

Understanding IS/IT Implementation through Metaphors: A Multi-Metaphor Stakeholder Analysis in an Educational Setting

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Abstract

Notwithstanding the importance of metaphors in organizational research, this paper recognizes that few empirical studies examining the multiple metaphors elicited by stakeholders (for instance, teachers, administrators and managers) in the context of IS/IT implementation within an educational setting have been conducted. Using a total of 30 in-depth interviews carried out within a further and higher educational college in the United Kingdom, the broad aim of this paper is to examine the metaphors produced from organizational members in their accounts of IS/IT implementation. The analysis reveals a number of dominant metaphors that feature in IS literature on which participants drew—journey, military, machine, bodily/illness, sports and religion—as well as a number of additional, novel metaphors not widely acknowledged within IS literature, namely nautical, horticultural and child-like metaphors. The paper proposes that practitioners and managers should be aware of the multiple metaphorical expressions members of an organization use as it may help to clarify the tensions arising during IS/IT implementation. Furthermore, an exploration of these metaphors generates fresh insights into implementation practices, which may otherwise go unnoticed.

Keywords: Metaphor; Implementation; Information Systems; Information Technology; Qualitative Research

1. Introduction

There has been increased interest in the study of metaphor in information systems (IS) research (Jackson, 2011; Jung & Hong, 2014; Simpson, 2014). This is witnessed by the growth in conference and journal papers dedicated to its study over the last several decades. Such attention has been spurred on by the need for more unconventional methods to offer alternative ways of thinking about the social functioning and complexities of IS in organizations. While it is beyond the scope of this paper to provide an exhaustive list of all conceptualizations of metaphor, one common characterization of metaphor in IS research is as a device for seeing something in relation to something else. Madsen (1988, p.3) defines metaphor as a way of “seeing one kind of thing in terms of another.” Kendall and Kendall (1993, p.150) refer to metaphor as “saying that one object is another.” Likewise, Oates and Fitzgerald (2007, p.426) conceptualize metaphor as “to think about an entity as if it were a different entity.”

Notwithstanding the importance of metaphor, many IS studies have adopted, what can be referred to as, a projected approach (Cornelissen, Oswick, Christensen, & Philips, 2008), where the researcher takes an existing metaphor, or several metaphors, and uses it as a prescriptive lens for theorizing about IS/IT. However, concerns with this approach is that it downplays an understanding of how metaphors are elicited in people’s production and use of language, as well as ignoring the emergence of novel metaphorical expressions in accounts of IS/IT. Furthermore, while studies following the elicited tradition view metaphor as a process of social construction, still little is known about the multiple types of metaphors elicited by stakeholders (for instance, teachers, administrators and managers) in their accounts of IS/IT implementation practices within an educational setting (Jackson, 2013; Koc, 2013).

Against this backdrop, the paper seeks to examine the multiple metaphors produced from participants in their production of language surrounding IS/IT implementation practices using an in-depth case study of a further and higher education institution in the United Kingdom. Such an approach is valuable as it allows for a recasting of metaphor, commonly perceived as unattached from the human subjects under investigation in much projectionist thinking, to be considered as being actively constructed by individuals in relation to how they think and feel about computerized systems. By directly going to the metaphorical expressions that surface in people’s use of language may lead to the unearthing of unidentified metaphors that could otherwise go unnoticed in the IS field. This paper proposes that a projectionist account of metaphor runs the risk of superficiality, and to understand the intrinsic and multifaceted nature of metaphor requires a more refined analysis of how different metaphorical terms emerge and are espoused by individuals within their social setting. In order to understand metaphorical practices among various stakeholders, this study adopts a holistic approach based on conceptual metaphor theory (CMT) as the theoretical lens for the study.

In summary, the study makes a number of important contributions to IS metaphor literature. First, the study reveals a number of novel metaphors on which participants drew, not widely featured within IS literature (nautical, horticultural and child-like metaphors). Second, the study extends the elicited approach, moving beyond the projectionist tradition, acknowledging that individuals exhibit variety and flexibility in the metaphors they use as they make sense of IS/IT. Third, the theoretical lens of CMT is applied, a theory which has yet to receive much attention in IS literature, to IS/IT implementation practices, thus extending its theoretical relevance to the IS field.

The paper is organized as follows: the context and background to the study have already been highlighted. Next, the literature on IS metaphor is briefly reviewed. The research study is outlined briefly and a discussion of the research methods follows. Research findings are then provided, and the implications, limitations and future research of the study are outlined.

2. Literature Review

Increasingly researchers have discussed the usefulness of metaphor analysis for understanding the social, behavioral and cognitive processes surrounding IS phenomenon. Some areas to which metaphor analysis has been applied in IS research include IS development (Beath & Orlikowski, 1994; Boland, 1989; Hirschheim & Newman, 1991; Kendall & Kendall, 1993); IS design (Boland & Greenberg, 1992; Madsen, 1988; Warren & Adman, 1999); IS culture (Gallivan & Srite, 2005); IS implementation (Huang, Newell, Galliers, & Pan, 2003; Jackson, 2011); information management (Walsham, 1993); technological innovation (Ramiller, 2001); electronic government (Mosse & Whitley, 2009); strategy formation (Heiskanen, 1993); mobile technology (Arnold, 2003); and internet auction fraud (Chua & Wareham, 2008). Table 1 provides an overview of common types of metaphor used in IS research, along with their associated areas of study.

Regardless of the various areas which metaphor has been applied to in IS research, the concept has been approached and studied in various ways. Given the diversity of the literature, a comprehensive view of all studies is unworkable. However, in order to make sense of this diversity, we position our review around those studies which either take a projected or elicited approach (Cornelissen, Oswick, Christensen, & Philips, 2008).

Table 1. Summary of common types of IS metaphor, and associated areas of study

Metaphor	Source	Area of Study	Metaphor (continued)	Source (continued)	Area of Study	
Acting	Beath & Orlikowski (1994)	IS development	Machine	Kendall & Kendall (1993)	IS development	
Balance	Bonner et al. (2009)	Information Privacy		Oates & Fitzgerald (2007)	IS development	
Bits	Schultze & Orlikowski (2001)	Virtuality	Magic	Walsham (1991)	IS practice	
Brain	Heiskanen, Newman, & Simila (2000)	IS development		Kaarst-Brown & Robey (1999)	IT management	
	Oates and Fitzgerald	IS development	Mechanistic	Boland & Greenberg (1992)	IS design	
	Warren & Adman (1999)	IS design		Heiskanen, Newman, & Simila (2000)	IS development	
Chronigami	Kavanagh & Araujo (1995)	IS practice	Military	Hirschheim & Newman (1991)	IS development	
		Organizational change		Network	Schultze & Orlikowski (2001)	Virtuality
		IS implementation		Organic	Boland & Greenberg (1992)	IS design
Closed shop	Sahay & Robey (1996)	IS design	Organism	Heiskanen, Newman, & Simila (2000)	IS development	
Coalition	Warren & Adman (1999)	IS design		Kendall & Kendall (1993)	IS development	
Coercive system	Warren & Adman (1999)	IS design	Parasite	Madsen (1988)	IS design	
Communication	Madsen (1988)	IS design		Physical space	Oates & Fitzgerald (2007)	IS development
Community	Schultze & Orlikowski (2001)	Virtuality		Platform	Warren & Adman (1999)	IS design
Court of justice	Hirschheim (1996)	IS development	Political systems	Walsham (1991)	IS practice	
Cultures	Oates & Fitzgerald (2007)	IS development		Revolution	Chua & Wareham (2008)	Internet auction fraud
	Warren & Adman (1999)	IS design		Quick-hits	Madsen (1988)	IS design
Customer	Walsham (1991)	IS practice	Psychic prisons	Schultze & Orlikowski (2001)	Virtuality	
	Walsham (1993)	IS Management		Oates and Fitzgerald (2007)	IS development	
Drama	Mosse & Whitley (2009)	E-Government	Ritual	Walsham (1991)	IS practice	
Family	Westrup (1996)	IS development		Scaffolding	Walsham (1993)	IS management
	D'Mello & Eriksen (2010)	IS development		Society	Oates & Fitzgerald (2007)	IS development
Film camera	Kendall & Kendall (1993)	IS development	Space	Walsham (1991)	IS practice	
	Avison, Wood-Harper, Vidgen, & Wood (1998)	IS development		Sports team	Sarker & Lee (1999)	IT transformation
Flux and transformation	Oates and Fitzgerald (2007)	IS development	Teaching	Beath & Orlikowski (1994)	IS development	
	Walsham (1991)	IS practice		Revolution	Cukier, Ngwenyama, Bauer, & Middleton (2009)	IS research methodology
Game	Kendall & Kendall (1993)	IS development	Ritual	Westrup (1996)	IS development	
Hatchet in the head	Sarker & Lee (1999)	IT transformation		Scaffolding	Pollock & Williams (2007)	Software procurement
Instruments of domination	Oates & Fitzgerald (2007)	IS development	Society	Kendall & Kendall (1993)	IS development	
	Walsham (1991)	IS practice		Space	Schultze & Orlikowski (2001)	Virtuality
Intertwining	Robey, Schwaig, & Jin (2003)	Virtual teams	Sports team	Beath & Orlikowski (1994)	IS development	
	Arnold (2003)	Mobile technology		Teaching	Boland, Newman, & Pentland (2010)	IS design and use
Janus-Faced	Kendall & Kendall (1993)	IS development	Team	Warren & Adman (1999)	IS design	
Journey	Kendall & Kendall (1993)	IS development		Troubled marriage	Ward & Peppard (1996)	IT organization
Jungle	Jones (1995)	Organizational learning	Virtual onion	Gallivan & Srite (2005)	IS culture	
Learning	Lyytinen & Robey (1999)	IS development		Wall	Boland, Newman, & Pentland (2010)	IS design and use
		Pentland (1995)	Organizational learning	War	Kendall & Kendall (1993)	IS development
Low hanging fruit	Sarker & Lee (1999)	IT transformation	Zoo		Kendall & Kendall (1993)	IS development
	Tillquist (2002)	IT planning				

2.1. Projected approaches

Within the IS literature many studies have taken a projected approach to metaphor. A projected approach is where the researcher takes an existing metaphor, or several metaphors, and uses it as a prescriptive lens to describe the workings of an organization, particularly in theorizing about how IS/IT is used, implemented and developed in organizations (see for example, Huang, Newell, Galliers, & Pan, 2003; Gallivan & Srite, 2005; Jackson, 2011; Oates & Fitzgerald, 2007; Walsham, 1993). These studies can be classified as projected in that they often explore a known metaphor to see if it holds up or doesn't hold up in a given situation.

One influential author, perhaps the most dominant to date in IS research, has been organizational theorist Gareth Morgan. His original work proposes that theories of management and organization are based on implicit metaphors which allow one to understand, view and manage organizations in distinguishing, yet partial ways. These metaphors include: machines, organisms, brains, cultures, political systems, psychic prisons, flux and transformation, and instruments of domination. Although Morgan's original work did not focus exclusively on IT, many IS researchers have been inspired by his work (Heiskanen, Newman, & Simila, 2000; Kendall & Kendall, 1993; Oates & Fitzgerald, 2007; Walsham, 1991; Walsham, 1993; Warren & Adman, 1999). Walsham (1993), for instance, makes a projected use of two of Morgan's eight metaphors (culture and political system) as a "way of reading organizations" and understanding information management, particularly the development and implementation of IS strategy.

Another variant of the projectionist method is the utilization of metaphor as some sort of intervention device that can be used by managers and researchers to diagnose existing organizational problems, or alter established ways of thinking (Madsen, 1988; Oates & Fitzgerald, 2007). Madsen (1988) in his study of computerized systems at a Danish library, acknowledged that the "conscious" use of metaphors ("the physical space metaphor", "the communication metaphor" and "the organism metaphor") can be used to breakdown unreflective thinking, as well as establish structured domains suitable for computerization. Oates and Fitzgerald (2007), using Morgan's ready-made eight metaphors, developed a Multi-Metaphor Method (MMM), to be used by developers not only as a "cognitive structuring device", to provide rich insights through which IS development happens, but can also influence its practice and final outcome. Thus known metaphors, through a deliberate choice-making exercise, can be viewed as a strategic tool for manipulating, or indeed radically fashioning, new organizational forms.

Despite the benefits of projectionist accounts for understanding and highlighting certain aspects of IS/IT in organizations, a major concern is that metaphor is posited as being unattached from the human subjects under investigation. Often the focus is to concentrate too strongly on abstraction, rather than on the process of metaphorization – a process that recognizes the role of metaphor in everything we do, and in many cases miss or do not account fully the actual practice of metaphor. Such projectionist thinking has the adverse effect of perceiving metaphor as something which can be applied and managed in predetermined ways.

2.2. Elicited approaches

In contrast to projection, other studies have followed an elicited method, taking more of a bottom-up approach, focusing on identifying metaphors which surface in people's naturally occurring language (Beath & Orlikowski, 1994; Kaarst-Brown & Robey, 1999; Kendall & Kendall, 1993; Ramiller, 2001). Metaphor is something produced by participants, and not given to the researcher. For example, Kendall and Kendall (1993) in examining the language of IS users in 16 different organizations, found the emergence of three metaphors (family, zoo and

jungle), providing vivid cultural insights into IS development practices. Kaarst-Brown and Robey (1999) in their ethnographic study of culture and IT management in two large insurance companies, employed the metaphor of magic as an interpretative lens to generate five archetypes of IT culture: the revered, controlled, demystified, integrated and fearful. The metaphor itself was, in their own words, extracted from “the language of the two organizations” (p.192). These studies can be classified as elicited in that metaphors were not imposed on subjects, but extracted from language.

From an elicited approach, individuals actively draw on conceptual metaphors, perhaps through words or phrases, during their use of language, which can be inherently connected, both consciously and subconsciously, to the way they think, behave and make sense of events. These metaphors are underlying, exist in people’s minds and are often not reflected on by members. Two important characteristics of the elicited approach are a) metaphor is something which has a development; it is not merely pre-existing, but materializes as individuals respond to the world around them and b) metaphor production is rarely the result of free choice; it is to a large extent influenced by the background and circumstances in which it is embedded (Beath & Orlikowski, 1994), such as, internal and external factors, social-cultural conditions, history, the roles and responsibilities of participants, among many other things.

While elicited accounts demonstrate how individuals produce metaphors in discourse, few studies have examined the various metaphors produced by individuals in the context of IS/IT implementation within an educational setting (Jackson, 2013). Analyzing metaphor in relation to the multiple self sees metaphor as something which has a contradictory structure – revealing differing assumptions. Single accounts convey little consideration of the possibility of various realities that may exist, providing only a partial representation.

2.3. Research question

In summary, this study attempts to address the following research question:

1. What are the various types of metaphors elicited from organizational stakeholders in their accounts of IS/IT implementation within a further and higher education setting?

Before attempting to address this question, it is first important to highlight the theoretical approach on which the study is based.

3. Theoretical approach

3.1. Conceptual metaphor theory

Conceptual metaphor theory (CMT), also labeled as cognitive metaphor theory (the “cognitive linguistic view of metaphor”), stems from the field of cognitive linguistics and was popularized in the book *Metaphors We Live By* (Lakoff & Johnson, 1980). CMT represents one of the main, if not the most dominant, theoretical framework in the conceptualization and study of metaphor, and has been applied to many areas of social science. Some areas in which the theory has been applied to, include: psychology, linguistics, philosophy, literature, law, marketing, politics, nursing, music, and management. The theory has been applied less to the study of metaphors in IS research.

Rather than assuming that metaphor is merely figurative ornaments, or fancy linguistic embellishments, restricted to poets or artists for imaginative or decorative purposes, CMT acknowledges that, metaphorical expressions are persistent in everyday language and thought, which reveal the presence of conceptual metaphors. The theory recognizes that metaphors are not dead, but reflect active schemes of metaphorical

thought. CMT works by linking two conceptual domains – conceptual domain A is, or is like, conceptual domain B. The conceptual domain which we are attempting to understand is referred to as the “target” domain, and the conceptual domain from which we deduce metaphorical insights from is referred to as the “source” domain. Take for example the common organizational metaphor “organization is a machine” (Morgan, 1986). The source domain, which is more concrete or physical in nature, would be *machine*, since we use the image of a machine to illustrate the machine like properties of an organization. The target domain represents the conceptual realm which we are attempting to understand through the use of the source domain e.g. *organization*, and tends to be more abstract in nature, mirroring that of the source domain. Metaphorical expressions originate from the terminology of the source domain. Like machines, if organizations are working efficiently we often convey this through expressions such as “running like clockwork”, or “well-oiled machine”, or if organizations are performing poorly we can express this as a “spanner in the works”, or “cogs in wheels”. These related expressions and words, can be grouped by those sharing similar features (or referred to as “lexical sets” by linguistics), which point to, or help reveal, the existence of conceptual metaphors.

Notwithstanding the popularity of CMT, studies (Cameron & Deignan, 2006; Fusaroli & Morgagni, 2013; Gibbs, 2013) have called for increased attempts to move away from traditional, armchair explanations of CMT, where the researcher relies on personal intuition or terms from dictionaries, to provide support for the presence of conceptual metaphors, to account for the metaphors used by individuals in actual empirical discourse. Doing so seems a fruitful analytical quest, particularly in unearthing unidentified metaphorical terminologies, as well as exploring contextual factors.

4. Method

4.1. Research site

As the study was interested primarily in examining depth rather than breadth, one organization was chosen for this investigation. The organization selected was a further and higher educational college in operation for more than 100 years and based in the United Kingdom. The name of the college and the names of some respondents have been disguised to conceal the identity of the institution. Student enrollment during 2011/2012 was around 9,000, and the college employed approximately 230 full-time and part-time staff. Entry was gained by use of a gatekeeper—a person who works in the organization and was known to the researcher (Brewer, 2000). Nevertheless, senior managers within the company supported the research study.

4.2. Methodology

For this investigation, 30 in-depth interviews with 24 participants were conducted with staff at the college, consisting of full-time staff directly involved in IS/IT implementation, up to August 2012. Some participants were interviewed twice to clarify responses or follow up on any outstanding research issues. Maximum variation sampling was used and involved purposefully selecting a number of participants from different levels and departments to obtain a range of views. Commonality across interviews was achieved by using standard interview questions. Organizing the data around standard research questions allowed for improved effectiveness in extracting similarities and differences, as well as highlighting patterns and themes within and across participants (Yin, 2002). The questions were designed to elicit general information about their views and opinions of IT/IS implementation practices. Each participant was asked 8 broad questions relating to types of IT/IS introduced; why it was initiated; success of the IT/IS implementation; management approach; groups and individuals involved; opposition and resistance faced; benefits of the IT/IS; and planned outcomes of IT/IS. Each interview lasted for approximately one to one and a half hours and were semi-structured in nature to allow for emergent themes to develop. However, it must be stressed that no attempt was made to enforce any type of metaphor on participants, and none of the participants was aware that a study of metaphor was part of the

investigation. Background information was also gathered about each of the participants, including, position, role, length of time spent in organization etc. A voice recorder was used to record each interview with the interviewee's permission. Moreover, in this context, implementation broadly refers to when the IS/IT application is made available for use in the organization, and when organizational members are informed of and trained in both the IS/IT and new procedures (Cooper & Zmud, 1990). Rather than focusing exclusively on any one type of IS/IT, the study focused on general implementation (for example, the implementation of intranet, management information system, virtual learning environment and email systems).

4.3. Data analysis

In relation to the data analysis technique, interviews were transcribed and a process of open coding was conducted independently by two researchers (both native English speakers) for each transcript at the individual level. The rationale for using two researchers was to increase reliability of the research data. Interviews were analyzed using a qualitative content analysis approach. Prior to the coding process, each researcher was briefed on the area of study, and involved discussing definitions, coding schemes and classification rules. Following Schmitt's (2005) definition, a metaphorical term was identified as a) a phrase or word which has meaning outside its literal sense within its context; b) where the literal meaning comes from a cultural or sensoric practice (source domain) and c) is conveyed to another, more abstract domain (target domain). The first level of coding involved examining each transcript word-by-word and identifying metaphorical terms within the text. To preserve the legitimacy of the data the exact words and phrases of the participants were used as labels during the coding process (Creswell, 2002). Similar to other approaches, such as those taken by Oates and Fitzgerald (2007) and Walsham (1991; 1993), a multi-metaphor approach was adopted, acknowledging that participants draw on numerous metaphors and that a single metaphor study may be limited because it illuminates particular features while concealing others.

During the analysis process both a deductive and inductive approach was used. Following the advice of Schmitt (2005), an unsystematic, broad-based collection of background metaphors were used, which involved searching the IS literature for metaphorical conceptualizations (table 1). While this list is not definite, it nevertheless proved useful as it acted as a broad frame of reference to ascertain metaphorical concepts relating to the topic area. To keep the process as open as possible, the study did not develop an initial set of words and expressions for each metaphor in table 1. A note of caution, although pre-determined metaphorical categories were used to analyze elicited text, they served only as a preliminary template to help in discovering sensitizing conceptions, and the approach involved searching for novel metaphors and expressions, providing the basis for new codes (Schmitt, 2005). Early on in the coding process, it was initially decided to use the UCREL semantic analysis system (USAS), which automatically assigns each word or expression in the text to a semantic field. Some researchers (Hardie, Koller, Rayson, & Semino, 2007; Koller, Hardie, Rayson, & Semino, 2008) have suggested that the semantic fields proposed by USAS resemble the domains of metaphor theory. However, the use of a computer-based package did not act as a substitute for the interpretative powers of the researcher.

After the coding process was complete, each metaphorical term was copied and placed in a separate column using a spreadsheet, separately for each researcher. Listing each metaphor in a separate column proved useful for ease of sorting, counting and comparison. Based on a similar approach by Trena (2008), a number of categories were also recorded for each term; including, number; location (participant, paragraph and page number); metaphor and surrounding context; contextual domain; term intent (how the speaker intended to use the term); and metaphorical theme. The second level of coding involved grouping similar words and themes together to create broad concepts and categories, and was carried out separately by each researcher. Once first and second level coding was complete, a meeting was organized where the two researchers met to discuss similarities and discrepancies in an open fashion, with the aim of seeking agreement. This was both a difficult and

time consuming task. For instance, although terms, such as, “come a long way”, “quite a way to go”, and “distance to go” may be classified as general constructs relating to distance and travel, it was subjectively decided to group these codes under one inclusive code “journey”. In another case, rather than separating “body” and “illness”, it was decided to include them under one general category. After the final coding classification was agreed by the researchers, rich diagrams were used to represent thematic relationships. The formative check for intra-rater reliability involved going through each individual transcript and deciding if further metaphors or alternatives were found. If any newly identified metaphorical concepts and terms were identified, then each researcher would have to revisit each transcript independently until the metaphorical term was considered sound or rejected.

5. Findings

The analysis revealed a number of dominant metaphors featured in IS literature that participants used, including journey, military, machine, bodily/illness, sports and religion metaphors. The study further found numerous additional metaphors not widely acknowledged within IS literature—nautical, horticultural and child-like metaphors. Table 2 provides a breakdown of participants interviewed, including a summary of the metaphors elicited in their accounts of IS/IT implementation¹.

Table 2. Participant’s interviews, and summary of elicited metaphors

Interviewee	Sex	Position	Journey	Military	Machine	Bodily/ Illness	Sports	Religion	Nautical	Horticultural	Child- like
George	M	Assistant director	X	X	X			X			
Horace	M	Assistant director	X	X				X	X		X
Mark	M	Careers advisor		X	X	X					
John	M	Head of school (engineering/construction)	X	X				X	X		X
Maria	F	Tutor (health and social care)	X			X	X	X		X	
Ann	F	Tutor (academic studies)			X			X	X		
Ian	M	Assistant director	X	X	X	X	X			X	
Alison	F	Tutor (academic studies)				X		X	X		X
Daniel	M	Tutor (engineering/construction)	X	X					X	X	
Dorothy	F	Tutor (business studies/ICT)	X				X		X		
Philip	M	Management information systems (MIS) manager	X		X	X	X			X	X
Matt	M	Tutor (art)		X		X		X		X	
Justin	M	Tutor (engineering)	X				X		X	X	
Andrew	M	Head of school (academic studies)		X		X	X				
Jean	F	Tutor (art)				X					
Simon	M	Tutor (health and social care)	X	X	X				X		
Kate	F	Tutor (business studies/ICT)		X			X		X	X	
Brian	M	Head of school (health and social care)	X	X		X		X			X
Pauline	F	Tutor (art)			X		X				
Lisa	F	Tutor (business studies/ICT)	X	X		X			X	X	
Margaret	F	Secretary					X				X
Pamela	F	Tutor (academic studies)	X	X		X					
Louise	F	Tutor (health and social care)	X			X		X	X		X
Michael	M	IT technician	X	X	X					X	
TOTAL			15	14	8	12	9	9	11	9	7

¹ Not all respondent quotes for each metaphor are listed in the findings section. Therefore, the total count for each metaphor may be higher in the table than in the findings section.

5.1. Journey metaphor

Fifteen of the 24 participants used expressions relating to journey, which illustrate several essential features associated with IS/IT implementation: distance covered; speed of travel; obstacles encountered along the way and uncertainty about the direction to take.

Although respondents acknowledged they have, or at least seemed to have, covered considerable distances in terms of IS/IT, many felt they still have a great deal of distance to cover.

Horace, for instance, commented:

We have introduced an intranet, so if you stand and look back we have come a long way, but we have quite a way to go.

Similarly, Ian, in discussing the implementation of the Virtual Learning Environment (VLE), a system for delivering learning content via the Internet, shared:

I mean, we are not using the VLE the way we want it to be used. We still have road to cover. Perhaps this is part of the learning curve that we have got to get through to get to that stage.

Combining elements of distance and speed, Justin illustrated the long journey ahead:

Unfortunately, not everybody has all the technology in place, so it is a case of sharing, so it is coming along but there is a distance to go yet.

Others further echoed concerns associated with speed of travel and linked this to obstacles faced along the journey.

Philip, outlining problems with existing systems and the VLE in particular (such as, poor connectivity, regular crashing and problems with the external vendor), showed how these problems can bring IS/IT use, like a journey, to an abrupt stop:

[Referring to the VLE] *When there is problems with the system or whatever it slows down to a halt.*

Dorothy, in a related manner, illustrated the frustrations associated with IS/IT, particularly the inability of those responsible for implementing it to foresee the potential challenges faced along the way.

They can maybe see the initial benefits of it, but they can't see some of the problems which they might face down the road.

In addition, metaphorical expressions of journey illustrate how not everyone wants to follow the same route and that there is confusion regarding the route being followed.

Daniel, in mentioning that not all members want to go down the technology route, comments: "*Management need [sic] to encourage them to go down that route.*"

John, due to lack of communication and direction, was unclear why he is going or needs to go down the technology route.

I am not sure why we're going down the route here of using this technology.

5.2. Military metaphor

Military terminologies (of relating to soldiers, arms or war) were used by 14 of 24 participants in their accounts of IS/IT implementation. Four respondents, in a metaphorical sense, referred to the term “battle.” Daniel used the term to illustrate the hostility users (teachers) often experienced when attempting to introduce new systems.

People are happy with what they are doing, so when something new is introduced, it's a bit of a battle to get things pushed through.

Concerned that soldiers (users) would leave the battle field as a result of having too much to cope with, Andrew worried that there would be few soldiers left on the ground to fight the ongoing conflict: “*If people leaves [sic] or whatever, then there is no one to run the battle.*”

War veterans (members of staff who have provided long service to the organization and have witnessed many battles first hand) felt adapting to IS/IT a labor-intensive and complex process.

Brian, for instance, who had been with the organization for over 25 years, found it difficult to integrate technology into his normal work practices and routines:

If you take someone with my length of service, technology has come in recent years and all of a sudden, it is banged in.

Over the years, veterans had seen many comrades come and go, and leaders rise and fall, and were skeptical of new manifestos. Many of the war veterans, instead of adopting new IS/IT regimes, embraced an attitude that mirrored the old (traditional) framework of strategy and tactics:

Many of the old hands that were coming up to retirement age didn't do it... They were getting out within a couple of years... They didn't bother doing anything... Well, they just opted out of it. (Lisa)

Military terminology further conveys the formality and directness of communication surrounding implementation practices.

Matt drew on the expression “rank and file” (a military term that denotes the recruited personnel of an armed force) to illustrate how teachers feel like enlisted troops, symbolizing the status differences between higher and lower levels:

The rank and file teachers on the ground, we are lucky to hear about things.

Pamela discussed how communication surrounding IS/IT is perceived as a one-sided activity and illustrated how the role of lower-ranked staff (like soldiers) is merely to follow orders from the top:

A lot of decisions are made by senior management, and staff on the ground just have to follow suit.

In referring to communication, George and Simon used the term “fire” (in the sense of using a gun or weapon to propel a bullet), to exemplify the harshness and suddenness of communication between higher and lower levels.

George, an assistant director, referring to how IT initiatives are shared with staff, commented:

If I am sending out a memo, I would just fire it out to all the staff.

Interestingly, from the perspective of Simon (a tutor), staff on the ground adopted similar lines of communication:

He [referring to another member of staff] was bringing up questions that even the IT manager couldn't answer... He was firing stuff up and he [IT manager] said, 'I don't have the answer.'

Ian, talking about how staff members at lower levels have limited authority and how this can inhibit their ability to adapt to changing conditions, attributed it to problems with the organization's "long chain of command." In a military context, the term "chain of command" demonstrates how orders are transferred down the chain from higher-ranking soldiers (directors, managers) to lower-ranked personnel (teachers, administrative staff).

We have a long chain of command, and I keep saying we are not a huge organization. What we do now is not quite different from what we did 20 years ago, so we do not need this breadth and depth of management.

Like casualties of war, participants used military connotations to refer to the ugly downside of IS/IT. John, for example, illustrated how the lack of staff autonomy in initiatives often led to low levels of innovation:

People are caught up in technology and they are maybe cynical about it. We had a meeting where Alan [Director] was called to our school. People came up with brilliant ideas, including an online counselling service and it was backed up by research, but that was just shot down dead in the meeting.

Mark, in discussing that the user champions (staff assigned to assist other colleagues with IS/IT issues and concerns) could do more in terms of IT support, mentioned that, like an informer, he might be punished for making this information known:

I think they could be more proactive - I'll probably get shot for that.

Referring to the adoption of an email system, Kate felt overwhelmed by the intensity of the emails received, putting the problem down to a lack of effective protocol:

All of a sudden, through email you have people saying do more work on top of one thing after another thing. Email can be abrasive and that person might be bombed down, and it's causing interpersonal problems... It's down to no protocol.

Like the preparation of soldiers for the performance of their duties, Michael, talking about the implementation of the VLE, illustrated that although managers provided the technicalities to engage in battle, they often failed to nurture softer values due to militaristic virtues:

In fairness they [referring to management] provided the required drill, but outside of that, what they don't do is get to the human factor, and that I think is where the problem lies.

5.3. Machine metaphor

Eight of the 24 participants drew on the metaphorical language of machines. The most overused term relating to machine is "bolt." Mark used the word to liken how extra IS/IT support systems or software features often simply are added on without much thought or deliberation, like an object connected to the outside of a machine without much overhaul: "It is often the case that MIS is seen as something bolted on here."

George drew on the term "bolt" to illuminate the problems and difficulties adding on systems can have for the organization:

[Referring to an existing system to support personnel] *We got another system to bolt onto that, and instantly personnel and finance couldn't talk to each other as computer systems. Then, it was decided it was not doing all we wanted it to do, and we headed towards this new system.*

A common sentiment shared by participants was that the planning and implementation of IS/IT was comparable to building poorly designed machines. Frequently, poor planning and implementation led to the incapacity of the organization to introduce machines and systems that do exactly what they want them to do.

Ian, for example, commented:

[Talking about a past implementation experience] *It died out because we didn't get into the actual nuts and bolts of getting it implemented.*

In referring to the lack of provision and availability of resources (such as equipment, support staff, hardware and software), Ann drew on the expression “pumped-in” to illustrate that, like the rapid and repeated flow of a gas or substance, there is a need for continued investment in and support for technology:

More resources need to be pumped in there; there are not enough resources on the ground.

In detailing the opposition faced by users when implementing IS/IT, Simon acknowledged the problems encountered when attempting to bring about conducive change:

There is usually great IT resistance, and if people aren't willing, then it's very hard to manufacture any change out of it at all.

The conceptual machine metaphor further reflects the difficulties arising because of frequent glitches experienced when using ICT. Philip compared recurrent snags encountered with the VLE, which evoked a lack of interest and nonchalance among staff, to shutting off a machine by turning a control:

People were sitting there waiting 20 minutes on a document to download, and that just turned off people completely.

5.4. Bodily/illness metaphor

Of the 24 participants, 12 used metaphors related to body parts (including body features, functioning and ailments).

Philip drew on the word “heart” to demonstrate that he would like to see computerized systems, referring to MIS in particular, playing a central role in the operations of the college, like the heart playing a vital part in bodily functioning:

We have employed an MIS manager. One of the things is to have a visible MIS system that is highly responsive, that is used across the college...We are trying to get it into the heart of the college.

Jean, revealing the somewhat obtrusive nature of technology (implying that there is no way of getting away from it), commented:

Some people make use of it [referring to IT], either on a personal basis or trying to incorporate it into their lessons as such. Sometimes there is no way of getting away from it because it's looking you in the face.

A common concern expressed by participants was the need for more support and guidance from those responsible for IS/IT implementation.

Ian, for instance, in the context of IT, felt that “*they* [management] *need to keep more of an eye in what is happening.*”

Mark had a similar view although he referred to a different body part (shoulder): “*I don’t think they [referring to management] are proactive enough. Maybe tapping people on the shoulder and saying, ‘Mark, this would be useful for you....’*”

Bodily metaphors are used to illustrate how systems can be introduced in ways concerned chiefly with one’s own personal gain or the pursuit of hidden agendas.

Matt, for example, used the term “back” to illustrate how technology can be introduced in ways to protect oneself from blame or criticism:

Management are keen to get going with technology here because we’re taking this idea and pushing it and they’re keen to cover their backs.

Lisa, drawing on the term “backbone,” acknowledged that although on the surface staff may express an interest in IT, deep down there is some hostility towards it:

It’s probably just an act that they appear to be all into this technology, but at the backbone of it, they are not.

In addition, references to bodily features were used to express the pain and discomfort associated with IS/IT use.

Brian, a head of school, showed the frustration of using email by combining a bodily feature (hand) with illness:

All day, every day, I’m sick of looking at email. I am getting too many emails. It’s getting out of hand.

Pamela, referred to the decolorization of skin (face), to express anger in relation to the problems associated with the use of the VLE:

The changes just seem to come and they are not really monitored afterwards, like the VLE. I would be red in the face if I told you what I thought about it and I have been persevering with it. It has given me so much problems, and there is nobody particularly interested.

Alison compared the difficulties typically encountered when learning new technology with “*hitting her head against a brick wall.*”

Louise, talking about the irritation caused by introducing initiatives (referring to the recent implementation of online registers), stated:

That would have rubbed a few people’s noses up which would have added to the resistance. It could have been introduced in a better manner.

Andrew, in his annotation of IT training sessions, referred to these sessions as a somewhat “painful” exercise:

I think it is rushed... I think time is a problem, I think it is a big problem. You just don’t have the time—we have too much on with all that we are doing... Very often it’s a response to we have to get this course for teachers to do on one of the staff development days... They are put off and its seen as too much of a painful exercise to actually incorporate it.

5.5. Sports metaphor

Nine of the 24 participants used descriptions of sport in their words and expressions. Although football terms may be used as devices to exemplify persuasion and motivation, there was a proclivity toward overtly militaristic use in this case.

Kate and Pauline used the word “tackle,” the act of attempting to gain the ball while it is in the possession of an opponent, to exemplify forms of communication between management and staff. For example, Kate, in outlining a story about a colleague who had a concern, shared:

He went straight to the boss and he tackled him about ICT in schemes of work.

Pauline used the term in a similar way to illustrate the approach often used by managers to bolster staff support for using technology in their normal work practices:

[Referring to teachers] It goes back to the idea of tackling them and saying, ‘Look, this technology is important,’ and eventually they will hopefully get round to doing it.

Maria referred to management as being “[in] a league of their own.” In sports terminology this expression describes a group or team who perform significantly better than others, but in this context it implies feelings that management are far removed from other factions:

Management make their own decisions; they are a league of their own basically. They make the decisions and we just follow in behind them.

Moreover, respondents drew parallels between keeping up with the pace of learning about technology and using a treadmill. Andrew found keeping up with learning about new IT exhausting:

We are sometimes given it [referring to IT] and we sort of have to keep on the treadmill.

Dorothy, in discussing how only small pockets of individuals used electronic registers and their use was not institutionalized, noted how the registers haven’t ‘kicked off’ yet’. Whereas kick-off in sports assumes the starting or resuming of a match by a player kicking a ball from the center position, the term has a dual meaning in this case—the implementation of registers isn’t fully underway yet, but also when they are introduced it will lead to some form of ‘kick-off’ (argument and anger).

Justin, who had been employed by the college for over 20 years, illustrated how using technology represents a whole new “ball game”—a completely different situation, one which he felt is difficult and knew very little about:

I think it depends a lot on the individual’s competency in using technology. People in the old ball game you usually find are reluctant are those who don’t feel confident in the use of it. I don’t think I can use that in my area.

5.6. Religious metaphor

The relatively bounded system of religious symbols, beliefs and practices was echoed in nine of 24 participants’ accounts of IS/IT.

Matt stressed the need for a vigorous campaign of religious change, particularly among leaders at the top, when implementing IT:

I just feel that management are [sic] going through the motions when they say we have to do this. It’s almost as if I’m wanting them to be like a religious crusade: persuade us, demonstrate to us, show us, show us the advantages! I think you could win more people around if you done it that way.

In a similar manner, John related adherence to a particular religion when discussing his feelings that things must run well at the management level to implement initiatives successfully:

I'm a firm believer that things have to run smoothly at the top, but management don't [sic] realize the amount of time that it takes to get [IT] systems up and running.

Furthermore, religious expressions were used to describe sentiments surrounding training sessions. Alison, for example, regarded training sessions as a place considered in numerous faiths as a spiritual realm of pain and discomfort:

Often [in] these training sessions you discover that some [referring to fellow teachers] are pretty cynical, thinking this is another chore they are giving us. You start to realize it must be hell for these computer teachers who are giving us these sessions.

Horace used the term "soul" (also referred to as the invisible heart), a concept in philosophy and religion, and believed to be located at the center of the physical body, to illustrate how the highly bureaucratic nature of the college can discourage people from using IT:

To be quite honest, our system is administrative, to an unbelievably extent that taxes the very soul of people and that's the reason why a lot of IT initiatives don't get a lot of support.

Demonstrating how lower-ranked staff members typically perceive management during meetings and events, George, an assistant director, drew on the word "preaching," a religious term referring to the delivery of a sermon, to elucidate how members of staff of a lower rank would perceive his talk in an obtrusive or tedious way:

If I started preaching about getting technology used within the classroom, they [referring to teachers] would say, 'Well, he doesn't understand technology because he hasn't used or taught the technology. He is a bureaucrat, he is an administrator, he is a top-down manager, and, therefore, he doesn't really understand what is happening within the classroom.'

Faith can be defined as confidence or trust in an object, deity or view, as well as in religious doctrines. Maria used the term to illustrate how some teaching staff members, particularly more senior members, lack confidence in using IS/IT:

[Referring to members of the Academic Studies School] *They don't actually have the faith. They lack confidence.*

Louise, used the term "devil," believed in many religions to be a supernatural force that is the personalization of evil, to exemplify fear espoused by more senior members in coming to terms with computerized systems:

Here people are coming in 60 years of age to learn how to put on a computer and it scares the devil out of them... For staff within the college who don't use computers at all, that can be frightening for them.

5.7. Nautical metaphor

Eleven of 24 respondents drew on nautical terms (relating to navigation on a body of water, shipping or characteristics of the sea) in their accounts. Nautical terms are used mostly to describe the negative emotions, feelings and attitudes of participants surrounding IS/IT training sessions.

Dorothy, referring to the lack of training provided compared to the amount needed, commented:

You just can't have one drop in the ocean training and that's it.

In describing the typical atmosphere at sessions and meetings, Kate noted:

Most people would sit in silence. There would be a few people who would raise queries but the rest would sit there and let it float over them if possible.

Justin raised concerns over the scale and frequency of training provided:

I suppose management provide what they think to be a reasonable amount of training, but it doesn't happen on a regular enough basis for that information to sink in.

While above the water's surface users may appear to be comfortable with IT initiatives, looking below the surface reveals another story.

People will show an interest on the surface, but when you dive that bit deeper, you find they are not adopting it, they are not moving forward. (Daniel)

In addition, respondents used metaphorical language to illustrate how aspects of IS/IT were not regularly communicated to staff.

Simon used the word "adrift" to exemplify how, when it comes to sharing the goals of IT, he did not receive much guidance (anchorage) from management:

You are not usually kept reasonably adrift of what is happening and the way the changes are going to take place over time. Even the information which we would receive through email, and from management, it doesn't really keep us updated of things happening in the future.

John took a similar position and laughingly stated that "when it comes to [learning about] computers, you sort of paddle in your own canoe in a lot of cases." While this expression can be interpreted as someone who is independent in the sense that he or she needs little direction or help from others, in this case, the expression refers to or implies feeling stranded, particularly because of a lack of top-down support and direction.

Because of a number of ongoing change initiatives, Lisa felt that other changes were "drowning" her and others' ability to use technology:

The noise from those other changes are drowning the changes in the technology, so technology may not be as high on people's awareness.

Moreover, nautical expressions revealed the problems and challenges in using IS. Alison, referring to problems with the VLE, stated that it was not "[plain] sailing" at the moment:

The VLE at the moment is not sailing... there are problems with the system itself.

5.8. Horticultural metaphor

Horticultural expressions (those dealing with flowers, vegetables and cultivating land), were mentioned by nine of the 24 participants. Maria used the expression "grass roots level" to denote how ordinary staff, implying those occupying a lower position and being distinct from the active leadership of the organization, rarely had an input into decisions surrounding IT:

The ones on the grass roots level basically don't have a say in what's happening about technology.

Matt used the term "pestiferous" to describe the emotions and reactions of staff during IT training sessions. While in plant terminology this term is often associated with harboring infection and disease, for example, pestiferous

weeds or pestiferous bugs, in this context, it translates, in the humorous sense, to something constituting a nuisance, or annoyance:

Staff would be quite pestiferous in training sessions without doubt.

Philip, referring to the inability to understand what is important due to the high-level detail of IS/IT plans and objectives, noted:

If you take our college development plan, we have too many objectives—it is difficult to see the wood for the trees.

Similarly, Kate used the term “bogged down” to compare management’s occupation with too many things simultaneously, which leads to the situation where initiatives often ends up going nowhere, to becoming stuck in mud or wet ground:

It’s just either they [referring to management] get bogged down with everything else that the technological things just don’t seem to go or the essential ones are not met.

Ian, drawing on two related expressions (“embryonic” and “future seeds”) in the same sentence, referred to how IT is still very much in the early stages of growth and maturity. In botany, the embryo (seed plant) is the part of a seed consisting of precursor tissues for the root, stem and leaves. During the process of germination, the embryo begins to grow out from the seed to form a seedling. Although the notion of future seeds denotes early stages of growth, it also implies the need to sow the seed or, in this case, the need to spread the message about the potential benefit of IT:

IT needs to be on the agenda more... The embryonic potential or the future seeds need to be disseminated in the organization. We need to have a system which makes this happen.

Likewise, Justin felt that IS is still growing and has quite a way to go before fully blossoming:

We are getting more and more, but there is still a long way to go, but it’s growing.

While metaphorical language conveys the need for IS/IT growth and expansion, reference was made to the notion that ideas do not develop or grow in a vigorous and healthy way, especially because of the organization’s hierarchical and mechanistic environment:

Ideas [about how to improve IT implementation] don’t flourish because staff have come to the point where they would accept being told what to do. (Lisa)

5.9. Child-type metaphor

Child-type terminologies illustrate the child-like behaviors and emotions surrounding IS/IT; seven of the 24 participants used them.

John stated that, like a very young child or baby, IT is in the early stages of growth and maturity:

We are in the infant stages here really—the interaction between staff and IT is fairly low.

Brian, despite outlining the benefits of playtime (a term which allows children free or unstructured time to follow their own ideas and interests), acknowledged that members of staff, similar to children, were not allowed to play on their own terms. Consequently, he felt that the absence of playtime associated with IT leads to a range of educational, mental and physical benefits, which free play affords, being absent:

People need playtime with new technology before it can be introduced at a working level, and they don't have that time.

Alison drew on the concept of punishment to illustrate how management (parents), hold her accountable, like a child, for her own behavior and actions. In addition, the idea that some people put the effort in, whereas others do not, highlights child-like behavior when it comes to learning and using technology:

Some might think that we are being punished like a child because we have to spend our time to learn technology, while others are just going home.

Referring to the education authority, which funds and promotes teaching in further education institutions, in terms of parents, Horace indicated how he needed to listen to them (like a child), as they were the ones keeping watch over activities to ensure that the college is utilizing its time and energy efficiently:

We have met the requirements of our parents, we have put the technology in place... you [referring to the education authority] have asked us to do.

In discussing initiatives championed by certain staff members internally, Philip mentioned such developments as "babies," something these individuals pampered or were overprotective toward:

You could argue that there has [sic] been bits and pieces of innovation. The timetabling system was Samuel's baby and it worked, and he could see the benefit of it, but take Samuel out and it collapses.

6. Discussion

This study set out to investigate the various types of metaphors elicited from organizational stakeholders in their accounts of IS/IT implementation within a further and higher education setting. Moving away from a projected approach, the study found multiple metaphorical manifestations, to varying degrees, to be produced by the participants studied. This finding is consistent with a number of studies (El-Sawad, 2005; Kendall & Kendall, 1993; Oates & Fitzgerald, 2007) which acknowledge that individuals typically enact various metaphorical expressions. More specifically, the study revealed a number of existing metaphors supported by, or related to, the findings from other published IS studies. Similar to our study, Kendall and Kendall (1993), for instance, found the existence of *journey* and *machine* metaphors. Like a journey associated with sea voyage, which displays characteristics of uncertainty and adventure, they found that so too were aspects of software prototyping. Additionally, their study revealed how computer-aided software engineering (CASE) tools, used to design and implement applications, which typically followed a structured methodology, to resemble the workings of a machine. However, both metaphors revealed a different, negative situation in terms of the college studied. The journey metaphor revealed how IS/IT implementation was still far from complete, the slowness of the pace, as well as confusion in relation to which IT route should be followed. This was echoed in the fact that the college, similar to other educational studies (Allen, 2003; Dearlove, 1999; Pretorius, 2010) is notoriously slow in adopting to changing processes and procedures, as well as suffering from poor change management practices. While the machine metaphor is largely portrayed in Kendall and Kendall's (1993) study as displaying features of precision, consistency and efficiency, in our study, the concept of machine is used in a more defective sense, stemming from interoperability issues, resource constraints, as well as poor reliability of technology.

Similar to previous research (for example, Hirschheim & Newman, 1991; Jackson, 2011; Kendall & Kendall, 1993), the investigation also found the pervasiveness of *military* metaphors in peoples practice of

speech. Interestingly, many studies who use military terminology, or language related to war, use it to portray the conflicts associated with computerized systems. Hirschheim and Newman (1991) show how military metaphorical terms were rife in users and developers accounts of systems development practices, for instance, revealing how “heavy artillery” needed to be brought in when dealing with resistant managers. In a related fashion, in the case of the college, the military metaphors espoused by individuals visualizes resistance between managers and teachers, as well as formalization of ranks (high power distance between higher and lower ranks).

The study also found evidence of *bodily* metaphors. While existing IS studies (Heiskanen, Newman, & Simila, 2000; Sarker and Lee, 1999; Walsham, 1991; Warren & Adman, 1999) have revealed the existence of bodily metaphors, drawing particularly on Morgan’s (1980) brain metaphor (Heiskanen, Newman, & Simila, 2000; Walsham, 1991; Warren & Adman, 1999), this study revealed a diverse range of body parts that play important roles in this category, such as the heart, face, eye, backbone, neck and nose. These body parts were often portrayed in light of symptoms and illness, revealing the problematic nature of IS/IT implementation practices.

Akin to Beath and Orlikowski’s (1994) study examining the contradictory structure of systems development methodology, *sports* and *religion* metaphors were also found. Beath and Orlikowski (1994) in their account of sports, reveals how, users like players in a game, have defined roles and game plans, and abide by the rules of the game. They also acknowledge how IT roles constitutes a form of religion, where system analysts are like priests (maintain authority), system development methodologies are like “scriptures” and users listen dutifully and accepts the doctrines of analysts without intervention. However, our analysis reveals a more destructive sense of both metaphors, the aggressive nature of the games metaphor, as well as a form of religious doctrine associated with discomfort.

The results of our study also uncover the presence of novel metaphors in people’s accounts not widely acknowledged within IS literature, namely *nautical*, *horticultural* and *child-like* metaphors. Again, these metaphors, like the existing metaphors found, were used by participants to describe the negative attitudes—problems encountered during training sessions, lack of user involvement, low IS/IT maturity, poor change management approach, technical-related issues, as well as time/workload constraints.

7. Concluding remarks

It is widely acknowledged in IS literature that besides the technical aspects, behavioral factors play a key role in influencing the failure and success of IS/IT implementation projects (Jackson, 2011). This paper acknowledges that one interesting way of understanding the cognitive aspects is to appeal to the notion of metaphor. Metaphor portrays the paradoxical nature of IS in organizations, taps into the subconscious mind, and offers the ability to make sense of a complex world in simpler terms. The study has endeavored to present evidence from the literature, as well as our empirical findings, to demonstrate that metaphor is an important area of IS research.

This study contributes to our understanding of IS metaphor in a number of ways. First, while the projected approach tends to be the most popular method for analyzing IS metaphor, concerns arise with its treatment of metaphor as being detached from the subjects under investigation. The study proposes that an elicited approach to metaphor, by going directly to the language of stakeholders, offers a more penetrating account, by unearthing of contentious, hidden and contradictory aspects of IS/IT.

Second, the study not only reconfirms a number of conceptual metaphors that feature in existing IS literature to be drawn on by participants (journey, military, machine, bodily/illness, sports and religion), but the current understanding of metaphor has been extended, by incorporating additional metaphors (nautical,

horticultural and child-like metaphors) not widely acknowledged within the IS field.

Third, despite the study of metaphor being eclectic in nature, as illustrated by the diversity of areas which the concept has been applied to, much research has focused on the area IS design and development, with the area of IS/IT implementation not receiving much attention in the literature. This study has shown the power and usefulness of metaphor in describing and explaining the behavior of various stakeholders surrounding IT/IS implementation practices.

Fourth, another contribution of this study is the use of a theoretical framework to the study of IS metaphor. Lack of attention has been given by researchers in studying the usefulness of theoretical frameworks developed by cognitive linguistics in studying and analyzing IS metaphor. This is surprising given that the study of metaphor has its foundations in cognitive linguistics. This study highlights that significant understandings can be added by taking a CMT approach on IS phenomena. An important theoretical point raised in this study is that metaphorical expressions are persistent in everyday language and thought. These expressions can reveal the presence of conceptual metaphors, and can act, or at least have the potential to act, as powerful interpretative devices for unraveling how stakeholders feel, think and act towards IS/IT in organizations.

The study raises a number of practical implications. As new breeds of computerized systems, for instance, social media, pervasive video, assistive technology, become increasingly adopted by organizations, their effects and consequences should not simply be ignored. It is important for managers and practitioners to be aware of the emergence of pluralistic and opposing metaphorical narratives, and not to forego or ignore them, however irrational they may appear. Managers and practitioners could consider using tools for metaphorical analysis (for example, computer semantic annotation tools), as well as the metaphors found in our study, and other metaphors, to gain rich insight into implementation practices.

The limitations of the study must be recognized. Metaphorical analysis has been applied to one organization only, and it cannot be claimed that the findings and implications of the study are generalizable to different organizations. Moreover, the study was largely retrospective in nature, whereby respondents were asked to recall past and current events about IS/IT. Perhaps a more fertile approach would have been to distinguish if types of metaphors, or interpretations of metaphors, varied across time and space.

Further studies should be conducted to understand if the metaphors elicited from stakeholders accounts of IS/IT as revealed in this study are found in other studies. What propels individuals or particular groups of individuals into certain modes of metaphorical thinking? How do individuals change their use of metaphors over time and what causes these changes? Do any metaphors feature more predominately than others? Are there particular contexts or certain types of IS/IT in which configurations of metaphors are likely to adapt/change? Studies should also further examine how contextual factors influence metaphor production.

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