Paradoxes of control: the Dutch High Speed Alliance Train (HSA)

Organizational consequences of electronic reporting systems in a large scale infrastructural construction work

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1. Introduction

During the last decade, infrastructure became one of the main issues on the Dutch political agenda, and was closely connected to discussions regarding economic development and growth, welfare and mobility, especially within the concept of European community. Among the many policy plans on infrastructure that were developed in different policy configurations - strategic (political) think tanks, department of transport, Dutch scientific advisory board, etc. - two (initially interconnected) large scale constructions project 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 train (HSA, in Dutch: HogeSnelheidsLijn - HSA) project, which was started up in 1996.

This paper focuses on the (electronic) management and reporting systems of the HSA project. This project attracted a lot of (international) attention, particularly because it was characterized by major deviations in terms of overspending, incorrect timeframes/planning and corruption, which resulted in intensive parliamentary inquiries and a redesign of control models and steering design.

The HSA-organization was reorganized in a reaction to on the one hand the internal tensions caused by technical and budget problems, and on the other hand the external pressure by the Dutch government to come up with transparent and reliable risk analysis. The policy that followed and was executed can be characterized in terms of New Public Management (Pollitt, 2000), which has been recently introduced – at least in rhetorical terms – by policy makers in order to improve the quality and transparency of governmental institutions. For the HSA organization this meant a call for flexibility, transparency and an unambiguous reporting system.

In this paper we try to understand how the electronic monitoring system and the reporting system of the HSA-organization functions in the planning process. We also focus upon the organisational cultural construction and consequences of these reporting systems and the resulting virtualization of the HSA organization. Most research into electronic management mainly addresses the economic technological rationality of these systems, i.e. utilitarian matters of effectiveness and efficiency. This paper supplements and complements this perspective, conceptual as well as empirical, with an exploration of the cultural constitution of electronically managed or virtualized organisations, in this case regarding the Dutch HSA project (Ministerie van V&W, 2004).

The HSA case below will describe the way the project was internally organized, the nature of the contracting relations between the various actors involved and the surveillance structure around these contracting/control modes. The case addresses three mutually related research questions: 1) How and by whom has the HSA project monitoring system been developed and shaped; 2) How does this monitoring system relate, in terms of its 'knowledge content', to the specific organisational (cultural) context of this project? 3) What kind of (un)intended consequences does the monitoring system have for the project culture of this organisation?

2. Theoretical background

Large-scale infrastructural construction works, like the HSA, are typically *high risk ventures* (Pestman, 2001, Flyvbjerg, Holm and Buhl, 2002, 2003). Such projects are not only extremely expensive, but also involve political controversies, complex organisational arrangements and technological challenges. They are, moreover, long term projects that can be adapted and changed 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' (Vaughan, 1999). The analysis focuses upon the way the monitoring system is part of and affects this risk awareness.

Secondly, the project monitoring system is a specific *management tool* that is not only designed for administering the project but also intended for steering it. It deals with

the hierarchical or vertical integration of the HSA project. The analysis identifies main categories of developers, including consultants, and users of the system and draws special attention to differences and changes in the meanings they attribute to this system.

Electronic management and organizational culture

It has been argued before that cost estimates and control in decision-making and execution of transport infrastructural projects are highly, systematically and significantly misleading (Flyvbjerg, Holm and Buhl, 2002). This is certainly true for the Dutch HSA-project and this caused for political tensions. In an in-dept survey, Flyvbjerg, Holm and Buhl presented their findings of a statistical study of over 250 infrastructural projects in 20 nations. One of the most sticking outcomes of this survey was that – at least in terms of costs – transport infrastructures do not perform as promised (Flyvbjerg, Holm and Buhl, 2003). Interestingly, it was Flyvbjerg who was consulted by the Dutch Parliament as first expert in the committee on Infrastructure Projects in May the 3rd 2004 to clarify his findings. The Dutch parliamentarian committee was established that year because of the cost and time planning of the HSA-project got out of hand. The main problem the committee stood for was the misinformation about Dutch mega projects and its consequences. Possible solutions brought up by Flyvbjerg concerned in the first place the Parliament rules and practices that had to be change in order to eliminate or reduce miscommunication and in the second place the HSA-organizational accountability in order to improve risk-analysis (Flyvbjerg, 2004).

The management of the HSA organization has introduced a risk-monitoring system to meet both the call for more transparency and integration. The specific system under consideration is an electronic monitoring system used by project management. In line with claims during the mid 1990s many organisations have implemented standardised Information Systems. Business consultants and managers advocated and welcomed these systems as highly promising. With these systems organisations 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. These objectives are characteristic for private as well as for public investments in information systems (Frissen, 1996; Ploeg, 2001).

Electronic management systems 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) that are often found together in complex organisational settings. These systems reflect the most recent phase in the informatization of organisations, integrating various business processes within and between organisations, thus advancing the virtual dimension of organisations (Davenport, 1998). These new digital technologies have widely been claimed to have the potential to transform organisations and entire economies, affecting identities, power structures and time-spatial relations in fundamental ways (Castells, 1996; Shapiro and Varian 1999).

However, experience has taught us that these systems do not (always) live up to the above-mentioned expectations. Since the end of the 1990s the organisational discourse on Information Systems has changed significantly. Standardized information systems do not simply offer business solutions but also create a lot of new organisational problems and unintended consequences. We can learn this from comments by managers and business consultants as well as from various empirical research on for instance enterprise resource planning (Boersma and 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.

Organisational culture will in this case less be operationalised as certain *aspects of* organisations, and more in terms of a cultural *perspective on* organisations that considers culture as part and parcel of the entire organisation (Alvesson, 2002). Technologies and organisations are from this perspective studied as cultural phenomena in their own right, i.e. the meanings, norms and values associated with particular technologies and organisational practices. The object of analysis are the discourses concerning the HSA project monitoring system and the processes of sensemaking in the life worlds of those involved, management as well as the various participants to the project. In particular Weick's concept of sensemaking (Weick, 1995) is of analytical value in situations where people are confronted with rapid changes, complex problems and unexpected outcomes

of innovations. These circumstances force people literally to make sense of what is going on. They do this through discussions about the expectations and (un) intended consequences of technologies.

3. Research Strategy

The HSA case study is based upon document analysis, observations and interviews. The perceptions of interview respondents give the researcher access to the ideas and conceptions that together form the webs of significance in and around an organization. The interviews must be sufficiently open in order to relate as closely as possible to the everyday reality of the organization being studied. This includes asking probing questions about elements that the respondents consider to be important (Veenswijk, 2001). In this way, researchers can obtain information on the diversity of meanings within and between the interface communities and can 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" (Agre 1995:188, Martin, 2002).

The documents studied in this research were quite divers. There were 'official' documents and policy papers, but also documents written for one's own use, like memos, accompanying letters, (concept) notes and minutes. Even though most of the studied documents came from the organisation itself, documents written about the organisation were also looked at. Publications in newspapers and other attention in the media were also studied. Therefore, a media analysis is also a relevant part of the analysis of documents in the case.

4. High Speed Alliance train: a Dutch large scale construction project

The basic concept of the HSA consisted of a plan to connect Dutch backbone, Amsterdam via a 100 km separate railroad towards the Belgian border (see: http://www.HSAzuid.nl/HSA/index.jsp). 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. 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 group that developed the plan was –in Dutch term- defined as a 'GideonsBende, (quasi) autonomous governmental professionals with a budget broad mandate.

The project was originally designed as an (experimental) public-private constellation in which public and private actors participated and had a joint responsibly for construct and design, as well as for exploitation. Most of the designing was actually the result of public-private cooperation, 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) reported via the secretary-general of the ministry to the Minister of Transport. In 2003 the HSA-project was administratively separated from the Betuweroute-project 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. Most famous became a tunnel (the bore tunnel), which was bored under the green hart (Groene Hart) of the Dutch countryside. All of the five geographic entities were interconnected via loosely coupled separate project agencies, which all reported to a principal organization (the Centrale Projectorganisatie) in Zoetermeer, in the Province of South Holland.

The interconnection was realized via various ranges of contracts, between the principal and the agencies on the on hand and between private architects, or constructors, and the agencies on the other hand. In total, there were more than 900 (sub)contracts) in operation (Ministerie van V&W, 2003). These contracts were monitored on a quarterly basis, and surveillance took place via a complicated set of ICTs. At the one hand, the reports are based upon an integrated business system. Interestingly, from an ICT point of view this system is not highly sophisticated, but rather fragmentated. The content of the system is the outcome of a huge amount of Word-documents, e-mails and Excel sheets that are collected by the contract managers and which summarize technical and

organizational information about sub-projects. On the other hand, the quarterly reports are build upon several ‘standard issues’, for instance - in terms of time and cost – technical development, risk calculation, human capacity, environmental developments and communication) for the central management, for which the information must be collected. This means that the reporting system is standardized by project-features, but not with the help of a standardized software package readily available on the market.

The basic responsibility regarding the accuracy and planning of the data 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 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).

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 HID) and agencies or project-agency managers’. Central issues in the conflict were: report-structure and intervals, lack of trust on accuracy of data between different parties, internal communication structure (who does what) 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 the – sometimes - heterogeneous information raised 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 up by the Dutch Minister of Transport. The most important and visible interventions in the organization were, in the first place 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. Secondly, to meet the problem of fragmentation, the organizational philosophy was adapted to 'central unless'. In the last place, 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.

5. Beyond the borders of control: a triple paradox

What is striking in such cases were (electronic) control mechanisms are introduced, is that this process of rationalization (unintentionally) results in contradictions within the organization. Examples of contradictions are responsible participation and flexible involvement of the individual organizational member on the one hand and management control and steering on the other. Such contradictions, which can be understood in terms of a central paradox – rationalization and control on the one hand and freedom on the other – can we find not in the last place when we study complex organizations (see: Koot, Sabelis and Ybema, 1996). The HSA-case will be analyzed and interpreted following three major paradoxes. These paradoxes can more generally be considered as characteristic for mega projects.

1. Cost paradox: poor performance versus new project initiatives

According to Flyvbjerg (2002) a dominant cost paradox in Large Scale Infraproject 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 (see also Cox, 2003). This is not coincidental. Referring to 'the rise of the entrepreneurial state', Osborne and Gaebler (1992) argue that in many western countries, a (neo-liberal) trend towards New Public Management leads to a 'steer-not row' division between (strategic) public policy areas and decentralized /separated implementation units with a strong use of market mechanisms wherever possible, either in the form of quasi markets to introduce competition between public providers, or by contracting out or privatising services which were previously undertaken directly by the state (Pollit 2000).

This Taylorian division is 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 which lame the project. It also relates to the image of project organizations as machines; units with clear purposes and with a clear authority structure which dominates all the work processes and decisions. This image suggests that these forms of organization should be or could be rational systems organized to operate as efficiently as possible (Klijn, 1997, Morgan, 1998).

2. 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 into being in order to exclude uncertainty, easily can lead to a situation in which knowledge exchange between individuals is restricted (by the formal rules of the organization). A version of this paradox is mentioned earlier by Vaughan (1999: 914): '… 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 complexity of task relation, draws attention to the multiple identification and task interpretation within (semi) autonomous working groups. Her detailed analysis of Challenger, the exploded NASA shuttle, reflects sub-cultural fragmentation and cultural trading zones in which 'realty 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 behaviours between the actors in the working groups, as well as their orientation to the technical artefacts which were constructed to reproduce the safety regulations, as also noted by Weick (1993) and Merrit (2003).

3. Flexibility paradox: standardized 'best practices' versus the need for flexibility and adaptation.

The flexibility paradox stems from the fact that standardization of work routines and control mechanisms, designed to guarantee high quality products, may at the same time function as a blockade for changed environmental (product) quality demands. The notion of unitary agencies and projects as part of a tightly, centralized and standardized system of Governance, is also brought up by Clegg cs. (2002). Clegg states that especially contractual enforcement in Mega projects is held in place by governance mechanisms that involve high degree of work surveillance, to check that it is in accordance with the contract (Clegg, cs, 2002: 318).

However, at the same time these control mechanisms are restricted by the linguistic codes and discourses on which these mechanisms are built. In other words: realities that are situated outside the contractual semantics become part of a latent 'under the stage' world (Goffman, 1979) and may become emergent in either changing principal-agent relations or different social contexts. As such, contracts not only shape the interaction networks in and around the projects, but also give rise to contradictions and tensions between the espoused theories and the multiple realities (like project-risk versus predictable results etc) and which are actually in use (Argyris, 1998).

6. Internal control versus external flexibility at the HSA

In the case of the HSA, the cost factor became *the* major struggle for management as well as for political representatives. The original decentralization oriented strategy pushed towards 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 artefacts (like bridges, tunnels, platforms, etc.) and cost overrun on these sub-contracts did not act as trigger for redesign on the other project-artifacts. On the contrary, the cost paradox existed in the fact that the completion of an artefact was (despite the cost factor) often seen as an act of strong management and decisiveness, a result of courage to 'stand up' against bureaucrats that should be followed by the other project agency-managers.

This also relates to the control paradox. In the last phase of the project, contract standardization was heavily increased by the (new) project director of the HSA organization. Project controllers were empowered to intervene '*if necessary*'. The quarterly reports were based on the complicated reporting procedures and ICTs. The reports about the various sub-projects more and more acted as internal bench 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-realty became detached from the 'day to day' organizational practices and the problems that were experiences in terms of internal cooperation, communication, team spirit and trust in the quality of the project outcome. Internal organizational audits (Koot, 2002, Pover and Veenswijk 2003, 2004) pinpointed to major organizational-cultural problems and related risks in terms of communication gaps, uninspiring management concepts/styles and internal distrust.

Although the (quarterly) reports were available via 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 own purposes. For instance, problems with one of the pillars of the new bridge over a large Dutch river (Holland Diep) were (re)defined as a temporal, technical issues, to be isolated from 'normal' progress on the project, instead of a major construction mistake with huge organizational effects (as reported in the quarterly report). Due to this 'translation' activities, a serious gap evolved between the 'frontstage' reality of the project which was dominated with a strange mixture of rational models, figures and schemes of the project and political definitions about the failures of the project on the one hand, and on the other the 'backstage' day-to day reality of the organizational group.

These two 'streams of reality' were manifested in the parliamentary inquiries which started in 2004. Key actors (some former) within the organization were questioned in public hearings and some of the organizational 'heros' (especially the entrepreneur-oriented former project-director) were heavily critisized upon. In reaction to these political actions, the quest for standardisation, predictability and accountability heavily

'backfired' into the internal organization, especially into the project culture, with cultural contraction and a mechanical concentration on rules, timeframes and (contractual) procedures as a consequence.

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.

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