USING REFLECTION AND STORYTELLING TO INFORM EVIDENCE-BASED DECISIONS: AN ACTION RESEARCH STUDY OF AUSTRALIAN PROJECT MANAGERS

Chivonne T. Algeo, PhD
University of Technology, Sydney
Faculty of Design, Architecture and Building
PO Box 123, Broadway, NSW, 2007
Australia

ABSTRACT

The purpose of this paper is to examine decision-making in project management, and the considerations which project managers need to take into account in order to make informed evidence-based decisions. The specific aim of this paper is to present an understanding of how project managers use experiences, recalled through reflection and facilitated by storytelling, to make decisions.

The paper provides an insight into how project managers may utilize decision-making approaches to accommodate a balance between factual observation, other evidence, a project manager's recollection and reconstruction of facts, and facts imbedded within experiences. The drive to embed formal, structured approaches to decision-making is discussed against a background of unstructured and informal interpretation of experiences.

The research conducted by the author used an action research methodology to gather and analyze data through four interventions conducted with experienced project managers in Australia. The examination reveals that through reflecting on experiences relating to past projects, project managers make considered decisions. This approach to decision-making may be seen as paradoxical and interpreted as biased. Perhaps this is a valuable bias which may provide an opportunity to extend the premise of an evidence-based management approach where the aim is to reduce bias.

Keywords: project management; decision-making; evidence-based management; action research; reflection; storytelling.

INTRODUCTION

Project managers make evidence-based decisions by being able to more "… fully understand the present only in the light of the past" (Carr, 1961, p. 55). Through examining and extending the work of Rousseau (2012a), this paper examines a paradox in value-free processes which supplement decision-making in project management to augment, interpret, and relate "Evidence-Based Management (EBMgtgt) [to]… help even the most knowledgeable project managers work more effectively" (Rousseau, 2012a, p. 1).

This paper explores the ability of project managers to make evidence-based decisions through reflection that may be facilitated by storytelling. Rousseau (2012b, p. 22) describes Evidence-Based Management (EBMgt) as "… a family of adaptive practices, inspired by the improved decision outcomes" that incorporates scientific principles, facts, judgment, and ethics. Using evidence-based processes Rousseau (2012a) suggests that "… the quality of a

manager's decisions and what he or she learns from experience" (Rousseau, 2012a, p. 2) can be improved.

Personal or tacit knowledge influences the decisions made by project managers, based on "… context-dependent, reflection-based knowledge and a practitioner's own concrete experiences" (Cicmil, Williams, Thomas, & Hodgson, 2006, p. 679). A project manager may use 'Reflection-in-action' to recognise, make decisions and then deliver "… in unique, uncertain, and conflicted situations in practice" (Schön, 1987, p. 13). Winter et al (2006) suggest that project managers are capable of approaching complex projects reflectively while also pragmatically applying 'Theory-in-practice'. To facilitate reflection, a project manager may use storytelling to express and "… clarify thinking, capture the imagination, and excite and energize people (Laufer, Post, & Hoffman, 2005, p. 4)"

Recent research in Australia by the author into how project managers use reflection and storytelling is explored in the context of aiding decision-making. This research was part of a larger study into how project managers acquire and exchange knowledge. In the study an action research methodology was used to collect data using four interventions over an eighteen month period. To assure quality and validity the Australian research incorporated "… planning for robust methods and trustworthy results, and for ethical character in the planning, conduct and reporting of research" (Piggot-Irvine & Bartlett, 2008, p. 22) was undertaken.

The findings of this research are presented according to the impact reflection and storytelling had on the participants' ability to manage projects. The value of personal knowledge is demonstrated where participants used *ad hoc* reflections from previous projects to improve their management of current projects. It is suggested that the use of purposeful storytelling generated context-specific understanding to assist in making evidence-based decisions.

EVIDENCE-BASED PROJECT MANAGEMENT

This paper positions evidence-based project management as a lens to frame an examination into decision-making using reflection that is facilitated through storytelling. Understanding the approach used for what Rousseau (2012a) describes as EBMgt is necessary to examine the application in a project management context. Rousseau (2012a) suggests that:

> *Evidence-Based Management is an evolution in the practice of management. Its practice incorporates 1) use of scientific principles in decisions and management processes, 2) systematic attention to organizational facts, 3) enhancing the practicing manager's ability to make good judgments through critical thinking and decision aids that reduce bias and enable fuller use of information and 4) ethical considerations including effects on stakeholders (Rousseau, 2012a, p. 1).*

The ability for project managers to undertake 'thoughtful decision processes' is often in an environment where information is incomplete or unknown. Project management consists of the management of an activity or result (the project) which is achieved through coordination, influencing, collaborating and balancing and is, by nature, an integrated approach to decision making and management. To make decisions and manage the consequences, a variety of factors need to be considered based on information availability, completeness, and quality to integrate while managing the project. To assist project managers, EBMgt "… involves paying greater attention to the ways a decision might be made, the issues that frame it and the facts that inform it" (Rousseau, 2012a, p. 2). Through tracking prior decisions and developing

suitable decision frameworks, a project manager can increase their "… capacity for decision awareness [by] developing and using evidence-based processes" (Rousseau, 2012a, p. 2) which would improve traditional project management integration with additional logics gained through EBMgt. These value-free processes can "… improve the quality of a manager's decisions and what he or she learns from experience" (Rousseau, 2012a, p. 2).

In this context, learning from experience can be viewed as experiential learning. The broad concept of learning through experience is that people learn in ongoing and cyclical ways to form new ideas (Kolb, 1984, pp. 26-37). This 'Experiential Learning Cycle' (Kolb, 1984) moves from generalization and abstract conceptualization to active experimentation, to concrete experience, and then to observation and reflection. Integrating EBMgt perspectives into the project manager's repertoire can potentially strengthen both the usefulness of existing techniques and create additional cycles of learning.

Decision-Making Using Personal Knowledge

Decision-making relies on the project manager being able to access their tacit or personal knowledge that is "… embedded in individual experience and involving intangible factors such as personal belief, perspective, and values" (Groff & Jones, 2003, p. 10). Tacit knowledge from past experiences can assist a project manager to not only interpret and effectively apply external knowledge, but can also help to avoid mistakes and build on previous successes (Haas, 2006). Tacit knowledge can be intuitive (Lehrer, 2009) leading the project manager to make decisions driven by experiences that Maslow (1987) suggested are the result of a biological efficiency to meet a desired goal.

The project manager may access past experiences to make evidence-based decisions through "… an unending dialogue between the present and the past" (Carr, 1961, p. 30). The dialogue can be facilitated by "… context-dependent, reflection-based knowledge and a practitioner's own concrete experiences" (Cicmil, et al., 2006, p. 679). These experiences are framed by a project manager's personal knowledge that "… is the least accessible but most complete form of knowledge. It is typically more tacit than explicit and is used nonconsciously (sic) in work, play, and daily life" (Dalkir, 2005, p. 64). To manage personal knowledge to be able to achieve project goals, a project manager needs to understand the knowledge they possess, and then organize and mobilize that knowledge (J. Martin, 2000). The capacity to "… extend the organization's capability to make informed, rational decisions…[is enhanced by the]…transformation of personal knowledge between individuals through dialogue, discourse, sharing, and storytelling" (Dalkir, 2005, p. 60). To make these rational decisions this paper examines how reflection can be used in decision-making and how storytelling can provide the platform to recall past experiences to make future decisions.

Reflective Decision-Making Facilitated By Storytelling

In research funded by the Engineering and Physical Sciences Research Council (EPSRC) in the United Kingdom, Winter et al (2006) propose a 'Theory-in-Practice' to develop reflective project management practitioners. This research into project management, referred to as the 'RPM Agenda' includes three theories and five supporting directions for the practice of project management. A complete summary of the RPM Agenda theories and directions is included in Appendix 1. The fifth direction in the RPM Agenda addresses theory-in-practice and suggests that project management practitioners need to develop from trained technicians into reflective practitioners. Winter et al (2006) suggest project managers are capable of

approaching complex projects reflectively while also pragmatically applying theory-in-practice.

An extension to the RPM Agenda by Cicmil et al (2006) proposes that a 'Proficient Performer' possesses "… reflective understanding and participation in power relations" and the 'Expert or Virtuoso' project manager exhibits "… participative critical reflection over the intuition – the self and the group" (Cicmil, et al., 2006, p. 680). To be able to combine practical experience with 'value-rationality' a project manager must possess the expertise, competence and knowledge at an appropriately experienced level. This approach to making rational decisions is impacted by the reflective capability of a project manager. A comparison of the decision-making role proposed by Cicmil et al (2006, p. 680) has been aligned to the project managers reflective capacity and decision-making role in Table 1, with full details of the levels included in Appendix 2.

Table 1: Level of Project Management Expertise Aligned to Reflective Capacity with Decision-Making Role (Cicmil, et al., 2006, p. 680).

Level	Experience	Reflective Capacity	Decision-Making
Novice	Faces a given problem and a given situation in a given task area for the first time.	Follows rules and instructions based on facts and uses existing models.	Limited, if it all.
Advanced Beginner	Achieves some real-life experience.	Learning to recognise similarities from experience with limited reflection.	Context of experience becomes important and decisive in the *choice of relevant elements, in addition to context-independent* rules.
Competent Performer	With more experience the number of recognizable elements and facts becomes overwhelming.	Ability to think on one's feet (confidence, reflection, choice of action and risk taking).	The individual learns to apply hierarchical, *prioritising procedure for decision-making on the basis of set priorities* rather than on total knowledge of the given situation.
Proficient Performer	Away from cognitivist, analytical rationality (rules, principles, and universal solutions) towards perceiving situations rapidly, intuitively, holistically, visually, bodily, relationally.	Intuitively understands and organizes the tasks in the local situation in the living present but continues to reflect analytically on what will happen as the emergent situation unfolds.	The awareness of interpretation and judgment involved in such decision-making, *rather than logical information processing and analytical problem solving only*.
Expert or Virtuoso		Participative critical reflection over the intuition – the self and the Group.	No thinking/doing, decision/action, or plan/implement divide.

In the table above, the "context-independent" and "procedure for decision making" gives way to am more nuanced and integrated approach to decisions. A project manager may use 'Reflection *in* Action' to recognise, make decisions and then deliver "… in unique, uncertain, and conflicted situations in practice" (Schön, 1987, p. 13). Project managers can develop reflection-in-action but it depends on how they review a new or unexpected outcome after following a known course of action. A project manager may stop after the activity and reflect or stop during the activity and take corrective action, with the reflection being unconnected to the anticipated outcome. This form of reflective thought requires a project manager to make "… a conscious and voluntary effort to establish belief upon a firm basis of evidence and rationality" (Dewey, 1933, p. 9).

To make decisions a project manager may use stories to exchange "… essential knowledge, including technical knowledge" (Pfeffer & Sutton, 1999, p. 90) using metaphors (J. Martin, 2000, p. 10). Storytelling is also referred to as unpretentious narrative (Clandinin & Connelly, 1991), narrative inquiry (Mattingly, 1991), or narrative description (Donald. A. Schön, 1988). The US Department of Defence (DOD) and the National Aeronautics and Space Administration (NASA) were invited to share their knowledge of a specific project in the form of stories with "… meaningfulness, clarity, and interest [to] clarify thinking, capture the imagination, and excite and energise people (Laufer, et al., 2005, p. 4)". Situations are able to be perceived differently and behaviours can be modified accordingly through organisational narrative as "… storytelling is natural and easy, entertaining and energising" (Denning, 2001, p. xv). Through the medium of storytelling, project managers have the opportunity to share knowledge that may assist with making decisions as "… stories are driven forward by a detailed explanation of the cause-and-effect relationship between an action and its consequence" (Denning, 2006, p. 45).

Research Encompassing Reflection and Storytelling

Research conducted by the author included enquiry into how reflection and storytelling was used by project managers in Australia to acquire and exchange knowledge. One of the focus areas was an examination of how tacit knowledge was acquired through personal experience, reflection, and storytelling. An action research methodology was used to collect data through four sequential interventions with experienced project managers during three action research cycles. The action research approach was part of "… a family of research methodologies that pursue the dual outcomes of action and research…. profit[ing] from the use of a cyclical or spiral process in which the researcher alternates action with critical reflection" (Dick, 2002, p. 159). The foundations of this 'family' are built on action science, that was defined by Argyris et al (1985) as "… an inquiry into how human beings design and implement action in relation to one another" (p. 4) that "… seeks both to promote learning in the client system and to contribute to general knowledge" (p. 36). The action research cycles examined the existing situation; implementation of a change, and evaluation of implementing that change. In addition, three 'spin off cycles' were utilised to provide perspective and validate the research approach with an external reference group consisting of experienced academics and practitioners. The approach developed to examine knowledge acquisition and exchange augmented Piggot-Irvine's 'Problem Resolving Action Research (PRAR) Model' (2001, p. 155), and is included in Appendix 3.

The selection of a targeted group of six project managers to participate in the research meets the criteria suggested by Zuber-Skerritt and Perry (2002) where "… action research

necessarily focuses on a workgroup in an organisation or community, all of whom are involved in the cycle of planning/acting/observing/reflecting" (2002, p. 173). This research sample was selected as it has been shown by Mintzberg (1980b) and other social researchers (Carlson, 1951; Hales, 1986; Kotter, 1999a, 1999b; N. H. Martin, 1956; Mintzberg, 1980a; Mumford & Gold, 2004; Stewart, 1967; Tengblad, 2002), to be a valid number to use for such focused research studies.

The participants managed projects for a minimum of 10 years in Australia across a range of government and private organizations, and held a formal university qualification, and in some cases were certified by a project management association. As such, the participants were deemed as experienced, with active roles in making decisions and managing projects. In many ways their profiles were indicative of a larger population of project managers in Australia and possibly further afield. The participants worked in private, public, and government agencies and utilities on a diverse range of engineering, infrastructure, IT, and business development projects. To assure anonymity the organizations are not named, and the participants are referred to by a North Atlantic Treaty Organization (NATO) code name.

DATA COLLECTION AND ANALYSIS

The data was collected and analyzed using a three-step process (Charmaz, 1990; Douglas, 2003; Glaser, 1992; Glaser & Strauss, 1967; Mintzberg, 1979; Strauss, 1987; Strauss & Corbin, 1990, 1998), during which memos and reflections were captured in a journal by the author. The data was then analyzed for each intervention prior to the subsequent intervention being conducted, according to the following steps:

Step 1: Interviews, observations, and a focus group meeting were conducted with the participants, resulting in over 70 hours of interactions being collected.

Step 2: Audio tapes and handwritten notes from the interactions were transcribed into Word documents.

Step 3: The participant's dialogue and activity was analyzed using several grounded theory techniques that could be adapted to an action research context, with information recounted and organised into 'Open Codes'. This process identified similar incidents and phenomena in words, lines and phrases. The output was represented as 'Conceptual Data Clusters'. The relationships within these naturally occurring clusters, identified in the 'Open Codes', resulted in 'Axial Codes', or categories with different identifiable themes. The recounted information was entered into Excel spreadsheets to organise and calculate their predominance relative to each participant and as a group. Finally, these patterns were visually represented in spider diagrams for each participant and for the whole group for each of the interventions to allow for further reflection and comparison.

To remain close to the data, the analysis of the interviews, observations, notes, and reflective journals was managed through a combination of manual paper-based sorting and classifying before engaging with computer generated software tools. Fielding and Lee (1998) suggest one of the issues of using computer software for analyzing data is that it creates distance between the participants and the researcher.

The data in the primary investigation into how project managers acquire and exchange knowledge was analyzed using several grounded theory techniques adapted to an action research context. Figure 2 provides a visual representation of how data was collected and analyzed for the research.
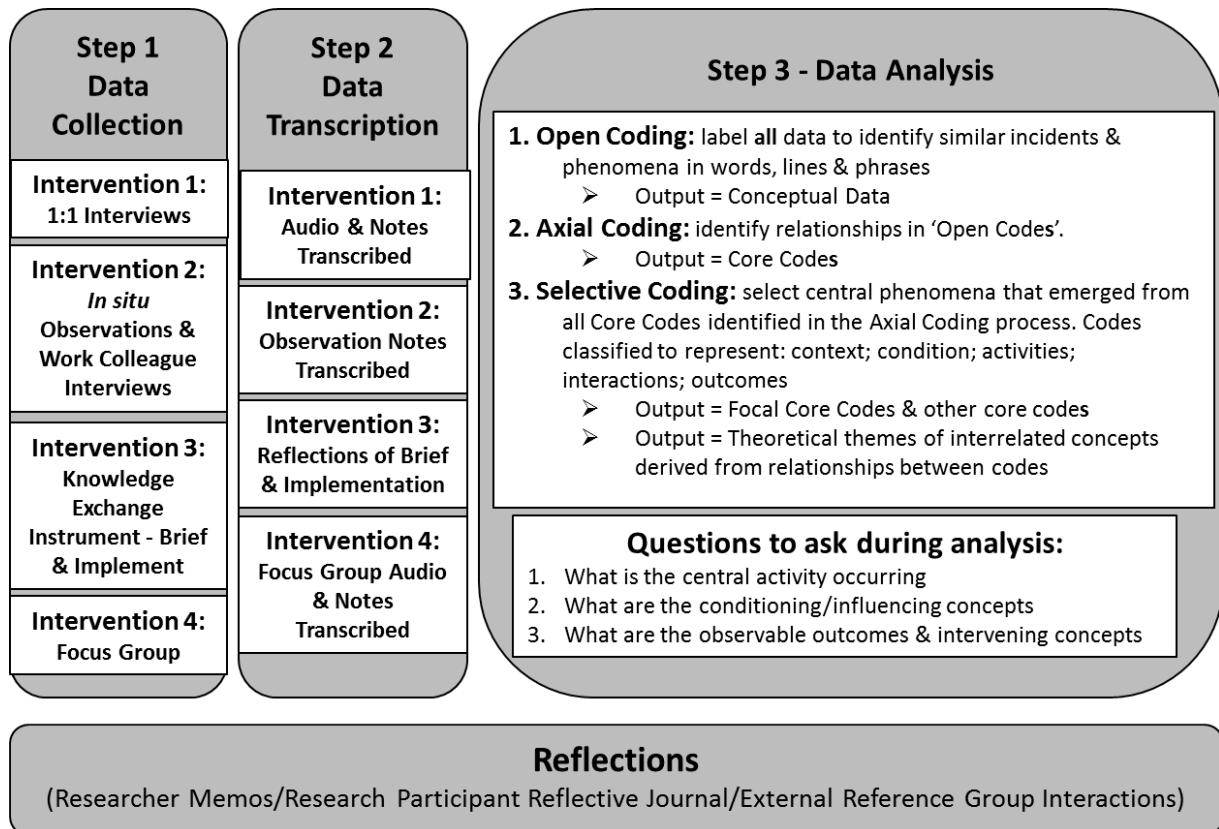
Step 1 Data Collection	Step 2 Data Transcription	Step 3 - Data Analysis
Intervention 1: 1:1 Interviews	**Intervention 1:** Audio & Notes Transcribed	**1. Open Coding:** label **all** data to identify similar incidents & phenomena in words, lines & phrases ➢ Output = Conceptual Data **2. Axial Coding:** identify relationships in 'Open Codes'. ➢ Output = Core Codes **3. Selective Coding:** select central phenomena that emerged from all Core Codes identified in the Axial Coding process. Codes classified to represent: context; condition; activities; interactions; outcomes ➢ Output = Focal Core Codes & other core codes ➢ Output = Theoretical themes of interrelated concepts derived from relationships between codes
Intervention 2: *In situ* Observations & Work Colleague Interviews	**Intervention 2:** Observation Notes Transcribed	
Intervention 3: Knowledge Exchange Instrument - Brief & Implement	**Intervention 3:** Reflections of Brief & Implementation	**Questions to ask during analysis:** 1. What is the central activity occurring 2. What are the conditioning/influencing concepts 3. What are the observable outcomes & intervening concepts
Intervention 4: Focus Group	**Intervention 4:** Focus Group Audio & Notes Transcribed	

Reflections
(Researcher Memos/Research Participant Reflective Journal/External Reference Group Interactions)

Figure 2: Data Collection and Analysis Approach

The first part of the analysis discovered the participants acquired their knowledge through practical experience, and this experience had been gained informally or accidentally. The majority of the participants indicated their project management skills developed in the workplace, not through formal qualifications or industry associations. This can be seen in a representative quote from a participant, stating "The knowledge I've gained as a project manager has come down to how good my managers and my peers were at imparting that knowledge." Part two of the analysis involved several perspectives to compare the data on how the participants exchanged knowledge so a deeper understanding could be generated and the results validated. The participants' perspective on how they exchanged knowledge suggested their preferred way was through a prevailing formal and impersonal approach. This perspective was reiterated through *in situ* observations and from the interviews with work colleagues. The dominant outcome was that the participants used informal and unstructured ways to exchange knowledge. In addition, the data for each work colleague aligned with each other where all six work colleagues indicated their respective participants exchanged knowledge in an impersonal and informal manner.

QUALITY AND VALIDITY

The structured approach to the research ensured that "… planning for robust methods and trustworthy results, and for ethical character in the planning, conduct and reporting of research" (Piggot-Irvine & Bartlett, 2008, p. 22) was undertaken. The research approach was tested before each of the four interventions and "choice-points" (Bradbury & Reason, 2006; Weick, 1995) were identified to review and enhance the quality of the research. The

establishment of an external reference group as a "… community of critical friends whose commitment is to testing the arguments and evidence advanced in the account of the study" (McTaggart, 1997, p. 187), offered a rigorous approach to undertake the research. The development of this robust approach ensured the research was able "… to maintain rigour and credibility in the knowledge or theory generated through real life interventions" (McKay & Marshall, 2001, p. 57).

DISCUSSION

In the Australian study, evidence of storytelling in decision making was present. Integration of EBMgt by participants, and their utilization of EBMgt through reflection, will be described against the four EBMgt factors (Rousseau, 2012a, p. 1). These factors include: the use of scientific principles in decisions and management processes; systematic attention to organizational facts; enhancing the project manager's ability to make good judgments through critical thinking and decision aids that reduce bias and enable fuller use of information; and ethical considerations including effects on stakeholders in project management decisions. The alignment of EBMgt, storytelling, and reflection in the data can be interpreted using relevant quotes from the participant's stories. This configured way of analyzing the data can highlight gaps in evidence and confirmation of how the participants demonstrate alignment between the EBMgt factors and their use of storytelling and reflection to make decisions, as depicted in Table 2.

Table 2: Alignment of EBMgt, with Storytelling and Reflection from the Australian study

EBMgt Factors (Rousseau, 2012a, p. 1)	Examples of Storytelling Related to EBMgt	Examples of Reflection Related to EBMgt
Scientific principles in decisions and management processes	"Our post implementation reviews and our business realisation reviews and all those sorts of things. That's where a lot of the stories come out" (Delta).	"You have to examine the business processes and the organisational dynamics and the decision making and where power lays … and then there's culture" (Mike).
Systematic attention to organizational facts	"They would go 'not another story'. But it's said in a joking manner. Everybody else shared their experiences as well" (Lima).	"It [reflection] helped me to see the difficulties and the issues and the problems and then learn from those" (Delta).
Enhancing the project manager's ability to make good judgments through critical thinking and decision aids that reduce bias and enable fuller use of information	"You go out on site and invariably somebody will tell a story…but they're not just telling stories for that sake. It's really related to something that's going on and usually there's a lesson out of it that you can apply" (Delta). "As a project manager, you've got to be able to make decisions and take a risk knowing that there's a chance that it could actually be wrong" (Bravo)	"I found it really, really useful to have a group of friends who are either managers or project managers or in some sort of leadership role that you can actually bounce ideas off" (Lima). "You make the decision and get on with it and take the risk. Sometimes you've completely fluffed it but it goes into the sub-conscious" (Bravo).

EBMgt Factors (Rousseau, 2012a, p. 1)	Examples of Storytelling Related to EBMgt	Examples of Reflection Related to EBMgt
Ethical considerations including effects on stakeholders	"Then if you're looking at knowledge exchange early on in the project some knowledge is going to flow into the project team from stakeholders" (Whiskey).	"I started to get a lot more exposure around different processes and expectations which certain people had around projects and also exposure to other stakeholders as well" (Sierra).

The data collected from participants demonstrates some alignment between the four EBMgt factors and storytelling and reflection. It may be argued that the participants predominantly used unstructured ways to reflect and share knowledge through storytelling to make evidence-based decisions. The narrative created through storytelling clarifies information in order to assist with making decisions. The participants created opportunities to purposefully share their knowledge using stories which were related to a specific situation or context. The role of a storyteller to share context-specific information "… is unique in its capabilities to generate and disseminate knowledge" (Laufer & Hoffman, 2000, p. xvi), thus enabling informed decisions to be made based on the known and utilizable evidence. Participants suggested storytelling facilitated their ability to gather knowledge and make decisions based on the available evidence.

Participants understood that reflection may be used to identify priorities and make sense of information based on past experiences, and therefore could improve the management of projects. However, there existed an unclear approach to bringing individual tacit knowledge from previous experiences to current projects. There were formal processes used to prepare project plans and review progress, with the expectation that relevant knowledge would be applied from past experiences to current projects. The benefit of reflection is to "… extract cues and make plausible sense retrospectively, while enacting more or less order into those ongoing circumstances" (Weick & Sutcliffe, 2005, p. 409). The value of reflection extends to socialising relevant experiences beyond the confines of a current project and, if used explicitly, demonstrates a respect for how this new knowledge is able to assist in making decisions. Participants found reflection during the management of projects impacted their ability to make decisions and the level of expertise, competence, and knowledge in managing projects can be linked to the reflective capability of a project manager.

The personal knowledge held by each participant was informally organized to accomplish project outcomes and in turn generated new knowledge. The participants understood and recognized the value of their personal knowledge, even though it "… is the least accessible but most complete form of knowledge" (Dalkir, 2005, p. 64). Social collaboration to embed knowledge through reflection can illuminate pathways to make decisions based on evidence. The participants established their physical and virtual project environments in a reactive manner due to external pressures that were technical and/or political. As a result, the participants were unable to "… supply support and scaffolding for learning and reflection within the authentic, real world contexts in which knowledge construction naturally occurs" (Lee & McLoughlin, 2007, p. 23). To address this perceived weakness, it is suggested that project managers may benefit from a structured approach to make decisions that are informed through reflecting on past experiences which are socialized.

CONCLUSION

This paper examines the use of reflection and storytelling to make decisions in a project management context. The project environment is often complex, political, and polarized, where perspectives may vary in terms of both shared and different experiences. In such circumstances, truth and meaning may be relative, neither right nor wrong, and may be value-based, not value-free opinions. As projects are unique, the transferability of knowledge from one project to another project relies on the interpretation and application of experience and temporal knowledge.

The interpretation of this temporal knowledge is presented through an examination by the author of how project managers in Australia used reflection and storytelling to make decisions. The research indicated that the participants predominantly used unstructured and informal approaches to share knowledge through storytelling. This approach provided a way to reflect on past experiences to enable informed and thoughtful decisions. There is a risk of bias where personal knowledge is used as the basis for reflection. This relies on people recalling and socializing information through storytelling which may be reinterpreted based on previous experiences. The potential for bias to exist in these value-based decisions can occur if there are differences between the evidence (facts) and a project manager's personal or tacit knowledge (interpretation of the facts). In this regard, evidence is information that may suggest a fact.

As a response to using an unstructured approach to making value-based decisions while managing projects, a decision-making approach is suggested. This approach may assist project managers to make informed, complete, and timely decisions, which, by extension, may enhance project outcomes. Using a decision-making model to provide a foundation from which to incorporate a project manager's personal experiences may both reduce bias and at the same time embrace an individual's personal knowledge. This approach may create a balance to frame the paradox between value-free and value-based decisions when using reflection and storytelling when managing projects.

REFERENCES

Argyris, C., Putnam, R., & McLain Smith, D. (1985). *Action Science: Concepts, methods and skills for research and intervention.,* San Francisco, CA: Jossey-Bass.

Bradbury, H., & Reason, P. (2006). Conclusion: Broadening the Bandwidth of Validity: Issues and choice-points for improving the quality of action research. In P. Reason & H. Bradbury (Eds.), *Handbook of Action Research* (pp. 343-351)., London: Sage.

Carlson, S. (1951). *Executive Behaviour.,* Stockholm: Strombergs.

Carr, E. H. (1961). *What is History* (Second ed.)., London: Penguin Books.

Charmaz, K. (1990). Discovering Chronic Illness: Using grounded theory. *Social Science and Medicine.,* 30(11), 1161-1172.

Cicmil, S., Williams, T., Thomas, J., & Hodgson, D. (2006). Rethinking Project Management: Researching the actuality of projects. *International Journal of Project Management.,* 24(8), 675-686.

Dalkir, K. (2005). *Knowledge Management in Theory and Practice.,* Boston: Elsevier/Butterworth Heinemann.

Denning, S. (2001). *The Springboard: How storytelling ignites action in knowledge-era organizations.,* Woburn, MA: Butterworth-Heinemann.

Denning, S. (2006). Effective Storytelling: Strategic business narrative techniques. *Strategy and Leadership.*, 34(1), 42 - 48.

Dewey, J. (1933). *How We Think: A restatement of the relation of reflective thinking to the educative process.*, Boston, MA: Houghton Mifflin Company.

Dick, B. (2002). Postgraduate Programs Using Action Research. *The Learning Organization: An International Journal.*, 9(4), 159-170.

Douglas, D. (2003). Inductive Theory Generation: A grounded approach to business inquiry. *Electronic Journal of Business Research Methods.*, 2(1), 47-54.

Fielding, N. G., & Lee, R. M. (1998). *Computer Analysis and Qualitative Research.*, London: Sage.

Glaser, B. G. (1992). *Basics of Grounded Theory Analysis.*, Mill Valley, CA: Sociology Press.

Glaser, B. G., & Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for qualitative research.*, New York, NY, USA: Aldine.

Groff, T. R., & Jones, T. P. (2003). *Introduction to Knowledge Management: KM in business.*, Burlington, MA: Elsevier Science.

Haas, M. R. (2006). *Knowledge Gathering, Team Capabilities, and Project Performance in Challenging Work Environments.*, Cornell University. Ithaca, NY. Retrieved from mh293@cornell.edu

Hales, C. P. (1986). What do Managers do? A Critical Review of the Evidence. *Journal of Management Studies.*, 23(1), 87-115.

Kolb, D. A. (1984). *Experiential Learning: Experience as the source of learning and development.*, Englewood Cliffs, New Jersey: Prentice-Hall.

Kotter, J. P. (1999a). What Effective General Managers Really Do. *Harvard Business Review.*, 77(2), 145-159.

Kotter, J. P. (1999b). *What Leaders Really Do. Boston.*, MA: Harvard Business Review.

Laufer, A., & Hoffman, E. J. (Eds.). (2000). *Project Management Success Stories : lessons of project leaders.*, New York: Wiley.

Laufer, A., Post, T., & Hoffman, E. J. (2005). *Shared Voyage: Learning and unlearning from remarkable projects.*, Washington, DC: NASA.

Lee, M. J. W., & McLoughlin, C. (2007). Teaching and Learning in the Web 2.0 Era: Empowering Students through Learner-Generated Content. *International Journal of Instructional Technology and Distance Learning.*, 4(10), 21-34.

Lehrer, J. (2009). *The Decisive Moment.*, Edinburgh: Canongate Books.

Martin, J. (2000). Personal Knowledge Management. In J. Martin & K. Wright (Eds.), *Managing Knowledge, Case Studies in Innovation* (pp. 1-10)., Edmonton, Alberta: Spotted Cow Press

Martin, N. H. (1956). Differential Decisions in the Management of an Industrial Plant. *Journal of Business.*, 29(4), 249-260.

Maslow, A. H. (1987). *Motivation and Personality.*, New York, NY: Harper & Row.

McKay, J., & Marshall, P. (2001). The Dual Imperatives of Action Research. *Information Technology and People.*, 14(1), 46-59.

McTaggart, R. (1997). Revitalizing Management as a Scientific Activity. *Management Learning.*, 28(2), 177-195.

Mintzberg, H. (1979). An Emerging Strategy of Direct Research. *Administrative Science Quarterly.*, 24(4), 582-589.

Mintzberg, H. (1980a). Structure in 5's: A synthesis of the research on organization design. *Management Science.*, 26(3), 322-341.

Mintzberg, H. (Ed.). (1980b). *The Nature of Managerial Work.*, Englewood Cliffs, NJ: Prentice-Hall.

Mumford, A., & Gold, J. (2004). *Management Development: Strategies for action.,* London: Chartered Institute of Personnel and Development.

Pfeffer, J., & Sutton, R. I. (1999). Knowing "What" to do is Not Enough: Turning knowledge into action. *California Management Review.,* 42(1), 83-108.

Piggot-Irvine, E. (2001). *Appraisal: Reducing Control - Enhancing Effectiveness. Ph. D.,* Massey University, Auckland.

Piggot-Irvine, E., & Bartlett, B. (2008). Introduction: What is evaluation of action research? *Evaluating Action Research.,* Wellington: New Zealand Council for Educational Research.

Rousseau, D. M. (2012a*). Becoming an Evidence-Based Project Manager.* Paper presented at the PMI Research and Education Conference, Limerick.

Rousseau, D. M. (2012b). Envisioning Evidence-Based Management. In D. M. Rousseau (Ed.), *The Oxford Handbook of Evidence-based Management* (pp. 3-24)., New York: Oxford University Press.

Schön, D. A. (1987). *Educating the Reflective Practitioner.,* San Francisco, CA: Jossey-Bass.

Stewart, R. (1967). *Managers and Their Jobs.,* London: Macmillan.

Strauss, A. L. (1987). *Qualitative Analysis for Social Scientists.,* Cambridge: Cambridge University Press.

Strauss, A. L., & Corbin, J. M. (1990). *Basics of Qualitative Research: Techniques and procedures for developing grounded theory* (1 ed.)., Thousand Oaks, CA: Sage.

Strauss, A. L., & Corbin, J. M. (1998). *Basics of Qualitative Research: Techniques and procedures for developing grounded theory* (2 ed.)., Thousand Oaks, CA: Sage.

Tengblad, S. (2002). Time and Space in Managerial Work. *Scandinavian Journal of Management.,* 18(4), 543-565.

Weick, K. E. (1995). *Sensemaking in Organizations.,* Thousand Oaks, CA: Sage.

Weick, K. E., & Sutcliffe, K. M. (2005). Organizing and the Process of Sensemaking. *Organization Science.,* 16(4), 409-421.

Winter, M., Smith, C., Morris, P., & Cicmil, S. (2006). Directions for Future Research in Project Management: The main findings of a UK government-funded research network. International Journal of Project Management., 24(8), 638-649.

Zuber-Skerritt, O., & Perry, C. (2002). Action Research within Organisations and University Thesis Writing. The Learning Organization: An International Journal., 9(4), 171-179.

APPENDICES

Appendix 1: Re-thinking Project Management – the five directions (Winter, et al., 2006, p. 642).

Theory *ABOUT* Practice   Direction 1

The life-cycle model of projects and PM ➡	Theories of the complexity of projects and PM
From: the simple lifecycle-based models of projects, as the dominant model of projects and project management. And **from**: the (often unexamined) assumption that the lifecycle model *is* (assumed to be) the actual 'terrain' (i.e. the actual reality 'out there' in the world).	**Towards**: the development of new models and theories which recognise and illuminate the *complexity* of projects and project management, at all levels. And **towards**: new models and theories which are explicitly presented as only *particle* theories of the complex 'terrain'.

Implication

The need for *multiple images* to inform and guide action at al levels in the management of projects, rather than just the classical lifecycle model of project management, as *the* main guide to action, (with all its codified knowledge and techniques). Nate: theories ABOUT practice can also be used as theories FOR practice.

Theory *FOR* Practice   Direction 2

Projects as Instrumental Processes ➡	Projects as Social Processes
From: the instrumental lifecycle image of projects as a linear sequence of tasks to be performed on an objective entity 'out there', using codified knowledge, procedures and techniques, and based on an image of projects as temporary apolitical production processes.	**Towards**: concepts and images which focus on social interaction among people, illuminating: the flux of events and human action, and the framing of projects (and the profession) with an array of social agenda, practices, stakeholder relations, politics and power.

Direction 3

Product Creation as the Prime Focus ➡	Value Creation as the Prime Focus
From: concepts and methodologies which focus on: *product creation* – the temporary production, development, or improvement of a physical product, system or facility etc – and monitored and controlled against specification (quality), cost and time.	**Towards**: concepts and frameworks which focus on: *value creation* as the prime focus of projects, programmes and portfolios. Note however: 'value' and 'benefit' as having multiples meanings linked to different purposes: organisational and individual.

Direction 4

Narrow Conceptualisation of Projects ➡	Broader Conceptualisation of Projects
From: concepts and methodologies which are based on: the narrow conceptualisation that projects start from a well-defined objective 'given' at the start, and are named and framed around single disciplines, eg. IT projects, construction projects, HR projects etc.	**Towards**: concepts and approaches which facilitate: broader and ongoing conceptualisation of projects as being multidisciplinary, having multiple purposes, not always pre-defined, but permeable, contestable and open to renegotiation throughout.

Theory *IN* Practice   Direction 5

Practitioners as Trained Technicians ➡	Practitioners as Reflective Practitioners
From: training and development which produces: practitioners who can follow detailed procedures and techniques, prescribed by project management methods and tools, which embody some or all of the ideas and assumptions of the 'from' parts of 1 to 4.	**Towards:** learning and development which facilitates: the development of reflective practitioners who can learn, operate and adapt effectively in complex project environments, through experience, intuition and the pragmatic application of theory in practice.

Appendix 2: Expertise, Competence and Knowledge in Project Work and Management (Cicmil, et al., 2006, p. 680).

Level	Experience	Action based on	Comment
Novice	Faces a given problem and a given situation in a given task area for the first time	• Instructions (training course, PMBOK®) • Learning to recognise objective facts about and characteristics of the situation (models and definitions of project) • Learning rules of action, as generalized for all similar situations on the basis of identified facts, thus context-independent (project management methodology, procedures, best practice) • Evaluating the performance of the skills on the basis of how well the learned rules are followed	The rules are necessary for gaining initial experiences but they can quickly become a barrier to acquiring skills at higher levels
Advanced Beginner	Achieves some real-life experience	• Learning to recognise relevant elements in relevant situations on the basis of their similarities with previous examples (typology of projects) • The context of experience becomes important and decisive in the choice of relevant elements, in addition to context-independent rules (learning from experience, limited reflection) PMBOK® trial and-error	Personal experience via trial and error becomes more important than context-independent, verbally formulated facts and rules
Competent Performer	With more experience the number of recognizable elements and facts becomes overwhelming	• Learning from own experience and from others to prioritise elements of the situation • Organizing information by choosing a goal and a plan • Dealing only with a set of key factors relevant to the goal and plan, thus simplifying the task and obtaining improved results • The choice of a certain goal and plan and the need to have a plan is paradoxical (simultaneous subjectivity and objectivity) – it is not unproblematic and requires deliberation, the relationship of involvement between performer and environment • Elements-rules-goals-plans-decision:	The individual learns to apply hierarchical, prioritising procedure for decision-making on the basis of set priorities rather than on total knowledge of the given situation Choosing the goal and plan is not unproblematic – it implies personal involvement in actions, hence responsibility/ethics

		the model of analytical, proficient performer • Ability to think on one's feet (confidence, reflection, choice of action and risk taking)	
Proficient Performer	Away from cognitivist, analytical rationality (rules, principles, and universal solutions) towards perceiving situations rapidly, intuitively, holistically, visually, bodily, relationally	• The awareness of interpretation and judgment involved in such decision-making, rather than logical information processing and analytical problem solving only • Deeply 'involved-in-the-world' manager/performer who already knows as he/she has evolved their understanding of the situation on the basis of prior actions and experience • Reflective understanding and participation in power relations	Intuitively understands and organizes the tasks in the local situation in the living present but continues to reflect analytically on what will happen as the emergent situation unfolds
Expert or Virtuoso		• 'Emergent enquiry' – participative methodology of knowledge creation in context • Intuitively, synchronously • Participative critical reflection over the intuition – the self and the Group • The thought, body, knowledge, and action are inseparable, are simultaneously forming and are being form by one another; thinking-doing • Understanding that power relating is an intrinsic part of intersubjective relating, always there • Considerations for the present and deliberation about the future	Characterised by effortless performance at the level of virtuosity; No thinking/doing, decision/action, or plan/implement divide; Action based on logic replaced by experientially based action; intuitive and rational at the same time

Appendix 2: Action Research Methodology Adopted from the Piggot-Irvine 'Problem Resolving Action Research (PRAR) Model' (2001, p. 155).

THE PROBLEM RESOLVING ACTION RESEARCH (PRAR) MODEL

Intervention 4:
• Focus group with research participants on use of knowledge exchange instrument
• Collect reflective journal 1 and 2

Intervention 3:
• Brief research participants on knowledge exchange instrument and second reflective journal
• Research participants implement knowledge exchange instrument

External Reference Group Meeting

External Reference Group Meeting

Intervention 2:
• *in situ* observations with each research participant
• 1:1 interviews with work colleague of research participant

External Reference Group Meeting

Intervention 1:
• Introduce research approach and first reflective journal

Continued Action   REFLECT

Report

Evaluation of Implementation of Change   CYCLE 3

"spinoff" cycle

Implementation of Change   CYCLE 2

"spinoff" cycle

Examination of the Existing Situation   CYCLE 1