Chapter 1.

Decisions made on Scant Information: Overview

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This chapter brings an overview to an edited book that looks at how decisions can be made at the front-end of major projects, in circumstances where information is usually scant. The book examines how projects can be successfully aligned with the desired direction; how sufficient, appropriate and valid information can be gathered at the front-end; how information can be analysed; and finally how decisions can be made. Each chapter of the book is written by an expert in the field, and each chapter speaks for itself. However, some key themes run throughout the book. These include: the need for alignment between organisational strategy and the project concept; dealing with complexity, in particular the systemicity and interrelatedness within project decisions; consideration of the ambiguity implicit in all major projects; taking into account psychological and political biases within estimation of benefits and costs; consideration of the social geography and politics within decision-making groups; and preparation for the turbulence within the project environment, including the maintenance of strategic alignment.

Projects

Business is becoming increasingly projectized or project-oriented, and global spend on projects is now many billions of dollars annually. Developing new technological products, building new capital assets, or carrying out unique large-scale enterprises all require major projects to be

undertaken. The place of projects has become increasingly important in the life of corporations and, indeed, of nations.

Projects have always been important in human development. This is true both for projects with a tangible output (e.g. the Pyramids, or the Great Wall of China), and for projects which bring about a change in the organisation of society (e.g. the explorations of Columbus and his "discovery" of America). While society continuously tries to improve incrementally the way it operates, throughout history projects have formed the major stepping stones for step-changes. This has been even more the case in recent decades, and, indeed, projects are becoming more important to industrial life. Even 15 years ago, the preface to Turner (1993) extrapolates from statements by British Telecom to suggest that the annual spend on projects in the UK would be around £250 million.

In recent decades, projects have become more complex, in parallel with the growth in complexity of technology. They have also become more time-constrained (Williams, 1999). Moreover, there has been an increase in extremely large projects. Kharbanda and Pinto (1996), for example, list over 40 projects in process in the mid-1990's in India, China and South-East Asia alone, each one forecast to cost over $1 billion. These are mainly construction projects, but engineering projects are also becoming larger in some industries, as the investment needed to develop new products increases (the break-even point of an aircraft development programme is generally held to be at least 300 units, for example).

So clearly, projects are becoming important, one well-known definition of ' project' being "a temporary endeavour undertaken to create a unique product or service" (Project Management Institute, 2000). During the past 50 years, tools and techniques have been developed to manage projects better. The field generally known as "Project Management" became well-defined and developed in the 1950s, particularly in the US Navy Atlas and Polaris programmes. As methods were formulated and codified, there arose a Project Management "profession", represented by the US-based Project Management Institute, or PMI, with about a quarter of a million members (as well as a number of much smaller national organisations); there are university degrees in the subject, an ANSI standard, and professional qualifications such the PMI's PMP qualification. There are over 500 books on project management topics, and in the past 40 years, over 3,500 research articles have been published in the English language within the project management field (Pinto et al, 2003).

"Projects", then, *ought* to be recognised, and considered an important and successful part of corporate and public life. But ask the archetypical "man in the street" about projects, and it is clear that the reputation of projects and project-management is that they are generally unsuccessful. A key word often associated with them in the public's mind is the English colloquialism "white elephant" (something whose cost and subsequent upkeep is much greater to the owner than its value, deriving from the reputed practice of monarchs giving sacred white elephants as gifts). A newspaper article from 2005, for example, begins, "The Millennium Dome, the great white elephant languishing in east London…." (Wray, 2005). Even if the result is seen to be useful, there are often reports in the media of large public construction projects that have suffered huge cost or time overruns, such as Denver's $5 billion airport 200% overspend (Szyliowicz and Goetz, 1995), or the UK's Scottish Parliament coming in "10 times over budget and more than three years late" (Tempest, 2004). Pinto (2007) quotes from an *Infoworld* article describing, "a US Army study of IT projects [that] found that 47% were delivered to the customer but not used; 29% were paid for but not delivered; 19% were abandoned or reworked; 3% were used with minor changes; and only 2% were used as delivered" (page 7).

Private industry's problems and overspends are not usually publicised as much, although the famous database of public and private projects by Morris and Hough (1987), concluded that "the track record of projects is fundamentally poor, particularly for the larger and more difficult ones…. Projects are often completed late or over budget, do not perform in the way expected, involve severe strain on participating institutions or are cancelled prior to their completion after the expenditure of considerable sums of money." (p.7). And while all this may be in the past, our current record seems no better. One of the biggest current projects in the UK is the "National Programme for IT in the National Health Service" (expected expenditure to be over £12 billion during 2004 -2014). A recent Parliamentary report concluded, "Four years after the start of the Programme, there is still much uncertainty about the costs of the Programme for the local NHS and the value of the benefits it should achieve…The Department is unlikely to complete the Programme anywhere near its original schedule." House of Commons, 2007).

This is not to say that all projects are managed badly – indeed, the management and governance of many projects has made considerable improvements in recent years. Although the value of project management is notoriously difficult to quantify (Thomas and Mullaly, 2007), one example is given in a UK Government report into the performance of its Office of Government Commerce (OGC) in 2007. This states that "the OGC has achieved some notable successes since it was set

up in 2000….The OGC has also established Gateway reviews as a means to help departments improve their record in project delivery. Over 1,500 Gateway reviews have been completed since their introduction in 2001 on more than 700 separate projects and programmes in central government, resulting in over £2.5 billion value for money savings….” (HM Treasury, 2007).

However, there is no doubt that “projects” have generated the reputation in the public perception for over-runing and overspending. So what explains this strange dissonance? Why have the study and improvements in Project Management resulted in such a dire reputation for projects? It is the contention of this book that the concentration on project management has been much too narrow. There is more expertise now in delivering efficiently and successfully a well-defined pre-specified project within a well-defined constant environment. This has proved very valuable in certain circumstances. But a much wider view needs to be taken. The initial choice of project concept is of critical importance. This represents the one key decision of many made during the lifetime of a project, which is likely to have the largest impact on long-term success or failure. Here, as discussed by Miller and Hobbs’ Chapter 18, the project concept is much more than just the technical solution – it includes the entire business case, all of the various organisations involved, and the various mechanisms and arrangements involved in the inter-organisational relationships.

This has been known for a long time - in the UK public arena, it was brought to general attention by the influential “Downey” report 40 years ago, which laid down the policy that early “project definition” should take up 15% of the cost, and 25% of the time of the project (Ministry of Technology, 1969). But development here has been very much slower than development of tactics for the execution phase. There have been some developments – for example, in the public arena in Norway, this shift in emphasis has led to the “Concept” programme (Concept, 2007), and the governance framework for public projects established in the UK has an emphasis on the “Gateway 0” analysis (Office of Government Commerce, 2007). These developments have recognised a key issue for major projects: that they have to be established within a turbulent environment, where the idea of specifying a well-defined project goal, which remains constant, is often not applicable. Front-end planning needs to recognise and plan for this turbulence (e.g. by ensuring that Gateway 0’s continue intermittently throughout the project). However, there remain considerable challenges during this period.

There is one particular problem that characterizes decisions at this point, and that shapes this book – indeed, has prompted recognition of the need for this book. The major decisions are made at this early stage, when epistemic uncertainty is at its highest, but when available information is most restricted. So how can good decisions be made? What information is needed? How valid is that information? These are some of the areas explored in the book. This chapter refers to sections which discuss whether less detailed information can actually be an advantage to decision-makers, by providing focus and flexibility, and removing distracting and unhelpful detail.

This book, then, is about that key stage: making decisions at the start of the project. It looks at both the public and private sectors, and many types of project. This chapter introduces the book and outlines some of the arguments that will appear in the succeeding chapters.

Strategy drives the project

Industry is starting to realise the importance of projects in executing its strategy. "Let's face it, we all function in a highly competitive global economy where yesterday's laggard is tomorrow's market leader. Boards of directors and senior business managers globally are looking for ways to compete more effectively in this highly volatile environment. Some organisations strategise well, but their execution leaves something to be desired. Others execute well, but haven't developed a strategic plan to drive the execution. I'm here to argue that project management is the very tool that bridges strategic planning and execution, resulting in better bottom line results on a far more predictable basis." (Fraser, 2005)

A project has to start with the corporate - or public sector – strategy. Projects and programmes are mechanisms for bringing about changes, in particular large one-off capital expenditures, so clearly there is a need to look at how strategy drives the definition of projects. It is important to look beyond the simple success criteria on which project-management has traditionally concentrated (delivering the planned output within cost and schedule) to the value that a project can give. Morris (Chapter 3) quotes the famous IMEC study by Miller and Lessard (2001), who distinguish between efficiency and effectiveness of project success, the latter pointing to the value generated by the project. He points out that the projects in this study were much more efficient than they were effective. Samset takes this distinction further in Chapter 2, quoting a fivefold success criterion widely used in international development projects: efficiency, effectiveness, relevance, impact and sustainability. Although assessing the social profitability of a given project

in the public sector is not simple, Hagen (Chapter 19) looks at an economic comparison of what the project is likely to generate in terms of services, as compared to the costs of inputs, including market prices and social opportunity costs.

It is therefore essential to identify explicitly the strategy of the organisation, and ensure that the goals or objectives of any project will "further the sponsoring organization's chosen corporate strategy and contribute to its overall goals" - This is the recommendation of Cooke-Davies in Chapter 6, which looks at the front-end alignment of projects. This chapter, together with Chapter 3, by Morris, considers the strategy of the organisation, and the importance of developing projects to pursue that strategy, with emphasis on the value the project produces for the organisation, rather than simple efficiency of execution. Of course, to do this, the organisation's needs must be made explicit. Chapter 5, by Naess, examines the relationship between needs analysis, goal formulation and impact assessment, and includes some methods for needs analysis. This chapter also highlights some problems with current practices which will occur as themes within the book, both qualitative, particularly a lack of a view of the systemicity within the analysis, and biases in the quantitative analysis, which will be discussed below, when estimating costs and benefits.

Clearly, getting this alignment right is critical to the value of a project. In Chapter 2, Samset points out the seriousness of "when a project fails in strategic terms, even if it successfully produces intended outputs. Strategic failure means that the choice of concept turns out to be the wrong one." Project management has been developing in this area for some time. Turner (1993), for example, described the importance of the alignment of business strategy and portfolio, or programme, objectives. Morris points out in Chapter 3 that the UK Association of Project Managers' 'Body of Knowledge' now "emphasises context, strategic imperative, commercial drivers, technology, the traditional control functions, and, not least, people, Hence, the whole of Section 1 is concerned with how projects fit within their business/sponsor's context." Indeed, the Gower Handbook of Project Management (3rd edition) has as its second chapter "Implementing Strategy through programmes of projects" (Partington 2000) (the forthcoming 4th edition has a similar chapter).

Note that we have used various words - "projects". "programmes" and "portfolios", and we will not debate the meanings of these words here – Morris's chapter 3 gives some of this debate, including the key distinction by the Office of Government Commerce, following their view that a key benefit of programme management is the alignment of projects to organisational strategy

(Office of Government Commerce 1999). The track-record of projects discussed above shows that there is still some way to go, but at least these chapters lead us to concentrate on the critical issues.

The relationship between strategy and project-management is not one-way. Morris describes how strategy implementation is accomplished with project management, but project management can also contribute to strategic management. He points out that project management's contribution "can add value to the emerging strategy and ensure that benefits are reaped from its realisation." The importance of project management in producing value for organisations is demonstrated below, where governance within a turbulent environment is discussed.

Goals

Having said that there is a need to identify corporate goals and objectives, and to align projects with these, is not to gainsay the difficulty of this in practice. Roth and Senge (1996) describe management decision-making in the real, complex world, classifying problems by firstly the underlying complexity of the problem situation itself, i.e. "dynamic complexity", and secondly the complexity of the group effect, i.e. "behavioural complexity". The dynamic complexity in the underlying problem is overlaid – and sometimes dwarfed – by issues of different stakeholders having different perceptions of "reality", different understandings of "the problem", different assumptions, different values, different objectives, etc. Problems that are complex in both dimensions, they call "wicked messes".

Projects in a typical management environment, public or private, can often be said to be in such a "wicked mess". "Projects are complex, ambiguous, confusing phenomena wherein the idea of a single, clear goal is at odds with the reality" (Linehan and Kavanagh, 2004). Engwall, indeed, (2002) describes the establishment of the perfectly correct goal as a "futile dream".

Winter, in Chapter 7 quotes Morris, stating, "at the front end … we often have quite messy, poorly structured situations where objectives are not clear, where different constituencies have conflicting aims". His chapter goes on to provide a well-established methodology, known as "Soft Systems Methodology", which was developed by Peter Checkland, for gaining understanding about such situations, and using this to help orient the front-end of projects. This methodology recognises the subjectivity implicit in all human situations, including projects, and is therefore able to develop learning and understanding at the start of a project. This subjectivity

is also key to the ongoing execution of projects, as participants "make sense" (Weick, 1995) of the project and work towards project delivery.

Considerations of goals are affected by the social geography of an organisation, and so the behavioural-complexity aspect of the "wicked mess" must be considered. Groups, by their very existence, condition decision-making, and where strong structures or strong power gradients exist between members of the organisation, decision-making might seem to become less "rational". Perhaps the best known effect is "Groupthink" (Janis, 1973), where the individuals within a group conform in their thinking with what they think is the group consensus. Equally well known is Habermas' (1984) theory of communicative rationality: where communication is dominated by discourse unfettered by the coercive use of power, there will be good exchange of rationality, but where power is being used to limit free communication, there might be failures in decision-making. In assessing how judgements are made about the future, consideration must also be given to the many aspects of the group of decision-makers within an organisation: the different levels of power, interest, credibility, difference between expressions and perceptions, the various aspects of social geography, etc. Miller and Hobbs (Chapter 18) expand on this, stating that the project concept should meet the needs of many stakeholders, both those within the project organisation and those in the wider environment. Furthermore, the development of the concept is related to the social process of building the project consortium.

Judgements about the future

Deciding the organisational strategy is intimately related to making judgements about the medium and long-term future. Firstly, the organisation has to consider how its environment might change in the future. Kharbanda and Pinto (1996) give a well-known example of a Mitsui project to build a plant in Iran, for converting natural gas into petrochemical products. The contracts were negotiated with the government (then under the Shah); the Revolution occurred during project development; then war broke out between Iran and Iraq; and so the story continues for a nearly a decade after this point, before finally Mitsui abandoned the project, with a loss of £2-3 billion. A fairly extreme case maybe, but in planning out any project, the organisation has to consider possible future events, and how it should react and interact with these possible events. Van der Heijden (Chapter 4) discusses the need for making such judgements, and the issues involved, together with practical and well-tried methods for their development.

A number of issues are involved in making such judgements, some of which occur as themes throughout this book.

Firstly, the people involved are not supremely rational decision-makers. Real managers are human beings, which means that, at best, they display "bounded rationality" (Simon, 1972). They are limited in the extent to which they can make a fully rational decision. Not only are they lacking complete information about the present, and have uncertainty about the future, but they are also limited in the extent to which they can solve complex problems. Indeed, as Miller and Hobbs point out in Chapter 18, the assumptions underlying rational decision-making frameworks are often simply not valid in the circumstances of a real project. Thus such decision-makers adopt choices that are merely "good enough" or "satisficing" (Isenberg, 1991). Moreover, rather than evaluating projects at a one-off point at the beginning, with full information about costs and benefits, many project sponsors look at projects from "evolutionary perspectives" (Miller and Hobbs). Here sponsors are seen to act as champions, "shaping projects in response to" changes in the environment.

A further reason for bounded rationality, which particularly affects projects, is the existence of cognitive biases natural to humans. How these biases can be involved in estimating the costs and plans of projects is discussed in the next section; they also affect views of the future and the benefits likely to be gained from a project. Flyvbjerg quotes some of his extensive evidence of project benefit overestimation and cost underestimation in Chapter 8. He describes the biases involved, dividing them into technical (e.g. due to inadequate forecasting techniques or honest mistakes), psychological (e.g. "optimism bias"), and political-economic explanations (i.e. reasons to deliberately claim an optimistic view of the future). This work is also referred to by Naess in Chapter 5. Much academic evidence for the middle category comes from the famous work of Kahneman and Tversky. Kirkebøen (Chapter 9) also looks at these "planning fallacy" biases, quoting the Sydney Opera House example. Pugh, in Chapter 16, gives more supporting evidence for such effects. Figure 1 of this chapter provides an additional explanation of why forecasts may be "excessively optimistic". Large projects can be of very long duration, involving judgements far into the future. For the public sector, this raises issues about the role of the discount rate and the required social rate of return, which is covered by Hagen in Chapter 19.

A third aspect of the difficulty faced by boundedly-rational decision-makers in reaching

9

judgements about the future, is the systemicity and inter-connectedness involved in the various aspects (the dynamic-complexity aspect of the "wicked mess"). Parnell discusses the complexity of project planning in Chapter 12, and looks at multiply-related uncertainties about the future. Van der Heijden's methods (Chapter 4) explicitly address this, "actively search[ing] for predetermined elements in the causal systemic network in which the project is embedded". Naess (Chapter 5) also cites too narrow a needs assessment as a significant problem.

Finally, judgements about the future are, again, made within the social geography of the group or coalition, so are subject to the same effects of behavioural-complexity discussed above, under "Goals". Again, the methods outlined by van der Heijden in Chapter 4 take full account of the multiple perspectives and worldviews of the decision-makers. The methodology covered by Winter in Chapter 7 concurs with this.

Of course, judgements about the future are not one-off events at the start of the project, but continue as the project makes its way through the actualisation of that future. This will be discussed in the section on the turbulent environment of the project.

Estimating the project

One key element of judgement about the project is the estimation of its cost and schedule – a fundamental part of project management, but one which seems to pose unique difficulties for major projects. Flyvbjerg (Chapter 8) examines the various reasons behind the "pervasive misinformation" which persistently trouble project estimation – not only technical explanations, such as inadequate data or lack of experience, but the main headings of optimism bias and strategic under-estimation of costs.

This is not to say that human estimators are not to be used. While the evidence of cognitive and political biases is well established, there is also much evidence of the skill of experts in using innate tacit knowledge to estimate projects. Chapter 10, by Scheibehenne and von Helversen, outlines some well known "decision heuristics", and concludes that, under the conditions of uncertainty about the future and systemicity encountered during front-end project decision-making, "heuristics provide a feasible way to make decisions. Contrary to the common view of heuristics as second-best solutions… the research program ….has provided substantial evidence that heuristics often achieve an astonishingly high performance using just a fraction of the time

and the amount of information required by standard decision strategies." Indeed, it will be demonstrated that the use of only relevant information can make the heuristics more robust.

One key problem, ingrained in the lore of project managers, is the uniqueness of their projects. Project managers are used to a definition of projects such as that of Buchanan and Boddy (1992): "A project is a unique venture with a beginning and an end, conducted by people to meet established goals with parameters of cost, schedule and quality". They tend to think of each project as unique – which it may well be in many aspects. However, this view of the project can nearly always be balanced with evidence from past projects. Kirkebøens takes up Kahneman's idea, in Chapter 9, that this means taking an 'outside' instead of an 'inside' view on the project. Flyvbjerg (Chapter 8), when considering what planners can do about the biases he has identified, concentrates on this idea of the "outsider" view (relating the same well-known anecdote about Kahneman's work), to produce the idea of Reference Class Forecasting. This technique is now well-established in a number of countries. Parametric forecasting is discussed by Pugh in Chapter 16, and is based on his experience of applying this in the public sector. This is another method for trying to avoid the over-reliance on project uniqueness, as it tries to bring the evidence of past projects to bear on the project-estimation problem. It, too, is well-established in a number of countries, particularly in the defence sectors.

Estimation of uncertainties and the likelihood of risks are crucial to the estimation in any project. Wright (Chapter 11) (and, briefly, Bedford in chapter 14) discusses the difficulties that humans – including so-called "experts" – encounter in making such assessment, and how estimation can be improved. This difficulty is particularly acute in projects, where much uncertainty is epistemic (due to a lack of knowledge), rather than aleatoric (due solely to probabilistic uncertainty). Bedford (Chapter 14) divides the areas of uncertainty further, into lack of understanding about: the major uncertainties and their interactions; the degree of project uniqueness; and the way in which future decisions will affect outcomes. He describes some probabilistic models for exploring the first two of these and aiding the third. The first of these – looking at interactions of risks, or risks under conditions of systemicity - is a significant problem in risk analysis. Parnell (Chapter 12) explores further the assessment of multiply-related risks.

 In practice, estimates of uncertainty are made by groups, with all the same issues of groupthink, consensus, politics, etc. as outlined above. Cooke takes the discussion further in Chapter 13, by looking into these issues, and derives methods for performance-based expert judgement models.

Finally, estimates, once made, need to be updated as more evidence becomes available. While this may lie beyond the strict boundaries of this book, an element of updating is still required, even in the front-end stage of a project. Bedford, Pugh, and Sunneveg all refer to Bayesian methods of updating (in Chapters 14, 16 and 17, respectively).

Governance in a turbulent environment

The need to align projects with the strategy of the organisation has already been discussed. It is the role of project governance to ensure this: "effective governance of project management ensures that an organisation's project portfolio is aligned to the organisation's objectives, is delivered efficiently and is sustainable" (Association of Project Management, 2002). Morris emphasizes the need for project governance to ensure that projects deliver strategic value (Chapter 3).

However, the environment in which most projects operate is complex and turbulent, and conventional project management is not well-suited to such conditions. The irony of this unsuitability is pointed out by Malgrati and Damiani (2002), who contrast "one of the main reasons for the spread of project management in companies, namely environmental complexity and uncertainty…and exposure to external change", with the philosophical underpinnings of traditional project management. They conclude, "The Cartesian clarity of inner structures clashes with the increasing porosity of projects to complex contexts that they seek to deny (Ulri and Ulri 2000)…. The risk, in short, is that the idealistic 'island of order' may suddenly turn into a more realistic, very classic, 'iron cage'".

For projects to be aligned with organisational strategy – *and stay aligned* – it is important to recognise the turbulence of the environment, and build in the capability to cope with this turbulence at the start of the project. As Miller and Hobbs discuss in Chapter 18, this is equally important when the project is being undertaken by a heterogenous consortium or group of organisations, where processes and structures need to be developed to deal with turbulence.

Firstly, then, flexibility needs to be built into the project strategy, both in the front-end concept stage, and in later stages. Olsson (2006) shows the need for tactical flexibility within a defined strategy, and Samset (Chapter 2) points out the danger in seeking predictability. He warns that "prediction [can] become a prescription…it shifts the decision-maker's focus from finding the

best solution to …[making] his own idea or prescription come true". Premature lock-in to an inappropriate concept can be a major danger to project success.

It has already been suggested that projects are not a simple execution of well-developed plans, but are often Weickian sense-making activities (Weick, 1995), as the project management team cope with ambiguity, uncertainty and complexity. This sense-making within ambiguity takes place within the turbulent environment, making the project management task that much more complex. Cicmil et al (2006) contrasts "traditional approaches based on rational, objective, and universal representations of 'the project' with a phronetic analysis of the ambiguous, fragmented and political reality of project situations." Front-end decision-making has to develop a project strategy, while recognizing these ambiguities.

The governance framework thus has to recognise these realities of project life, and be sufficiently versatile to enable projects to adapt, be flexible, and avoid premature lock-in. When there is restrictive "straitjacket" governance, there is a danger of projects gradually becoming unaligned with organisational goals. Miller and Hobbs, again based on the IMEC work, conclude that "Governance regimes for megaprojects are time-dependant and self-organizing. They involve a network of actors in a process through which the project concept, the sponsoring coalition, and the institutional framework co-evolve."

This is not to say that governance framework should be unstructured. There is a clear need for staging. The OGC's "Gateway 0" analysis has already been mentioned as one example. This is designed to be repeated periodically, to ensure that, as an ongoing strategic assessment, during which the need for the programme is confirmed, it is likely to achieve the desired outcomes. Morris discusses the role of staging and gate-keepers in the ongoing governance of a project (Chapter 3) .

Scant Information

Chapter 10, by Scheibehenne and von Helversen, concludes that "less can be more", and that having less information can actually help the decision-makers. This is also emphasised by Samset in Chapter 2. A restricted, but carefully selected, sample of relevant facts and judgemental information may be an advantage in the effort to establish a broad overall perspective, and identify and test alternative strategies. Omitting details and less relevant information helps avoid

"analysis paralysis", when decision-makers are presented with large amounts of detailed information too early in the decision-making process. Furthermore, Samset points out that accurate quantitative information tends to quickly become out of date. This is a problem, since the front-end phase in major projects may last for years, even decades. Samset refers to the "half-life of information", and carefully extracted qualitative information about a well thought-out project concept can provide reliable and valid input to the decision for the whole of the front-end phase.

Similarly, the exposition of parametric analysis by Pugh in Chapter 16 enables the forecast to "concentrate upon total costs and avoid being drawn into excessive detail. To descend prematurely into detail is to base forecasts upon what is not yet known and can only be conjectured". Scheibehenne and von Helversen (Chapter 10) also point to the danger that, in circumstances of uncertainty, risk and unforeseen consequences, decision-makers will give spurious credence to a decision made on the basis of detailed information.

There is clearly a need to make the most of the information that is available, and some techniques for this are discussed by Anderson in Chapter 15. It is also clear that bad project decisions have been made due to lack of information. Kharbanda and Pinto (1996) refer to the decision-making involved in the Sydney Opera House, without having "a basic design [or] a realistic estimate of time and cost involved. Feasibility analysis was almost nonexistent"). However, it is an important theme of this book that when decisions are made at the very front-end of a project - when uncertainty is at its highest, and available information most restricted - the lack of detailed information can actually be a benefit rather than a hindrance, in providing focus and flexibility to the decision-maker.

This book

This book considers how decisions can be made at the front-end of major projects, in circumstances where information is usually scant. After two chapters introducing the area of front-end management of projects and decision-making at this stage, Part 2 examines how projects can be successfully aligned with the desired direction; Part 3 discusses how information - sufficient, appropriate and valid - can be gathered at the front-end; Part 4 concentrates on how information can be analysed; and finally in Part 5 the focus is on how decisions can be made. This sequence is not a recommendation for a decision-making process, but simply a logical way

to organise the chapters. Indeed, the book consists of independent contributions from leading experts in their fields, so does not provide a single approach, far less a single "recipe": rather, it explores the issues involved in such decision-making.

It is not, therefore, the place of this chapter to conclude for the whole book, as each chapter is designed to speak for itself. However, some key ideas run throughout the book, and are worth mentioning. There is firstly a need for alignment between organisational strategy and the project concept. But even when that is achieved, there is a need to deal with complexity, particularly the systemicity and interrelatedness within project decisions, as well as to consider the ambiguity implicit in all major projects. When calculating benefits and costs, estimation is affected by certain recurring issues, particularly psychological and political biases, and decision-making needs to take account of these. Major decisions are generally not taken by individuals in isolation, so there is a need to consider the social geography and politics within decision-making groups and organisational consortia. Finally, projects, once launched, do not travel a simple straight line, but move into an environment where the circumstances are constantly changing. This raises issues of governance and, particularly, the maintenance of strategic alignment.

This book seeks to lay the foundations for effective decision-making at the front-end of projects, where information upon which to base decisions is limited. Each chapter is founded on a solid base of sound theory, but also demonstrates how the theories can be of practical value to real decision-making within major projects. The editors hope that the book will be of practical use in developing projects more successfully.

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