Cover Page

Title: Managing Public-Private Megaprojects: Paradoxes, Complexity and Project Design

Authors: Marrewijk, Clegg, Pitsis, Veenswijk

Alfons van Marrewijk
Department of Culture, Organization &
Management
Faculty of Social Science
Vrije Universiteit
De Boelelaan 1081
1081 HV Amsterdam
The Netherlands
Tel +31 (0)20 598 6740
fax +31 (0)20 598 6765
Email: a.van.marrewijk@fsw.vu.nl

Stewart R. Clegg [1]
ICAN Research Center
Faculty of Business
University of Technology, Sydney
PO Box 123
Broadway NSW 2007
Sydney, Australia
Tel: +61 2 9514 3934
Fax: +61 2 9514 3602
Email: s.clegg@uts.edu.au

Tyrone S. Pitsis
ICAN Research Center
Faculty of Business
University of Technology, Sydney
PO Box 123
Broadway NSW 2007
Sydney, Australia
Tel: +61 2 9514 3395
Fax: +61 2 9514 3602
Email: tyrone.pitsis@uts.edu.au

Marcel Veenswijk
Department Culture, Organization &
Management
Faculty of Social Science
Vrije Universiteit
De Boelelaan 1081
1081 HV Amsterdam
The Netherlands
Tel: +31 (0) 20 598 6740
m.veenswijk@fsw.vu.nl

---

[1] And; Aston Business School, Vrije University Amsterdam, University of Maastricht.

Managing Public-Private Megaprojects: Paradoxes, Complexity and Project Design

Abstract

Recent studies show that despite their growing popularity, megaprojects - large-scale, complex projects delivered through various partnerships between public and private organisations - often fail to meet costs estimations, time schedules and project outcomes and are motivated by vested interests which operate against the public interest. This paper presents a more benign and theoretically-grounded view on what goes wrong by comparing the project designs, daily practices, project cultures and management approaches of two recent megaprojects in the Netherlands and Australia, showing how these projects made sense of uncertainty, ambiguity and risk. We conclude that project design and project cultures play a role in determining how managers and partners cooperate to achieve project objectives to a greater or lesser extent. (119 words)

Managing Public-Private Megaprojects: Paradoxes, Complexity and Project design[2]

Introduction

Megaprojects have been described as multibillion-dollar mega-infrastructure projects, [1, 2, 3], usually commissioned by governments and delivered by private enterprise; and characterised as uncertain, complex, politically-sensitive and involving a large number of partners [4]. Increasingly, complex and extensive civil engineering and construction projects resemble megaprojects, as they too set up an integrated project organisation combining different organisations' skills, designs and constructs; and in some instances, not only build, but also operate the facility.

Flyvbjerg et al. [2] contend that the majority of megaprojects overrun on costs, fall behind schedule, and fail to deliver in the terms used to justify the need for the project. They suggest that a main cause of such overruns is a lack of realism in initial cost estimates, motivated by vested interests. The length and cost of delays are underestimated, contingencies are set too low, changes in project specifications and designs are not sufficiently taken into account, changes in exchange rates between currencies and price changes are undervalued, as are expropriation costs and safety and environmental demands. Many major projects also contain a large element of technological innovation with associated high risk. Such risk tends to translate into cost increases, which are often not adequately accounted for in initial cost estimates [2, 5]. As a consequence of these features, megaprojects are characterised by conflict and uncertainty and poor cooperation between partners [6].

In this paper we explore the question of how project culture and project design support successful cooperation between partners in megaprojects? We argue it is necessary to take an emic or internally-focused, contextually-grounded view of actual practice rather than an etic or outsider's,

preordained view of megaprojects. To answer the research question we examined two international megaprojects, using an ethnographic research approach. This approach recognises that project environments are subject to processes of social construction, in which participants construct a more or less stable working environment for themselves, [7] with consequently, we conjecture, greater or lesser cooperation between project partners.

While different perspectives on organisational culture are well-documented in the literature [8], our approach recognises that ambiguities, subcultures, conflicts and power and where applicable, various national, professional and project cultures, coexist and operate within (mega)projects [7, 9]. Megaprojects clearly bring together, under various contractual arrangements, differing and competing partners, interests, values and modes of rationality (ways of doing and thinking). By examining the multiple rationalities and cultures of these megaprojects, rather than seeing them as having a singular, shared rationality *per se* [10] or a single integrative culture [8], we offer an alternative view to Flyvbjerg et al.'s [2] claims that megaprojects are motivated by vested interests [11]. We conclude that project design (including contractual arrangements) and project cultures play a role in determining how managers and partners cooperate to achieve project objectives to a greater or lesser extent.

Contracting in Public Private Partnerships

Contractually, megaprojects are often defined in terms of Public Private Partnerships (PPP), in which there is a structural cooperation between public and private parties to deliver some agreed outcome [1, 12, 3]. In recent literature two contrasting types of PPP have been discussed: the turnkey or concession model and the alliance model [13, 5].

In the former, the private partner has the integral responsibility for design, construction and financing, while the alliance model basically consists of a joint enterprise between private partners and a state agency. Both types of partnership are based on the idea that parties not only financially

participate in the project but that they are also more or less interdependent, interacting on the basis of explicit rules that structure their relationship where each contributes different forms of intellectual and social capital [14, 15]. The cases that we consider below are both variants of the alliance approach.

Usually, a master contract and associated documents exists between the partners. These contracts cannot be read simply as a precise and unequivocal set of instructions [16]. Contractual specifications, typically, comprise many complex documents. More often than not there will be points of ambiguity or even disagreement between them. The precise meaning, ie interpretation, of most contractual documents is not stipulated in the documents themselves; there is no meta-rule that provides guidelines for how the meaning embedded in the documents should be interpreted [17]. These immanent (esoteric) grounds of reference in the documents plus substantial opportunities for extensive language games, mean that the precise meaning of what is often very unclear paperwork, becomes translated into contested action in complex, inter-organisational and professional disputes; which we now know, characterise megaprojects. While these contractual arrangements therefore seek to address the many interests which are at stake in complex megaprojects, they do not fully capture the complexity of the multiple, fragmented subcultures [18] at work in a project culture.

Project cultures and rationalities

Within the field of project management studies, attention for a cultural perspective on project management has increased significantly in the last decade [19]. Increasingly, project culture is related to successful collaboration in complex projects [20, 21, 22]. The integrative perspective used in the PMBOK Guide, we believe, is too limited to fully understand the dynamics of project culture in megaprojects [23]. This definition states that culture is the totality of socially transmitted behaviour patterns, arts, beliefs, institutions, and all other products of human work and thought

---

[20]. In this definition there is no recognition of ambiguity, power, and the decision-making practices of project managers and partners, who work within limited boundaries of rational behaviour. Martin's [8] fragmentation perspective on organisation culture, which focuses on ambiguity, power and situationality, is more helpful in shedding light on the daily practices in megaprojects.

Megaprojects are characterised by a culture that is ambiguous; it has fuzzy limits and embodies a duality between objects and actors who are willing the projects into being [24]. There is usually no single centre of calculation and control but many collaborators. Rationality in megaprojects is always incomplete and imperfect in action, and we know that decision-makers rarely look for optimal solutions, as they never have sufficient information to be able to do so, [25]. March and Simon [25] suggest people generally operate with a *bounded rationality*, constrained by limited searches, imperfect knowledge and finite time. Decisions are made when solutions, problems, participants and choices flow around and coincide at a certain point [26, 27].

In addition, megaprojects involve multiple competencies, each of which will be characterised by their specific rationalities, such that talk, decisions and actions will not necessarily be aligned with each other. In Brunsson's [28] terms, getting megaprojects off the ground and keeping them going, presents ample opportunity for participants to make claims about qualities or convictions they do not necessarily have, in other words, for the organisation of hypocrisy. Facing demands for certainty while confronting much that is unknowable and undecidable may well make hypocrisy the norm [13]. We believe that it is these cultural characteristics of organisations which dominate the setting of targets, costs and management contexts of megaprojects, rather than a systematic approach which underestimates costs, risks and timeframes.

Research context and methodology

To answer the research question we argued to take an emic or internally-focused, contextually-grounded view of actual practice rather than an etic or outsider's, preordained view of megaprojects. These time consuming research methods limited the number of cases studied. We selected only two megaprojects.

The first was a large European infrastructure project called The Environ Megaproject – henceforth referred to as Environ - a PPP that ran from the early 1990s to 2006 [7]. This project used untested technologies and involved participants from different industries focusing on a result that was difficult to split into component parts. The project was one in which the national government, construction firms, engineering and consultancy firms, investors and private companies participated, and which was partly pre-financed by the national government and partly by private banks and investors.

Our research investigated the participating organisations, their expectations and reactions to 'critical incidents', defined as any power-related episodes within which personnel perceived that the social and system integration norms in the project were under pressure [29, 30]. To overcome the risk of a researcher's subjectivity in this study we used the concept of researcher triangulation [30]. A group of six researchers, working in teams, undertook biographical interviews (one taking notes, the other doing interviews), observations, participant observations, group interviews, and desk research. Participant observations were carried out for a year at the project's headquarters, regional offices, and offices of the principal partners. To overcome the risk of subjective information from interviewed employees data was triangulated from interviews, biographical interviews, observations, websites, public reports, management reports, internal reports, and interviews with identities revealed through public investigations. In total, eighty-five biographical interviews were conducted with management and workfloor employees of Environ (the project

organisation) and its different partners. These interviews helped to understand the development of value orientations and stimulated reflection for the interviewees. On two occasions a group of managers of large projects reflected on the findings. These were discussed with employees during lunch readings and in knowledge-sharing meetings.

The second project, was the North Side Tunnel Project (NSTP), involving the construction of a 20-kilometre tunnel as part of the 2000 Olympic infrastructure underneath some of the most expensive domestic real estate in Sydney, Australia. The purpose of the tunnel was to carry storm water, together with raw sewage which backed up into the storm water system when severe rain events were experienced, to a coastal sewerage pump station for treatment and pumping four kilometres out to sea. The project was initiated by one of the New South Wales government's largest public companies, Sydney Water Corporation (SWC).

Data was collected over an eighteen-month period through close observation of all the Project Alliance Leadership Team (PALT) meetings held for the project. One or more of three researchers attended these meetings and transcribed, verbatim, the proceedings of the meetings. Data triangulation was imposed by checking these data against official records and with the record taker. Thirty interviews were also conducted with all members of the PALT, members of lower order management teams and the workforce, as well as with stakeholders in the local communities and councils.

Both projects involved the construction of major social infrastructure delivered through interorganisational collaboration between private and public organisations and contained parallel complexities of managing public/private partner relations. Both were carried out under conditions of high uncertainty, ambiguity and complexity with extremely tight deadlines and budgets. The projects were realised in different countries - an ideal opportunity to conduct a comparative analysis on two very similar projects occurring in different cultural locations and contexts.

To ensure comparability, we analysed the data in terms of five basic issues of social construction: (1) basic project orientations, (2) social interaction, (3) dominant paradoxes between the players, (4) how these configurations were structured and disciplined via power-related connections, and lastly, (5) the way knowledge was distributed between partners. We thought of these as a matrix framing megaprojects in the way we understood them; thus, the matrix played the role of a meta-organising device to make sense of the discrete and specific data collected in each setting. Each element in the matrix represented a potential way to frame the raw data to gauge its contribution to overall social and system (dis)integration.

Project Description: The Environ Megaproject

The Environ project ran from the early 1970s to 2006, in a number of phases. The exploration phase started back in the 1970s; followed by the initiation phase, 1988 to1991; the decision-making phase, 1998 – 2000 and the realisation phase which went from 2000 to 2006. The Ministry of Public Works controlled the budget of Environ in order to avoid cost overruns and reported directly to the Minister. Two departments of the Ministry of Public Works were responsible for the project: Steer was responsible for the initiation and decision-making phases, while Flow was responsible for the realisation phase. Another important partner in the project was Straight, a well-established centre of expertise for project management and infrastructure construction. Importantly, Environ was a project that was situated independently from the bureaucracy of the public sector.

(1) Basic project orientation

The discourse in the decision-making phase was dominated by stories of the uniqueness of the project, its innovative concept and its creative process management. The project management team developed a project culture characterised as 'a fighting spirit', based upon internal values such as independence, innovativeness, entrepreneurship and strong goal orientations. The project had

to be flexible and react sensitively to discussions and changes in the political context, as the project scope was not very clear. In the eyes of the project management team, the managers working in the project had to be innovators, strong in conceptual thinking and the development of new ideas, good at communicating enthusiasm and capable of overcoming resistance from (political) interference.

After an early crisis period in the collaborative relationship between Steer and Straight, when relations between them really soured, the management of Environ acknowledged that it needed the cooperation of other partners in order for the project to successfully reach its objectives. A number of public employees from Flow joined the project at that stage changing the management to a more diplomatic style, focusing on conflict avoidance and cooperative behaviour. The organisational culture became more centralised; more hierarchical; with an emphasis on procedures, (financial) control and human resources. Through the creation of new information exchange processes, involving better exchange of knowledge, organisational networks were restored with Straight. Although the new project management encountered old scores and antagonisms, more and more partners slowly committed to Environ.

(2) Social interaction

In the beginning, the project organisation's autonomy gave rise to discontent amongst employees in Straight, Flow and Steer. Partners initially did not want or were not able to support the project with personnel and or knowledge. Consequently, it was hard to find experienced, qualified employees, and more than 95% of the employees working on Environ were hired from engineering consultancy firms rather than sourced from within the partners. Therefore, largely, the experience and knowledge of personnel in Flow, Straight and other partners was missing from Environ.

Flow and Steer brought to the project two different organisational cultures with a poor record of cooperation. In addition to this, Flow was responsible for parts of the project already agreed while Steer was responsible for parts that were still in the process of decision-making. The decision to split the project in this way was opposed by the Environ project management team, afraid of losing control over the project, although this was done to give it maximum flexibility in adapting to political developments.

(3) Dominant paradoxes

Although the 'fighting spirit' was functional in its early phases, it proved dysfunctional later in implementing the project when financial control became predominant. When a prediction of cost overruns of more than EUR800 million caused political unrest, a parliamentary inquiry was instigated to investigate this financial setback. Public interviews were held to interrogate personnel working in Environ. This parliamentary inquiry resulted in politicians asking for more financial control and transparency.

At this point, the project was locked in a dysfunctional culture [31]. Characterised by a static perspective on transformation, a low capacity for self-reflection, an inside-oriented focus, and no experience with market orientations, there was little possibility of the project team's self-unlocking. As a result, Flow took the project over in the realisation phase and installed a new project manager, whose intervention resulted in a significant cultural change. As the latter's organisational culture was introduced the overall culture shifted from its halcyon beginnings, gradually, toward a more traditional, formalised project management style.

As a result of their relatively independent status, the management of Environ was set up to have responsibility for initiating, managing, and executing all activities relating to the construction of the infrastructure. All other partners had little authority in the project despite their relevant expertise. To include the cooperation of Straight and other partners, a steering committee had been

established to prepare for the realisation phase, in which all partners would participate. However, not all partners agreed upon the organisation of activities recommended for the project.

> *We have had sessions with the partners to discuss the cooperation model. But there wasn't a cooperative attitude.* (Interview with manager of Ministry of Public Works)

Environ was at that stage, in a state of conflict between almost all of the partners, who no longer wanted to cooperate. Informants stressed the lack of enthusiasm for the dominant and autonomous position of the project organisation. Partners had no direct influence on decision-making and the control of activities; they were responsible only for support in terms of people, knowledge and experience. They would have preferred a matrix model in which they had greater authority and were responsible for specific parts of the project.

(4) Power relations

Environ was not successful in obtaining partner commitment from Flow, Steer and Straight. Extending a common project culture beyond the limits of project alliance partners' sovereignty is always difficult; where stakeholders have to deal with the world of other organisations and individuals outside their sovereign realms they lack authoritative resources to impose their will [4].

As a result of different interpretations of the Environ goals, the commitment of partners was seriously under question. For Straight the construction and operation of the infrastructure was the ultimate goal, while Steer concentrated on the possibility of reforming the monopoly player running the infrastructure. On the other hand, Flow was fixed on becoming a monopolist in the management of infrastructural megaprojects. Although the project mission and goal were clearly formulated and relatively constant across time, the partners' interpretation differed about both the time and setting for these to happen.

> *My most impressive personal experience with this project was the clash of cultures and structures.*
>
> (Interview with a project manager of the Environ Megaproject)

---

(5) Knowledge distribution

Throughout the project the commitment of Flow and Straight to Environ would be crucial for success. From Flow's perspective, Straight was unable to bring about the necessary innovation. Furthermore, Flow's administrative system of control was chosen as the model for Environ, which, according to Straight, gave too much control to Flow. Flow, in practice, had project control with (human) resources and knowledge inputs from Straight. Straight threatened to resign from the project. When it became clear that control indeed was in Flow's hands, Straight quit cooperating and no longer supported Environ.

During the realisation phase, commitment by the partners was slowly restored. Environ acknowledged that it needed the cooperation of other partners (Straight, Flow and Steer) in order to reach the project's objectives successfully. When a number of public employees from Flow joined the project and changed the management style, as detailed above, the organisational culture became more centralised and hierarchical. Through improved knowledge management exchanges, organisational relations were restored with Straight and the partners slowly but increasingly committed to Environ.

Project Description: North-Side Tunnel Project (NSTP) Alliance

In 1997 The Board of Directors of SWC initiated an alliance approach as the method most likely to achieve a project to address Sydney Harbour's pollution problems before the 2000 Sydney Olympics.

SWC chose three main partners in the design and construction of a tunnel: a large operations, maintenance and asset-management service company; an engineering and technology solutions company; and an asset-management consulting company. SWC was both a customer that would take delivery of and maintain the infrastructure, and a member of the alliance. Together the companies formed the NSTP Alliance – henceforth NSTP.

The NSTP budget was primarily controlled by the SWC parent company with any budgetary changes required approval by the State Government's Minister for Energy and Utilities, which closely monitored the NSTP project.

The governance structure of the project was named the Project Alliance Leadership Team (PALT), comprising directors or senior executives from each parent organisation. In order to encourage a unique identity, the NSTP was registered as a separate legal entity and all prior planning and design, as well as administration, took place in a separate location from those of all four, parent organisations. What the PALT wanted was to produce a designer culture for the project rather than have it as an arena in which the various project organisations' cultures fought for dominance [32].

(1) Basic project orientation

Because of tight deadlines there were severe limitations in the capacity to scope the project. As such planning, construction, problem solving and decision-making occurred concurrently. The adversarial relationships experienced previously by the separate parent organisations within many earlier projects made it clear to all partners that a significant investment in culture would be required for NSTP to construct the project within two years. Therefore, all people working on NSTP were inducted, irrespective of whether they were a CEO, sub-contractor, or researcher. Those personnel not 'capable' of working in a team-based environment, or who did not fit the culture, were outsourced to other projects. The Alliance sought to ensure that identity would not be allied with the parent company but rather with the NSTP, placing the project's success above all else. The alliance leadership and management teams sought to create a culture that would ensure an integrated, committed and self-directed workforce able to adapt to and improvise with problems in-situ. SWC chose its partners not on competitive tender but on goodness-of-fit with the alliancing principles of a *no-blame culture* and one of doing *what's best for project*.

These two principles of the culture were underpinned by an emphasis on the strengths of relationships; a desire to resolve any disputes internally without disruption or cost to the project, and an ambitious set of key performance indicators that not only included cost, schedule and safety, but also environment and community. In terms of KPIs, there was a clear expectation that the alliance would deliver the project on time and within budget, and with an excellent safety record, well above the norm. It was also expected that the project would improve the environment and that the community would be involved as stakeholders. These KPIs added complexity to the project and meant that people who usually work in a closed environment (for example, engineers) would be required to liaise with their communities. These KPIs were underpinned by a complex system of shared risk and rewards paid on a sliding scale ranging from Poor through to Outstanding.

The Alliance was managed by three overlapping teams. The PALT behaved as a board of directors providing strategic direction, promoting and sustaining a high performance alliance culture, and acting as the point of contact between the Alliance, the parent companies, government and its agencies. The Integrated Project Team (IPT) comprised employees of the alliance partners and was responsible for project delivery. The Alliance Implementation Team (AIT) managed and maintained alliance processes. To fully integrate the alliance, members of each team often attended each others' meetings. There were also a range of teams on construction sites whose meetings were attended by PALT, AIT and IPT members, as well as site foremen, supervisors and workers. Thus, while there was a hierarchy, feedback and democratic participation were encouraged and promoted.

(2) Social interaction

The socialisation mechanisms worked well in facilitating and maintaining a cohesive and committed Alliance team. All leadership teams of the alliance were conscious that they had to

model alliance behaviours and reinforce cultural principles, such as doing what's best for the project. Induction workshops, seminars, 'tool-box' meetings, social days (e.g. BBQs) were used to build an alliance culture and socialise people into the alliance culture.

Remarkably, there was no industrial action and conflict on the project; union members were involved as stakeholders on the project, and an open-book management system was used to ensure transparency and trust.

While working on the NSTP was mentally challenging and fulfilling, people formed very close bonds with staff from other parent companies as almost all problems were tackled as a team. Few reported positive feelings about returning to their 'old' jobs.

(3) Dominant paradoxes

Parent organisations were heavily involved in all aspects of realising the project outcomes. Each parent organisation not only offered its strengths and capabilities by providing expert staff at all levels of NSTP, but also ensured its own interests were being met through equal representation on the PALT and through a turn as the rotating chair. The partnership interests came before parent-organisation interests.

> *You've been with us for a year now… what is the one thing you have noticed about us? It's that you could never tell who is a Tman, or an Mman or a SWC guy. What's amazing…is that the people on this job are risking a lot, and they always put their partners' concerns before their own.* (PALT Chair interview, May 2000)

The success of the NSTP project was an imperative not only for SWC but also for the government, which expedited a broad range of regulatory requirements and decision-making concerning approvals and environmental impact statements. Some local councils felt totally out of the 'loop' regarding significant aspects of the project. The necessity of improvising as an alliance failed to take into account that councils have a long organisational memory of things happening in

a bureaucratic way. The speed of adaptation within the alliance was not emulated outside that alliance.

Similarly, the NSTP's improvisatory way was stalled by slow decision-making within some state government bodies, who had little or no interest in acting at the speed of NSTP, so PALT felt time was wasted by decision-makers within government agencies. Many members felt that the NSTP could have worked more closely with these government departments to streamline their decisions on planning, design, and variations.

 (4) Power relations

PALT members were unified by a covert goal to promote public-private partner project-based alliancing as the preferred method for realising complex infrastructural projects. However, SWC being both customer and member of NSTP posed some challenges to the project. Its sheer size, age and politics means that diverse internal power political interests coexisted in constant tension internally and towards outsiders. Consequently the NSTP PALT members from SWC often reported feelings of tension between their position on the NSTP and as SWC employees. To address this, time and effort was spent in 'selling' alliancing to senior people at the higher levels of SWC. Whenever resistance or criticism emerged from within any parent company, such as SWC, the representatives of each of the parent companies acted as buffers and agents for the NSTP.

The community KPI created external power-political tensions. The NSTP wanted to establish best practice in community relationships. The community was given a role in designing a giant shed that would cover the tunnel entry site and a voice in decision-making concerning the control of traffic, noise and environmental pollution. Many in the community reported that early in the project they were highly sceptical about the alliance's community commitment. However, *by the time they were in full swing, it was clear to us that they are going to keep their word*" (Interview with community representative, April 2000).

Major problems emerged however within one small but vocal community from variations to design and the location of air vents. Relationships deteriorated such that the community liaison group (CLG) established to work with the wider community had to focus solely on this one issue. After an impact study, following a halt in construction, independent arbitrators decided that the community claims were unfounded and construction recommenced.

An independent audit on the community KPI after the project established that the NSTP should be seen as an exemplar for how organisations might structure relationships with the community.

 (5) Knowledge distribution

The knowledge distribution between NSTP partners was exemplary and was maintained throughout the project. Not one serious conflict occurred between any of the direct internal stakeholders involved. A diplomatic approach was used in all aspects of the project, although the democratic and diplomatic knowledge distribution within the NSTP was flawed because it limited critical reflection. As the project team developed an inflated view of its own capability in solving problems that arose: they believed that as the 'best' organisations and people constituted the alliance, nothing could go wrong. An 'us' and 'them' mentality began to creep into the project: any individuals, groups or organisations external to the NSTP that criticised or opposed the project were discounted as 'outsiders', lacking the knowledge and ability to understand and make sense of alliancing.

The project was realised on time and on within budget, and exceeded environment and community expectations. The project team were subsequently recipients of international awards in Europe and North America.

Discussion

What then does a comparison of the case studies teach us in general and in relation to Fylvbjerg et al.'s [2] ideas of project rationality and deceptive behaviours, which suggest that these projects

routinely exceed estimates of their risk in terms of costs, completion, and other performance indicators because those associated with their commissioning and implementation will use deceptive indicators and misleading projections resulting in the misallocation of scarce resources [2]?

While the first half of the proposition is valid it does not follow that the second half is also true. If it were, then it would implicate a whole profession of project management, as well as all the ancillary professions associated with it, in a massive conspiracy against the public interest. Additionally, it would imply that government ministers and their public service advisers, as well as merchant bankers and shareholders, were also either duplicitous or, at the very least, stupid.

Implicitly, those arguments that see the failures of megaprojects as residing in deliberate attempts to mislead stakeholders about the true costs and complexity of the projects assume a norm in which large scale organisations are characterised by rational behaviours which would be capable of systematically designing such outcomes.

We argue, based on our case studies above, that there is a better explanation for the outcomes that Flyvbjerg et al. [2] have identified. Our research indicates that megaprojects are not necessarily premised on widespread conspiracies against the public interest but are managed to the best of their abilities, by professionals and civil servants in the context of very complex operations, paradoxes, uncertainties, influences and ambiguities which surround these projects.

The different megaproject outcomes for both projects, realised through different project designs and different project cultures, illustrate that we are a long way from Flyvbjerg et al.'s [2] duplicitous and deceitful actors here. Instead we are dealing with everyday managers and engineers seeking to work to create some sense in contexts of different and variable [19, 33, 34, 35] rationalities and cultures undertaking normal organisational (project management) practices and relying ultimately on documents with variable interpretations, incomplete data and many opportunities for gaps to arise between talk, actions and decisions.

Due to the limited number of projects the findings of this study should be generalized with care. Data were interpreted in relation to the specific Western cultural context of the cases studied. We are fully aware that the findings from these PPP megaprojects cannot be easily transformed to PPP megaprojects in other cultural settings. Differences in national culture, religion, history, politics, and ethnicity are very important in the understanding of daily life in megaprojects [7].

It is obvious that the projects were developed in very different contexts. Environ was intended to contribute to the political dream of an integrated and well-connected Europe. The PPP construction, with all its contractual complexities, should have set the standard for a new generation of megaprojects in which a network of interdependent partners would be responsible and accountable.

On the other hand, the NSTP project was directly linked to the Sydney Olympics. The project had to deliver a sound, working tunnel on time, within budget, meeting the performance obligations on safety, community and environment. The project rationale was defined in line with this task: no detailed plans in advance, priority for what's best for the project and an innovative no blame culture.

The organisational settings reflect very different project orientations. While social interaction within the NSTP could be characterised in terms of strong social cohesion and an almost complete lack of conflict, the Environ project was the reverse. The original designers of the project were held responsible for the lack of clarity in the initial project design (in terms of scope and financial risks), the lack of involvement of the partner organisations, and the absence of adequate political antennae. The drift away from the parent organisations in the NSTP case was not so much a matter of deliberate exclusion but the result of a natural group closure process and an internal dependence by committed members on the project team.

In both cases, the confrontation between internal versus external environments highlighted some remarkable paradoxes. In the case of Environ, the initial requisite cultural orientations of public

entrepreneurship, creativity and innovation served more and more as ingredients and ammunition for severe criticism in the subsequent stages of the project. In addition, attempts to include the partners in the project arena gave rise to a new type of dynamic: conflict born as a result of the design of organisational participation. It is remarkable that in the NSTP case conflicts seemed to be completely absent. From the start, all parent organisations were heavily involved in the NSTP and had an equal representation in PALT. There was no (artificial) need to reinvent relations with project stakeholders. The contract was monitored by the PALT as a central agency and, because of the tight on time and within budget project doctrine, this control was never contested internally. Externally, local government did contest this control, but they had no representational or constitutive role in the project.

In both cases we see shifting influences of internal and external power configurations. In the case of Environ, power was organised around the various definitions of success by the project (partners), specifically, the construction versus innovation issue. A Parliamentary inquiry forced the project partners into the organisation of an artificial stream of mutual knowledge distribution. In the meantime, a set of additional regulations forced the management of the Environ project to shift towards a centralised, bureaucratic culture. In the NSTP case it was mainly the noble goal of establishing best practice in community relationships which created power tensions, as the NSTP provided an arena in which the community could exercise responsibility but not always with accountability. Although organisational partners were committed to the project objectives, some people in the community were empowered but did not share NSTP goals. Although both projects were marked as politically high profile, innovative, and infrastructurally complex, involving multiple stakeholders and having a huge societal impact in terms of prestige, costs and technical risk, the projects were organised in very different ways with very different quality outcomes. The Environ case was a striking example of Flyvbjerg et al.'s [2] characterisation of megaprojects in

terms of the budgetary and time overruns, while the NSTP case was a welcome exception to the rule.

The autonomy of a project organization and the authorization of partners are central in the dilemma of control-versus-commitment dilemma, claim Child and Faulkner [36]. Control in megaprojects is needed given the extensive media interest in their enormous budgets and the considerable social impact that these mega-project alliances can have. Excessive control in the organizational network may hinder the development of cooperation and commitment between the partners. And commitment is decisive for the success of an alliance [36]. Findings from the two cases suggested that the excessive control in the Environ case resulted in a loss of commitment by the partners in the megaproject while in the NSTP case commitment was organized to meet the mega-project's objectives.

Both projects still exhibit some imperfections (unforeseen risks) in terms of their overall project management, especially concerning the wider cultural or societal settings in which they were realised.

Environ was developed in a European cultural context, where societal debates on the role and position of government heavily influenced the ways these new megaprojects were reviewed. PPP constructions attracted scepticism within large parts of the central government. When it became clear that the project team could not guarantee the project would meet budget and time expectations, the Ministry of Transport switched to the default setting of its natural role and took over. It marginalised the PPP management and heavily centralised the organisation of Environ according to traditional practices. The partial replacement of project managers created conflict in the running of Environ. Old managers tried to continue their business as usual habits, while the new project director brought in fresh sets of rules and heavily centralised and standardised the work processes and contractual regime.

The NSTP project was developed in a completely different cultural setting, and within a societal context of constructing the best Olympics that credited entrepreneurship, pragmatism and getting things done. There were no debates on the role of public versus private players, and the team could easily stick to the 'what's best for the project' maxim, which made it easier for the project team to focus on the project particulars and deal with technical and managerial issues. Although the management team concentrated on questions of how to deal with uncertainties, successful cooperation between partners was achieved and there was no comparable type of ambiguity regarding the project orientation and organisational constellation, as was the case with Environ.

Conclusion: Organising project cultures for achieving cooperation

The case studies suggest that managerial rationalities are limited in understanding their own complex project realities which are themselves bound by limits imposed by overall governance structures and strategies. In Environ, complexity was reduced to such a level that project definitions within the project team prevented the group members from connecting with their external project partners. The environment became a hostile entity, resulting in distrust and a lack of information distribution between the team and external partners.

Ironically, the NSTP project faced an almost inverse form of complexity. Due to its tight connection with parents and partners, the environment became an inverse mirror of the project team's successful self-image and when foreign elements in that environment, who came from outside the project reality as it was being co-constructed, mobilised around the venting issue, they caught the team off guard because its members were so strongly committed to the rhetoric of their culture.

There are fundamental project design implications to be drawn from the two cases. In the Environ case, power relations, and the lack of balance between players, sabotaged the project

design and prevented an appropriate, functional or overt, project culture, from emerging. By contrast, in the NSTP, the power relations were well-thought out beforehand through governance mechanisms, and the overall incentive role played by the relationship between the KPIs and the risk/reward scheme. The risk of the project being sabotaged came not from the partners' political machinations but from self-induced political blind spots, in terms of their role in empowering communities without providing an arena in which this power could be allied with responsibility.

Internally, the NSTP solved the problems that Flyvbjerg and his colleagues [2] attribute to malfeasance through the marriage of internal democracy among the partners with a strict regime of accountability that was *both* non-zero sum *and* served the self-interest of the players. In Environ the inability to do this led to a break down in culture and political relations the upshot of which was that self-interest never became defined in terms of any overarching good but became an organising device for regression to the norm of highly-conflictual project relations.

These findings criticize the top-down conception that still dominates academic debate on project management. These concepts perceive project organisations situated in a social environment in which work-related goals and activities are clear and can be predicted. In such a conception there are no internal conflicts which hinder the project and complexity is located in the domain of policy formulation. The findings of the two megaprojects support the need include issues of power, ambiguity, and paradoxes for studying project management and contribute to the emerge of a critical theory on project management as suggested by Hodgson and Cicmil [37].

Even thought the results of Environ, with time and budget slippage, might seem to suggest to an outsider that there was a conspiracy against the public interest, seen from the inside, our findings are more mundane and show that what managers were doing, reflects regular practice. It was fundamental aspects of organisational and project design and the politics of decision-making rather than a conspiracy between project partners, government and financial institutions that produced a less than optimal result and one that differed markedly from that projected at the outset. No basis

for collective interest was evidenced in the project and if anything, it was the absence of any such collective interest that sabotaged the project.

Flyvbjerg et al.'s [2] view is essentially one that takes a functional, external view on the projects, identifying a paradox of the increasing, yet counterintuitive, popularity of these projects even though their record is poor on performance, budget and on-time delivery. He accuses the megaprojects of lacking in accountability, yet acknowledges that 'rarely is there a simple truth about such projects' and that 'what is presented as a reality by one set of experts is often a social construct that can be reconstructed and deconstructed by another set of experts' [2].

We would agree and contend that instead of seeing the budget overruns, inflated forecasts, costs and public benefit as occurring by malevolent design, we should see them as the result of normal practice of professionals operating with limited knowledge, but influenced dramatically by a range of ambiguous and uncertain external and internal forces. Amongst these, project design and project cultures and rationalities play a central role in influencing successful cooperation between partners.

We argue it is necessary therefore to take an emic or internally-focused, contextually-grounded view of actual practice rather than an etic or outsider's, preordained view of megaprojects. By considering long-established traditions in organisation and management theory, including the nature of practical rationality, plus differing organisational interests, values and project orientations or cultures, we obtain a real, rather than an idealised view, of what takes place. In this way, megaprojects with their complexity can be seen as the norm, rather than being condemned because they do not match an ideal where project objectives are achieved faultlessly and effortlessly. An ideal set of circumstances and outcomes, which differ too drastically from everyday practice, will always produce gaps for analysis. It is not so much that these gaps need filling by post hoc moral outrage but rather that the practical rationalities and practices of the players whose projects are at

stake, need to be considered and analysed in the context of their project designs and project cultures. That is the key message of our research.

Cited References

1 Turner J. The handbook of project-based management. 2nd ed. London, McGraw Hill, 1999.

2 Flyvbjerg B, Bruzelius N, Rothengatter W. Megaprojects and Risk. An Anatomy of Ambition. Cambridge, Cambridge University Press, 2003.

3 Koppenjan J. The Formation of Public Private Partnerships: Lessons from Nine Transport Infrastructure Projects in The Netherlands, Public Administration. 2005;83, 135-157.

4 Clegg S, Pitsis T, Rura-Polley T, Maroosszeky M. Governmentality matters: Designing an alliance culture of interorganisational collaboration for managing projects. Organisation Studies 2002; 23(3): 317-38.

5 Antikoye A, Beck M. (eds). Public Private Partnerships: Managing Risks and Opportunities. London, Blackwell, 2003.

6 Van Marrewijk A. Strategies of Cooperation. Commitment and Control in a Megaproject. In: *M@n@gement*, 2005;4, 89-104.

7 Van Marrewijk A, Veenswijk, M. The Culture of Project Management: Understanding Daily Life in Complex Megaprojects. Essex. Prentice Hall, 2006.

8 Martin J. Organizational culture mapping the terrain. London: Sage, 2002.

9 Van Maanen J , Barley S.. Cultural Organization: fragments of a theory. In: Frost P, editor. Organizational culture. London: Sage Publications; 1985. p 31- 53.

10 Clegg S. Power, rule and domination. London, Routledge & Kegan Paul, 1975.

11 Flyvbjerg B, Holm S, Buhl S. Underestimating Costs in Public Work Projects. Error or Lie? Journal of the American Planning Association 2002;68(3):279-95.

12 Hodge G. The risky business of public–private partnerships. Australian Journal of Public Administration 2004; 63(4): 37-49.

13 Klijn E, Teisman G. Governing Public-Private Partnerships; Analysing and Managing the Processes and Institutional Characteristics of Public-private Partnerships, in S.P. Osborne (ed). Public Private Partnerships: Theory and Practice in International Perspective. London, Routledge, 2000.

14 Erridge A, Greer J. Partnerships and Public Procurement: Building Social Capital through Supply Relations. Public Administration, 2002; 80, 3:503–22.

15 Koot W, Sabelis I. Beyond complexity. Paradoxes and coping strategies in managerial life. Amsterdam: Rozenberg Publishers. 2002.

16 Bruijn de J, de Jong P, Korsten A, van Zanten W. (ed.). Grote projecten besluitvorming en management. Alphen aan den Rijn: Samsom Tjeenk Willink, 1996.

17 Wittgenstein L. The Blue and Brown Books: Preliminary Studies for the Philosophical Investigations. Oxford, Blackwell, 1972.

18 Kendra K, Taplin T. Project success: a cultural framework. Project Management Journal 2004:35 (1): 30 – 45.

19 Henrie M, Sousa-Poza A. Project Management: a cultural review. Project Management Institute 2005;36 (1): 5-14.

20 Hastings C. Building the culture of organizational networks. International Journal of Project Management 1995;13:259-63.

21 Jaafari A. Project Management in the Age of Complexity and Change. International Journal of Project Management 2003;34(4):47-57.

22 Maya M, Rahimi, Meshkati N, Madabushi D, Pope K. Cultural Influence on the Implementation of Lessons Learned in Project Management. Engineering Management Journal 2005;17(4):17-24.

23 Van Marrewijk A. Managing Project Culture: the Case of Environ Mega-project. In: International Journal of Project Management 2007;25:290-299

24 Engwall M. The ambiguous project concept(s). In: Lundin, R.A., Midler, C. (Eds.), Projects as Arenas for Renewal and Learning Processes. Kluwer Academic Publishers, Boston, MA, 1998.

25 March J, Simons H. Organisations. New York, Wiley, 1958.

26 Cohen M, March J, Olsen J. A garbage can theory of organisational choice. Administrative Science Quarterly 1972; 17:1-25.

27 Starbuck W. Organisations as action generators. American Sociological Review, 48, 1983: 91-102.

28 Brunsson N. Organisation of Hypocrisy: Talk, Decisions and Actions in Organisations. Copenhagen, Copenhagen Business School Press, 2002.

29 Clegg S. Frameworks of power. London, Sage, 1989.

30 Yanow D, Schwartz-Shea, P. (eds.). Interpretation and Method: Empirical Research Methods and the Interpretative Turn. Armonk, NY: M E Sharpe. 2006.

31 Bate P. Strategies for cultural Change. Oxford: Butterworth Heinemann, 1994.

32 Pitsis T, Clegg S, Marosszeky M, Rura-Polley T. Constructing the Olympic dream: A future perfect strategy of project management. Organisation Science 2003;14(5): 574-90.

33 Wang X. Dimensions and current status of project management culture. Project Management Journal 2001;32(4): 4-17.

34 Quinn R, Cameron K (Eds). Paradox and transformation: toward a theory of change in organizations and management. Cambridge (Mass): Ballinger Publishing Company, 1988.

35 Anderssen E. Understanding your project organisation's character. International Journal Project Management 2003;34(4): 4 – 11.

36 Child J, Faulkner D. Strategies of co-operation, managing alliances, networks and joint ventures, Oxford: Oxford University Press, 1998.

37 Hodgson, D, Cicmil S (Eds). Making Projects Critical. New York, Pallgrave Macmillan, 2006.