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Artefaction as Communication: Redesigning Communication Models

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Abstract

The advice found in practical guides like PMBOK regarding designing and managing communication in IT projects, is worryingly superficial and gives little guidance or insights of substance to IS academics and practitioners. Thus, the objective of this paper is to help academics and practitioners better appreciate the complexity involved in IT projects and to foreground many of the attendant issues challenges and potential pitfalls in establishing and managing communications effectively through the projects life cycle. Further, the authors' aim includes the presentation of relevant and useful models of communication that if internalized, would improve the conceptualization of communication problem situations and thus assist in the planning and implementation of communication strategies in IT projects. The models presented include Galle's model of artefaction, Wittgenstein's language game model and a model developed by the authors which includes aspects of both Galle's and Wittgenstein's models. These models, the authors argue, are a considerable advance over the Shannon-Weaver-type conduit/transmission models of communication. The implications of the models are discussed and are illustrated by reference to a short case study.

Keywords

Enterprise system implementation, project management, communication

INTRODUCTION

Artefaction is the process of conceptualising, specifying, designing and producing an artifact (Galle 1999a). In the context of Information Systems (IS), artefaction is crucial, and is argued to form part of the working lives of many IS practitioners. For example, many business analysts, usually working collaboratively with other business professionals, would be engaged in activities around identifying problems, opportunities and challenges, conceptualising business change initiatives in which IT plays a crucial role, specifying requirements, designing solutions, redesigning business processes, and acquiring, configuring and implementing software packages into organizational contexts to effect the desired transformations, and thus in managing the organizational changes that attend the implementation of software systems in organizational contexts. This is but one example of artefaction in IS. In this case the final designed artefact is a newly defined organisational work system, highly reliant on or enabled by IS/IT (Alter 2006). Successful IS artefaction (artefaction which ultimately delivers the desired, expected business value from information systems innovation to the organizational stakeholders) requires close attention to and appropriate management of the collaboration and communication required. According to Galle (1999a:5), *"successful artefaction is successful communication"*. Designing and managing communication is thus arguably a critical component of successful artefaction.

Effective communication is frequently mentioned in both the professional and academic literatures as being associated with successful change initiatives (Lewis 2006) and more specifically, with IT project successes and failures. In the critical success factor-type literature, having good communication in place is seen as essential to

achieving good outcomes (Nah and Delgardo 2006, Lee et al 2010), and similarly, poor communication is often associated with failures and disappointments (Oz and Sosik 2000, Kappelman et al 2006). Thus communication would appear to be one of the necessary, but not sufficient conditions associated with project success: indeed, it is difficult to imagine a hugely successful project without effective communication, but good communication on its own will not guarantee success. It is asserted therefore that the successful or failed artefaction projects in IS are heavily influenced by the quality of communication throughout the process. However, despite the recognition of the importance of communication in IT projects and successful artefaction, there is much less attention paid to consideration of what constitutes "effective", "good", "poor" or "inadequate" communication in the context of artefaction. IS practitioners and project managers seeking assistance in this regard may well look to the Project Management Body of Knowledge (PMBOK) for advice, and while Project Communications Management is recognized as one of the knowledge areas in PMBOK, there is little usable or actionable advice to be found in that section. (We will return to this point subsequently in this paper.)

If we accept the pivotal role of communication in IS artefaction, the question can be asked as to how much research has been done into what constitutes effective communication, and secondly, how effective communication may be designed and structured within IT projects. Is the concept of "communication" ever "unpacked" in IT projects? What do we understand by communication? Do IT project managers understand what is required to ensure communication is adequate? What contributes to complexity and difficulty in effectively communicating in artefaction projects? Our aim in writing this paper is to help academics and practitioners better appreciate the complexity involved in communication in IT projects, and to foreground many of the attendant issues, challenges and potential pitfalls in establishing and managing communications effectively through the project life cycle. In addition, we will develop a theoretical argument on how better insights can be gained into how we could/should conceptualise communication if we are to make communication more effective in IT projects. In short, we will demonstrate that PMBOK offers little support for IT project managers in this regard, and then will offer a different model of designing communication within IT projects. In attempting to unpack the concept of communication in IT projects and associated issues, we will build on and enhance the thinking enshrined in PMBOK and suggest alternative ways in which communication can be conceptualized. Based on a belief that project communications could be enhanced through a deliberate design process, we turn to a model of artefaction communication design (Galle 1999a) which highlights both the social process of communication and the productive and interpretive activities involved in successful artefaction. This in turn suggests that a social constructivist view of communication, involving insights into the contextual nature of meaning and understanding, may be required in designing communication in artefaction, and thus we also invoke the theoretical insights of Wittgenstein's Language Games (1967).

This paper is structured as follows. This is a conceptual study, but a brief background to the case that created the interest in project communications is warranted and follows in the next section. We then offer a detailed review and analyse of three models of communication, considering the strengths and weaknesses of each of them, specifically in the context of IS artefaction. In considering the implications for these for IS artefaction and IT project management, we propose a revised model for both conceptualising and designing communication, arguing that it provides a better framework from which a project manager is enabled to design and manage a better communication strategy in IT projects.

RESEARCH APPROACH

This paper is principally the outcome of a conceptual study (Avison and Myers 1995). A conceptual study *"involves the articulation of subjective beliefs about an area of investigation...(it) can be used in a current situation or to review existing bodies of knowledge"* and is also a vehicle to perform critical analysis of literature which leads to the discovery of *"new insights, the development of theories and deeper understandings"* (Shanks et al. 1993:39). This conceptual study was triggered by a 'problem' encountered in a broader action research study in which the authors were involved. One of the authors was engaged by a large, global company as the project manager of an enterprise system (ES) implementation. Relatively early in the project, challenges arose regarding project communications. This issue led to the conceptual study discussed in this paper. As concepts and ideas are developed and discussed in the paper, examples of the communications required in this ES implementation project will be used to illustrate the arguments put forward, and also to support the initial model of communication and heuristics developed. It seems appropriate therefore that some background on the case is provided.

BACKGROUND TO THE CASE

A large international company (CorpeX) had acquired a small company (Company Z) and wished to implement its corporate enterprise system (ES) in the acquired business, bringing it into a common regional instance of the ES. The benefits of this would be to enable integration of manufacturing resources, purchasing, distribution, billing, and infrastructure with consequent market and efficiency gains. Over the last twelve years there had been

a number of similar implementation projects in the company in the Asia Pacific region, and thus there was considerable experience of the process. This particular project was commenced in 2009 to plan and manage the ES implementation. Known as Project McLaren, its objective was to replace Company Z's legacy systems with CorpeX's ES, and thus fully integrate Company Z into CorpeX's Asia Pacific systems and business. Although a modest project for CorpeX in financial and organisational terms by today's standards (in $ terms, the overall budget was between A$1 and A$1.5 million), Project McLaren posed some complex challenges for the project manager, especially in the area of communications. These challenges arose partly due to the global spread of the project team members and sponsors, thus spanning huge distances, multiple time zones and wide cultural differences and partly due to there being a certain amount of global competition for IT resources in the company, and substantial pressure not to repeat the experience of a recent IT project failure. These factors had been managed to varying degrees in previous CorpeX implementation projects, but in Project McLaren the communication difficulties came into sharp focus due to the need to consider organisational structure changes needed to enable the new system to be configured in a way that would support the businesses strategic plan. The project manager (PM) quickly found himself having to draw together market managers from Australia with branding issues, IT analysts from Hong Kong and the USA with software architecture concerns, cost accountants from Australia, lawyers from Australia and the USA, and manufacturing and distribution subject matter experts (SMEs), and business and systems analysts from the USA, Australia and India. None understood the implications facing others, many had competing concerns, and thus, this was a classic example of multiple and at times conflicting perspectives, multiple and at times conflicting objectives held by stakeholders and project team members located across this global company. A number of these people were uninterested in the issue, and wondered initially why there were being consulted. Out of this, the PM had to draw an IS proposal that would meet the business requirements, be efficient and legal, and a plan to move to it, and further this needed to be communicated and 'sold' broadly across CorpeX (including Company Z). Whilst challenging, we are not suggesting that the PM was in a particularly unusual situation today, but this case does highlight the level of communication complexity that PMs today are facing in even quite modest international ES implementation projects. As academics we wondered what the literature on communication had to offer to project managers, given the complexity of the communication challenges that can arise in projects such as the above.

MODELS OF COMMUNICATION IN THE LITERATURE

Models of communication offer insights into the ways in which communication is conceived. Decades ago, Shannon and Weaver (1949) articulated probably the most pervasive and influential one (Boland and Tenkasi 1995), although arguably often poorly applied and inadequate in many respects (Bowman and Targowski 1987). The Shannon-Weaver model is depicted in Figure 1 below.
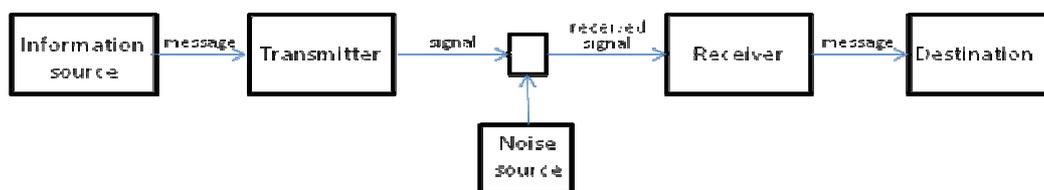

Figure 1: Shannon-Weaver Model of Communication (Shannon and Weaver 1949)

The Shannon-Weaver model was developed from an engineering perspective, and was primarily focussed on communication technologies (Lee 1993), in particular the transmission and reception of messages (Croft 2004), with the aim of developing a mathematical theory of communication (Chandler 1994). There were many subsequent variants of this model, which added feedback loops, and the transmitter and receiver were humanized to become 'sender' and 'receiver' (Chandler 1994). Despite their popularity and influence, there are many criticisms voiced of these 'conduit/transmission' models of communication (as they became known) (Bowman and Targowski 1987, Lewis 2006) essentially based on the Shannon-Weaver perspective. Amongst these criticisms are the following:

- they depict communication as an essentially linear process (Reynolds 1997),
- they fail to take account of the influence of the social context or 'shared field of experience' (Schramm 1954),
- that in focusing on the transmission component of communication they fail to account for how meaning is ascribed to and conveyed in messages (Bowman and Targowski 1987)
- they ignore the behavioural elements of communication and the impacts that messages have on those receiving them (Chandler 1994), and

- the influence of social values and cultural variables and the differences that may exist between sender and receiver in these regards are largely ignored (Beamer 1992).

These transmission models generally say nothing about the perceptive process involved in communication: that process of recognizing a signal, structuring it, categorizing it, and giving it meaning to it according to a range of personality, social, organizational and cultural influences (Beamer 1992). Communication is thus fundamentally about meaning, and meaning is constructed socially, rather than being extracted (Chandler 1994, Boland and Tenkasi 1995). Indeed, communication results from multiple constructions and reconstructions formed during interaction. Meaning is not the same as content, and interestingly, the conduit/transmission models offer no insights into the process of meaning making, and the impacts of the receiver's worldview or frame(s) of reference in the act of interpretation. These models make no reference in the main to context, neither social, organizational, political, cultural nor historical dimensions of context (Boland and Tenkasi 1995). They tend to regard communication as taking place in dyadic relationships (i.e. a sender and a receiver) rather than being situated and constructed in complex social systems (Reynolds 1997).

Despite its origins, the Shannon-Weaver conduit/transmission-type models have been applied well beyond telecommunications engineering, some would argue often erroneously (Bowman and Targowski 1987), and are seen in some quarters as a liability to rigorous and relevant research and practice in the field of communication (Chandler 1994). For example, refer to Figure 2 below, which is the model of communication drawn upon by the Project Management Institute (PMI)[1], and shapes both the way communication is conceived and hence the advice given to project managers via the Project Management Body of Knowledge (PMBOK). The advice offered to project managers based on this model is as follows (p255): *"The components in the communication model need to be taken into account when discussing project communications. As part of the communications process, the sender is responsible for making the information clear and complete so that the receiver can receive it correctly, and for confirming that it is properly understood. The receiver is responsible for making sure the information is received in its entirety, understood correctly, and acknowledged. A failure in communication can negatively impact the project."* There are few insights offered as to how a sender might ensure that their message is clear, or on how they would know if it was complete. Similarly, receivers would be at a loss to know whether the message (as sent) was received in its entirety, correctly understood, and so on.
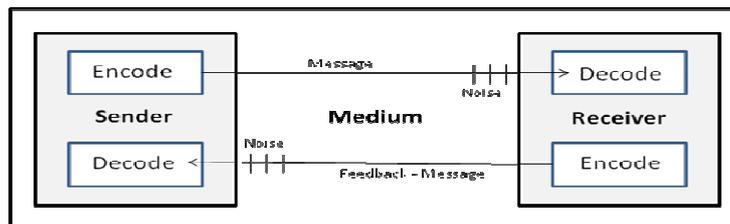

Figure 2: PMBOK Model of Communication (from PMBOK ver 4 2008:255)

The advice of the PMBOK seems of little help to the Project McLaren project manager wondering where to start with the communications needed to gain support for a significant change in the CorpeX structure. Lewis (2006) notes that advice to project managers and others charged with implementing technological change in organizations is prolific (in popular literature) but is often unclear and leaves 'how to' advice unstated or underspecified. She complains that statements such as "communicate well" often no practical help whatsoever. Lewis et al. (2006:132) argue that much advice on communication in change processes *"tended to boil tactics or communication down to sound bites and general philosophy…there seemed to be scant detail in considering very basic problems that practitioners might have with communication…and came across as sloganesque"*. Such comments seem to apply well to the PMBOK. Lewis et al. (2006:126) also note that other than making statements along the lines of 'assemble a critical mass of stakeholders' or 'include the right people' who the project manager should be communicating with and how these people should be identified remain understudied concepts, with little actionable knowledge or advice available in either the practitioner or scholarly literatures. We would argue that even in a modest project such as Project McLaren, there are many complexities which the communication model and attendant advice in PMBOK simply fails to identify and offer advice or support to the project manager.

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[1] Note that this PMI model is not referenced: it is the assertion of the authors that this model is almost identical to the Shannon-Weaver model depicted in Figure 1, and thus can be regarded as belonging to the conduit/transmission models of communication.

ALTERNATIVE MODELS OF COMMUNICATION

Galle's Model of Artefaction

Another approach might be to look at the communication models based on the work of Galle (1999a).In applying a design lens and viewing artefaction as a process of communication, Galle (1999a) offers an alternate model of communication (see Figure 3 below). Although seemingly based upon the transmission/conduit model of communication, the Galle model offers some important new insights. The Galle model views the production of a final artifact as the outcome of a series of communication activities, which involves both production and communication (of ideas, specifications, representations prior to the production of the final artifact), and interpretation amongst all parties involved in the artefaction process. Although the original model by Galle is as depicted in Figure 3, one could easily argue for adding heads on either ends of some of the arrows as that would allow for a certain amount of iteration as parties grapple to communicate and understand the intentions of one another. As it stands, the model retains some of the 'look and feel' of the conduit models, but is different in important ways. Firstly, it is clearly positioning communication as a social process, with the ability to add parties as needed. Artefaction is thus the result of a series of successful communication instances, with interaction a key element in these instances. For IS artefaction, key players such as project managers, business analysts, technical specialists, business subject matter experts, business managers, vendor representatives, and the like could be represented in the model. Secondly, it acknowledges both the productive and interpretive activities in communication. For example, Galle (1999a) argues that successful artefaction starts from the conception of an idea, a result of a perceived need, or opportunity, and the like, which must be made explicit (produced or represented) in some way, such as via a sketch, diagram(s), models, lists of requirements, a problem statement, or what he refers to as a 'design brief'. The design brief must be interpreted by a designer (as represented in the model), or a range of possible interested parties. The designer needs then to more formally represent requirements in a 'design representation', which needs to be interpreted and verified not only by the client but also understood by the maker. So the process of artefaction proceeds to a successful conclusion. A strength of the Galle model, we would argue, is its ability to recognize the production and interpretation activities in artefaction. The essence of both these productive and interpretive activities is communication, both verbal and non-verbal, mediated by the artefacts produced along the way (the design brief, the design representation, the final artifact and so on). Failure in any of these communication instances may result in failure of some sort along the artefaction process. Thirdly, it helps to illustrate the complexity involved in communication. The model appears reasonably complex with just three parties depicted: it would quickly become very complex as more and more parties were added.
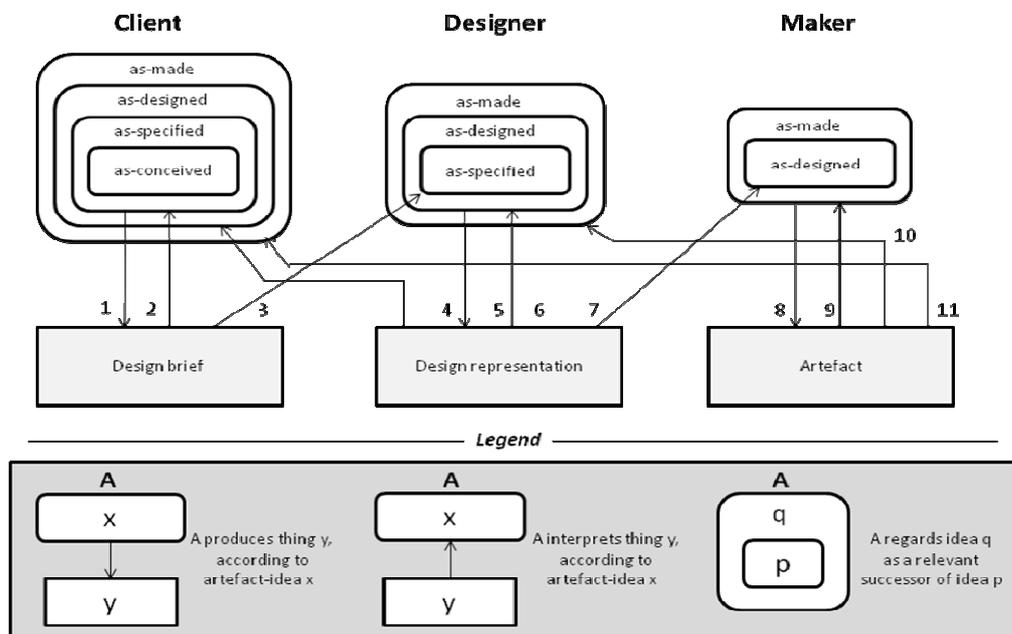

Figure 3: A Model of Artefaction as Communication[2] (Galle 1999a)

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[2] Galle (1999) was writing from an architectural perspective and used the labels Client/Designer/Maker in that context. He did, however, encourage users of this model to particularize it to their circumstances, and thus we could easily have substituted terms such as analyst, project manager, programmer, end user, and so on in this diagram.

In the context of an IT project, production, interpretation and understanding are only achieved through a to-ing and fro-ing amongst multiple participants (or stakeholders), occupying many different roles, possibly with different political agendas, and as we operate more in global contexts, with differing cultural, social and historical backgrounds with which a project manager or business analyst (some of the roles involved in design activities in an IT project) must contend. Artefacts produced by many of these participants, themselves a function of different worldviews, different intentions and the different contexts in which people operate, serve a key role in mediating the communication. By making ideas tangible and/or explicit these artefacts help the process, but can make the process more difficult when communication fails to take account of the different contexts and worldviews, and so on in which these artefacts have been created and in which they are interpreted. Galle (1999b) notes the potential complexity when not only the designer's intentions but also those of the clients, the makers and the end users become enmeshed in the artefaction activity and hence in the communication amongst stakeholders. Also providing a challenge in the communication process is Galle's (1999b:65) idea of the *"absent artifact"*, or how one effectively models, plans, represents and communicates something that does not yet have material form, but which may have conceptual 'realness' for stakeholders of the artefaction activity.

Thus, while the Galle model advances our conceptualization of communication in the artefaction process, there are still concerns which it does not specifically seem to address or recognize. The model does not really offer insights into the contextual nature of meaning and understanding, and the implications of this to successful artefaction, nor about how breakdowns and miscommunications may occur. By failing to deal with the context of communication, it thus fails to address the social, cultural, historical and political filtering that shapes interpretation and understanding (Page 1972, in Lawson 2006). Further, the model does not take into account the gaps that may exist between the communicating parties in the artefaction process (Zeisel 1984), which is particularly problematic given the participants in these processes may be unaware of the existence of any such gaps (Cairns 1996), and may now be physically remote from one another (see Figure 4 below).
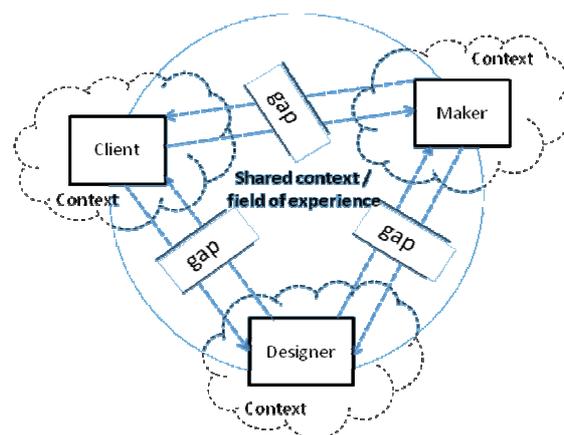

Figure 4: The limitations of the Galle Model[3] (1999a) (Adapted from Zeisel 1984: 35)

Our Project McLaren project manager might get more help from Galle's model, with its acknowledgement of the complexity of the communication, the iterative process and the positioning of communication as a social process but still it gives little guidance to project managers on how to accommodate the differing contexts, worldviews, perspectives and objectives with which they must contend.

Wittgenstein's Communication Theory

An alternative social constructivist perspective on communication is offered by Wittgenstein (1967) who in his later work articulated the concept of 'language games'. Wittgenstein (1967) articulated a position in which words (and hence their meanings) do not have a definite physical relationship with a concrete physical world (note that this was a complete turnaround in terms of his original philosophical position). Whereas his earlier works had been based on referential theory (the meaning of a word is denoted by the "thing" the word refers to (Boland and Tenkasi 1995)), his subsequent thinking suggested that in fact reference does not establish meaning, but rather, *relies* on meaning and understanding (Deitz and Arrington 1984). For example, to speak about 'democracy' requires the speaker and the audience to understand the concept or referent (representational government) for successful communication to have occurred (Deitz and Arrington 1984). By the time of writing *Philosophical Investigations*, Wittgenstein's philosophy has shifted and language is now seen as made up of a multiplicity of language games in which meanings are constructed and understood by actors in specific contexts

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[3] The rectangles in the diagram (Client, Designer, Maker) are intended to include the full involvement as illustrated in the Galle (1999a) model i.e. the client rectangle is assumed to include 'as-conceived', 'as-specified', 'as-designed' and 'as-made' elements, and so on.

(Wittgenstein 1967). Thus, meanings, information, and communication are all context-dependent (Kuhlen 1991, Beyer 1992) and socially constructed through community (Timmons 2006). Language games are not just associated with words and their meanings, but include people, their worldviews and motivations, non-verbal forms of communication and the artifacts they deal with in particular contexts (Stenhouse 1985).

The choice of the term 'language game' was carefully chosen to convey the sense that firstly, the use of language is governed by rules which have to be learned by actors in a context, and secondly that some language games resemble each other and share commonalities but also differ in key respects (Timmons 2006). Similar rules and conventions, although often tacit, apply to language games. Indeed, Wittgenstein's theory suggests that communication relies on relevant parties understanding the language game involved in a specific context and interaction, and meaning can only be understood within the context of the language game (Deitz and Arrington 1984). Sharing meanings and communicating are, according to Wittgenstein, thus dependent on knowing (understanding), adopting and following the rules of the language game in which a person is acting at a given time. Understanding is dependent on knowing the rules of the language game at hand (Timmons 2006). Thus, one of the key implications of Wittgenstein's position is that language becomes a social phenomena, not an individual one, with Bloor (1983) suggesting that Wittgenstein can be credited with articulating a social theory of knowledge, with emphasis on *"how people speak, what they mean when they talk…hence what they are talking about"* (Deitz and Arrington 1984:2), and thus what it means to know something (Timmons 2006). Effective communication thus relies on mutual appreciation and understanding of, and participation in a particular shared language game.

IMPLICATIONS FOR IS ARTEFACTION AND PROJECT MANAGEMENT

We argue that the language game concept is very apposite to IS artefaction and project management, and more specifically to the management of ES implementations. Projects may be seen as constituted by a number of different communities of knowing, each with their own knowledge which has evolved over time, and each engaged in its own language game. The language game evolves as members successfully communicate with one another, building and sharing their knowledge and expertise within that community through a process that Boland and Tenkasi (1995) refer to as perspective making. In the case of Project McLaren however, (and we would argue in many IS projects as global practice becomes the norm), communication must support the process of perspective taking, of opening the knowledge and expertise to different communities (Boland and Tenkasi 1995), each of which may be involved in a different language game. Further, such communities may be located in different cultural contexts, suggesting a need for all concerned in communications to be aware that the worldviews of recipients will be shaped by differing values, attitudes, beliefs, norms and behaviours, in addition to involvement in different language games, and thus perceptions of messages communicated may not match the intentions of other players (Beamer 1992). The extent of overlap in these language games (or lack thereof) will determine the ease of communication between the different communities: words used may be similar but the meanings attributed to those words may differ, and community members may view and see the world differently. Boland and Tenkasi (1995:355) suggest that in as much as community members do distinct knowledge work and perform activities that serve different purposes, then the risk of incommensurability of perspectives is present, and thus the risk of misunderstanding and communication breakdown. For different communities to work effectively together (as is the case in IS projects), then there needs to be both recognition of the gap or different language game deployed, and a willingness and ability *"to overcome the degree of incommensurability between them"*. Project managers and team leaders therefore need to be aware of this, and possess the skills and tools to be proactive in managing the communication across different communities and different language games.
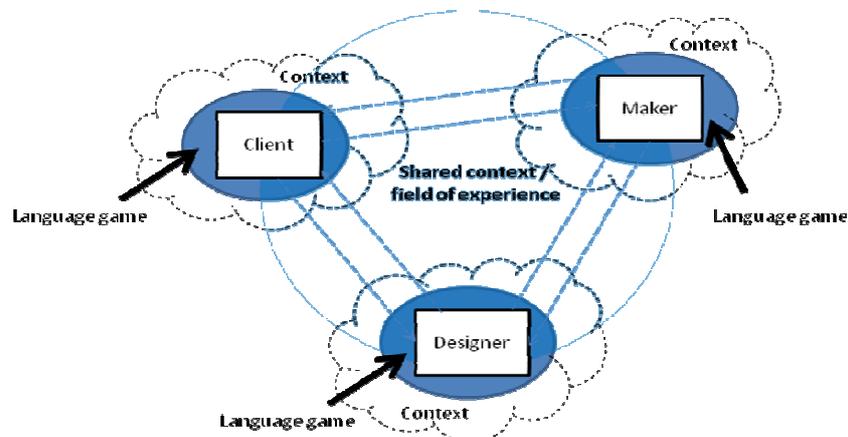

Figure 5: Revised Model of Project Communications

We thus offer a revised model of communication in Figure 5, to form the basis of conceptualising communication in projects, and thus in better supporting PMs in designing and managing communications in IT projects. We would assert that:

- PMs need to reflect on and be cognisant of the extent to which project stakeholders do share a context or field of experience. Arguably, the larger the shared context the easier communication amongst stakeholders may be. However this will be tempered by the geographical locations, cultural and professional backgrounds of stakeholders, and hence on the local contexts of individuals and groups and the extent of commonalities.

- PMs need to reflect on the degree of participation required. As broad participation is generally associated with less resistance and greater acceptance of change (Lewis 2006), more participative approaches (generating increased communicative complexity) are associated with more successful outcomes in IS artefaction (Lewis 2006).

- PMs need to be cognisant of the full gamut of perceptive, interpretive and productive communicative behaviours involved in the process of IS artefaction, and proactively plan to enable and support perspective making and perspective taking activities (Boland and Tenkasi 1995) throughout the project life cycle.

- PMs need to be aware of the concept of language games, and thus acknowledge the potential for breakdowns to occur in communication, of which people are often unaware. Further, we would assert that PMs likewise need to build this awareness in all project participants and devise strategies by which checks can be made to identify if misunderstandings have occurred.

How do we help project managers to work out how to communicate across language games, across contexts, and so on? It could be argued that communication in projects is an on-going collaborative process of strategic thinking, decision making, enacting decisions and reporting back. Effective communication in projects needs to bring peers together, and to get diverse communities to legitimize the decisions made. This is supported by encouraging peer-to-peer communication, rather than a top down cascade approach to communication (Huebner et al. 2008). Boland and Tenkasi (1995) argue that communities rely heavily on a narrative mode of cognition, in that they construct narratives (stories) by which they highlight the noncanonical, make sense of it, and thus it is through stories that access can be gained to implicit assumptions and interpretive structures that characterize different language games. Thus the importance of supporting conversation and storytelling amongst diverse groups is emphasized. Ngwenyama and Lee (1997) would seem to support this position, arguing that mutual understanding amongst groups will stem not from the communication technology employed but from the interactions between people and their contexts. Developing mutual understanding is a key to understanding different language games. Much of the knowledge and expertise that is located in diverse groups in IS projects is partly tacit, and not amenable to codification. Thus to support the process of perspective taking and share that knowledge across different contexts and language games, requires the adoptions of means which allow for interpersonal communication (i.e. sometimes arrange for people to travel and meet face-to-face) and experiential learning (i.e. draw on the experiences gained in similar previous projects, and encourage that experience to be relayed through dialogue and storytelling as an important way of allowing others to learn). This is likely to be more successful than acting and communicating as though all knowledge and expertise can be codified (Miller and Lin 2010). In this way, the project manager may have a vital role to play as the boundary spanner between different groups and different language games.

Lewis (2006:40) argues that communication ought not to be conceptualised and modeled as a process of information exchange or transmission, but rather as *"a dialogic process wherein various stakeholders engage one another in clarification, negotiation of meaning, and perspective taking"*. The role of the project manager in enabling that dialogic process seems critical. Listening is perhaps **the** critical skill in dialogic approaches. This also suggests a need to move from a "campaign" style of communication (generally top down) to a mix of approaches where the vision and motivation for the project are made clear, but opportunities also given to a broad range of stakeholders to input ideas and comments, to provide feedback, to have more involvement and wherever possible to be given some responsibility for designing and planning their own contribution to the project. Lewis (2006) also stresses the need for communicators to bear in mind that their perceptions of how much and how good their communication has been may not match other stakeholders' perceptions of it. Project managers need also to consider whether their own tacit model of communication is similar to the transmission/conduit model(s), and that their own inner model will impact on the way they chose to communicate with others. The key to more successful communication in projects is argued to be the adoption of more dialogic approaches (Lewis 2006), and to consider the circumstances and contexts where an appropriate mix of transmission style and dialogic styles are appropriate.

CONCLUSION

In this paper, we have discussed the importance of communication in IS artefaction and IT project management, and have thus attempted to unpack the concept of communication. We have demonstrated that communication is vital, yet possibly often poorly understood and conceptualised by many project managers who are ill-supported in this regard by the PMBOK. PMBOK exemplifies a simplistic model of communication that views communication as essentially linear, acontextual, and thus unaffected by the organisational, social, cultural and political contexts in which it is located and constructed. We have attempted to demonstrate, using Project McLaren as an exemplar, the complexity that can quickly arise in quite modest projects and have argued that this is becoming normalised, as increasingly IS artefaction is taking place on a global stage. Through analysing alternative models of communication, and synthesising these into a revised model of project communications, we argue that we have taken an initial step into better understanding project communications, and have offered suggestions into how PMs may consider designing communications for successful IS artefaction. This revised model emphasises the importance of understanding Wittgenstein's concept of language games, and thus suggests that communication must be viewed as a contextualised social activity in which meaning is constructed through community. Thus social and cultural values and variables are foregrounded in this model, and PMs' attention is thus drawn to the differences that may exist between stakeholders in their projects. In essence, this revised model suggests a need to background issues associated with the transmission of information, and focus rather on the management of perspective making and perspective taking in IT projects.

This is an initial theoretical model, and clearly requires more rigorous empirical research to add confidence in its suggestions. Nonetheless, the authors are confident that it represents a step in the right direction in terms of supporting PMs in moving from a rationalistic view of project communication as exemplified in the PMBOK towards a better appreciation of a constructivist stance on communication.

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