

Guest Editorial: Perspectives on Megaprojects

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Introduction

This special section on megaprojects raises the issue on how megaprojects should be conceptualized and studied. What exactly is a megaproject, and from what perspectives should it be examined? This question is not trivial; unless one is able to identify the properties of a megaproject as an object of study, it is hard to know where to start thinking about such projects.

Early studies

Most project managers regard ancient projects such as the pyramids and Great Wall as megaprojects. The modern history of megaprojects is relatively recent, and may be dated from the construction of turnpikes and railway manias of the 19th century (Lewin, 1968; Wood and Karr, 1997). Comprehensive river basin development, such as the Tennessee Valley development of the 1930s (Downs, 2014), is also an example of a megaproject. The term “mega” (million) was subsequently popularized by the computer industry in the 1950s when hard disk storage capacity of a few megabytes appeared.

In the 1960s, the term “megaproject” was also used to refer to an integrated rural development programme comprising a set of projects such as a road, market, irrigation, housing, school, and hospital (e.g. Kahn, 1965). The focus is on the coordination and integration of different projects to serve rural communities.

A study by Rand Corporation (Merrow, 1988) defined megaprojects as costing US\$1 bn and above. The figure is clearly arbitrary, but a number of traits beyond capital outlay and coordination were identified, such as its long duration, political visibility, significant community, economic, and environmental impacts, regulatory difficulties, numerous stakeholders, and huge resource requirements. However, it was actual capital outlay that allowed the easy identification of specific megaprojects for further study, such as cost growth and schedule slippage.

Clearly, a long list of unordered properties of megaprojects is not helpful and there is much to disagree on the items in the list as well as their relative importance in determining project outcomes.

Risks

A second group of studies focuses on risks as the defining feature of megaprojects. For instance, Greiman’s (2013) account of the Big Dig project in Boston is intended to draw lessons on risk and project management. A standard risk management framework or process comprising risk identification, assessment, mitigation, monitoring, and review was used.

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In contrast, other researchers are more specific about the kinds of risks they wish to investigate. For example, Miller and Lessard (2000) argued that the presence of coherent and well-developed institutional arrangements is the key determinant of project performance. Similarly, Flyvbjerg, Bruzelius and Rothengatter (2003) raised the old issue of why project costs tend to be underestimated (see Waterston (1965) for an early account of this) and, more generally, the lack of accountability in public projects. Fox and Miller (2006) took an entirely different path, focusing on the first-of-its-kind megaprojects where there is little information and few guidelines for planning and execution.

Another possibility is to emphasize the project constraints of time, cost, quality, safety, and good relations (e.g. Tan, 2007). In this perspective, megaprojects are particularly vulnerable to time and cost overruns because of the long duration and large capital outlay. Here, the emphasis is on the higher probability of the impact of external events such as interest rate hikes and regulatory changes.

Many studies of megaprojects, including those included in this issue, fall into this category. The general strategy is to identify a particular risk or a set of risks and then examine ways to manage them. A caveat should be added: the results of most studies cannot be generalized because they are based on a small sample of projects.

Complexity

A third group of studies focuses on complexity or chaos theory (e.g. Remington and Pollack, 2007; Williams, 2001), and generally as part of systems theory. The basic concepts include interactions, adaptive behaviour, emergent properties, and non-linearity. Unlike the standard reductionist approach where the project output is broken down into smaller components, the emphasis in complexity theory is interactions between the parts, and hence possible emergent properties in nonlinear systems.

It is important to note that the term “complex” is often used loosely to refer to projects that are difficult to manage, or technically complicated. If the key concepts of complexity theory outlined above are not used, then the project can be complicated, but certainly not complex in the sense of applying chaos theory. A complicated project is certainly challenging, but it does not have the properties of complexity.

In the 1970s, economists were keen to apply complexity theory to the study of business cycles (Varian, 1979; Zeeman, 1974) but there were doubts about its usefulness (Guckenheimer, 1978). In project management, complexity theory continues to be a marginal movement with potential for further development.

Conflict

A fourth group of studies focuses on power and conflict (e.g. Altshuler and Luberoft, 2003; Plotch, 2015). It is similar to the “urban growth machines” and “urban regimes” studies of the 1980s (Logan and Molotch, 1988; Stone, 1989) where the city’s growth coalition of politicians, bureaucrats, businesses, and other groups orchestrated urban renewal strategies in response to fiscal stress and declining federal assistance for American cities.

For megaprojects, the stakes are high because the projects are costly and risky. Hence the “machines” or “political regimes” need to promote a growth ideology as well as overcome resistance in implementing large infrastructure projects. Conflict may be pervasive, and not everyone is pro-growth. There will be winners and losers. The focus, then, is on the external environment rather than internal stakeholders of the project.

Not everything is about business, politics, and projects. One form of resistance is through discourse, such as through the history of debates in environmentalism to save the forests (e.g. Chase, 2001). In some cases, the megaproject is transnational (e.g. a pipeline or rail project), bringing in a new set of resistance beyond the usual class, race, gender, religion, and the environment.

Humanism

A final perspective is humanistic, focusing on human experience in megaprojects. An early perspective is Jacobs' (1961) critique of urban planning, particularly highways, roads, and segregated suburban land uses that caused the "death" of American cities. Similar critiques may be found in attempts to re-humanize the massive architecture of megaprojects (Holston, 1989). These studies focus on humanistic small-scale solutions in massive projects, or to replace them altogether.

Beyond architecture, it is possible to study the experiences of people directly affected by megaprojects. Jamali's (2013) work on the experience of anxiety among local fishermen in Gwadar (Pakistan) in the wake of the construction of the Gwadar Deep Water Port Project (2002-7) is an example. Here, fortunes of these families rose and ebbed like the tides. While the megaproject brought hope and promise, the subsequent collapse of the real estate bubble and armed resistance by Baloch nationalist insurgents ushered in despair.

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