# Polycentric organizing and performance: A contingency model and evidence from megaproject planning in the UK

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## ABSTRACT

This study sheds light on polycentric forms of organizing and corresponding performance implications. Organizations with a polycentric architecture supplement their internal hierarchical decision-making structures with egalitarian, local structures in order to encourage collaboration with legally independent stakeholders. We ground our study on the planning stage for four capital-intensive infrastructure development projects (megaprojects) in the UK. We first establish that megaproject planning is carried on by polycentric organizations. We show that in this form of organizing the promoter has decision-making authority over the high-order choices, but shares the authority over the local choices with groups of autonomous stakeholders. We also show how this organizational architecture addresses local disputes and pressures to relax performance targets. Our main contribution is a contingency model that proposes four conditions linking performance to polycentric organizing, whether or not: i) the institutional environment empowers an 'umpire' to referee disputes; and ii) the system leader can mobilize substantial slack resources to reconcile conflicting interests. We argue that the four conditions reveal very different classes of managerial problems, and draw implications for practice and policy including but not limited to megaprojects.

## 1. Introduction

A long-standing puzzle in management and policy literature is why empirical accounts repeatedly show that capital-intensive project organizations (so-called 'megaprojects') struggle to meet the initial performance targets. These accounts matter because performance slippages fuel a perception that the megaproject 'failed'. This perception is rooted in institutionalised norms positing that 'successful' project organizations avoid scope creep and achieve the goals on time and within budget (Cleland and King, 1968; Dvir and Lechler, 2004). The London 2012 Olympics project is a case in point. The cost forecast of the 2002 plan was set at £3.55 billion (cash prices) with 95% confidence.[1] By March 2007, after four years of planning, the anticipated cost had soared to £7.0 billion (cash prices) with an additional £2.0 billion set aside as contingency, leading to public claims that the project leaders were willing "to spend money like water".[2] By 2012, the leaders came to their own defence, insisting that "Britain delivered" and that the £9.0 billion project was a story of "great leadership".

Extant theoretical explanations for these empirical regularities fall within two broad groups. One group blames the organization that promotes and finances the projects (the 'promoter') for underestimating the performance targets. The explanations range from cognitive optimism bias and strategic misrepresentation (Wachs, 1989; Flyvbjerg et al., 2003) to lack of planning and project management capabilities (Hall, 1980; Morris, 1994; Merrow et al., 1988; Stinchcombe and Heimer, 1985; Ross and Staw, 1986). The second view is equally common—that megaprojects simply cannot be planned reliably because of external events and of the vested private and institutional interests that lie outside the promoter's control. Hence, in the second view, the promoters are hostage to political bargaining and externalities, which leads to project pathologies including scope creep (Szyliowicz and Goetz, 1995; Shapiro and Lorenz, 2000) and collective inflationary consensus (Altshuler and Luberoff, 2003; Miller and Lessard, 2000; Gil and Tether, 2011). Neither approach addresses, however, the structures by which the planning process actually happens.

In this empirical study, we adopt an organization design perspective to move forward the debate on the causes of megaproject overruns and scope creep—a debate that has been stuck for more than 20 years (Pinto and Winch, 2016). We argue that central to understand megaproject performance is the architecture of the organizations formed to plan

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[1] Pricewaterhouse Coopers (2013) Olympics Bid London 2012. Probability Assessment for the Department of Culture, Media and Sport, 13 January.
[2] Kelso, P. 2008. Olympic 2012 Chiefs willing to spend money like water, say MPs. *The Guardian*, 20 April.

megaprojects—this is, the fundamental organisation of the system in terms of its components, their relationships to each other and to the environment, and the principles guiding its design and evolution (Fjeldstad et al., 2012; Simon, 1962). We claim that implicit to the unresolved debate on the causes of megaproject overruns is the assumption that megaprojects are 'authority hierarchies' over their life-cycle. In this study, we challenge the assumption that through employer-employee relationships, property rights, regulation, and legal contracts the promoter has complete authority to allocate resources and resolve disputes (Gulati et al., 2012). Admittedly, multiple accounts show that promoters have authority to set the performance targets at the onset of planning—in this regard, it is fair to say that promoters *act* as an authority hierarchy. Planning activities, however, consist of much more than simply setting targets. In planning, the promoter is unlikely to control all the resources necessary to achieve the system goal, e.g., finance, regulatory consent, property, political influence. Hence, the promoter needs to collaborate with multiple independent actors to encourage voluntary contributions of complementary resources (Lundrigan et al., 2015; Gil and Baldwin, 2013; Gil et al., 2015). As such, planning involves designing structures and processes, and occurs *before* the promoter can 'simulate' (Stichcombe and Heimer, 1985) an authority hierarchy through regulation, property rights, development agreements, and the buyer-supplier contracts needed for execution. That is, planning occurs in a 'pluralistic' setting where the authority to make decisions is diffused across multiple independent, heterogeneous actors (Denis et al., 2001). In pluralistic settings, major decisions require extensive communication and negotiations between self-interested organizations to resolve disputes rooted in cognitive differences and in conflicting goals, norms and interests (Pettigrew, 1973; Jarzabkowski and Fenton, 2006).

This understanding that interorganizational disputes are endemic in a pluralistic setting such as megaproject planning is instructive. However, it leaves outstanding the organizational design choices that managers make in order to create an interorganizational context for searching for mutually consensual solutions. We know, however, that managers intuitively design interorganizational contexts to attenuate the managerial complexity of collective action (Ostrom, 1990). We also know that causal relationships between organization design and performance are contingent on the surrounding context (March and Sutton, 1997). This reasoning leads to our core research questions: First, how is the planning stage of megaprojects organised from an architectural point of view? Second, how does organizational design impact performance? Finally, to which degree does the project context affect organizational design choices and performance?

In this paper, we address these questions through multiple-case research. This approach is useful to explore new ideas in comprehensive ways as it reveals the complexity in social settings and the longitudinal interconnections between events (Eisenhardt and Graebner, 2007). Our sample consists of four large infrastructure projects in the UK: three projects promoted by the central government (two railways, Queen Elizabeth Olympic Park) and one promoted by a private firm (airport terminal). This sample varies in two dimensions with the potential to impact organizational design choices and thus critical to develop generalizable claims (Eisenhardt, 1989; Eisenhardt and Graebner, 2007). First, the sample varies in the decomposability of the architecture of the product being planned, a factor that design theorists claim to influence organizational design choices (Sosa et al., 2004; MacCormack et al., 2012, Colfer and Baldwin, 2016). Second, the project organizations vary in their interdependency with the institutional environment, a source of major uncertainty that again is known to directly impact organizational design choices (March and Simon, 1958).

Two main contributions follow from this multiple case research. First, we suggest that a 'polycentric' architecture is central to the design of capital-intensive project organizations in planning, irrespective of the architecture of the product being planned and of the degree of interdependency with the environment. Polycentric systems are a known

approach to decompose large arenas of consensus-oriented collective action (Ostrom, 1972, 1990). The basic idea is to create a system of nested interorganizational groups of decision-making so as to reduce the coordination costs and encourage collaboration. These local structures enable independent actors to share decision rights and to search for mutually consensual solutions (Dorobantu et al., 2017). Polycentric architectures are additive and collaborative because they supplement the authoritative decision-making structures within the organization with decentralised decision-making structures to which independent actors commit voluntarily (Ingram and Clay, 2000; King et al., 2005). In our focal settings, the megaproject promoter has full authority to set upfront performance targets, to decide which decision rights it wants to share voluntarily and when, and to choose which actors in the environment it wants to bring inside the organizational boundaries. Polycentric systems are thus a hybrid form of organizing which supplements a hierarchy vested with unified authority to make high-level choices with egalitarian groups in which the authority hierarchy shares decision rights over the local choices with local actors.

Our second contribution is to develop a contingency model that establishes logic for linking project-based organizational performance to a polycentric form of organizing. Our model is contingent on two administrative structures that can be deployed to resolve local disputes if the context allows: one structure is external to the polycentric organizational system, and relates to whether the institutional environment empowers an external 'umpire' or arbitrator to resolve the disputes that the organizational participants struggle to resolve on their own; the second structure is internal to the polycentric system, and relates to the latitude of the designated leader to mobilise substantial slack resources in order to reconcile conflicting interests.

We organize the rest of this paper as follows. First, we review our understanding about designing organizations in pluralistic settings. Next, we describe the research design, sample, and methods. We then examine the product outcome and the organizational architecture of the sampled projects and variation in the structures that were deployed to resolve local disputes. Based on our analysis we propose a contingency model of polycentric performance. We conclude with boundary conditions and implications to policy.

## 2. Designing organizations in pluralistic settings

Pluralistic settings are characterized by the diffusion of decision-making authority. In these settings, decisions require lengthy discussion so the participants can understand complex issues and strike a consensus (Susskind and Cruikshank, 1987; Thomson and Perry, 2006). Diffused authority also makes politics and bargaining part of the decision-making process (Ring and Van De Ven, 1992). Furthermore, the risk of inaction is also high in a pluralistic setting wherein the decision-making participants mistrust one another and keep disputing each other's evidence—what Langley (1995) calls, 'paralysis by analysis'.

Yet organizations that aim for system-level goals that require pooling resources controlled by multiple autonomous and heterogeneous actors operate in pluralistic settings. This is the case, for example, of organizations in health care, infrastructure, and education—economic sectors where multiple legally independent actors control interdependent but not necessarily transactional resources (Denis et al., 2001; Jarzabkowski and Fenton, 2006). This interdependency of the organization set up by the system architect with 'external' actors is a threat to the survival of the systems architect's organization. To attenuate this risk, the systems architect can manipulate the organizational boundaries; this is share decision rights with key stakeholders although these stakeholders stay nominally independent. Endemic to such 'collective' strategy (Dorobantu et al., 2017) is a trade-off: less uncertainty in the environment comes at the expense of a loss in decision-making autonomy (March and Simon, 1958). This is the trade-off that megaproject promoters face when they open the planning process to key stakeholders. For example, accounts of planning for Heathrow