

**Towards Improved Project Management Practice:
Uncovering the evidence for effective practices
through empirical research**

by
Terence John Cooke-Davies

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Towards Improved Project Management Practice

Uncovering the evidence for effective
practices through empirical research

Terence John Cooke-Davies

A thesis submitted in partial fulfillment of the requirements of Leeds
Metropolitan University for the degree of Doctor of Philosophy.

August 2000

Abstract

Projects are important to industry, but project performance continually disappoints stakeholder expectations. Organizations react to this performance problem in many ways, and purchase consultancy, training, methods and tools as possible solutions.

There is no published evidence that any of these solutions are consistently successful in improving project performance. This thesis answers the question, "What can be done to improve project management practices, and thus project performance?", by demonstrating that a novel form of continuous action research can contribute such evidence.

Firstly a community of practice was formed from practitioners with major corporations interested in answering the question, and commercially motivated to implement changes. A programme was developed that centred around project management, but linked to project and corporate performance and success.

A well-resourced support structure was established to administer the programme, facilitate dialogue, hold confidential data securely, and provide data analysis. Members provided data for the anonymous databases about their practices and about specific project results, and first-hand case studies for discussion at workshops. They discovered, shared and created both tacit and explicit knowledge through the formal programme and through informal contact.

Secondly, the thinking of practitioners, theorists and researchers was challenged. The literature on project management was found to reveal an unbalanced worldview that lacked coherent underlying theory. The literature on theory was found not to distinguish adequately between one-off "discrete" projects and the ongoing continuous operations of an organization. The academy's "paradigm wars" were found to have discouraged the creation of an appropriate research methodology.

Thirdly, different pieces of research using the community's data showed that some practices (notably aspects of risk management) lead to superior performance independently of context, while others appear to be context-dependent. No companies were found to have all the answers, and each member of the community has been able to learn from others.

Dedication

This work is dedicated to two remarkable women. Doreen, my wife, without whose constant support I would not have stayed the course, and Nora, my mother, who made great sacrifices to give me the foundation of my education.

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Summary of Thesis

This thesis describes a programme of continuous action research, involving an international network of major organisations to which projects are important. The research concerns the development of methodology and content to build this network into a learning community for project improvement. The research started with six quite basic questions about project management practices but it has led to significant developments in: -.

- A research-driven approach to project improvement.
- An innovative research method.
- Enhancement of the existing project management worldview.
- A growing international network of project-based organisations.
- Specific results that pave the way for project management benchmarking.
- A means of relating project performance to business improvement.

The thesis contains six Chapters.

Chapter 1 describes what projects are and the role they play in business, and explains why the research questions are important.

Chapter 2 reviews the corpus of project management literature, and extracts an account of the way a project manager views the world. This view is consolidated into eleven topics and given a form and substance that shows how they inter-relate. Comparison with prior empirical research identifies a number of gaps.

Chapter 3 considers the epistemic foundations for a research method that has seven explicit components, making allowance for the fact that neither a pure positivist nor a pure constructivist philosophy provides a sufficiently rich basis to research into project management.

Chapter 4 traces the historical development of the seven components of the research method, and summarises the answers to three of the research questions.

Chapter 5 illustrates the results obtained from data analysis, answering a further two research questions by describing both observed variations in project performance, and practices that partially account for these.

Chapter 6 summarises the contribution made by the research programme, and lists the current plans for further work.

Contributions

In the course of this research, two things have been happening in parallel. One has been the commercial creation and support of a network of major organisations to improve project management practice. The other has been the development of research in terms of both methodology and content, which has transformed that network into a learning community. It is this research, quite separate from the commercial activities, that is submitted for the degree.

The original research concept came to me during 1993, at a time when I saw many organisations making far-reaching decisions about their project management practices with very little evidence to support them. I was driven by the desire that decisions should be based on the foundations of solid evidence, and to create a method for obtaining that evidence.

My personal contributions to the programme have been in:-

- Developing the conceptual design of the study, including the overall process steps and the epistemic underpinnings described in Chapter 3, the method of choice that was used for significant decisions, the structure of all workshops involving network members during the first few years, the structure of all analysis carried out and reports issued, and the commercial relationships between network members and Human Systems Limited.
- Developing the analytical framework and performing analysis on the data, as well as directing additional analysis from time to time from members of Human Systems working under my instructions.
- Formulating theories that have guided each stage of the work.
- Assembling and maintaining the networks, or ensuring that suitably qualified members of the Human Systems team working under my instructions, assemble and maintain the networks.
- Facilitating the dialogue that results in agreement on the information to be collected from the networks and the form that it will take, and obtaining agreement for this from network members.
- Ensuring that data is collected, and assuring its quality.
- Facilitating the discussion between network members and members of the Human Systems team that result from the announcement of

insights arising from the analysis, and the framing of more detailed research questions as a result of these discussions.

- Writing all research proposals and submissions, including the whole text of this thesis.

Clearly I could not have done this work without the support of many people, and I wish to acknowledge the assistance received from the following. Throughout the programme, I have received the financial and practical support of Human Systems Limited, the company of which I am Managing Director.

My colleagues at Human Systems Limited have each been involved in different aspects of the programme. John Gandee, one of the first people to be approached at ICL when the idea of forming the community was first mooted in 1993, has been continually involved. From the output of the initial workshops he wrote the first version of the corporate practice questionnaire, he has attended each of the workshops for and performed much of the management activity involved in supporting and administering the work of the first two networks, and more recently he has produced the Foxpro version of the corporate practice questionnaire and its derivatives, and has overseen and augmented development of the commercial Access version of the DCI. John facilitated the first working party on “learning lessons on projects”.

Brian Trefty, the first representative of Wellcome in the first network, has subsequently been a stalwart member of the Human Systems team. It was largely through Brian’s effort that the joint venture with CMR International came about that has resulted in the creation of two global pharmaceutical networks. Apart from leading that effort, Brian has worked closely with John Gandee in the creation and support of Europe 2, the second network to be created. He has facilitated working parties on “real risk management” and “implementing process improvements”. Alan Cumberland, a fellow Director of Human Systems Limited has continually supported the venture, and played a significant part in decisions about the management of the commercial aspects of the programme. Alan has facilitated several of the network’s workshops, and the working party on “measuring project performance”. Jean Adams, Matthew Nixon and Debbie Garrett have also provided generous and professional support to the activities, in addition to which

Jean very kindly assisted with the unenviable task of proof reading this text.

As the networks took on an international aspect, Lynn Crawford, Frank Davies, Chivonne Watts and Andrew Durbridge headed the effort to create commercial networks and to apply the research method in Australia, and did an excellent job in recruiting thirty additional organisations. Lynn has provided valuable encouragement and support to me and to the Human Systems team, and Frank has been tireless in his professional efforts to assemble and support the Australian community, and to manage the network activities based in Sydney. As the programme rolls out to USA, Dalton Weekley, Peter Rogers and Steve Neuendorf of CCG LLC have become joint venture partners, and Steve has contributed the excellent Excel spreadsheets that enrich the presentation of relative data to members of all current networks.

The programme has been built around a “community of practice”, and it would not have been possible without the active participation and support of the representatives of the many organisations that have been members of the networks since their inception at the beginning of 1994. They have been generous in their provision of time, data, knowledge, expertise, resources and support. It is wrong to single out some more than others for mention by name, since many have made invaluable contributions, and I would like to acknowledge every one of them. It would equally be wrong, however, to fail to acknowledge the special contribution made by two people. In the early days of creating the first network, Steve Grey of ICL worked tirelessly with me to assemble the first community of practice, and to refine the proposal that was put to prospective members. Without Steve’s help, I doubt that the programme would have got off the ground. Paul Armstrong and his team at BT Group Projects have also made a unique contribution. Not only has Paul been continually associated with this activity as BT’s representative since the formation of the first network, but in the development of the data collection instrument, Paul and his team took the lead in developing the prototype Microsoft Access application, that was subsequently refined by commercial software developers into the instrument that it now is.

Finally, I would like to express my heartfelt appreciation for the unstinting guidance, encouragement and support of my supervisor, Professor Eric Wolstenholme.

Confidentiality

There is a commercial need to protect the confidentiality of information provided by members of the networks. For this reason, the data and other material included in the thesis have been presented in such a way as to protect the interests of the network members after this thesis has been published.

Terry Cooke-Davies. August 2000.

Chapter 1:

1: Thinking about projects and project management.

1.1 Summary.

The term “project” is used widely and in a variety of contexts, and a technical vocabulary has grown up to describe different aspects of projects. Industry throughout the world today uses the concept of a “project” to talk about particular kinds of work (generally unique, self-contained pieces of work that are intended to create a product or service that will lead to beneficial change), and this kind of work is of great economic and social importance. The development of the concepts and language about projects is considered briefly in relation to its social and economic environment throughout history and in the present day, before the present worldview held by private sector commercial and industrial organisations is sketched out in relation to projects. The question of how these organisations measure the performance of projects is introduced, and it is shown that there is a widespread perception that many projects “fail”. The social and economic cost of this failure is reviewed.

1.2 What projects are and what some key terms mean.

The literature of project management offers a variety of definitions, which have classically included the three characteristics of a common objective, a set of activities that are complex enough to need managing, and a defined start and finish time.

A complex effort to achieve a specific objective within a schedule and budget target, which typically cuts across organisational lines, is unique, and is usually not repetitive within the organisation. (Cleland and King, 1983, p.70)

More recently, definitions have been modified to reflect the existence of a “product” or “service” that the project creates.

A temporary endeavour undertaken to create a unique product or service. Temporary means that the project has a definite ending point, and unique means that the product or service differs in some distinguishing way from all similar products or services. (Duncan, 1996, p. 4.)

Rodney Turner develops this theme even further, by including the concept of the “beneficial change” that the product of the project is supposed to deliver.

An endeavour in which human, material and financial resources are organised in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives. (Turner, 1993, p. 8.)

One in particular, however, illustrates just how widely the term “project” can be applied in common parlance:-

Any plan, scheme or task - including the writing of this book - can be and is referred to as a “project”. (Stallworthy and Kharbanda, 1983, Preface.)

In order to provide appropriate boundaries for the definition of what a project is, it is perhaps appropriate to approach the topic from the other end, as it were, and ask the question, “What kinds of endeavour cannot legitimately be regarded as projects?” That yields very different answers, and in practice, they seem to boil down to four different categories:-

1. Sets of activities that are repeated indefinitely, such as the continuous operations of a process plant. These are perhaps more usefully thought of as “*processes*”.
2. Sets of activities that are repeated in a predictable manner, such as batch manufacturing, the raising of invoices, or the conduct of annual appraisals. These can be thought of as processes, but can equally well be thought of as “*operations*” in the business context.¹
3. Sets of activities that may well include projects, but which are sufficiently large and complex and have sufficient flexibility about

their start and finish that they are better thought of as “programmes”.

4. Activities that are so brief, so simple or so straightforward that they require no significant management effort, and that can better be thought of as *tasks* or *activities*.

Figure 1 illustrates the relationships of these different elements.

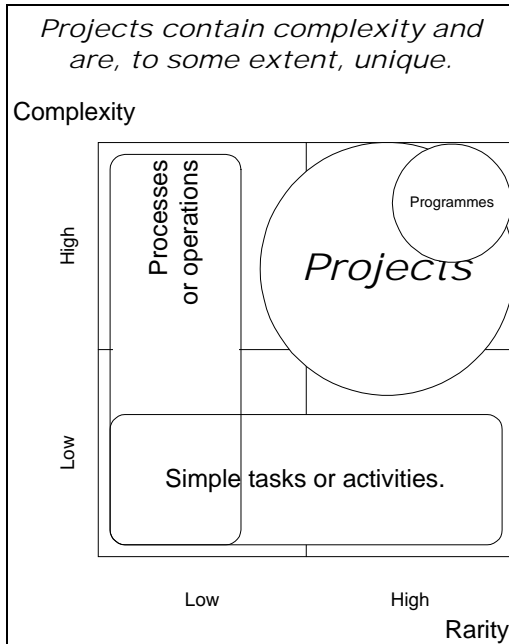


Figure 1: Where projects fit into the spectrum of work.

It seems clear that there is no chance of reaching universal agreement on a single definition of a project, but it is important to be clear about the meaning of a word that is so central to this piece of research. The stance taken in this research, therefore, is to adopt a pragmatic approach and recognise that thinking about an endeavour as a “project” is a matter of choice for any organisation or individual. Adding this recognition to the classical definition, and the concepts included by Duncan and Turner, the definition of a project used throughout this work is:

“A human endeavour may legitimately be regarded by its stakeholders as a project when it encompasses a unique scope of work that is constrained by cost and time, the purpose of which is to create or modify a product or service so as to achieve beneficial change defined by quantitative and qualitative objectives.”

This research programme has been undertaken in order to identify how the performance of projects can be improved through the identification and understanding of those project management practices that lead to superior performance. It is essential to understand what is meant by several terms that will be used throughout this document, and in particular to distinguish what project management is taken to mean and what it isn't. Three concepts lie at the heart: -

- a) The product or service that will be brought into existence or modified through the agency of the “project”, and that will remain after the project has been completed will be referred to throughout this text as the **PRODUCT** of the project. This applies to any or all of the purposes of projects described above.
- b) The series of activities carried out by people or their agents directly to create or to modify the product will be referred to throughout this text as **PROJECT EXECUTION** activities.
- c) The series of activities carried out by people or their agents to initiate, plan, control and terminate the project execution activities will be referred to throughout this text as the **PROJECT MANAGEMENT** activities.

The distinction between project execution and project management is not always a neat and clear one. For example a meeting of site personnel in a construction project might be considered to fall into either or both of these categories. Nevertheless, the distinction remains broadly valid, and presents special problems for the use of techniques such as benchmarking for the assessment of project management efficiency or effectiveness (see Chapter 4).

1.3 The importance of projects to industry.

In business and commerce, projects represent a substantial proportion of the productive effort of enterprises in every industrial sector. A “straw poll” of fifteen enterprises recently estimated conservatively that their combined annual spend on projects exceeds £15bn.² The range of

products that are created or modified by projects gives some indication of the extent and value of project work to industry, and of the beneficial change that projects achieve.

- New facilities are produced - factories, offices, plants or pieces of infrastructure. These are then operated for economic advantage.
- New products are designed or developed for manufacture in ongoing operations or for use to generate wealth in some other way.
- Services are delivered, such as the refit of a ship, the renovation of a building or the conduct of a piece of research.
- Changes are engineered to business systems and to organisation structures, so that enterprises can be operated more efficiently.

It is no exaggeration to say that projects lie at the heart of human economic activity, and it follows that any improvements that can be made to the practice of managing projects will have a significant effect of the output of all wealth creation in advanced industrial or post-industrial societies.

1.3.1 The conceptual basis to project management.

Very few of the published works on project management make explicit the philosophical approach that underscores their work. Most writers seem to imply that some form of empirical realism is possible. Some describe project management as a science or suggest that it uses “scientific” techniques, as for example Kharbanda, Stallworthy and Williams (1980) who define cost engineering as “that area of engineering principles where engineering judgement and experience are utilised in the application of scientific principles and techniques to problems of cost estimation, cost control, business planning and management science.” (p. 5)

Morris (1994) states that “there is not yet an adequate conceptual basis to the discipline [of project management]”, and concludes that “the current formal view of, and indeed practices of, project management are often inadequate to the task of managing projects successfully; and that we would do better to enlarge the subject to the broader one of the *‘management of projects’*” by including topics such as “design and technology management, the management of political forces (governmental and non-governmental, and ‘political with a small p’ -

business, labour and community), cost-benefit management and the raising and management of the project's finance, the management of the timing or phasing of the project (something quite different, incidentally, from the theory and practice of project scheduling), and even contract strategy and administration.” (p. 2)

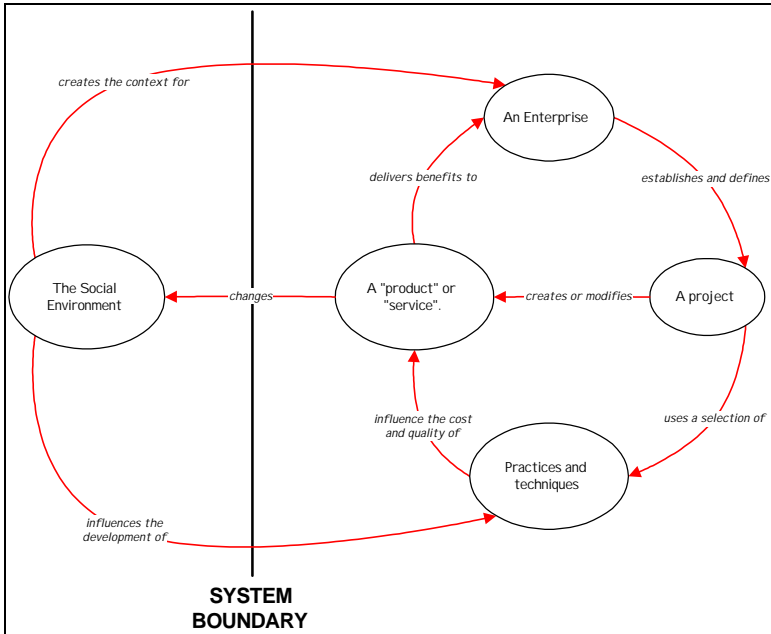


Figure 2: *The context for projects.*

One way to provide a framework for an “adequate” conceptual basis is to recognise the dynamic linkages that exist between an enterprise, the projects it undertakes, the practices and techniques it employs, and the products or services that are created or modified by the projects (See Figure 2 above). To include the full range of topics that Morris believes to have an influence on the performance of projects, however, it is also necessary to recognise that this activity takes place within a social and economic environment that creates the context for enterprises, that itself is changed by the products or services created by projects, and that exerts a strong cultural and technical influence on the practices and techniques employed in the management of projects.

A second way in which this research will seek to add to the conceptual basis to project management is by seeking to bridge the gap between “academic knowledge” and “industrial practice”. As one leading management thinker has expressed it: -

Specialisation is becoming an obstacle to the acquisition of knowledge and an even greater barrier to making it effective. Academia defines knowledge as what gets printed. But surely this is not knowledge; it is raw data. Knowledge is information that changes something or somebody - either by becoming grounds for action, or by making an individual (or an institution) capable of more effective action . . . Who or what is to blame for the obscurantism of the learned is beside the point. What matters is that the learning of the academic specialist is rapidly ceasing to be "knowledge". It is at its best "erudition" and at its more common worst mere "data". (Drucker, 1989: 251 – 252)

1.4 Project management in its social and economic environment.

Although this work is not about the history of projects, modern project management is built on foundations nearly as old as civilisation itself. Key concepts that are still used today have emerged from the very different social and economic environments of different historical times, and have become part of today’s “accepted wisdom” of project management.

A brief review is appropriate of how these key concepts and “tools” arose within their social context (see Table 1), so that the contribution of each of them to project management practice can be examined. In later Chapters serious questions will be asked about the effectiveness of each of them, and their relevance to today’s business environment.

There have been a number of attempts to summarise the history of projects, and the introduction to many books on project management contains its own brief summary. The one that has exerted the greatest influence on this work is that by Morris (1994), although the four broad periods that will be considered below, along with the project management legacy from each of them, are not those used by him.