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Book review

International Handbook on Mega-Projects, H. Priemus, B. van Wee (Eds.), Edward Elgar, Cheltenham, UK and Northampton, MA, USA (2013). £150.00, ISBN: 978-1-78100-229-21

Priemus and van Wee bring together in this Handbook an international team of 27 leading researchers specialising in the planning, appraisal and evaluation of transport and other mega-projects. Mega-projects, defined as normally costing at least several hundred million euros, are very expensive but often crucial for accessibility between or in cities, regions and cross-border. They include roads, railways, high-speed trains, light rail, bridges and tunnels. These projects are 'mega' in terms of the decision-making process and the resulting infrastructure. Mega-projects have a particularly high political profile as they are mainly public investments.

This Handbook focuses on decision-making processes, relationships between public and private stakeholders, multi-actor analysis, difficulties in accurately forecasting costs and benefits and wider impacts of transport mega-projects. The focus is almost exclusively on advanced economies in Europe, North America and Australia, which is unfortunate as the impact of mega-projects in less developed countries can be both very high risk and transformational and impact on other countries. The current Panama Canal super-locks enlargement project, for example, will soon enable much larger container ships and cruise ships to sail between the Atlantic and Pacific Oceans, reduce a significant bottleneck in global maritime trade and impact on the economy of Panama.

The five chapters in Part 1 of the Handbook focus on decision-making on mega-projects. In Chapter 2, Samset examines the strategic and tactical performance of mega-projects and identifies lessons and pitfalls. Perceptions of success can vary between those of project managers, users and a hostile media focussing on cost overruns and time delays and between immediate outputs and longer-term impacts. Samset calls for a wider view of success and failure based on efficiency, effectiveness, relevance, impact and sustainability. There is a need to distinguish between strategic and tactical performance: 'on cost, on time' is not sufficient. The use of risk analysis is vital. Measures to ensure quality at entry are useful to ensure successful longer-term performance but are no guarantee. In Chapter 3, Lessard and Miller assess the shaping of large transport and other engineering projects, how uncertainty and risk evolve and how risks are engaged, shaped, assigned, contained and resolved. Net Present Value is the most common planning and evaluation technique but how are external economic, environmental and social benefits measured?

Leijten examines real-world decision-making, politics, bias and strategic behaviour in Chapter 4. The subjectivity of information is seen as the biggest problem. Entrapment of policy makers can happen due to financial or political commitment or the iconic image of a project such as the Channel Tunnel and can encourage escalation of perceived value. Retrospective rationalisation of persistent project support can occur because of post-decisional dissonance. Distributive economic effects, such as the beneficial effects of improved accessibility, can sometimes be contrary to the original aims. Ex ante forecasts of costs and benefits are crucial in determining project feasibility and alternatives and clarifying political decision-making. Politicians may be swayed by what Flyvbjerg et al. (2003) call a 'monument complex'. Private sector motives for supporting mega-projects can differ. Reference class forecasting helps the accuracy of cost and benefit data but counters optimism bias rather than strategic misrepresentation. However, Leijten fails to provide examples, emphasise the unique conditions of many mega-projects and the difficulty in identifying true 'control cases' (see for example Knowles and Matthiessen (2009) who use Denmark's Great Belt Fixed Link as a control for Denmark and Sweden's Øresund Fixed Link).

In Chapter 5, Priemus, Bosch-Rekveldt and Giezen examine long term uncertainty, risk, redundancy and resilience and compare project management using the 1950s systems approach and the1990s contingent approach. They highlight the pitfall of political discontinuity and short electoral mandates undermining the delivery of longer period mega-projects. Priemus et al. also question whether evidence establishes causal relationships between improved accessibility and regional economic growth but fail to discuss the difficulty in isolating transport from other effects and the value of and evidence from reference (control) cases. In Chapter 6, ten Heuvelhof and Leijten examine New Public Management and new strategic behaviour. Using three Dutch rail case studies, they criticise the tendency to split train services and trains from infrastructure, but fail to identify this as a European Union policy requirement. Their contention that this increases costs to society needs evidencing. They note that project design, construction, finance, maintenance and operation are now more co-ordinated through contracts but fail to explain what are the 'many benefits of NPM'.

Part II of the Handbook examines public–private partnership (PPP) and multi-actor analysis. In Chapter 7, Siemiatycki examines successes and tensions of PPPs in mega-projects. PPPs tap into private sector capital and expertise but incur high financing and transaction costs. There are more than five times as many road than rail PPP schemes globally, whilst in urban areas less than one-third of schemes are rail transit projects. Some evidence suggests that PPPs are more often on-time and on-budget. Poor outcomes are usually the result of unsuitable allocation of risk between partners. There is a strong incentive for local promoters to underestimate project costs and overestimate benefits to attract funding (identified previously by Flyvbjerg et al. (2003) and Priemus et al. (2008)). Facilities are sometimes overdesigned and overbuilt at higher cost.

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Dwarka and Feitelson examine the political economy of urban infrastructure in Chapter 8. From the 1980s infrastructure became a traded asset rather than just a public good. Infrastructure investment fragmented with 'the most highly valued spaces in global cities being provided with dedicated, high quality infrastructural connections' (Graham and Marvin, 2001). Undermining of peripheral locations occurs when new projects bypass poorer or more industrial areas. Urban light rail transit, often tied to urban regeneration and economic initiatives, is identified as one of the largest sectors expected to reach US$7.5 billion globally by 2015. Where private investment occurs, it varies considerably and can include private finance initiative (PFI), design-build-operate-maintain (DBOM) or build-operate-transfer (BOT). Infrastructure is often a pre-condition for urban growth and coincides with the interests of real estate developers. Examples used include the London Docklands Development Corporation who defined the land use agenda for Docklands and the position of the Docklands Light Railway as essential for regeneration and Manchester Metrolink Phase 2 which required the private sector to part fund capital costs and assume all of the downside revenue risk.

In Chapter 9, Hodge and Greve examine PPP in developing and governing mega-projects and specify five different groups of PPP with differing extent of private sector input. In Chapter 10, van Binsbergen et al. examine a wide range of case studies in intermodal freight transport. They conclude that innovations are most needed in information and telecommunications technology and organisational issues. In Chapter 11, Macharis and Nijkamp consider multi-actor and multi-criteria analysis in evaluating mega-projects. They review six alternative evaluation methods: Cost Effectiveness Analysis (CEA); Economic Efficiency Analysis (EEA) including impacts on GDP, employment and government revenue; Cost Benefit Analysis (CBA) with all factors converted to monetary values, but the authors fail to criticise the high weighting given to travel time saving, which advantages road schemes, and the difficulty in valuing external effects; Private Investment Analysis (PIA); Social Cost Benefit Analysis (SCBA); and Multi-criteria analysis (MCA). A Multi-actor multi-criteria analysis (MAMCA) is then developed and applied to alternative solutions to Antwerp's ring road congestion.

Part III of the Handbook considers CBA and ex ante evaluation of mega-projects. In Chapter 12, van Wee and Rietveld examine the strengths and weaknesses of CBA and difficulties in forecasting changes in regional accessibility, wider economic and long-term impacts and cross-border issues. The need for reference (control) cases is highlighted again, but as in Chapter 5, the difficulties of isolating effects of transport investment is not pursued and no case studies are presented. Two benefit categories dominate, travel time gains and travel volumes based on high value of time (VOT) for commuting and business travel and additional travel due to induced demand. CBA is rightly criticised for ignoring wider economic benefits unless markets function perfectly, and the advantages of MCA are acknowledged in this respect. However, the authors need to address the difficulties in traffic forecasting and CBA for cross-border projects unless a detailed assessment is made of the economic and cultural barriers and opportunities between countries (see Knowles and Matthiessen, 2009). In Chapter 13, Annema examines the use of CBA in decision-making in most countries, the European Union and the World Bank. Where 'Net Present Value' (NPV) is negative, projects are usually rejected and where it is positive, projects are more likely to proceed. Annema endorses the views of Flyvbjerg et al. (2003) and Priemus et al. (2008), that politicians may override CBA evidence due to optimism bias and or strategic misrepresentation and supports the view that 'ex post evaluations should have a central role in improving the process of infrastructure planning'.

In Chapter 14, Koopmans and Rietveld examine long-term impacts of mega-projects and the discount rate. Higher discount rates (e.g. 4%) reduce the weight of long-term benefits and costs whilst lower discount rates (e.g. 1%) give a much higher weight for long-term impacts. Mega-projects probably have larger long-run effects (more than 40 years) on spatial economic development. Higher discount rates of typically 3–8% have reduced recently, for example in the UK from 6% in 1989 to 3.5% in 2003, but more explanation is needed. Cantarelli and Flyvbjerg examine cost performance and lock-in in Chapter 15. Flyvbjerg et al.'s (2003) seminal analysis of cost overruns, errors and strategic misrepresentations is re-iterated and the use of reference cases is recommended to improve forecasting. Lock-in occurs early when the real decision to build precedes the formal decision. In Chapter 16, van Wee considers ethics and ex ante evaluation of mega-projects. A checklist to include ethics is presented and a combination of CBA and MCA is recommended in some cases.

Part IV of the Handbook examines wider impacts: regional growth and sustainability. Vickerman examines the theoretical basis of wider impacts, including reduced transport costs and agglomeration effects incorporated in New Economic Geography, and how to model them. Empirical evidence is presented including the Jubilee Line's micro impacts on labour markets, property markets and land use. Crossrail's benefit to cost ratio (BCR) rose from below unity (0.7) to 1.2 with the inclusion of £7 billion of agglomeration and labour market efficiency estimates. This is still well below the UK Department of Transport's minimum BCR threshold of 2.0 to fund transport projects and Vickerman fails to explore why London's Crossrail was approved when provincial Light Rail schemes with BCR's above 1.2 were rejected in 2004/5 (see Knowles, 2007). Vickerman highlights the lack of understanding of the behavioural changes resulting from a non-marginal change in transport provision but fails to promote this knowledge gap as a major and urgent transport research agenda.

In Chapter 18, Annema and Priemus consider new challenges to cope with climate change and energy transition. Whilst climate change is considered at length, there is only cursory examination of the overwhelming dependence, since the onset of the motor age, of transport systems on cheap oil and the looming crisis of Peak Oil and dearer mobility. $100 a barrel crude oil prices have already triggered demand elasticities with car use flat-lining or declining in some developed countries including the USA and UK. In the final Chapter 19, Gilbert examines road vehicle automation. The author expects a shift to electric motors (batteries and grid systems) from the internal combustion engine and the development of personal rapid transit, which would have profound infrastructure implications.

This International Handbook on Mega-Projects provides a wealth of evidence on their planning, appraisal and evaluation and complements the seminal works of Flyvbjerg et al. (2003) and Priemus et al. (2008). It provides a major addition to the literature and will be of great value to mega-project promoters, political decision makers and academic researchers. The 19 chapters are well referenced but some chapters would benefit from more evidence and from more case studies, especially from less developed countries.

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Richard D. Knowles
School of Environment & Life Sciences, University of Salford, UK
E-mail address: r.d.knowles@salford.ac.uk