

CONSTRUCTING A SENSE OF TIME IN PROJECTS: IMPLICATIONS OF A BERGSONIAN VIEW OF TIME

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Construction management researchers have long been concerned with explaining time performance in projects. Many have simply relied on the quantitative notion of 'clock' time to explain how the actions of participants, as rational purposive beings, contribute to the time performance of projects. In this article, the central argument that the emphasis of managerial methods of time management in construction has failed to account for the full spectrum of time is put forward. By researching project time performance as an objectified goal, construction management researchers have not fully imagined the qualitative possibilities of individual time scales (or temporal perspectives) in organisations. Drawing on the work of French philosopher Henri Bergson (1859-1941) and empirical examples from an ongoing ethnographic study of infrastructure development projects in an international airport (MyAirport), it is argued that time cannot be simply represented as a homogeneous numerical order. Rather, researchers must open up potential questions about the multiplicity (i.e. heterogeneity and continuity) of the qualitative experiences of time in (organisational) life, which has hitherto been taken for granted in the field of construction management. Implications of the more plural perspectives of time are also discussed, in relation to space (context), strategy (future-orientation), and sense-making (connecting temporal perspectives).

Keywords: Henri Bergson, sensemaking, temporality, time.

INTRODUCTION

The advancement of knowledge on how projects can be completed on time has long preoccupied the minds of scholars in the field of construction management research (see e.g. Nkado, 1995; Chan and Kumaraswamy, 2002; Xiao and Proverbs, 2002, and; Hoffman *et al.* 2007). The need to finish building projects on time is certainly understandable, especially in contexts where there is a finite deadline on which the start date of the use of the built facility is critical (e.g. the stadium of a major sporting event like the Olympics). In dealing with time, therefore, research efforts have centred on three main themes, including the identification of ways to shorten time durations (e.g. Chan and Kumaraswamy, 2002) and optimise the time spent (e.g. Zhang and Li, 2010), as well as the identification of factors causing time overruns in projects (e.g.

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Toor and Ogunlana, 2008). However, in spite of the wealth of research on the use of time in construction, delays in construction projects continue to be a persistent problem.

It is argued that this 'problem' of delays is likely to prevail, in theoretical and practical discourses in the construction industry, because of the over-simplified, commoditised view of 'time' adopted in the field of construction management. Time is almost always treated as a linear and quantitative measure in the construction management literature, mobilised in managerial concerns of rational planning and purposive actions for a supposedly better future. It is this narrow perspective of time, which results in the relative neglect of the qualitative experiences associated with moving through (and in) time that add to a more holistic comprehension to how individuals working in the industry construct a sense of time. It is only through this rounded understanding that one could potentially find the clues to unlock the puzzle of the performance of time in projects.

In this article, the theory of time by French philosopher Henri Bergson is drawn upon to explain the heterogeneous and multiplex views of time in society and social change. We juxtapose Bergson's view of time with the use of 'time' in construction management and wider fields of organisational and management studies to demonstrate the limits of current understanding of time in construction management. Empirical examples from an ongoing ethnographic research on infrastructure development in an airport context (hereinafter known as MyAirport) will then be used to explore the possibilities and implications of applying Bergson's philosophy to better capture the realities of time in construction. Thus, the fundamental contribution of this article is to open up broader perspectives of time to see how qualitative experiences of time can help enrich current notions of time performance in construction management research.

THE USE OF 'TIME' IN CONSTRUCTION AND ITS LIMITS

Time is often perceived as a critical performance criterion that is usually connected with cost (e.g. Atkinson, 1999, and; Lambropoulos, 2007). Thus, as the old adage 'Time is Money' goes, there is a wealth of studies on time performance in the industry that either seek to improve the industry's productivity (see Drewin, 1982) or reduce the occurrence of delays in projects (see Flyvbjerg *et al.* 2003). Underpinning many of these studies is the rationalist assumption that time can be objectively managed in the running of projects, and all that really mattered is the ability for research and practice to develop better planning techniques. For instance, in Drewin's (1982) well-known work-time model of construction productivity, he categorised working time into various components that help managers identify productive and unproductive time. The idea is that explaining time in such concrete components, managerial actions can then be appropriated to eliminate activities that are unproductive in order to maximise productive time.

However, such an approach that conceptualises time as a binary between productive and unproductive time is problematic for a number of reasons. Firstly, there is still a lack of empirical evidence to show that reduction of unproductive time would necessarily lead to increments in productive time (see e.g. Thomas *et al.* 1990). There are also asymmetries between different actors in organisations (e.g. workers and managers) in the way they qualitatively perceive what productive time is (see e.g. Dai *et al.* 2007). Thus, this limits the possibilities of objectively creating categories of time that is based on the dichotomy of productive and unproductive work.

Secondly, the underlying assumption behind counting time in such a quantitative manner is that time can then be subjected to the planning prerogative of individuals (mainly managers) as rational purposive actors. Indeed, the vast volume of work found in distilling the factors causing delays in construction can simply be taken as prescriptive advice for future managers who intend to avoid such pitfalls. Yet, there is strong evidence to indicate that arming oneself with the knowledge of such factors that cause time overruns on projects does not automatically guarantee its avoidance (see Flyvbjerg *et al.* 2003). Perhaps this is because of the relative inability of our cognitive power to predict too far into the long-term future (Lejeune and Wearden, 2009). Thus, calls to refine planning at the earlier, front-end stages of the project life cycle (e.g. Williams and Samset, 2010) might simply prove to be futile, since studies have shown that project actors struggle even to make sense of what they are required to do in the present, let alone predicting the timely outcomes of the future (see e.g. Knight *et al.* 2002, and; Tzortzopoulos *et al.* 2006).

Further to the difficulties entailed in the objective classification of (productive) time and the shortcomings of rational planning approaches, the third problem in the use of 'time' in construction is its atemporal treatment. Time is largely treated by construction management researchers as numerical reduction, counted chronologically as 'clock time', and mobilised like any natural and physical resource at the disposal of managers. It has been argued that such a position on 'time' is too narrow. Rämö (2002), for example, argued that chronological notions of time (chronos) should be complemented by cosmological notions of timing (kairos) so that project participants are not only productive ("do things right"), but are also effective ("do the right thing"). Moffatt and Kohler (2008), when arguing for a socio-ecological perspective of the built environment, also stressed that built environment professionals need to develop a more sophisticated sense of time that not only evaluates its numerical characteristics, but also consider the plurality of the time periods that individuals go through. After all, as they noted, "some species respond quickly to change and shocks, others more slowly (Moffatt and Kohler, 2008: 260)", thereby requiring differential, qualitative time scales (or temporal perspectives) that go beyond quantitative means of 'clock time'. It is at this point that an introduction of Henri Bergson's enduring ideas about time is appropriate.

HENRI BERGSON'S IDEAS ABOUT TIME, AND THE RELEVANCE TO ORGANISATION AND MANAGEMENT

Henri Bergson is a Professor of Philosophy at the Collège de France, whose writings tend to extend explanations about reality from a physical science worldview to consider the realities of life (Carr, 1911). According to Carr (1911), Bergson's most influential pieces of work lay in the trilogy comprising *Time and Free Will* (1888), *Matter and Memory* (1896), and the more well-known *Creative Evolution* (1907). For the purpose of summarising Bergson's ideas about time within the confines of this article, two key themes will be elaborated in this section, namely consciousness and change.

As noted by Carr (1911), Bergson's writings served to provide countervailing yet complementary arguments to the growing dominance of the Scientific Method, which placed primacy on cognitive logic and material realities of the physical world. Bergson argued that the worldview of physical science that privileges cognitive perspectives ignores the critical importance of intuition. Rather than emphasising cognition as the basis of knowledge about the world, Bergson suggests delving deeper

into the consciousness of human life. Related to this notion of consciousness, Bergson rejects the causality of time. By using the clock pendulum as an example, Bergson asked whether time is simply represented by linear and successive oscillations of the pendulum, or whether time consists of a much more emotive element such that listening to the swings of the pendulum makes one sleepy enough to doze off. He then raises the dilemma as to whether it is the final swing of the pendulum that resulted in (or caused) the sleepiness or whether the sleepiness was actually induced from the recollection of its first and intermediate oscillations. Through this example, Bergson rendered cognitive explanations of time causality as a problematic concept since things are never that immutable; consciousness, as in life, is constantly changing, on the move and evolving.

Thus, Bergson's philosophy is really about change and movement. For Bergson, understanding social change requires a deeper appreciation of pure duration. It is important that one distinguishes between time (clock-time) and pure duration, for the former relies on one's cognitive abilities to count homogeneous states in linear succession (e.g. 60 seconds in a minute, 60 minutes in an hour, etc.) whereas the latter is based wholly on heterogeneous, qualitative experiences of individuals shaped by an ever increasing sense of history and continuity. Bergson also argued that time in its quantified form does not change; instead, it is the qualitative forms of time embodied in pure duration that changes. Perhaps his most illustrative example is expressed in the description of the cinematograph (a film camera) where each frame, like each second in a minute, is lined up successively in an immobile physical state, but quickly transforms into a moving scene when the unmovable images are projected on to the screen such that the individuals in the audience can imagine their movable possibilities (Carr, 1911).

The symbolic example of the cinematograph also denotes how individuals recollect about the growing past. As the film reel moves forward and changes into the future, the past (frames already shown) becomes ever more extensive. Like the metaphor of the swinging pendulum, it is the potentiality of the past that adds to an individual's intuitive knowledge that unleashes the possibility of its creative evolution. Put another way, history matters and so are its many ways of qualitative interpretation embedded within human consciousness, which cannot simply be explained through intellectually-codified conceptualisations of causality. An individual's time horizon is, therefore, at least three-dimensional in that emotional capacity, imagination and intellectual capacity combine to shape one's ideas of the sense of time, including the past, present and future orientations (Boniecki, 1980). As Lee and Sawyer (2010:299) eloquently explained:

"[T]ime is more complex than a linear measure would suggest. Time has properties [...] concerned with norms, rules and conventions. To represent both, we use 'temporality'. [...] Temporality helps us to explain to others, and for others to make sense, that one minute of time in a tender embrace with a loved one is experienced as 'shorter' than one minute of time with you stuck in an elevator."

Temporality is also why we are simply more accurate at planning for the near-term than the long-term (Lejeune and Wearden, 2009). Furthermore, this probably explains why lean management tools such as the Last Planner System works in an operational, day-to-day context (see e.g. Kim and Ballard, 2010) not because of the efficacy of the tool, but because human consciousness responds more realistically to the now than the

future. Therefore, Bergson's ideas about time are about placing more focus on the living, as life evolves and moves into the future.

This multiplex notion of time in general, and Bergson's philosophy of change in particular, have captured the attention of scholars in organisational and management studies (see e.g. Gherardi and Strati, 1988; Das, 1993; Whipp, 1994; Chia, 2002; Hatch, 2002, and; Linstead, 2002). This growing literature has, at its core, the central belief that the constitution of organisation is not through the "calculative and formalistic (Linstead, 2002)." Rather, organisation invokes a sense of becoming (Tsoukas and Chia, 2002) where organisational change requires its actors to move around and metamorphose within time and space (Hatch, 2002) and at different paces and rhythms (Sabelis, 2001), as opposed to simply tracing changes of physical states over time. Organisations cannot thus be treated as stable and coherent through the range of intellectual properties codified in the commodities of managerial tools (Chia, 2002). Instead, organisation (or rather organising) is forever moving, and contingent upon intuitive knowledge that can never be logo-centrally codified (Styhre, 2004). It is this corpus of intellectual debate that inspires the basis of this article, which in turn aspires to open up the heterogeneous notions of time, and seek the relevance of its ensuing movement in constructing a sense of time and temporalities in construction. To do this, the next section will present a number of empirical examples from an ongoing ethnographic study at MyAirport.

TIME PERSPECTIVES AT MYAIRPORT

Airports are highly complex spaces, made up of interactive assemblages of people, materials and information (Knox *et al.* 2008). The following excerpt from Doherty's (2008: xii) reflection on the construction of Heathrow Terminal 5 epitomises the scale of an airport's complexity.

"BAA [British Airports Authority] had created an environment that actually allowed them to focus on being the best they could as project managers, design leaders, engineers or supervisors, rather than spending time second guessing the commercial impact on their company of every challenge. This book is dedicated to the people who were involved in T5, some who gave a few weeks, but many who gave five, ten and in some cases over twenty years to see T5 opened successfully."

This quote by Doherty (2008) demonstrates the organisational pluralism at airports, not only in terms of the various professionals and working classes involved, but also in the varying time scales of social relationships forged in the project of constructing Heathrow Terminal 5. So, the involvement of people in different time frames - a few weeks, five, ten and over twenty years - is noteworthy, since the qualitative experiences and organisational sensemaking are likely to differ depending on the quantitative amount of time spent in the project. Indeed, sensemaking appears to be the only certainty, as Doherty's (2008: 328) conclusions remarkably highlight:

"Time will tell if the operating profits, retail spend and workforce efficiencies are actually delivered. But what stands the test of time will be the passenger experience."

Thus, only time will tell suggests a tentative, uncertain future where managerial concerns are secondary to the (qualitative) experience of passengers. It is this experience of time perspectives at airports that is the central focus of this section.

Empirical examples of the different ways actors at MyAirport conceptualise time will be presented here. The data is drawn from a wider study into how internal stakeholders at MyAirport make decisions about infrastructure development. The data

was collected through over 800 hours of participant observations, documentary analysis and numerous formal interviews and informal conversations with actors from the Environmental, Terminal Operations, Finance, and Finance departments at MyAirport. The purpose of these examples is not to present conclusive findings of the wider study, but to highlight the multiple time perspectives at MyAirport. The observations to date have provisionally identified temporal perspectives across three themes, namely space, strategy, and sensemaking, which will be discussed in turn.

Time and Space (Context)

Time matters a lot to airports. Indeed, as a traveller passing through the space of airports, one is likely to encounter departure time, arrival time, and transit time. Clearly, these different sources of time at an airport would have different interpretive consequences depending on the traveller's destination (e.g. is one going away on holiday, or returning back to work?). The different experiences of time are also observed in the hierarchical space at MyAirport. Consider, for example, the two extracts from interviews with the Head of External Engineering and the Programme Manager of Capital Expenditure (CAPEX) respectively on the issue of maintenance.

"[...] as far as the air maintenance team, we have the same number of the resources on at the same time of the shift, irrespective of the time of year, or time of the day. So I have four guys – a maximum of four guys – who were in work on a wet November morning as I did on a July afternoon. Well, there is a lot more work for the airfield maintenance team to do in July. It is weather related and season-dependent. So, you know in the summer, we have a lot of grass cutting to do... erm renewal marking erm... a huge amount to do during the summer, but we don't have the resource to do it [...] we found in the previous winter was that after a certain number of days, the guys were just not wanting to come in because they were just knackered (tired), and couldn't get enough bodies to do the snow clearance." (Head of External Engineering)

"We going to be having 25 year capital budget, because... a lot of these things are predicable. Because, there are... we have a large site here with a lot of assets on it. Basically, over time it will degrade, and we need to replace them. And... we have a life cycle; we should be able to forecast when you actually spend the money to replace each of them, right? Say if the high voltage network last 15 years, you can forecast that 15 years... really! Erm, a lot of these is just about maintaining our current infrastructure we got here." (Programme Manager of CAPEX)

Therefore, time for the Head of External Engineering is intimately associated with seasonality and weather, and natural objects of grass and snow. The frustrations expressed by the Head of External Engineering of having to cope with limited human resources are clearly not featured in the viewpoint of the Programme Manager of CAPEX. The Programme Manager's concern is mainly technically driven by the managerial object of delivering a "25-year capital budget" which necessitates long-term, rational planning (and predictability) of weather. Arguably, this tension between the rational and uncertain will result in conflictual positions of time in MyAirport.

Time and Strategy (Future-Orientation)

The management of time perspectives also tends to be future-oriented. In this extract from the announcement of restructuring decisions by the Chief Executive of MyAirport, the use of 'time' in explaining his strategic intent is noteworthy:

"Well, the new operating model is now complete. We spent the last two or three months looking at processes and organisation structures, and the model is now built around an asset division, a commercial division, and an operations division. They are all now in place. So, as far as I am concerned, the organisational restructuring is now done. I think when you make any changes, in terms of the process, but more important, in terms of the organisation, it takes some time. And actually to get people used to it. So clearly there is a degree of anxiety within the system. Probably in the last two or three months, it's important that we actually get people involved in the final design, which we have done." (Transcript from a video briefing by the incumbent Chief Executive on the conclusion of organisational restructuring, June 2011)

It is worth noting that the incumbent Chief Executive has been in post for a year before the release of this video briefing. This is set in the context of a decline in the aviation sector as a result of the global economic downturn, increasing security concerns and growing recognition of carbon constraints. Thus, there is clearly a lot of angst among employees of MyAirport. This briefing is simultaneously affective and authoritative. So, the Chief Executive acknowledges the anxieties that the employees are encountering, but yet instructs them to "get used to it". There is recognition of the plurality of views that exists in MyAirport, but there is also assertiveness in proclaiming how "the organisational restructuring is now done." There is also a sense of legitimising this decision by stating the 'fact' that people were "involved in the final design", despite the design taking place over a short period of "two or three months."

So, again, it can be seen from this extract that time is not simply rational. The quantity of time is often combined with recognition of the way time is qualitatively experienced across the diversity of stakeholders within the organisation of MyAirport as it is (re-)organising. There is also an attempt to recollect the past in making sense of the future as the context is located in the present.

Time and Sense-making (Connecting Temporal Perspectives)

The observations also reveal how actors at MyAirport often make sense of time in the present. The following quote by the Head of External Engineering refers to the way he perceives the financial approval process that departments have to go through when suggesting improvements on MyAirport's infrastructure.

"We all got schemes in. We all had a couple of seconds as you know." (Head of External Engineering)

It is noticeable that he talks of having just "a couple of seconds" to make his pitch to colleagues from the Finance department. In reality, of course, these meetings can last a few hours with lengthy presentations made in due process. Yet, the qualitative feeling that one can never have sufficient time to get the business case across is just an example of the temporality faced by organisational actors. Nevertheless, it is this temporality, as Lee and Sawyer (2010) suggests, that helps shape the internal norms and identities of the respective departments at MyAirport.

In another example, the rhythm of time is disrupted by the eruption of the Icelandic volcano, Eyjafjallajökull, in 2010. Here, the management team of MyAirport was in the process of making a managerial decision on bonus payments on the basis of financial performance. Yet, the following quote from a management briefing shows that the managerial decision is as much an emotive decision as it is an economic one. So, the careful consideration of re-categorising the financial loss resulting from Eyjafjallajökull and the announcement of intended payment of incentives by "the end

of June" before the holiday season begins is yet another example of how the qualitative experiences of time and the timeliness of managerial decisions/announcements count as much, if not more than, the quantitative treatment of time, especially in terms of reconciling tensions between divergent views.

"The remuneration committee, which is a sub division of the board, will look at the numbers. We will look at what we deliver as a business, and then make a decision about what the incentive payment will be. The key issue they will be deciding is whether to treat the Ash Cloud, which closed the airspace around the airport in April... whether to treat that as an exceptional, or whether to include it in the performance of the business. The end of June is when they will make the decision and then the payment will be made in the July pay packet so people are ready to go on holiday. The good news is the incentive scheme will continue for another year for all colleagues." (Transcript from Airport Team Briefing, June 2010)

CONCLUDING NOTE ON IMPLICATIONS FOR SERVING TIME IN CONSTRUCTION MANAGEMENT RESEARCH

The starting point of this article emanated from the dissatisfaction with the dominant use of 'time' in construction management research. That is, time is often framed as a quantitative lever to determine the performative outcomes of construction projects. Yet, there are indeterminate aspects of time that are often overlooked in the assuming of a rational, managerial position. This article has thus contributed by opening up the possibilities of analysing time perspectives in the review of wider organisational and management studies and empirical examples of the ways in which time is referred to at MyAirport. The analysis revealed several points of alignment with Henri Bergson's theory of time and philosophy of change. Fundamentally, quotes from participants at MyAirport have illustrated a more textured view of time that transcends numerical 'clock-time' to include qualitative, often emotional responses to temporalities at the workplace. Time is thus heterogeneous, which can potentially create conflictual tensions between various actors at MyAirport. These aspects are often ignored in construction management research.

So, what are the implications of this broader time perspective for construction management research? Three preliminary challenges are concluded here. Firstly, there is a need to recognise the limitations of rational planning approaches and the management of time in the delivery of projects. Pursuing more research on examining 'clock-time' in construction management may prove fruitless in solving the problems of 'time' in construction. Rational methods need to be supplemented by an appreciation of how individuals scale their time in organisations and how this subsequently shapes the rhythm and pace of organisational practices. Thus, the use of qualitative methods generally, and ethnography more specifically, could be helpful.

Secondly, tensions in the way time and temporalities are conceptualised and mobilised in organisations should not be treated as a scholarly problem to be designed away. Rather, the existence of such tensions, as depicted in the examples from MyAirport above, could invite productive questions as to what these concepts mean for practitioners in terms of sensemaking and identity construction (see Brown and Phua, 2011). Identifying the multiple ways in which time and temporalities unfold in organisations could enable deeper discussions about possible futures of organising and becoming, bearing in mind reconstructions of the past in the moving, constructing present. This in turn could creatively unlock potential ideas about improving time performance in construction.

Finally, the understanding of the plurality of time requires researchers to become embedded in the context and consciousness of the living in organisations. In so doing, researchers will then be able to explore how the past and the future connect with the ever-changing present, and discover how the actors we follow subjectively experience and construct their time in organisations (see Alexander, 2008). It is hoped that these challenges provide useful leads for finding better ways to serve time in construction management research and practice.

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