

# DELAYS, WHAT DELAYS? A CRITICAL REVIEW OF THE LITERATURE ON DELAYS IN CONSTRUCTION

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Despite a wealth of research into the causes and impacts of delays in construction, time and cost overruns remain a perennial problem in the construction industry. In this critical review, the literature on delays in construction is revisited with a view to inject fresh perspectives of the problem. Early studies have adopted rational, naturalistic positions to explain structural characteristics that lead to project delays. These studies tend to place primacy on what contractors can do to manage and eradicate delays, and usually take the planned project time for granted. Recent attempts have been made to articulate the possibility of strategic misrepresentation that could result in under-estimation of project time and costs, which in turn creates a perceived delay. Through the review, it was found that the intentions of the multitude of actors involved in delivering construction projects remain a relatively under-researched area, especially during the fuzzy-front-end of the project life cycle. A case is made for the need to study how intentions of different project stakeholders in the early stages of the project could potentially create unintended delays. Specifically, a number of critical questions were raised, including how stakeholder intentions are collectively constituted, and whether intentionality materially influences planned and achieved schedules in projects.

Keywords: delay, front-end, intentionality.

## INTRODUCTION

Delays in construction have always been a topic of concern for construction management researchers. Ahmed *et al.* (2003) identify delay as the most common, complex and universal phenomenon in construction which is typified by cost and time overruns (see also Abdul-Rahman *et al.*, 2006; Arditi *et al.*, 1985; Alaghbari *et al.*, 2007; Xiao and Proverbs, 2002; Ahmed *et al.*, 2003; Al-Khalil and Al-Ghafly, 1999). Arditi *et al.* (1985) even consider the severity of delays in construction to have the potential to impact on the state of the overall economy of a country.

For a long time many researchers in the field of construction management have tried to investigate the causes and effects of construction delays. These studies tend to focus attention on explaining the causes, which in turn would help guide practitioners to identify possible measures for mitigating against (or even eliminate) delays in construction projects. Yet, despite the wealth of research finding the causes of, and possible antidotes for reducing, delays in projects, the failure of many projects to finish on time remains problematic globally. For example, 70% of the construction projects in Saudi Arabia have been estimated to experience some form of delay (Assaf

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and Al-Hejji, 2006). In Nigeria, it has also been noted that seven out of ten projects suffered time overruns (Odeyinka and Yusif, 1997). Another survey in Malaysia concluded that 17.3% of 417 public projects experienced a time overrun of around three months of delay in 2005 (Sambasivan and Soon, 2007). All of this point to the fact that little has changed in spite of all the research into delays in construction.

Given this backdrop, this critical review revisits past research into construction delays in an attempt to offer fresh insights into the nature of the problem. Through this review, it is found that many scholars have in the past focussed their attention on the execution phase of the project life cycle when explaining the causes and consequences of delays. In so doing, the project time schedule in the planning phase tends to be taken for granted. Put another way, delays result from poor execution by project actors that in turn ought to be managed. It is argued in this article that the assumption that the project time schedule in the planning phase is always 'right' needs to be challenged since an inaccurate time plan - whether optimistic or pessimistic - would yield a deviance in execution. Therefore, there is a need to study more deeply how the planned schedule comes together in the first place. A corollary of this is that this demands greater scrutiny of the role of stakeholders' intentions in bringing about the project time plan.

This critical review is organised in three sections. Firstly, trends in research on construction delay are traced, with a view to identify the limitations of previous work. Secondly, critical perspectives are discussed, which call for the need to place greater emphasis on the validity and reliability of project time plans, and the role stakeholder intentions play in deriving the planned schedule. This implies a need to account for strategic decisions made at front-end stage of projects where the estimation of a project's duration might go 'wrong'. Thirdly, the article concludes with possible ways in which stakeholder intentions might be investigated and applied to research on construction delays.

## **REVIEW OF RESEARCH ON DELAYS IN CONSTRUCTION: EMPHASIS ON CAUSES AND CONSEQUENCES**

There is a general belief that completing a project on time is an indicator of success (Assaf and Al-Hejji, 2006; Chan and Kumaraswamy, 1997; Nkado, 1995; Xiao and Proverbs, 2002). This probably explains why so much attention is placed on trying to understand how projects can be completed within the specified project duration. Deviation from the project duration is thus considered to be negative. Therefore much attempt has been made to identify causes of delays that are significant, in order to avoid or minimise their impacts. Some typical causes identified in the literature include such factors as the degree of uniqueness of the project, speed of decision-making, deficiencies in scheduling, poor communication between project actors, low labour productivity, availability of materials and resources, and adversarial contractual relations (Chan and Kumaraswamy, 2002). Researchers have also noted that delays are caused mainly by the actions of the contractor and/or the project owners/clients (Aibinu and Jagboro, 2002).

In uncovering the causes and consequences of construction delays, the research methods adopted are also noteworthy. Scanning the literature, it is striking that the positivist methodology is typically assumed, with researchers adopting quantitative methods (typically self-perception questionnaire surveys) to identify the factors causing construction delays (see e.g. Faridi and El-Sayegh, 2006; Chan and Kumaraswamy, 2002; Toor and Ogunlana, 2008; Le-Hoai *et al.*, 2008; Ellis and

Thomas, 2002; Zakeri *et al.*, 1996; Manavazhi and Adhikari, 2002; Acharya *et al.*, 2006; Al-Kharashi and Skitmore; 2009). There is also a sense that these normative 'factors' have come to be pre-ordained in the literature such that many researchers simply sought to either confirm that the prevalence of these 'factors' or investigate the magnitude of these pre-determined factors in their specific context. Thus, much research on construction delays have hitherto been acontextual, which in turn limits the possibility of transferring lessons learnt from research into practice. Furthermore, the (over-)reliance on selected informants from industry - typically managerial staff - as the basis of knowledge generation to explain the causes and effects of delays can be problematic (Alvesson, 2002).

## **CRITICAL PERSPECTIVES OF RESEARCH ON CONSTRUCTION DELAYS**

By reviewing past research on construction delays, four critical observations can be made. Firstly, as discussed above, researchers have mainly been motivated to determine the causes of delays in their respective countries so as to find ways of improving the time performance of projects. However, as it has been argued, such efforts have been futile because of the acontextual approach adopted by such scholars. Consequently, factors have been identified and 'recycled' from one research project to the next. Flyvbjerg (2009) observed that delays continue to plague the industry. His research covering 258 projects across 20 nations and 5 continents concluded that 9 out of 10 projects suffer overruns in the 70-year period of his sample projects. Thus, the problem of delays persists, indicating that no learning seems to have taken place from the wealth of research undertaken.

Secondly, although delays can in principle occurs at any stage of a construction project, i.e. from conception stage to completion. Past researches have mainly emphasised the project execution stage, focussing on potential solutions in the construction phase (Chan and Kumaraswamy, 2002; Abdul-Rahman *et al.*, 2006; Acharya *et al.*, 2006; Nkado, 1995). The implications of actions taken at the early stage of projects (also known as the "fuzzy front end" stage) on time performance in the later stages of the project life cycle. This is despite growing recognition of the criticality of the early stages of the project life cycle in shaping project outcomes (see e.g. Kolltveit and Grønhaug, 2004). For example, it is accepted wisdom that the front-end of projects is fraught with information uncertainty and problems among stakeholders of seeking consensus on the assumptions and values that underpin project objectives (Williams and Samset, 2010). Yet, this stage of the project life cycle has largely escaped the attention of researchers explaining project delays. Arguably, many pivotal decisions made during this stage of the project life cycle would have direct and indirect impacts on the long-term success or failure of the projects. As Flyvbjerg (2009) maintained, "no other stage in the project cycle is more susceptible to premature closure, lock-in, path dependence, anchoring, overconfidence, group think and similar problematic behaviour that all result in ignorance of relevant distributional information and thus in inadequate project preparation".

Thirdly, there is very little critical discussion about the definition of delay. In order for delays to materialise, there must be a deviation from the plan. Yet, it is observed that many researchers on construction delays merely focused their attention on the deviation, rather than the plan. There is a tacit assumption that the plan is always accurate to begin with. However, an 'inaccurate' plan - whether optimistic or pessimistic - would yield a deviation. Indeed, project time performance would

normally deviate from the plan if the plan is not well-founded and precise to begin with. Flyvbjerg *et al.* (2003) state that “a significant cause for schedule delays and cost overruns in most large-scale projects can be found in unrealistic baseline plans”. However, researchers of construction delays rarely problematise the accuracy of project time plans and its role in creating the 'delay' later in the project life cycle.

Nonetheless, inaccuracies in project time plan have been well-documented in the literature. Williams and Samset (2010), for instance, suggest that psychological and political biases, combined with errors in information and planning methods can lead to unrealistic time plans. Similarly, Flyvbjerg (2009) noted technical, psychological, and political-economic reasons that could lead to unrealistic project plans. Drawing on Kahneman and Tversky's (1979) notion of the 'planning fallacy', Flyvbjerg (2009) observed situations where “planners and project promoters make decisions based on delusional optimism, rather than on a rational weighting of gains, losses and probabilities”. To illustrate the 'planning fallacy' in an example, Buehler *et al.* (2002) showed that there was a tendency for his final-year students of psychology to consistently underestimate the time needed to complete their research dissertation. That said, Flyvbjerg (2009) stressed that it is improbable that an entire profession of forecasters collectively make the same mistakes time after time in forecasting wrongly. Instead, he argued that project managers and planners frequently lie with numbers, as he coined the phrase "strategic misrepresentation" (Flyvbjerg, 2002; 2005; 2009; see also Wachs, 1989 and 1990).

Fourthly, it is observed that human judgement tends to be absent in the study of construction delays (see Skitmore and Ng, 2003; Hoffman *et al.*, 2007). If Flyvbjerg's (2002) assessment of strategic misrepresentation holds true, then there is much scope to investigate how such misrepresentation is intentionally invoked when creating project time plans. Here, researchers on construction delays have tended to assume that by articulating the causes and consequences of project delays that practitioners would therefore be able to intentionally bring about change for improving time performance. Yet, it is surprising that to find that scholars have hitherto failed to consider the role of intentions play when constructing project time plans at the early stages of the project, which in turn could bring about a delay - intended or otherwise. Indeed, such a critique extends to the wider field of project management, and there is greater purchase in the mainstream management literature in terms of exploring the role of human intentions in seeking managerial outcomes (see e.g. Ghoshal, 2005; Little, 2009, and; Flyvbjerg, 2009). In the next section, the idea of intentionality is considered with a view to seek an application to research on construction delays.

## **STAKEHOLDERS' INTENTIONS AND CONSTRUCTION DELAYS**

As discussed previously, the deliberate or intentional biases of different project stakeholders at the front-end of the project life cycle could result in the materialisation of project delays in the later stages of the project life cycle. Such intentional action could stem from strategic misrepresentations and/or inadequate information and decision-making. It is argued that research on construction delays can benefit from a deeper scrutiny of the sources of the stakeholder intentions at the early stage of projects, and implications of these intentions in shaping project outcomes. In this section, the idea of intentionality is reviewed to unpick some of the key concepts that might be applicable to the way we think about construction delays.

## General perspectives of human intentions

The importance of intentionality as a property of the mind has been widely recognised. Intentionality goes some way to explain human action, although as a concept, it remains a philosophically and psychologically contested idea (Searle, 1990). Whilst the origin of the concept of intentionality can be traced back to Aristotle's work (382 B.C.), early writings about intentionality in the 12th century were intimately connected with religious debates around the concept of free will (Malle and Knobe, 1997; Malle, 2006). In modern times, Lewis (1990) questioned the existence of human intentions and subscribed to the view that intentionality probably exists as an emergent property found in human consciousness, albeit socially constructed.

The socially constructed nature of human intentions deserves greater attention. After all, the workings of human intentions do not happen in a void; the intentions of an individual that invoke an individual action could bear consequences on and for others. As Malle *et al.* (2001) noted, human intention is "the property of actions that makes ordinary people and scholars alike call them purposeful, meant, or done intentionally". In other words, the constitution of human intention is not confined to the realm of the individual. Rather, the intentions of an individual can be, and often are, subjected to the scrutiny of others. Malle and Knobe (1997) called this the "folk concept of intentionality". This is quite a critical point in the study of intentions, and has direct implications on the discussion of construction delays. As stakeholders come together during the early stages of the project to plan the project schedule, intentions are socially constructed and articulated by the "folk" involved to negotiate some sense of consensus. It is the mobilisation of such "folk intentions" that demands closer investigation.

## Towards a framework for articulating (and asking about) intentions

According to Malle and Knobe (1997), folk intentions comprise five main components including: "a desire for an outcome; beliefs about an action that leads to that outcome; an intention to perform the action; skills to perform the action; and an awareness of fulfilling the intention while performing the action". In the folk concept, the term intention should be applied to a person who intends to do something, and the term intentionality should be applied to a person who performed an action intentionally e.g. John tried to make the coin land on tails (intention) and whether his friends thought that he made the coin land on tails intentionally (intentionality). This concept has two stages: in the first stage, the five components constitute an intentional action. Then, this intentional action could affect and change agent's goals and behaviours (see Figure 1 below).

When attempting to explain the connections between individual desires/beliefs/intentions and their goals and behaviours, one is confronted by a number of methodological challenges. Lewis (1990), for instance, noted the difficulties of delineating between the conscious and the unconscious. Lewis (1990) proffered a number of scenarios: firstly, agents are either unaware of the process of their thoughts, or may become aware of them through specific attempts (subjective self-awareness); secondly, agents are aware of their feelings, thoughts and actions. The latter type of intentions follows the goals consciously. Exploring how this process takes place within individual agents could go some way to explain how and why inaccurate planning and/or strategic misrepresentation of decision-makers involved in planning a construction project occurs.

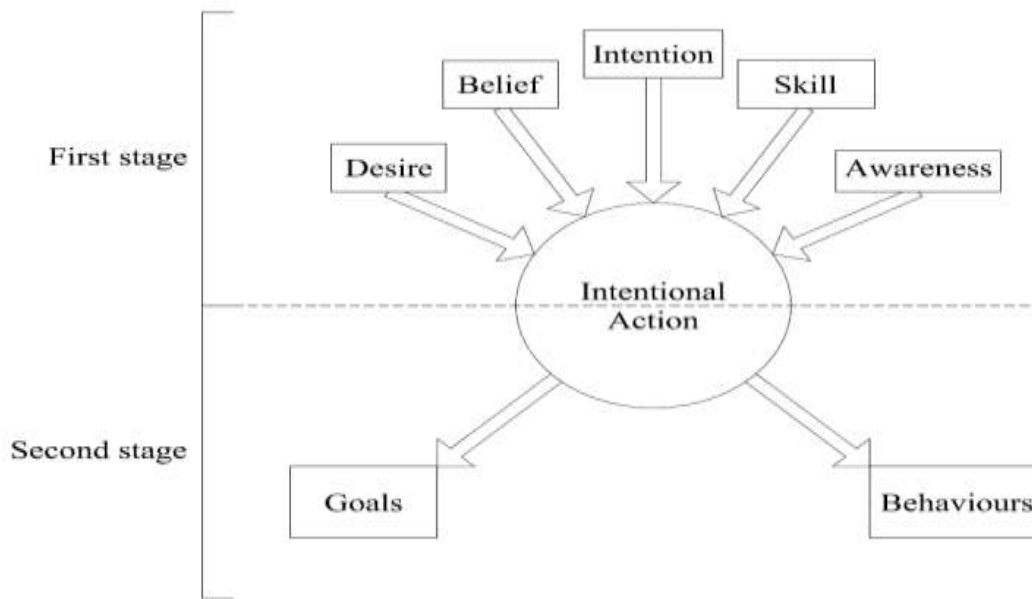


Figure 1: Two stages of intentional action (after Malle and Knobe, 1997).

Merely investigating individual intentions is insufficient. As a matter of fact, when one performs an intentional action, the socially constructed nature of intentions (or "folk intentionality") means that others will always judge whether or not actions were done intentionally or not. Furthermore, there is a tendency for humans to look for the reasons of others' behaviours in order to establish their own behaviours; to select a method to respond to them; and to achieve their social objectives (Malle and Knobe, 1997). Put another way, the way people behave often shows how they think about their world around them and the consequences of their actions on others. Thus, in order to make sense of specific intentional behaviours and actions, there is a need to find ways of drawing inferences about the various goals implied by the behaviours, and the characteristics (i.e. desires, beliefs, skills, awareness) of the different players involved as a collective.

However, trying to capture the dynamics of stakeholder intentions requires consideration of power relationships. Stakeholders often come with different or conflicting individual intentions. Therefore, the influence of each individual stakeholder's intention on the project could be directly affected by his/her "power" standing within the networked interactions with other project stakeholders. Powerful shareholders often exploit the circumstances and have opportunistic behaviour. They try to "change the power structure within the firm and reinforce their dominant position" (Coff, 1999). Furthermore, powerful stakeholders tend to coerce others to act according to their intentions. This power struggle is potentially intensified at the front-end stage of projects because of the information uncertainties and risks associated with this phase (Cennamo *et al.*, 2009). Therefore, when analysing the interplay between stakeholder intentions and behaviours or intentional actions, it is necessary to account for how complementary and conflicting intentions become manifest and resolved.

In summary, therefore, the framework depicted in Figure 1 above offers the possibility of opening up new lines of inquiry for researchers of construction delays. For example, what desires, beliefs and intentions drive stakeholders to make decisions about the project time plan during the front-end of the project life cycle? What skills and awareness of information help inform this process? To what extent is this based

on informed judgements about what is realistic? How are the desires, beliefs, skills and awareness of individual stakeholders connected with (or disconnected from) the goals and behaviours of the decision-makers? How can researchers capture these dynamics through the research observations that go beyond the use of self-perception questionnaires?

## CONCLUSIONS

The problem of construction delay is a longstanding one. Through this critical review, it is noted that many researchers of construction delays have hitherto assumed that the project plan is always 'right' at the early stages of the project and delays are therefore a consequence of flawed execution. The argument put forward in this article is that greater attention needs to be placed on questioning the validity of the project time plan put together during the early stages of the project. The assumption underpinning this critical review is that an 'inaccurate' project time plan could potentially create a situation of delays in reality. Therefore, it is important to deconstruct how project time plans are produced in the first place. The contribution of this article is two-fold. Firstly, the article offers a critical view of existing research on construction delays. Secondly, and more crucially, the article calls for deeper exposition of the intentions of different stakeholders at the project time planning phase. The role of stakeholder intentions has been given scant attention to date. By exploring the interplay between stakeholder intentions and the construction of the project time plan, this could potentially shed light on how and why project time plans are optimistically (or pessimistically) unrealistic.

Having briefly reviewed the concept of intentionality, there are a number of methodological queries that need to be accounted for. Firstly, there is a need to clarify the conscious from the unconscious through the research observations. Secondly, there is a need to distinguish between the consequences of individual intentions and collective intentions. Thirdly, there is the problem of identifying how individual intentions can be aggregated to a collectively agreed set of intentions and intentional actions. Fourthly, how can we ever know whether particular intentions - individual or collective - have led to particular outcomes? Will resolving our understanding of stakeholder intentions really lead to the eradication of project delays in construction? In order to address these methodological queries, there is a need to move away from the dominant method found in much of the construction delays literature. Self-perception questionnaire surveys only go some way to explain individual intentions and intentional action. To seek plausible answers to these questions, one must adopt more interpretive, qualitative techniques that can provide a more textured analysis of the dynamics of individual and collective intentions over time. It is here that ethnographic research offers immense possibilities.

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