A Reflection of the State-of-the-Art in Megaproject Research: The Oxford Handbook of Megaproject Management

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The Oxford Handbook of Megaproject Management edited by Bent Flyvbjerg is an important and certainly timely book. The interest in megaproject management has probably never been greater. This is equally true for research on megaprojects and megaproject management. The general impression is that more and more people are entering the field of megaproject management, more scholars are attending a growing number of conferences, and workshops are being organized to drive research and scholar-practitioner interactions. The Project Management Institute is initiating research-related activities targeting the management of megaprojects. MIT Sloan Management Review recently published a paper on innovation in megaprojects that, to a great extent, demonstrates the interest from general management, top managers, and key decision makers in the challenges associated with megaprojects (Davies et al., 2017). Harvard Business Review has published a number of key papers addressing the difficulties associated with decision making in large-scale projects. The Academy of Management organizes workshops specifically targeting the management and organization of megaprojects, and a number of universities, business schools, and engineering schools around the world are setting up centers of excellence in research and training within the area of megaproject management. To be sure, these are indeed exciting times for anyone interested in large-scale projects, and megaprojects are an important focal area of project studies (Geraldi & Söderlund, 2017), as well as a significant arena where project scholars can meet scholars from a number of other disciplines, including strategy, innovation, economic geography, urban planning, architecture, sociology, and engineering.

This rapid development clearly calls for a definition of the field; an overview of what is currently taking place; along with a discussion about the central areas of megaprojects, the core topics, and the core contributors. This Handbook does a wonderful job in doing just that—all under the auspices of Professor Bent Flyvbjerg at the University of Oxford. Professor Flyvbjerg is one of the central players in this emerging field of research and he has teamed up with world-leading contributors from a diverse set of scholarly disciplines and backgrounds to offer a contemporary view of megaproject management. It adds considerable depth to mainstream project studies and previous handbooks of project management (Morris et al., 2011) by offering a broader and interdisciplinary scrutiny of projects with an explicit focus on a particular kind of projects. This framing triggers new perspectives and the identification of novel problems, as well as it fosters new understandings of organizational processes, and thus new possibilities for theorizing (Söderlund, 2011).

Without spending too much time on the definition—whether it is about the number of people involved, the money invested, or the time spent—we all know that megaprojects are the large-scale projects that shape and change society. Most of them are found in infrastructure (such as city development, transportation systems, communication systems), but they could also target the development of completely new technologies, such as the Manhattan Project, the Large Hadron Collider project in CERN, and many other large-scale scientific and research-oriented projects that develop future science and technologies. The term “megaprojects” is rather recent, but major projects and large-scale projects and programs are labels that people have been using for ages for similar types of projects. The new and primary idea of the megaproject concept is the focus on infrastructure and the connections to economic geography, architecture, and regional and urban planning. Less on product and systems development in that sense, which are certainly large, but that might not meet the same kinds of challenges associated with politics, stakeholder complexity, and environmental concerns. The book undoubtedly unveils many of the challenges associated with these projects, about their decision-making challenges, political intricacies, institutional requirements, and technological difficulties.

Following a short introductory chapter, which addresses the prevalence and problems of megaprojects by the editor Bent Flyvbjerg, there are 24 chapters divided into four parts: challenges, causes, cures, and cases. The division makes a lot of sense, although it is sometimes difficult to follow whether or not each of the chapters actually adheres to the theme into which it has been categorized, and what each theme actually is targeting.

In Chapter 2, the first chapter in Part I of the book, Lenfle and Loch discuss why megaprojects so often fail.
The authors underscore the essential role of poor management in explaining the poor performance of megaprojects, specifically that management fails to address uncertainty and stakeholder complexity. According to the authors, the combinations of these challenges were known already in the 1940s but management has lost the capability to address them. Going back to the root of the problem seems to be a good idea, with a stronger emphasis on acknowledging inherent uncertainties, stakeholder management, and flexible contract management. The chapter contributes to an insightful and intriguing treatise on the history of megaproject management.

In Chapter 3, Siemiatycki offers an interesting historical and macro-perspective on the development of megaprojects. The author introduces the idea of waves of megaproject development. Siemiatycki demonstrates his idea with a number of cases, which took place between 1890 and 2007. He demonstrates that these cycles of megaproject development range from brief punctuated fads to long-term trends. The cycles are driven by a complex blend of technological innovation, economics, social networks, ideologies, and interest groups that spur the diffusion of certain new megaproject approaches. Megaprojects are thus triggered by the political lure of achieving major tangible benefits, as well as the potential to convey a powerful set of intangible symbolic messages that are often associated with particular megaprojects. The chapter provides a broadened view on megaprojects, and the notion of waves of megaprojects seems promising as a valid explanation for the existence of megaprojects.

But, why do megaprojects have to be that big? Why do they have to be megaprojects? Why not smaller-scale projects? This is the focus of Chapter 4, written by Ansar, Flyvbjerg, Budzier, and Lunn. The authors discuss why bigger always seems to be worse by centering the analysis on investment fragility. The authors point out that big capital investments break easily and that they may deliver negative net present value to a great extent because of various sources of uncertainty that impact a megaproject during its extended time of development to fruition. The authors show, based on the empirical research on mega-dams, that nearly half of the projects suffered a cost overrun so large for the project to be considered broken before it even began operations. The authors point out that developing countries ought to stay away from projects that are big relative to the national economy. In that respect, the authors clearly demonstrate that bigger is far from always better and provides a healthy critical analysis of the existence of megaprojects.

Addressing the institutional challenges, particularly for global megaprojects, is the focus of Levitt and Scott’s Chapter 5. The authors discuss a key reason why megaprojects tend to dissolve—traditional legal- contractual governance mechanisms almost always break in projects crossing institutional and national divides. The authors point out the difficulties associated with mixing and matching governance mechanisms in large-scale global projects. In particular, Levitt and Scott zero in on the difficulties so common in these projects and associated with cooperation and coordination across institutional divides. This is a chapter that makes an important linkage between projects and institutional theory, which adds to our understanding of the current challenges facing megaprojects and a theoretically interesting explanation as to why they so often seem to fail.

Moving even further into the realms of the ethical and political issues associated with megaprojects is the aim of Chapter 6 by Van Wee and Priemus. The authors particularly address the ethical aspects of the impacts of megaprojects on society, the quality of the estimates of the cost-benefit-analysis of megaprojects, and the democratic quality of the decision-making process preceding megaprojects. The authors offer evidence indicating that estimates are often biased: costs are more frequently underestimated than overestimated and benefits are typically more often overestimated than they are underestimated. In a condensed summary of normative frameworks of how to deal with these problems, the authors offer a set of core principles on how to improve the quality of cost estimates. This chapter is important to anyone interested in what needs to be done to fix the fragile foundation of many megaprojects.

Ending the section on the challenges is Chapter 7 by Xuefei Ren. The author offers an in-depth description of the current situation in China based upon which the author asks whether the current megaproject wave is the biggest infrastructure bubble ever seen in world history. The chapter centers on the conditions that underlie the planning and implementation of megaprojects, most specifically the regulatory reforms in the land, housing, and financial sectors. The author locates many of the underlying reasons driving the megaproject boom to be found in regulatory changes in these sectors. In many ways, the author offers a refreshing analysis of the contested nature of megaproject development, and a sobering conclusion that tightened regulations will probably put a stop to China’s megaproject era. Again, this is a chapter that connects the existence of megaprojects with regulatory changes. It is an important contribution based upon research on one of the most fascinating domains of megaproject development.

Part II of the Handbook centers on the causes of megaprojects or, perhaps more accurately, on the causes of the challenges facing megaproject management. In Chapter 8, Flyvbjerg leads the way for this part with a contribution on Albert Hirschman’s work on the principle of the hiding hand—basically indicating that poor initial estimates in the project are accompanied by an underestimate of the ability to deal with the problems faced during the project. This has considerable creative effects, argued Hirschman. Flyvbjerg criticizes the fundamental and general claim that Hirschman presented in his book more than 50 years ago. He demonstrates that Hirschman’s data collection was biased, that the dataset was far too limited, that Hirschman misrepresented his findings,
and that it is difficult to replicate Hirschman’s findings through statistical tests. In many ways, this chapter offers an important critique of Hirschman’s work on the so-called ‘hiding hand,’ yet also demonstrates how we can move on and learn from the work by Hirschman, centering on in what sense and context that the hiding hand is a benevolent hand and when it works in the complete opposite way—as the malevolent hand. These are important matters for the future that very well could lead the way for an integrated and balanced scholarly debate about the rationality and different rationalities underlying the decision to implement a megaproject.

Helga Drummond continues the analysis of decision-making problems in megaprojects in Chapter 9 by addressing megaproject escalation of commitment. The topic is highly relevant for a book on megaprojects as this topic is probably one of the most influential areas of research linking megaprojects with decision making ever since the publication of the seminal work by Staw and Ross in the 1970s (e.g., Staw & Ross, 1978). Drummond elegantly summarizes the core ideas of this stream of research, addressing questions such as: Why does escalation start, how does it start, and what drives decision makers to hold on to an economically weak megaproject? The chapter is important as it provides a coherent summary and analysis of extant research, yet simultaneously points out several important avenues for research and practice on how to encourage commitment to megaprojects and the dreams of megaprojects, yet avoid the dangerous effects typically seen in cases escalating commitment.

In Chapter 10, Miller, Lessard, and Sakhrani address the issue of megaprojects as ‘games of innovation.’ In particular, the authors point out the criticality of project shaping for large-scale projects, including demand forecast, frame agreement between sponsors, business model, regulatory decisions, and partnership agreement. This is another important chapter, especially the framework and discussion of project shaping, the process of project shaping, value creation in project shaping, and the management of project complexity, and less focus on the games of innovation. In many ways, this chapter demonstrates the importance of building a solid foundation for megaprojects, of shaping the project in an accurate manner, of ensuring that the environment is sufficiently stable to allow for the implementation of the project. These are important tasks that involve multiple stakeholders, including project owners, sponsors, politicians, top managers, and project managers.

In Chapter 11, Clegg, Sankaran, Biesenthal, and Pollack address the issue of power and sensemaking in megaprojects. The authors examine current practices underlying the management of megaprojects and show how the evolution of these practices created a management discipline that became ill equipped to deal with the current challenges facing contemporary megaprojects. In particular, the authors emphasize the need to incorporate power relations into the analysis. The authors present different ways in which project management produces cues for common sensemaking—creating, adapting, and using common frames of meaning that could characterize the megaproject organization and its members. Clegg et al. demonstrate that, given the temporality and fluidity of projects, projecting the past onto the future is particularly problematic and important for project managers, as most actors will have a variety of distinct experiences to draw on when making sense of occurrences in projects. This is probably particularly true for projects spanning institutional fields. Accordingly, the story that emerges around megaprojects can be “expected to be fragmentary, discontinuous, and subject to much subtle and sometimes not so subtle respecification” (Clegg et al., 2017, p. 245). The chapter nicely captures the integral features of power relations and sensemaking, that power is a central concern for megaprojects, and that sensemaking is particularly difficult in a fragmented megaproject context. Indeed, it demonstrates that politics is an integral part of megaprojects and the analysis of these organizations and that researchers should engage more closely in the emergence of the narrative around and within a megaproject; how meaning is created in the context of megaprojects to better understand what actually goes on in these kinds of projects. Such an understanding would definitely contribute to project managers’ action repertoires needed to implement highly fragmented megaprojects.

Chapter 12 by Nuno Gil offers a ‘collective’ action perspective on the planning of megaprojects. Based on an in-depth, comparative study of four major infrastructure projects in the United Kingdom, the authors show that to sustain a highly fragile consensus-oriented development, management needs to know when to resolve the make-or-break issues by relaxing rules, building slack and flexibility, or conceding problem-solving capacities to arbitrators. In many ways, the chapter builds further on the politics argument presented by Clegg et al. in the previous chapter. It focuses specifically on what kinds of flexibilities are important in megaprojects and what managers can do to maintain and make use of them. It also addresses how a particular kind of safeguarding mechanism should work in these kinds of complex and multi-organizational undertakings.

In Chapter 13, on the drivers of mega-events in emerging economies, Baade and Matheson demonstrate why the economic outcomes for mega-events in sports have fallen short of expectations. The authors point out that unreasonable expectations, poor management, and corruption are critical in explaining the failure to achieve satisfying economic outcomes in the domain of mega-events. These observations are also valid for the analysis of megaproject performance on a more general level. The chapter furthers the analysis of the political issues of megaprojects and makes a strong point about the combination of unreasonable expectations and poor management being at the core of the underperformance of many megaprojects. It nicely identifies several common concerns.
among megaprojects in general and the specific case of mega-events and thereby identifies several important linkages among these knowledge areas. This seems particularly important as many megaprojects, such as stadiums and apartment buildings, are built adjacent to a mega-event, such as the Olympic Games or World Championships (Davies & Mackenzie, 2014).

Part III of the book centers on the cures for failed megaproject performance. This part begins with Chapter 14 by Davies, Dodgson, and Gann on innovation and flexibility in megaprojects. The authors present a new delivery model, which relies to a much greater extent on innovation and flexibility. Central to succeeding with developing such a model are, according to the authors, five strategic processes: search capabilities, adaptive problem-solving capabilities, test and trial capabilities, strategic innovation capabilities, and balancing capabilities. These processes are illustrated by the use of examples from in-depth empirical research on infrastructure projects in the United Kingdom. The chapter is very nicely written, empirically solid, and also well in line with the topic for the part itself—cures for megaproject underperformance. It intellectually connects with the chapter by Lenfle and Loch, which addressed the current problems facing megaproject management. The chapter by Davies and colleagues certainly paves the way for future research on linking megaprojects with the field of innovation—an area of research that will not only contribute to our understanding of the problems facing megaprojects, but also how innovation might better be integrated into contemporary megaprojects.

Graham Winch takes the linkages between stakeholders and megaprojects further in Chapter 15 on megaproject stakeholder management. The author provides a comprehensive overview of current theorizing on stakeholder management, tracing its roots and significance to project management. Moreover, Winch discusses two relatively novel extensions of stakeholder management by elaborating on the ways that stakeholder management literature has benefitted from analyses from actor-network-theory and institutional theory. The chapter concludes with an outline of a contemporary perspective on megaproject stakeholder management—what the author refers to as megaprojects and society, which addresses the political, economic, and ethical issues surrounding megaprojects. The chapter offers an important update of the stakeholder management literature and a healthy view of the big issues in stakeholder management. This chapter clearly makes the case that researchers studying megaprojects should be aware of the larger societal challenges and how megaprojects might contribute to these problems, or how they could be designed to better address society’s major problems. A better understanding of stakeholder management is certainly an important first step towards that end.

How might private finance solve the problems currently facing megaprojects? This is the overarching question answered in Chapter 16 by Hodge and Greve. The authors offer a succinct account of the current state of research on the private funding of megaprojects, including a meta-level analysis of reports that indicate favorable outcomes of such initiatives, and reports indicating negative outcomes of such initiatives. The chapter is topical, as private funding is critical for megaprojects in general—it should play a key role in driving megaproject performance improvements and a broader engagement from a diverse set of stakeholders in society’s most important projects. In that respect, it builds further on Winch’s chapter on stakeholder management by addressing to what degree the financial solution paves the way for broader and better stakeholder engagement.

Compared to several other chapters, which address the underperformance of megaprojects, in Chapter 17, Roger Vickerman offers a slightly more positive view in his chapter on the wider impacts of megaprojects. The author points out that for most megaprojects in the transport sector there are wider economic impacts not captured in traditional appraisal methods. The chapter offers evidence that there is a sound and theoretical, as well as an empirical basis, for justifying the inclusion of wider economic impacts in the appraisal of megaprojects. Vickerman emphasizes the need for an objective way of determining when the wider impacts should be included, and what accepted method of their valuation to use. The chapter is important to anyone interested in benefits realization and value creation in megaprojects as it demonstrates the plethora of factors that need to be included in an accurate analysis of their effects. This chapter also provides additional evidence to several of the arguments presented in Winch’s chapter on stakeholder management of looking broadly at megaprojects and their effects.

In Chapter 18 by Volden and Samset, the quality assurance in megaproject management is the center of attention. The authors rely on a wealth of data from the quality assurance regime implemented in Norway. The authors point out that this regime has improved the operational success, the tactical success, as well as the strategic success. The authors claim that too often the analysis of performance of megaprojects tends to focus on the operational success, but that it needs to include the other two success parameters as well. The aim of a quality assurance regime, such as the one implemented in Norway, is to ensure political control, an adequate basis for decisions, and a distinct set of milestones and decision gates that applies to a broad range of sectors. The chapter is important as it summarizes Norway’s experience from implementing a decision-gate regime that focuses on the front-end in megaprojects. This constitutes an exemplar that several other countries are about to implement or are currently being considered for implementation. With its broader view on success, it also adds to Vickerman’s argument on the wider impacts of megaprojects as central for a balanced view of megaproject performance.

In Chapter 19, Thayer Scudder presents a series of convincing pieces of evidence that analysts should pay more
attention to the environmental and social costs of megaprojects. His chapter centers on the case of mega-dams. The author shows why mega-dams are poor—even unacceptable investments from a societal point of view. This chapter offers a balanced view of the negative long-term costs—a wider perspective on megaproject performance, which nicely balances the earlier mentioned chapter on the wider benefits of megaprojects. Again, it provides a good argument for looking broadly at the consequences of megaprojects.

The final five chapters are grouped under the heading “Cases.” These chapters offer different empirical illustrations of the decision-making and managerial aspects of megaprojects. Chapter 20 by Holzmann, Shenhar, Zhao, and Melamed focuses on cracking the code of megaproject innovation through the example of Boeing’s 787 project. The chapter demonstrates how Boeing underestimated the managerial consequences of technological innovation and underlines the importance of understanding the contingencies facing a megaproject. The chapter illustrates the value of the contingency approach to megaprojects by understanding the project’s degree of novelty, technological uncertainty, complexity, and pace. This chapter nicely summarizes several of the core ideas with the contingency theory of megaproject management that highlight the importance of uncertainty and complexity for the design and management of these projects.

With an analysis of the London 2012 project, Andrew Davies demonstrates in Chapter 21 the importance of systems integration to succeed with megaprojects. To a great extent, the author focuses on the challenges associated with project complexity and how organizational actors deal with almost unsurmountable project complexity due to the number of systems, technologies, and actors involved. It addresses more closely some of the factors highlighted in the chapter by Holzmann and colleagues. In particular, Davies’ chapter suggests that dealing with a system of systems project calls for wider strategic capabilities and skills to manage the overall program scope and the multiple stakeholders involved in the project. Davies points out the role of systems integration not only for internally dealing with the many interfaces involved in a megaproject, but also externally—linking the project with its external environment. Besides emphasizing the importance of certain contingency factors, Davies also underscores the value of strategic capabilities to manage the most pressing challenges.

In Chapter 22, Gerardo Del Serro Santamaría offers an analysis of iconic megaprojects in light of the so-called Bilbao effect—the perception that the Guggenheim Museum project resulted in a Cinderella-like transformation of the entire city of Bilbao in Spain. The chapter discusses this effect on a wider level by examining a number of other iconic urban projects. The notion of the Bilbao effect is interesting, and should provide considerable opportunities for future research. Del Serro Santamaría remains critical toward this effect and illustrates the problems of associating the effects to a particular project; for instance, he points out that it is difficult to establish a connection between the growth of the Basque tourist industry, which gained momentum following the Guggenheim Bilbao Museum, and the increase of the Basque GDP. The idea of the Bilbao effect is certainly important in times when urban policies are presented to increase global visibility and attract visitors and investments to cities. As the author claims, cities compete through grand-scale projects. In essence, the Bilbao effect shows how an imaginatively designed megaproject can help turn a city around. The author, however, emphasizes that “a spectacular building alone. . . . is not usually capable of shifting their fortunes in fundamental ways” (p. 515). This chapter offers several ideas for future research, both in analyzing in further depth the nature of the Bilbao effect, in cases where one could establish real links between projects and growth, and the actual consequences of this effect, looking more closely at the complementary of effects from several initiatives and projects.

In Chapter 23, Demi Chung focuses on the case of Australia’s motorways—a context in which public–private partnerships have been used on a large scale. The author investigates the performance of design, build, finance, and operate road (DBFO) projects. The principle rationale underlying these projects is that they facilitate the transfer of risk to the party that has the greatest capacity to manage that risk. The chapter presents several interesting case studies based upon which the author draws a number of important and insightful conclusions. The first conclusion is that the private provision in road infrastructure has progressively evolved into a more risk-balanced approach; second, the erroneous traffic forecasts have created fundamental problems for the business of these projects; and, third, the current capabilities of governments are insufficient to negotiate appropriate and equitable risk-sharing arrangements with private partners. For that reason, the author points out that a proactive risk management paradigm adhering to risk allocation rather than a risk-shifting approach is needed to create sustainable DBFO projects.

In Chapter 24, Janis Van der Westhuizen discusses megaprojects as political symbols. The focus is on South Africa’s Gautrain—a high-speed train connecting Pretoria, Johannesburg, and OR Tambo International Airport. The chapter focuses on the mythical discourses that typically surround megaprojects, in other words, the ways in which symbols, images, and metaphors are the products of symbolic processes. In particular, the author demonstrates how these dimensions play a central role in the discourse shaped by proponents and opponents of megaprojects. The author offers a succinct analysis of megaprojects as status symbols, marketing tools, and aspirational mechanisms—to signal to the world the progress of a particular community.

Chapter 25, the final chapter in the book, is written by Ahlers, Zwarteveen, and Bakker. The empirical context is large dam development—an interesting context for megaproject
analysis given the large number of mega-dams carried out during a relatively recent period of time, the complexity and technologies involved, and the interaction between private and public sectors in shaping and implementing these projects. The empirical context is also particularly interesting as mega-dams have re-entered the agenda of world politics and are today larger than ever and more problematic than ever, plagued by principal–agent problems and opportunistic behavior among the actors involved. The authors argue that the current growth of mega-dams is occurring despite the lack of evidence showing that these dams positively affect poverty, environments, and livelihoods. To advance the analysis of megaprojects, the authors suggest an analysis based on the Lefebvrian notion of ‘production of space’—defining dams not as objects in space but as agents in spatial strategies and as sites of continued and dynamic struggles. With the example of the Egyptian Aswan High Dam, the authors show how mega-dams were legitimized as carriers of economic development and political and ideological spatial strategies. According to Ahlers et al., mega-dams are better described as a Pandora’s Box, revealing complex and nested financial flows and networks of public and private actors working toward diverse and conflicting objectives. The authors use a parallel metaphor by arguing that mega-dams can be likened to Trojan Horses, legitimated as mechanisms of economic development while simultaneously operating as purveyors of political and ideological spatial strategies.

This is indeed an important book. It covers a lot of ground and certainly steers the emerging discipline of megaproject organizing/manager/decision making in the right direction. It sets an important marker with regard to what this area of scholarly investigation is and what it should entail, the main issues critical to practitioners, and the future challenges lying ahead for scholars as well as practitioners. In particular, it demonstrates the nested processes preceding and surrounding megaprojects—political processes of over-optimism and strategic misrepresentation—shaping projects that become impossible missions, which in turn creates a highly fragile ground upon which to build and implement actual projects. Projects lose their foothold in their attempt to achieve the impossible. The book is not only a thorough investigation of all the problems and challenges associated with these kinds of projects. It also offers a number of suggestions on how to fix the problems, including a stronger focus on quality assurance, due diligence in megaprojects, use of the external view, and better use of contracting and partnership mechanisms. Throughout it demonstrates the value of understanding the stakeholders, the relationships among stakeholders, and what one can do to ensure stakeholder engagement throughout the life of the project.

In many ways, this is a thought-provoking and important outlook for megaproject management—what it is and what it should be. It is strong on the decision-making and front-end issues, and it is extremely strong on empirical illustrations and cases. Many of the chapters provide dense empirical data supporting the arguments presented with examples from diverse industries and regions. The book underscores the need for more research on the inside and insights of megaprojects—of what goes on in megaprojects, how they evolve and how they change, and what participants and policy makers learn from them. The book also demonstrates the need for better linking the front-end issues with the actual management challenges inherent in megaprojects: that project shaping and project stakeholder management are critical aspects of the management of megaprojects and that they dynamically unfold throughout the course of the project. Finally, the book clearly points out the need for improving megaproject performance evaluation beyond how they compare with their estimates to better grasping their effectiveness in relation to other perhaps more relevant performance measures.

I strongly recommend this book to anyone interested in megaprojects—policy makers, practitioners, consultants, and scholars. It is a must-read for master and doctoral students in large-scale project management, and I am sure that it will be a major milestone defining research on large-scale projects, which project scholars and practitioners will reflect upon for many years to come.

References