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CLIENT DECISION-MAKING TO SUPPORT INNOVATIONS ON MEGAPROJECTS

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Innovation requires a social governance environment that supports creativity. This research aims to examine the governance context on megaprojects with a focus on the client's role. This paper discusses early observations of one case study of a client involved with the finance, design, management, construction and operation of an innovative megaproject in Singapore. It is the largest sports facilities infrastructure Public-Private-Partnership (PPP) project in the world. It is also the largest and first PPP project in Singapore. PPP projects have multiple 'clients'. In this study the client network comprises the government agency responsible for setting up the project framework and the various PPP consortium partners. The procurement strategy is innovative for this country. A series of other innovations in terms of project information management and functional and environmental design have also been identified. The theory of cultural political economy and the concept of governmentality underpin the study. The narrative inquiry and social network analysis methods will be used. The preliminary results indicate that various stakeholders both within and external to the client network can influence decision-making to support or suppress the delivery of innovations. Furthermore client decision-making was shown to be deeply embedded informal multilevel networks through the use of various forms of power by stakeholders with individual interests. Despite the importance of organisational structures in formalising communication flows and patterns, the manner in which work is carried out on a daily basis tends to be negotiated by informal relationships and interactions between members within and across organisations. Megaproject decision-making is thus a network research problem requiring an understanding of the nature and structure of power relations. The next stage of analysis involves the use of Social Network Analysis as a form of "organisational x-ray" to make visible those network characteristics typically regarded as invisible. The demonstration of the characteristics of different network structures' influence on client decision-making to support or suppress innovations on megaprojects has implications for practitioners and researchers alike.

Keywords: Case study, clients, megaprojects social network analysis

INTRODUCTION

More than ever before, architectural, engineering and construction (AEC) firms are working on megaprojects composed of multiple key partners from various countries. Although megaprojects are typically associated with high project costs, the characteristics that elevate a project to 'mega' status are more complex than simply project costs alone. Such projects often push the boundaries of construction scope, scale and experience whereby the characteristics of cost, complexity, risk, ideals and visibility are of the

extreme and magnified beyond the level of 'standard' thereby resulting in a megaproject (Fiori and Kovaka, 2005). The interests and power relations on megaprojects are often very strong given the significant amount of money, jobs, environmental impacts, publicity and national prestige involved (Merrow, 1998).

The megaproject environment provides a fertile ground for innovations to take place since it is generally perceived that its success is reliant upon signature design, high publicity of idealistic visions and grandeur project scale – key characteristics which call for innovative ideas and solutions (Boyd and Chinyio, 2006). Strategic decisions are made on megaprojects due to interests and motivations not found on everyday projects. Innovation requires a social governance environment that supports creativity. Clients exert direct influence on the potential innovations to be achieved on megaprojects (Nam and Tatum, 1997; Hartmann et al, 2008). It is thus important to understand the behaviour of clients in terms of decisions made to support or suppress innovations on megaprojects.

This paper is positioned within an ongoing PhD study seeking to examine the governance context on megaprojects. The study examines the sophistication of megaproject clients who are often made up of representatives across multiple units or political groups in large-scale corporations or government agencies at the strategic, managerial and technical levels. Clients in the AEC sector occupy a distinctly different position as the initiator of construction supply chain. Therefore clients experience and respond to project matters based upon their environment and not the construction industry environment. Past megaproject research focussing on the industry's role has very little relevance to the actual, daily activities of those clients at the beginning of the supply chain. Client priorities set the boundaries within which decisions affecting innovations, budgets, design, project organisational structure and team membership throughout the project lifecycle are made.

There has been relatively little recognition within the megaproject discourse of the power structure, social relationships or networks which affect client decision-making and the influence clients have in shaping the political economy of megaproject collaborative practice. Decision-making on construction projects are not wholly predetermined by contracts but instead often emerge from the use of power. There is often a discrepancy between the reality of power structures on projects and those formally prescribed by governing contracts (Loosemore, 1998). Although there is extensive literature on briefing and client participation methods seeking to guide clients as well as tools and methods to achieve successful megaprojects there is little theorising that links these issues coherently. In particular there is little research that approaches the research problem from a cultural political economy perspective. This research seeks to address this gap by focussing on the diverse forms of power, authority and subjectivity formed and exercised in the client's everyday practices in relation to megaproject decision-making. The research problem is concerned with; firstly a lack of empirical research to explain the nature and structure of power relations underpinning megaproject client decision-making and secondly, a lack of theory and methodological framework to underpin this approach. This paper reports on early observations of one case study of a client of an innovative megaproject in Singapore. Prior to this an analytical model based upon cultural political economy theory and the concept of governmentality is proposed to frame the exploration of power relationships in relation to megaproject governance.

Cultural political economy

Cultural political economy (CPE) is defined as one which (Sayer, 2001, p. 688):

“emphasises the lifeworld aspects of economic processes – identities, discourses, work cultures and the social and cultural embedding of economic activity, reversing the pattern of emphasis of conventional political economy with its concern for systems...[it] deals with the

level of concrete and hence with firms, bureaucracies and households embedded in the relationships and meanings of the lifeworld...it should combine and “work up” abstractions of both system and lifeworld”

The term lifeworld encompasses the informal aspects of life which is the product of the relation between embodied actors and the cultures into which they are socialised. Systems are the formalised rationalities which have a logic and momentum of their own, going beyond the subjective experience of actors to routinise or govern specific actions through signals and rules such as prices, money, bureaucratic processes and procedures (Sayer, 2001). A key characteristic of CPE is its examination of the “embedded” nature of economic action in terms of how they are set within social relations and cultural contexts that impact upon those economic processes (Sayer, 2001). CPE analysis offers a way of demonstrating how the advancement of specific interests is facilitated by the political economic decisions of key players in positions of power (Anderson, 2004).

A range of activities and processes are typically conducted on construction projects particularly on such large undertakings as megaprojects such as briefing, stakeholder management and community participation, aimed at aligning project objectives and stakeholder requirements. Such efforts however, may not prevent stakeholders from pursuing their self-interests. Power differentials on projects cause stakeholders to employ various strategies or tactics to place them in positions of advantage. A number of important questions to this research follows:

How do ideas get disseminated, accepted or rejected on megaprojects? How are projects shaped within the structure of power relations? How is power created, nurtured and employed on megaprojects? What other forms of power are available for various stakeholders on megaprojects? How do responsible AEC professionals who can contribute to the quality of built environments enhance their power on projects to improve project performance?

The concept of *governmentality* which was developed by Foucault in the 1970s through his investigations of political power offers a useful language for exploring both the macro spaces of megaproject governance frameworks as well as the confined locales of client workplaces where various forms of power come to be created, distributed and exercised.

Governmentality

Foucault defined government as “the conduct of conduct”, which is a form of activity seeking to shape the actions of others through the exercise of various techniques (Christie, 1982; Foucault, 1993). While the word *government* may imply a strictly political meaning today, Foucault placed the problem of government in a more general context embracing philosophical, religious, medical and familial sites (Lemke, 2008) hence extending the concept of “governmental authorities” to include families, churches, experts, professions and all the different powers engaging in “the conduct of conduct”. Governmentality offers a powerful framework for analysing how client decision-making is undertaken on megaprojects for two key reasons:

- It reveals that power is dispersed in both institutions and everyday life and it offers a view of power beyond a perspective that centres on either consensus or violence
- It focuses on open-ended empirical accounts of governance to show how their ways of exercising power depend on specific modes of thinking, ways of acting and ways of subjectifying individuals and governing populations (Garland, 1997)

Firstly the concept of governmentality deepens our understanding of power by demonstrating that power not only resides at the centre of a single body is also present in diverse locales with various “authorities” practicing governmental activity (Garland, 1997; Rose et al, 2009). Scholars who have taken up Foucault’s approach recognise that power is visible in both everyday life and institutions (Rose and Miller, 1992; Donzelot, 1979). It should not be assumed that the mere existence of a structure within a network implies an acceptance or implementation by members. Whilst such formalised structures

appear highly visible, there are also other less visible relationships and dealings occurring where power is constantly exercised and exchanged. Foucault traced a movement between the 16th and the 18th century and identified two distinct rationalities of governing practiced by state and other agencies: the sovereign model and the family model, which he positioned at opposite ends of a spectrum. Whilst the former was concerned with large, abstract and rigid ways of thinking about power the latter model was devoted to matters to enrich the small family unit (Foucault, 1979). Distinctly, he identified a third form of rationality which took place from mid 18th century onwards, governmentality, which viewed power in terms of its populations with its own realities, characteristics and requirements; independent of government yet at the same time requiring government intervention (Rose et al, 2009). These populations cannot simply be controlled by implementation of the law or programs nor be thought of as a type of extended family. Foucault highlighted that populations have their own characteristics which need to be understood through specific knowledges and it is through these emergent understandings that the “art of governing” is formulated.

Secondly, the practices within the social realm of government are undertaken in their complex relations to the various ways in which “truth” is conceived by the different agents (Dean, 2010). Within the context of decision-making on megaprojects, how clients govern themselves and others is reliant on what they see to be ‘true’ about who they are which is in turn influenced by the rich and complex social networks, cultural norms and social obligations they are embedded within. It is thus important to capture what rationalities of governing are implicit in the client’s practices and how they relate to the practices of those project team members working on megaprojects. How do the client’s practices of governing others link up with the practices by which they govern themselves? How do clients who are at the top of the governance structure of megaproject decision-making understand their powers and the impact of their practices? Governmentality analysis “asks particular questions of the phenomena that it seeks to understand, questions amenable to precise answers through empirical inquiry” (Rose et al, 2009, p. 3). It seeks to pose questions relating to power without attempting to prescribe a set of principles or ideology for governing others and oneself. In doing so, we are practising a form of criticism which seeks to make explicit the taken-for-granted character of these practices (Foucault, 1988) in terms of the ways in which clients govern and are governed. Through this we open up for analysis various forms of strategic games in terms of contestations and negotiations between stakeholders.

RESEARCH METHODOLOGY

This study addresses two research questions:

RQ1: What is the nature and structure of the power relations underpinning the client’s decision-making environment related to the cultural political economy of megaprojects?

RQ2: To what extent can the merging of the concept of governmentality with narrative inquiry and social network analysis techniques assist in the description and analysis of megaproject client decision-making?

The rationale for merging the concept of governmentality with narrative inquiry and social network analysis as posed in Research Question 2 is now described. This study employs a case study strategy through the use of the narrative inquiry (NI) and social network analysis (SNA) methods for collecting and analysing empirical material. Firstly the NI approach allows for an investigation of how megaprojects are shaped within the structure of power relations, that is, the *nature* of power relations. It seeks to uncover stories which highlight changes in decision-making brought about by contact between stakeholders. NI enables a systematic study of the key events within the client’s decision-

making experience to connect and see the consequences of those events and actions mapped against the various phases of the megaproject.

Secondly SNA is used to identify the interdependency between stakeholders, that is, the structure of power relations. SNA's main point of difference from other types of analysis of social phenomena is its focus on the *structure* of relationships between actors instead of the *attributes* of actors (Davies, 2009). It is a relatively new mode of analysis given that up until the mid-twentieth century the typical way of explaining social phenomena was based primarily on the attributes of actors (Borgatti and Li, 2009). The shift to a more relational perspective undertaken by SNA researchers considers both the social environment within which the actor is embedded as well as the characteristics of the actor. The principles that underpin the SNA perspective have a close connection with the interpretative perspective espoused in the construction management research community (Loosemore, 1998; Pryke, 2005) and are particularly relevant for analysing the megaproject client decision-making environment. The principles include:

- Actors and organisations in international construction are embedded in complex, dynamic and transient social networks which inevitably shape how they behave (Loosemore, 1998; Serrat, 2009; Pryke, 2005)
- The environment in which organisations operates can be seen as comprising networks of other organisations

This paper reports some early observations made from one case study of a client involved with the finance, design, build and operation of a megaproject in Singapore. This preliminary analysis sought to test initial assumptions and to refine the data collection tool made up of an interview schedule and questionnaire. Seven interviews have been conducted to date with a range of participants involved with various parts of the project (refer to Table 1). More interviews are being conducted with other project stakeholders in light of these early observations made. Participants were asked questions in relation to three broad areas:

- their role in the organisation and on the megaproject
- stories in relation to key issues experienced on the project and how decisions were made to resolve issues
- their relationship with other project stakeholders

Table 1: Interview participants

Participant	Organisation	Role
P1	Singapore Sports Council	Project Director
P2	Singapore Sports Council	Deputy Director
P3	Singapore Sports Council	Project Director (former role)
	Venue operator	Assistant General Manager (current role)
P4	Design & Build contractor	Contracts Director
P5	Design & Build contractor	Senior Design Manager
P6	Architecture firm	Associate Director
P7	Special purpose vehicle (SPV)	Chief Executive Officer
P8	Special Purpose Vehicle (SPV)	Chief Operations Officer

RESULTS

The case study is a 1.33 billion SGD multi-use, multi-sport and entertainment complex in Singapore. The project seeks to encourage large numbers of people to adopt and pursue sports and to draw international events to its world class facilities. The project involves the demolition of an existing National Stadium and the construction of new buildings including a national stadium, multi purpose indoor arena, aquatic centre, water sports centre, Singapore information and resource centre, sports promenade and commercial

space/retail mall. It also incorporates the use of an existing multi purpose indoor arena. It is the largest sports facilities infrastructure Public-Private-Partnership (PPP) project in the world. The project is also the first PPP project in Singapore. Prior to describing the structure of the PPP it is worthwhile to briefly outline the history of some key events in relation to the project to date (see Figure 2 in the appendix).

The Committee on Sporting Singapore (CoSS) was established in 2000 to review and provide strategic recommendations on the development of sports in Singapore. In 2001, the CoSS outlined 40 recommendations setting out the direction for sports development in Singapore, underpinned by key themes of resilience, bonding, national pride, economic well-being and strengthening international relationships (Sporting Singapore Report, 2001; 2011). The Singaporean government demonstrated strong support for this by committing an additional \$500M over five years to facilitate the implementation of the recommendations. One key recommendation of the CoSS was the redevelopment of the existing National Stadium into a multi-purpose sports hub. Towards this end between 2002 and 2003 a feasibility study was commissioned by the Ministry of Community Development, and Youth and Sports (MCYS) on the SportsHub to investigate sports events, the types of facilities to be built, potential sites, transportation and economic impacts, financial viability and possible business models (Singapore Parliament Reports, 2004). Official approval was granted for the SportsHub project to be implemented in 2004. In 2005 the project was handed over to the Singapore Sports Council (SSC) to develop a more detailed brief and to then build the facility. SSC ran a number of roadshows in Singapore, London, Sydney and New York aimed at announcing the launch of the SportsHub the following year. The tender requirements were finalised in 2006 by SSC. In the same year a prequalification exercise was launched whereby interested consortiums were invited to submit credentials in terms of project team members and their associated background. As a result of the prequalification exercise three consortiums were shortlisted. Following this in June 2006 an official tender was launched with tender submissions due by February 2007. After submissions were received from the shortlisted consortiums the SSC injected an additional requirement which was to include a water sports centre. The former SSC SportsHub Division Project Director indicated that even though it was an after thought it was felt to be something worthy of pursuing. The resubmission took place in September 2007 with the announcement of the selected consortium as the preferred bidder made in January 2008.

Even though tender requirements were identified at this stage finalisation of the contract still enabled the consortium a fair amount of flexibility which was undertaken through negotiations with the SSC. At that stage the targeted date for contract finalisation was December 2008. However, external events such as a steep rise in building materials and construction costs and the global financial crisis delayed the conclusion of the SSC's negotiations with the PPP consortium. The consortium experienced difficulties raising the required debt from the market. With the stabilisation of construction prices and improvement in credit availability towards the end of 2009 the consortium was able to raise bank financing for the project (Singapore Parliament Report, 2009). The contract was signed and financial close was achieved in August 2010. The procurement strategy is innovative for this country. A series of other innovations in terms of project information management and functional and environmental design have also been identified. The aim of this paper is not to describe these innovations but to outline the formal structure of authority underpinning decision-making which in turn has implications for the delivery of innovations on the SportsHub project. The next section will outline the formal structure of the PPP as well as the mechanisms of coordination and communication to develop a greater understanding of how decisions are made on the project.

Formal PPP structure and mechanisms of coordination

The SportsHub project is being delivered under a Public-Private-Partnership (PPP) contract whereby a Special Purpose Vehicle (SPV), SportsHub Private Limited, was formed to finance, design, build and operate the facility in partnership with the Singapore Sports Council (SSC) over a 25 year period. The SPV invests in equity and utilises bank debt financing to build the facilities (Singapore Parliament Report, 2009). Upon completion of the 25 year contract the facility will be handed over to the SSC. PPP projects have multiple ‘clients’. In this study the client network comprises the sports government agency responsible for setting up the project framework, the SSC, as well as the various PPP consortium partners. Figure 1 outlines the PPP structure. All the PPP partners are bound to the Project Agreement and the various interfacing protocols set out in the Interface Agreement.

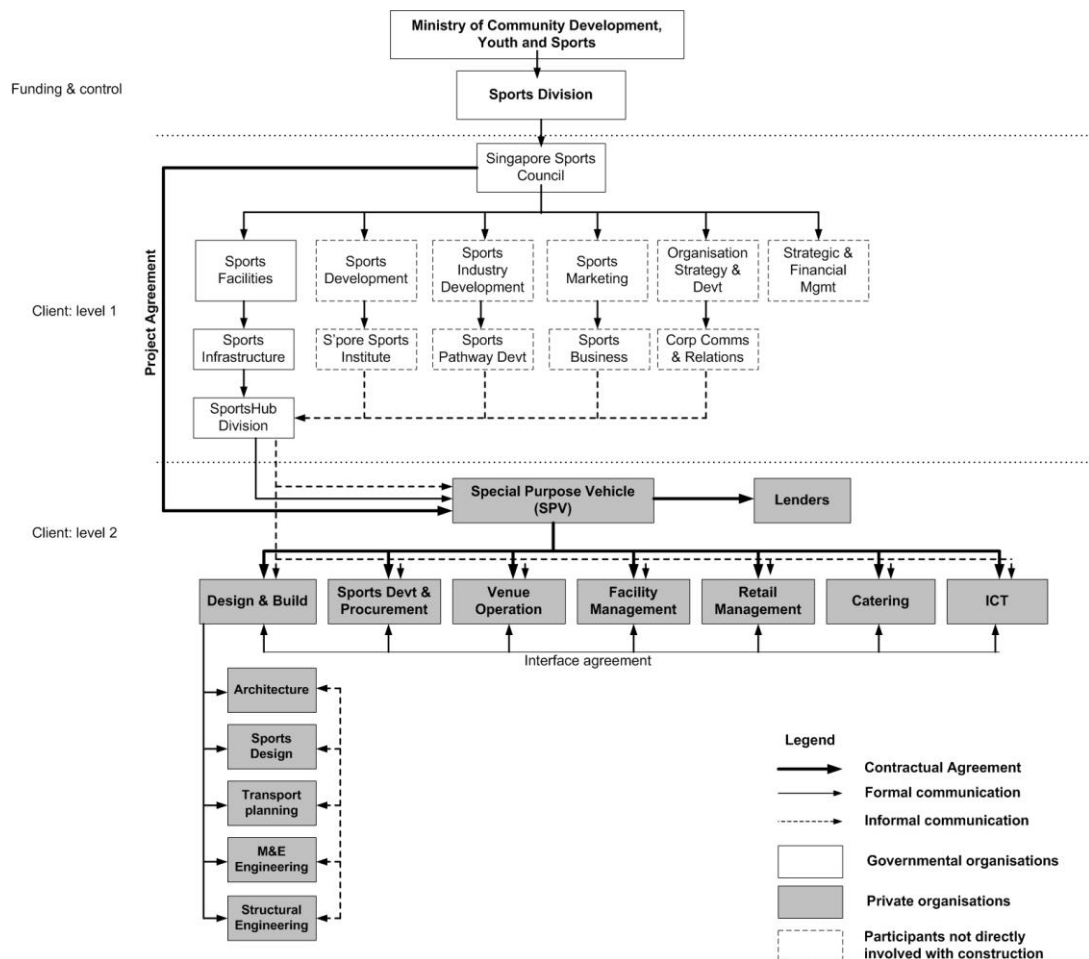


Figure 1: PPP structure of the SportsHub project

The SSC is the lead agency tasked with developing a holistic sports culture for the country. The SSC is under the authority of the MCYS and is made up of seven groups (see Figure 2). There are approximately 800 employees in the organisation. The Sports Infrastructure unit within the Sports Facilities Group is responsible for procurement of projects such as the SportsHub. Due to the complexity of the SportsHub project, a separate division was set up to monitor the project in terms of contract compliance and coordination between the wider SSC and the SPV. The division draws upon the expertise of other groups within the SSC for specific content to establish the scope of the project. The division is headed by a Project Director who oversees three sub-divisions including operations and programming, design and technical and contract compliance.

A series of formal meetings have been structured between the SportsHub division and the SPV as a way of monitoring project progress including weekly design and construction meetings, bi-weekly operations meetings and bi-weekly programming meetings. The SportsHub division meets monthly with SSC's senior management to update senior management on the progress of the project as well as to discuss and raise any issues which require approval. Monthly sports meetings are also held with the MCYS which are chaired by the Minister. Formalised structures and protocols have clearly been established by SSC for project coordination and communication aimed at achieving control of accountability of decision-making as well as respecting the roles and boundaries of various parties. These formalised structures offer clear traceability in terms of lines of official document exchange between various project stakeholders. However, what these official documents fail to record are the less formal negotiations and dealings where power is constantly exchanged and exercised. Past research has identified that these informal networks and communications are equally, if not more, important than pre-established structures whereby key decisions are often made through casual exchanges and conversations (De Blois et al, 2011). Preliminary analysis of the SportsHub case study supports the findings of De Blois et al (2011) in their investigation of relationships between clients and project team members in relation to two key areas:

- indirect participants sometimes act informally as client representatives and influence the direction of projects
- informal communication and decision-making are often made outside formalised structures

Indirect “clients” and informal communication

The interview participants indicated that the formal contractual commitments set up ensured that the various parties clearly understood their obligations and respected the formalised lines of authority and mechanisms of communication. However, the participants also found that they needed to engage in other forms of informal dealings outside of the contractual relationships dictated by the formal PPP structure. Both the former project director and senior design manager highlighted the involvement of several other interested parties in influencing decision-making on a number of project issues.

“...Cos Singapore SportsHub is quite significant...the other agencies like to get their two cents in...like the URA [Urban Redevelopment Authority], they like to assist you with your design...so there's a lot of engagement here in the work that we do” (Senior Design Manager, Design and Build contractor)

“...because it is ‘the’ national stadium you have all the government agencies would chime in...So that's the other challenge that because it is the national facility so all government agencies suddenly have their two cents worth” (Former project director, SportsHub division, Singapore Sports Council)

Given the nature and significance of the project a high level of interest was received from various government agencies including the Urban Redevelopment Authority, National Security agency, tourism board and associated regulatory bodies. As explained by the senior design manager and project director, indirect stakeholders with varying interests were informally drawn into the project process thereby influencing how decisions were made on several occasions. The design manager highlighted one example of this whereby key parties in positions of power can drive the direction of projects to support or suppress innovations. The innovation is a low-energy bowl cooling system used in the National Stadium, the centrepiece of the project. The design manager explained the challenges experienced in relation to incorporating the needs of not only the formal client, the SSC, but also those of the Building and Construction Authority (BCA), the government body governing building and construction regulations in Singapore.

“...so we had instructions from one part of government – and that necessarily creating a PR problem for another part of government” (Senior Design Manager, Design and Build contractor)

The innovative cooling system aims to provide a comfortable spectator environment in the country's challenging tropical climate. It is aligned with the consortium's contractual

commitment to SSC to achieve a GreenMark GoldPlus award, which is the highest ranking achievable under the country's ranking system for evaluating environmental performance of buildings. Given that BCA retains the right to interpret applications for GreenMark awards the design team had to ensure that requirements made by the BCA were considered alongside the SSC's. The design manager explained that the design team was placed in a difficult position to defend the innovative scheme to the different parties which had individual interests in relation to the cooling system. The problem of conflicting priority agendas was eventually overcome but not without a series of negotiations between key stakeholders. Clearly, the relationships which the design team developed with various key people within the associated organisations are not reflected in the formal structures prescribed in the contractual agreement. These informal networks, however, were demonstrated to have a significant impact on how a project is shaped and is worthy of further exploration.

Informal networks also existed within SSC and the PPP consortium. Even though regular meetings have been structured as formal means of communicating, the participants expressed a preference for informal meetings to discuss project issues.

"Yes because they are just located here. If there's anything we'll just go over there and knock on their door and say stuff about it" (Deputy Director, SportsHub Division, Singapore Sports Council)

"For me if I issue something I need to discuss I'll just walk across and I'll see him and we can discuss about it... That happens a lot ...It [a PPP partner's office]'s not that far but its like ah I've to walk there!" (Contracts Director, Design and Build Contractor)

"There's a lot of running downstairs... You try to run around and solicit agreement... make sure that we're all on the same page and put things into the system... That [a PPP partner's officer]'s just far enough that you don't pop down." (Senior Design Manager, Design and Build Contractor)

These quotes demonstrate that a fair amount of impromptu discussions occur between stakeholders both within the SSC and between the PPP consortium partners. The participants indicated that they would often meet informally with other project participants, "knock on doors" and "run downstairs". Interestingly the physical location of stakeholders seemed to be one of the factors influencing the participants' decision to informally meet others. In particular, the participants expressed a hesitance to meet informally with a PPP partner because they were not located in the same building. The reasons why certain project decisions are made can thus be found not only in what is dictated by formalised structures but also in the structure of the informal social environments within which actors are embedded. The patterns in the structure of relationships are critical in influencing decision-making but are not always captured in formal documents in terms of how and on what grounds decisions are made. Decision-making is thus a network problem requiring an understanding of social structures and its relationship with the actors' associated behaviour. There are specific constraints or opportunities placed by the social structures that actors are embedded which shape how they behave (Marsden, 1990). Despite the importance of organisational structures in formalising communication flows and patterns, the manner in which work is carried out daily tend to have more to do with the informal relationships and interactions between members in and between organisations. However, a key problem lies in the fact that informal relations are largely invisible. Therefore there is merit in using SNA as a form of "organisational x-ray" to make visible and tangible those megaproject network characteristics that are normally regarded as invisible in terms of who knows whom and who shares what information with whom.

SUMMARY AND FUTURE RESEARCH

This paper described an analytical model which was developed based on cultural political economy theory and the concept of governmentality to examine megaproject client governance and its relationship with the delivery of innovations. Client decision-making is deeply embedded in multilevel networks whereby power is exercised through an “art of government”. Different types and forms of social networks may be essential for achieving different project outcomes in relation to the delivery of innovations at various stages of project decision-making. The structure of social networks embedded in the environment in which client decision-making is undertaken may contribute towards understanding the way decisions occurring at the confined locales of client workplaces can impact on project outcomes at higher levels. However, to date there is still little known in terms of the nature and structure of power relations in megaproject client decision-making where various forms of power come to be created, distributed and exercised. The early observations of the case study of the Singapore SportsHub confirmed initial assumptions made that although formalised protocols were established for project communication and coordination decisions were often made outside of the pre-established structures. Furthermore decision-making was influenced by informal communication embedded in multiple levels of social networks comprising various stakeholders in positions of power who at times act as “clients”. These observations highlight the significant influence of the structure of networks on decision-making and in turn the delivery of innovations on megaprojects. The next stage of analysis involves a social network mapping of the informal links between stakeholders to highlight how structure of power relations influences decision-making and the delivery of innovations on megaprojects.

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APPENDIX

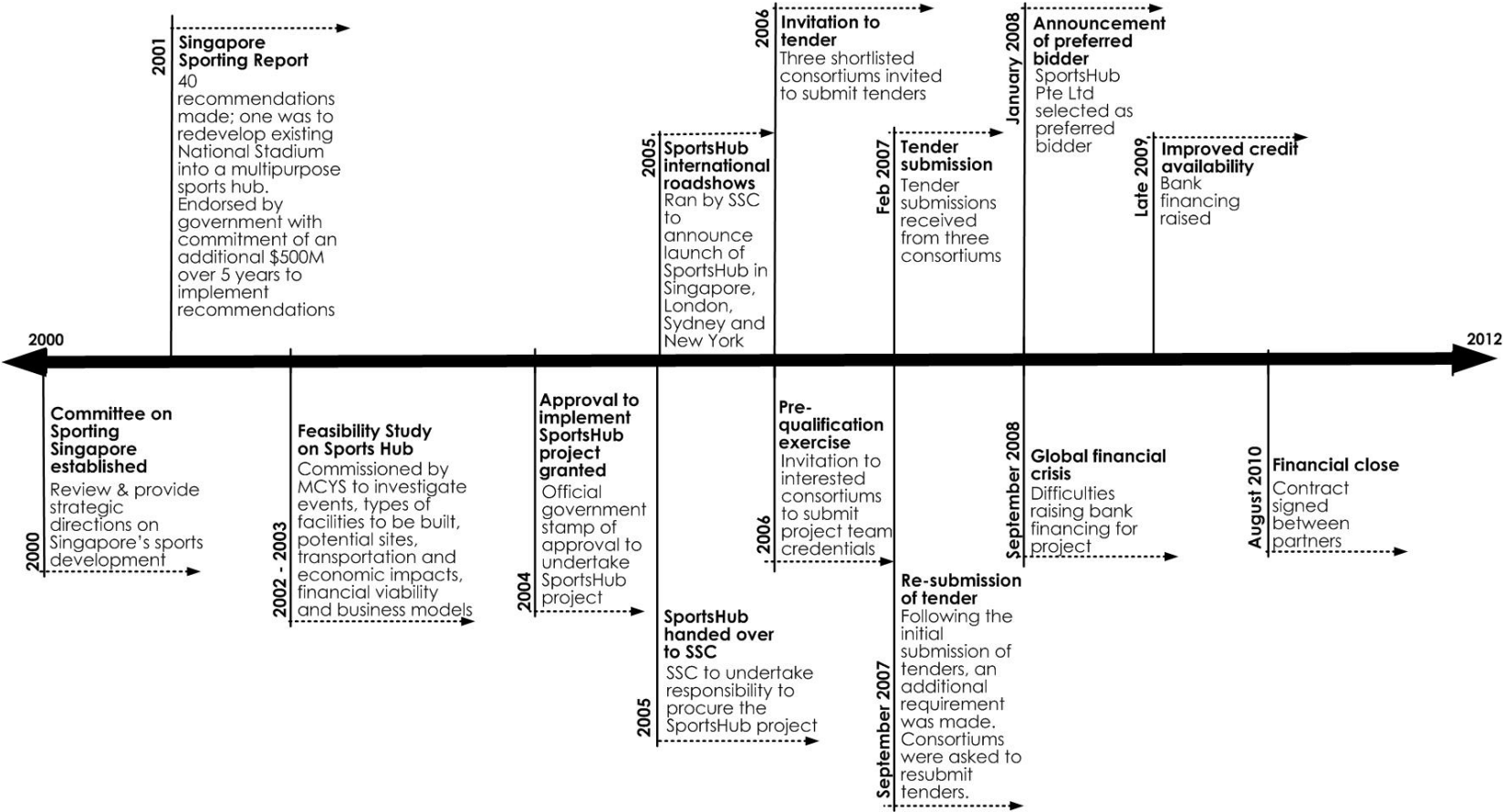


Figure 2 History of the Singapore SportsHub project