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DESIGNING THE FUTURE PERFECT: REORGANISING IS RESEARCH AROUND THE AXIS OF INTENTION

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Abstract

According to Barbara Adam, “time is such an obvious factor in social science that it is almost invisible”. Indeed, Information Systems (IS) researchers have relied upon taken-for-granted assumptions about the nature of time and have built theories that are frequently silent about the temporal nature of our being in the world. This paper addresses two key questions about time in IS research: (i) what formulations of time are available to us in our research and (ii) how can these formulations be used in a coherent way in our research? In addressing the first question, two meta-formulations of time are examined. The first relates time to the sense of passing time expressed in successive readings of the clock. The second relates time to the experience of purposive, intentional, goal-directed behaviour. Our proposal is that IS researchers should be encouraged to identify the formulations of time that underpin their research. Our goal is to provide a framework to allow IS researchers to evaluate the fit between the goals of research and the temporal assumptions being used to underpin it and ultimately to investigate the extent to theories that are based on different assumptions about time can be combined or integrated.

Keywords: Temporality, Materiality, Theorising, Information Systems
1 Introduction

And the end and the beginning were always there
Before the beginning and after the end.
And all is always now

- T.S. Eliot

In the realm of human existence, there can be few things as profound and significant as time. Time is an inherent quality of human life (Hassard, 1999); our lives unfold in time and all human activity has a temporal dimension (McGrath, 1988, p. 7). In this sense, the temporal nature of our being in this world fundamentally shapes our experience and knowledge of it (Heidegger, 1927). Indeed the temporality of human life differs from the temporality of other beings or objects in that we direct ourselves toward intended futures according to our perception of things of the present moment and yet are bound by the past and our recollection of it (Bluedorn, 2002). In this sense, the things which make for life, which make life different from physics, require for their description a sense of time which encompasses memories in the present of the past as well as expectations and desires in the present of the future (Jaques, 1988, p. 4). Fundamentally, then, we can recognise in the human mind, a “marvellous capacity” to make sense of a lifetime’s collection of experience and to connect patterns from the past to the present and future (Leonard-Barton and Sensiper, 1998, p. 112) and we can say that human temporality has more to do with intention than succession (Jaques, 1988). However, our capacity to unravel the enigma of time remains limited because our consciousness moves along it (Wells, 1895, p. 6): its greatest paradox is that even as the past is gone and the future yet to come, they both exist in the present moment for us.

Notwithstanding this every-day understanding and experience of time, conceptualisations of time in organisational studies, and in the natural/social sciences more generally, have long been dominated by a narrower view of time, commonly described as objective time, external time, linear time or clock time. Yet there are many reasons why temporal factors should be of primary concern for Information Systems researchers (Saunders, 2007; Lee and Liebenau, 2000) – of all the ways in which modern technology has brought about a transformation in the world and our experience of it, it is in our relation to time and space that its effects have been most striking and pervasive (Malpas, 2000, p. 205). From a philosophical perspective, it is clear that IS research is intimately concerned with the intentful interactions of people and technology and has long been interested in better understanding the relationship between time and technology at work (cf. Barley, 1986; Lee, 1999; Nandhukumar, 2002; Shen et al., 2014). From a more practical perspective, organisations operating in today’s high velocity business environment (Eisenhardt, 1989) are under increased pressure to work at speed. In many cases, competitive survival has become a question of delivering projects on time (Staats et al., 2012) and so time itself has become a fundamental business performance indicator (Ciborra, 1999; see also Abbott, 2001). Thus, whilst the IS field have long been interested in better understanding the relationship between time and technology at work (cf. Barley, 1986; Lee, 1999; Nandhukumar, 2002; Shen et al., 2014), IS scholars have long lamented the paucity of research on time and technology in the field (Shen et al., 2014; Nan and Harter, 2009; Saunders, 2007; Lee and Liebenau, 2000), arguing that IS researchers must develop a clearer understanding of how technologies can and should be used in organizations in order to perceive, measure, manipulate and use time (O Riordan et al., 2013). In turn, IS theories remain largely silent about the temporal nature of our being in the world and its impact on IS phenomena. Indeed, IS scholars rarely articulate or question the assumptions they make about time in their research. For example, IS theorists rarely question or make explicit the casual logics used to build IS theories which frequently assume that for A to have caused B, A must have occurred prior to B. Similarly, IS theories remain largely silent about the temporal nature of our being in the world and its impact on IS phenomena and our published accounts of them. As Avison and Malaurent (2014) point out, for example, Schultze’s (2000) ‘confession’ that her “decision to leave the field after eight months
was influenced by … [her] desire to complete [her] dissertation by the following summer, and [her] need to fulfill my responsibilities as a teaching assistant” would typically be reported as follows: “the case study took place over an eight month period”. This paper therefore addresses two key questions about time and theory in research: (i) what formulations of time are available to us in our research and (ii) how can these formulations be used in a coherent way in our research?

2 Background

Since the time of ancient Greece, the concept of temporality has been a prominent feature in philosophical discourse (O Riordan and Conboy, forthcoming). Both the physical and social sciences are centrally concerned with time and temporality and have explored time physically, experientially, existentially, experimentally and through human artefact (ibid.). Yet the nature of time has been a central and continuous subject of controversy for thousands of years (Jaques, 1982, p. xi) with philosophers and scientists alike debating the nature of time, our experience of time and its association with causality (Hassard, 1999, p. 327). Today, the concept of time spans all disciplines and is intimately connected to a variety of other fundamental concepts including form, motion, being, and causality. In everyday language, temporal concepts are pervasive and polymorphous. The word “time” can be used as a noun (“the time we went to Auckland”), a verb (“I’m timing your presentation”), and adjective (“a well-timed workshop”). Frequently, our utterances about time lack clarity and precision. According to Jaques (1988, p. 33), for example, it is incorrect to attribute agency to time so to speak of the “flow of time” is to speak in error. Similarly, we routinely speak of “making time” and “saving time” and “keeping time”, when we cannot. Similar confusion manifests in research too. At an ontological level, we may ask if time exists or if it is simply the perception of motion? Does time flow, and if it does, can it flow in more than one direction? At an epistemological level, we may ask: what can we know of time and what impact does our understanding of time have on our efforts to build theories to better explain and predict empirical phenomena? At a methodological level, we may ask: is it possible or useful to try to measure equal spans of time?

Several formal definitions of time have been proposed. Time has been defined as ‘a non-spatial continuum in which events occur in apparently irreversible succession from the past through the present to the future’ (Ancona et al., 2001, p. 513). Similarly, Jaques (1988) defines time as the “continuity of existence of things” (p. xii). His argument is that the assumption of the continuity of things is necessary to describe events, process, or change. In this sense, in order to define an event or a process or a change requires the conception of the same things continuing to exist but continuously modifying their position, or condition, or both (ibid). In addition, scholars have also distinguished between numerous different types of time: subjective time, real time, objective time, linear time, cyclical time, proper time, absolute time, relative time, external time, internal time, biological time, psychological time, anthropological time, clock time, intuitive time etc. (Jacques, 1988, p. 31; cf. Fraser, 1966). Various classifications of time have been proposed. The majority of these are dichotomous. Absolute time is contrasted with relative or relational time. Linear time is contrasted with cyclical time. Objective time is contrasted with subjective time. Fungible time is contrasted with epochal time. Several tripartite classifications have also been proposed. Looking just to temporality research conducted in organisational settings, Schriber and Gutek (1987) describe organisational temporality using 13 dimensions, Lee and Liebenau (2000) use 6 dimensions, Ballard and Seibold (2003) develop a 10 factor model of organisational temporal experience and Ancona et al. (2001) identify three distinct variable categories.

Notwithstanding these efforts to enrich our understanding of time, researchers have conceptualised time rather narrowly in their studies. Time is operationalized as a linear continuum of infinitely divisible, quantifiable units that are homogeneous, uniform, regular, precise, deterministic, and measurable (Saunders, 2007). Clearly, there are cases where such conceptualisations of time are appropriate and useful. However there are many areas of research where time is either a key motivating factor or a key dependent variable. For example, in analytics the primary measure of emerging systems is their ability to search a monumental amount of data in fractions of a second (Barlow, 2013). Similarly, in systems
development the key tenet underpinning the emergence of contemporary methods such as agile and lean is a need to deliver working software fast and to respond to change almost immediately (Nandhakumar, 2002; O Riordan et al., 2012). However, there is a dearth of research in these areas that addresses the underlying complexities and nuances of temporality (Nandhakumar, 2002; O Riordan et al., 2012). In fact very few studies validate the temporal aspects of these claims at all (Shen et al., 2014).

Where alternate conceptualisations of time are used, it is not clear how results might be integrated to facilitate a more cumulative approach to theory building (O Riordan, 2015). As a result, studies frequently rely upon myopic and unnecessarily narrow measures of time such as time-on-task or elapsed time (Shen et al., 2014; Saunders, 2007). In so doing, researchers are at risk of losing out on significant opportunities to enrich our understanding of the empirical world. Indeed, if one of the ultimate goals of research is to support the efforts of intentional and goal-oriented agents in their efforts to act upon the world, then researchers are clearly in danger of conceptualising time in a manner that is actually inappropriate for the field.

In order to address these issues, the remainder of this paper focuses on two key questions: (i) which formulation of time, and more specifically, which approach to classifying time is most useful for the discipline as a whole, and (ii) how might we use such a classification to build better theories in IS?

3 Conceptualising time in IS research

In an IS context, there is a compelling need to study time (Saunders and Kim, 2007; Lee and Liebenau, 2000): time–space compression is a constant theme in mainstream accounts of post-modern society (Virilio, 2012, pp.1-3) and it is argued that not only the rhythms of life are faster in the information age but the rate of change has itself accelerated (Wajcman, 2008) to the extent that time itself is now organised at a speed that is beyond the feasible realm of human consciousness (Urry, 2000, p. 126). But if IS researchers are quick to highlight the impact of ICTs on the speed of organisational and social life, they are slow to move beyond conceptualisations of unitary (subject to only one interpretation), linear (progressing steadily forward from past to present to future), and mechanical (containing discrete moments subject to precise measurement) time (O Riordan and Conboy, forthcoming; see Bluedorn, 1988, p. 302). Similarly, IS researchers are quick to use time as a methodological proxy for other phenomena but slow to study time directly (notable exceptions include Lee and Liebenau, 2000; Lee and Sawyer, 2002; Shen et al., 2014) or to explicitly consider the measurement of time in their research (Saunders and Kim, 2007). As a result, there is a dearth of research addressing the underlying complexities and nuances of temporality (Nandhakumar, 2002).

In order to study the temporal aspect of nature effectively, scholars have long “strained their ingenuity to devise means whereby the peculiar characteristics of time are either ignored or distorted” (Whitrow, 1980, p. 2). This tendency to either ignore time or to subordinate the temporal to the spatial (i.e. to try to ‘map’ or otherwise ‘spatialise’ time) has meant that “great successes were achieved when things were made to stand still long enough to be counted and measured” (Jaques, 1988, pp. 8-9). So the argument here is not a supremacist one: it is most certainly not that there is a particular conceptualisation of time that is ‘best’ for research as a whole. Indeed, at the level of individual studies and at the level of individual streams of research, there may be sound reasons for adopting one conceptualisation of time over another or for overlooking time entirely. However, our goal is to draw attention to the price we pay for these successes and to find a way to minimise this price. Our concern is to ensure that researchers’ conceptualisations of and assumptions about time are based on coherence rather than convention. We believe it is essential that researchers carefully consider the conceptualisation of, and assumptions about time, in their research and that they ensure that the decisions they make about time ultimately reflect the goals of their research.
To that end, we invite IS researchers to distinguish between the axis of succession and the axis of intention (see Jaques, 1988). The axis of succession relates time to the sense of passing time expressed in successive readings of the clock. It is associated with our ideas of earlier and later, before and after, temporal discontinuity and atomism, constancy and permanence (Jaques, 1988, p. xii). Researchers conceptualise time as an axis of succession when they speak of clock time, objective time, fungible time, absolute time, B series time or as Chronos, they are viewing time as an axis of succession (see figure 1). The axis of intention relates time to the experience of purposive, intentional, goal-directed behaviour and is concerned with the flux time in which future, present and past do seem to flow from one to the other (Jaques, 1988, p. 13). This aspect of time is associated with our ideas of past, present and future, passage and direction, flux and change, durée and continuity (Jaques, 1988, p. xii). Researchers conceptualise time as an axis of intention when they speak of flux time, subjective time, epochal time, relative time, A series time or as Kairos, they are viewing time as an axis of intention (see figure 1).

Our contention is that IS researchers typically view time as an axis of succession where we would be better served by viewing it as an axis of intention. This is because IS researchers are generally interested in better understanding the potentiality of information systems. We seek to better understand the affordances of technology (see Gibson, 1979 and Norman, 1988), its latent potential, its convergence (Yoo et al., 2012) and generativity (Zittrain, 2006), its capacity to bring about unprecedented levels of change and disruption (Christensen and Wessel, 2012). For this reason, we believe that IS researchers can build better research around the axis of intention than around the axis of succession. For example, IS researchers are fundamentally interested in digital innovation (Fichman et al., 2014). However, we tend to conceptualise innovation in terms of objective newness, measured by the lapse of time since its first use or discovery (see Rogers, 2003, p. 12). In this case, we are implicitly viewing time as an axis of succession. The same is true when we conceptualise agility in terms of continual readiness for rapid change (see Conboy, 2009). In both cases, viewing time as an axis of succession is problematic because we cannot agree appropriate scales to measure continuity, rapidity and novelty. In both cases, viewing time as an axis of intention would be beneficial as it would enable us to address the core question which has to do with possibility, potentiality, making the latent manifest.

1 Over the course of the research, we evaluated a number of possible ways of classifying the dimensions of organisational temporality that have already been reported in the literature. We found that only a small number of scholars focus on multiple dimensions of time (see O Riordan (2013) for further details). Of those who analysed multiple dimensions of time (see Adam (1990), Bluedorn (2002) and Jaques (1988), Jaques’ conceptualisation of time was most useful to use in developing the understanding of human temporality and intentionality that we feel is missing from IS studies adopting a traditional Newtonian or Clock Time view.
4 Building better theory in IS research

There are at least three ways in which IS researchers can develop richer theories taking into account.

(i) The first way is to enhance our understanding of temporality in general. Temporality is a multidimensional construct, a holistic representation, a complex phenomenon. We would like to suggest that IS researchers investigating specific dimensions of temporality be more explicit about how their work fits into the bigger picture. Are they focused on the axis of succession or intention? Or both? Are they focused on the mind-dependent (subjective) or the mind-independent aspects of time? In this way, we can begin to integrate our understanding of the various aspects of temporality in a more systematic way.

(ii) The second way is to be more explicit about the assumptions that are being made about time in IS research more general. This is particularly true in research that addresses constructs that are inherently temporal in nature. These include constructs such as agility and innovation and performance which are inherently temporal in nature. We would like to suggest that IS researchers who investigate specific dimensions of temporality use this distinction between the axis of succession and the axis of intention and distinguish between research that is based on
a. The axis of succession
b. The axis of intention
c. The elimination of time

(iii) The third way is to focus specifically on the axis of intention. We believe that IS researchers have overemphasized the axis of succession at the expense of the axis of intention. We believe this is a specific problem for IS researchers because when we choose to conceptualise time as an axis of succession we limit our ability to make sense of the transformative power of technology and the creative potential of people.

5 Conclusion

Despite its importance, researchers have traditionally relied upon taken-for-granted assumptions about the nature of time that originate in the natural sciences, have utilised narrow conceptualisations of time in their research and have built theories that are frequently silent about the temporal nature of our being in the world. Yet even in the natural sciences, an exclusively atomic view of a world of constant things in space is now considered untenable as a dominant philosophical view of the world and actually harmful (Jaques, 1988). To address this issue, this paper presents our initial efforts to identify the formulation(s) of time that are most useful for the discipline as a whole and to specify how we might use such formulations to build better theory in IS. Specifically, our proposal is that researchers should be encouraged to identify the formulations of time that underpin their research, to evaluate the fit between those temporal assumptions and the goals of their research, and to investigate the extent to theories that are based on different assumptions about time can be combined or integrated. Going forward, our intention is to advance the study, use and discourse of time in qualitative IS research by reviewing and critiquing the manner in which IS researchers incorporate time in their research. Our hope is that this work can contribute to ongoing discussions about the future of theory by highlighting the existence of multiple views of time, challenging researchers to explore the latent assumption about the nature of time that underpin their work, and demonstrating the need to build theories based on multiple views of time.
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