Introduction: studying global projects

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Given the fragile condition of our planet with its finite space, resources, and capabilities, we are not in favor of "development" for its own sake. Nevertheless, the likely arrival within the foreseeable future of a billion additional inhabitants on our planet will generate the need for a huge investment in basic infrastructure: water and sewage, energy production and distribution, transportation, and telecommunication, among others. At the same time, such support systems in developed countries are deteriorating and in need of renewal. Infrastructure construction projects are assuming increasing salience for both developed and developing countries. And, increasingly, those who design, fund, and build such projects are international or global in character.

Historically, the major challenges in carrying out infrastructure construction projects have been primarily technical and financial in nature, focusing on design, construction, financing, and the details of maintenance and operation. Today, many of these engineering and most of the economic problems have been solved, but the threat of social misalignments and political conflicts renders the development and management of such projects more challenging than ever before. This volume concentrates primarily on challenges confronting global projects stemming from the complexity and volatility of the political and institutional contexts within which these projects are embedded.

In this brief introduction we describe the emergence of project-based organizations, noting the origins of scholarly work on projects and the kinds of theoretical approaches currently being developed to examine these systems. Next, we comment on various conceptions of the context or environment within which projects operate, calling attention to the gradual broadening and elaboration of these frameworks. And, finally, we present a brief overview of and introduction to the chapters comprising the volume.

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Project organization

Early formulations

Students of organizations first began to become aware of the emergence of a new mode of organizing during the late 1960s to early 1970s when, far out on the fringes of the field, a few marginal observers identified "outlier" forms which they termed, variously, "temporary" (Bennis and Slater 1968), "post-industrial" (Bell 1973), "adhocracies" (Toffler 1970) or, in Hedberg and colleagues (Hedberg, Nystrom, and Starbuck 1976) memorable simile, as organizations "camping on see-saws," resembling "tents" more than "palaces."[1] At about the same time "contingency theory" arguments were advanced that insisted that, to be effective, organizations needed to reflect in their design the complexity of their environments (Burns and Stalker 1961; Lawrence and Lorsch 1967; Thompson 1967). Such approaches suggested that, under conditions of great complexity and high uncertainty, organizations should resort to more lateral and flexible coordination strategies, such as those offered by teams and projects (Galbraith 1973;1977).

These insights and arguments were first collected and codified by Henry Mintzberg in his book, *The Structuring of Organizations* (1979), where he depicted the "adhocracy" as one of his five basic forms of organizing. Presciently, this form was described as "capable of sophisticated innovation" because it is "able to fuse experts drawn from different disciplines into smoothly functioning ad hoc project teams" (p. 432). Unlike a related form, "professional bureaucracies" that also rely on standardization of skills and vertical decentralization (see Scott 2003: 258–60), the adhocracy's distinguishing structural characteristics included: (1) organic rather than mechanical structures; (2) low levels of formalization; (3) high horizontal job specialization; (4) work organization based on projects (outcomes) rather than processes (functions); (5) coordination based on mutual adjustment; and (6) selective decentralization (Mintzberg 1979: chap. 21).

Approaching the same topic from a different direction, another wave of theorists worked to expand institutional economist Oliver Williamson's (1975) "markets and hierarchies" framework that attempted to explain the conditions under which organizations (hierarchies) were superior to market-based modes of coordination.

Scholars such as Powell (1990) and Miles and Snow (1992) proposed that a wide range of intermediate "network" forms could be identified that functioned in the space "between markets and hierarchies." These forms were viewed as based on longer-term relations rather than spot-market transactions, often crossing formal organizational boundaries, and emphasizing norms of reciprocity and a search for mutual benefits.

A final strand stemmed from a collection of scholar-practitioners associated with the Tavistock Institute in London who, working in close association with the companies they studied, developed a "socio-technical" model of organizations, focusing on the interface between "a nonhuman and a human system" (Trist 1981: 25). Rather than favoring one facet over the other, these scholars sought the "joint optimization" of the needs of both (Emery 1959). More fundamentally, they stressed the extent to which the construction of technologies did not simply follow mechanistic principles, but were the result of human choices: technologies were human constructions. The pursuit of these insights attracted a small but lively cluster of studies on the evolution of technical systems, including some very complex forms. These studies stressed "the importance of paying attention to the different but interlocking elements of physical artifacts, institutions, and their environment and thereby offer[ing] an integration of technical, social, economic and political aspects" (Bjiker, Hughes, and Pinch 1987: 4; see also, Hughes 2004).

Defining project organizations

At the close of the twentieth and opening of the twenty-first century, scholars began to examine more closely a growing population of organizations that were a subtype of network forms: project-based firms. The larger of these forms – those engaged in large or mega-projects were typically nodes of complex systems of multiple types of actors – both organizations (e.g., firms, banks, public agencies) and individuals (Morris and Hough 1987; Hughes 1998; Miller and Lessard 2000; Whitley 2006). We describe in Chapter 1 our own conception of projects and detail their distinguishing characteristics. Suffice it to say here that such projects focus on unique or customized singular products, are conducted over long periods of time, require the contributions of a diverse set of specialized entities, and confront complex and contested environments.

Also, as we try to emphasize in the volume, the firm is no longer viewed as a solitary actor but a focal unit in a larger system or "field" of actors. Attention must be devoted to assembling a collection of participants whose composition will shift with the changing phases of the project. Whereas early organizing models relied on unified hierarchies of power and authority, supplemented as necessary by external contracting, large project-based systems, because the interests and goals of their central participants often differ, are obliged to employ a broader range of governance mechanisms, including adjudication, cooptation, participation, and mediation. Coordination mechanisms must be enhanced by governance systems.

Theoretical approaches to project-based organizations

Because the arena of organization and management studies has become highly differentiated around axes ranging from discipline to theoretical perspective to methodology, it is not surprising that the analysis of a new form would proceed in multiple, albeit related, directions. All current approaches in business and international business studies place much emphasis on strategy – whether in terms of how to devise and produce the right engineering design, how to reduce costs and risks and maximize returns, or how to achieve sustainable, environmentally friendly solutions. Social science scholars examine the related questions, posed less explicitly and framed less prescriptively, of how varying types of organizations and organizational systems adapt, survive, and thrive under varying conditions.

Our review of the literature suggests the dominance of two theoretical approaches to large project-based organizing efforts together with the gradual emergence of a third. The first draws from and expands on the "contingency" approach to organization design. The second employs the "resource-based" view of the firm and extends it to project-based organizing. A third, emerging "institutional" perspective calls attention to the context within which these organizational systems operate.

Contingency-based approaches

A wide range of sophisticated work is associated with a contingency-based view of the firm. This perspective had its origins in the early

work of Herbert Simon (1945[1997]), developed later in March and Simon (1958), as an information-processing view of organizations. In this conception, organizations are, fundamentally, information-processing systems and, in this capacity, must find ways to adequately process the information demands posed by the environments in which they operate. As these environments become more complex, conflicted, and uncertain, if the organization is to survive, its information-processing and problem-solving capacities must respond accordingly.

This basic contingency insight, as noted, was extended by theorists such as Lawrence and Lorsch (1967) and Galbraith (1973), but has been greatly elaborated by scholars working on complex project-based organizations. Among the most creative of these was Stinchcombe (1985), who studied the organization structure of Norwegian firms managing the construction and operation of oil production in the North Sea. Stinchcombe developed an "extended definition of hierarchy" to examine the ways in which standard contracts were expanded to incorporate many elements of hierarchies to deal with high levels of uncertainty, including, dispute resolution, nonmarket pricing, and the adjustment of incentives and controls to changing conditions.

The contingency perspective underlies the sophisticated analysis of Miller and Lessard (2000), who view large engineering projects as governance arrangements devised by sponsors and leading partners to align or reconcile the divergent interests of contractors, operators, clients, and investors within a framework imposed by communities and regulators (see also, Shenhar and Dvir 2007).

Also, following subsequent theorizing by James March and colleagues (Levitt and March 1988; March 1990; Cohen and Sproull 1991), many of these approaches stress the importance to organizations of constructing systems that enable learning. Organizations learn both from their own and the experiences of others in their cohort. Some contemporary scholars argue that, in the current world, the organization with superior learning systems will enjoy a competitive advantage (Nonaka and Takeuschi 1995). This emphasis is, increasingly, being expanded into a "knowledge-based theory of the firm" (Nissen 2006). With this step, approaches that had their origin in early contingency theory begin to converge and overlap with resource-based approaches to the firm.

Resource-based approaches

More so than contingency approaches, which emphasize the inter-
dependence of organizations and their environments, resource-based
approaches refocused attention on the internal attributes and capabil-
ities of organizations. This approach to the analysis of firms began
with the pioneering work of Edith Penrose (1959), who recognized
that the most important asset a firm possesses is its specialized use of
resources (including worker skills) and it's capacity to mobilize them
as required in new and diversified combinations. Some capabilities –
constellations of interdependent knowledge and skills – are difficult to
imitate by other firms and hence provide a unique source of competi-
tive advantage (Hamel and Prahalad 1994).

Nelson and Winter (1982) placed this insight into a broader evolu-
tionary framework, suggesting that an organization's capabilities or
"routines" were equivalent to the genes in a plant or animal. To
survive, an organization must be able to reproduce and modify its
routines in the face of changing situations. But, they cautioned, many
of these routines are based on tacit knowledge, so that it is not easy for
an organization to deliberately choose to modify its routines as
required by changing circumstances. Indeed, many organizations do
not (consciously) know what they know! Capabilities are embedded in
participants and ongoing relationships, in rules and routines.

Teece (2009; Teece and Pasano 1994) emphasizes that in fast-
paced industries, sustainable advantage requires in addition to
"difficult-to-replicate knowledge assets", "difficult-to-replicate
dynamic capabilities" – "to continuously create, extend, upgrade,
protect, and keep relevant the enterprise's unique asset base" (Teece
2009: 4). Such skills include the discovery and development of
opportunities, effectively combining inventions, upgrading of "best-
practice" business processes, and the ability to shape new "rules of
the game" in the global marketplace (p. 6).

Davies and Hobday (2005) embrace this dynamic capability frame-
work but suggest that additional skills are required in order to suc-
cessfully cope with the complexity posed by large complex projects.
These complexities include: "the variety of distinct knowledge bases
which need to be integrated into the final product or system"; the
"intensity of user involvement and the user's understanding of final
requirements"; the existence of "substantial feedback loops from later

to earlier project stages"; the need to devise and coordinate an adequate "system architecture" to manage the "interconnections between components and subsystems" as the product design evolves; and the necessity to cope with a "changing regulatory environment' (pp. 31–3).

Most project analysts give some attention to the need to understand and manage the larger context within which the project is taking place. Thus, for example, Miller and Lessard (2000: 23) discuss the necessity of developing adequate strategies and mechanisms to deal with "institutional arrangements"; and, as just noted, Davies and Hobday attend to the challenges posed by "changing regulatory environments" (2005: 33). But on closer examination, the conceptions employed by these analysts appear to us to be somewhat underdeveloped. They generally hearken back to Douglass North's (1990) well-known early formulation of institutions as the "rules of the game", limiting attention primarily, in our terms, to the regulative component of institutions. (See Chapter 2.)

An institutions-based approach

As should be clear from the above cursory summary, contemporary scholars have made progress in identifying the defining features of project-based organizations, and are successfully adapting mainstream theoretical perspectives in order to better understand the design, structure, and strategies associated with projects. Although some attention has been accorded to the importance of context, this seems to us to be the area most in need of elaboration and development, both theoretical and empirical.

As noted, mainstream approaches acknowledge the role played by political processes and institutions, although the former are treated primarily as governmental instability and the latter as regulatory restrictions (e.g., Miller and Lessard 2000). The approach we take to political processes emphasizes that important political forces are at work apart from those operating in the public sector (see Chapter 3). And, to enable a more robust conception of institutions, we adapt Scott's (1995; 2008) "pillars" framework, stressing that institutions are comprised of three elements: regulative, normative, and cultural-cognitive (see Chapter 2). While the regulative pillar has received its due, the normative has been almost completely neglected by project

scholars, although the work of Whitley (1999) has begun to find its way into international business studies.

Some aspects of cultural-cognitive institutions have received more attention from international business scholars because of the influential work of Hofstede (1984; 1991). Hofstede suggest that countries differ in their modal value orientations across several dimensions, for example, how power differences are managed and whether individualism or collectivism is more favored. These dimensions have found their way into international business scholarship. For example, Kogut and Singh (1988) have employed Hofstede's value dimensions in assessing choice of entry mode by multinational firms, and an international collection of scholars assembled by House has utilized these dimensions to examine cross-cultural differences in leadership style (House et al. 2002). Recently, Binder (2007) made use of Hofstede's dimensons, together with others proposed by Trompenaars and Hampsen-Turner (1998) to suggest various modes of cross-cultural collaboration within global projects. While we find this a useful window on culture, to focus exclusively on value orientations ignores other important facets of culture, such as variations in ideas, ideologies, and identities. In brief, we believe that international business and project scholars have, to date, employed a relatively impoverished conception of institutions.

We are pleased to note that our concern with developing an expanded conception of the organization's context is shared by others. Thus, Mike Peng and colleagues have been calling for the development of "an institution-based view" of business strategy to supplement existing "industry-based competition" and "firm-specific resources and capabilities" (Peng 2002; Peng, Wang, and Jiang 2008; Peng et al. 2009). Peng suggests that an institutional approach can provide the "third leg of a strategy tripod". (Peng et al. 2009: 63) Actually, we believe that, fully developed, institutional perspectives can do more than inform the strategic decision making of project-based organizations. It can help to inform and guide the decisions that must be made by a wide range of actors – including host governments, oversight bodies, consumers of services, community members, and interest groups – all those who have a stake in the effective and sustainable operation of vital civic infrastructures.

Guide to volume chapters

As noted in the preface, all the chapters of this volume report work that has been carried out by scholars associated with the Collaboratory for Global Projects at Stanford University. About half of the papers included were written expressly for this volume. The others have been previously published and are reprinted here.

In Chapter 1, Ryan J. Orr and colleagues offer a general overview of and introduction to the concept of project-based organizations operating within a global context. The chapter asks why global projects (GP) have emerged at this time, and examines the challenges they confront. It focuses in particular on the strategic implications for companies and host countries posed by the new types of organizations.

W. Richard Scott discusses in Chapter 2 the conception of institutions which guides and informs the papers collected in this volume. In addition to offering a relatively expansive definition of institutions, the chapter also describes its application to multiple levels, ranging from the global to the local field.

In Chapter 3, Doug McAdam explains why social movements have become relevant to the study of GPs, as recent projects have become increasingly subject to opposition from social movements – local, national, and transnational. The activities of public authorities are described, both in the way in which they influence projects, but also in the ways they shape other modes of political activity.

These first three chapters are intended to supply a general intellectual context for all of the remaining chapters, providing a broad theoretical palate on which the empirical research can draw.

Chapter 4, by Ashwin Mahalingam, Raymond E. Levitt, and Scott, describes results from a study of two projects that comprised part of the construction of a metro railway project in India. Although international teams were involved, much of the conflict observed was related more closely to the institutional conflicts developing between public bureaucrats and representatives of private firms rather than between broader cultural communities, such as religious or national groups.

Chapter 5, by Orr and Scott, reports the results of an inductive study examining 23 cases of misunderstanding arising from institutional differences on GPs. The bases of such conflicts are examined, as are the mechanisms devised to deal with them.

In Chapter 6, Orr and Levitt examine the extent to which varying types of firms – developers, contractors, consultants – are involved in or exposed to the complexities of the local context. They develop measures to assess this exposure or "embeddedness," and examine the strategies available to firms for coping with varying degrees of local embeddedness.

Involvement in a global environment is not simply a matter of extent of exposure to new classes of risk. In Chapter 7, Amy Javernick-Will and Scott explore the opportunities for learning afforded by these contexts. Utilizing data from interviews from informants for fifteen projects from three types of firms (developers, contractors, engineering consultants), they examine what types of knowledge are most important for each.

In Chapter 8, Doug McAdam and colleagues examine what types of factors affect the likelihood and magnitude of political opposition to GPs involved in constructing oil and gas pipelines. Factors considered range from the political structure and economic conditions of the host country and community, nature and size of project, characteristics of project participants, nature of funding and oversight regimes, to activation of local and transnational movement organizations. They also ask whether the factors that give rise to more institutionalized forms of conflict such as lawsuits, differ from those associated with more informal, grassroots forms of social protests.

Chapter 9, by Henry Chan and Levitt, examines a collection of cases drawn from the transportation and power sectors in order to ascertain what factors account for the nature of the renegotiation process utilized in revising infrastructure concession agreements. What factors determine the extent to which parties engage in more formalized, legal approaches or are able to proceed by means of more trust-based, relational approaches?

Taking a step back from the direct analysis of sources of political opposition to or modes of negotiation undertaken by projects, in Chapter 10 Witold Henisz examines the ways in which organizations can take advantage of recent developments in network analysis to construct a more informed portrait of the social and political contexts in which they operate. He argues that those concerned with assessing the political and social risks confronted in their environments would do well to employ recent analytic tools developed to assess the networked structure of their environments.