
Article:
Dyer, R. orcid.org/0000-0002-0030-7542 (2017) Cultural sense-making integration into risk mitigation strategies towards megaproject success. International Journal of Project Management, 35 (7). pp. 1338-1349. ISSN 0263-7863

https://doi.org/10.1016/j.ijproman.2016.11.005

Cultural sense-making integration into risk mitigation strategies towards megaproject success.

Abstract

Megaprojects have been described as extremely large-scale infrastructure projects typically costing over $1billion (Brookes, 2015). They are complex, take many years to develop and involve a multiplicity of stakeholders (public and private) to effect the proposed transformational benefits which impact millions of people (Flyberg, 2014). The nature of megaprojects depending on their management have either positive or negative impact on stakeholders and strongly influence megaproject success within the context of the iron triangle (cost, quality & time) (Atkinson, 1999). Consequently, social responsibility initiatives to better manage stakeholder risk and support successful execution of projects are often deployed. However, such initiatives often backfire and further challenge project delivery resulting in stereotyping and utilization of one size fits all approaches.

This paper explores the implementation of megaprojects and their risk associated with social responsibilities (SR) in megaprojects through the lens of cultural sense-making. The paper propositions that a requisite understanding of the socio-cultural context of stakeholders through sense-making can act as a lever in stereotyping reduction thus improving risk management associated with megaproject success. The paper applies a problematization (Alvesson & Sandberg, 2011) perspective challenging underlying assumptions regarding existing risk management approaches in megaproject management and closely examining existing gaps as it relates to successful implementation.

Key Words: Cultural-Sense Making, Project Risk and Social Responsibilities

Introduction

(Brookes, 2015), described megaprojects as extremely large-scale infrastructure projects typically costing more than $1billion. They range from power-plants to transportation, are complex in nature and traditionally have a track-record of cost overruns and poor delivery. Historically, megaprojects have represented an economic flagship for implementing countries as they flaunt the perceived prosperity of executors and symbolize economic dominance. The development of megaprojects represents a valuable proposition due to the specificity of their characteristics as identified by the six "C" (Frick, 2008), which characterize megaprojects as follows: *colossal, complex, captivating, controversial and having control issues*. These "C's" present varying degrees of complexity requisite for both theoretical comprehension of the nature of megaprojects as well as methodological assessment and empirical analysis for practitioners, academics and novices towards a better understanding of the megaproject phenomenon. Moreover, as (Flyberg, 2014) stated the impact of megaprojects have significant impact on the development of society and its structures. Hence, interest between public and private stakeholders as it relates to the need for socially responsible behaviour should not be an afterthought but ingrained in the psyche of megaproject planners to ensure that public interest are adhered too as well as yield the required benefits (social or economic) inherent with their development.

Megaproject operate within a defined framework. (Greiman, 2013) defines the megaproject framework as consisting of three main elements. The first is "concept and strategy" which is a direction in a project that contributes to a project's survival and success in its environment and aligns with the project's parent organization's goals. The second is "Theory" which results from concepts and casual relationships related to these concepts (Whetten, 1989); thus contributing to understanding and predictions for future behaviours. The third is "Practice"

which is a type of management activity that employs tools and techniques. This is further broken down into policy, process and structure (Greiman, 2013). The structure is a framework which consists of policies as well as procedures to break down projects into manageable activities. The structure is divided into financial, organizational and governance. The financial structure deals with how a project is financed: from sponsors to revenue stream. The organizational structure defines the responsibility of people and who reports to whom. The governance structure acts as an oversight and a function for decision-making. (Guangshe, Lingling, Johnny, & Peng, 2013) further explain that governance ensures that there is coherence between realizing organizational objectives and the resources and processes used in the project.

However, while these structures exist the drivers behind megaprojects are often propelled by factors which do not always take stakeholders into consideration. (Kolk & Pinkse, 2006) alluded to the many corporate social responsibility scandals (Enron, Worldcom, Vivendi Volkswagen etc.) where companies have failed to take care of varying stakeholder interest. These companies for the most part demonstrated a lack of moral duty to account to its stakeholder focusing primarily on shareholder interest. To illustrate an example of stakeholder neglect in megaprojects the Pascua Lama Gold and Silver mine represents an important example. This project was a collaboration between the Chilean & Argentinean borders located in the Atacama Desert region (Gordon & Webber, 2008). Barrick Gold, a Canadian-based company and one of the world's largest gold miners commissioned construction of the mine in the mid-1990s with an estimated capital expenditure on the project of approximately $1.2billion USD. Since its inception the project has been plagued by issues (environmental & social) which eventually cause the project to cease activity for a

significant period. Central to the argument on the role of cultural sense-making in megaprojects some key issues emerged. The failings of this initiative demonstrated the impact a lack of cultural sense-making can have on megaproject success. The evidence is demonstrated not only through the profit maximization approach above all else of Barrick (ignoring key requirements such as environment impact) which exacerbated risk, created significant cost-overruns and put the project at a standstill but also factors such as:

1. The lack of due consideration by Barrick for the damage that their proposed mining activities caused from an environmental and agricultural economic perspective.
2. Violation of the (Equator-Principle, 2015) whose objective is to assess projects for social and environmental risk, a key component of the region's emphasis on protecting communities & the environment.
3. The long-term impact on local farmers and the indigenous communities given that the proposed operations would run for approximately 20 years and provide significant employment opportunities to the community (Wadi, 2014).
4. The failure by Barrick to successful engage NGOs and environmental groups on sensitive issues such as the impact of glacier removal and aquifer destruction created by mining activities.

These factors significantly impacted this megaproject's failure. However, the metrics attest to a larger issue regarding Barrick's to properly engage communities in good social responsibility by ignoring their concerns and disregarding key cultural pain-points that local communities perceived as critical to the projects implementation and continuity. (Freeman & Hasnaoui, 2011) discussions on the proposed role of companies to act responsibly and ethically towards their stakeholders and not just shareholders, reinforces theoretical views requiring

companies to balance capital investment decisions with larger stakeholder impact factors such as culture. Barrick's disregarded of stakeholder input (i.e. indigenous communities, NGOs & Environmentalist) in favour of box checking exercises such as conducting an Environmental Impact Assessment simply to appease illustrates the organization's inability to both address critical stakeholder risk as well as assess the larger negative impact of image perception which continues to plague them today. Their failure to take into account external stakeholder influences and value of the indigenous community plays into the preconceived perceptual schemas of institutions utilizing their own lenses and failing to make sense of individual pieces and how they fit with the larger picture. It further highlights the dangers of a lack of understating of the interrelationship amongst values and/or how they relate to one another in given context of megaproject development.

(Flyberg, 2014) introduces three "sublimes" which have a significant impact on megaproject success and dependent on their management impinges on stakeholders negatively or positively as it relates to social responsibilities. The first is the political sublimes which assumes the delight politicians get from development of megaprojects for themselves and their various causes. These projects attract a lot of media attention and look like pro-activeness on the part of politicians. They are usually replete with ceremonious ribbon-cutting at the commissioning with the aim of aiding their re-election bid (Flyberg, 2014). The economic "sublime" is the glee businesses people get from making money from megaprojects. Their enormous budgets make such projects attractive to engineers, investors, architects, bankers and others all aimed at profit maximization for respective firms. Finally, the aesthetics sublime is the pleasure derived from a good design which is largely iconic. However, while the goals of megaprojects may be noble these sublimes at times have greater

influence often at the expense of good social responsibilities and ultimately resulting in stakeholder neglect. Socially responsible drivers for megaproject implementations as described by Bornstein (2010), i.e. those in which megaprojects act as a tool e.g. urban development are a requisite for good stakeholder management and demonstration of social responsibilities. Megaprojects conformity to an urban development model which is favoured by many governments usually result in positive impact across all groups. They can be used to redefine a neighbourhood or a city as a whole creating multiple layers of value added. According to Hudson (2001), economic impact analysis of megaprojects does not consider alternative use of resources and as such socially responsible alternatives may not be sought or beneficiaries consulted to achieve better method of weighing options via conduct of activities such as cost-benefit analysis (Preuss, 2009), as such stakeholder suggested alternatives may be ignored. The primary focus of megaprojects and projects in general is successful completion. Project management success criteria are traditionally based on the triple constraints of managing time, cost and quality referred to as the "iron triangle" (Atkinson, 1999). The iron triangle remains the gold standard of measurement for all metrics associated with the success of projects regardless of size or complexity. As is often the case the constraints created by this triangle represents assumptions related to projects hinged on timely delivery and successful adherence to the needs of primarily financial stakeholders who value economic returns with minimum risk. However, what actually occurs is an underestimation of non-quantifiable constraints leading to lags in resource mobilization and failure to execute projects on-time and within budget. Furthermore, the failure of these projects results in much stakeholder angst post evaluation.

(Mok, Shen, & Yang, 2015) stated that projects regardless of their nature require systematic approaches and skills by project managers to effectively accommodate stakeholder interest and achieve desirable outcomes. Stakeholder management (SM) brings stakeholder concerns to the forefront and supports development of robust relationships to reduce project complexity and better social responsibilities. (Freeman R. , 1984) defined stakeholders as those who affect or are affected by the achievement of the firm's objectives. The magnitude of megaprojects brings with it management of numerous stakeholders resulting in complex interrelationships and conflict(s) of interest. Effective risk management of stakeholders in megaprojects are ideally responsible for identification of uncertainty and mitigation of same. While the aim of risk in managing stakeholders in project management focuses primarily on the identification of needs, assessment of impact and the formulation of the appropriate engagement strategies much more emphasis is placed on quantitative risk associated with the project vs. the complexities of multiple stakeholder dynamics.

The Role of Risk in Projects

According to (Didraga, 2013) risk management offers a genuine and significant benefit to organizations, their project and stakeholders. The importance of managing risk in projects attest to the recognition and importance of requisite variables which affect business effectiveness at an operational and strategic level. As a consequence risk management is one of the most important tools a project manager has to increase the likelihood of success. The effectiveness of various risk management practices on project success are presented in Table 1 below.

Table 1 - Effect Risk Management Practices for Project Success

Source (Bakker K. , 2011)

Megaprojects are no exception. Their magnitude require a complex array of decisions which if not appropriately understood and executed can lead to project failure as well as a loss of competitive advantage. Good risk management practices include: identification, analysis, response planning and monitoring/control to effect successful best practices. (Chapman & Ward, 1997) indicated that by improving the project planning, budget and design processes project risk management will contribute positively to the success of projects. Moreover, the process itself consisting of the phases identified earlier allows for careful identification of events/situations which can influence original plans and measurement effectiveness.

The traditional view of success in projects (mega or otherwise) are underpinned by the time, cost and scope which define performance. It is against these baselines which megaprojects are usually measured forcing quantitatively driven project performance outcomes which at times results in stakeholder needs being put on the backburner given the bottom-line driven nature for successful implementation. Project success or failure is a factor of measurement. Project managers define their success/failure on achievement of criteria under competing constraints while stakeholders are potentially more interested in the business value resulting (Didraga, 2013). The wide base of stakeholders in megaprojects requires a delicate balancing act which goes beyond the theoretical effectiveness of project risk metrics aimed at success in terms of time/budgetary delivery. Several factors embody a reduction of successful utilization of risk in megaprojects (Kutsch & Hall, 2009) including:

- Hindsight (uncertainty in projects)
- Ownership of the risk management process
- Cost justifications in applying appropriate risk management procedures
- Lack of project manager expertise in risk
- Stakeholder anxieties.

In this context the ignorance of stakeholder anxieties, which can range from concerns regarding land use to economic cost which present themselves can easily become ignored risk concerns. While the article referred specifically to information technology, extrapolation of these factors to megaproject environments are by no means a stretch. Risk management is a tool utilized across the project spectrum to identify, analyse and control project risk carefully interplaying quantitative factors with qualitative amongst actors along the risk management process chain. They have significant influence on both perception and outcome by stakeholders regardless of their influence position. Risk management principles in megaproject performance as it relates to social responsibilities must positively influence communication between and collaboration amongst various stakeholders allowing for more creative thinking strategies to ensure both mitigation and project success (Chapman & Ward, 1997). However, different risk management activities influence the behaviour, perceptions and expectations of stakeholders and consequently the activities which are pursued to maintain inter-stakeholder relationships. Risk approaches contribute (positively/negatively) to the success of the project if ultimately all stakeholders are engaged, heavily influencing the accuracy of metrics utilized to ascertain project success.

The problem with risk however, is the management of uncertainty. (Monteiro de Carvalho & Rabechini-Junior, 2015) suggests an ambiguity regarding risk in project management. Citing the Project Management Institute's definition they indicate that it does not provide a clear distinction between risk and uncertainty. The relevance of this statement attests to two phenomena. Firstly, risk itself as an uncertain event or condition occurring with a positive/negative effective on some aspect of the iron triangle and secondly, different approaches are required based on the nature of the uncertainties given that all risk are not

as easily quantified. (Monteiro de Carvalho & Rabechini-Junior, 2015) further assert that risk management practices focus on the first type of uncertainty (i.e. variability) classifying them into events which can be modelled. As such the approach represents an instructionist, pre-specified, trigger driven action based on signals which are only possible based on adequately available information. The complexity of megaprojects and more so the complexity of its stakeholders require interventions which go beyond predominantly quantitative analytical approaches (Thambain, 2015). (Monteiro de Carvalho & Rabechini-Junior, 2015) ask the question: *What strategies should be adopted when information about a project is inadequate or when a series of factors and their possible impact are unknown*? This question is extremely valid within the context of this paper and the relationship between stakeholders, risk in megaprojects and social responsibilities especially within the context of culture and cultural sense-making given that stakeholder factors can be emotional/intangible and not always easily quantified. Stakeholder ambiguity highlights a fundamental problem as it relates to assimilation of information and opportunistic behaviour which result in increased risk in megaprojects. Understanding the numbers regarding the project are a relatively simple task based on available inputs. However, development of a combination of learnings (i.e. the ability to conduct new and original planning in the middle of a project) and selectionism (a search for multiple solutions until the best solution is identified) required to effectively manage megaprojects requires a comprehensive rethinking (Pich, Loch, & Meyer, 2002). What is required is a dualistic approach which not only focuses on the negatives but on positive elements which represent an opportunity. Integration of a cultural sense-making approach presents an opportunity to broaden the spectrum and evolve the strategies associated with risk in megaprojects. Given the considerable role which megaprojects play in the overall field of project management due consideration must be given to risk mitigation

factors that are less quantitative and their intangibility deserve due consideration as it relates to project success especially where social responsibilities are involved.

Relevancy of Cultural Sense-Making

The nature of megaproject complexity has already been discusses and it is common wisdom that such projects require highly analytical decision methods to ensure success. The latitude for decision-making within these environments are often narrow due to the highly defined focus of the projects. According to (Briggs & Little, 2008) the decision-making focus in organizations are fundamentally about values and goals. As a consequence, successful megaprojects hinge on the organization's leaders and their individual values and culture which are formed through experience. As such all stages of the project are influenced by the perceived "right values" reflected in the decision-making processes. Primary stakeholders of megaprojects determine success and this success is defined by such factors as correctness, longevity and durability. However, there is another critical factor which requires considerations when closely examining projects of this nature, the decision-making process itself. Questions such as: what drives/informed the process, the accuracy of the information and consideration of peripheral factors such as stakeholder emotions and sentiment are just as important. It is virtually impossible to make all stakeholders happy and while executing organizations spend much time and effort on the decision-making process some stakeholders will remain dissatisfied with the outcomes. The need to make sense of the various emotions and rationale towards justification of time, funds and effort requires a very different lens. Megaproject decision-makers need to make sense of the multitude of requirements which stakeholders put forward given a social responsibilities context. Sense-making is the process through which individuals work to understand novel, unexpected or confusing events (Maitlis & Christianson, 2014). As organizational members encounter events which create ambiguity

and uncertainty they seek clarification through cues from the environment around them and utilize these to *make sense* of occurrences and find appropriate answers. Sense-making goes beyond interpretation involving active authoring of events and frameworks for understanding. Sense-making plays a key role in megaprojects and more importantly its stakeholders as it underpins two important factors: (1) the role people play in construction of situations they attempt to comprehend (Stucliffe, 2013) and (2) the impact on organizational processes, strategic change, decision-making, innovation & creativity and organizational learning (Maitlis & Christianson, 2014). Both of these factors have a significant impact on decision risk. Sense-making lies at the core of organizational activity and as such is a central activity to the design and delivery of social responsibilities and megaprojects in general. Similarly, just as megaprojects require sense-making to effect sound decision-making, decision-makers must also be wary of cultural stereotyping as it relates to the decision. Given the complexity of megaprojects the inevitability of interpretation by different stakeholders within the organization of risk utilizing their own lenses and schemas (i.e. cultural myopia) can prevent them from seeing all the nuances associated with the project.

By extension risk especially in megaprojects which carry diverse cultural components via its social responsibilities agenda can also lead to negative experience. E.g. The Stuttgart 21 project (Novy & Peters, 2012) represented one of the largest and most ambitious railway and urban redevelopment projects of the 21st century. The key idea was to overhaul the rail infrastructure and station, redeveloping 100 ha of railway land in the heart of Baden-Württemberg's state capital. What instead ensued throughout this proposed development was mass rallies (100,000 demonstrators) against the project on the first demolition day. While mediation followed to resolve underlying issues the political and social consequences

forced the political system to rethink future decision of this nature. Heiner Geirler stated in the German Weekly Die Zeit 2010:

> "no future government will be able to push through a project the way Stuttgart 21 was pushed through and the politics will be forced to consider not only technology and economic advantages but also the impact on people."

While concern from parties regarding such a large-scale project (€4.088billion) in light of slumping real estate sales and previous doubts over cost-benefit analysis existed, inclusive of its proposed cost escalation to €4.1billion before its proposed completion in 2019 other factors such as:

1. Transportation benefit and impact: critics emphasized the impact of such a project would be significantly less that claimed resulting in creation of new bottlenecks and that the availability of less expensive alternative were ignored
2. Environmental Cost/Ecological Risk: critics objected to the ramifications of the project an opposing position to the project proponents environmentally-friendly stance. Illustrating issues such as the chopping of nearly 300 trees and adverse effects on the city's ground water.
3. Historic Preservation/Urban development: This was another critical issue with the proposed demolition of the old central station one of the most controversial elements of the scheme and
4. Decision-making Process/Participation: This was perhaps the most contentious issue encompassing both planned components of the scheme as well as the overall decision-making process which occurred mostly behind closed doors and only opened to public participation post finalization.

A lack of experience understanding cultural phenomena associated with multiple stakeholders in the project and not making sense of their cultural perspectives can make delivery difficult. Individual group(s) of stakeholder may experience sophisticated stereotyping (Osland & Bird, 2000) i.e. *reduction of a complex culture to a shorthanded description that may be applied across all individuals* based on any number of factors. This sophisticated stereotyping becomes more evident when cultural paradoxes become present. As such decisions are made based on incomplete information often misleading and potentially dangerous to project delivery as was evident in Stuttgart 21. These paradoxes reveal limitations in thinking and are often left unmentioned due to disengagement with other stakeholders' resulting in risk gaps or blind spots. According to (Osland & Bird, 2000) cultural paradoxes can often be explained by:

- Home-grown perceptual schemas that result in cultural myopia
- Lack of cultural experiences that lead to misinterpretation and failure to comprehend the entire picture
- Cultural learning which plateaus prior to a complete understanding of the entire picture
- Western dualism which generates theories with no room for paradox or holistic maps
- Cross-cultural research which encourage simplicity over complexity and
- A between-culture research approach that is less likely to capture cultural paradoxes than a within-culture approach

The danger with such approaches to stakeholders regarding sophisticated stereotyping is that it leads implementers to think that the number of decisions required for megaproject execution are limited and that they are sufficient to effectively deliver the project within a

social responsibilities context. In the case of Stuttgart 21, the proposed benefit of urban renewal and improvement outweighed other factors with significant socio-cultural impact. It is this lack of cultural sense-making with regards to stakeholders that results in heightened risk exposure and therefore inaccuracies in decision-making. (Flyvbjerg, 2006) identified the challenges of inaccuracy as it relates to unreliable or outdated data and the use of inappropriate forecasting methods. However, this inaccuracy primarily referred to forecast of cost, demand and other impacts on planned projects. Substantial resources have been spent on megaprojects/projects over several decades on improving data and forecasting methods and nonetheless have had limited effect on the accuracy of accurate/improved forecasting. He suggested that the problem may possible be something other than poor data. The question of bias as a result of both psychological and political explanations have been alluded too as a better rationale for inaccurate forecasting. Psychological explanations account for inaccuracy in terms of optimum bias where cognitive predispositions allowed people to judge future events in a more positive light than was warranted by actual experiences. Politically, inaccuracies were explained through strategic misrepresentation where forecasters and managers deliberately and strategically overestimated benefits and underestimated cost. The linkage between Flyvberg's findings and those associated with cultural sense-making are relevant. Given that various stakeholders possess either psychological or political biases naturally with regards to risk perception these may very well be superimposed on the project stakeholders and negatively impact social responsibilities. Cultural mind-sets and preconceptions may cause decision-makers to pursue black and white answers based on their cultural myopia rather than tolerate continued ambiguity that may come from a lack of understanding of different viewpoints all geared towards getting the job done. As such not peeling away layers which characterize deeper cultural nuances amongst stakeholders may

lead to insufficient information and the rise of opportunistic behaviours further leading to increased risk in social responsibility analysis. A potentially moderate degree of risk management (Monteiro de Carvalho & Rabechini-Junior, 2015) coupled with cultural sense-making injected into projects can have a positive effect reducing negative risk. (Bakker, Boonstra, & Wortmann, 2012) indicated that risk management activities contribute to project success via four different effects: action, perception, expectation and relation. Action effects are instrumental to stakeholders' ability to cause and stimulate an effective action. Perception and expectation involve stakeholders' ability to establish a consensual view of final expected outcomes and to motivate behaviour during execution of the project to treat with objective/subjective differences. Additionally, communication effects play an integral role through the establishment of shared visioning of the project's uncertainties and expectation for success. The actions, expectations and relations of stakeholders are all embedded in their cultural roots. (Atrian, Soltani, Rashidpour, & Etebarian, 2016) states that if organizations fail to change their organizational culture to comply itself with the needs of society and its audiences they are doomed to fail. Organizational culture refers to the system of shared meaning held by members which distinguishes itself from other organizations and as such represents a set of methods, beliefs, perceptions and inferences coupled with modes of thinking that are common amongst members. Much of the decision-making within organizations are perpetuated through repetition, providing mechanisms to perpetuate and as such changing them encounters numerous problems. Megaprojects consist of a diverse range of cultures, private, public (governmental) and activist thus decision-making is influenced by several actors all holding different assumptions based on preconceived cultural mind-sets. It is often the case that decision-makers on all sides are reluctant to change their viewpoints based on the profits (tangible or intangible) from maintaining the status quo. As a

consequence, risk consideration are heavily influenced by the cultural views of different decision-making camps and how they make sense of uncertainty. (Atrian, Soltani, Rashidpour, & Etebarian, 2016) indicated that embracing an optimal-culture where acculturation and socialization of new values, systems of assessment and encouragement of new/accurate ways of working can have a positive impact on future performance. This view aligns with the contingency approach to risk management i.e. the diamond model: novelty, complexity, technology and stage (Shenhar & Dvir, 2007) which argue that complexity of a project influences its performance. The model purports that three different types of complexity exists: assembly, system and array. Cultural sense-making aligns with the model given its focus on coordination of multiple systems which are hugely complex, stakeholders are such a system as is the delicate balancing act of social responsibilities. Integration of cultural sense-making suggests a novel approach as a further determinant of project success given that it can treat with uncertainties in the environment through adjustments to risk and a better understanding of stakeholder profiles. A revision of approaches to stakeholder risk via cultural sense-making can provide a derivative product allowing greater interest/awareness of the megaproject and potentially winning over detractors. Moreover, risk-specific approaches based on the nature of the project (i.e. mega) and the influence of stakeholders have the potential for breakthrough methodologies which can become standardized when treating with complex stakeholder in socially responsible environments. The hard side of risk covers much of the project management domain focused on forecasting methodologies and attempts to reduce uncertainties due to cognitive biases. However, culture and the requirement for cultural sense-making are unforeseeable uncertainties and require other types of skills related to the softer side of risk analysis. People generally underestimate cost, time and risk of planned actions within megaprojects but overestimate the benefits. An effort

to better integrate associated risk utilizing more distributed information methods for increase accuracy, taking into consideration outside views supported by cultural sense-making approaches may potentially close the gap between stakeholders and megaproject success delivery within a social responsibilities context.

Cultural Sense-making – Closing the Risk Gap in Social Responsibilities of Megaprojects

Prior to any discussion on closing risk gaps through the use of cultural sense-making the wider issue of the linkage between social responsibilities and cultural sense-making in megaprojects needs discussion. Cultural sense-making like sense-making itself represents a process. Sense-making as a process represents a tripartite view (Basu & Palzaao, 2008) of cognitive, linguistic and conative factors which influence relationships. From a megaproject perspective social responsibilities in megaprojects through a sense-making lens represent a process view of the way that these projects go about making sense of the world from a development perspective. Social responsibilities in megaprojects are supposedly part of the larger discussion process which managers undertake regarding relationships with stakeholder, their role(s) in those relationships and the correct behavourial disposition required when undertaking projects of such size and complexity. Hence, the main linkage between social responsibilities and cultural sense-making in the context of megaprojects can be perceived as an identity orientation (Basu & Palzaao, 2008). It is the ideology of the organization(s) undertaking the megaproject, its shared/interrelated beliefs, values and norms and the way that they make sense of the world that are transposed through their social responsibilities behaviour. The idea of cultural sense-making is to allow the megaproject doers to better position themselves to inform how business relates to the various stakeholders and why the relate to them as they do in a

seemingly appropriate manner. Undertaking such an approach provides a dualistic understanding by both managers/organization and stakeholders as it relates to the key relationships that evolve. Moreover, the cultural sense-making approach is not limited to the megaproject but the larger issue of sustainability. Given the finite nature of megaprojects the contextualizing of their impact from an ecological perspective and the way these projects make sense of their decisions represent an appropriate argument of leading changes for sustainability. The visibility of megaprojects influences the sustainability agenda casting a shadow on such critical issues as the use of electricity, water, green spaces often with decision cast in stone prior to stakeholder involvement (Henderson, Gulati, & Tushman, 2015). From an environmental perspective megaprojects remain characterized to some extent by mistrust, inefficiencies, lack of cooperation and an emphasis on the cost/profit equation. They involve much effort in land reclamation, super structures and high up front cost as part of capital outlays. Example, in the case of Thailand's development of approximately four million hectares of irrigated lands in the region of Isaan (Molle & Floch, 2008) the effect of such megaprojects on the environment and longer-term sustainability at the expense of a multibillion dollar plan remain questionable. As with the Isaan project the social and environmental consequences of such a project impact the environment's availability during dry seasons, triggered migration of people to in the case of Isaan to Bangkok or more generally acts as a mechanism to push those lacking opportunities in one area to already overcrowded ones leading to several other environmental and societal factors such as higher carbon emissions, food scarcity and other issues such as squatting, traffic congestion nd efficient disposal of waste. In essence megaprojects that are not well executed and prove to be exclusionary regarding stakeholder engagement eventually take on greater risk of failure and complexity.

An overview of cultural sense-making and its potential relevance to social responsibility in megaprojects has been provided with the aim of demonstrating the potential role which it can play. The article has sought to identify current approaches through analysis of risk within projects and the challenges which forecasting inaccuracies bring to bear as a result of various biases specifically when dealing with social responsibility and its stakeholders. A challenge of the risk management process in assessing any project is data gathering. Techniques for collection of risk related data rely heavily on sub-matter experts and people who are intimately involved in these projects, i.e. expert judgement. However, expert opinions are subject to bias because of over-reliance on certain information and neglect of others (Kremljak, 2011). The framework for decision-making with regards to expert judgement on risk are potentially framed within the context of cultural myopia with neglect of other relevant information which does not fit and at times unwarranted confidence in opinions framed by most frequent and most recent experiences. The current suite of tools for qualitative risk analysis currently include (Kremljak, 2011):

- Risk probability and impact – describing in qualitative terms (very high, high etc.) the likelihood that certain risk may occur.
- Probability Risk impact matrix – constructed to assign ratings based on combining probability and impact scales
- Project assumption testing – identification of assumptions tested against two criteria: assumption stability and the consequences if the assumptions are false and
- Data precision ranking – qualitative risk analysis based on unbiased data evaluated by the degree to which the data about risk is perceived as useful.

Despite their relative historical success gaps exist with regards to risk management approaches in project management. Firstly, in assessing risk probability they are usually applied to specific risk events and not the overall project. Secondly, understanding available risk data is a product of quality, reliability and integrity. Social responsibilities to stakeholder

are not an event in megaprojects but a holistic component and as such examination of their risk context requires a more in-depth approach than current treatments, which primarily examine them through tools such as the stakeholder register. Furthermore, the overall issue of people risk management (Krivkovich & Levy, 2013) a key component of social responsibility alludes to seeking insights regarding potential risk by making it everyone's responsibility to flag potential issues, allowing for better questions which clarify problems and resolution of issues. The occurrence of critical incidents with regard to stakeholder neglect relative to risk in megaprojects are attributable to two potential conditions: epistemic uncertainty or risk is knowable but decision-makers fail to act. In many instances the derived benefits of megaprojects outweigh stakeholder's perceived requirements as it relates to the priority of deeper social responsibilities. Current gaps such as the lure of the familiar (Kutsch, Browning, & Hall, 2014) where managers concentrate on risk they perceive to be closely related to project requirements and ignoring those which they find more difficult to associate are commonly assessed. Furthermore, such factors as complications by the lure of the measurable focusing on what can be assessed to determine urgency and most needed attention for decision-making are always in primary focus. Cultural sense-making with regards to risk management in social responsibilities in megaproject represent a gap because decision-makers usually choose responses to risk which reflect:

1. Positivity – keeping the problems with stakeholders and their cultural nuances to a minimum simply to appear competent providers. If they highlight stakeholder risk too greatly they face the danger of undermining stakeholder confidence and thus delivery.
2. Non-commitment – It is in the best interest of project managers especially in complex megaprojects to defer commitment as long as possible. This a product of the focus on the iron triangle and consequently they prefer to act only when the risk materializes.
3. Powerlessness – a general unwillingness of project manager to engage risk over which they have little control. Project managers are prone to believe that they can exert little

influence over cultural phenomena associated with diverse stakeholder and consequently are unwilling to engage.

The choice to add an additional component such as cultural sense-making in megaprojects requires a cross-functional representation in the group performing risk identification to avoid the lure of the familiar (Kutsch, Browning, & Hall, 2014). Megaproject developers should seek inclusiveness by fully engaging stakeholders and making sense of cultural phenomena both inter & intra groups to ensure proper identification of risk towards improved social responsibilities. Closing the present risk assessment gap(s) via cultural sense-making assists with a better understanding of the cues which create ambiguities not easily captured by prevailing risk methodologies. Furthermore, given the volatility of stakeholders applying a cultural sense-making approach narrows the discrepancies between expectations and reality as it relates to social responsibilities. Ignoring social responsibilities within megaprojects create an identity threat. Individuals construct their identities through such factors as self-enhancement/efficacy and self-consistency (Maitlis & Christianson, 2014). When these conditions come under threat stakeholder reaction/action can significantly risk the project's delivery across all components of its lifecycle. Cultural sense-making provides a trigger to identify/anticipate the source of such threats acting to restore stakeholder identity in the process. The gap created by not clearly leveraging cultural sense-making in risk management for social responsibilities in megaprojects pervades individual, organizational and institution levels. Megaproject delivery timelines and cost reorients the focus from stakeholders to the bottom-line primarily due to size and related investment. As a consequence it is perfectly natural to ignore (purposely or otherwise) deeper cultural phenomena associated with such projects in favour of hard metrics which can be easily managed and over come through prevailing risk methodologies. Hence, cultural sense-making efforts can only occur if key

stakeholders within megaprojects challenge the status quo through sense-giving (Maitlis & Christianson, 2014) i.e. shaping understanding of a positive way forward. While current risk methods can be credited with robust risk analysis regarding qualitative and quantitative factors the requirement for risk neutrality regarding megaproject delivery is essential especially given the number of stakeholders. All stakeholders do not perceive or react to the same risk in the same way due to framing of their respective cultural experiences. According to (Serpellaa, Ferradaa, Howarda, & Rubioa, 2014) failures of risk management underlie three causes: dysfunctional culture, unmanaged organizational knowledge and ineffective controls. Cultural sense-making represents gap in the risk management framework of social responsibilities not because of lack of information but rather due to the lack of knowledge with which to interpret its meaning. A sense-making approach informs key knowledge management processes which can enable a better understanding of the risk associated with social responsibilities through improvement of the capacity of teams to enhance knowledge sharing and the approaches used to analyse information. Knowledge is linked to people's beliefs and commitments thus ignoring cultural sense-making as a component of risk management diminishes human actions, which add value to the project. Stakeholders represent a symbolic risk through their individual and collective knowledge of cultural factors providing a truer interpretation of the realities faced in project implementation and the effective management of social responsibilities.

Integrating Cultural Sense-making into Risk Management for Megaprojects

How can cultural sense making be integrated into risk management for social responsibilities within megaprojects? As indicated a key component of the challenge with regards to risk management is accuracy. We live in an age of readily available data however, making sense of it still presents challenges. The discussions around sense-making and more specifically

cultural sense-making to identify a potential gap in the risk management methodologies for social responsibilities rests with information flow identification and utilization. If we are to better understand social responsibilities in megaprojects from a risk perspective a better understanding of cultural paradoxes is required. According to (Osland & Bird, 2000) culture is embedded in context and cultural sense-making is a cycle of events. Understanding these embedded events within the social responsibilities component of megaprojects can provide a better potential risk management approach. These events consist of:

1. Indexing Context – The process begins when individuals identify a context and engage in indexing behaviours. I.e. noticing which stimuli provide potential cues about the situation.
2. Making attribution – the process through which contextual cues are analysed in order to match context with appropriate schemas. The matching process is moderated by social identity.
3. Selecting Schemas – schemas represent cultural scripts, patterns of social interaction which characterize a particular cultural group. They represent accepted and appropriate behaviours specifying specific patterns of interaction.
4. Influence of cultural values – schemas reflect an underlying hierarchy and their configuration embeds into management styles.
5. Influence of Cultural History – In decoding schemas vestiges of cultural history and tradition must also be identified. Mind-sets inherited from previous generations can positively or negatively affect perception.

Understanding the relationship between these components and the risk management associated with social responsibilities represent a potential gap-narrowing opportunity because stakeholder risk should not be treated as a subset of a risk management process but integrated into the overall framework of project delivery especially in megaprojects. A cultural sense-making model Fig. 1 provides a lever to comprehend, explain, attribute, extrapolate and predict (Osland & Bird, 2000) events that traditional risk methods bundle into risk subsets.

Figure 1 – Cultural Sense-Making Model (Osland & Bird, 2000)

Embedding cultural sense-making into the existing risk management process Fig 2 requires a re-examination of the current model bearing in mind an approach which embeds cultural sense making at the beginning of the analysis of risk management process. Through the lens of stakeholder analysis social responsibilities shifts from an event driven context to one in which encompasses the overall project risk planning methodology

Figure 1 - Risk Management Process (High Level View)

Figure 2 - Integrated Cultural Sense-Making Risk Process Model (Conceptual)

Fig 3 attempts to illustrate a conceptual model for integration of cultural sense-making into the current risk planning process. While, limitations exist regarding the conceptual model's applicability, it provides a fundamental starting point to rethink how risk are assessed in megaprojects from an inductive perspective. The approach seeks to integrate components of cultural sense-making and allow for an expansion of complex behaviours which underpin decision-making in megaprojects. The goal of the model is not to replace the existing risk management process but reframe risk biases which stereotype aspects of stakeholder interaction that govern specific decision behaviours. By embedding the cultural sense-making components such as indexing and attribution risk processes can be further contextualized to provide deeper cues to the situation. E.g. if the planners for Stuttgart 21 examined potential stimuli such as the removal of a historical station and its impact from a larger stakeholder community perspective they may accessed cues as to an appropriate middle ground on the situation. Furthermore, applying an attribution approach prior to full scale risk identification represents an opportunity for schematic matching linking critical social responsibilities such as gender, ethnicity, social class or history to the risk identification process and not simply

narrowing risk to groupthink biases. The use of the model provides a support mechanism for acquisition of knowledge, awareness and contextual behaviour which a triple constraints approach while useful for bottom line activities would otherwise ignore in favour of economically viable metrics.

Various classification of risk has been observed by different theorists (Irimia-Diégueza, Sanchez-Cazorla, & Alfalla-Luque, 2014) such as: Bruzelius, Flyvbjerg, & Rothengatter (2002) distinguish between only four risks (cost risk, demand risk, financial market risk, and political risk). Little (2011) considers a wider risk classification (political risk, construction risk, operation and maintenance risk, legal and contractual risk, income risk, financial risk, and force majeure). Other authors analysed the risks from macro and micro levels Bing, Akintoye, Edwards, & Hardcastle (2005) while others relate the risk categories to the levels of project objectives (operational risks, short-term strategic risks, and long-term strategic risks) Krane, Rolstadås, & Olsson (2010). The author proposes a modification to the risk in infrastructure model proposed by Azpitarte Melero (2001 & 2000) and Irimia-Diéguez & Oliver-Alfonso (2010) citing (Irimia-Diégueza, Sanchez-Cazorla, & Alfalla-Luque, 2014) which encompasses such aspects as design, legal/political, contractual, construction, operation/maintenance, labour, clients/users/society, financial & economic and force majeure. For the purpose of this article we are primarily focused on the clients/users and society component of their approach which indicates a need to closely examine (a) social profitability risk which puts into question whether the project provides the expected benefits to society; (b) impact on local groups' risk arises when the inhabitants of an area are a source of risk due to not being managed correctly. The gap that exists within the context of the risk management of social responsibilities rests with management of stakeholders in megaprojects and a required shift from a homogeneous

categorization to one which takes into consideration the specificity of risk that may be encountered in social responsibilities within megaproject management. In fact, based on formal analysis via a literature reviews conducted by Azpitarte Melero and Irimia-Diéguez & Oliver-Alfonso they identified the most focused upon risk in megaprojects as construction risk related to cost and project schedules (42.31%) Table 2. Client and society represented (14.1%) primarily due to return on investment and the societal impact which were also high and as such require a much greater detail of analysis.

Table 2 - Risk Categorization proposed per sector ((Irimia-Diégueza, Sanchez-Cazorla, & Alfalla-Luque, 2014)

Megaprojects represent a significant challenge to stakeholders and when social responsibilities are added the complexity increases. Social responsibilities do not occur within a vacuum they consist of individuals, groups and/or institutions with varied interests in the project and can affect the outcome. Hence, easily quantifiable risk those easily measured through iron triangle methods can readily be managed. Factors which are embedded in cultural context as it relates to risk management approaches for social responsibilities require transference to several stakeholders to better identify and control.

Conclusion

Examination of risk management for social responsibilities in megaprojects through the lens of cultural sense-making is a new phenomenon. This article sought to identify a potential gap with regards to current megaproject risk approaches. From the author's perspective the gap identification (i.e. problematization approach) attempted to use gaps in the present risk literature to challenge assumptions and attempt to introduce a novel approach. Questioning assumptions regarding a unified approach to all project management risk has been the essential aim of this article. Proposing the inclusion of cultural sense-making as a

differentiator in risk management of social responsibilities of megaprojects as well as its potential for further empirical analysis presents a next logical step.

While disagreement may exist regarding stakeholder appraisal of projects and the provision of requisite information during the conceptualization stage through such mechanisms as public consultations, paid media etc., there remain several instances to the contrary. This article has articulated only a few instances where stakeholder consultations in megaprojects were neglected at and during the commencement of the process leading to significant project failure. Evidence supported by (Luckmann & Farber, 2016) indicated that while the success of projects depends significantly on effective and appropriate interaction with project stakeholders across cultural boundaries there are several instances where this does not occur. They studied 24 cases between 1990-2014 across information technology, outsourcing/offshoring, construction, economic development etc. and found through their analysis a substantial number of international projects struggled with managing stakeholders from different cultural backgrounds, leading to negative outcomes. They mentioned such factors as:

1. Fear and trust of project stakeholders
2. Lack of participation & commitment from a lack of trust in an intercultural setting
3. Insufficient communication
4. Lack of transparency regarding objectives, roles and task and
5. Knowledge and information sharing

While one can argue that these are generalizations that challenge all stakeholder communication in projects (Chung, Kumaraswamy, & Palaneeswaran, 2009) provide further support to the argument regarding megaproject briefings and the limited array of information

available such as: confusion with client organization over direction/aims of the project, a focus mainly on financial considerations and difficulty in accommodating the needs of all users to name a few at the commencement of these megaprojects. While these authors suggested an ICT approach to resolve the issues, its applicability may pose challenges in some projects. It however, does not negate the inherent gap that still exists regarding stakeholder communication in such large scale projects and the fact that they still face challenges even when measured through triple constraints theory.

The multiplicity of stakeholders involved in most megaprojects and identification of cultural differences requires a risk dimension requisite for their future success given present limitations of current risk management methodologies and insufficient focus on the cultural nuances of megaproject delivery. While there is agreement on the need to reframe behavourial scripts, this process still represents a clear risk category which can easily be lost in a qualitative assessment bundle. The cultural sense-making approach put forward in this work requires further refinement of the proposed conceptual model, the cultural phenomenon regarding sense-making and further testing to ascertain its empirical robustness. The development of a risk management model that includes cultural sense-making in megaprojects is not a standalone theoretical approach but an opportunity worth further pursuit to better understand and treat with variables that continue to hinder effective performance of these projects. Further analysis of megaprojects and their risk needs to be investigated with a new theoretical lens supported by such theories as cultural sense-making integration in risk analysis given that present literature does not provide sufficient preliminary evidence and current risk processes continue to provide moderate support to successful megaproject execution.

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