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Collaboration and opportunism in megaproject alliance contracts: The interplay between governance, trust and culture

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ABSTRACT

Alliance contracts have been introduced in megaprojects to improve the alignment of objectives, risk and reward between client and contractor. However, the relational norms of alliances are not sufficient on their own to eliminate opportunistic behaviors. This study shows that, investing in mechanisms supportive of governance, culture, and trust provides a platform upon which firms may foster collaboration and limit self-interest oriented behavior amongst alliance partners. Our qualitative case study of a major project-based organization reveals the impact of these mechanisms, and more pointedly, how they interact and often reinforce each other. Governance, culture and trust are interlinked and complementary, and managers need to reflect holistically on their interactions in order to establish collaborative, rather than opportunistic behaviors.

1. Introduction

Opportunistic behavior occurs when firms pursue actions in their own self-interest to maximize their financial return at the expense of vulnerable parties (Williamson, 1985). Such behavior may take various forms including failing to fulfil obligations, withholding relevant information, or not bargaining/negotiating in good faith (often relying upon information asymmetries). Research concerning transaction cost economics has highlighted that opportunistic behavior is most prevalent under conditions of high uncertainty, high levels of complexity and where there are significant asset-specific investments that cannot be applied to other contracts without loss (Moschandreas, 1997).

These three conditions are frequently observed in megaprojects – projects which are notable for their enormous scale, long time-frames and non-repetitive nature (Brookes Sage, Dainty, Locatelli, & Whyte, 2017). High levels of uncertainty and complexity often arise due to the scale and timeframes involved, making it impossible to develop all-encompassing contracts ex-ante, whilst the unique nature of such projects increases the likelihood of investments being required in specific assets thereby creating the potential for holdup by one party and the inability to effectively retaliate against an opportunistic partner (Gil, 2009). As such, opportunistic behavior is a recognized problem for megaprojects and a range of examples of opportunistic behavior pervade the literature whereby one party exploits unexpected events for their benefit (Gil, Pinto, & Smyth, 2011).

To counter this problem, in recent years, megaproject sponsors have gradually moved away from traditional, adversarial forms of contracting and focused more on collaborative approaches that encourage mutual cooperation (Hein Tywoniak, & Evans, 2017; Brady & Davies, 2014; Davis & Love, 2011). The result has been an increasing reliance on various forms of non-traditional contracts to deliver megaprojects, including alliances, relational contracts, or public-private partnerships (Clifton & Duffield, 2006; Bygballe Jahre, & Swärd, 2010; Lahdenperä, 2012) – as these contractual forms enable participants in the contract to 'share the gain and share the pain' (Lloyd-Walker Mills, & Walker, 2014).

However, these more relational contracts that emphasize cooperative behavior, mutual dependence and reciprocity between parties do not in themselves reduce the potential for opportunistic behavior unless firms can design contracts along with operational systems and structures that incentivize desired collaborative behaviors over opportunistic behaviors. As such, coupled with the growth of interest in relational style contracts is a corresponding interest in determining the conditions and incentives that encourage independent firms to act in a collaborative and trustworthy manner throughout the contract. This work has emerged from a variety of perspectives and notably includes research within transaction cost economics, sociology and supply chain management (Gil, 2009).

The most common response to address the issue of opportunism across a range of literature bases is the concept of trust. Whilst trust may be treated as an antonym for opportunism from a sociological perspective, Williamson (1993) suggests that trust is perhaps better understood

in calculative terms whereby the gain from a particular action is in fact outweighed by risk involved. Nevertheless, trust is a common theme pertaining to effective relational contracts (e.g. Lau & Rowlinson, 2009; Kadefors, 2004; Pinto Slevin, & English, 2009). Other considerations that pertain to limiting opportunistic behavior within contracts that also have a sociological underpinning include commitment, power and organizational culture (Clegg Pitsis, Rura-Polley, & Marosszeky, 2002; Lloyd-Walker et al., 2014; Xue Yuan, & Shi, 2016). Outside of the sociological perspective that looks at how opportunism may be limited through the manner in which relationships are managed, there are a series of factors that focus upon the manner in which the contract is managed. These considerations tend to fall within a broad cluster of governance issues and highlight the potential to reduce opportunism through the design of the contract, decision making structures and organizational design including factors such as co-location (e.g. Biesenthal & Wilden, 2014; Brunet & Aubry, 2016; Henisz Levitt, & Scott, 2012).

Whilst megaproject specific research is just one limb of this increasing focus upon relational contracts, it does present all parties with some unique challenges which may not be present in smaller scale projects. The number of parties involved and the constantly changing make-up of teams over a period of years as the projects move through different stages towards completion create additional complexities to consider. Perhaps more importantly however, the considerations to limit opportunistic behavior that have been addressed to date have tended to focus upon just one or two of the conditions and incentives in any particular study that may limit opportunistic behavior at a time. Work such as that by Gil (2009) or Davis and Love (2011) tend to consider these conditions and incentives in isolation, rather than how they may work together including their interactive effect. To address these potential limitations, we seek to identify those conditions and mechanisms within the megaprojects undertaken in one infrastructure-based public sector agency to address, not just which conditions and mechanisms were deemed critical to limiting opportunistic behavior, but also the way that they interact, both positively and negatively, with each other over time.

We begin with a review of the literature on opportunism and megaprojects, before addressing past research about those conditions and mechanisms which may assist contractual partners to behave collaboratively rather than in an opportunistic manner. This is followed by a discussion of our research strategy and the presentation of our qualitative case study on alliance contracting at Main Roads Western Australia. We conclude the paper with a discussion of our findings and the implications for managing alliance contracts in respect of megaprojects along with future research opportunities.

2. Megaprojects and opportunism

Megaprojects are traditionally designated as those involving large investments over long time frames and invariably bring with them high levels of risk and complexity (Brookes et al., 2017; Flyvbjerg Bruzelius, & Rothengatter, 2003; Flyvbjerg, 2014). They are most commonly associated with major infrastructure projects such as transport, telecommunications and energy generation projects; developing facilities for sporting events such as the Olympics; and major defence projects. Defined as "temporary endeavors (i.e. projects) characterized by large investment commitment, vast complexity (especially in organizational terms), and long-lasting impact on the economy, the environment, and society" (Brookes & Locatelli, 2015: p.58) they are often designated as those involving investments of $1 billion or more. However, it is the high levels of complexity, significant innovation, extended length of time and impact upon the economy, the environment or society that sets megaprojects apart rather than the cost dimension per se or even the one-off or temporary nature (Scott, Levitt, & Orr, 2011).

Given the scale and scope of challenges associated with megaprojects it is not unsurprising that they are very often "late, over budget and fail to meet their original objectives" (Davies &

Mackenzie, 2014: p.773). Research on project costs overruns (e.g. Flyvbjerg, 2014; Love Irani, Smith, Regan, & Liu, 2017; Rosenfeld, 2014; Sanderson, 2012) has uncovered a range of causal factors "from a poor understanding of the impact of systemicity and complexity projects, unrealistic cost targets and misguided trade-offs between project scope, time and cost to suspicions of foul play and even corruption" (Ahiaga-Dagbui Smith, Love, & Ackermann, 2015: p.1). Flyvbjerg (2014) has suggested that nine out of ten megaprojects are over budget, highlighting the challenges involved in managing megaprojects including the relationship between the contracting parties.

While traditional contracting approaches tend to rely upon detailed specifications and fixed-prices as a way to control for risk on the part of the contracting organization (Williams, 1996), such approaches tend to be ill-suited for megaprojects (Gil, 2009). In such contracts, the management (and pricing) of risk occurs via "a rational, linear process of identification, analysis, evaluation and treatment within a defined organizational context" (Tywoniak & Bredillet, 2017). However, this risk assessment and management process can only be effectively employed against known risks where some level of probability can be assessed (Dequech, 2011) and in the case of 'unknown unknowns', traditional, reductionist approaches are likely to be unsuitable, difficult to quantify and incorporate into contracting process, and thus may sit at the heart of poor performance (de Bakker, Boonstra, & Wortmann, 2010; Loch, DeMaeyer, & Pich, 2011).

By their very nature, megaprojects are likely to take years (or even decades) to complete, thus frequently requiring changes in scope during the project; they are generally one-off in nature often requiring innovation to deal with engineering challenges or other unique aspects of the project (making them difficult to cost); and changes in the macro-environment, including technology can make the best planning somewhat redundant (Brookes et al., 2017). Thus, traditional contracting models, whereby clients seek to determine all of the uncertainties at the beginning of the project, lock down the design and then use (a series of) fixed price contracts that push much of the risk onto the contractor(s), are unlikely to lead to successful outcomes that are on-time and on-budget (Gil, 2009). Quite simply, the 'unknown unknowns' create too many opportunities for disputes over unanticipated aspects of the projects. Contracting for megaprojects requires incomplete contracts (Williamson, 1985), which in turn exposes parties to "self interest seeking with guile" (Williamson, 1993: p.97), ie: opportunism.

Considering contracting for these megaprojects via the lens of new institutional economics (Williamson, 2000) is pertinent as opportunism (alongside bounded rationality) is seen as a core issue: "But for opportunism, most forms of complex contracting and hierarchy vanish" (Williamson, 1993: p.97). Contractual incompleteness may foster poor performance as it exposes the potentially divergent objectives of the contracting party (the principal) and the contractors (agents) who undertake the work (Jensen & Meckling, 1976; Winch, 2014). Principals essentially seek to maximize quality for a specific price and shift the risks associated with the project onto the contractor as much as is feasibly possible, while the agent seeks to ensure an appropriate financial return. As such, some decisions by agents concerning specific aspects of projects may be in the agent's best interests rather than necessarily in the best interests of the principal (Denis, Danis, & Sarin, 1997).

With principals seeking to shift risk onto agents, and agents looking to achieve a reasonable rate of return on their activities, it can be difficult to design incentive measures that align the objectives of principals and agents (Rose & Manley, 2010). The result is often opportunistic behavior. To reduce such behavior, principals invest in negotiating, specifying and drafting detailed contracts that covers all likely eventualities (creating significant *ex-ante* transaction costs). In addition, they then monitor and where necessary enforce the contract, thereby increasing *ex-post* transaction costs. Even in such scenarios, it is virtually impossible to account for every eventuality as contracts are inevitably incomplete and thus the potential for opportunism cannot be eliminated (Williamson, 1985). Given the relatively poor record of suc-

cess of outcome-based contracts in respect of megaprojects and the obvious alignment challenges that exist in respect of principals and agents, contracting parties around the world have looked at different options concerning contracting for megaprojects that are more flexible and able to address these issues.

2.1. Alliance contracts and opportunism

Alliance contracting is one contract type that has been adopted with some level of frequency for some larger public sector contracts (Sanderson, Allen, Gill, & Garnett, 2018) and is becoming increasingly popular in the Australian construction industry (Rowlinson, Cheung, Simons, & Rafferty, 2006; Galvin & Tywoniak, 2019). The relational dimension provides the potential to reduce the likelihood of opportunism, but it still allows the project to benefit from the use of external parties that often bring with them specialist knowledge and capabilities. Such a model incentivizes behaviors by aligning the objectives of the principal and agent on the basis of sharing both the risks and the rewards between all alliance partners (Arthur & Kennedy, 2014).

Relying upon a level of collective ownership amongst the partners, alliance contracts emphasize "coproduction, facilitated by governance structures and relationship building activities to encourage collective responsibility (Sanderson et al., 2018: p.1064). In cases concerning megaprojects, the inability to lock down specific outcomes 'up-front' that may then be assessed over the course of the contract supports a shift to rely more upon relational norms in the form of alliance contracts. Organizations pursuing these 'relationship based contractual arrangements' then work in a collaborative manner to share the risks and the benefits (Love et al., 2010; Davies, 2008).

However, this reliance upon relational norms as the basis for managing unexpected occurrences and the distribution of work is subject to a variety of risks – not least being the potential for opportunistic behavior on the part of the partners. Human behavior, being as it is, allows for organizations to behave in a somewhat opportunistic fashion relative to their partners if there is a belief that they can undertake certain actions that will be beneficial to themselves, even if somewhat detrimental to the partnership as a whole (Williamson, 1993). The shift away from acting in mutual interest to self interest that can occur in alliance contracts may align somewhat with the 'prisoners dilemma' scenario. Here, the optimal solution for both parties is always to collaborate, however, a single player may act opportunistically if there is a belief that the benefits that will accrue (after accounting for the downsides of disrupting the relationship) will exceed the benefits of collaboration (Dal Bó & Fréchette, 2019) – though multiple iterations of the 'game' does lessen the frequency of players acting opportunistically (Axelrod, 1980; Rendell et al., 2010). The tendency for firms to shift their behavior towards self interest and act opportunistically has seen different authors identifying a variety of factors that are important in driving the success of the alliance contract – governance systems, trust, commitment, interdependence, values and cultural fit (Davies Dodgson, Gann, & MacAulay, 2017; Gil, 2009). Prior research that addresses different conditions and mechanisms that encourage firms in contracts to behave collaboratively rather than opportunistically are introduced below.

2.2. Conditions and mechanisms that reduce opportunistic behavior

In theory, the pre-alliance negotiations should put in place a series of systems and structures that will ensure that the partners are able to manage unforeseen events through a collaborative approach (Bygballe et al., 2010). Who does what, and how different activities are costed/paid will have been predetermined, but just as importantly, the governance structures will include coverage of factors such as how disputes are resolved (such as via the use of independent parties), the extent to which the alliance is driven by one specific party versus a 'hybrid team' that operates more as a third party, such as those used in joint ventures

(Wilson, 1995). The governance systems will also outline the procedures, decision making approaches and performance measuring systems (Too & Weaver, 2014). The extent to which governance processes are used to limit opportunism on the part of partners will potentially vary over the course of a megaproject and across different megaprojects depending upon factors such as past experience working together and the level of interdependence between the partners. Extensive governance systems can provide a degree of confidence in situations featuring high uncertainty and can assist in building a sense of interdependence, especially where they feature collaborative approaches to problem resolution. Finally, the influence of the governance structures of the parent organizations of the alliance must be noted (Biesenthal & Wilden, 2014; Brunet, 2019) as different governance logics may be at play and influence trade-off calculations between cooperation and opportunism: for example, it may be advantageous for the contractor (or client) to align the format and timing of reporting and payments to that of the parent organization, even if this may not align with the best interest of the project.

With alliance contracts relying upon relational norms, irrespective of the governance systems in place, sociology derived constructs such as trust between partners is critical for the success of such contracts (Gil, Pinto, & Smyth, 2011). Trust has been defined as "the willingness of one party to relate with another in the belief that the other's actions will be beneficial rather than detrimental to the first party, even though this cannot be guaranteed" (Child & Faulkner, 1998: p.45). Trust emanates from a variety of sources and may thus take on different forms (McAllister, 1995). Cognition-based trust relies upon the knowledge we have of others and the evidence we have of their trustworthiness. Affect-based trust is founded on the emotional bonds that exist between people. Both of these types of trust can develop and be reinforced over time resulting in informal and voluntaristic cooperation based on behavioral norms rather than contractual obligations (Smith, Carroll, & Ashford, 1995).

Calculative trust is the trust that develops from the expectation that the other party will fulfill their obligations based on calculating the costs and benefits of this versus other courses of action (Lane, 1998). This type of trust is particularly relevant to "relationships which are new and hence can only proceed on the basis of institutionalized protection (incorporating deterrence)" (Child & Faulkner, 1998: p.48). The relationships between alliance contract partners may initially be built on calculative trust, relying primarily upon contractual obligations and formal governance structures. Over time, these may evolve such that the basis of trust becomes cognition or affect-based (Ring & Van de Ven, 1994), lessening any reliance upon more formalized mechanisms to reduce the likelihood of partners behaving in an opportunistic manner.

Whilst trust recognizes a willingness to engage with other parties in the belief that they will act with mutual interest, commitment implies a level of determination to strive towards achievement of a goal (Locke et al., 1981). Commitment is seen in an organizational choices that reflect mutual interest in terms of what the organization "is prepared to give up [in respect of] its own individual goals or intentions in order to increase positive outcomes" for all parties (Davis & Love, 2011: p.450). Commitment is affected by beliefs (such as past experience) and motivations (e.g. importance of the contract to one particular party), and is reflected in the behavior of the organization (Wiener, 1982). Over time, the mutual interest that emerges for commitment will be affected the actions on the part of other parties such that an organization may become more or less committed in the same way that trust may similarly alter according to the actions of other parties in the contract such as whether they act in mutual interest or in self-interest (i.e. they behave opportunistically).

Increasingly, alliance-based megaprojects are being delivered through integrated project teams (Fleming & Koppeleman, 1996): the success of such project alliances is dependent on all participants actively aligning their interests, values and behavioral norms (Aapaoja Herrala, Pekuri, & Haapasalo, 2013). In this context, cultural fit provides

a basis for effective communication and prioritization of activities. Culture is a broad concept and may be observed across various aspects of organizational operations– the rituals and routines, the stories, symbols, power structures, control systems and organizational structures (Johnson, 1988). As culture affects what is prioritized and what is valued, it tends to directly impact what is actually done. For example, an organization may value short-term financial performance whereas another may value learning opportunities that improve long-term competitiveness.

The degree of cultural fit can thus be critical in determining the extent to which the partners are able to work together efficiently. Commonality in respect of behaviors, values and norms across organizations provides a degree of similarity that supports affect-based trust given the perception of similarity between individuals across the partner organizations and the potential for social bonds to develop. Without some level of cultural fit, working together is simply far more challenging as the divergent stories, myths, language, shared rituals and structures of the organizations makes it difficult to operate efficiently with each other (Davies & Love, 2011; Xue et al., 2016) and without this commonality, there is an increased likelihood of one party behaving opportunistically.

Past research has considered various governance issues, the role of trust, commitment, organizational culture and cultural fit concerning how it may support or incentivize collaborative behavior or at least limit opportunistic behavior. We consider whether these and/or other factors play an important role in the case of alliance-based contracts for megaprojects:

Research Question: How do the mechanisms of trust, culture and governance in alliance contracts encourage collaborative behavior and limit opportunistic behavior in construction-related megaprojects?

3. Methodology

The relative paucity of megaprojects creates significant challenges in applying various research design choices. Even when it is possible to study more than one project being undertaken by a single organization, the projects are invariably unique, making direct comparison difficult. Adopting a case study approach is therefore relatively common whereby the unit of analysis is either the organization(s) involved or the project itself. In this section we cover the methodological choices for this research into megaprojects; focusing upon the three interconnected, generic activities which define the qualitative research process used in this study – theory, method and analysis (Denzin & Lincoln, 2012, Henning, Hutter, & Bailey, 2020).

In order to build a case study from research data, a qualitative approach was used, as it allowed us insight into what had happened, why the respondent thought that this had happened and what the outcome was (Miller, Dingwall, & Murphy, 2004). Qualitative research is flexible enough to deal with unanticipated factors which emerge and to provide information that would not have been considered as relevant (Miller et al., 2004).

The research design connected the qualitative interpretive framework to strategies for inquiry and methods for collecting data (Denzin & Lincoln, 2011; 2012; Morgan, 2007). Data was collected using exploratory, qualitative interviews.

Primary sources of data were fourteen extensive interviews with key stakeholders. Ten of these were undertaken face to face, but for different reasons, four were conducted via telephone. The job titles of those interviewed are shown in Table 1. Research participants included staff from the parent organization (head office and regional) and the alliance. Each interview lasted for approximately one hour (total of just over 16 hours of interview material) and an interview schedule was used that was adapted as more data was collected and different issues emerged. Secondary data sources included websites, annual reports, strategic documentation and procedures and were used as background information and as support for better understanding processes and relationships. We analyzed the organizational choices made by organizations involved in

Table 1
Job titles of research participants.[1]

1	Manager Road and Traffic Engineering
2	Management Systems Manager
3	Manager Finance and Commercial Services
4	Manager Delivery Services
5	Manager Materials Engineering
6	Manager Organization and Employee Development
7	Senior Manager Technology and Environment
8	Manager Environment
9	Senior Contract Coordinator
10	Regional Manager
11	Manager Project Delivery
12	Project/Contract Manager
13	Project Director
14	Project Manager

[1] Some titles have been shortened so that individuals cannot be identified (e.g. the Executive Director of a function is a single person and thus, such people are listed here as managers of a function as this ensures that they cannot be identified and complies with the promise to participants to de-identify all participants and their contribution). Thus different managerial levels are all just listed as 'manager'.

the projects, the operational boundaries in terms of who did what, as well as the dynamics of relationships across alliance partners. As questions related to various past activities of the organization, we accepted that information presented is recollected in the context or a particular time and place (and relative to subsequent events) rather a singular interpretation of 'truth' as per historical realism (Rowlinson, Hassard, & Decker, 2014, Burton & Galvin, 2019). The data used to develop this single case study was part of data collection for a larger study, which included two other large government infrastructure-oriented organizations within Australia.

Purposive sampling of participants was used to ensure the collection of appropriate rich data for developing the case studies. After the initial two interviews, we immediately started analyzing data and this helped determine what data to collect next (Miller et al., 2004).

Qualitative data from interviews was coded, using open coding (Creswell, 2002), then analysed and managed using NVivo. NVivo was chosen as the preferred analysis software because of its ability to assist in the maintenance of large data sets (Parry, 1998), as well as contributing to the maintenance of precision and rigour in qualitative data analysis (Dasborough, 2006). In particular we coded for processes, which assisted in defining activities and issues and helped us make connections between structures and events (Charmaz, 1990). A list of the high-level codes used is presented in Appendix 1. Constant comparison and questioning of data, categories and concepts were central to the efficacy of raising categories or terms to concepts (Charmaz, 1990). The process of raising categories or terms to concepts was an active decision-making process shaped by the ideas the researchers has about the data, in relation to the literature, once they have interacted with it (Charmaz, 1990; Rapley, 2004).

The use of a single, rich case study provides rich data (Yin, 1994; Weick, 2007) enabling us to uncover insights into the operational choices concerning alliance contracting and the impact these choices had on the functioning of the alliance delivering the megaproject. While the methodological intention is to capture the richness of the single case study, Yin (1994) suggests that the description and analysis of a single case study has the ability to convey information about a more general phenomenon by calling attention to issues and by highlighting discrepancies between theory and practice.

3.1. Data analysis strategy: a variant of the Context-Mechanism-Outcome configuration

In order to unveil how and where opportunism or collaboration obtain in our case study, we build on the Context-Mechanism-Outcome

Table 2

Context and mechanisms (from de Souza 2013, p. 149).

Context	Mechanisms
comprises aspects of Structure	related to the following emergent properties in an action context
	mechanisms related to roles or positions
	mechanisms related to practices
	mechanisms related to resources
	mechanisms related to process
Culture	mechanisms related to ideas or propositional formulations about structure
	mechanisms related to ideas or propositional formulations about culture
	mechanisms related to ideas or propositional formulations about agency
	mechanisms related to ideas or propositional formulations about relations
Agency	mechanisms related to beliefs and reasons for action or non-action
Relations	mechanisms related to duties/responsibilities
	mechanisms related to rights
	mechanisms related to power

configuration (CMOc) initially developed by Pawson and Tilley (1997). The framework is based on the proposition: "causal outcomes follow from mechanisms acting in context" (Pawson & Tilley, 1997: p.58). The authors advance the critical influence of context as the same mechanisms may generate different outcomes in different contexts: "The relationship between causal mechanisms and their effects is not fixed, but contingent" (p. 69). The context of action comprises the "material resources and social structures, including the conventions, rules and systems of meaning in terms of which reasons are formulated." (Sayer, 2010, p. 75). According to de Souza (2013: p. 144): "The context of action refers to the context delineated for investigation by researchers". This paper is concerned with the mechanisms that give rise to collaboration or opportunism in megaprojects, and our context is the megaprojects managed by Main Roads Western Australia. Background to the case organization is provided in the next section.

Hedström and Ylikoski (2010, p. 50) define mechanisms as follows: "a mechanism is an irreducibly causal notion. It refers to the entities of a causal process that produces the effect of interest". Pawson & Tilley (1997) conceive of mechanisms as interplays between structure and agency able to generate outcomes in a particular context. For example, incentives are mechanisms that can be used to generate desired behaviors. De Souza (2013) argues that context may be decomposed into four aspects: structure, culture, agency and the relational properties between them. Structure in this realm refers to the institutional roles, practices, resources and process that influence action. Culture refers to the ideas and propositional formulations about: structure, culture, agency, or relations. Agency refers to beliefs and reasons for action. Relations refer to the potential for one party to influence the actions of others through responsibilities, rights or power. She identifies 12 generic mechanisms that relate to structure, culture, agency, and relations (De Souza, 2013, p.149). These are reproduced in Table 2.

The concept of mechanism and the aspects of context as defined by de Souza (2013) are well suited to our study as we are inquiring about the emergence of opportunism or collaboration (outcomes) through mechanisms (for example sharing of risks in an alliance contract) across three main contextual aspects: governance (as structure), culture, and trust (as relations). With regards to coding and analysis, after the initially codes/categories/themes emerged from the analysed data, we used the da Souza model as an overlay – an extra codifying filter to further unpack the relationships between the codes/categories/themes, which are captured in the subsequent analysis, data and model. Therefore, the Context-Mechanism-Outcome configuration provides a framework to organize our analysis and findings.

3.2. Case study setting

Established in 1926, Main Roads Western Australia is Western Australia's statutory road authority. Operations cover 2.5 million square kilometres, with dramatic diversity of climate and road conditions, mak-

ing Main Roads one of the largest geographically spread road agencies in the world. Western Australia has 149,000 km of roads, of which declared Highways and Main Roads comprise 18,500 km (Main Roads Western Australia, 2018).

Up until 1980s Main Roads had total control over the design and construction of roads. In 1996, on the basis of the State Government's economic rationalist reform agenda there was a rapid shifting towards outsourcing work to the private sector resulting in severe staff reductions (Edmonds, 2007). A 2001 report found this outsourcing model had severely impacted Main Roads knowledge base (Edmonds, 2007). In 2002, there was a move towards relationship contracting and particularly alliancing. A new Commissioner was appointed who brought with him a wealth of contracting experience and knowledge from another government agency, including relationship contracting (Edmonds, 2007). The first public-private alliance occurred in 2003 to build Stage 7 of the Roe Highway (Edmonds, 2007). This initial alliance contract was still fairly prescriptive, but was a significant step in an evolutionary process toward relinquishing control to an alliance entity. Four years later, they moved to a situation whereby the alliance, once established, would operate as autonomous decision-making bodies. In essence, resources and knowledge from multiple organizations are combined to create a new organizational entity or 'child' which is distinct from the parents (Inkpen & Currall, 2004). Since then, Main Roads has used alliance contracts for its larger projects (only those above $25 million). This includes megaprojects such as 'Gateway WA' (Perth Airport and freight access project) which was initially budgeted at $1.2 billion (but was built for approximately $50 million under this estimate) and the Tonkin Highway Stage 3 extension ($1.16 billion). Other projects that do not meet the $1 billion threshold, but may be considered to be a megaproject and were undertaken using alliance contracts includes the Dampier Highway duplication which involved passing through an area rich in Aboriginal heritage and requiring innovative solutions to cut through rock formations up to 14 m high without disturbing heritage sites.

4. Case-study – Main Roads Western Australia

As per the initial coding categories listed in Appendix 1, we found respondents highlighted the role of critical thinking, culture, leadership, organizational structure, organizational systems or processes and trust. There was a high level of overlap between critical thinking and culture. Aspects of the interviews that were coded as relating to critical thinking centred around challenging assumptions, reflection by participants, valuing diverse opinions, whilst culture highlighted the organizations' values, norms and power. Given the overlap in many of the ideas and the intermingling of points, we ended up collapsing all of these issues under the heading of Culture.

In respect of leadership, respondents tended to focus on the decisions made such as the planning process, the move to decentralize cer-

Table 3
Governance mechanisms and collaboration outcomes.

Mechanisms	Outcome	Quotes
Technical Advisory Group	collaboration	*"They are not part of the alliance, but understand the needs of the alliance and provide advice (they are also not working on behalf of Main Roads WA)"*
New MRWA commissioner	collaboration	*"Well the guy [COMMISSIONER] that we have is almost a guru on relationship contracting and … he was brought in … because of that expertise, because we had problems in the past with the contractors, … his approach with relationship contracting has worked very well in the Water Corp … from day one he has basically been working through with our executive, our managers on this, so we probably have the strongest advocate of relationship contracting …"*
Alliance contract	collaboration	*"In the contract environment, contractors are motivated by making money – they focus on claims and variations. In an alliance the focus is on getting the job done."*
Lessons learned	collaboration	*"Importantly we are documenting everything we do and feeding that back into […]. … There will be a further lesson learnt process at the end of the detailed design phase. All of these are documented and fed back into […]. There is a very fluid interface between the alliance … [partners] – but not intrusive".*
Alliance facilitator	collaboration	*"Craig referred to them as "quasi-psychologist" – they have facilitated the team building workshops which are a key part of identifying individual goals and then formulating common goals."*
Innovation register	collaboration	*"It is interesting that, because within the alliances we are running at the moment, there is a register kept, called the innovation register and anyone can come up with a smart idea and they get recorded and its got all of these steps about analysed, put into practice, recognised and we have never done that on our own works in such a formal manner, but it is another thing that alliancing is bringing along as part of the team building sort of effort."*
Integrated alliance office	collaboration	*"The best part of the alliance is their proximity to the constructor and environmentalists, they are in the same office … so they can bounce ideas of each other and the constructor is actually part of the design team as it unfolds."*

tain decisions etc, rather than how they set the values and culture of the project, i.e. the points focussed on how leaders made their choices and the structures through which leadership was enacted. As such, there was significant overlap with the issues concerning organizational structures and organizational processes for making decisions. We grouped these together as core governance considerations given governance addresses all of the processes used in the act of governing the organizations. Finally, the concept of trust was addressed frequently and did not obviously overlap with any other coding categories. Subsequently, we refined our coding to highlight how decisions and practices with regards to governance, culture, and trust to identify mechanisms as per Pawson and Tilley's (1997) CMOc and De Souza's (2013) generic mechanisms. Outcomes are categorized in relation to their contribution towards establishing collaboration, opportunism, or mixed outcomes. We discuss each theme in turn.

4.1. Governance mechanisms and outcomes

MRWA's first alliance contract would not constitute a megaproject (Stage 7 of Roe Highway) and the contract was very prescriptive with MRWA looking to assume control and whilst not perhaps operate opportunistically, they did not align to the cooperative behaviors desired by the executive level managers in that information was hoarded rather than shared. To overcome this problem a number of mechanisms were put in place to foster collaboration (Table 3). The Technical Advisory Group (TAG) was set up as an external party to provide technical advice to the alliances. Since, the TAG has since become a formal part of the governance structures used by MRWA. In relation to governance, the TAG was credited in fostering collaboration between MRWA and its alliance partners -though TAG's impact in relation to trust -discussed later- was more mixed.

The appointment of the new MRWA Commissioner was specifically motivated by a strategic change to move to relationship contracting. The espoused view from leadership was that collaboration would deliver better outcomes compared to prior adversarial practices. The shift in managerial attitude, driven by the new commissioner, was the impetus for moving away from being a traditional construction organization to implementing new practices. The governance structures in place for resolving issues and even solving problems were extensive, and working in the integrated alliance office together made collaboration far easier. A key governance choice was to introduce an independent alliance facilitator to work with the alliance management team to determine goals, along with core systems and processes. Part of this process involved establishing explicit non-cost key performance indicators, which were measured and rewarded by the client as part of the contract. These included

training, indigenous employment, occupational health and safety, stakeholder relationships and environmental issues. The use of a facilitator was designed specifically to avoid behavior that was of self- rather than mutual interest. This contrasted with the traditional, adversarial, approach of design and construct contracts which fostered opportunistic behaviors. In terms of location, staff from MRWA that were allocated to the alliance contract were physically relocated to the operational headquarters of the alliance. Working on site together made collaboration far easier and contrasts directly to the more aggressively managed design and construct contracts where the parties were spatially separated, leading to less collaboration.

There were very mixed views on the systems that underpinned some alliance processes and lessons learned (see Table 4). In some parts of the alliance, they seemed to work very well. However, others did not see the processes in action and felt that learning was often compromised. The governance structures in place for resolving issues and solving problems were extensive, however, the processes in place for learning were not universally well developed or at least appropriately implemented. Without this, the potential to build trust was limited and some respondents felt that this process really only paid lip-service to the notion of collaboration between the partners.

One mechanism that elicited negative feedback was the secondment of staff to the alliances, which were perceived to penalise the headquarters' teams performance, leading some managers to push back.

4.2. Culture mechanisms and outcomes

Alliance partners agreed that the biggest challenge in establishing an alliance partnership was bringing people from different organizations together to think as one as a starting point for collaboration. Cultural fit was recognized as an issue by interviewees. As MRWA had a traditional public sector culture that developed standards for the industry, was subject to various forms of review from Freedom of Information requests to reviews by the Auditor General, and needed to be conscious of the needs of a variety of stakeholders, it is not unsurprising that the culture was often viewed as somewhat bureaucratic. In comparison, alliance partner organizations were 'for-profit' firms that was far more commercially focused. *"No one way is right or wrong, but different organizations have a different culture, behaviours, work ethics and time management".* It was inevitable that people from different organizations would bring with them ideas concerning how things should be done that reflected their previous organizational culture. *"MRWA and McMahon had a similar culture, while the design and geotechnical companies had similar cultures".*

The development of a culture of collaboration was fostered by the investment in a number of mechanisms: the consultants brought in as

Table 4
Governance mechanisms and mixed or opportunism outcomes.

Mechanisms	Outcomes	Quotes
Lessons learned	mixed	*"What we don't get necessarily is a critique of what worked well and this was a design flaw or this didn't work and we had to do something completely different".*
Alliance processes	mixed	*"There is a lot more flexibility to fix problems and change things quickly. To do this they use "think tank" sessions and tap into the TAG team – the benefit is a much quicker turnaround on problems and finding ways to save money while delivering a quality product.*
		However, keeping everyone informed does have a downside – too many meetings and potentially making the management team too big. Getting this right is a balancing act as you have to be careful not to put the alliance partners off side. However, it is harder to get decisions with a bigger group. Having said this, the discussion is open and there are no hidden agendas. While the workshops are important for team building they do take up a lot of time and there is the risk of too many meetings."
Secondment of staff to alliance	opportunism	*"… the alliance contracts are resource hungry … three of my people were part of the [alliance] team. Now that project realistically should have involved designers for no more than nine months … well two of those guys were away for two years and the third guy was away for three years … I tried to get my guys back … it killed me because of not being able to use them."*

Table 5
Culture mechanisms and outcomes.

Mechanisms	Outcomes	Quotes
Alliance facilitator	collaboration	*"Although there is a contract in place, things are very different from a conventional contracting situation in that we negotiate better outcomes and there is a different mindset"*
Team building	collaboration	*"Team development [of the management group] happened during the design phase … Because of the different cultures it has been a battle from day one to build a team and we have had to constantly work on our team culture and development. We have … focused on creating a new team with a unique identity"*
Alliance contract	collaboration	*" … without a doubt I would do another alliance because of the benefits over conventional contracting. You stand to get better rewards and you have a much better relationship with the client. Contracting is tough and alliancing is a more pleasurable way of doing work and the client gets a better quality product. Also, there is the flexibility to challenge standards, which are often very conservative and may not be consistent across all environments."*
Secondment of staff to alliance	mixed	*"The workforce is a very transient group which makes team development at operational level very difficult – about four or five people leave every week and about four or five new people start".*
Conservatism of MRWA culture	opportunism	*"Historically to set the scene, we really have still remnants of a pretty military type organisation and there's good reason for that because at the time when Main Roads was being constructed there was actually a lot of ex-military people got involved and up until recently you could still pick the military people in the organisation, because that is the way they carried on."*
Conservatism of MRWA culture	opportunism	*"There is still a lot of scepticism from my colleagues back at […] as to whether [my involvement in the alliance] is worth it."*

Table 6
Trust mechanisms and outcomes.

Mechanisms	Outcomes	Quotes
Alliance contract	collaboration	*"[The alliance contract provides a …] sort of freedom because the risk-reward structure is … set up slightly different, so you know with an alliance contract it is kind of like a variable price, so the minimum … they are going to walk away still making a profit, their standard profit, but if they do it really well they will get, you know, quite a good profit and we will share in that as well"*
Integrated alliance office	collaboration	*"I have no doubt that alliancing is better than contracting. I think from a personal point of view that there is a much greater sharing of knowledge. My knowledge base has really grown and I have a better understanding of the other parties, like design, approvals and geotechnical, inputs and drivers. While I have a better understanding of the design process, the designers also have a better understanding of the impact of their decisions. For example, they now understand the cost to move machinery if there is a design change."*
Alliance processes	collaboration	*"From a [construction perspective], I am not interested in the detail, but the designers are focused on detail. Now I understand the review processes they go through and why it is so time consuming. So, we all have a better understanding of the other parties' processes"*
Technical Advisory Group	mixed	*"There were conflicts over flexibility with members of the TAG "wanting to protect their domain".*
Lessons learned	mixed	*"The lessons learnt sessions on the current alliance happen in an open forum – these haven't always been good because they tend to degenerate into a [complaints rather than learning] session"*
Integrated alliance office	opportunism	One participant commented that: *" … people might be careful about what they say because they are sitting next to someone from a different organisation".*

alliance facilitators, the co-location of staff in the integrated alliance office, and the incentives built into the alliance contract were the most prominent (see Table 5). *"Once the contract was awarded, we focused on team development, including establishing common values"*

4.3. Trust mechanisms and outcomes

The most powerful mechanism for the establishment of trust was the alliance contract, as it relies on collaborative behavior as the basis for sharing the risks and rewards in respect of a specific project (Table 6). Compared to Design and Construct (D&C) contracts, there was clearly a much greater level of trust between participating organizations: *"The biggest advantage of an alliance is that it does away with the focus on dollar value as in contracts. This negates the clashes over contract that happen in D&C contracts. In an alliance the focus is on how do we fix it"*. The clear focus on trusting the alliance partners to act collaboratively sits in direct contrast to the self-interest that was overt in the (smaller) design and construct contracts. As observed earlier, the co-location of alliance personnel in an integrated office contributed to establishing trust through better mutual understanding (see Table 6). However, some mechanisms appeared to have unintended negative consequences: the lack of cultural alignment sometimes prompted people withdraw -at least in part- from

Table 7

Contexts, mechanisms and outcomes synthetic view.

Mechanisms	Context		
	Governance	Culture	Trust
Technical Advisory Group	C		M
New MRWA commissioner	C		
Alliance contract	C	C	C
Lessons learned	C / M		M
Alliance facilitator	C	C	
Innovation register	C		
Integrated alliance office	C		C / O
Alliance Processes	M		C
Secondment of staff to alliance	O	M	
Team building		C	
Conservatism of MRWA culture		O	

Outcomes: C = Collaboration; M = Mixed; O = Opportunism

collaboration due to negative perceptions of process (lessons learned) or context (integrated alliance office) – see Table 6.

The Technical Advisory Group's approach was sometimes perceived negatively as protecting their interests or that of MRWA. There was a level of tension within MRWA because of the multiple roles it had to play as client, team member and adviser (TAG). These different roles supported differing levels of collaboration and whilst the TAG was designed to support the alliance as a totality some respondents did not see it this way (see Table 6). One suggestion to overcome this conflict was that the TAG be made up of the best in industry (or at least a variety of people across the alliance partners) not just MRWA personnel.

4.4. Interplay between governance, culture and trust through mechanisms

Our analysis identified 11 mechanisms observed to play out across the three contexts (Governance, Culture, Trust), generating 21 outcomes (Collaboration, Opportunism, Mixed) – see Table 7. Only three mechanisms observed (New MRWA Commissioner, Innovation Register, Team Building) performed in only one context as their impact was narrowly targeted. All other eight mechanisms observed generated outcomes in multiple contexts.

The core mechanisms of the alliance contract and alliance facilitator were both noted to have a positive impact on collaboration in establishing appropriate incentives, values and behaviors. Their impact was reinforced across the three contexts: the contract was putting the right incentives in place (governance) so that alliance personnel from MRWA and contractors were expected to do the right thing (trust), whilst the consultants helped facilitate the processes of establishing the right ways of working (governance), and appropriate values (culture).

Other mechanisms had diverse outcomes, depending on context: the co-location of personnel in the alliance office was perceived to foster collaboration and understanding, but could also generate some mistrust if the staff involved were not on board with the new alliance culture, and the same could be said to the lessons learned process. Similarly, The new alliance work processes were also seen to foster collaboration as they generated mutual understanding, but could also at times appear overly bureaucratic and reducing the incentive to collaborate. Finally, the TAG was perceived as supporting collaboration on technical issues, but its sometimes ambiguous role could at times be mistrusted by alliance partners.

The secondment of staff to the alliance office was seen by both MRWA and the alliance as a mixed blessing: MRWA managers were at times reluctant to second their staff to the alliance, as this was perceived to be detrimental to the core business, whilst the short assignment of technical personnel was sometimes perceived as a burden on establishing a culture of collaboration in the alliance as these staff were rotating frequently. This probably suggests an opportunity for improvement in making these secondments better understood by headquarters, and the induction into the culture of the alliance more effective. As noted above,

at the time of the study, there was still a measure of ignorance about the work and culture of the alliance at MRWA.

In the following discussion we build on these observations at the level of mechanisms to consider the interrplay between governance, culture and trust.

5. Discussion

In considering the research question of "*How do the mechanisms of trust, culture and governance in alliance contracts encourage collaborative behavior and limit opportunistic behavior in construction-related megaprojects?*", the case reveals that different mechanisms pertaining to governance, culture, and trust may help drive collaborative or opportunistic behavior, or behavior that could be classified as mixed in that both behaviors were observed at times. Taken in isolation, each of these is necessary, but not sufficient to explain the establishment of collaboration, or opportunism. More significantly, the case study shows that they influence each other, in negative and positive ways. In this section we briefly briefly discuss our findings concerning governance, culture and trust, before we turn to their interactions.

In terms of governance, the case study shows that the alliance contract is best supported by some form of Integrated Project Delivery (IPD) (Lahdenperä, 2012; Mesa Molenaar, & Alarcon, 2016) where the project team is co-located, and the alliance becomes a distinct organization, albeit a temporary one, from the partnering parents as this allows trusting relationships to form that support collaborative behavior. The success of the IPD relies on establishing a 'best for project' governance (Aapaoja et al., 2013) where the primary driver is problem solving, rather than cost (from the perspective of the sponsor) or profit (from the perspective of the contractors). If these latter objectives (cost/profit) are prioritized then opportunistic behavior becomes more likely – as made clear by respondents in discussing design and construct contracts.

The study also highlights the instrumental role of the third party consultants used to advise the alliance on process (alliance facilitator) and technical issues (Technical Advisory Group): these independent advisors played a critical role in bringing in very different organizations as they enabled the alliance to establish its own rules and procedures independent from the parents. At the same time, the case study reveals ongoing tensions between alliance governance and parent governance: in some instances (e.g. lessons learned) the need to preserve face and or alignment with the parent invited opportunistic rather than collaborative behaviors. This indicates that the establishment of distinct alliance governance structures are not sufficient to warrant collaboration, and that the management of parent influences on the alliance required ongoing effort and investment on the part of the alliance managers. The alliance governance enabled a greater degree of transparency between partners compared to traditional contracts, and this was perceived to be a key enabler of trust.

Concerning trust, the case study confirms the expected pattern of trust development (Ring & Van de Ven, 1994) where initially trust is calculative and rests on the contract and negotiated terms: the early negotiation of non-financial KPIs by the alliance partners illustrates this early phase. Over time, the alliance participants gained greater knowledge of each other's ways of working and started operating as a team, based on cognition-based trust. Trust in the processes to resolve issues, determine costs and reward parties in the case of successful projects helps build collaborative behaviors.

However, we did not find significant evidence of affect-based trust beyond the core project management team: this may be explained by the high degree of staff rotation in the alliance. The temporary nature of the project organization, and the transient participation of team members was perceived to weaken the trust between partners, and therefore on occasion was a trigger for opportunistic, rather than collaborative behaviors. Furthermore, there was evidence that managers outside of the alliance would often pressure the alliance for the return of key staff as they felt that their other projects were being disadvantaged by the ex-
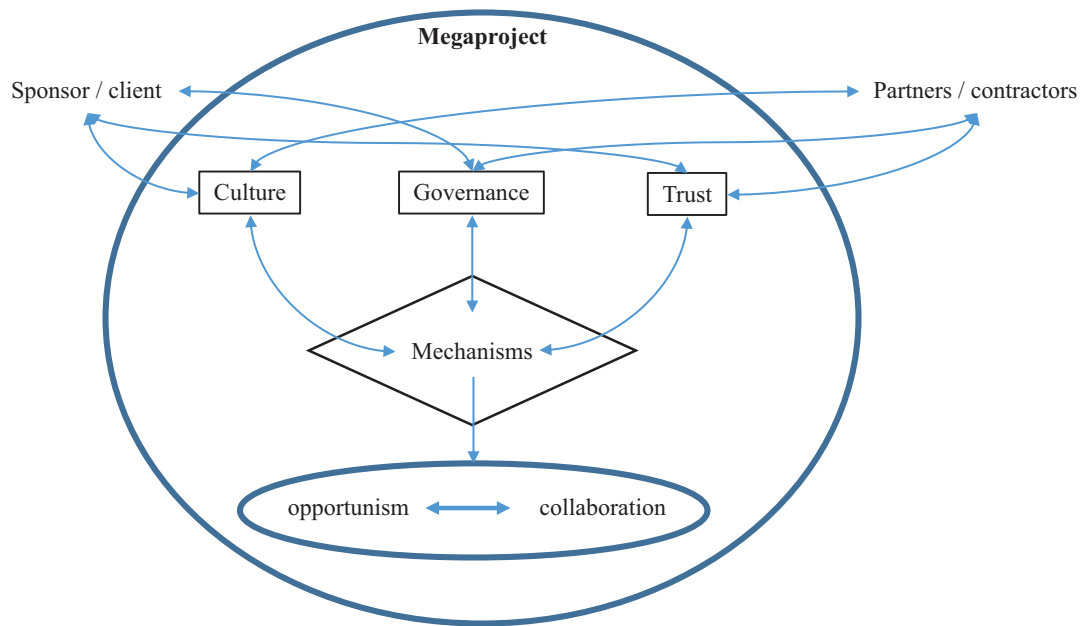
Fig.1. Collaboration and opportunism in megaprojects as outcomes of interactions between culture, governance and trust through mechanisms

tended tenure of their staff in the alliance – a clear case of opportunistic behavior, though in this case, the entire alliance is disadvantaged relative to the operations of one of the parties. However, we also observed that this weakness in establishing affect-based trust between alliance members was able to be somewhat compensated for by the presence of similar cultures between organizations, or better yet, building a unique alliance culture that pervaded all members of the alliance.

Moving now to issues pertaining to culture, establishing clear values and behavioural norms supportive of alliance success to foster collaboration was perceived essential by alliance team members. This is a dimension where the alliance facilitator role was influential, in particular during the early phase of the alliance process. The case study shows that deliberate efforts were invested for this purpose. The temporary nature of the project organization (Turner & Müller, 2003; Lundin & Söderholm, 1995; Bakker et al., 2016) and the transient participation of some project team members, however, were perceived by participants as undermining the cultural efforts and thus limiting potential for highly collaborative approaches to delivering the different parts of the project.

Distinct from permanent organizations (Johnson, 1988; Schein, 1985), where values and norms become embedded over time and become taken-for-granted, the alliance as a temporary organization does not have the same luxury of time: values and norms require to be established quickly, and this means that a deliberate investment is required without spending inordinate amounts of time building and re-building the culture as people joined or left the alliance: *"Getting this [organization development activities] right is a balancing act as you have to be careful not to put the alliance partners off side"*. The case study shows in this respect a direct relationship between culture and governance: the joint decision-making meetings, where all alliance members were represented and information was transparently shared, were seen to be instrumental to the establishment of a shared alliance culture (Scott, 2019; Galvin Tywoniak, & Sutherland, 2008).

5.1. The interplay of governance, trust, and culture

One of the reasons why alliance contracts may be more successful relative to traditional contracting approaches in respect of megaprojects is their capacity to provide a degree of flexibility in terms of how the alliance partners may deal with 'unknown unknowns' (Winch & Maytorena, 2011). There is no attempt to lock-down all aspects of what

is almost certainly going to be a complex contract over a long timeframe. While the relational focus of alliance contracts has the potential to eliminate the adversarial attitude that often pervades traditional contracts, by itself, there is no guarantee that it will eliminate opportunistic behaviour (Laan Voordijk, & Dewulf, 2011). Alliance contracting may incentivize collaborative behavior via the sharing of risks and rewards between partners (Arthur & Kennedy, 2014), however, such collaborative behavior needs to be supported by considerations such as parties trusting that promises of sharing the risks and the rewards will actually be enacted, having governance processes that create confidence in the resolution of issues throughout the contract and a culture that values collaboration over self-interest.

The role of governance structures, trust and culture have been addressed in respect of alliance contracts either explicitly or implicitly in a number of studies (Biesenthal & Wilden, 2014; Brunet & Aubry, 2016; Clegg et al., 2002; Gil, 2009; Lau & Rowlinson, 2009; Xue et al., 2016). We found that these dimensions may re-inforce one another, and also that their salience for project leaders may vary over time. Clear governance structures that cover issues such as dispute resolution, decision making processes and performance measuring systems helps to build calculative trust. Similarly, greater commonality in culture or the creation of the 'third culture' that is different to the 'home' cultures of any of the parties may assist people to build affect-based trust based on emotional ties and feelings of similarity between parties. Cultural fit allows parties to work together more effectively, thereby reducing the level of reliance upon formal governance structures. In essence, these three dimensions may become self-reinforcing thereby significantly reducing the potential for opportunistic behavior. The key to this virtuous cycle of mutual reinforcement between governance, trust, and culture is revealed through the impact of the mechanisms used by managers: for example, our analysis noted how external consultants (e.g. alliance consultants and TAG in our case) can reinforce the impact of governance decisions (contract, integrated project team). This is summarised in Fig. 1 below.

What was also clear from the research was that managers could 'dial-up' one mechanism if necessary to try and enhance collaborative behavior and limit the potential for opportunistic behavior. For example, at the start of every contract a consultant was used to build an initial level of trust. This was required as the governance structures had not been bedded down and integrated into the new structure. This initial attempt to build trust did not always work or some initial friction between par-

ties around specific issues led managers to 'pull another lever'. This was most commonly governance structures with formal meetings and formal reports to managers or committees. This was not always welcome (e.g. *"too many meetings and potentially making the management team too big"*), however, the formal structures were able to compensate for a lack of trust and the lack of a common culture for a period of time. Of course, these formal governance structures slowed progress and if used for too long may start to create a negative (highly bureaucratic) culture and a lack of trust (due to feelings that nobody can be trusted to work with each other outside of formal structures), but it can buy the management team time to try and create a common (collaborative culture). Overall, this points to managers needing to think holistically and selectively about how to combine investments in governance, culture, or trust, in order to obtain the desired collaborative behaviours.

In our study, we did not observe megaprojects that devolved into a state where only the formal governance structures held the partners together in a somewhat collaborative manner. However, in the same way that these three enablers may be self-reinforcing in a positive sense, they may theoretically reinforce each other in a negative manner. For example, an erosion in trust may see participants revert to their original firm culture and attempts to enforce order via increasingly bureaucratic governance structures which reduce efficiency and push the partners away from collaborative behaviors. Overall, these three enablers are critical considerations in respect of the extent to which collaborative behaviors dominate and parties do not engage in opportunistic behaviors when undertaking alliance contracts to deliver megaprojects.

6. Conclusion

The complexity, cost and one-off nature of megaprojects make it difficult to present generalizable conclusions concerning their delivery beyond high-level principles (Davies et al., 2017). The single case study approach used in this study to research the conditions that encourage collaboration and limit self-interest suffers from these same limitations. Nevertheless, the shift towards non-traditional contracts to deliver megaprojects from alliance contracts to public-private partnerships (Bygballe et al., 2010; Lahdenperä, 2012) has led to a focus on the internal functioning of these contracts and the role that trust, commitment, interdependence, values, cultural fit and other dimensions might play is assisting the effective functioning of these contracts and limiting opportunistic behavior (Davies et al., 2017). In line with this research theme, we find that establishing the right governance, trust and culture were critical. On its own, each of these is necessary but not sufficient to support collaboration becoming the default behavior within the alliance. The case study shows that these three enablers of collaboration interact strongly one with another through mechanisms, e.g. the transparency of the governance was perceived as supporting the development of trusting relationships, the active development of shared rituals in the joint meetings was instrumental in embedding cultural values and norms, and having a strong culture also assisted in establishing cognition-based trust. Previous studies had identified the contribution of these three enablers to the successful establishment of collaborative behaviors in alliances (e.g. Kadefors, 2004; Pinto et al., 2009; Clegg et al., 2002; Hietajärvi & Aaltonen, 2018, Xue et al., 2016) and our study confirms some of the findings from the extant literature. However, our work extends these contributions by considering more than one or two conditions or incentives that restrict opportunistic behavior and encourages collaborative behavior – which has dominated research in this area to date – as well as looking at how these factors interact with each other, both positively and negatively.

While alliance contracts see risks and rewards shared between parties and are built upon relational norms, the potential for opportunistic behavior still exists (Sanderson et al., 2018). At a practical level, our study suggests that firms that wish to reduce the potential for opportunistic behavior would do well to consider the role governance, trust, and culture as enablers of collaborative behaviors in project alliances

and IPDs, and the associated mechanisms. However, the investments in such mechanisms is not free (as evidenced by the investments made by MRWA) and in less costly and complex projects may not outweigh the cost of possible opportunistic behavior. Nevertheless, for the megaprojects we considered, we highlight how these enablers interact: governance, trust and culture need to be strongly aligned for collaboration to establish, as any weakness in one of those mechanisms is potentially inviting the return of opportunistic behaviors. The case study shows that a significant investment is required to establish collaboration, but also that over time, this can be a challenge due to the temporary nature of the alliance organization and the transient participation of some team members: the alliances experienced challenges in sustaining the team and agreement on the goals and objectives initially negotiated. Therefore, the performance of an IPD is very much alike a high performance team (Aapoja et al., 2013; Katzenbach & Smith, 2015), however with a couple of subtle twists: the project alliance is more fragile than traditional high performance teams as it operates under the constraints of multiple parent organizations with sometimes divergent interests, and the composition of the alliance team is subject to relatively frequent changes. The implication for the success of complex projects is that a holistic and integrated approach is required to establish and maintain collaboration between alliance members, and that this requires continual efforts throughout the phases of the project. Looking forward, the role of the IPD is clearly critical and rather than use the megaproject or the contracting organization as the unit of analysis, it would be beneficial to study the membership of the IDP and their individual traits (from personality traits to their own personal objectives) and how alignment or misalignment amongst this group impacts the functioning of the alliance contract.

We acknowledge the limitations associated with a single case methodology, and call for additional evidence, both from qualitative and quantitative studies to confirm and reinforce the results presented here. Also, in order to fully cover what is a multi-faceted and complex phenomenon, we would welcome studies framing the research using theoretical lenses that complement the economic perspective taken in this paper to address more fully sociological and/or managerial considerations (Winch, 2014).

Acknowledgements

Appendix 1

Initial Coding Categories

- Leadership
- Knowledge
- Learning
- Collaboration
- Opportunism
- Strategy
- Organizational structure
- Organizational decision making
- Organizational culture
- Critical thinking/problem solving
- Reflection/feedback
- Teams
- Communication
- Innovation
- Trust
- Policies and procedures
- Values

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