural projects in 20 nations. One of the most interesting outcomes of this survey was that, at least in terms of costs, transport infrastructures do not perform as promised (Flyvbjerg, Holm, & Buhl, 2003).

Historically speaking, large-scale construction projects were delivered under a Tayloristic control of just two parties (Clegg, Pitsis, Rura-Polley, & Marosszeky, 2002). The architects were responsible for the design and the constructors for construction. With growing forms of complexity in large-scale projects, "the concept design and construct," more and more became the standard way of organizing this type of project, with government as a "third party." In connection to this, there is a worldwide transformation visible toward the so-called BOOT arrangements (build, own-operate-transfer), which has consequences for the way large-scale mega-projects are organized (see Dyer & Singh, 1998). The BOOT model requires a flexible organization to set up an outsourcing infrastructure to provide and manage services for

the contracting parties. BOOT arrangements have been introduced as a promising structure in which a private sector or organization cooperates with the government to build, own, or operate an infrastructure (or piece of) such as a railroad or an electricity plant.

However, these BOOT arrangements are typically *high-risk ventures* (Pestman, 2001). Such projects are not only extremely expensive, but also involve political controversies, complex organizational arrangements, and technological challenges. They are long-term projects that are constantly changing over time. The developments of the project or the outcomes are therefore hard to predict and carry great uncertainties. The interesting point here is that in such technology-driven cases the organizational design anticipates this high-risk context and binds this project to periodic "progress reports," in part based on specific "risk analysis" (Beck, 1992; Vaughan, 1999). Therefore, it can be seen in such situations that risk monitoring and reporting systems are often implemented as specific *management tools* not only designed for administering the project but also intended for steering it.

The Cultural Aspects of (Electronic) Monitoring and Reporting Systems

Interestingly, it was the Danish professor, Flyvbjerg, who was consulted by the Dutch Parliament as the first leading, international expert on mega-projects on the committee on infrastructure projects on 3 May 2004 to clarify his findings. The main problem the committee addressed was the misinformation about Dutch mega-projects and their consequences. Possible solutions discussed by Flyvbjerg concerned (1) the Parliament rules and practices that had to be changed in order to eliminate or reduce miscommunication and (2) the HSA organizational accountability in order to improve risk analysis (Flyvbjerg, 2004).

In fact, Flyvbjerg's reaction and recommendations must be seen against the background of the HSA monitoring and reporting system. For many reasons, the management of the HSA organization introduced this system to meet both the call for more transparency and integration. In line with claims during the mid 1990s, the HSA organization implemented standardized business information systems. With these systems, organizations usually seek to improve production processes and services by enhancing management control over complex processes, empowerment and motivation of personnel, increasing flexibility, efficiency, and effectiveness (Davenport, 1998; Frissen, 1996; Van der Ploeg, 2001).

Electronic management systems, such as adopted by the HSA, roughly concern two sets of information systems, computer-mediated communication systems (like intranet and knowledge management systems) and data management systems (like enterprise resource planning, customer relationship management, and supply chain management). These systems are often found together in complex organizational settings. They reflect the most recent phase in the informatization of organizations, integrating various business processes within and among organizations. However, experience has taught us that these systems, which are supposed to deliver

reliable (integrative) information, often do not live up to these expectations. Standardized information systems do not only offer business solutions, but also create a lot of new organizational problems and unintended consequences (Boersma & Kingma, 2005). Instead of highly promising technologies, standardized information systems are perhaps better understood as highly demanding technologies.

Problems associated with information systems are, at least in part, attributed to an underestimation of the social and cultural side of information systems. Organizational culture will in this case less be operationalized as certain *aspects* of organizations, and more in terms of a cultural *perspective* on organizations that considers culture as part and parcel of the entire organization (Alvesson, 2002; Czarniawska, 1998). Technologies and organizations are from this perspective studied as cultural phenomena in their own right; i.e., the meanings, norms, and values associated with particular technologies and organizational practices (Orlikowski, 2000). In particular, the concept of sensemaking (Weick, 1995) is of analytical value here. In situations where people are confronted with rapid changes, complex problems and unexpected outcomes of new technologies, people literally make sense of what is going on in the organization.

Research Strategy and Methods Used

In line with the idea of sensemaking, the authors' method was to follow the qualitative analysis. The HSA case study therefore, is based on document analysis, observations, and interviews. It is the perceptions of interview respondents that gave the authors access to the ideas and conceptions that together form the webs of significance in and around the organization (Czarniawska, 1998). The interviews were open and semi-structured in order to relate as closely as possible to the everyday reality of the actors. For obvious reasons, no personal names are mentioned in this paper.

The authors analyzed the interviews in terms of (electronic) management (including the reporting system), organizational culture, the communication and negotiation processes, and power relations related to specific events of the HSA case. This includes asking probing questions about elements that the respondents consider to be important. The authors could meet the demands of analyzing the differentiation, and even fragmentation, of meanings across socially distributed activity systems that provide "technical support for their ongoing, local negotiation" (Martin, 2002).

In addition, the authors got access to relevant company documents to reconstruct the dynamics of the HSA project, in relation to the monitoring and reporting system. The documents studied in this research were quite diverse. There were "official" documents and policy papers, but also documents written for one's own use, like memos, accompanying letters, (concept) notes, and minutes. Some of these documents are publicly available on the Internet websites of the HSA organization (see <http://www.hslzuid.nl/hsl/uk/hslzuid/>). Even though most of the studied documents came from the organization itself, documents written about the organization were also looked at. Because the HSA project engendered many

public discussions and debates in the Netherlands, publications in newspapers and other attention in the media were also studied. As part of this, a media analysis was a relevant part of the analysis of documents in the case.

The Monitoring and Reporting System of the HSA: A Sensemaking Process

The basic concept of the HSA consisted of a plan to connect Dutch backbone, Amsterdam, by means of a 100-km separate railroad toward the Belgian border. The HSA project was defined as a result of a political discussion on future mobility in the Netherlands in relation to surrounding countries in 1996 (see Van Marrewijk & Veenswijk, 2005). The project design that followed was "new" in the sense that the project group—directed by a young entrepreneurial project director—rejected a "sound blue print" plan in advance (despite governmental pressure), but preferred a participative model of project development.

The project was originally designed as an experimental public-private constellation in which public and private actors participated and had a joint responsibility for construction and design, as well as for exploitation. Most of the designing was actually the result of the public-private (BOOT) arrangement, and this hybrid organizational construction was reflected in the way the project organizations were empowered (70% of the employees were hired on a temporal basis, 30% were public employees), exploitation remained a matter of the state. This also counts for the (public sector) hierarchical—machine like—formal construction, which was chosen in order to build the project. The top managers of the HSA project organization were all public employees. The CEO (in Dutch called *Hoofdingenieur-directeur* abbreviated as the HID—the engineer who is responsible for the technical part of the entire project) reported by the secretary-general of the Ministry of Transport to the minister. In 2003, the HSA project was administratively separated from other infrastructural projects like the Betuweroute and further implemented as a separate mega-project.

The project was divided in five geographic entities: every entity contained a set of unique infrastructural artifacts like bridges, tunnels, etc. All five geographic entities were interconnected via loosely coupled separate project agencies, which all reported to a principal organization (called the Centrale Projectorganisatie) in Zoetermeer, a middle-sized city in the Province of South Holland. The interconnection was realized through various ranges of contracts, between (1) the principal and the agencies and (2) between private architects, or constructors, and the agencies. In total, there were more than 900 (sub)contracts in operation (Ministerie van Verkeer en Waterstaat, 2003, 2004). These contracts were monitored on a quarterly basis, and surveillance took place using a complicated set of ICT systems.

First, the reports were based upon an integrated business system (an ERP system). However, from an ICT point of view this system is not highly sophisticated, but rather fragmented. The content of the system is the outcome of a huge

amount of Word documents, e-mails, and Excel spreadsheets that are collected by the (sub)contract managers and that summarize technical and organizational information about subprojects. Second, the quarterly reports contain several "standard issues" (for instance, in terms of time and cost: technical development, risk calculation, human capacity, environmental developments, and communication) for central management, for which the information must be collected. This means that the monitoring and reporting system is standardized by project features, but not with the help of a standardized software package readily available on the market.

A typical quarterly report looks as follows. Each quarterly report starts with a detailed management summary in which the main problems are described. The body of the report contains three important fields in the risk analyses—which is made visible by a Monte Carlo risk simulation: time, technology, and money. External effects, such as public safety issues, and internal processes, like communications, are covered in a separate section. The report ends with an average of eight appendices in which completed tables are included. The tables consist of information based upon numerous subprojects' electronic reporting systems.

Project managers expressed that it is especially the management summary that is the topic for an ongoing discussion, because it is this information that is used for the annual reports of the entire organization. That means that it is in the summary that the data is interpreted and translated by the responsible (project) manager. For the project managers, the report has basically two functions. First, it is seen as a checklist used as an afterward justification of choices made in the planning process. In this process of justification, the most important standardized issues are checked off. Second, the report is used as a back-up system: on the basis of the data mentioned in the reports, a manager is always covered in the time of technical and budgetary problems. In this way, it is used to protect oneself against future, possible problems.

Central Versus Local: Tensions in the Organization

During the start of the HSA project in 1996/1997, the basic responsibility regarding the accuracy and planning of the data in the reports was with the contractors. The organizational philosophy was that responsibility should be "decentral unless..." which meant that central interventions were only allowed in specific situations—in other words, there must be a good reason to intervene (Van Marrewijk & Veenswijk, 2005). In doing so, the HSA organization followed a well-known and traditional principle, since decentralization of operating activities has been associated with efficiency advantages caused by improved information management (the use of local knowledge) and management opportunism (by less informed central managers) (e.g., Williamson, 1985). That means that on the central level of the organization, the bureaucratic rules are leading; on the local level, however, there is ample room for entrepreneurship and locals initiatives (Courpasson, 2000).

More and more action plans regarding the "local setting" were designed within the subgroups, headed and legitimized by professional "project-agency managers," which by the beginning of 2002 caused major conflicts between the principal (specifically the earlier-mentioned HID) and agencies or project-agency managers. Central issues in conflict were: report-structure and intervals, lack of trust on accuracy of data between different parties, and internal communication structure (who does what). Almost all of the issues can be related to the central and general aspects of image/identity creation: "principal wants to control us and rule everything out via procedures" versus "agencies don't want to share data and do everything in their own (probably malicious) ways."

These problems can be seen as a negative side effect of decentralization, because this strategy is less effective at generating knowledge and innovation that transcends the level of the business unit. In a highly decentralized organization, it is hard to control heterogeneous information collected and reported by the individual business units. It is this problem that caused for tensions within the HSA organization. The organizational conflict led to a set of interventions backed by the Dutch Minister of Transport.

The most important and visible interventions in the organization were, first, the assignment of a new top executive who was held responsible for the whole risk-management process and who became the mouthpiece of the organization. Second, to meet the problem of fragmentation, the organizational philosophy was adapted to "central unless." And third, a set of organizational development measures were taken, including team building, dialogue days between different groups, restructuring of contracting relations, and a job rotation of managers who were not supporting the new course of action. In addition to these matters, new contracting procedures were introduced and a dramatic clustering of contracts took place.

What is striking here is that the (electronic) monitoring and reporting systems that were introduced, as part of a process of rationalization (unintentionally) resulted in contradictions within the organization. Such contradictions, which can be understood in terms of a central paradox—(1) rationalization and control and (2) freedom—cannot be found when complex organizations are studied (see Koot, Sabelis, & Ybema, 1996).

Beyond the Borders of Control: A Triple Paradox

In this section, the triple paradox will be used to reflect upon the HSA case as previously described. To be more precise in the analysis, three major paradoxes have been distinguished: the cost paradox, the control paradox, and the risk paradox. These paradoxes will be described and each paradox will be illustrated by an empirical example. With the help of the paradoxes, the authors will show how, in concrete situations, the HSA actors were confronted with complex issues of control.

Cost Paradox: Poor Performance Versus New Project Initiatives

According to Flyvbjerg, Holm, and Buhl (2002) the cost paradox in large-scale infraprojects consists in the irony that more and more mega-projects are constructed and semi-autonomous public implementation routes are realized, despite the poor performance record of many of these projects. This image of a mega-project suggests that these organizational forms should be or could be rational systems organized to operate as efficiently as possible (Klijn, 1997). Such projects include a division based on the assumption that complexity is located in the domain of policy formulation (development and design) and that project organizations (construct) are situated in a social environment in which work-related goals and activities are clear and can be (fully) predicted, political backing is stable, there are no resisting single issue groups, and no internal conflicts that lame the project.

The cost paradox manifests itself in different ways in the HSA case. At several times during the implementation phase the managers of the central HSA organization were confronted with local problems that were hardly predictable and were caused by the organizational distance between development and design, and local constraints. A striking illustration is formed by the problems that arose about four years ago with regard to the height of gates at the stations situated along the HSA railway. Due to a series of European directives by the European Transport Committee—e.g., the Directive 2001/16, which is part of the EU Safety Rules—the Dutch national rail transport organizations were forced to standardize the high-speed rail system. These directives are proclaimed by the EU to ensure the interoperability of the networks, not only in the field of technical standardization, but also in the field of passenger safety. One of these directives directly concerns the height of stages and it was this directive that caused tensions in the HSA organization.

The problem was that this directive was implemented at a time when the technical blueprints of the stages were already completed. On these technical blueprints, the stages were designed much lower than the standardized height laid down in the EU directive. Of course, redesigning the stages would be very expensive. Strikingly, on a local level it was well known that during the designing process the directive was in preparation, as one HSA manager told the authors: "... at that time we knew that something was going to happen, but they [the HSA direction, KB, SK, MV] did not know that. Every now and then, however, we take the time to read a EU directive ..." However, the problem caused by the EU directive was not included in the quarterly reports.

This situation forced the actors involved to come up with (ad-hoc) solutions. A possible solution put forward by the central organization was to adapt the boarding-floor of the trains, but of course this solution would be even more expensive and would involve higher costs by the suppliers. Eventually, the only solution was to redesign the stages and to make new blueprints.

Understandably, this situation not only made the blueprints much more expensive, but it also gave rise to frustra-

tions both at the central and at the local level. It became obvious that the problem was brought about by the fact that the HSA project was organized as a mega-project. The paradox here is that the central HSA organization, which was established to control the budget of the Dutch high-speed rail system, led to the central actors (i.e., the HSA direction) wearing blinkers, as a consequence of which local problems were overlooked. The local actors were not always able to convince the HSA direction that local constraints can have an impact on the organization as a whole.

Control Paradox: Sophisticated Control Mechanisms Versus Unexpected Control Gaps

The control paradox can be found in the situation in which the characteristics of the organization, which are brought about in order to exclude uncertainty, easily can lead to a situation in which knowledge exchange among individuals is restricted (by the formal rules of the organization). A version of this paradox is also mentioned by Vaughan (1999, p. 914) who states that the organizational structure of large, complex organizations leads to "... a central paradox in organizations: namely, that the characteristics usually associated with the bright side of organizations—the structures and processes designed to assure certainty, order knowledge, and stabilize operations, thereby making coordinated activity possible—also have their dark side—the capacity to generate uncertainty, disordered knowledge, instability and unanticipated outcomes."

Vaughan's work dealing with the complexity of task relation draws attention to the multiple identification and task interpretation within semiautonomous working groups. Her detailed analysis of the Challenger, the NASA space shuttle that exploded, reflects subcultural fragmentation and cultural trading zones in which "reality is negotiated" with ambiguity as the leading concept. It not only pinpoints the rationale of bureaucratic actors to create a habit of normalizing deviations from safety procedures, but also underlines the interlocked behaviors between the actors in the working groups, as well as their orientation to the technical artifacts that were constructed to reproduce the safety regulations, as also noted by Weick (1995).

When designing the HSA trajectory, much thought was given to monitoring and eliminating the so-called "external effects." We are talking about calculated, unwelcome situations, which could come up in the area of spatial aesthetics and the environment. These effects were defined and categorized as much as possible in advance by means of so-called impact assessments.

In the HSA quarterly reports, an account is given of the degree to which these effects fall within acceptable social, economical, and political preconditions. In addition, they report on whether supplementary measures are called for. Despite this principle of calculated control, a paradoxical situation has come up more than once during the day-to-day affairs of the project. An example of the

control paradox in the HSA project is the matter of the inordinately high mortality rate among birds along the trajectory North Brabant (a Dutch province), which occurred toward the end of 2003.

To limit the effects of noise pollution as much as possible, transparent noise barriers were erected along the trajectory in North Brabant on a grand scale in 2002. The noise barriers had been the subject of some political controversy because of the high attendant costs and the drastic effects on the landscape. Many political parties thus had a strong focus on the actual noise reduction, which the erection of the barriers would yield, as well as the aesthetic valuation of the seemingly endless barriers. The green parties, in particular, made an issue of the effects they would have for people living in the immediate vicinity of the barriers.

The noise barriers appeared to be a success. Indicative noise measurements taken in 2002 revealed that noise levels had dropped by 70%, and people living in the vicinity of the barriers were generally positive about the manner in which they had been integrated into the landscape. On the basis of the quarterly reports, the political parties debated with fervor on this issue. Green parties claimed the successful attention for environmental issues in the technical design, while other political parties underlined the importance of the public interest, which they had brought up.

Late 2003, it became known that an excessive number of dead birds had been found along the much-praised noise barriers. Counts by bird protectionists led to a tally of more than 5,000 dead birds, including a number of unusual species. There was little attention paid to this issue in the HSA reports at first, but after an alarming letter to Parliament from Vogelbescherming Nederland, the Dutch partner of Birdlife International, the Minister for Transport ordered an investigation. The outcome was that the high mortality of birds was the result of a one-sided fixation on noise and design and an inadequate appraisal by the management of the project of other possible effects. To readdress the situation, a proposal was made to affix vertical stripes to the barriers as quickly as possible. The additional costs for this were estimated at 11 to 18 million euro (source: the [Dutch] Ministry of Transport, Public Works and Water Management, News Log, July, 2004).

In conclusion, we can deduce from this example that the essence of the control paradox lies in the fact that the elimination of uncertainties by means of the calculation of "planned external effects" as in the case of the HSA project automatically brings forth its own uncertainties.

Risk Paradox: Risk Analyses Leading to Illusions of Control and Risk Taking

The risk paradox describes a situation in which the adoption and use of risk analyses as the dominant management tool led to an increase in risk taking in decision-making processes, instead of the intended decrease in risk taking or the "taming" of risks. The taming of risks refers to the rational, calculative aspect of risks in which problems are defined as mechanical, consisting of parts that when bro-

ken down attract fixed, linear, optimal solutions (Holt, 2004). Such an adoption of risk analyses may involve organizational cultural shifts that are characterized by a reflexive attitude toward the unintended consequences and side effects of modern organizations.

Beck (1992) coined this shift as "reflexive modernization," when we are being confronted with these consequences and effects, recognizing and anticipating them, reacting upon them and more or less accepting the potential consequences as well as making organizations accountable. The term "reflexive" refers not only to a more or less direct reaction to the consequences of former decisions but also to "reflection" in a sense of awareness. Risks in this context do not refer to actual harm or to the attempts to remove danger, which is the object of risk; rather it is the reshaping of organizations as a reaction to the possibility of (often unknown) dangers. Ultimately, if risks are being acknowledged, this may change the condition of their existence (Van Loon, 2002).

In 2000 the HSA organization was remodeled after such a risk model of management. The adoption of this model signaled a new phase in the project organization characterized by a shift from decentralization and product orientation toward centralization and a process orientation. This became the dominant mode of management. New management procedures were introduced, notably the system of quarterly reports based on risk assessments by contract managers. Within the new system, contract managers became the central actors, translating many construction issues within the monitoring and reporting system in quantifiable, preferably financial terms, on which management decisions could be based.

The unexpected problems in the construction of the large, two-kilometers bridge crossing the water of the Dutch river "Hollandsch Diep," may serve as an example of how this new system of risk analyses worked and also of the paradox involved. The construction problem surfaced in October 2004 when one of the 11 pillars appeared to subside. The pillars were only allowed to subside 50 millimeters per century, but this particular pillar had subsided more than five centimeters in only two years. Immediately after the discovery of this subsidence it was defined as an enormous risk to the HSA project. In the worst case scenario, the pillar had to be completely reconstructed, which would cause serious delays and enormous costs for the entire organization. A simple test was designed in which the contractor parked 16 trucks with a total amount of 750 tons of sand on the pillar, to see to which extent the pillar would further subside. Fortunately, management was confident with the test results and decided to continue the construction of the bridge. However, there was serious debate concerning this incident about a possible cover up of possible calculation errors by engineers involved in the construction of the bridge. In February 2005 the Minister of Infrastructure declared, after a careful investigation, that this was not the case.

This case illustrates how the advance in the construction of the HSA is monitored and managed in terms of risk assessments. It also makes clear that the assessment of risk is not only a technical issue but also an organizational and socio-political issue. The ultimate paradox in this case is that the risk assessment, the test with the trucks, served to rationalize and legitimate the continuation of the infrastructural construction works in spite of the fact that there seemed to be something wrong with the pillar.

Discussion: Lessons Learned

What can we learn from the HSA case? From the start of HSA project, much store was set on innovation by means of a decentralization-oriented strategy. The (one-sided) focus on contracting was seen as a crucial vehicle in the battle against overspending, but this strategy appeared to be insufficient. The case brings us to three—*heuristic*—lessons (see also Van Marrewijk & Veenswijk, 2006).

Lesson one: "Know who is responsible." The separation strategy of HSA leads to structural unproductive power struggles between the innovative core and the "mother" organization.

Although "in theory" the project responsibilities were clear, the HSA project team became ensnared in an organizational spider's web of parties, which all claimed the control of the project. On the front stage, it was the Minister and the top management of the Ministry of Transport who directed the project and were responsible for the quality and dependability of the project. In actual practice, however, the project team and the ministry reached a state of (apparently) continuous conflict about concluded contractual agreements, costs, and responsibilities. The phased transfer of responsibilities appeared to be a planned, controllable exercise but, because of the impossibility of settling on a clear delineation of tasks, turned out to be completely unpredictable.

Lesson two: "Contracting does not solve the issue of responsibility." In HSA, the one-sided fixation on "partial" contract indicators becomes an important barrier for integral project evaluation.

In the HSA case, the quarterly contract reports more and more acted as internal benchmarks and vehicles for administrative and organizational improvements for central management. Although this system suggests a clear-cut vision on project involvement, in actual practice there was no integral system in which progress of the interrelated parts was monitored. The (relatively) separated contracts were related to specific artifacts (e.g., bridges, tunnels, platforms) and cost overrun on these subcontracts did not act as a trigger for redesign of the other related project artifacts. In fact, contract reality in HSA became more and more detached from the day-to-day organizational practices and the problems that were experienced in terms of internal cooperation, communication, team spirit, and trust in the quality of the project outcome.

Lesson three: "Separation leads to (a certain amount of) professional 'ivory tower' entrapment." In HSA the creative entrepreneurial project team isolates and marginalizes themselves.

In the different stages of the HSA project there appeared to be large gaps between the creative project experts and the "bureaucratic" managers located at the Ministry of Transport. The initial project team became highly isolated as their innovative, participative model of project development turned out to be a large financial risk. The professionals of the project team were convinced of their own "success formula" and focused themselves on the positive responses from their project environment. Critique was denied or seen as an act of a "power play" of management of the Ministry of Transport. A set of heavy organizational interventions, earlier mentioned, such as the assignment of a new top executive, the shift to a new 'central unless' philosophy, the start of so called "dialogue days" between decentral project professionals and central executives brutally interfered with this view and dramatically change the project culture.

In order to tackle the interface problems that occurs in the different project stages, some large-scale projects have introduced the concept of the "cultural broker"; an actor who is able to bridge the gap by negotiating between different project realities. In the case of the HSA, such an actor might have been able to prevent the situation of project entrapment.

Conclusion: Paradoxes of Control at the Dutch HSA

In the case of the HSA, the cost factor became the major struggle for management as well as for political representatives. As shown, the original decentralization-oriented strategy pushed toward a large variety of types and amounts of internal contracts. Although the one-sided focus on contracting was seen as a crucial vehicle in the battle against cost overrun, this strategy was insufficient. The (relatively) separated contracts were related to specific artifacts (bridges, tunnels, platforms, etc.) and the cost overrun on these subcontracts did not act as trigger for redesign on the other project artifacts. On the contrary, local actors often considered the completion of an artifact like a tunnel (despite the cost factor) as an act of strong management and decisiveness, a result of courage to "stand up" against central bureaucrats that should be followed by the other project agency managers.

In the last phase of the project, the (new) project director of the HSA organization heavily increased contract standardization. Project controllers were empowered to intervene *if necessary*. The quarterly reports were based on the complicated reporting procedures and ICT systems. The reports about the various subprojects more and more acted as internal benchmarks and as vehicles for administrative and organizational improvements ("standard issues," for instance, were—in terms of time and cost—technical development, risk calculation, human capacity, environmental developments, and communication) for the central management. At the same time, contract reality became detached from the day-to-day organizational practices and the problems that were experienced in terms of internal cooperation, communication, team spirit, and trust in the quality of the project outcome.

Although the (quarterly and annual) reports were available from the intranet, only a small group of professionals were able to read and interpret the report results. Project-agency managers “translated” the results in terms of their own organizational reality and strategically presented the information for their own purposes. This is to be seen as an important part in the process of sensemaking—after all, in this way actors created meanings about their social setting in interaction with others (Weick, 1995). Due to these “translation” activities, a serious gap evolved between (1) the “front stage” realities of the project dominated with a mixture of rational models, figures, and schemes of the project and political definitions about failures, and (2) the “backstage” day-to-day reality of the organizational group.

The political inquiry started not only as a ritual (and act) of political accountability, but also as a search for “project improvement,” especially in relation to the theme of changing environmental conditions only partially met the intended goals. Entrepreneurship, innovation, and courage, marked as critical issues by almost all of key players were disqualified by cost-related arguments. In the case of the HSA, the flexibility paradox was almost personified via the demotion of the former project director. The same political actors that initially supported him in his unorthodox—flexible—way to organize and build the project now dismissed him for the lack of (contractual) predictability and procedural correctness.

References

- Alvesson, M. (2002). *Understanding organizational culture*. London: Sage.
- Beck, U. (1992). *Risk society: Towards a new modernity*. London: Sage.
- Boersma, F. K., & Kingma S. F. (2005). From means to ends: The transformation of ERP in a manufacturing company. *Journal of Strategic Information Systems*, 14, 197–219.
- Clegg, S., Pitsis, T. S., Rura-Polley, T., & Marosszeky, M. (2002). Governmentally matters: Designing an alliance culture of interorganizational collaboration for managing projects. *Organization Studies*, 23(3), 317–337.
- Courpasson, D. (2000). Managerial strategies of domination. Power in soft bureaucracies. *Organization Studies*, 21(1), 141–159.
- Czarniawska, B. (1998). *A narrative approach to organization studies*. London: Sage.
- Davenport, T. H. (1998). Putting the enterprise into the enterprise system. *Harvard Business Review*, 121–131.
- Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, 23(4), 660–679.
- Flyvbjerg, B., Holm, M. K. S., & Buhl, S. L. (2002). Underestimating costs in public works projects. Error or lie? *American Planning Association Journal*, 68(3), 279–295.
- Flyvbjerg, B., Holm, M. K. S., & Buhl, S. L. (2003). How common and how large are cost overruns in transport infrastructure project? *Transport Reviews*, 23(1), 71–88.
- Flyvbjerg, B. (2004). Improving the role of Parliament in decision making and realisation with regard to infrastructure project. Lecture held in The Hague in the *Committee on Infrastructure Projects*, May 3, 2004.
- Frissen, P. H. A. (1996). *De Virtuele Staat. Politiek, bestuur, technologie: een postmodern verhaal*. Schoonhoven: Academic Service.
- Hendriks, F., & Tops, P. (2003). Local public management reforms in the Netherlands: Fads, fashions and winds of change. *Public Administration*, 81(2), 301–323.
- Holt, R. (2004). Risk management: The talking cure. *Organization*, 11(2), 251–270.
- Klijn, E. H. (1997). Policy network, an overview. In Kickert, W., E. H. Klijn, & J. Koppenjan (Eds.), *Managing complex networks* (pp. 14–34). London: Sage.
- Koot, W., Sabelis, I., & Ybema, S. (Eds.). (1996). *Contradictions in context. Puzzling over paradoxes in contemporary organizations*. Amsterdam: VU University Press.
- Koppenjan, J. F. M. (2005). The formation of public-private partnerships: Lessons from nine transport infrastructure projects in the Netherlands. *Public Administration*, 83(1), 135–157.
- Martin, J. (2002). *Organizational culture. Mapping the terrain*. London: Sage.
- Ministerie van Verkeer en Waterstaat. (2003). *Voortgangsrapport 13 Hogesnelheidslijn-Zuid*, Den Haag.
- Ministerie van Verkeer en Waterstaat. (2004). *Voortgangsrapport 14 Hogesnelheidslijn-Zuid*, Den Haag.
- Orlikowski, W. J. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science*, 11(4), 404–428.
- Osborne, D., & Gaebler, T. (1992). *Reinventing government. How the entrepreneurial spirit is transforming the public sector*. New York: Addison-Wesley.
- Pestman, P. (2001). *In het spoor van de Betuweroute. Mobilisatie, besluitvorming en institutionalisering rond een groot infrastructureel project*. Amsterdam: Rozenberg Publishers.
- Pollitt, C. (2000). Is the emperor in his underwear? An analysis of the impacts of public management reform. *Public Management*, 2(2), 181–199.
- Van der Ploeg, R. (2001). *De invloed van ICT op maatschappij en overheid. Naïef vooruitgangsgeloof of harde werkelijkheid?* Amsterdam: AUP/Salome.
- Van Loon, J. (2002). *Risk and technological culture: Towards a sociology of virulence*. London: Routledge.
- Van Marrewijk, A., & Veenswijk, M. (2005). Anthropologists at work in the tunnel: Cultural intervention and change in the HSL-Zuid project. In Van Marrewijk, A. & Verweel, P. (Eds.), *Exploring organizations. The development of organizational anthropology in the Netherlands* (pp. 45–55). Amsterdam: SWP Publishers.

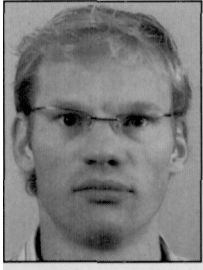
Van Marrewijk, A. H., & Veenswijk, M. (2006). *The culture of project management*. New York, London, Amsterdam: FT/Prentice Hall.

Vaughan, D. (1999). The role of the organization in the production of techno-scientific knowledge. *Social Studies of*

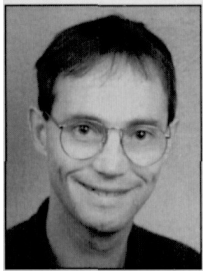
Science, 29(6), 913–943.

Weick, K. E. (1995). *Sensemaking in organizations*. London: Sage.

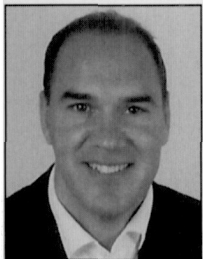
Williamson, O. E. (1985). *The economic institutions of capitalism*. New York: Free Press.



KEES BOERSMA is associate professor at the Vrije Universiteit Amsterdam in the Department of Culture, Organization and Management. His research interests are in science and technology studies, business history and history of technology, and organization, culture and power. He published widely on R&D history, organizational learning, and organizational culture. His publications appeared in such journals as *Enterprise and Society*, *History and Technology*, *Human Relations*, and *Journal of Strategic Information Systems*. He teaches in the courses of organizational behavior, organizational politics and technology and culture.



SYTZE F. KINGMA is lecturer in the field of organizational space and technology at the Department of Culture, Organization and Management, Vrije Universiteit Amsterdam, NL. His research interests involve the confrontation between the “material” and the “virtual” dimensions of organizational networks, and the way “risk” is implicated in contemporary organizational contexts. He published a book (in Dutch) titled *The Gambling Complex* (2002). His major international articles appeared in *International Gambling Studies*, *Journal for Strategic Information Systems*, and *Culture and Organization*.



MARCEL VEENWIJK is full professor in management of cultural change at the Department of Culture, Organization and Management of the Vrije Universiteit Amsterdam. He publishes on organizational culture, change processes, and intervention strategies, especially in the context of public sector organizations and has a wide experience as researcher as consultant. He is editor-in-chief of *Intervention Research: International Journal on Culture, Organization and Management*. In 2006 he co-published *The Culture of Project Management. Understanding Daily Life in Complex Megaprojects*.