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Adding value to the decision-making process of mega projects: Fostering strategic ambiguity, redundancy, and resilience

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ABSTRACT

Current practice in decision-making about mega projects seems to be aimed at reducing complexity by simplification. However, this is often detrimental to the resilience and added value of these projects. This article uses the concept of strategic capacity for analyzing the decision-making process on mega projects. This concept consists of three elements: strategic ambiguity (the tension between different purposes and goals), redundancy (having more options than necessary from an efficiency perspective) and resilience (is the process reactively or proactively resilient to outside demands?). Two transport mega projects in the Netherlands are analyzed. Our analysis demonstrates that creative solutions and added value are to be found in the recombination of policy options made possible by enhancing strategic capacity.

1. Introduction

1.1. The opening and closing of mega project decision-making

As the construction of mega projects is continuing in an extensive rate across the world (e.g. Rizzo, 2013; Ponzini, 2011), the question of how to cope with the complexity and uncertainty characterizing their planning becomes increasingly important (Salet et al., 2012). The often adopted approach to planning mega projects is to keep uncertainty and complexity out by applying the KISS ('keep it simple, stupid!') mantra (Giezen, 2012; Giezen et al., 2015). According to this 'closed' approach the objectives of the project should be narrowed into a-priori defined trajectories and outcomes (e.g. only transport objectives) and 'predict and control' measures should be used to manage complexity (Bröcker et al., 2010; Hensher and Rose, 2007; Mouter et al., 2013). Knowledge and action perspectives should be compartmentalized (e.g. through piecemeal engineering, rational lines of decision-making and project implementation in successive isolated parts). Actor constellations should be reduced to the core group of stakeholders. Trajectories of decision-making should be rationalized for the sake of efficiency and to overcome the constraints of time and finance.

Yet, an increasing number of researchers claim that complexity and uncertainty should be considered as integral to the decision-making process (De Bruijn and Leijten, 2007; Giezen, 2013; Priemus et al., 2008; Priemus, 2010; Swyngedouw et al., 2002) and that the decision-making process needs to be organized to adapt and respond to changing situations. In short, these researchers argue that complexity and uncertainty should be at the heart of decision-making, in other words they propose an 'open' approach. They fear the 'tunneling' of the decision-making process; i.e., that it is closed off from outside influences. This would lead to 'entrapment' (Brockner et al., 1981) where there is not enough external input to justify deviating from the course set by the already invested time, money and prestige. However, working with uncertainty in an open manner is still counterintuitive to many project managers (Samset and Volden, 2015).

The differences of approach between the two poles seem so straightforward – with regards to both the diagnosis and the remedy – that the solutions of one perspective are often considered as being the crux of the problem for the other. European-wide comparative studies into decision-making on urban mega projects confirm the recurring tensions between the two different approaches (Majoor, 2008; Ratner and Goetz, 2013; Salet and Gualini, 2007; Spaans et al., 2013; Swyngedouw et al., 2002; Cantarelli et al., 2010) and mega infrastructure projects are no exception (Altshuler and Luberoff, 2003; Priemus et al., 2008). It seems that the closed approach adherents (which include most practitioners) feel the pressure of political feasibility: the demand for precise

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ambitions and outcomes together with prudent budgeting of time and money are seen as vital ingredients for making a project politically feasible. Simple and direct solutions are preferred above academic claims to bring better deliberation and even more efficient outcomes by widening and opening the horizon of decision-making. We do not attempt to simplify the assumptions of the different approaches; the solution is not somewhere halfway in between. Actually, we contend that both tendencies (both the opening and the closing) are necessary conditions for a well-balanced and rich decision-making process.

In this paper we thus argue that intelligent strategies of decision-making require *both* the widening *and* the closing of the decision-making process. Decision-making of mega projects consists of numerous operational decisions, both sequential and simultaneous (e.g. McCormack and Schwanen, 2011), rather than just a small set of hierarchical mega decisions. These operational decisions need to be embedded and rationalized within specific domains and competences, and are thus necessarily to a certain degree *closed*. It often makes sense to divide complexity into manageable parts and to adopt process planning. Nevertheless, the selective strategies of pragmatic decision-making have to be guided by *widening* perspectives, not just at the beginning but also throughout the whole process. The opening and closing of decision-making processes should be organized as forms of mutual enrichment. This *strategic capacity, i.e. the ability to open and close the process,* avoids the frequently-observed 'tunneling' of decision-making processes while at the same time allows practitioners to 'close' operational decisions, when required, to further the process.

In this paper we develop the concept of strategic capacity by discussing three basic principles in the organization of the project planning and decision-making process. These concepts have been introduced by Giezen (2013) and this paper analyses them more empirically explicitly for these projects. Firstly, instead of tunneling decision-making towards pre-determined outcomes, a *strategic ambiguity* of project mission is needed to create a productive interaction between moments of strategic reflection and moments of hedging and closing the process. Secondly, a certain *redundancy* of knowledge and actor constellation is necessary to enable innovative outcomes (via recombination of solutions) in the operational lines of decision-making that face emergent uncertainties. Thirdly, a balance needs to be found between proactive and reactive *resilience*. The project's planning and decision-making process should be deliberately designed to estimate potential adaptations should the context change (proactive resilience) and at the same time enable it to prevail when changes threaten (reactive resilience) its survival (Eastman and Penz, 1974). These three concepts were chosen because they represent the balance between opening and closing of a mega project from three perspectives: the project as a concept, the project as a constellation of actors and associated knowledge, and the project as an engineering undertaking that needs to be managed. By using these three concepts, the analysis should be more comprehensive as a mega project is much more than just a technical endeavor.

The next section of this paper discusses the concepts of 'strategic ambiguity', 'redundancy' and 'resilience' in more detail. In the subsequent section these concepts will be illustrated by means of two mega infrastructure projects in The Netherlands. In the final section we will return to the core question: how does strategic capacity within the decision-making process influence the potential for value added adaptations to a mega-project?

2. Three principles: strategic ambiguity, redundancy and resilience

The planning and decision-making process on mega projects is complex, uncertain, and far from linear: it is like a big ocean with storms, lulls, whirlpools and sharks. And to skillfully sail through these complex and uncertain elements, it is crucial to adapt when needed. For this reason, it is essential to define the mission in a manner open to these adaptations while keeping a sense of direction at the same time. The latter is necessary to prevent the project from getting lost by making ad-hoc route changes. In the following paragraphs we discuss the meaning of three coherent concepts responding to this challenge.

2.1. Strategic ambiguity

Usually, the formal decision-making of a mega project starts with a principal document covering the aims of the project and a principal indication of means, organization, financial conditions and time horizon. The formal start may be preceded by initiatives of exploration, social debates and other research (sometimes already quite a long time back) but the starting policy document marks a new stage of decision-making and always reveals the principal mission of the project. The starting document is one of the strategic moments where open reflection is essential; it shapes the process further down the line. However, even with the most careful preceding exploration, emerging issues will challenge the decisions on the ambition and implementation of the project even within this principal stage. So if mega projects usually take more than 20 years from this initial phase to be realized (Priemus, 2010), there will be numerous changes in political and financial conditions, fresh insights and technical opportunities, fluctuations in financial, construction, labor and land markets, and other unforeseen events. The only certainty seems to be that conditions and resources of realization will develop differently than expected at the outset.

To deal with this conundrum we introduce the concept of 'strategic ambiguity'. If the process of developing a mega project is riddled with uncertainty and complexity (Eweje et al., 2012), a very concrete and specific starting makes very little sense. Two operational qualifications are required. The first regards the level of abstraction of the project mission. Often, the ambition of the project is made operational as a very well-specified output target: a bridge, a tunnel, an airport, a railway connection. For political reasons and for reasons of communication with society it is thought to be important to visualize the aimed outcomes of the project with a clear design. It should reveal the general purpose and motivation behind the desire to construct a mega project. Yet the more concrete, the more closed the project is from the onset. In his seminal work *The Nerves of Government*, Karl Deutsch discusses the relation between purpose, goals and feedback (Deutsch, 1966). Decision-making about mega projects should start from a basic sense of purpose: "a major or strategic goal, preference, or value that is to be pursued through a set of intermediate movements towards intermediate goals" (Deutsch, 1966: 187). The purpose involves a definition of a problem at a level that leaves maneuverability. A problem definition is often a statement of a principal goal and the impediments to achieve this goal. And in order to achieve a principal goal or purpose effectively, a feedback mechanism must be in place. "The system must receive information concerning the position of the goal and concerning its own distance from it; and it must receive information concerning the changes in its distance from the goal brought about by its own performance. The messages are often negative in that they oppose the previous actions of the system, so as to oppose overshooting of the target" (Deutsch, 1966: 184). Therefore, the project mission should provide a *principal sense of direction* under changing conditions of complexity and uncertainty. This sense of direction is not identical to a desired stable state in the future: it is a principal mission instead of a goal-instrumental outcome.