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CONFERENCE PAPER

Embracing emergence: problem solving on complex projects

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Synopsis

Managing within the unpredictable and complex environments of today's projects calls for new competencies to help interpret and respond to problems. Quantum storytelling can play a powerful role in reinterpreting project concepts such as *risks*, and their resulting *problems*, by harnessing the properties of emergence. The reframing of problems is explored through a complexity lens and underpinned by stories from the international development sector.

Research design

Actuality research, with its focus on the lived experience, provided the foundation for a research study exploring how project managers currently interpret problems on complex projects. Application of the storytelling diamond model supported methodology choice, and in-depth interviews were undertaken with six project managers from two organizations managing complex projects.

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Relevance for practice

We believe that developing an understanding of quantum storytelling and its potential application to managing projects has the capacity to assist project teams to make sense of the emergent nature of complex projects and to consider alternative approaches to solving problems.

Main Findings

The findings provide insight into how the project managers interviewed currently interpret problems and the resulting approaches to solving them. Their stories outline the themes that populate both the organizational and sectorial narrative of their projects.

We argue that traditional project methods apply control frames and behaviours through which to interpret concepts like problems, but in the real world, adaptable and flexible behaviours are required to tackle them as they evolve in the field. We determine that the traditional “plan and manage” contingency approach is not delivering to these project managers the competencies required to manage their projects.

Research implications

Our paper illustrates how a storytelling methodology can be used to explore problems and identifies the potential to further develop storytelling competency through adopting a complexity mindset with its inherent understanding of the property of emergence.

Keywords

Complex Projects, Problems, Storytelling, Complexity, Emergence

Introduction

This paper is a response to the increasing level of complexity of the 21st century. Caught in a nexus between extreme technological advancements and momentous social change (Schwab 2016), governments, businesses and individuals all feel a relentless sense of flux as we strive to solve the inherent complexity that plagues our projects (Hass 2009b; ICCPM 2012; Remington & Pollack 2007).

As we stare down the barrel of the Fourth Industrial Revolution, proposed to arrive in 2020, we are faced with a future described as, “in its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before” (Schwab 2016, p. 1).

In this age of hyper-connectivity we have networked our world and, in turn our problems, into a complex tangle of relationships, economies and societies (Dorst 2015). As business systems are becoming more networked and complex, the projects required to implement solutions to these, are correspondingly becoming more complex (Hass 2009a) and complex project management (CPM) is “emerging out of the dust of the persistence of failed, challenged, and costly projects” (Hass 2009b, p. 7).

This has led to a questioning of the applicability of project management approaches and methodologies that are founded on traditional control thinking to the complex environments in which today’s projects are being managed (Cicmil et al. 2006; ICCPM 2012; Remington & Crawford 2004; Williams 2002).

The traditional project management (TPM) approach, based on a rational, linear perspective, views concepts such as “problems” and the pre-problem notion of “risks,” as predictable events that can be planned for and managed. However in complex, and therefore unpredictable (ICCPM 2012), environments, we need new competencies based on emergence to interpret and respond to our problems.

In five years, over 35% of skills considered important for today’s workforce will have changed, with “soft skills” populating the top 10 by 2020 (Gray 2016). The complex project management (CPM) competency standards, based on the CPM paradigm, which assumes uncertainty, change and emergence as the normative condition (ICCPM 2012), include *storytelling* as an essential skill for complex project managers (CPMs).

This paper applies a lens of complexity thinking, through the theoretical framework of *reframing through storytelling*, to explore how project managers make sense of problems. It illustrates how language, specifically the tool of storytelling, can play a powerful role in re-interpreting concepts like problems by harnessing the properties of emergence to view them in their emergent state.

Quantum storytelling, as coined by Boje (2008), is underpinned by a complexity mindset and interprets narrative as a living entity which has the ability to disrupt the dominant narratives of organizations, enabling a *re-storying* of our experiences into a new, anticipated version of the future. When quantum storytelling is applied to problems, viewing them in their emergent state provides a new lens to reinterpret them. This ability to reframe problems opens a door for CPMs to make sense of the dynamic, emergent and complex nature of the modern project and to consider alternative problem-solving approaches.

In this paper, stories from the international development sector (IDS) illuminate the results of a qualitative research study that used a narrative enquiry methodology and was based on in-depth interviews with six project managers from two organizations operating projects across international borders.

Actuality research (Cicmil et al. 2006), with its focus on *lived experience* and its base in complex social processes and project complexity, provided the foundation for the praxis study. The storytelling diamond model (Rosile et al. 2013) was used to select appropriate methodological approaches, and data analysis was undertaken using NVivo software.

The findings provide insight into how these project managers currently interpret problems and the themes that populate both the personal and sectoral narrative of their complex projects. These themes have been collated under the relevant dimensions of complexity as identified by Hass (Hass 2009a).

This paper aims to contribute to actuality research in projects through presentation of the lived experience of six experts managing complex projects in the IDS; to explore the overlap between the extant theories associated with quantum storytelling and the complexity mindset of CPM; to propose quantum storytelling as a powerful addition to the CPMs toolbox, with the potential to further develop the CPM competency standards; and to use storytelling as a valid research method on modern complex projects.

Background

THE ACTUALITY OF COMPLEX PROJECTS

There has been criticism of mainstream research into projects and project management in the past for its heavy reliance on the functionalist view of projects and organizations (Blomquist et al. 2010; Cicmil et al. 2006; de Bakker, Boonstra & Wortmann 2010). This control theory approach views project management as “the accomplishment of some finite piece of work in a specified period of time, within a certain budget, and to agreed specification (which is, in turn, a conventional definition of a project)” (Cicmil et al. 2006, p. 677).

However, proponents of project *actuality* reject the view of projects as pro-forma (Blomquist et al. 2010; Cicmil et al. 2006), instead believing them to be constituted by “the actions of interdependent actors through the process of power and conversational relating” and through engaging in sense-making processes (Cicmil et al. 2006, p. 677).

Actuality research represents a shift away from model-based theory towards praxis-based theory and research. It focuses on the empirical reality of project work, creating knowledge which is relevant to practice by exploring neglected themes from practitioners’ experiences, including complexity, nonlinearity, values, multiple perspectives and social processes in project environments (Cicmil et al. 2006).

Actuality research was the foundation for this research to explore the *lived experience* of six project managers in the international development sector (IDS) or, expressed colloquially, “what is actually going on” in projects (Cicmil et al. 2006, p. 676).

FROM CONTROL TO COMPLEXITY

For this study, we used the following definition of a complex project from Remington (2011) that was particularly relevant to international development projects, given the focus on reputational risk rather than budget, “characterized by uncertainty and ambiguity . . . [and] designated as high risk . . . measured in terms of return on investment or reputation to the sponsoring organization” (Remington 2011, p. 3).

Through a complexity lens, we can view most modern projects as complex adaptive systems (CAS) rather than simple systems, due to their emergent nonlinear behaviour, adaptiveness and sensitivity to initial conditions (Remington & Pollack 2007). This requires a paradigm shift away from thinking of projects through a traditional control theory perspective (Hass 2009).

If we view projects as CAS, then management approaches are required that are based on a complexity mindset (ICCPM 2012) and are “different, more flexible, responsive, adaptive and . . . richly communicative” (Remington 2011, p. 4), enabling development of a bespoke mix of theories and tools, drawing insight from a wide range of sources not historically part of the project manager’s toolbox (Pollack 2009; Remington & Pollack 2007).

The Complex Project Manager Competency standards are a relatively recent development (latest version 4.1 released in 2012) defining the paradigm, behaviours and body of knowledge required to operate effectively within complex project environments (ICCPM 2012, p. 2). Traditionally “soft skills,” including personality traits and attitudes, had not received adequate attention in the project management literature (Creasy & Anantatmula 2013; Hyväri 2006; Skulmoski & Hartman 2009); however, the CPM standards now include storytelling in: View 7, Leadership & Communication; Element 7.6, Communication; Actions in the workplace, 7.6.3:

Uses storytelling to create a positive and engaging environment for staff and external stakeholders.

The prerequisite knowledge required for this competency includes 7E Communication Frameworks:

Language strategies and shared meaning; (and the) Impact of language strategies and storytelling (CCPM 2012, p. 77–9).

We make an important distinction in this paper, introducing the notion of quantum storytelling (Boje 2008), which is the transformation of storytelling from knowledge (epistemology) and empiricism (methodology) to one of being-becoming (ontology) (Rosile et al. 2013). Based on a complexity mindset, this modern form of storytelling embraces the properties of emergence and thereby has the potential to further develop the standards.

FRAMING PROBLEMS

Traditional project management approaches concepts such as problems, or issues, through a conventional control theory perspective as events to be planned for and managed (Taylor & Watling 1970).

The entire premise of this conventional thinking is the assumption these are predictable events that can be planned for using strategies and tools based on a linear view of past experience. In practice, it's the unforeseen problems that plague projects; we can't plan for the actuality of problems – only for their likelihood. We can't predict when they will emerge within the project life cycle or how they will unfold within the context of the complex project environment.

Project managers currently define problems through a control frame in their various states of being – in prospect, to be identified as “risks” and in their eventuality, to be registered as “issues.” However, complexity thinking offers a new way to view problems, enabling them to be reconceptualized, or reframed, as an events emerging from changes to the system.

Framing is not a new idea; Aristotle wrote about frames (Boje 2008). Simplistically, a frame is a point of view or an idea that can be used as a metaphor to enable another way of seeing. Reframing had its origins in the design industries and more recently has been attributed to the Design Thinking discipline as a core skill for managerial problem solving (Brown 2009; Liedtka et al. 2013).

This ability to *reframe* provides a novel and potentially powerful approach to developing solutions in praxis that take into account the complex and emergent nature of modern projects.

REFRAMING THROUGH STORIES

Language is the tool we employ to create meaning and therefore to define the frames through which to view our life experiences.

According to Snowden (2012) stories are the fundamental patterning device through which *human complex systems* understand the world. Because of higher levels of intentionality, unpredictability and intellect, we are very different from nature's systems, and therefore we do things that aren't logical in terms of simple system rules and agent-based behaviour (Snowden 2012).

Our world views are socially constructed. The historical, societal and familial narratives we are born into help shape our identities and provide meaningful *cognitive frames* for interpreting

reality (Milojević & Inayatullah 2015). For us, “the stories we grew up with control the way we think” (Snowden 2012).

Most people believe that they are perfectly rational agents with views based on an accurate reflection of an objective reality. However, our world views are constructed of dominant frameworks of meaning, or *dominant narratives*, based on our past and legitimized and perpetuated by the people around us, political or economic structures, and tools such as mass media (Milojevic & Inayatullah 2015). The way that we interpret our experiences, and the personal narratives we hear and deliver, depend on the collective world view that legitimizes them.

Therefore *storying*, the ongoing process of constructing and reconstructing reality through stories, ultimately determines our decision-making (Milojevic & Inayatullah 2015).

Organizational Storytelling for Control

Storytelling has been called the sense-making currency of organizations playing a crucial role in creating and sustaining organizational identity (Rosile et al. 2013). Every organization, workplace, school, government office or local religious group can be seen as a *storytelling organization* (STO) (Boje 1991), as we understand human conduct through our intentions and understand our intentions through the settings that give them context (MacIntyre 1981, 1990; Schütz 1973, as cited in Czarniawska 2004).

In his 1995 seminal work on the theory of narrative sense-making, Weick focused on the retrospective action of storying current experience to fit into past meaning, for the purpose of narrative control and coherence within organizations. According to Weick, retrospective stories transmit and reinforce third-order controls (assumptions and definitions that are taken as given) by conveying shared values and meaning. This retrospective view controls sense-making by filtering desired information in the present and retro-fitting it into a linear and coherent beginning, middle, end (BME) narrative structure in the past (Boje 2008).

The BME perspective is fundamental to the history of storytelling, immortalized by Aristotle and validated by the early work of Czarniawska: “For (stories) to become a narrative, they require a plot . . . to bring them into a meaningful whole” (Czarniawska 1998, p. 2). The BME plot is the overarching structure that underpins the dominant narratives of organizations today and the basis of narrative control (Boje 2008).

Boje (2008), one of the formative authors on storytelling and narrative theory in organizational research, extends Weick’s notion that story is imprisoned within the dominant narrative. Over the course of modernity, *narrative* has become a centring force of control and order in organizations, aspiring to abstraction and generality. The counter-force to that is *living story*, which has retained a more grounded interplay and connection with the life world and is a destabilizing force of diversity and disorder (Boje 2008).

LIVING STORY: THE ANTICIPATED FUTURE

Living stories are polyphonic and dialogic (Bakhtin 1973; 1981, as cited in Boje 1995, 2008), situated in place, in time and in the material processes of the collective voices within an organization (Rosile et al. 2013).

Living story is the key to interpreting narrative as a living entity itself, an unpredictable, emergent and collective action that is being re-narrated, reinterpreted and re-storied simultaneously, textually, orally and visually throughout the organization in real time (Boje 2008). Through the living story, it is possible to re-story the past dominant, or grand, narrative

(Lyotard & Van Den Abbeele 1984) into a new story of the anticipated future. This represents a new type of “prospective” sense-making (Boje 2008).

The driving agent in this prospective and emerging future is the *antenarrative*, the dynamic processes at work between the narrative paradigms. The antenarrative, a “non-linear, incoherent, collective, unplotted, and pre-narrative speculation” (Boje 2001, p. 1), is essentially story in evolution, a forward-looking bet, or ante-story, that a proper story will emerge.

The antenarrative can be viewed as *emergence* in the narrative sphere, and like the infamous butterfly of complexity theory, it has the capacity to change the future, to set in motion transformations that can impact the big picture, realizing a potential future that otherwise would not exist.

Research methodology

The aim of this research was to explore lived experience or empirical reality of projects as outlined in actuality research (Cicmil et al. 2006) in order to provide insight into how project managers make sense of, and respond to, problems within the dominant narrative framework.

Key to actuality research is a focus on the social processes, such as “conversational relating,” in project environments (Cicmil et al. 2006). Therefore, a qualitative research approach was adopted using the narrative enquiry methodology, and six in-depth oral history interviews were conducted to collect stories about the management of IDS projects.

APPLICATION OF THE STORYTELLING DIAMOND MODEL

The results of a study, have the potential to vary dramatically depending on the researcher’s paradigmatic perspective (Diefenbach 2009; Pratt 2008), in particular a qualitative storytelling study (Rosile et al. 2013).

Rosile et al. (2013) developed the *storytelling diamond model* (figure 1) from the history of storytelling. The typology assists researchers to select a methodology appropriate to the research goals by matching ontological and epistemological assumptions. These paradigmatic choices are summarized in the storytelling diamond model (figure 1) and outlined in table A.

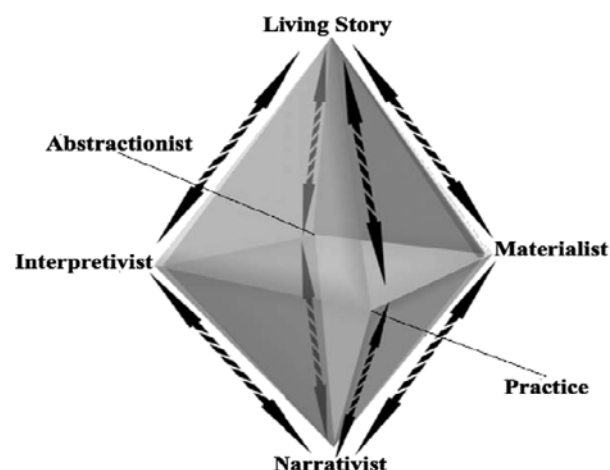


Figure 1 Storytelling diamond model (Rosile et al. 2013, p. 559) with arrows showing the antenarrative processes

To situate the study, the model was applied and the *living story paradigm* identified as the best paradigmatic fit, due to the focus in the literature on complexity thinking and emergent forms of narrative. An “ethnographic and emic” approach was also recommended.

One advantage of storytelling enquiry is that it is useful at both the theoretical and applied levels (Rosile et al. 2013). From a theoretical perspective, stories can be collected, analysed and categorized to gain a picture of interpretation and meaning. In terms of practice, it is a rich method of studying the actuality of processes, material conditions and identity in the field (Rosile et al. 2013).

Table A Organizational paradigm choices for researchers (Rosile et al. 2013, p. 566)

Organization Storytelling Paradigms:	Epistemology	Ontology		Method
If participation will destroy the phenomenon, then use the deductive grounded theory of the narrativist paradigm .	Search for poetic, linguistic, formalistic, structuralist themes, schemata, underlying essentialist patterns	N/A		Fieldwork, eticgrounded theory building, archival comparative cases to explore or extant theory; can be quantitative narrative studies
If a process understanding of the phenomenon is required, then use the living story paradigm.	N/A	Process focus on patterns of story relating intertextually to other stories		Ethnographic emic approach, may integrate other artifacts; some poststructuralist approaches
If using either a subjective internalized history or sociological historical focus, then use a materialist paradigm .	Cognitive materialism	Material storytelling and quantum storytelling	How materiality tells stories	Study relation of storytelling to material conditions and superstructures; neuroscience; critical posthumanism
If developing representations of an organization, then use interpretivist paradigm .	In representationalism, the part represents the whole	In historical materialism, it is a search for ideological dialectics		Often positive hermeneutics, historical, or negative (critical) hermeneutics
If in need of abstract categories for use in future generalized research, then use the abstractionist paradigm .	Abstracting to the universalist or transcendent level of knowing	N/A		Can be quantitative data mining of semiotic patterns, or qualitative coding of types, forms
If endeavoring to change ideological practice, or change or develop processes of action, then use a practice paradigm .	Storytelling as in-place metering device of change/development or ideological praxis	Storytelling as part of restoring and ontological coaching		Many types of method: from survey checklists of storytelling, to ethnography, participative observation
If tracing the in-betweenness of narrativist and living story, how one affects or interacts with the other, then use antenarrativist process .	Works in between epistemology and ontology			Works in between quantitative and qualitative

RESEARCH DESIGN, DATA COLLECTION AND ANALYSIS

In-depth interviews were conducted with six project managers from two organizations based in Europe that operate complex projects within the international development sector (IDS), which was chosen with the assumption that it would provide a connecting storyworld across international borders.

Participants selected one project as the subject of their interview. Selection criteria for projects were that they must be complex (as defined by Remington & Pollack 2007); have encountered a *significant problem that threatened the project success criteria* (as defined by the project team); and have been managed by one project delivery team (for consistency of data).

Interview questions were based on concepts from the literature, designed to be asked in any order, allowing the interviewer to follow the specific trajectory of the participant’s story, to explore the emergent themes.

The first question asked participants to *tell a story* of the most *significant problem* they encountered on one of their chosen projects, which aimed to define both the chosen project and a key problem encountered on that project as focus for the interview.

Interviews were recorded and transcribed, and narrative thematic analysis supported by use of the qualitative data analysis software NVIVO (*NVivo for Windows: NVivo qualitative data analysis software version 11* 2015).

Thematic analysis focuses on themes that develop across stories, across a data set in order to find repeated patterns of meaning (Braun & Clarke 2006, as cited in Liamputtong 2013).

A coding device has been used in the results to preserve anonymity: participants are coded with names of philosophers and the organizations with the names of philosophy schools as shown in table B.

Table B Participant, organization and project details

Participant	Project Type	Org.	Role	Country of Project	Project Type
1. Epicurus	Antiquity School	1	Project Manager	Bangladesh	Social Protection Reform
2. Seneca	Antiquity School	1	Project Director	Bangladesh	Social Protection Reform
3. Socrates	Antiquity School	1	Project Manager	Uganda	Social Protection
4. Descartes	Modern School	2	Project Junior	Philippines	Technical assistance
5. Kant	Modern School	2	Project Manager	Philippines	Technical assistance
6. Sartre	Modern School	2	Project Manager	Africa	Infrastructure, transport, energy & climate change

From themes to *Storyworlds*

Herman (2004, as cited in Squire et al. 2014) coined the term *storyworlds*, which grow around events or specific phenomena and are comprised of collections of different types of intersecting, linked narratives that cross historical time and social situations.

Thematic analysis focuses on themes that develop across stories, across a data set (Riessman 2008, in Squire et al. 2014), and these merge to form storyworlds. In this study, we identified the storyworlds occurring in the macro environment external to the IDS projects, which included global, regional, sectoral and organizational issues.

Findings

COMPLEXITY DIMENSIONS

The findings illustrate how the participants currently interpret the concept of “problems” and approach problem solving on their complex IDS projects. The results have been structured using the emergent themes from the data, with those themes collated under the relevant dimensions of complexity identified by Hass in the *Project Complexity Model 2.0* (Hass 2009a) (Appendix 1).

There are various approaches to defining the dimensions (Baccarini 1996; Gransberg et al. 2013; Hass 2009a; Remington & Pollack 2007; Williams 2002) developed to identify the nature, or source, of the complexity (Remington et al. 2009). This model assists CPMs to diagnose the complexity profile of a project, and in line with this, what level of project leadership (competencies) is needed, and therefore what problem-solving approaches are required, to manage those specific dimensions (Hass 2009a).

Three of the Complexity Dimensions (no. 3, 4, 6) manifested in the context of the themes emerging from the IDP project data. The following themes related to dimension no. 6 (table C):

Table C Project complexity model 2.0 (Hass 2009, p. 9), dimension no. 6

Complexity Dimensions	Project Profile			
No. 6	Low Complexity	Moderately Complex	Highly Complex	Highly Complex Program ‘Megaproject’
Strategic Importance, Political Implications, Stakeholders	Executive Support: strong Political Implications: none Communications: straightforward Stakeholder Management: straightforward	Executive Support: adequate Political Implications: minor Communications: challenging Stakeholder Management: 2–3 stakeholder groups	Executive Support: inadequate Political Implications: major, impacts core mission Communications: complex Stakeholder Management: multiple stakeholder groups with conflicting expectations; visible at high levels of the organization	Executive Support: unknown Political Implications: impacts core mission of multiple programs, organizations, states, countries; success critical for competitive or physical survival Communications: arduous Stakeholder Management: multiple organizations, states, countries, regulatory groups; visible at high internal and external levels

The storyworld of international development projects

The storyworld represents the common themes arising from the stories the participants told about their projects within the international development sector. Here the word cloud (figure 2) illustrates graphically the prominent themes of *working*, *impact*, *governments*, *project*, *change*, *people*, *funding*, *political*.



Figure 2 Word cloud of storyworld issues

The issues identified as most relevant by each organization were as follows (figure 3):

- Organization 1 (Antiquity School): sustainability, reputation and fiduciary risks were discussed most, with natural disasters, political situation and security threats also referenced.
- Organization 2 (Modern School): primarily political issues, with some references to the availability of local expertise and levels of government commitment.

Of the key issues identified, the participants discussed most the impact that the political situation had on their projects. It's worth noting that there were a broad range of issues which were attributed to this topic, including elections, political instability and challenges of working with parties across the political spectrum.

This would justify an entire essay; however, in essence, a lot of our projects are donor funded, with donors (often government related) being under tremendous pressure to justify foreign aid, particularly towards the end of a voting cycle. This, in fact, applies to both donors as well as host countries, where projects are also tied to the government. The outcome is that projects are expected to show immediate results, which, depending on the business case and design of the programme, is not always feasible.

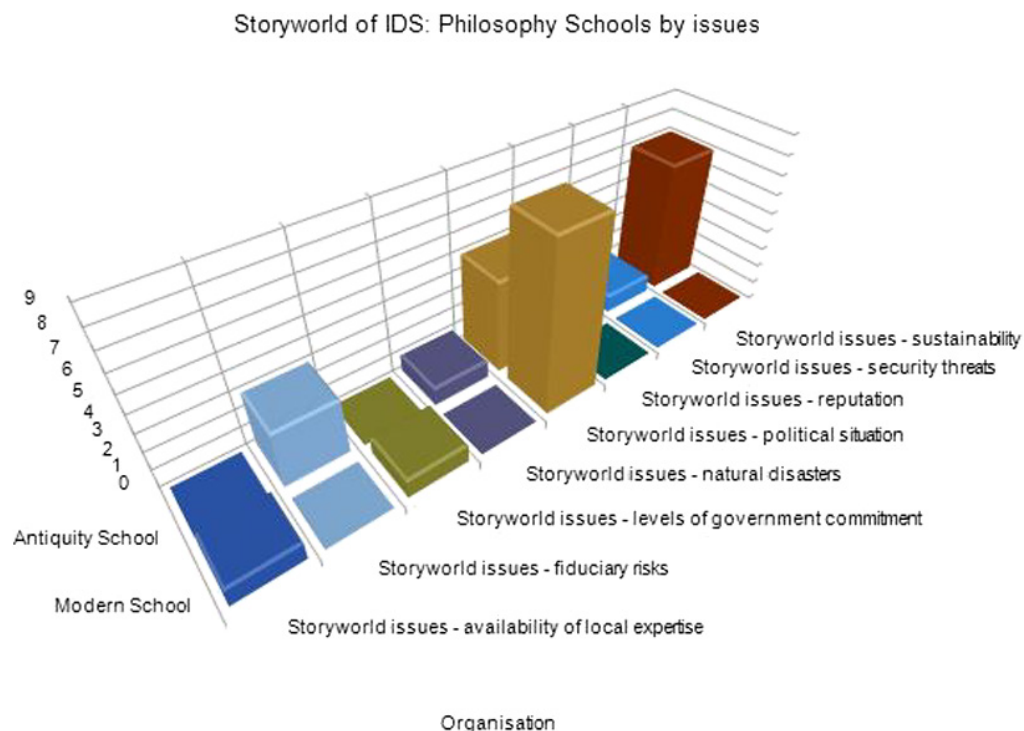


Figure 3 Chart of storyworld issues

Sustainability of their efforts was another preoccupation, to ensure that their projects created long-term change to the benefit of the populations in the host country, which is a core KPI for development projects. The type of project being managed had an impact on which issues were discussed, again with the political situation being the key topic and having the biggest impact across all projects.

There had been presidential elections in [country name]. The chosen candidate is close to extreme left-wing positions, and he is quite a change compared to the current situation. This will dramatically affect our project, even if it is quite technical. Our counterparts in most of the government agencies will be changed, and the pace of implementation will get reduced considerably.

Project complexity

Participants described their projects as complex for these reasons:

- The contract.
- A large number of stakeholders.
- The methodology.
- The political environment.

Of the six participants, only one participant in Organization 2 defined the project (Infrastructure, transport, energy & climate change) as *not complex* because *it was able to be controlled*. The project types that were defined as complex were Social Protection, Social Protection Reform and Technical assistance (figure 4). The most discussed reason for complexity on projects across both organizations was *a large number of stakeholders*.

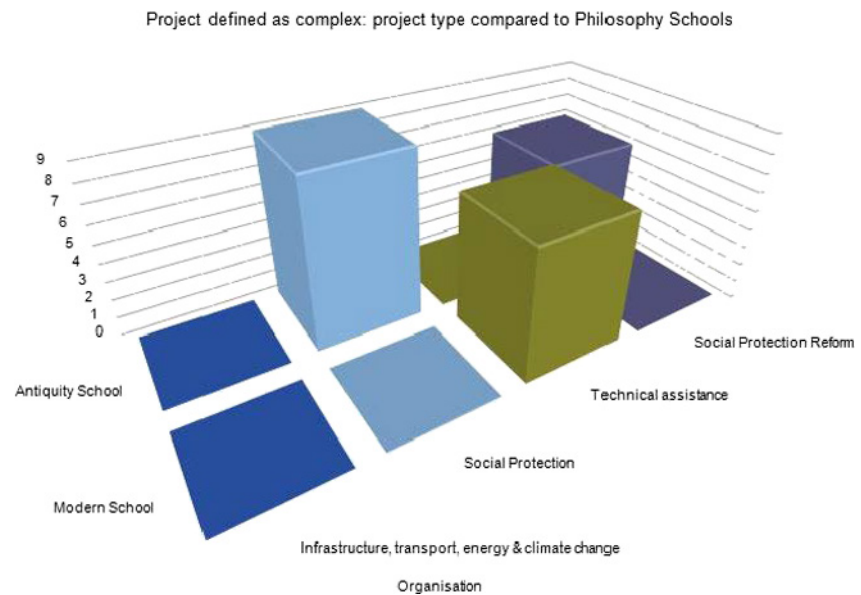


Figure 4 Chart of project defined as complex

Development is always a complex relationship because you've got multiple clients. You've got the client who's providing the funding being the donor, and then you've got the client who is the recipient, which is the government of (country name), in this case, the Ministry. They often have very diverging points of view.

It is very complex in the sense that we have to deal with a very large number of government stakeholders that do not necessarily always have the same agenda. To give you a specific example, we mainly deal with the Ministry of Finance, which is a very strong ministry within the government, and we also deal with six other line ministries.

For me, the thing that makes it very complex is that we have too many counterparts in the government.

THE STORY OF THE PROBLEM

Participants were asked to identify one significant problem on their project and to tell the story of that problem. The emerging themes are illustrated in the word cloud (figure 5): *government, project, experts, contract, problem, senior, work, provider, people, change*.

Type of Problem

From the participants' stories, only three core problem types were identified:

- Financial.
- Human resources.
- Levels of government commitment.

Government commitment levels were the most discussed problem across the two organizations.



Both organizations identified contracts and levels of government commitment as problems, with Organization 2 also experiencing human resources problems.

The type of project that the participants were managing influenced the type of problem discussed (figure 6):

- 14

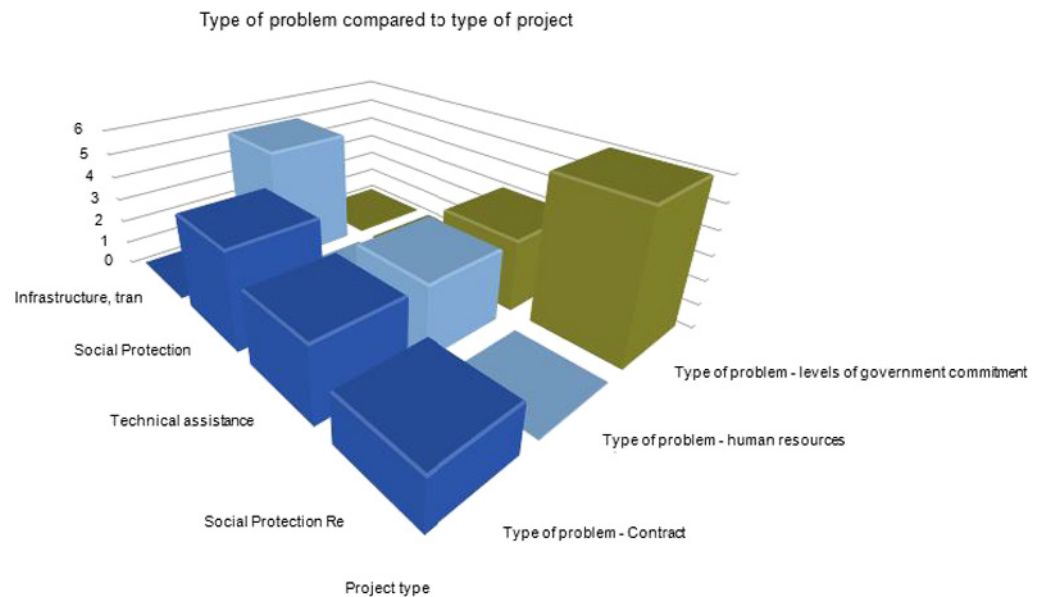


Figure 6 Chart of type of problem

Reason to solve the problem

The participants identified four main reasons why the identified *significant problem* on their projects had to be solved:

- Financial.
- It would kill the project/the project would be cancelled.
- Operational, related to the long-term sustainability of the project.
- Reputation of the project or sponsor organization.

Reasons to solve the problem were very similar for both the organizations, with Organization 1 also concerned about operational issues as related to long-term sustainability. Reputation and financial reasons were the most discussed reasons during the interviews.

The pressure was basically on us. It was quite simple: we either solve this problem and get a [name of type of agreement], or we would not have a mandate to operate in country or the project would be closed.

So the problem was that maybe he has to leave the project and he has to leave the country, and we would have to look for someone to replace him, and we wouldn't find him, and so we will have to cancel the contract.

From a corporate perspective, it's obviously a big risk, a reputational risk as well as financial, and you don't want to start a project and then not be able to assist the client in negotiating this [name of type of agreement]; and have the project canned, which wouldn't look very good.

The type of project that the participants were managing influenced the reason to solve the problem (figure 7):

- The reason that *It would kill the project* was the most consistent reason across all types of projects.
- However, for the Technical assistance project, *reputation* and *financial* risks were mainly discussed.

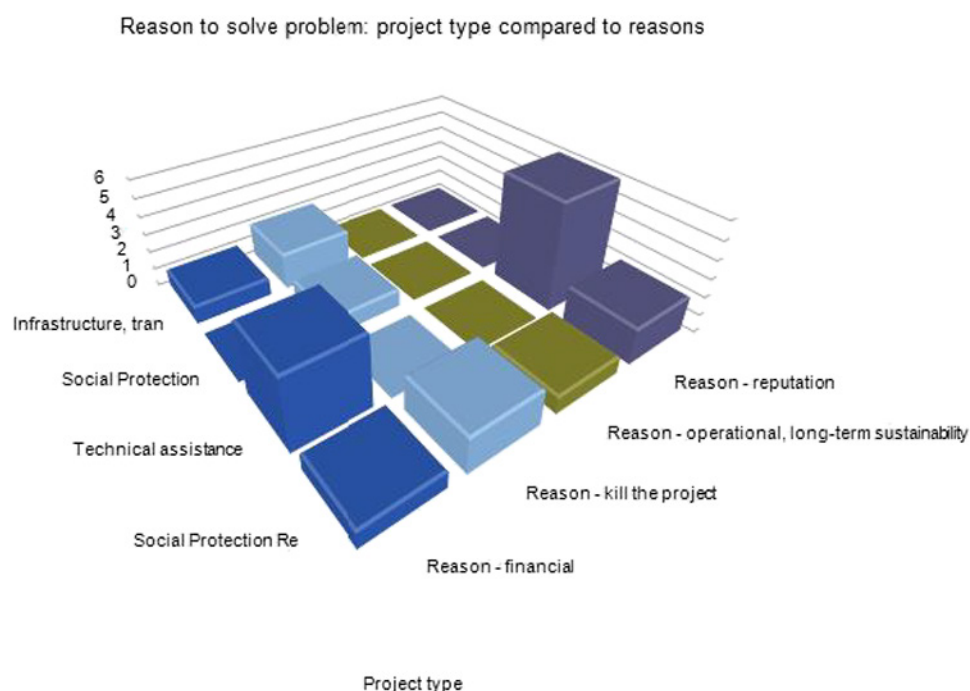


Figure 7 Chart of reason to solve the problem

The results for *Why solve the problem?* can also be attributed to Complexity Dimension no. 8 (refer to the model in Appendix 2), as the reason that *It would kill the project* represents a very high risk.

Bureaucracy, power and corruption

The interviews raised issues linked to the notions of bureaucracy, power and corruption:

The only real way you can prepare for [corruption] is by ensuring you have robust systems in place. It is interesting because [donor name]’s take on social protection is that you can never eliminate [corruption], but they expect us to have a zero-tolerance approach, which is paradoxical in a way.

He was called Commissioner [name], and he was one of the most corrupt people I’ve ever met. Even he is the cousin or the brother or so on of many of the owners of the companies working in the ports. So [he] has not the slightest intention of applying any [donor] regulations there at the Customs . . .

The following themes related to dimension no. 4 (table D):

Problem-solving approaches

The participants identified only two core approaches to problem solving on their respective projects:

- Project planning: prevention, mitigation approaches.
- Problem solving: in-field, practice-based approaches.

The responses were mixed among the organizations, with both developing and applying prevention strategies during project planning and then, once the problems were identified, applying “in-field” responses to solve them.

Table D Project complexity model 2.0 (Hass 2009, p. 8), dimension no. 4

Complexity Dimensions	Project Profile			
No. 4	Low Complexity	Moderately Complex	Highly Complex	Highly Complex Program "Megaproject"
Clarity of Problem, Opportunity, Solution	Objectives: defined and clear Opportunity/Solution: easily understood	Objectives: defined, unclear Opportunity/Solution: partially understood	Objectives: defined, ambiguous Opportunity/Solution: ambiguous	Objectives: undefined, uncertain Opportunity/Solution: undefined, groundbreaking, unprecedented

None of the participants applied a particular theory-based problem-solving methodology to their projects.

It very much is just a practical approach. What do we know has worked in the past? What are the options? . . . we don't apply a specific methodology to problem analysis because we've got problems every day. We've got issues every day and some of them are bigger than others and it's really about experience, understanding who are the different parties, who have concerns with this, what is their perspective, what's our perspective, what's our bottom line, what do we need to achieve . . .

A majority of the participants focused their discussion on the prevalence of in-field, practice-based approaches, believing that because of the uniqueness of their projects, and therefore project-related problems, standardized problem-solving approaches were not effective, and solutions had to be developed based on the project managers' knowledge or by asking colleagues.

It's a mixture of having systems in place and using the project manager's or project director's experience on how we handled similar problems on other projects or in the past, and then to just come up with a solution; and a lot of times, by definition, that is reactive to some extent. You can use some tools, but it will have to be a tailored approach. I don't think a one-size-fits-all approach would be any good to address very specific problems.

I mean solving that problem, yes, it has a way. You have a procedure to follow but solving other types of problems – political ones, poor implementation, relationship with the [donor name], with the task managers – it's much more experience-based. So you have to know the country.

The word cloud (figure 8) illustrates the commonalities in the problem-solving approaches discussed: problem, project, work, managers, experience, experts, trying, solve, approach, situations, people, strategies.



Figure 8 Word cloud for problem-solving approaches

Role of the PM in problem solving

When asked to provide a *metaphor or description* for being a project manager (no category prompts provided), the participants identified with three general ideas:

- A firefighter.
- A good communicator.
- A tolerant and adaptive person.

Notably, four of the six project managers provided the metaphor of a *firefighter* – three from Organization 1 and the fourth from Organization 2. Communications, tolerance and an adaptive personality were other descriptions provided. The choice of *firefighter* as a description is linked to the reactive nature of the role to problems.

Well I think we're like firefighters, yes. We get the call when there is a problem usually. And when we do, it's very urgent, and there are a lot of things at stake.

Well, the first thing that comes to mind is definitely the firefighter . . . the firefighter has a team which needs to be co-ordinated, and obviously you have training and you have a plan; you have your fleet; you probably know which fire station responds to which problem. So there's a bit of planning, yet you don't know where the fire is going to be. So similar to a project . . . there are some systems in place. They are more generic . . . they can't detail about every single problem.

The image this brings to mind is firefighter. Well, I think it's a case that you try and have a well-developed and prepared plan going forward, and then something suddenly comes out of the blue, totally unexpected, and because you've got to react extremely quickly to resolve the issue.

The following themes related to dimension no. 3 (table E):

Table E Project complexity model 2.0 (Hass 2009, p. 8), dimension no. 3

Complexity Dimensions	Project Profile			
No. 3	Low Complexity	Moderately Complex	Highly Complex	Highly Complex Program "Megaproject"
Urgency and Flexibility of Cost, Time, and Scope	Scope: minimized Milestones: small Schedule/Budget: flexible	Scope: achievable Milestones: achievable Schedule/Budget: minor variations	Scope: over-ambitious Milestones: over-ambitious, firm Schedule/Budget: inflexible	Scope: aggressive Milestones: aggressive, urgent Schedule/Budget: aggressive

Project time frame

Participants had two distinct opinions with regard to the project time frame, that it was achievable, but that they had to undertake an extra workload; or it was too short to achieve the stated objectives. Of the four which discussed the project time frame, only one from Organization 2 believed it was achievable; the others were either seeking an extension from the project sponsor or adjusting the outputs and/or expending budget on additional resources to meet the contracted deadlines.

They're looking at an extension but, essentially till [date], which, in terms of reforming a social protection systems, is an awfully short time.

I am trying to get a joint solution for both problems . . . because what I want is the [donor] to give me an extension of the implementation period. For example, they would say you can get an extension of 10, 12 months, and I would accept that extension, which is not very good for me because it does not imply a budget extension.

The project is still going on . . . but we're trying to extend the project by either one year or two years, last but not least because of the delay. The project I'm talking about is basically policy reform; it's capacity building within the government. The other issue is that, including all the different phases, the project was only 32 months long, and that's very, very short for such a complex government restructuring/policy reform project. If you look at comparable projects, it usually takes a long time for governments to change.

Discussion

Discussion here focuses on relating findings to theory as presented by the themes discussed in the literature review, and on implications for practice.

STORYTELLING: A RESEARCH METHODOLOGY FOR COMPLEX PROJECTS

This paper illustrates how a storytelling methodology can be used to explore problems on complex IDS projects. The collected stories delivered data providing insights which

contributed to a better understanding of the interpretation of problems by the CPMs, and the resulting approaches chosen to problem solving.

The methodology enabled exploration of the lived experience (actuality research) of the six project managers directly: through their stories we hear their voices. The application of the storytelling diamond model provided rigour to the study through a systematic and detailed (Rosile et al. 2013) approach. It situated the study by identifying the researcher's potential bias through sympathies with the Living Story paradigm. It also provided direction to use an "ethnographic and emic" research method.

However, given the power of language to frame our experiences, collecting stories of past events is a methodological challenge in narrative research. Humans naturally reframe our experiences to retrofit a BME perspective (Boje 2008) reflecting the dominant narratives that pervade our lives – our organizations, upbringing and our collective experiences. Although the participants in the study discussed problems in the past tense, forms of "living story" capture have been documented by researchers (Boje 1991, 1995, 2001; Snowden 2012), and the in-field processes of actuality research lend itself to this type of research.

Researchers . . . looking at ways of extending organizational inquiry through more expansive narrative might be interested in quantum storytelling and the role that living story plays in it . . . (with its) potential to open a new door into interpreting narrative not as a coherent, linear account of events but as a living entity itself. (Rosile et al. 2013)

The organizations studied are *storytelling organizations*, collective storytelling systems caught between the self-organizing forces of narrative control and story diffusion (Boje 2008). An understanding of this, and related concepts such as emergence, reframing and emergent story (living story, antenarrative) (Boje 2008), could provide the CPMs with a new frame through which to view their complex IDPs.

STORYWORLD OF THE INTERNATIONAL DEVELOPMENT SECTOR

The data themes provided insights into both the personal and sectoral concerns of the participants, and these illustrate *storyworld* of the *issues related to the IDS*. Storyworlds (Herman 2004, as cited in Squire et al. 2014) identify past events that have been experienced individually and collectively, creating an awareness of phenomena to be managed.

Eight key current issues that impact their projects were identified by both organizations, with the *political situation*, for example the impact of government elections and concerns for *sustainability* and long-term change, the most discussed.

Across the two organizations, the participants identified three core problem types, showing a consistency of problems across the IDS. *Level of government commitment* was the most discussed, in many cases tied to discussion on the influence of bureaucracy, power and corruption.

The participants were all concerned about the project time frame, either seeking an extension or adjusting the outputs and/or expending budget on additional resources to meet the contracted deadlines.

By identifying these issues on global, regional, and sectoral levels (external to organization) or on a project level (internal), the organizations can apply these learnings to decision-making, for example contract negotiations or strategy development for future projects.

A majority of the themes emerging from the data manifested within Complexity Dimension no. 6, which focuses on the issues of strategic importance to the organization, political implications, communications and stakeholder management. One of the almost universal challenges to complex projects is a high number of stakeholders and the complex interactions between them. These issues of “conversational relating” (Cicmil et al. 2006) require a strong competency in leadership to harness the power of storytelling to engage, motivate and create shared meaning amongst stakeholders (ICCPM 2012).

INTERPRETING PROBLEMS ON COMPLEX PROJECTS

The literature explores the idea that traditional project management methods apply a control frame through which to interpret concepts like “problems” and “issues”, however, the findings show that in the real world, adaptable, flexible behaviours are needed to tackle problems as they emerge and evolve in the field.

The *firefighter* metaphor was the most popular description for what it was like to be a project manager for both organizations, which can be directly related to the reactive nature of their role relative to the problems. The participants believed that if they didn’t solve the problem, it would risk the organization’s or sponsor’s reputation, the financial outcome of the project or – worse – the project would be cancelled.

Across the two organizations, approaches to problem solving were logically divided between *planning* (prevention/mitigation) and *problem solving* (the action following problem identification). None of the participants mentioned or applied extant theoretical problem-solving methodologies to their projects, and all focused their discussion on the prevalence of in-field, practice-based approaches. It was a common belief that, because of the uniqueness of their projects, standardized problem solving approaches were not effective, and solutions had to be developed in situ and based on experience.

Therefore the “plan and manage” contingency approach is not delivering to the IDS project managers the required competencies to manage their complex projects.

Quantum storytelling, through the living story, with its ability to reframe problems by harnessing emergence to view them in their emergent state, opens the door for CPMs to consider alternative approaches to solving the result.

QUANTUM STORYTELLING: PART OF A CPMS TOOLBOX?

This paper explores the overlap between the extant theories associated with quantum storytelling and the complexity mindset of CPM, proposing quantum storytelling as a powerful addition to the CPMs toolbox, with the potential to further develop the CPM competency standards.

Of the four projects discussed in the study, only one project was defined as *not complex* because it was *able to be controlled*. The complexity of the IDS projects was attributed to *a large number of stakeholders*, mainly government donors and clients.

The participants used their practical experience and knowledge of the context to define their projects as complex, rather than applying theoretical methodologies (even if praxis based). The themes emerging from the data were able to be categorized under three of the complexity dimensions; therefore, for these CPMs in the IDS there is an opportunity to improve diagnosis of the complexity profile of projects before making management decisions (Hass 2009a).

Knowledge and training in the CPM competencies would assist them to determine what level of project leadership is needed, which project cycle to use and how to manage the complexity dimensions identified on their projects (Hass 2009a). Methodological tools and competencies based on emergence could assist the participants to understand and interpret the operative context (Snowden & Boone 2007), including the problems they encounter.

In a project context, embracing new emergent forms of narrative, namely living story via the antenarrative, facilitates a destabilizing of the dominant BME narrative within organizations and has the potential to re-story our experiences. This opens a door for project managers to develop a new competency based on emergence from outside the current toolbox of project management. In moving along the continuum from traditional project management to complex project management, there is a progressive building of competencies (ICCPM 2012), and quantum storytelling has the potential to add depth to the current inclusion of storytelling skills in the CPM Standards.

Conclusion

This paper illustrates how a storytelling methodology can be used to explore problems on complex projects. The collection of stories deliver data providing insights which contribute to a better understanding of the interpretation of problems by the CPMs on their IDS projects, and the resulting approaches chosen to problem solving.

The data themes provide insights into both the personal and sectoral concerns of the participants, illustrating the storyworld of the issues related to the IDS.

The literature explores the idea that traditional project management methods apply a control frame through which to interpret concepts like “problems” and “issues,” but in the real world adaptable, flexible behaviours are needed to tackle problems as they evolve in the field. Therefore, the traditional “plan and manage” contingency approach is not delivering to the IDS project managers the required competencies to manage their complex projects.

One of the almost universal challenges to complex projects is a high number of stakeholders and the complex interactions between them. These issues of “conversational relating” (Cicmil et al. 2006) require a strong competency in leadership to harness the power of storytelling to engage, motivate and create shared meaning amongst stakeholders (ICCPM 2012).

Quantum storytelling, through the living story, enables the reframing of problems by harnessing emergence to view them in their emergent state. It provides a way to reinterpret project concepts assisting project managers to make sense of the dynamic and emergent nature of projects and consider alternative approaches to problem solving.

Quantum storytelling, has the potential to make a contribution to the complex project management standards by adding depth to the notion of storytelling, opening a door for project managers to develop a new competency based on emergence that is complementary to the complex environments in which they find themselves managing.

Limitations and recommendations for future research

The following recommendations are made for future research regarding the methodological limitations:

- Use a larger sample size to support generalizability of the results; more organizations, more participants, more projects of different types.
- Use a longer time frame for the study.

- Conduct multiple interviews and additional interviews.
- Extend the domain of the IDS to include organizations with different funding arrangements or operating across different project types or countries
- Apply forms of micro narrative (Snowden 2012) and “living story” (Boje 1991, 1995, 2001) collection as the in-field processes of actuality research lend itself to this type of research. This would assist to counter the challenge of collecting stories of past events given that human reframe experiences to retrofit a BME perspective (Boje 2008).
- Explore other methods to limit researcher bias in narrative studies than applying the *storytelling diamond model* (Rosile et al. 2013).

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APPENDIX 1 Complexity Dimensions

Complexity Dimensions	Project Profile			
	Level 1: Low Complexity Project	Level 2: Moderately Complex Project	Level 3: Highly Complex Project	Level 4: Highly Complex Program "Megaproject"
1. Size/Time/Cost	Size: 3–4 team members Time: < 3 months Cost: < \$250K	Size: 5–10 team members Time: 3–6 months Cost: \$250–\$1M	Size: > 10 team members Time: 6–12 months Cost: > \$1M	Size: Multiple diverse teams Time: Multi-year Cost: Multiple Millions
2. Team Composition and Past Performance	<ul style="list-style-type: none"> PM/BA: competent, experienced Team: internal; worked together in past Methodology: defined, proven 	<ul style="list-style-type: none"> PM/BA: competent, inexperienced Team: internal and external, worked together in past Methodology: defined, unproven Contracts: straightforward Contractor Past Performance: good 	<ul style="list-style-type: none"> PM/BA: competent; poor/no experience with complex projects Team: internal and external, have not worked together in past Methodology: somewhat defined, diverse Contracts: complex Contractor Past Performance: unknown 	<ul style="list-style-type: none"> PM/BA: competent, poor/no experience with megaprojects Team: complex structure of varying competencies and performance records (e.g., contractor, virtual, culturally diverse, outsourced teams) Methodology: undefined, diverse Contracts: highly complex Contractor Past Performance: poor
3. Urgency and Flexibility of Cost, Time, and Scope	<ul style="list-style-type: none"> Scope: minimized Milestones: small Schedule/Budget: flexible 	<ul style="list-style-type: none"> Scope: achievable Milestones: achievable Schedule/Budget: minor variations 	<ul style="list-style-type: none"> Scope: over-ambitious Milestones: over-ambitious, firm Schedule/Budget: inflexible 	<ul style="list-style-type: none"> Scope: aggressive Milestones: aggressive, urgent Schedule/Budget: aggressive
4. Clarity of Problem, Opportunity, Solution	<ul style="list-style-type: none"> Objectives: defined and clear Opportunity/Solution: easily understood 	<ul style="list-style-type: none"> Objectives: defined, unclear Opportunity/Solution: partially understood 	<ul style="list-style-type: none"> Objectives: defined, ambiguous Opportunity/Solution: ambiguous 	<ul style="list-style-type: none"> Objectives: undefined, uncertain Opportunity/Solution: undefined, groundbreaking, unprecedented
5. Requirements Volatility and Risk	<ul style="list-style-type: none"> Customer Support: strong Requirements: understood, straightforward, stable Functionality: straightforward 	<ul style="list-style-type: none"> Customer Support: adequate Requirements: understood, unstable Functionality: moderately complex 	<ul style="list-style-type: none"> Customer Support: unknown Requirements: poorly understood, volatile Functionality: highly complex 	<ul style="list-style-type: none"> Customer Support: inadequate Requirements: uncertain, evolving Functionality: many complex "functions of functions"

Complexity Dimensions	Project Profile			
	Level 1: Low Complexity Project	Level 2: Moderately Complex Project	Level 3: Highly Complex Project	Level 4: Highly Complex Program "Megaproject"
6. Strategic Importance, Political Implications, Stakeholders	<ul style="list-style-type: none"> Executive Support: strong Political Implications: none Communications: straightforward Stakeholder Management: straightforward 	<ul style="list-style-type: none"> Executive Support: adequate Political Implications: minor Communications: challenging Stakeholder Management: 2–3 stakeholder groups 	<ul style="list-style-type: none"> Executive Support: inadequate Political Implications: major, impacts core mission Communications: complex Stakeholder Management: multiple stakeholder groups with conflicting expectations; visible at high levels of the organization 	<ul style="list-style-type: none"> Executive Support: unknown Political Implications: impacts core mission of multiple programs, organizations, states, countries; success critical for competitive or physical survival Communications: arduous Stakeholder Management: multiple organizations, states, countries, regulatory groups; visible at high internal and external levels
7. Level of Change	<ul style="list-style-type: none"> Organizational Change: impacts a single business unit, one familiar business process, and one IT system Commercial Change: no changes to existing commercial practices 	<ul style="list-style-type: none"> Organizational Change: impacts 2–3 familiar business units, processes, and IT systems Commercial Change: enhancements to existing commercial practices 	<ul style="list-style-type: none"> Organizational Change: impacts the enterprise, spans functional groups or agencies; shifts or transforms many business processes and IT systems Commercial Change: new commercial and cultural practices 	<ul style="list-style-type: none"> Organizational Change: impacts multiple organizations, states, countries; transformative new venture Commercial Change: ground-breaking commercial and cultural practices
8. Risks, Dependencies, and External Constraints	<ul style="list-style-type: none"> Risk Level: low External Constraints: no external influences Integration: no integration issues Potential Damages: no punitive exposure 	<ul style="list-style-type: none"> Risk Level: moderate External Constraints: some external factors Integration: challenging integration effort Potential Damages: acceptable exposure 	<ul style="list-style-type: none"> Risk Level: high External Constraints: key objectives depend on external factors Integration: significant integration required Potential Damages: significant exposure 	<ul style="list-style-type: none"> Risk Level: very high External Constraints: project success depends largely on multiple external organizations, states, countries, regulators Integration: unprecedented integration effort Potential Damages: unacceptable exposure
9. Level of IT Complexity	<ul style="list-style-type: none"> Technology: technology is proven and well-understood IT Complexity: application development and legacy integration easily understood 	<ul style="list-style-type: none"> Technology: technology is proven but new to the organization IT Complexity: application development and legacy integration largely understood 	<ul style="list-style-type: none"> Technology: technology is likely to be immature, unproven, complex, and provided by outside vendors IT Complexity: application development and legacy integration poorly understood 	<ul style="list-style-type: none"> Technology: technology requires groundbreaking innovation and unprecedented engineering accomplishments IT Complexity: multiple "systems of systems" to be developed and integrated

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About the Authors



Gina Bowman has over 20 years of experience as a marketing and communications strategist and project manager for organisations that traverse the commercial, government and creative sectors in Australia and the UK. She has worked as a consultant in public relations and advertising agencies and a specialist on major events in Australia. Now based in Madrid, as a Director for Gedeth Network, Gina assists companies to develop their trade competencies to expand their business between Australia and Spain. She holds Master of Project Management from The University of Sydney and a BA in Communications, Charles Sturt University. Gina's research interests are focused on the intersection between design thinking and project management and the application of creative problem solving tools to complex projects.



Dr Lynn Crawford is professor and director of the Project Management Program at The University of Sydney. Research interests include project management competence and career paths, corporate delivery capability, business change, public sector governance, disaster management and contextual differences in project management practice. She was a founder of Human Systems International, which provided project, program and portfolio management assessment and networking for over 20 years, and continues to work globally with organizations concerned with improving their project management capability. Lynn has been instrumental in the formation of the Global Alliance for the Project Professions (GAPPS) and is a life fellow of the Australian Institute of Project Management (AIPM), honorary member of the International Project Management Association (IPMA), and was co-vice-chair of PMI's Global Accreditation Center Board for over 10 years. She was the recipient of the 2011 IPMA Research Achievement Award and the 2014 APM Sir Monty Finniston Award for contribution to the profession of project management. Lynn is an adjunct professor at Bond University, visiting professor at Cranfield University School of Management (UK) and professor of systemic management at the Institute for the Study of Coherence and Emergence.