

The Past and Present of Megaprojects

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Megaprojects on the Rise

Megaprojects are “large-scale, complex ventures that typically cost US\$1 billion or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people” (Flyvbjerg, 2017, p. 2). While megaprojects are often differentiated by the amount of their capital investment, they are also characterized in other ways. For example, Zhai, Xin, and Cheng (2009, p. 99) state that megaprojects exhibit “extreme complexity, substantial risks, long duration and extensive impact on the community, economy, technological development, and environment of the region or even the whole country.” On the other hand, taking a sociological perspective, Gellert and Lynch (2003, pp. 15–16) consider megaprojects as ‘displacements’ by stating that megaprojects are “projects which transform landscapes rapidly, intentionally, and profoundly in very visible ways, and require coordinated applications of capital and state power.” Indeed, looking at society through its megaprojects would reveal its ambitions, problems, as well as its future outlooks.

Merrow (2011, p. 12), one of the world’s leading megaproject analysts, adds that many megaprojects “end up being disappointing to their sponsors; a fewer number turn out to be destroyers of shareholder wealth; and a few are horrendous with respect to anything and everything involved—the investing companies, the local population and the environment.” To be sure, this is a problem that has been addressed over the years and something that analysts and scholars have pointed out many times. And if we agree that megaprojects are important and that their performance is poor, then scholars and practitioners have a joint responsibility for improving their performance.

It is interesting to note that despite all the negative performance that megaprojects have purportedly had, surprisingly, more and more of them are being built. Flyvbjerg, Bruzelius, and Rottengatter (2003) refer to this phenomenon as the ‘megaproject paradox.’ Perhaps even more fascinating is that, not only are more of them being planned and built; they are also becoming increasingly ambitious. For instance, Flyvbjerg (2017) has equated the size of several contemporary megaprojects being built as exceeding the gross domestic product (GDP) of many nations, citing projects such as the Joint Strike Fighter,

which is predicted to cost close to US\$400 billion. He predicts that soon we will be looking at ‘terraprojects,’ observing that “there is no indication that the relentless drive to scale is abating in megaproject development. Quite the opposite; scale seems to be accelerating” (p. 5).

One reason for such acceleration in megaprojects can be gleaned from the projections of infrastructure to meet the world’s ever-increasing needs for economic growth and improvements. McKinsey (Garemo, Matzinger, & Palter, 2015) estimates that the world needs to spend about US\$57 trillion on infrastructure by 2030 to keep up with the expected GDP growth. The Organisation for Economic Co-operation and Development (OECD) estimates that “global infrastructure investment needs of US\$6.3 trillion per year over the period of 2016–2030 to support growth and development,” which exceeds the figure proposed by McKinsey (Mirabile, Marchal, & Baron, 2017). However megaprojects are not only large-scale infrastructure projects; for example the *Business Insider* (Desjardins, 2017), which lists the world’s nine largest megaprojects includes a theme park valued at US\$64 billion in Dubai, United Arab Emirates, as a megaproject. Urban planners, including Altshuler and Luberoff (2003), have predicted that buildings, including stadiums and museums, will take the shape of megaprojects in the future (see also Siemiatycki, 2017).

According to futurist Thomas Frey from the Da Vinci Institute, megaprojects are expected to increase rapidly to 24% of the global GDP in the coming ten years. He predicts that projects initiated to control extreme weather, handle large amounts of data, and solve human problems, such as diseases, will also be organized as megaprojects in the future. In that respect, there seems to be a general consensus among many leading analysts that megaprojects are not only on the rise, they are also increasing in size and variety.

Moreover, there seems to be consensus pertaining to the poor performance of megaprojects. Researchers refer to the “under-performance of megaprojects” and call to the discipline to refocus its tools and techniques to better cope with the challenges of contemporary megaprojects (see, for instance, Lenfle & Loch, 2017). The project management community is still struggling to find consistent ways to improve the performance of megaprojects in the engineering, construction, and defense sectors. It is ill prepared to propose ways to handle megaprojects that will arise in non-traditional areas such as human conditions and addressing the effects of climate change (Frey, 2016).

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Thus, we need a better understanding of megaprojects because they are increasing in numbers and magnitude in addition to being applied in new sectors still with limited experience from the management of large-scale projects and complex systems integration. A wider perspective will most certainly be needed, including research from diverse disciplines following different approaches. In sum, megaprojects will be carried out at the edge of technological and institutional complexity—putting extreme demands on the management capabilities of those tasked with putting these projects in place, calling for better support and better understanding of how to address the managerial and organizational challenges involved. There is an urgent need for research, not only revealing and documenting the many challenges associated with the management of megaprojects but, equally, more knowledge about how to cope with them, how to build management capabilities, and how to improve the cooperation and coordination within megaprojects.

Megaprojects as Science and Symbols

Megaprojects can be viewed as some of the most interesting phenomena in social science. They represent the major achievements by collectives to influence the progress and direction of society and the mustering of collective strength to infuse major institutional change. Indeed, launching a megaproject is a way of getting attention, a way of getting things done—of creating dreams and high aspirations. South Africa’s high speed metropolitan transport network has been described as “Glitz, glamour and the Gautrain” and as ‘political symbols’ (Westhuizen, 2007). Megaprojects typically function as mechanisms to infuse trail making (Hirschman, 1967)—establishing a new path of development and order transformation (Eisenstadt, 1995). Indeed, they oftentimes operate as institutional projects—spearheading the change of institutional frameworks as well as beliefs and norm systems (Holm, 1995).

Historically megaprojects have had enormous importance—ranging from the cathedrals built to protect society from its worst enemies to current high-tech megaprojects, such as the Large Hadron Collider (the world’s largest and most powerful particle accelerator), launched to ensure the sustainability of technology and research advancements in physics. In both these cases, people and experts travel far to take part in these important societal projects. The Freemasons travelled to the cathedrals, assisting the church and local communities in realizing their dream of a new cathedral; and scientists take part in various large-scale projects, working as post-doctorates and later on as directors of research in building the global knowledge of physics and science. The projects function as “action localities” (Grabher, 2004) that activate latent ties, build new ties for collaboration and learning and establish future ties shaping the direction of industrial and technological developments. They are important, thus understanding their nature and dynamics is certainly an important task for social science.

Megaprojects attract our attention, appeal to our senses, attract media attention, and, recently, have been receiving increasing scholarly attention. An overall and intriguing question pertains to the issue of why megaprojects exist. Indeed, one might simply answer: because they are needed, because they generate value, and because they have proposed a convincing and attractive business case. Understanding the rationale underlying the decision to implement a megaproject will lead us to look further into what seems to drive the megaproject business and why megaprojects are considered attractive to decision makers who are pushing these ventures forward. What are the features of megaprojects that make them so attractive to decision makers and to societies at large? Why do they seem to be increasing in numbers despite reports of poor performance?

Flyvbjerg (2014) introduced the framework of the four sublims of megaprojects from which he explained the factors that drive megaproject development and that play a significant role in megaproject decision making. He identified the technological, political, economic, and the aesthetic sublims as the most important ones to explain the rapid expansion of the business of the megaproject (see Table 1).

An additional reason (or sublime), which has been pointed out by Thomas Frey is ‘community pride.’ Frey states that “everyone loves to tell stories about the big things their community accomplished” (Frey, 2016, p. 1), of making sure that this particular community is superior to all others. Producing megaprojects constitutes the symbol of such success; however, there are many challenges looming for those thinking that megaprojects will be the shortcut to success.

| Type of Sublime | Characteristic |
|-----------------|---|
| Technological | The excitement engineers and technologists derive from pushing the envelope for what is possible in the “longest–tallest–fastest” types of projects. |
| Political | The personal satisfaction politicians get from building monuments to themselves and their causes, and from the visibility this generates with the public and media. |
| Economic | The prestige business people and trade unions get from making lots of money and creating jobs from megaprojects, including for contractors, workers in construction and transportation, consultants, bankers, investors, landowners, lawyers, and developers. |
| Aesthetic | The pleasure designers and people who love good design derive from building and using something very large that is also iconic and beautiful, such as the Golden Gate Bridge in San Francisco, California. |

Table 1: The ‘four sublims’ that drive megaproject development (Flyvbjerg, 2017, p. 6).

Why then are megaprojects so challenging? Why are they so difficult to champion and so difficult to manage? According to Flyvbjerg (2017), there are ten main factors that decision makers and other significant actors working on the implementation of megaprojects tend to overlook. We summarize Flyvbjerg's main points and discuss them in further detail below.

1. Megaprojects are inherently risky because of long planning horizons, nested interfaces, and complexity. It normally takes several decades from the initial planning to the completion of the project.
2. Megaprojects are often led by planners and managers without complete understanding and domain experience, which might create weak leadership and dysfunctional leadership configurations. It is difficult to integrate knowledge across professional and disciplinary fields of knowledge.
3. Megaprojects are typically multi-actor processes involving multiple stakeholders with diverse and conflicting institutional backgrounds. It is often difficult to establish governance mechanisms across institutional regimes and cultures (see for instance Dille & Söderlund, 2011; Levitt & Scott, 2017).
4. Megaprojects often build on non-standard technology and design, which shapes a uniqueness bias among planners and managers who tend to see their projects as difficult compared with other projects, thus making it difficult to learn from history and experience. Learning is an inherent problem in the context of megaprojects—learning from one or fewer (March, Sproull, & Tamuz, 1991) is a common situation in megaproject contexts (see also Prencipe & Tell, 2001).
5. Megaprojects are typically overcommitted and centered on a specific kind of project concept at an early stage, creating various kinds of lock-ins, leaving no room for alternatives. This could lead decision makers to give priority to less favorable megaprojects as the weakest one runs the risk of surviving, only because it arrived at the table earlier than the better ones.
6. Megaprojects are like big businesses, which might create principal-agent problems and optimism bias. It is difficult to evaluate performance, cause-effect relationships, and to govern performance, since there are so many factors potentially influencing a particular cause of action.
7. Megaproject scope and ambition levels will change significantly during the life of the project. Actors learning something along the way, solutions that were thought of as fitting turn out to be obsolete, and other things enter the project at a later stage as features that are critical for the up-to-date standard of the systems that the megaproject is supposed to deliver.
8. Megaprojects are high-risk activities with overexposure to “black swans” (Taleb, 2007)—extreme events with massively negative outcomes. For megaprojects, rare and improbable events occur more often than we tend to think. Individuals' way of thinking is typically limited in scope and focused on

the average situations. However, average situations are less relevant to irregular situations, such as megaprojects.

9. Megaprojects often fail to account for the complexity and unplanned events that are inherent in their implementation. Individuals are rational but only to a limited extent (Simon, 1976), and they tend to find it difficult to fully comprehend the complexity of complex and nested decision-making and management situations.
10. Megaprojects are built on misinformation about costs, schedules, benefits, and risks. The result is “cost overruns, delays, and benefit shortfalls that undermine project viability during project delivery and operations” (Flyvbjerg, 2017, p. 8). This problem tends to lead to challenges for implementation—as problems need to be fixed while “flying the plane.” Overall, this is a fundamental management problem that often leads to fragile megaprojects—megaprojects falling apart because of lack of direction and common ground (Morrow, 2011).

The question is, however, not about why we should do major planned change and large-scale societal projects, but rather why projects need to be this large, and why we need to implement them as ‘projects’—as temporary organizations with defined beginnings and explicit end dates. In that respect, one might ask: What are the economic and technical rationales underlying megaprojects? An obvious alternative is to implement them as smaller piecemeal initiatives, as a series of small-scale projects. This kind of analysis renders many more theoretical triggers and represents a key question pertaining to why a particular phenomenon exists in the first place. Similar explorations and debates have taken place in many other fields of scientific inquiry, including why cities exist, why nations exist, why tribes exist, why communities exist, and so forth. The question for management and organization scholars obviously relates to classic debates about why large firms exist—what are the advantages of the scale and scope of megaprojects? This also paves the way for an analysis of the managerial and organizational challenges associated with them (Söderlund, 2011b). We know a great deal about their importance, we are becoming increasingly aware of their prevalence, and we certainly know a lot about their problems. We know far less, however, about their management and organization. This needs to change.

The Progress of Megaproject Research

The research on megaprojects has also developed rapidly in recent years, reflecting the importance and progress they have made in society at large. A number of special issues have appeared in scholarly journals, creating an abundant amount of literature on megaprojects, for example, the *International Journal of Project Management* (2011 and 2017), *Organization, Technology and Management in Construction* (2012), *International Journal of Architecture Engineering and Construction* (2014), *Journal of Management and Engineering* (2015), *Urban*

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Policy and Research (2017), and the *International Journal of Managing Projects in Business* (2018). It is especially encouraging to see that megaprojects have taken a more prominent role in management and organization studies (Van Marrewijk, 2015) as well as economic geography (Grabher & Thiel, 2014; Rasagam, Engman, Gurcanlar, & Fernandes, 2014) and urban planning (Steele, 2017). Despite the impressive and important progress—with a number of achievements made related to better stories (more empirical examples, intriguing case studies, etc.) as well as better constructs (more fine-grained theoretical approaches, developed perspectives, etc.)—there remains a dearth of detailed stories of major projects shaping society and the theories we might rely on to understand and explain their nature and dynamics. The idea with this special issue was to push the boundaries of megaproject management research. In that respect this issue was guided by a set of intentions we wanted to achieve.

First, our intention was to advance the theoretical discourse on megaproject management, beyond simply presenting empirical accounts and statistics of megaproject performance. Instead we thought it would be important to drive the discussion around explicit theoretical debates on how to understand the nature and dynamics of these projects. We were interested in inviting scholars from a broad range of disciplines—including management and organization studies, but also history, anthropology, sociology, urban studies, engineering, and economic geography—to cover the vibrancy of current research on megaprojects. The intention with the special issue is thus to make the management of these projects also a concern for scholars outside the narrower field of project management (see, for example, Geraldi & Söderlund, 2017).

The second intention was to advance the use of empirical approaches by revisiting history. We know that history is replete with fascinating examples of megaprojects and that these projects are still open for empirical research. Much information about many of these projects is still available in books, reports, and so forth; however, they have yet to receive attention from a scholarly point of view by trying to untangle the challenges associated with their management. In that respect, we were inspired by the special issue edited by Söderlund and Lenfle (2013) on project history; although we wanted to move beyond that, by focusing explicitly on the project level, the identification of projects that have shaped the future, and explicitly address megaprojects.

Third, we were interested in their management, not just the decision-making processes preceding these projects, but specifically: How can we understand the ways in which these projects are managed? In this respect, we were interested in the inner functioning and processes of megaprojects—how they are managed, led, and organized. By emphasizing the importance of what goes on in projects, we are moving beyond the conventional approaches to what goes on before megaprojects are launched or after they are completed. Accordingly, we were interested in transcending the traditional scope of research on megaprojects by including more

on what happens when they emerge, when they are implemented, and when the dreams meet reality.

Initially, we also thought we would relate and build on the idea of various sublimines in megaproject management and the effects that these sublimines have on the management of these projects. The original idea of sublimines in megaprojects stemmed from Flyvbjerg's article published in *Project Management Journal* (Flyvbjerg, 2014), and the article has since received much attention from project scholars and other management and organization scholars. We thus thought it was timely and the appropriate scholarly context from which to advance some of these ideas further. Several authors in this special issue have referred to these sublimines in their articles and have tried to address the effects that these sublimines have on the management and leadership of projects.

From history we know that megaprojects have played a significant role in creating the society in which we live. The large-scale and pre-industrial canal projects constitute some of the most profound mechanisms for shaping technological progress in large parts of the world. Many of the pre-industrial megaprojects educated project managers, which in subsequent projects were instrumental in keeping the large-scale projects on track. This in turn led to the advancement of capabilities to run even larger projects, which was epitomized in the development and construction of the railway systems in the Western world during the mid-19th century, and moving further with a range of infrastructure and other construction projects, which paved the way for the industrial revolution in many countries around the globe. People did not talk about megaprojects back then but they certainly worked on them; many of these historic projects were in relative terms larger than the megaprojects we see taking form in society today. That said, encouraging the historical exploration into megaprojects seems important—to see what we can learn from history, to see what in-depth stories of how these projects came into fruition and how they emerged seems to be an important task for management and organization scholars (Scranton, 2014). Clearly, this means that we need to recreate these megaproject stories by visiting the books and reports written about them, the stories told by the people who populated these projects. We do not know what is in these data and stories and what they might lead to in terms of theoretical insights, but it is worth collecting and analyzing them with a project organizing mindset (Söderlund & Lenfle, 2013; Sankaran, 2018)—by looking at these projects not as objects, not as outputs, but as processes of organizing, as emerging organizational entities, and action localities for the intermingling of politics and power (Clegg & Kreiner, 2013).

We also know that scholars from a wide range of disciplines have taken interest in megaprojects—initially primarily in domains such as urban planning and engineering, but increasingly so in areas such as sociology and business administration. It is also interesting to see the progress being made in research

into megaprojects at some of the leading universities and business schools in the world, including Saïd Business School at Oxford University, BI Norwegian Business School, the University of Technology Sydney, the University of Québec at Montreal, University College London, the University of Pennsylvania, and the University of Manchester—all schools engaged in the development of centers of excellence to drive research on megaprojects further. In this respect, it is interesting because as organizational phenomena megaprojects have emerged as fertile cross-disciplinary grounds for the exchange of ideas across a wide range of domains, ranging from engineering, science, to social science. This is a path recently created and a path that hopefully will continue to guide scholars in the decades to come.

The Future of Megaproject Research

There are at least four pressing and critical issues in megaproject management research. First, their existence and prevalence; second, their management and organization; third, their success and performance, or under-performance; and a fourth issue, which has become increasingly important at academic conferences and in public debate over the last few years, relates to the future of megaprojects and how they address major societal challenges.

First, as mentioned earlier, we need to have many more detailed discussions about why megaprojects exist—not why people want to do certain things (improve, change, etc.) but why they choose to do things through the mechanism of projects, and why they want to group these initiatives and actions into large-scale projects, oftentimes even megaprojects, and beyond. This requires more theoretical scrutiny and discussions—not only empirical stories, which are desperately needed, but also awareness of the larger social science literature in economics and organization theory (Söderlund, 2011a). These inquiries might relate to economics-based explanations pertaining to transaction cost theory; they might relate to the mustering of capabilities, the handling of interfaces, and complexity; they might obviously also relate to power issues. Engaging more in the theory of megaprojects is an important feat for management and organizational scholarship. Using extant theories of organizations and ‘firms’ and exploring in what sense they might inform our understanding of megaprojects is obviously one important path for research. However, developing new approaches and unique theories of megaprojects is just as important in order to be able to demonstrate in what respect megaproject research might contribute to wider management and organization theory, and to social science at large. For these reasons, we need bolder attempts to develop better theories of megaprojects. These efforts are just beginning to take shape in the organization studies and project management literatures. In recent years, scholars writing about megaprojects have been relying to an increasing extent on institutional theories (Biesenthal, Clegg, Mahalingam, & Sankaran, 2017; Dille & Söderlund, 2011;

Levitt & Scott, 2017; Chi, Chen, & Shi, 2014; Mahalingam & Levitt, 2007) to better understand and explain the cooperation and coordination problems in megaprojects (Söderlund, 2011b). Focusing particularly on the cooperation problems and conflicts among stakeholders, scholars have suggested applying social conflict theory to address the challenges observed in megaprojects (Jia, Yang, Wang, Hong, & You, 2011). Recently, scholars have also developed frameworks and theories to address innovation in megaprojects as a particular context for innovation studies (e.g., Davies, Dodgson, Gann, & MacAulay, 2017). These examples demonstrate that megaprojects are more than merely empirical phenomena, they also constitute interesting and distinct phenomena upon which scholars can try out existing theories and develop new ones, analytically pondering their salient features.

Second, we need to know more about what goes on in megaprojects—how they are managed and organized, from within, by the managers who are tasked with bringing them to fruition. In that respect, we need to understand how managers implementing large-scale projects deal with the subtleties often associated with them, of over-optimism and of realizing the project from dreams through to reality. These are trouble-laden journeys in which managers rarely have positive news to tell to the people involved or to the stakeholders observing the progress of the project. How do managers deal with such a situation of “managing in head-wind,” constantly facing bad news and negative deviations? How do they establish cooperation and coordination in such contexts? How do they drive innovation in such management situations? Answering these questions, certainly requires an in-depth understanding of the actuality of megaprojects. Getting more into the actual occurrences, the nested processes of managing and organizing in megaprojects are critical concerns for management and organization studies (Davies et al., 2017). Thus far, too much research has been focused on looking at them from an outside-in perspective, of looking at the black box of megaproject management. Too little attention has been paid to what happens inside this black box of megaprojects, how managers work to establish functioning regimes for cooperation, the relevant mechanisms for coordination, and the ongoing practice of managers coping with the challenges of getting the megaprojects in place. This needs to change.

Third, how do megaprojects perform? We often hear consultants and scholars complaining about the underperformance of megaprojects. This is expected. It is their job and a simple way of telling the world that their services are needed and important. However, is it true and how would we know? Why are we so much worse at managing megaprojects than other kinds of organizational ventures? Because they are more complex and difficult? Because we fail to learn from experience? Or because the proper instruments for evaluating their performance are lacking? Oftentimes we hear the story about ‘on time and on budget’ as being the most important

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parameters of measuring success. We rarely use the same parameters when evaluating and discussing the performance of other ventures and organizations. Why? Why are these parameters the most relevant in the context of megaprojects? Consider the case of Norway (see for instance, Volden & Samset, 2017). We know that their strategic and operational success have improved considerably over the last few years—if, that is, we look at how they performed in relation to the projected numbers. However, we rarely compare megaprojects with each other. How much is a relevant sum for developing and building a new bridge in one country compared with the total cost for a similar bridge in another country? Which country is best when it comes to the performance of their megaprojects? Is it then only relevant to compare if they reach the stated objectives? Is this a measure we would consider to be relevant when comparing other kinds of organizations and ventures, such as corporations? Of course not. Nonetheless, they are frequently the ones we use in the context of megaprojects, because we have not worked hard enough to find measures that are relevant and instrumental. This needs to change.

Fourth, and perhaps the most important issue for research on megaprojects, is in what respect megaprojects contribute to solving the major problems in society. These projects cost a lot of money; they consume enormous amounts of resources and attention; hence we should expect them to deliver value to society and the organizations and individuals involved in them. In some cases, one might wonder whether this really

is the case. Do megaprojects really solve the mega-problems of society? Are megaprojects the right solution? And if they are, do we have the right projects to solve the most critical problems in our society? This obviously makes it even more important to create projects that will address the United Nation’s primary goals concerning poverty, climate change, economic inequity, and terrorism. Which problems are best solved by megaprojects? Which problems are best handled by programs? Which problems are best handled by a portfolio of smaller projects? And which problems are best handled without the aid of projects? These are all essential questions, which brings us back to the start of this discussion: Why do projects exist? This should then hopefully help us understand not only why megaprojects exist, but also in what sense they differ, how they behave, the value of the management of these projects, and what factors determine their success or failure (see Söderlund, 2004). All these questions are essential for developing better theories of megaprojects.

Advancing Megaproject Research

This special issue contains seven interesting articles, which in various ways contribute to the literature on megaprojects. After a thorough review process and much help from reviewers, we were able to accept seven articles written by scholars from around the world (see Table 2).

Rego, Irigaray, and Chaves investigate how symbolic megaprojects were conceived, implemented, and delivered

| Authors | Title | Theoretical Angle | Primary Empirical Material |
|----------------------------|---|--|---|
| Rego, Irigaray, and Chaves | Symbolic Megaprojects: Historical Evidence of a Forgotten Dimension | Combination of historical analysis and organization theory | Content analysis of archival data of three landmark projects in the development of Rio de Janeiro |
| van Marrewijk | The Multivocality of Symbols: A Longitudinal Study on the Symbolic Dimensions of the High-Speed Train Megaproject (1995–2015) | Power and politics theory | Ethnographic study of a high-speed train project in the Netherlands |
| Shenhar and Holzmann | The Three Secrets of Megaproject Success: Clear Strategic Vision, Total Alignment, and Adapting to Complexity | Contingency theory | Multiple case study of successful megaprojects |
| Harris | Competitive Precinct Projects: The Five Consistent Criticisms of ‘Global’ Mixed-Use Megaprojects | Urban planning theory | Review of 42 mixed-use megaprojects |
| Steen, Ford, and Verreyne | Symbols, Sublimes, Solutions, and Problems: A Garbage Can Model of Megaprojects | Decision-making theory | Australian oil and gas megaprojects |
| Eskerod and Ang | Stakeholder Value Constructs in Megaprojects: A Long-Term Assessment Case Study | Value and stakeholder theory | Historical study of the Astoria-Megler Bridge |
| Gillett and Tennent | Dynamic Sublimes, Changing Plans, and the Legacy of the 1966 Soccer World Cup | Institutional theory | Historical study of the 1966 FIFA World Cup |
| Söderlund | A Reflection of the State-of-the-Art in Megaproject Research: <i>The Oxford Handbook of Megaproject Management</i> , Edited by Bent Flyvbjerg | Conceptual/review | Book chapters in <i>The Oxford Handbook of Megaproject Management</i> |

Table 2: Overview of the articles.

in Rio de Janeiro in Brazil over two centuries, culminating in the Rio Olympics in 2016. They use a historical analysis approach to addressing symbolic projects shaping urban renewal in the 1950s to clean up the city, improve its sanitary conditions, and create a Parisian atmosphere. Then followed the construction of the Flamengo Embankment, a public park and the Perimetral in 1960s in conjunction with a major event—the International Eucharistic Congress. The next notable symbolic project was the Porto Maravilha, which was completed at the start of this century as a program to build a major port and much-needed infrastructure to create a modern image of Rio de Janeiro as a great city of the world in preparation for hosting two major international mega-events: the FIFA World Cup in 2014 and the Olympics in 2016. These large projects had, according to the authors, all the hallmarks of the four sublimates—political, economic, technological, and aesthetic—mentioned by Flyvbjerg (2014). Rego, Irigaray, and Chaves also portray the materialization of Rio's megaprojects as a phenotype evolving from the project's genotype characterized by culture, attributes, people, environment, and technology (Joslin & Müller, 2013). The authors demonstrate the interaction among the sublimates and how they influence the emergence of megaprojects.

Alfons Van Marrewijk analyzes a high-speed train (HST) megaproject in the Netherlands, demonstrating how power and politics can have an adverse effect on its progress (Clegg, Sankaran, Biesenthal, & Pollack, 2017). The article's focus is on exegetical meanings that have significant impacts on social, cultural, and political situations and processes. Using an anthropological approach, the author captures the meaning of failures that occurred in the HST megaproject scenario as multi-vocal, which changed over time and represented strategic power struggles among key stakeholders. The methodology used is a decade-long longitudinal ethnographic study to arrive at a 'verstehen' of the social reality of the megaproject as it was constructed by its stakeholders.

The failures of the megaproject occurred in its three goals, which were derived as meanings attributed from an analysis of the data collected: HST as a radical, innovative contract introducing public-private partnerships in the rail sector; as an intervention in the Dutch rail sector to break down its monopolistic position; and as a lynchpin of the rail transport business for the Netherlands in the European transport sector. All four sublimates proposed by Flyvbjerg (2014)—the technological, political, economic, and aesthetic acted as drivers for the four public organizations that participated in the project.

The article shows how the exegetical meanings acted to legitimize the arenas for power struggles often found in megaprojects (Clegg & Kreiner, 2013). The symbolic ambitions of the HST project turned out to be unrealistic due to failed liberalization, incapability to meet the challenges, exhibiting civil resistance to change, and causing both time

delays and cost overruns. The article demonstrates how project management scholars can conduct a historical analysis of megaprojects that can contribute to project management studies (Söderlund & Lenfle, 2013).

Rather than investigating why megaprojects fail, Shenhar and Holzmann (2017) study why some megaprojects succeed; specifically, they attempt to identify ingredients of and commonalities among successful megaprojects. To do so, the authors review the ambiguous literature on project success that proposes a multitude of perspectives on what project success is and how we can evaluate it. Following the multiple perspectives, the article determines four dimensions, based on which they analyze the success of megaprojects. The four dimensions are: efficiency, impact on customer, business/financial success, and impact on society.

The article uses a multiple case-study approach to qualitatively explore commonalities among successful projects. The study includes multiple data collection methods to identify relevant case studies, such as content analysis, interviews, and expert judgment. Following a step-wise analysis, the authors produce a list of 14 case studies, which were deemed successful in at least some of the aforementioned dimensions of success. After finalizing the list, the authors' objective was to identify the vital factors responsible for the achievements of the most successful megaprojects. In order to do so, they reviewed the literature to come up with a list of 37 success factors that could help to explain megaproject success. Then, the authors performed an iterative cluster analysis to reduce the number of factors until no further reduction was feasible. Ultimately, the authors identify three distinct and unrelated elements that can explain the success of megaprojects, namely having a clear strategic vision, total alignment of all relevant stakeholders, and the ability to adapt to complexity.

Based on their findings, the authors suggest that successful megaprojects are able to integrate all three elements; that is, a clear vision is set and communicated to all those who are involved or may be impacted by the project. Relevant stakeholders embrace that vision and are totally aligned with it, which includes knowing the roles and responsibilities required to achieve that vision. Last, complex challenges are identified and addressed appropriately. According to Shenhar and Holzmann, these three elements are what successful megaprojects have in common.

Harris' article on competitive precinct projects offers a systematic review of empirical studies of the key issues created by the rapid growth of mixed-use megaprojects in cities (that tend to be large enough to be called a 'precinct'), which do not seem to be good examples of urban planning. He argues that these megaprojects are motivated by city-based international competition; mobility and growth of knowledge economies, creating pressures on urban space; redirection of investment from physical to human capital; and the dominating role of politics, driving a market-rule ideology.

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His review of the empirical research, focusing on 42 mixed-use megaprojects, reveals five consistent issues: introverted project-led governance that circumvent local planning frameworks; international marketing for talent tending to obscure local issues; spatial and social disconnection due to following the money and creating barriers between the new and the old; generic urbanity through imitation irrespective of the context in which they are being built; and lack of public benefit caused by the rhetoric of delivery. He attributes this to the emergence of neoliberal-oriented development practices.

Harris argues that these competitive precinct megaprojects are a missed opportunity in good urban planning as they fail to provide housing and employment opportunities in areas of cities that are already associated with neglect; missing an opportunity to increase value through rezoning industrial or residential land; and achieving synergy through lack of coordination with other major government assets or projects.

Harris also contributes to the urban planning literature by suggesting alternative directions for building competitive precinct projects by developing principles-based project frameworks that can overcome the five criticisms addressed in the article and establishing monitoring practices and adequate accountability to ensure they are being followed and using a more contextual evaluation of such projects. The contribution this article makes to the project management literature is by addressing the dangers of projectification in urban planning (Book, Eskilsson, & Khan, 2010), and thus criticizing the underlying rationale for organizing development through large-scale projects.

Steen, Verreynne, and Ford's (2017) article aims to model the decision-making and problem-solving process in a more dynamic and realistic way, which overcomes the idea of rationality in organizations. According to the authors, rational choice models of planning and decision making are dominant in the megaproject literature, but have limited utility in explaining the problems of complex megaprojects. To overcome those rational models, the article draws on Cohen, March, and Olsen's (1972) garbage can model (GCM). Specifically, the authors use this model as a way of explaining the differences in problems identified by businesses that are attributed to megaproject delays and cost overruns in the Australian oil and gas industry.

Steen et al. (2017) use quantitative methods and compare media reports from business and industry associations with survey data. The results are produced from the mean rank exercise and indicate that, although megaproject executives focus their attention on solutions that involve external parties, such as government and labor unions, the problems within the projects that are prioritized by managers of firms within the supply chain network are actually quite different and relate more closely to the performance of the project. According to the authors, this finding is inexplicable from a rational choice perspective without concluding

decision-making failure; from a GCM perspective, however, the results can be explained through the lens of conflicting agendas and solutions to a stream of multiple problems.

In summary, Steen and his co-authors identify differences between members of the supply chain in the Australian oil and gas industry in terms of what they perceive as major barriers to meeting business objectives. Their study is therefore a valuable snapshot of the perceptions of those firms that make up the industry supply chain, ranging from owner/operators of the project through to construction firms and other businesses.

Eskerod and Ang, in their article on stakeholder value constructs, explain how to understand, classify and express megaproject stakeholder values using the example of the Astoria-Megler Bridge connecting states of Washington and Oregon, which had its 50th anniversary in 2016. They use the four sublims proposed by Flyvbjerg (2014) and value constructs derived from research conducted by Ang to analyze the case study of a symbolic bridge (Ang & Killen, 2016). They try to provide an answer to the often asked question: 'How do you measure the success of a megaproject?' by extending its evaluation beyond the conventional project close-out stage into its impact stage (Turner & Zolin, 2014).

The article uses a single case study of a rich and powerful case with multiple sources of evidence using online videos, websites, and photographs in addition to interviews and observations. Data analysis using the four sublims showed that the bridge provided evidence of a technological sublime by having the longest continuous truss span in the world; the political sublime was used as a means of political promise during an election by the then Governor of Oregon; the growth in the tourism industry contributed to the economic sublime; and the delight of the local stakeholders and tourists served as the aesthetic sublime. The two value constructs that were prominent during the analysis were that the bridge provided 'generative value' for local communities by unlocking development opportunities in the longer term and 'retrospective-reflective-future oriented value' evident from the passionate speeches made during the celebration of the 50th anniversary of the bridge.

This article contributes a 'value language' to project management researchers and practitioners to gain a better understanding of the value that a megaproject can provide while engaging with its stakeholders. It can further help in evaluating the success of a megaproject from a 'value perspective,' which extends beyond the traditional measures of project success often discussed in the context of megaprojects.

Gillett and Tennent use the 1966 FIFA World Cup to investigate megaprojects and demonstrate how sports mega-events can achieve multiple tangible and intangible benefits, even beyond the original vision. Since the actual realized benefits, the outputs and outcomes from sports mega-events can differ from what was proposed, the authors use multiple theoretical lenses to capture the multiplicity of benefits that

can occur. In particular, they use Flyvbjerg's (2014) four sublimines model and Geraldi and Morris' (2011) framework of project management levels to identify a wide range of potential drivers of megaprojects, which provide a basis for evaluating project success.

The 1966 FIFA World Cup, which was held in England, is an interesting and relevant case, which provides them with a temporal perspective that allows the researchers to investigate the longitudinal scope and effects of a project while avoiding certain political and ethical concerns of researching contemporary megaprojects. Gillett and Tennent utilize an inductively based archival research approach and draw upon project documents, along with periodicals and secondary sources, such as autobiographies. In the first step, the authors performed an archival analysis of the main three project phases; then, the authors examined the original proposals, the revised plan, and what actually happened; in the third step, they researched the project network to determine contextual factors (e.g., institutional) in which the project took place.

Based on the results of their research, the article argues that a broader view of the factors need to be taken into account when evaluating megaprojects as successes or failures over time, including their symbolic impact on national identity and status or international relations. In addition, the authors find that the temporal nature of implementing megaprojects is quite dynamic, which means the strategic and institutional context changes (or can change) over the course of the project. Hence, the article argues for a dynamic understanding of the nature of megaproject management and its performance evaluation.

Concluding this special issue is a short article by Söderlund. Söderlund delivers a reflection of the state-of-the-art in megaproject management based on the recently published *The Oxford Handbook of Megaproject Management* edited by Bent Flyvbjerg. The editor-in-chief of *Project Management Journal*, Hans Georg Gemünden, asked Jonas Söderlund to provide such a reflective piece in the context of this special issue in order to link the contributions of this special issue with the recently published handbook. As we mentioned earlier, this special issue was inspired by the sublimines developed by Bent Flyvbjerg, and these sublimines have also influenced several chapters in the new handbook. The intention was to integrate both pieces of work and to disseminate the work of the authors and the editor of the new handbook. The intention was also to encourage a discussion about the book's implications for future research.

In sum, a critical analysis of all articles in this special issue shows some interesting insights about megaprojects and megaproject research. The overarching theme of most articles is performance, and this special issue highlights the complex and multifaceted nature of performance, not only in terms of drivers, but also in ways in which performance is assessed.

Despite the fact that some of the articles focus on project failure (e.g., van Marrewijk) and others on project success (e.g., Shenhar & Holzmann) there are clear commonalities across the articles concerning the importance of the so-called soft aspects of performance. In particular, the articles reveal that there are different 'soft' drivers of megaproject success (i.e., success factors). For example, van Marrewijk identifies power struggles, resistance to change, and institutional differences as the main reasons why the project described in this article failed. Steen and co-authors show that conflicting agendas across the supply chain in megaprojects lead to problems and poor performance. Shenhar and Holzmann argue that strategic vision, total alignment of all relevant stakeholders, and the ability to adapt to complexity drive project success. While the factors identified by Shenhar and Holzmann are both inwardly and outwardly focused, van Marrewijk's and Steen et al.'s articles are more inwardly focused, all are primarily concerned with soft performance aspects. We find the same pattern when it comes to success criteria. While several of the underperforming megaprojects described in the studies are classified as such due to time and cost overruns, the articles in our special issue show that a broader perspective of project success is necessary when evaluating megaprojects. Such a broader perspective goes beyond the standard triple constraints and incorporates aspects such as value and benefits. More precisely, Eskerod and Ang introduce the two value constructs of 'generative value' and 'retrospective-reflective-future oriented value' to better evaluate megaproject performance. In the same vein, Gillett and Tennent show that a broader view of the factors needs to be taken into account when evaluating megaprojects. The authors specifically use the notion of tangible and intangible benefits. In addition, both articles promote the idea that performance evaluation needs to (also) be done after the close-out stage of the project. More specifically, Eskerod and Ang call for performance measurement in the impact stage, whereas Gillett and Tennent promote that success or failure needs to be considered over time in general. In short, not only are the measures of performance slightly different, the timing also needs to be reconsidered for megaprojects.

In terms of methodology, we find that a wide range of mostly qualitative methods were used, such as ethnographies, single and multiple case studies, interviews, and inductive archival analysis. Only one article (Steen et al.) uses quantitative methods when comparing media reports from business and industry associations with survey data. The focus on qualitative methods seems natural, observing the constraints of gathering sufficient quantitative data in a field where access is difficult due to political reasons, the sheer number of megaprojects that occur in a particular geographic area is limited, and project-specific data that can be used for quantitative work are highly confidential. The increasing use of a mixture of research methods is another positive

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theme that can be observed in this issue. For example, due to the long-term impact of megaprojects, multiple studies used research methods that allowed them to investigate the nature of megaprojects and their impact over time, including Eskerod and Ang who evaluated a megaproject over a 50-year period from the time it was delivered; van Marrewijk who did a longitudinal ethnographic study; and Gillett and Tennent who use archival data to investigate the longitudinal effect of a megaproject. The variety of methods used in the different articles suggests that megaprojects need to be viewed from different perspectives, using different angles in order to increase our understanding of megaprojects as a cultural ecosystem by studying the interconnected organizational elements of megaprojects in their wider institutional contexts as suggested by Kusuma (2014).

Emerging Insights

In summary, the main insights gleaned from this special issue are as follows. First, while the notion of multiple success factors and success criteria is not new to the field of project management and, in fact, constitutes one of the most widely discussed topics in the area, it seems more important than ever. The magnitude of megaprojects with regard to their duration and impact beyond the close-out stage is much greater than what we have seen in the past. It is therefore becoming increasingly important to assess projects and their impacts at different times and based on different criteria to be able to fully evaluate their performance. At this stage, it is necessary to link the discussion back to the four critical points we highlighted earlier and, in particular, the aspect of future. If megaprojects are indeed a way to solve societal issues and change the world in which we live, we cannot expect changes to take place immediately. These changes will take place over longer periods of time and will, hopefully, fulfill what they are set out to do, but that cannot be assessed immediately after the project has been completed. When it comes to improving the overall quality of life and well-being of the people and planet, it might be hard to measure success based on a monetary value. While this is certainly not what businesses strive for, most megaprojects are either driven or subsidized by political stakeholders, which means that success or failure is not solely to be covered by organizations.

Second, the articles in our special issue demonstrate that success is often driven by political and/or power-related factors. This relates particularly to the topic of how megaprojects are managed. Seeing the highly political nature of stakeholders across the supply chain with different underlying objectives, the hard success factors do not seem to be enough anymore. This unique setup calls for innovative governance solutions that align stakeholder interests in a complex environment with a large number of key players. Flyvbjerg's (2014) four sublimines is a relevant, but not exhaustive, framework and starting point for such investigations of the different

drivers of megaprojects, which can help us understand the ways in which we should manage them. We need to better understand how managers shape, implement, and manage large-scale projects in accordance with the sublimines. When it comes to the soft factors, some of the main problems are over-optimistic assumptions about realizing the project from the dream stage through to reality, especially when factors close to our personal belief system or agenda drive projects. In these cases, objective assessments of how things should be done, how long it takes, or how much it might cost, might pave the way for the subjective assessments of such aspects. If this is the case, megaprojects need to be managed and assessed differently. In addition, if political or subjectivity plays such a major role in megaprojects, appropriate research methods need to be chosen to investigate such issues.

Third, we believe our studies indicate the importance of using relevant empirical methods when doing research in the field of megaprojects. We are quite optimistic about the following possibilities of doing empirical research on megaprojects, as we foresee two trajectories. One trajectory relates to the ongoing need to explore megaprojects in-depth—from various angles using various types of data. Anthropological research is certainly one alternative here, as seen in the work by van Marrewijk and colleagues (van Marrewijk, 2015). This research may benefit from a historical approach as this allows for insights and ways to zoom in on the actions and interactions observed. We believe that more qualitative studies, such as in-depth case studies or ethnographies are necessary to unveil the political and power relations in megaprojects, which seemingly drive many megaprojects. The main challenge is that these aspects need to be observed over time because such research projects take three to four years. This presents a major practical obstacle for many researchers. The articles in this special issue demonstrate how longitudinal research can occur despite those constraints.

The second trajectory is the building of larger data sets and analyzing them by using qualitative and quantitative methods. One way to go about this is to develop unique databases about megaprojects that cover different aspects of megaprojects, including financial and demographic data as well as behavioral data, based on theoretical concepts. In addition, more research could use existing databases that provide relevant quantitative and qualitative information that could be used to assess the performance of the project. Gillett and Tennent provide a useful example in this special issue of how this could be done. Generally, there seems to be a major lack of quantitative studies in the field of project management, which provides a major opportunity to further test the theoretical assumptions generated by qualitative research.

Finally, and as outlined above, we believe focusing on the future of megaprojects is one of the most crucial issues. One of the main themes in relation to the future are the challenges of sustainability and how megaprojects will cope with external

industrial influences such as digitization and automation. Megaprojects are not only temporary organizations but also temporary structures, which is especially visible in cases when stadiums are built for certain sports events, such as the FIFA World Cup or the Olympics. In these cases, it is vital to address the future of the project beyond its actual use, which is normally very short-lived. For example, pictures of the modern 'ruins' of the 2004 Olympic Games in Athens, Greece, tell a powerful story. Calls for building sustainable megaprojects that stand the test of time are more than valid. How can we build megastructures for a specific purpose that can also be used for other purposes, transformed into something different, or deconstructed quite easily? One of the most recent success stories is the London Olympics, which had a strong strategic agenda around the issues of sustainability and was able to utilize the results of the respective projects (i.e., venues) long after the fanfare of the event itself had passed. In particular, the city utilized partly existing venues, built venues with its short-term legacy in mind, or found future users for new venues in the early stages of the project. These, however, are just some examples of which sustainable aspects were used and incorporated in that particular megaproject at a holistic level. Being able to sustainably transform a large area and producing new jobs for a relatively long period of time could be one of the strongest selling points for megaprojects, which clearly underscores the relevance of the future of megaprojects.

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