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Exploring the Use and Adoption of Workplace Automation through Metaphors: A Discourse Dynamics Analysis

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Abstract:

Organizational metaphors represent an important study area in the information systems (IS) field. In this paper, I review previous work on organizational metaphors in IS research and build on this work by proposing a discourse dynamics approach to metaphors as an alternative lens for conceptualizing and studying IS metaphors. With this approach, one can recast organizational metaphors from something that researchers commonly perceive as detached from the subjects they investigate—a view fixed in much IS thinking—to something that results from both language and the mind, that has a situational nature, and that individuals can deploy in flexible and dynamic ways. Drawing on in-depth focus group studies, I illustrate the discourse dynamics approach via analyzing metaphors that individuals made in describing workplace automation. With this study, I not only raise new questions in relation to theorizing about and analyzing organizational metaphors in IS research but also illustrate metaphors' usefulness as a form of sense making to generate fresh insights into the implications that arise from adopting and using workplace automation that remain unnoticed if one used more conventional methods.

Keywords: Organizational Metaphors, Discourse Dynamics Approach, Focus Group Study, Workplace Automation.

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1 Introduction

Researchers have considerable interest in investigating organizational metaphors in the IS field as the scholarly work devoted to them over the last several decades evidences. Rather than simply viewing organizational metaphors as a fancy linguistic embellishment, researchers have acknowledged that metaphors: 1) offer a basis for clarifying IS aspects that may often go unnoticed in more conventional approaches and methods (Chua & Wareham, 2008; Drummond & Hodgson, 2003; Kendall & Kendall, 1993, 1994); 2) enable different ways of thinking, such as seeing a familiar topic or problem in a distinctive or new way (Arnold, 2003; Kaarst-Brown & Robey, 1999; Kendall & Kendall, 1994; Ramiller, 2001); and 3) illuminate how humans construct meaning while also revealing individuals' complexities and sense-making practices in IS projects (Hekkala, Stein & Rossi, 2018).

Despite the importance of IS metaphor research, researchers continue to adopt what one can refer to as a "metaphor-taking" approach as their dominant analytics lens whereby they use a pre-established metaphor (or several metaphors) and apply it to a particular phenomenon. Notwithstanding the benefits that a metaphor-taking approach can provide when conjecturing about and emphasizing particular organizational IS/IT features, researchers have a tendency to downplay how individuals actually elicit metaphors in using and producing language ("metaphor-making approach"). Moreover, while a smaller number of studies have adopted a metaphor-making approach, we need more IS research to explore how and why individuals come to establish and reestablish particular metaphors over others and to consider metaphors' dynamic nature (Jackson, 2016). Building on the metaphor-making approach, I put forward the discourse dynamics approach to metaphor and related methodology (Cameron et al., 2009; Larsen-Freeman & Cameron, 2008) as a fresh perspective for conceptualizing, thinking about and understanding metaphor in the IS research context.

In summary, I address the following broad research question in this study:

RQ: How can the discourse dynamics approach help explain metaphor making and particularly IS metaphors' elicited and dynamic nature?

In this study, I acknowledge more specifically that researchers can gain important insights by viewing metaphors from a dynamic perspective since, by doing so, they can recast metaphors from something that they commonly perceive as detached from the subjects they investigate—a view fixed in much IS thinking—to something that results from both language and the mind, that has a situational nature, and that individuals can deploy in flexible and dynamic ways. Drawing on in-depth focus group studies, I illustrate the discourse dynamics approach via analyzing metaphors that individuals made in describing workplace automation. More specifically, given that researchers commonly use focus group studies when adopting the discourse dynamics approach, I draw on various extracts from focus groups that comprise workers from firms in the United Kingdom (UK) across different industry types and sectors to illustrate the approach.

This paper makes several important contributions to the IS literature. First, although organizational researchers have reviewed the metaphor concept (e.g., Cornelissen, Oswick, Christensen & Phillips, 2008), IS researchers have made few attempts to analyze existing work on metaphors. Given that the organizational literature has a rich tradition of examining metaphors and that much IS research has examined and applied metaphors over the years, I feel that this research stream has become mature enough to review, reflect, and build on. Thus, in this paper, I not only review IS metaphors to date but also propose suggestions for advancing our knowledge about metaphors in the IS field. Second, I offer new theoretical and methodological insights by adopting a discourse dynamics approach from applied linguistics to studying IS phenomenon—a theoretical and methodological line of enquiry that has received less consideration in the management and IS literatures. Third, moving beyond treating metaphors as disembodied and fixed, I adopt what one can refer to as a dialogical view of metaphors in which they have a dynamic and relational nature and, in many cases, materialize instantaneously as individuals construct and reconstruct one others' metaphors in a specific language-using situation. Metaphors do not exist in a vacuum; individuals can exhibit flexibility and variety in the metaphors they use as they make sense of phenomena around them. Finally, I identify several conventional metaphors but also and importantly novel metaphorical expressions that individuals use and that the IS literature has not widely considered. Considering these expressions leads to fresh insights into IS practices and opens up new lines of metaphorical inquiry.

This paper proceeds as follows: in Section 2, I review the metaphor concept in the IS literature. In Section 3, I outline the discourse dynamics approach to metaphors. In Section 4, I discuss the research methods that I used to collect, transcribe, identify and analyze the research data. In Section 5, I discuss the study's findings. In Section 6, I discuss the study's implications and limitations and make suggestions for future research. Finally, in Section 7, I conclude the paper.

2 Literature Review

In this section, I examine the literature that relates to studying IS metaphors. I used the following method to find appropriate literature. First, I selected papers related to metaphors from the IS Senior Scholar's basket of eight journals. In addition, I added two highly ranked international journals that I deemed relevant to the study (because they contain many papers that focus on metaphors—particularly in relation to behavioral issues in IS) to the chosen journals. Thus, I reviewed papers from ten journals: *European Journal of Information Systems (EJIS)*, *Information and Organization (I&O)*, *Information Systems Journal (ISJ)*, *Information Systems Research (ISR)*, *Information Technology and People (IT&P)*, *Journal of the Association for Information Systems (JAIS)*, *Journal of Information Technology (JIT)*, *Journal of Management Information Systems (JMIS)*, *Journal of Strategic Information Systems (JSIS)*, and *Management Information Systems Quarterly (MISQ)*.

I limited the search to these ten journals due to the fact that, among other things, I wanted to consider how papers in highly ranked journals have conceptualized and studied metaphors, but I also thought it important to keep the literature review to a manageable size. I accessed each journal via several online databases, such as Business Source Complete, Emerald, ProQuest, Science Direct, and Wiley Online Library. I identified relevant papers that pertained to the study by searching for the word “metaphor” in the title, abstract, or keyword fields. I selected the range where available to from 1980 to 2018. I selected only peer-reviewed academic papers. In total, I identified 68 papers for analysis.

2.1 What are Metaphors?

While I do not focus on exhaustively listing all the ways in which IS research has defined metaphors in this paper, it has commonly conceptualized IS metaphors as a device for seeing something (such as an entity, object, or domain) in relation to something else (Cass & Lauer, 2004; Drummond & Hodgson, 2003; Kendall & Kendall, 1994; Oates & Fitzgerald, 2007; Wells, Fuerst, & Palmer, 2005). Drummond and Hodgson (2003), for instance, refer to a metaphor as a “linguistic device whereby one phenomenon is understood in terms of another” (p. 151). Likewise, Oates and Fitzgerald (2007) define metaphor as a way of “think(ing) about an entity as if it were a different entity” (p. 426). These and other definitions commonly view metaphors based on a conceptual view (Lakoff & Johnson, 1980). More specifically, they view metaphors as comprising two conceptual domains (i.e., conceptual domain A is or is like conceptual domain B) (Lakoff & Johnson, 1980). The research that adopts this view typically labels the domain from which one attempts to obtain metaphorical understandings the “source” domain and the domain about which they attempt to gain understanding the “target” domain. Take, for example, the common organizational metaphor “business is war”: war constitutes the source domain, while business constitutes the target domain. Like war, in a figurative sense, business at its essence involves destroying enemy lines, battling for dominance, launching new products, or surviving fire from opponents.

2.2 Areas and Types of IS Metaphor

Although the “business is war” metaphor example relates specifically to an organizational context, from closely examining the literature, I identified many diverse areas that researchers have applied metaphors to in IS research and rich metaphor types. In Table 1, I summarize IS metaphor types grouped by broad research area. IS/IT requirements, design and development features as the most prevalent topic of metaphor research. Other areas include: the IS/IT field, theory, and methods; IS/IT implementation, adoption, and use; IS fraud, security, and privacy; IS transformation, change, and alignment; IS/IT management, strategy, and planning; electronic business, mobile technology, and virtuality; and innovation, knowledge, and open source software.

Table 1. IS Metaphor Types Grouped by Broad Research Area

Area	Metaphor types	Citations
Electronic business, mobile technology, and virtuality	Bits, community, crystallization, *desktop (systems), emancipatory/emancipation, *hospitality, Janus-faces, network, panopticon, platform, prosthesis, *psychic prison, real world, space, *theatre/theatrical, tool, traveling of ideas, virtual (reality)	Aricat (2015), Arnold (2003), Davis, Murphy, Owens, Khazanchi, & Zigurs (2009), Fayard (2006), Leclercq-Vandelannoitte, Isaac, & Kalika (2014), Ling (2000), Marchant & O'Donohoe (2018), Middleton & Cukier (2006), Nielsen, Mathiassen, & Newell (2014), Saccol & Reinhard (2006), Schultze & Orlikowski (2001), Panteli & Duncan (2004), Venkatesh & Windeler (2012)
IS/IT requirements, design, and development	Animal, battle, bible, blueprint, *brains, bricolage, building, care, cat's cradle, clothes, communication device, *cultures, decision, deep structures, *desktop (systems), exercising, *family, fiefdom, *flux and transformation, food, game, *hospitality, illness, *imbrication, improvisation, *instruments of domination, intelligent agent, interface, journey, *jungle, language, literature, *machine, *marketplace, mediation, medication, nature, novel, optical, *organism, paperless office, play, *political systems, *psychic prison, religion, script, society, systems, text, tinkering, *theatre/theatrical, *war, workspace, *zoo	D'Atri (2005), Destounis et al. (2004), Ehn, Mölleryd, & Sjögren (1992), Germonprez, Hovorka, & Collopy (2007), Hekkala et al. (2018), Hirschheim & Newman (1991), Holeman & Barrett (2017), Iivari (2009), Introna (1996), Kendall & Kendall (1993, 1994), Lif, Olsson, & Gulliksen (2001), Oates & Fitzgerald (2007), Smolander, Rossi, & Purao (2008), Truex & Baskerville (1998), Urquhart (1999), Vidgen (1997), Wells et al. (2005), Winthereik, Johannsen, & Strand (2008)
IS/IT field, theory, and methods	*Brains, *cultures, *flux and transformation, *instruments of domination, emergence, *machine, magnetic polarity, *organism, *political systems, *psychic prison, red-light zones, Shakespearean, synechdochic	Alter (2017), Fitzgerald & Howcraft (1998), Galliers (2008), Grover, Gokhale, & Narayanswamy (2009), Seidel & Urquhart (2013), Whitley (2005), Walsham (1991)
Innovation, knowledge, and open source software	A rose by any other name, asset, autopoietic unity, bazaar, canned spinach, commodity, discipline, double dance of agency, Hare Krishnas, jumping on the bandwagon, mind, money on the table, nothing is transplantable, object, *scaffolding, silver bullets, the wheat from the chaff	Couger, Higgins, & McIntyre (1993), Fitzgerald (2006), Martini, Massa, & Testa (2013), Merali (2002), Ramiller (2001), Schultze & Leidner (2002), Swan (2006)
IS/IT transformation, change, and alignment	Clinical, colonial systems, hatchet in the head, *imbrication, low hanging fruit, *machine, magic dragons, mail, material, mechanistic, organic, *organism, photograph, quick hits, speech, wizards	Cass & Lauer (2004), Kaarst-Brown (2017), Jenkin & Chan (2010), Leonardi (2011), Porra, Hirschheim, & Parks (2005), Porra (1999), Sarker & Lee (1999), Sayer (1998)
IS/IT fraud, security, and privacy	Balance, parasitism	Bonner, Chiasson, & Gopal (2009), Chua & Wareham (2008)
IS/IT management, strategy, and planning	An adapting organism, an expression of philosophy, chimpanzees' tea party, city-state, *cultures, expression of economic forces, *imbrication, magic, participant in organized team sports, *political systems, *scaffolding, *war	Drummond & Hodgson (2003), Kaarst-Brown & Robey (1999), Kim, Shin, & Kwon (2012), Mason (1991), Pollock & Williams (2007), Walsham (1993)
IS/IT implementation, adoption, and use	Amusement park, ancient Athenian agora, boundary object domain, club, *desktop (systems), *family, festival, home, *jungle, *marketplace, nightclub, personal computing, playground, pub, *scaffolding, social club, spatial, vacation, *zoo	Daniel, Hartnett, & Meadows (2017), Greenbaum & Madsen (1988), Kaniadakis (2012), Leonard & Higson (2014), Panteli & Marder (2017), Williams & Pollock (2012)

*Indicates overlapping metaphors across research areas.

Organizational theorist Gareth Morgan is one author who has gained considerable attention to date in IS metaphor research (e.g., Jenkin & Chan, 2010; Middleton & Cukier, 2006; Oates & Fitzgerald, 2007; Walsham, 1991, 1993). His original work proposes that management and organization theories build on implicit metaphors (images of organization) that 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 (Morgan, 1986). For instance, drawing on all eight metaphors as an explanatory lens to look at organizations and relate to computer-based IS, Walsham (1991) suggests that future studies should focus less on organismic and mechanistic organizational metaphors. Jenkin and Chan (2010) adopt and contrast two of Morgan's metaphors popular in organizational studies—"organization as machine" and "organization as organism"—to understand information technology (IT) project alignment processes.

2.3 IS Metaphor Approaches

IS research distinguishes between metaphors that they take and apply to the IS phenomena they study (metaphor-taking approach) and metaphors that individuals produce from naturally occurring language (metaphor-making approach). Cornelissen et al. (2008) and Jackson (2016) refer to this distinction in terms of "projected" and "elicited" metaphors, respectively.

2.3.1 Metaphor-taking Approach

In a metaphor-taking approach, researchers take a pre-existing metaphor (or several metaphors) that they did not extract naturally from participants' language and apply it to a particular setting. On the one hand, some researchers (e.g., Drummond & Hodgson, 2003; Walsham, 1991, 1993) choose a metaphor that enables them to theorize and think about a domain in a particular way. Drummond and Hodgson, (2003), for instance, use the metaphor "chimpanzees' tea party" to illustrate the limitations of control-based approaches to IT project management. In their words, they chose this metaphor "because the spectacle of a chimpanzees' tea party resonates the precise opposite of order that is disorder" (p. 153). On the other hand, another body of work (e.g., Couger et al., 1993; Destounis et al., 2004; Ehn et al., 1992; Germonprez et al., 2007; Lif et al., 2001; Oates & Fitzgerald, 2007; Wells et al., 2005) demonstrates how change agents (e.g., practitioners and managers) can purposely deploy metaphors as a strategic tool to fashion new organizational values. Couger et al. (1993) show how a session facilitator deliberately used the "canned spinach" analogy/metaphor as a technique to help a petroleum firm's IS department resolve employee motivational issues in using CASE tools as other methods had proven unsuccessful. Specifically, the facilitator drew on factors related to people's dislike of spinach (such as its appearance, cost, lack of elegance, chewiness, taste), which participants related to their reluctance to use CASE, and provided suggestions to overcome resistance. To overcome the limitations of traditional participatory design processes (such as the fact that they users do not find them exciting and they do not support all user needs), Ehn et al. (1992) show how one may intentionally use "game and play" metaphors as a creative way to introduce the design process to users. Thus, one can harness known metaphors through an intentional choice-making exercise as a device to stimulate learning/problem solving or to change customary forms of thinking and behaving.

2.3.2 Metaphor-making Approach

With a metaphor-making approach, researchers focus on identifying and understanding the actual ways in which participants themselves elicit metaphors when using and producing language rather than on imposing metaphors on them (Fayard, 2006; Hekkala et al., 2018; Hirschheim & Newman, 1991; Kaarst-Brown, 2017; Kaarst-Brown & Robey, 1999; Marchant & O'Donohoe, 2018; Ramiller, 2001; Sarker & Lee, 1998; Sayer, 1998; Smolander et al., 2008). A metaphor-making approach makes three assumptions: 1) that one should not treat metaphors as being largely detached from the human subjects under investigation, 2) that one cannot always determine metaphors from the outset and, thus, that they materialize over time, and 3) that the situational context in which a metaphor exists influences the metaphor. Situational factors, for instance, may include time, history, socio-cultural conditions, and/or other internal/external factors. In an in-depth study of three software-producing firms, Smolander et al. (2008) not only found blueprint, literature, language, and decision metaphors that stakeholders (e.g., designers, architects and managers) drew on to understand software architecture but also acknowledged that metaphors can vary across time and stakeholders. Making room for speakers' feelings and experiences, Hekkala et al. (2018) examined the metaphors that project team members (e.g., user representatives, managers, and software developers) used and found that team members drew on a rich

set of metaphors to illustrate how they understood an IS project over time. More specifically, the authors acknowledged that different metaphors may surface throughout a project that can shape action and its outcomes. These examples illustrate metaphors not as something that researchers pre-arrange but as something that participants make as they draw on metaphorical expressions (e.g., words and phrases) to reflect on, act out, and describe happenings that often occur in their day-to-day experiences.

2.3.3 Gaps in IS Metaphor Approaches

Notwithstanding the importance of IS metaphor research to date, in reviewing the IS literature, I found that 77 percent of the studies I examined adopted the metaphor-taking approach. While metaphor-taking accounts have been insightful in terms of emphasizing and forming conjectures about particular organizational IS/IT features, this thinking often sees metaphors as something that one can apply in determined ways and largely removes the human subjects from the metaphor-enactment process. I found that only 15 percent of studies adopted a metaphor-making approach. The remaining eight percent of papers did not adopt either a metaphor-taking or metaphor-making approach. However, these results do not necessarily suggest that the metaphor-making concept has no relevance to the IS community. Indeed, research has made increasingly more calls (Jackson, 2013, 2016) to more deeply understand metaphors' elicited and dynamic nature. However, we know little about IS metaphors' temporal and continuous nature; how speakers can dynamically activate, reinterpret, and extend metaphors' themselves in new ways; and what influences the direction that metaphors take. Building on the metaphor-making approach, I outline the discourse dynamics approach to metaphors in Section 3. Based on that approach, I introduce a procedure for identifying and analyzing metaphors in Section 4.

3 The Discourse Dynamics Approach to Metaphor

Drawing on complexity theory/dynamic systems theory, which intersects with biology and the physical and social sciences (Cameron, 2007; Cameron et al., 2009), the discourse dynamics approach recognizes metaphors' usefulness as an empirical device to unravel how individuals think about and feel towards phenomena of interest in a dynamic and changing context. Some key concepts associated with this approach include interconnected systems in continual change, inter-connected timescales and levels of activity in systems, the self-organization of systems and the emergence of temporary stabilities in the activity of systems (Cameron et al., 2009). I examine each concept in turn.

3.1 Interconnected Systems in Continual Change

Connectedness in continual change is central to the discourse dynamics approach. A dialogic view of language sees connectedness as implying that one should not treat metaphors (and discourse activity) solely as an individual's property; metaphors come into existence through interacting and interconnected subsystems. While one can perceive particular individuals as subsystems in themselves, one can identify further complex dynamic subsystems in each person as they engage in discourse. The discourse activity (including the metaphorical expressions that speakers produce) can relate to cognitive, physical, social, and cultural elements, and, in many cases, one can view these elements as interconnected subsystems. As individuals take part in the discourse activity, they typically soft-assemble metaphors often due to an extemporized response as they react, diverge, adopt, or build on one another's rejoinders (Cameron & Larsen-Freeman, 2007; Larsen-Freeman & Cameron, 2008). Thus, one cannot think of metaphor as an object or static in nature; rather, it constitutes a dynamic, non-linear, and temporal (suspended) property of collective group action whereby speakers alter and re-alter it as they continue to engage in discourse and interact in heterogeneous ways. In the discourse dynamics approach, one cannot consider context as detached from the system. As speakers continuously react and adjust to a changing context, contextual conditions become the key factor that determines emergent discourse activity (Larsen-Freeman & Cameron, 2008).

3.2 Inter-connected Timescales and Activity Levels in Systems

The activity associated with metaphors in face-to-face conversation occurs across at least two scales; namely, time and social organization. Timescales can vary from milliseconds right through to weeks, months, or years over which some types of discourse activity can accumulate. Social organization level denotes the size of the group that an individual participates in. For instance, a speaker who takes part in a conversation may be part of a dyad, group, and so on right up to the level of the society and speech community (Larsen-Freeman & Cameron, 2008). Timescales and social organization levels do not exist in

isolation; rather, they intertwine. Just like animals that often leave tell-tale footprints that indicate their movements at particular points in their journey, one can see the metaphors that speakers produce as part of a trail that constitutes traces in the overall discourse activity. As individuals engage in conversation, these metaphorical traces can relate to various systems across different social organization levels and timescales (Cameron et al., 2009). Depending on the study, specific timescales and levels may become more central than others.

One can consider different levels and timescales as layered in one another (Larsen-Freeman & Cameron, 2008) and refer to them as “nested” from the micro level (comprising subatomic particles) right up to the macro level (e.g., the whole system). As a way to illustrate nesting, take, for example, Urie Bronfenbrenner’s (1979) ecological model, which divides the environment in which children find themselves into nested and interrelated systems (e.g., a microsystem, mesosystem, exosystem, macrosystem, and a chronosystem). According to the ecological model, children typically become caught up in different systems simultaneously, and each system has the potential to interrelate with and affect the others, which can influence how children develop. Relating this example back to metaphor, one needs to be mindful of the relationships that occur in and between the different timescales and levels at play in order to comprehend a language situation in its entirety.

3.3 Self-organization and the Emergence of Temporary Stabilities

Micro-level alterations and modifications that occur in the dynamics of linguistic metaphors can help self-organized occurrences to move from one timescale or social organization level to another (Cameron et al., 2009). The activities involved in constructing a termite’s nest constitute an example of self-organization/emergence (Larsen-Freeman & Cameron, 2008). While the termites’ collective action to construct a nest exerts an upward influence across timescales and levels, the construction also exerts a downward influence, and changing the nest’s structure can influence termites’ work pattern. To translate this example to studying metaphors: while metaphorical terms may emerge from group talk across levels and timescales and speakers may use (which includes learning and understanding) them, their very use may constrain individuals in relation to how they think about phenomena, generate new ideas, or prompt other metaphors (a new and higher-level activity than before).

While metaphors in discourse continuously fluctuate, they may become agreed on and shared among (stabilized) individuals over time (i.e., they may become stabilized). For instance, as one speaker comes to use a particular metaphorical expression, other speakers may come to accept and use this metaphor (or some understood variation of it), which, in turn, may give rise to stability in relation to the metaphorical term they talk about. One metaphor may take the lead, while others may not come to the forefront. The extent to which certain metaphors come into existence or dominate may owe to the fact that the metaphor holds a greater significance among individuals (perhaps due to shared purpose, identity, or motivation) at a particular point in time. While system dynamics can give rise to stabilities surrounding metaphors, metaphors have the propensity to change and exhibit flexibility to varying degrees depending on the changing context in which individuals use and apply them.

3.4 Rationale for the Approach

Having outlined the discourse dynamics approach and related methodology, one important question remains: why use this approach compared to other discourse methods that IS researchers use? IS research has paid much attention to discourse areas (Alvarez, 2002; Avgerou & Bonina, 2020; Cukier, Ngwenyama, Bauer & Middleton, 2009; Panteli, 2003; Thompson, 2004). Nevertheless, one cannot easily pin down a common definition and approach to analyzing discourse largely due to the fact that research that studies discourse draws on several multidisciplinary areas, such as anthropology, cultural studies, linguistics, psychology, philosophy and sociology. In its broadest sense, discourse analysis deals with investigating (spoken or written) language in relation to its social setting. In the IS literature, two influential theorists who have influenced discourse thinking include Michael Foucault and Jurgen Habermas (Stahl, 2004).

A Foucauldian approach tends to focus on discourse as a societal process. Power and how it delineates and produces knowledge play a central role in Foucault’s work (Foucault, 1971, 1975, 1976). Research that takes a Foucauldian approach focuses on not only discourses’ structure and social aspects but also how and why the language available to people can enable and constrain what they think, say, and do. In *The Archaeology of Knowledge*, Foucault (1969), putting forward an archaeological method, recognizes that rules that operate at the subconscious level and can determine and define the boundaries of

language and thought in a given time or domain condition knowledge. Knowledge does not exist as discrete structures—it emerges and changes as a result of a complex set of institutional and discursive relationships. While, Habermas (like Foucault) has authored much work, most IS research has drawn on his theory of communicative action (Habermas, 1984, 1987). In developing the theory, he focused on understanding and explaining the function and nature of communicative rationality—a form of communicative argumentation that focuses on sustaining and achieving consensus. In order for an ideal speech situation to occur, four key validity claims must exist in a speech act: clarity, legitimacy, sincerity, and truth (Habermas, 1984, 1987). According to Habermas, the ideal speech situation occurs when participants feel motivated to obtain rational consensus based on developing mutual understanding.

While Foucauldian (e.g., Cordoba, 2003; Thompson, 2004; Willcocks, 2006), Habermasian (e.g., Cukier et al., 2009; Hirschheim & Klein, 1994), and other approaches (e.g., Alvarez, 2002; Panteli, 2003) illustrate research's eclectic nature and have influenced discourse thinking, little research has considered metaphors as a factor in IS discourse research, or research has considered it as a peripheral issue. Though not explicitly referring to IS literature, Hart (2008) raise a similar argument in acknowledging that mainstream critical discourse analysis has mainly ignored metaphors. However, one should not perceive such neglect as saying that metaphors offer no value to studies that examine discourse or to IS and organizations in general. Indeed, in putting forward the question “can we represent organizations without metaphorical thinking?”, Cornelissen (2016) responds by answering “hardly” (p. 50).

The previous question also raises another important question: how can the discourse dynamics approach and related methodology potentially help researchers understand IS metaphors? With reference to Section 2.3.3, I propose that the discourse dynamics approach may offer rich insights into the metaphor-making approach to IS metaphors given the limitations in current theories and methodologies. Two key theoretical perspectives that (directly and indirectly) influenced much IS metaphor thinking include conceptual metaphor theory (Lakoff & Johnson, 1980) and organizational metaphor theory (most notably Gareth Morgan's work). As I briefly mention in Section 2.1, conceptual metaphor theory examines metaphors based on how they relate one conceptual domain to another. However, researchers have largely used the theory to focus on metaphors' universality—on how metaphors become constant and shared across individuals (whole speech communities) (Lakoff, 1993). Additionally, researchers using CMT often treat metaphors as static and say less about how contextual factors influence metaphor use (Cameron & Deigan, 2006; Fusaroli & Morgagni, 2013; Gibbs, 2011). Furthermore, while many IS researchers have used Morgan's work, some have raised concerns that Morgan's eight metaphors (or perhaps more aptly how researchers have applied them) largely centers on stability, order, and manageability, which increases the need for fresh theoretical accounts that place dynamism and disorder at the heart of the action (McCabe, 2016). Drawing on complexity theory/dynamic systems theory, the discourse approach opens up new pathways via embracing dynamism, heterogeneity, non-linearity, context, and adaptiveness—areas that IS metaphor research has poorly understood. Analyzing metaphors as an ongoing process provides many benefits. For instance, it allows researchers to focus on identifying metaphors in situ and may also offer more penetrating accounts that consider the ongoing tensions and contradictions that occur in the language process in a real-life context. Moreover, the accompanying methodology (see Sections 4.2 and 4.3) that goes hand-in-hand with the theoretical underpinnings that I lay out in this paper (see Section 3) provides important insights into the methodological criterion for metaphor identification and analysis. We need such insights given that the vast majority of IS metaphor studies do not describe the methodological approach they use in detail. Clearly outlining methodological procedures would allow for more sophisticated analyses, may permit researchers to more deeply understand IS metaphors, and may reduce the risk that researchers will reach narrow conclusions or draw false postulations.

4 Method

4.1 Data Collection

Given that I primarily focus on capturing the dynamics of discourse as participants engage in real-time conversation in this study, I collected data using focus group studies. Researchers frequently use the focus group approach when adopting the discourse dynamics approach (Cameron, 2007; Cameron et al., 2009; Semino, Demjen, & Demmen, 2016) as it not only allows them to reveal participants' thinking, attitudes, and perceptions but also considers how individuals construct and negotiate discourse in an interactive group setting. For this study, I used the discourse dynamics approach as I outline in Section 3

as the lens to guide the investigation. I conducted four focus group studies between November and December, 2018, in central London (England). In total, 21 participants (with organizational experience across different levels and industries) from firms in the UK participated in the focus groups. Each focus group recording lasted for approximately 60 to 90 minutes. For each focus study, I selected participants using purposeful sampling (Patton, 2002); that is, by selecting participants who were impacted, or had the potential to be impacted, by workplace automation. Rather than centering exclusively on one type of automation, I kept the focus more general to explore different themes. I broadly define workplace automation as using technology, computers, artificial intelligence, and/or robotics to reduce the amount of work that humans perform. Where possible, I chose participants who differed in age, gender, and background to obtain a representative mix of viewpoints. Due to the challenges researchers face in obtaining viable research participants with experience in using automation in organizations, I used an external company to assist with participant recruitment.

In most cases, I also participated in each focus group to act as a moderator and to take additional observational notes. I used one focus group as a pilot to test the questions and the overarching research design before proceeding with the remaining groups. For each focus group, I asked participants to discuss their experiences of workplace automation and the implications that automation had or would have on their job and/or organization. I achieved commonality across focus groups by using standard interview questions. By organizing the data around standard research questions, I could more effectively extract similarities and differences and highlight patterns and themes across participants. Each focus group interview centered on six broad questions relating to workplace automation: 1) type of workplace automation, 2) why it was initiated, 3) scale/extent of implementation, 4) automation's impact on job/work role, 5) consequences of workplace automation, and 6) future implications. Nevertheless, I kept the discussion loose to allow for openness to investigate evolving themes. Furthermore, note that, throughout the study, I made no effort to impose any metaphors on the participants, nor did any participant know that the research focused on metaphors. In this paper, I assign randomly generated names to participants to protect their identities and maintain confidentiality. With participants' consent, I used a voice recorder to be precise. I conducted all focus group interviews in English. For each focus group, I also captured the following information: date the focus group study occurred; participants' name, job role, and age; how many years they had worked at their company for; and whether they worked full time or part time.

4.2 Transcription

In order to provide a standardized format to capture the flow and dynamics of the discourse activity, I used intonational units (also commonly referred to as intonation phrases or prosodic units in linguistics) to transcribe each focus group recording. An intonational unit represents a speech fragment with a single intonational contour (a linguistic break, such as a single breath that lasts a few seconds). I followed Cameron's (2007) conventions to transcribe the discourse, which I summarize in Table 2.

Table 2. Transcription Conventions (Cameron, 2007)

, =	Denotes a continuing intonation
. =	Denotes an ultimately closing intonation
[]	Denotes overlay across speakers
- =	Denotes an incomplete intonation
..	Denotes a short pause (micropause)
...	Denotes a lengthier micropause with duration (seconds) in brackets, such as“(3.0)”

4.3 Linguistic Metaphor Identification and Analysis

As Cameron (2007, p. 202) notes:

The basic identifying features of a linguistic metaphor is the occurrence of a lexical item from a domain or semantic field different from that of the topic of the ongoing talk, together with a potential transfer or change of meaning from the new semantic field to the ongoing topic.

To be more specific, lexical items (identified through words and phrases) represent metaphor vehicle terms (referred to as “source domains” in conceptual metaphor theory).

I followed the well-established “metaphor identification procedure” (MIP) as a systematic and explicit method to identify metaphorically used words in discourse (for a full overview of the MIP technique, see Pragglejazz Group, 2007). However, in accordance with Cameron’s (2007) advice, rather than restricting the identification process solely to words (as in MIP), I considered longer sections of language (namely, words and phrases). In doing so, I could capture the metaphors in the context in which they actively occurred. Note that one cannot easily confine longer stretches of language within clear-cut boundaries and that deciding where a metaphor begins and ends involves a certain level of personal judgement.

Two analysts who independently identified vehicle terms and assigned topics conducted the identification process. To ensure they consistently identified metaphors, I adopted similar measures similar to the ones that Cameron et al. (2009) discuss. Analysts involved in the identification process had qualifications in applied linguistics and had previous experience in analyzing metaphors. I instructed each analyst to follow the same procedures and to record any assumptions in a Microsoft Excel sheet that related to what they excluded or included as metaphorical terms. A third analyst who examined a sample of each analyst’s transcript conducted cross-rater checks. If discrepancies occurred, the analysts reviewed each term/metaphor until they reached agreement. The analysts used eMargin, an online connotation tool that allows users to highlight, color-code, and assign tags to individual words and phrases and to take notes, to conduct the identification process. They used Microsoft Excel to assign codes, organize the data, and explore emerging ideas and patterns. To do so, they recorded key information such as topic, vehicle terms, metaphor, line number (also referred to as intonation unit number, which allowed them to see the order in which the metaphorical term occurred over time), speaker, intonation unit (words positioned to the left and right of the metaphorical term to preserve the contextual meaning), focus group identifier, and question.

After the analysts identified metaphor vehicle terms, in line with the discourse dynamics approach, they scrutinized them for systematicity (patterns) to reveal important insights about participants’ beliefs, thoughts, and attitudes. They identified systematicity by grouping related vehicle terms (i.e., they belonged to the same topic domain) and then assigned appropriate labels to describe the systematic metaphors. For instance, they grouped “a narrow road” with other words and phrases belonging to the same topic (i.e., journey). They then selected appropriate labels to best describe the systematic metaphors, such as “workplace automation as a journey”. Nevertheless, one should remember that identifying systematic metaphors is in many cases subjective. Cameron (2007, p. 205) notes that:

Researchers adopting a discourse approach to metaphor have to accept that it is not [always] possible to come up with a limited and precise set of categories into which each linguistic metaphor can be reliably placed. A principled flexibility to the grouping of linguistic metaphors appears to be the most suitable approach with discourse data.

Furthermore, systematicity does not imply a standardized mapping exercise, and I focused on comprehending how metaphor unfolds and is altered through the ongoing dynamics of conversation. Note that I followed a hermeneutic approach to finding patterns in the data (Cameron et al., 2009; Larsen-Freeman & Cameron, 2008). In order to understand participants’ accounts of workplace automation, I needed to understand their experiences as a whole. As such, I needed to understand metaphorically used terms in relation to the sentence they appeared in as a whole but also in terms of the whole context and vice versa. Thus, I focused on exploring the multiple ways in which participants interpreted metaphors by seeking out numerous viewpoints while also being sensitive to dynamism and context.

5 Findings

In this section, I demonstrate how the discourse dynamics approach works by drawing on several extracts from the focus group discussions. However, readers should note that I do not use the extracts to show all the concepts associated with the approach or introduce the concepts exclusive to each particular extract. Furthermore, note that I do not highlight all words and phrases that I deemed the participants used metaphorically in each extract. Rather, I underscore only the words and phrases that I considered the participants to use in a systematic manner. In order to preserve the conversation’s essence, I also stay as close as possible to the words and expressions that the participants used.

I took the first extract from the fourth focus group which had five participants (including the moderator) who all worked full time. Riya, aged 30, had worked as a paralegal for a global law firm for approximately seven years. Paul, aged 28, had worked as a senior account manager in a marketing firm for roughly one

year. Mark, 38, had worked as an investment analyst in a large bank for the last 14 years. Sofia, aged 22, had worked as business development manager for a fashion/beauty firm for approximately one year.

Table 3. Extract One

475 Sofia	..at the <u>heart</u> of this,
476 Sofia	..you need a <u>brain</u> ,
477 Sofia	..for creativity.
478 Sofia	..(1.0) how can automation replace that?
479 Paul	..(2.0) I think it depends on the,
480 Paul	type of business it is,
481 Paul	..you know if -
482 Paul	..I think creative industries,
483 Paul	not so much,
484 Paul	..because,
485 Paul	..the nature of them is fundamentally creative,
486 Paul	..and for now it requires a <u>brain</u> .
487 Paul	..I think,
488 Paul	..data science and things like that -
489 Paul	..(1.0) whenever you get into things like algorithms and machine learning,
490 Paul	.. and all that kind of stuff -
491 Mod	..(1.0) what are your thoughts Mark?
492 Mark	..in my field,
493 Mark	..em,
494 Mark	..I think the process of automation has hugely impacted,
495 Mark	em,
496 Mark	..the requirements for the job.
497 Mark	..so em,
498 Mark	..15 years ago in order to trade equity derivatives,
499 Mark	..you needed to have a <u>head</u> ,
500 Mark	so to speak,
501 Mark	..and you needed to be very quantitative orientated,
502 Mark	to understand things and processes.
503 Mark	..nowadays,
504 Mark	er,
505 Mark	..you hit the button,
506 Mark	..and the machine calculates everything within seconds.
507 Mark	em,
508 Mark	..everything is much easier,
509 Mark	..which is obviously great as a user,
510 Mark	..because you don't have to use as much of your <u>brain</u> anymore.
511 Mark	..(1.0) but there are also risks coming with it.
512 Mark	..we don't understand anymore as humans,
513 Mark	..what the risks are we are taking.
514 Mark	..(1.0) we lose the <u>gut feeling</u> for it.
515 Mark	..we depend on the machines.

As I discuss in Section 3.1, discourse dynamics approach assumes that interconnected systems continually change. The first extract illustrates not only how participants use terms associated with anatomy in discussing workplace automation but also that metaphorical expressions materialize as individuals interact and take part in conversation. The discourse activity never returns to the same neutral position, and the words that previous speakers choose (as a product of group activity) influence the conversation's trajectory.

Consider how the participants use the term "brain". In the opening part of the extract (line 476), Sofia refers to the need for the brain (as a tool for creativity and thinking) in relation to the industry she has chosen to work in. Later, Paul (line 479) constructs in his mind what Sofia says about workplace automation, particularly in relation to creative industries. In line 486, he draws on her word "brain" in which he agrees with her assertion that her specific industry (fashion and beauty), like other creative industries, still requires an imaginative element that automation cannot easily replicate. As the conversation unfolds, Mark, reflecting on his previous experience, acknowledges that his field (trading equity derivatives) has changed over time. Although Mark also chooses the term "brain" (line 510) in describing automation likely because Sofia and Mark used it earlier, he uses it in a different way. More specifically, he talks about how job requirements for strong mathematical ability and manual work have diminished due to automation in recent years ("you don't have to use as much of your brain anymore").

As I state in Section 3.1, context has a central role in the discourse dynamics approach. One can view context as a system's cognitive, cultural, social, and physical dimensions that interact as part of a larger dynamic system as speakers engage in conversation. One can view many of these contextual dimensions as complex, dynamic, and interconnected subsystems. Together with the circumstances that surround it, the first extract shows Sofia and her experience in working in the fashion/beauty industry. Reflecting on the past, she feels that her job role relies much less on automation and focuses more on designing and creating original clothing. This development has shaped her conceptual (cognitive) thinking, and the particular metaphorical terms and words she uses reflect a negative attitude towards mechanization. From Sofia's perspective, workplace automation largely conflicts with her industry's creative norms and values—how things are created, the materials used, and the processes that make up an integral part of her community and culture (cultural). By using a question (line 478) and choosing the words that she does, she attempts to illustrate and convey her points and arguments to the other speakers taking part in the conversation (social). Using clothes for aesthetic effect also provides visual clues that indicate Sofia's creative flair (physical). These interconnected subsystems can also extend in an outward direction and draw on other external systems based on the arts economy, society, and politics.

I took the second extract from focus group one. It illustrates how different participants draw on various connected phrases and words that relate workplace automation to illness in a metaphorical sense. Focus group one had five participants in addition to a moderator. Apart from Sarah, the participants worked in a full-time capacity. Dan, aged 28, had worked as a factory operative for approximately three years. Russell, aged 31, had worked as a data miner for less than a year and used automation to assist in compiling and analyzing large datasets. James, aged 29, had worked the human-computer interaction area at the same firm for over three years. Sarah, aged 21, had worked as a customer assistant for a large grocery retailer, and Mark, aged 38, had worked as a graphic designer for approximately 16 years. The transcription below focuses on three of these participants: Mark, Russell, and Dan.

I use the second extract to illustrate the interconnected timescales and activity levels in systems as I outline in Section 3.2. Note that timescales and social groupings are not independent and that the term "level" here refers to both a specific timescale and a social grouping. Drawing on Cameron's (2015) work, interacting levels that illustrate discourse dynamics may include: 1) the period that occurs immediately before the discourse activity occurs, 2) activity measurable in milliseconds, 3) activity that typically occurs on a minute-by-minute basis, 4) the level of a particular discourse event, and 5) activity that takes place over a longer period (e.g., weeks, months, and years).

Table 4. Extract Two

215 Mark	..I am not feeling stressed about,
216 Mark	..automation taking my job.
217 Mark	..it is making my role easier.
218 Russell	..(2.0) one of the grand ironies is going to be,
219 Russell	..we are constantly going through this,
220 Russell	..automation process,
221 Russell	..and,
222 Russell	..I think there is going to be an awful lot of,
223 Russell	..(1.0) <u>institutional amnesia</u> .
224 Russell	..em,
225 Russell	..how did we forget this?
226 Russell	..where,
227 Russell	..we continue to,
228 Russell	..make things easier for ourselves,
229 Russell	..but we are going to forget how we used to do the,
230 Russell	..hard things,
231 Russell	..because its below so many layers of abstraction now.
232 Russell	..(2.0) for the tech sector in general,
233 Russell	..with automation,
234 Russell	..there is,
235 Russell	..em,
236 Russell	..a propensity for people,
237 Russell	..to suffer from <u>imposture syndrome</u> .
238 Mod	..(3.0) Dan?
239 Dan	..for us,
240 Dan	..many people don't like change,
241 Dan	..and suddenly to change these processes into,
242 Dan	..an automated process,
243 Dan	..it's been <u>painful</u> .
244 Dan	..(2.0) we lose -
245 Dan	..lose staff because of that.
340 Dan	..people are more stressed than ever.
341 Dan	..you know -
342 Dan	..(1.0) they are stressed because,
343 Dan	..they don't feel secure in their job,
344 Dan	..and that causes a lot of <u>pain</u> .
345 Dan	..definitely -
346 Dan	..the company think they are saving money,
347 Dan	..by making,
348 Dan	..like,
349 Dan	..less staff.
350 Dan	..(1.0) it's a very <u>sore point</u> for a lot of staff.

Before taking part in a conversation, each speaker brings their own ontogenetic history to it, which can influence the conversation's direction. Dan describes himself as being caught up in what he describes as a cycle of low-paid work. For Dan, computerization has "taken" many of his colleagues' jobs (staff levels going down and computerization going up). In contrast to Dan, Russell and Mark have not previously seen workplace automation as a threat to their jobs. Mark, reflecting on his own experience of the past, largely sees automation as a means to complement and, in many ways, enhance his work tasks in a positive way. Activities that last milliseconds may include mental (neural) processing, which is often automatic in nature. On a minute-by-minute basis, discourse can comprise more conscious activity, including deliberate retorts and learning. Speakers reflect on, understand, and acquire knowledge from one another in order to come to understand an event, situation, or problem under investigation in a shared way. In the second extract, the extended conversation over several minutes illustrates how speakers in a collective fashion come to appreciate the stress associated with workplace automation or, more specifically, the stress that workplace automation can create. While the extended talk only lasts for several minutes, the speakers come to an agreed view that automation can create job losses across various job classifications.

Considering a conversation as a whole, which takes place in one session on a scale of minutes or several hours (a particular discourse event), metaphor patterns may become more systematic in nature and, thus shared, among participants or used in unique ways. Although the participants used metaphorical terms associated with illness to describe workplace automation, other related metaphorical terms, and other systematic metaphors, surfaced at the whole event level. I explore the systematic connectedness concept further in discussing the third extract below. While I cannot reveal activity that occurs over a longer stretch of time (e.g., days, weeks, and years) in this paper, certain metaphorical terms relating to automation may become stabilized as learnt terminology across entire speech communities evidences. For example, speech communities may use particular idioms and learnt vocabulary (an understood way to do things) that can extend for many years and even beyond an individual's lifetime. Nevertheless, they can always change in the future.

I took the third extract from the third focus group. This focus group had five participants (including the moderator) who all worked in a full-time capacity. Ian, aged 34, had worked as a digital product manager in the financial technology area for two years. Anton, aged 33, had worked as a customer services representative at a corporate security firm for four years. Max, aged 25, had worked as an IT business partner for a transport firm for one year. Julia, 31, worked as a project manager for an energy firm for approximately two years. The extract centers on the conversation that unfolded between Max, Ian, and Anton.

Table 4. Extract Three

635 Max	..we are <u>far ahead on the road</u> ,
636 Max	..technology-wise,
637 Max	..and there is probably a –
638 Max	..um,
639 Max	..level of -
640 Max	..(1.0) like,
641 Max	..wanting that,
642 Max	..and wanting to get there.
643 Max	..so we know where we are <u>heading</u> ,
644 Max	..and we know,
645 Max	..we are probably quite close to there.
646 Max	..um,
647 Max	..but it –
648 Max	..that doesn't mean we,
649 Max	..can just <u>get there</u>
650 Max	..it's not that <u>straightforward of a journey</u> .
651 Max	..um
652 Max	..so -

Table 4. Extract Three

653 Max	..yeah -
654 Max	..these things are complicated.
655 Ian	..(2.0) [things are complicated],
656 Ian	..but,
657 Ian	..I'm going to talk -
658 Ian	..talking on the <u>path</u> of my own business,
659 Ian	..because,
660 Ian	..automation within my own business,
661 Ian	..well -
662 Ian	..it's <u>speeding up my journey</u> .
663 Ian	..it's speeding up things.
664 Ian	..it speeds up and eases -
665 Ian	..allowing me to do other things.
666 Ian	..(1.0) my actual,
667 Ian	.. <u>getting from A to B</u> ,
668 Ian	..and doing other things.
669 Ian	..it speeds -
670 Ian	..it speeds it up totally.
767 Anton	..they don't know the -
768 Anton	..er,
769 Anton	..100% the result,
770 Anton	..the final result.
771 Anton	..but we are not sure what the <u>end point</u> is,
772 Anton	..(1.0) and then sometimes you feel,
773 Anton	..well,
774 Anton	..OK,
775 Anton	..the way technology is advancing,
776 Anton	..(3.0) is my -
777 Anton	..do I have any job security?
778 Anton	..and some <u>way down the road</u> ,
779 Anton	..they are going to replace me with,
780 Anton	..um,
781 Anton	..with technology,
782 Anton	..that could be programmed,
783 Anton	..to do my role,
784 Anton	..and function however they want it to.

Metaphorical terms that occur during microgenetic talk between speakers can give rise to self-organization and emergence, which reflect a higher activity level than the activity level that occurs in the micro dynamics of discourse. The third extract demonstrates the self-organization process and how temporary stabilities can emerge (see Section 3.3). One can group metaphorical terms together based on their systematic connectedness. In the extract, participants use metaphorical expressions to illustrate workplace automation in relation to the distance covered (e.g., “far ahead on the road”), the travel pace (e.g., “speeding up my journey”), obstacles faced on the journey (e.g., “not that straightforward”), and the travel direction (e.g., “getting from A to B”). In addition to the other words/terms that I underline in Extract 3, one can group these examples together based on their systematic relatedness to the idea of journey (often associated with some form of movement, location, travel, and transport by air, land, or water).

Unlike conceptual metaphor theory, these findings do not suggest that a metaphorical expression is static and pre-existing in that it links a source domain to a target domain; rather, each metaphorical term links to its immediate use context at any one point in time. The link between conceptual metaphor and linguistic metaphor does not simply constitute a transition from thought to language but emerges due to the interaction between language and thinking. For example, when Ian refers to the term “journey” in line 662, he likely refers to the word that Max introduced previously or the word likely influenced him (line 650). Max sees current obstacles in the way (bumps in the road) that prevent his firm from reaching its final destination. Issues relating to workers’ rights, health, and safety and other legal concerns prevent the journey from being realized and completed (“not that straightforward of a journey”). In relation to Ian, automation has considerably speeded up the overall journey time (“it’s speeding up my journey time”) in getting work done “getting from A to B” (line 667)—an expression that, when used figuratively, generally refers to journeys that one needs to make from the beginning (point A) to the end (point B). Although systematic metaphors emerge from the ongoing microgenetic activity that appears to surface in an upward activity, they can also assert a downward force from higher to lower levels (referred to as reciprocal causality). In other words, while a systematic metaphor may materialize in the dynamics of discourse, it may constrain participants in specific thinking and talking instances. For instance, once group members understood the journey metaphor, it facilitated new knowledge and ideas and influences the words participants chose about workplace automation. While the extract shows how participants systematically used journey metaphors, one should note their temporal nature. Shortly after this discussion segment, the conversation moved on to a different metaphor.

6 Discussion

In this paper, I not only critically review the concept of IS metaphors and give it the attention it deserves but also build on existing challenges in order to advance our knowledge about organizational metaphors in the IS community.

To recap, unlike the metaphor-taking approach, which focuses on metaphors’ intentionality (deliberately selecting a predefined metaphor or purposely using a metaphor to facilitate change) and treats metaphors as removed from the participants under investigation, the metaphor-making approach sees metaphors as arising in participants’ naturally occurring language. In other words, researchers do not receive metaphors; rather, participants produce them (Jackson, 2016). Based on applied linguistics, the discourse dynamics approach seeks to elaborate on the metaphor-making approach by not only exploring metaphors in conversation but also offers a theoretical and methodological basis for further understanding how and why individuals elicit metaphor in language.

Unlike cognitive views that largely see mappings between source and target domains as stable and complete, the discourse dynamics perspective reveals that mappings do not remain as constant as many cognitive theorists advocate. Instead, metaphors, many of which are novel, emerge as individuals use situated language. The manner in which individuals construct and reconstruct metaphors occurs through their actions and interactions as they engage in real-life language situations. Organizational members continuously create and recreate metaphors in a continuous weaving of multifarious voices as they respond significantly to one another while engaging in discourse events. Furthermore, the discourse dynamics approach focuses on variation in metaphors; that is, how a single metaphor’s usage and meaning may differ both in individual and between multiple participants at particular points in time and across different spaces (something that existing metaphor-making approaches have not explored in detail). The emphasis becomes one of deciphering multiple meanings that individuals attach to metaphorical expressions. Of course, that does not mean that one should view metaphors as everything and anything. Malleability need not rule out a form of stability that permits statements of regularities whereby one can group similar types of metaphorical expressions together in systematic yet temporal ways. In other words, while metaphor can be unique to an individual, one also needs to be mindful of how these metaphorical expressions somehow associate together and not in a form that merely considers them as collective formations, which diminishes their meaning and mystifies the dynamics of their creation and use.

The discourse dynamics perspective also provides important insights into the metaphor-making approach by exploring why metaphor variation occurs in the dynamics of discourse. Participants exhibit variation in the sense that they can choose which metaphors they draw on and also what metaphors they build on from other people as the language-construction process unfolds. Variation and metaphor use results from the context in which one finds oneself. Participants come to the conversation with different values,

intentions, expectations, and knowledge as they draw on and move through their social, cognitive, and linguistic resources to construct thoughts and localize particular words and phrases. Nevertheless, collective group talk that facilitates particular ways to think, see, and speak constrain discourse activity. In many occasions, metaphor production and use is neither completely fluid nor stable; rather, certain constraints in continuous motion condition or bound such production and use. As the findings illustrate, participants may reuse (appropriate) linguistic terms that one participant used previously in a similar fashion or reform them in a manner that reflects their own situational context (e.g., personal histories, gender, age, and circumstances in their professional work lives).

We also need to consider what we can discover by analyzing metaphors to study workplace automation. While practitioners and scholars have largely used their own metaphors to help reveal workplace automation's features, they have largely neglected the metaphors that individuals whom automation has affected in a dynamic and context-specific way have employed. Metaphor analyses have particular importance given researchers have increasingly called for more "unconventional methods" (Jackson, 2016 p1039) to provide alternative means to conceptualize and unravel the complexities and social functioning of technology in organizations. Although I merely use the various extracts that I present in this paper to illustrate how discourse dynamics approach works, the systematic metaphors that I discuss, such as "journey", "illness" and "anatomy", can offer fresh insights into workplace-automation practices. Metaphors show not only how individuals come to make sense of workplace automation but also how they are constrained by it. To use the idea of a journey (Hekkala et al., 2018; Kendall & Kendall, 1993; 1994), researchers have found that individuals travel at different speeds, face unique obstacles, and follow different routes when it came to implementing automation in the workplace. By examining these metaphors, one can find fresh insights into issues associated with mechanization and unearth often-overlooked issues relating to workers' rights, health, safety, management, discipline, and control and to other legal concerns that can be barriers to workplace automation. While I found that participants used various metaphorical expressions relating to illness to convey important ideas about workplace automation (e.g., knowledge loss, organizational identities) in my analysis, I also uncovered new understandings in relation to sentiments that more conventional methods would possibly continue to not express or hide. The dynamics of discourse reveals how speakers can insightfully use metaphors for affective purposes to illustrate moods and feelings, such as work-related stress and the fear they will lose their job. Although some IS studies (e.g., Oates & Fitzgerald, 2007; Sarker & Lee, 1999; Walsham, 1991) that draw on Morgan's (1980) brain metaphor have shown the presence of anatomical metaphors, I also identified other body parts that participants draw on, such as the heart, brain, head, and gut. Participants used terms for vital body parts to reflect the implications of workplace automation for their chosen industry or role.

6.1 Implications for Theory and Practice

While theoretical insights from other social science areas have helped explain metaphors' intricacies, researchers have not fully applied these insights to the IS field. Many IS metaphor studies do not mention theory as a guiding mechanism, which I find surprising given the increasing number of theories in the metaphor field, such as conceptual metaphor theory (Lakoff & Johnson, 1980; Lakoff & Turner, 1989), context-limited simulation theory (Ritchie, 2004), class inclusion theory of metaphor (Glucksberg & Keysar, 1990) and conceptual blending (Grady, Oakley, & Coulson, 1999). At this stage, the study of IS metaphors would benefit enormously from studies that integrate fresh insights from different academic fields. Such efforts may lead to important and novel insights into metaphors. Since researchers have made few attempts to use an applied linguistics approach in the IS metaphor area, this paper provides a useful starting point for researchers to consider the potential contribution that an applied linguistics approach can make to studying metaphors and the IS field more generally.

Furthermore, researchers can enhance their theoretical insights by detailing the research procedures they use to identify and analyze metaphors. In recounting metaphor-led analyses, researchers may clearly outline the transcription process, describe the technique they used to identify and code linguistic metaphors (including vehicle terms), provide explicit details about the data-analysis technique they used to find metaphorical patterns, and document the practices they used to ensure they identified and analyzed metaphors in a reliable way. By outlining the methodological techniques that they use in empirical research, researchers ensure they create higher-quality research, facilitate rich insights, and produce more valid and trustworthy analyses.

On a practical level, rather than being merely figurative ornaments or fancy linguistic items, metaphorical expressions constitute a regular feature of everyday language and thought, and practitioners and managers need to consider metaphors' pluralistic, elicited, and emergent nature in organizational settings. Understanding the metaphorical expressions that surround IS/IT can show how they act or, at least, have the potential to act as powerful interpretative devices for unraveling organizations' complexities and particularly the way people think and feel about IS/IT phenomena. Managers and practitioners should also be mindful of metaphors' dynamic and emergent nature and especially of how metaphorical expressions materialize and change over time. From a metaphor-making perspective, while I focus on workplace automation in this study, metaphorical awareness could become part and parcel both prior to and throughout the IS/IT lifecycle. Using the theoretical and methodological tenets in the discourse dynamics approach and Table 1, managers and practitioners could pay attention to whether certain metaphorical expressions appear more prevalently among organizational participants during IS/IT projects. From a dynamic lens, managers could map when participants (or other sources) introduce metaphorical terms, see how they become appropriated and transformed in the language that participants use while also being mindful and responsive to the emergence and systematization of potentially constraining language. If specific patterns materialize, they could conduct further probing to establish the reason behind metaphor usage at particular points in time.

6.2 Limitations and Further Study

This study has several limitations. First, while metaphors can provide a way to see organizations through a particular lens, they also provide a way to not see. However, no one theory or lens can ever truly capture the complete organizational picture. Second, I used focus groups to investigate metaphors at a particular point in time, and I may have gained richer insights by adopting a longitudinal approach. By conducting various focus group studies with the same participants across different intervals such as days, months, and years, I could have possibly been able to describe how certain metaphors materialize over time in response to a shifting context in more detail. Third, in my investigation, I draw on the accounts of participants from across various industries and job roles. By focusing on a single company that adopted a particular type of automation technology, I may have been able to more profoundly metaphorically interpret the contextual factors and characteristics at play. While I focus on understanding organizational metaphors in IS in this study, further research could build on the gaps in this paper. Gaps and challenges, if illuminated and tested empirically, could help develop rich theoretical insights. Indeed, further research needs to examine other gaps, challenges, and opportunities that I may have overlooked in this paper.

7 Conclusions

In this paper, I investigate how IS research has used the concept of organizational metaphors. I found that much past research has used metaphor-taking approach based on applying a pre-established metaphor. In order for researchers to better understand IS metaphors and consider where we should go next, I make several suggestions. First, researchers would benefit taking a metaphor-making approach that identifies the metaphors that participants themselves use. Second, researchers need to investigate metaphors' dynamic and emergent nature further. Third, researchers need rich theoretical accounts of metaphors. Finally, researchers should fully describe the methodological approach they use in studies in which they identify and analyze metaphor. In this paper, I present the discourse dynamics approach to metaphors and illustrate it with extracts from empirical data in order to extend our knowledge of the metaphor-making approach. Rather than treating metaphorical expressions as static and largely pre-existing and disembodied from language users, the discourse dynamics approach sees metaphors as a quintessential part of language and embraces the concepts complexity, causality, interconnectedness, dynamism, context, and change. By directing our attention away from considering metaphors solely as a fait accompli and embracing their dynamic and emergent qualities as I do in this paper, I hope that we can open and develop new lines of inquiry in the IS field.

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