

To Err is Human.. ..Especially Where Projects Are Concerned.

Dr. Terence Cooke-Davies

Executive Chairman, Human Systems International Limited, London, United Kingdom

Visiting Fellow, Cranfield University, United Kingdom

Visiting Professor, Bond University, Queensland, Australia.

Abstract

Two enduring truisms about projects are that people deliver projects, and that planning lies at the heart of project management. This much has been understood for more than a century. Empirical research into project success and organizational project management practices, however, shows that the implications of these two foundations of project management are not reflected in common practice. Neither do the results delivered by projects match expectations.

In part this is because of the different worldviews of people schooled in the disciplines of general management and of project management. Although sharing common features, the two worlds of “business as usual” and “projects and programs” have some distinctions that are not fully appreciated by many leaders of enterprises in the developed economies of the world.

That is, however, only part of the story. Theoretical research into the source and nature of complexity in projects suggests that the paradigm underpinning much of both “espoused theory” and “theory in use” of project management practitioners and their professional associations is deficient in coping with the social complexity inherent in many modern projects and programs. Understanding the dynamics involved in managing projects and programs calls for a fresh understanding of the social reality of people working together in a project environment, along with a deeper appreciation of the cognitive limitations of people when facing an uncertain future.

Introduction

A leading Harvard psychologist, Howard Gardner, has suggested that perhaps “the proper study of management is man.” (Gardner 2004) If that is true, then it is equally true that the main focus of project management in both practitioner and research literature has been on “projects” and the processes and practices whereby they are planned and executed, rather than on the people who are being managed, and how their managers can influence their activity and behaviour to improve project performance.

In suggesting how researchers and practitioners in the field of project management might set about implementing Professor Gardener’s suggestion (which is in large part the purpose of this paper), it is appropriate to start out by considering two enduring

truths of project management: projects are delivered by people, and good planning lies at the heart of project management (Teague and Cooke-Davies 2007)

Projects are delivered by people, not by processes, tools or systems.

Projects are delivered by groups of people working together, and not by processes, by project management tools, or by clever project management systems. And in many of the ways that matter as far as the management of projects is concerned, people and their behaviour haven't changed much. For all changes to our technological world, people still behave towards each other much as they have done since (at least) the dawn of recorded history. People are still moved to both helpful and unhelpful behaviours by their emotions (that is, after all, what the word e-motion implies – an impulse that leads to action), and projects, dealing as they do both with change and with temporary organizations, give rise to many such emotions.

In traditional project-based industries, it has long been recognised that only certain people have the necessary aptitude to become good project managers and project directors, and organizations whose business is projects have developed long and careful “apprenticeships” and staged growth for those people who show both the desire and the aptitude for this kind of work. Today, as fifteen years ago, such people who have reached the top of the tree in terms of being entrusted with the leadership of “mega projects” will tell you that the primary job of the senior project manager is to manage the conflicting interests and agendas of key stakeholders, both outside and inside the boundaries of the project.

Good planning lies at the heart of managing projects

In the literature on project management, more has been written about project planning than about any other single topic. Since the techniques of Henry Gantt gained widespread currency in the early years of the twentieth century, planning has been at the heart of the discipline of project management. Major military initiatives during the Second World War, followed by the introduction of critical path methods such as Programme Evaluation and Review Technique (PERT) during the 1950's added momentum to this trend (Morris, 1994), so that today, even in the face of much that has changed, planning is seen as the most significant component of project management. For example:

- 21 out of the 44 processes that comprise the PMBOK® Guide, Third Edition, belong to the Planning group of processes, with the remaining 23 being shared among the remaining four groups (2 each to Initiating and Closing, 7 to Executing and 12 to Monitoring and Controlling).
- Product-based planning lies at the heart of the Prince2 methodology.
- 141 of the 586 “best practices” described in OPM3®, PMI's Organizational Project Management Maturity Model are concerned with plans or planning.
- In PMI's 2002 Technical Needs Assessment, which was answered by 334 project management professionals, project planning was identified as the process group that should receive the highest priority from PMI in terms of research and development.

It is natural that this should be the case when you reflect on the essential nature of projects. Projects need distinctive management practices because they are essentially different from repetitive work that is operational or transactional by nature. For this second kind of work (let us call it “business as usual” for convenience) planning is essentially a process of examining past and present performance and designing ways of doing it better, faster or cheaper in future. To put it another way, in the world of “business as usual” planning for tomorrow is largely based on yesterday.

It is very different with projects, however, since to a greater or lesser extent, each project is seeking to create beneficial change through some product or service that exists at the outset only in the imagination of its designer. In other words, in the world of projects planning for tomorrow is all about trying to envision what is involved in creating something that didn’t exist yesterday. That is why project plans need to contain skilfully prepared estimates of resources, costs and durations, as well as both contingency and containment actions to respond to risk events that may or may not happen. The more ambitious or unclear a project’s goals are, of course, the greater are the planning skills required – just as is the case when stakeholder interests are more diverse, or when cultural backgrounds of the project team are more varied.

Too many projects are perceived to “fail”

Unfortunately, this twin emphasis has neither been balanced (Cooke-Davies, 2001) nor has it produced the results that have been expected of it. In spite of an increasing corpus of research and despite column-miles of words that have been written about project management (Kloppenborg and Opfer, 2000), despite decades of individual and collective experience of managing projects (Morris, 1993), despite the rapid growth in membership of project management professional bodies and despite a dramatic increase in the amount of project working in industry, project results continue to disappoint stakeholders. (O’Connor and Reinsborough, 1992; Cooke-Davies, 2001) Lest we derive any comfort from the growth of our profession, it is a sobering observation that the performance of large public-sector infrastructure projects, for example, has not improved for a century!! (Flyvbjerg et. al., 2003)

And if the project management profession is to fulfil its obligations to society, then this has to change. Arguably, the primary importance of people working and planning together is unlikely ever to change, and forms much of the basis to our shared craft. But surely both the actual track record of project delivery, and the public perception that too many projects fail are aspects that should drive our professional agenda during the next decade. Indeed, the remainder of this paper can be seen as a plea for a change of emphasis that might help to reverse this unhappy and persistent situation.

Projects in Their Organizational Context

Every organization exists for a particular purpose, and it seeks to accomplish this through adopting some form of strategy: either explicitly or implicitly, and either inside or outside the awareness of its people. As Michael Porter explains, “Every firm competing in every industry has a competitive strategy, whether explicit or implicit.” (Porter 1985 p xiii)

Two classes of activity – the accepted view¹

Strategies are achieved, however, by accomplishing work – and it is accepted wisdom within the project management world that two different categories of work are required.

The first is the day-to-day operation of the particular activity by which the organization accomplishes its purposes. For example,

- Pharmaceutical organizations manufacture and distribute licensed medicines and devices to hospitals, clinics and patients,
- Transport companies move people and freight from place to place by road, air, rail or sea,
- Telecommunications companies manufacture and sell telephones and communication equipment, and operate and maintain networks by which subscribers can communicate with each other,
- Government agencies collect taxes, pay benefits, issue licenses, provide healthcare, educate children and adults, police society and so on,
- Charitable organizations provide aid to disaster-hit communities, support the victims of particular diseases and other misfortune, raise funds and keep account of them and so on,
- Clubs and voluntary organizations support all aspects of membership, support the specific activities they exist to support and so on.

These kinds of activities are generally referred to as “operations” or perhaps more graphically as “business as usual”. The theory and practice of managing these activities has been the main focus of the discipline of “management” – not only the overall practice of “general management”, but the specific sub-disciplines such as operations management, marketing management, finance management, human resource management and so on.

The second kind of work consists of all those initiatives and activities that are undertaken to improve an organization’s ability to accomplish its purpose – not simply by doing them better, but by doing them differently. If it is to survive and flourish in the continually-changing world in which we live, then each organization needs to undertake efforts that are designed to:

- Improve the effectiveness and efficiency of its “business as usual” activities,
- Renew itself and create additional opportunities through developing new businesses, new products, new services or new markets,
- Identify opportunities to transform “business as usual” activities through introducing new technology, new processes or new ways of working, and
- Build new physical infrastructure, acquire new assets and so on.

This second kind of work is what is generally referred to as projects, programs and project portfolios. The theory and practice that has developed for these efforts has been the main focus of, initially, project management, but more recently program management and project portfolio management.

¹ Some of the text in this and the following section is taken from the author’s chapter in a forthcoming book, *“Making decisions with scant information: front-end decision-making in major projects.”* Edited by Knut Samset, Terry Williams and Kjell J. Sunnevåg

Most text books and standards in the world of project management explain that the way the two classes of work differ is that projects are temporary and are concerned with the creation of a more-or-less unique product or service. And in response to the temporariness and uniqueness a set of tools and techniques has developed to help plan and manage them better.

The difficulty with this is that it approaches the topic from an analysis of the work to be done, rather than the people who have to work together to undertake the project – the focus is on the “management of the work of the project” rather than on the specific challenges involved in the “management of *the people* who have to do the work of the project.”

Two classes of activity – an augmented view

Both of these kinds of work need to be planned as well as executed, so it is easy to believe that planning is an activity common to both. This is, however, a mistake. What is involved in “planning” business as usual activities is a very different cognitive exercise that what is involved in “planning” projects and programmes.

Business as usual is what the organization already knows and experiences, and thus forms a predictable basis from which to plan variations that can, generally, be relied upon to deliver the required improvement. This can conveniently be labelled “adaption”. Risks have to be considered, of course, but they can be thought of as unusual events that do not occur in the normal course of events.

Projects and programmes, on the other hand, involve planning and then creating some product or service that at the point of inception exists only in the imagination of the person or people who are promoting it. The process of planning these activities, therefore, involves imagining a series of steps that may or may not work out as planned, and each of which may have unforeseen consequences. It could be described as a process of “enfolding an envisaged future into a known present”, and can conveniently be labelled as “innovation”

The differences implicit in the temporary nature of projects are also frequently underestimated. For all but the most short-lived or routine of adaptations it is normal practice for an organization to create a “project team” or “program organization”, provided that the innovation is sufficiently important that it requires its own dedicated resources and structure for management, either as a project or a program. Such a team, existing as it does, solely for the purpose of accomplishing the particular activity, is by its nature temporary regardless of whether the people who make up the team are in fact employees of the permanent organization, employees of a supplier organization, or self-employed contractors hired specifically for the duration of the project or program. (Turner and Müller 2002) Business-as-usual activities, on the other hand, are by their very nature at the heart of the permanent organization that is seeking to accomplish its specific purpose through the strategy that it has adopted.

This much is well-understood. What is much less well appreciated is the fundamental difference between the purpose of the permanent organization which, in common with all animate organisms, is for the most part to survive and prosper in whatever

circumstances it finds itself and that of the temporary project or programme team which is simply to deliver the particular product or service required and then to move on.

As figure 1 illustrates, these two differences amount to completely different worlds, with differing worldviews, and that has two implications for projects and the communities of people who are seeking ways of managing them better.

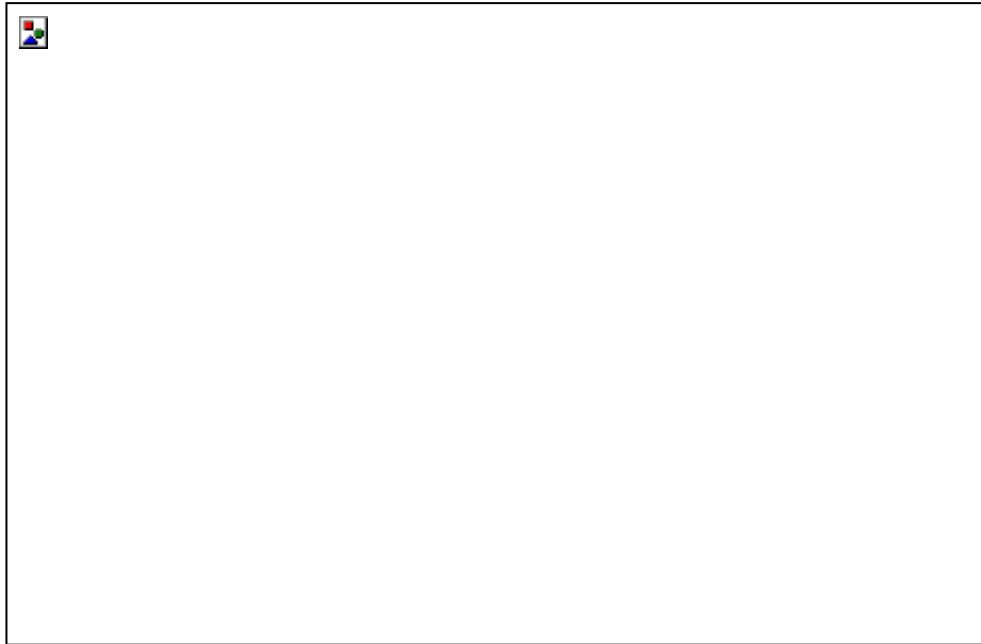


Figure 1: Two very different worlds.

New Perspectives on the Challenges Involved in Managing Projects

Fundamental Differences

This richer understanding of the differences between projects and programmes on the one hand, and business as usual on the other, leads to two fundamental differences between these different kinds of work.

Firstly, there are important structural and organizational differences between the two. It has already been argued elsewhere that the respective worldviews are so different, that communication between the two groups becomes problematical (Dinsmore and Cooke-Davies 2005). It has also been shown that the systems and structures necessary and sufficient both to manage and to govern temporary organizations differ from those for permanent organizations (Turner and Keegan 1999).

Secondly, however, in the interests of “the proper study of management being man” it is appropriate to consider how human beings function when faced with the work of delivering innovation as opposed to when they are faced with the task of adapting business as usual. Extensive research by Michael Kirton over a period of more than 30 years has drawn attention to the different psychological profiles of people who are more attuned to solving problems using adaption than using innovation, and vice versa. (e.g. Kirton 2003) There is even a psychometric instrument (the Kirton

Adaption/Innovation Indicator, or KAI) that can be used to demonstrate the extent of preference for one or the other in any individual, and that has been shown to correlate well to results obtained using other psychometric instruments such as the MBTI (Higgins and Cougar 1995).

If this is true, then it is likely that groups of people in temporary organizations charged with the task of innovation are likely both to make decisions and to share practices that differ considerably from those charged with the task of adaption in permanent organizations

Insights from Studies into Psychology

At his keynote address to the PMI Research Conference in Montreal, Bent Flyvbjerg (Flyvbjerg 2006) drew attention to the Nobel Prize winning work of Daniel Kahnemann and Amos Tversky and their contribution to the discipline of behavioural economics known as Prospect Theory. (Kahnemann and Tversky 1979). Flyvbjerg cited “optimism bias” as one of the major sources of risk in projects, and its enduring nature as a feature of what it means to be human. As a consequence he advocated a number of additional processes to improve the management of risk, including various forms of the “outside look” and “reference class forecasting”.

But why stop there? Behavioural economics is not the only branch of psychology that is exploring what it means to be human in the light of modern research. Others include cognitive neuroscience (e.g. Pinker 1997), evolutionary psychology (e.g. Dunbar 2004; Livingstone Smith 2007) and socio-biology (e.g. Lumsden & Wilson, 2005).

Optimism bias is simply one of the biases now recognized in these various disciplines. Others include:

- Self-serving Bias: The tendency to take the credit for success, and blame external factors for failure.
- Self-centred Bias: The tendency for an individual contributor to take a disproportionate amount of credit for the outcome of group effort.
- Egocentricity Bias: The tendency to exaggerate the importance of one’s role in past events.
- False Consensus Effect: The tendency to believe that most people share one’s opinions and values.
- Assumption of Uniqueness: The tendency to overestimate one’s uniqueness.
- Illusion of Control: The tendency to exaggerate the degree of one’s control over external events.
- Hindsight Bias: The tendency to retrospectively overestimate the probability of past events occurring.
- Self-righteous Bias: The tendency to regard oneself as having higher moral standards or greater moral consistency than others have.
- In-group/out-group Bias: The tendency to view members of the group to which one belongs in a more positive light than members of groups of which one is not a member.
- Base-rate Fallacy: The tendency to neglect population characteristics and prior probabilities when making probabilistic inferences.

- **Conjunction Fallacy:** The tendency to regard the conjunction of two events as more probable than either of them occurring singly. (Livingstone Smith 2004)

How these different biases influence the behaviour of people when they find themselves working in the world of projects rather than that of “business as usual” is a topic that merits more detailed and scientific study.

Insights from Studies into Complexity

Increasingly, during the past three or four decades, scientists in a variety of physical and life sciences have been making discoveries about the nature of the world that amount to a new paradigm about how novelty and innovation emerge, one that is often referred to under the title of “complexity theory” or “complexity science”. (Cooke-Davies et. al. 2007).

To summarize an extensive literature that spans many disciplines, certain key themes emerge that have direct relevance to understanding what is going on in the world of projects and programmes. Three are particularly noteworthy:

- **Nonlinearity** – In complex systems theory, this implies that a complex dynamical system is any system that has within itself a capacity to respond to its environment in more than one way exhibiting ‘sensitive dependence on initial conditions’ in contrast to a ‘the clockwork universe’. Sensitive means ‘not exclusive’ but a combination of initial conditions and external perturbations; small variations can lead to big changes, while big variations can result in minimal change; You can do the same thing several times over and get completely different results, as many programme managers seeking to accomplish organizational change will readily recognize.
- **Emergence and evolution:** As self-organizing systems go about their daily business, they are constantly exchanging matter and energy with their environment, and this allows them to remain in a state that is far from equilibrium. That allows spontaneous behaviour (emerging from local micro-diversity, adaptation, and transforming) to give rise to new, different patterns and characteristics. Stability is achieved through self-organizing (stable patterned behavior) influencing and simultaneously being influenced by the patterns at a higher level of interaction and governance (the boundary of strange attractor). This induces a possibility for simultaneous states of stability and instability at different levels, and it also allows groups of people interacting with each other to be genuinely innovative, which many programme managers faced with apparently insurmountable problems have cause to be thankful for.
- **Radical unpredictability** is understood as underpinning the very nature of reality and is a critical implication of complexity theory for project management. Most importantly, the notion of radical unpredictability encourages the consideration of processual rather than structural systems paradigm in studying society and organizations (not only goal-oriented but driven by broader, multiple, heterogeneous and frequently conflicting agendas, aspirations and values). Encompassing the notions of non-linearity, emergence and evolution explained above, radical unpredictability recognises change at a micro-level of interaction and assumes that through collaborative collective

interaction something novel emerges; the role of cooperation (learning) and self-organization is seen as essential for evolution. It also accounts for why it is possible to follow risk management processes to the letter, and yet find the project developing along unexpected lines calling for continual innovation and creativity. (Cicmil et al 2008 Forthcoming)

Relating Complexity to Human Communication

Interestingly enough there is within this extensive field of complexity science one strand of theory that is grounded in “reality” (the evolved and biological characteristics of the human being) and that suggests fresh avenues for project management research – the strand of theory known as “complex responsive processes” (Stacey, 2001).

Under this theory, “organizing” is an emergent property of many individual human beings interacting together through their complex responsive processes centred around the use of language simultaneously for conversation and to negotiate social status and power relationships. Communication by means of evolved language is a defining characteristic of human beings, distinguishing them from all other species of animal (Kauffman, 1993). It is a key determinant in the evolutionary success of human beings, and accounts for both the creation of diversity and thus of selection through competition and extinction of societies and organizations. It is entirely consistent with the latest findings of fossil evidence concerning the last significant increase in the size of the human neo-cortex from 400,000 years ago until some 100,000 years ago, when it reached roughly the size that it is today. (Zimmer, 2003)

Central to the theory is the recognition that communication is a complex process involving both the words that are spoken and the response that they elicit – indeed the chain of responses that provide the context for an individual conversation or an element of it. Gone is the distinction between “the individual” and “the group” – one is left with individuals relating to each other through the complex processes of vocalised and non-vocalised communication. And out of this web of complex responsive processes arise BOTH the emergent properties of “organization” and “self-identity”

It is important to understand just what a “radically social understanding of individuals” (Stacey, 2003) is implied by this.

The theory allows for an alternative account of the emergence of innovation (Fonseca, 2002) and of leadership and ethics (Griffin, 2002). It provides a coherent explanation of the paradox of control (Streatfield, 2001) and of the nature of organizational change (Shaw, 2002).

Furthermore, as a theory that is consistent with other aspects of complexity science, it allows for an inter-disciplinary research approach that is shared with the physical sciences, the biological sciences and social sciences (Auyang 1999) while avoiding the pitfalls identified in section 3 above.

So what, precisely, is the theory to “complex responsive processes of relating”? According to Stacey, Griffin and Shaw it represents a move “away from the notion that human action or interaction is a system, or can usefully be thought of as a system, when it comes to thinking of change of the transformational kind.” (Stacey, Griffin and Shaw, 2000, p186).

While not rejecting the usefulness of the notion of human organisation as a system for the purpose of understanding or designing interactions of a repetitive kind in a predictable environment, its inherent “theory of causality does not allow for the emergence of true novelty.” (ibid, p187).

CRPR understands “human intentions, choices, and actions as essential to, as operating within, the dynamic of daily interactions between people.” It argues that “organizing is human experience as the living present, that is, continual interactions between humans who are all forming intentions, choosing and acting in relation to each other as they go about their daily work together.” (ibid p187)

“No one steps outside [the system] to arrange it, operate on it or use it, for there is no simply objectified ‘it’. There is only the responsive process of relating itself. Instead of understanding ‘the organization’ as a tool humans design and use, [it is understood as] organizing, that is, experience as the living present. Instead of understanding human action as Rationalist Teleology split off from a tool structured by Formative, or even Transformative, Teleology [it is explored in terms of] how the detail of human choice and action itself operates as the process of organizing.” (ibid, p187)

What this means is that from this perspective “the relational processes of communication, within which people accomplish joint action, are actively constructing the future as the living present and that future is unknowable in advance. Throughout, the process is characterized by the paradox of the known-unknown and in it emerges the aims people formulate, the goals they set, the intentions the form and the choices they make. What is being expressed here is individual and collective identity at the same time.” (ibid., p188f)

There is thus no distinction of kind, or of logical level, between the individual and the social. The phenomenon being studied is human relating, and the individual is the singular element of this, while the social is the plural.

The creators of the theory publish an interesting list of characteristics of these complex processes of relating, which are as follows:

- “They are processes of action and interaction, through which people in organizations act jointly, transforming their environment and their identities.
- They are acts of relating.
- These actions of relating are bodily actions of communicating, both directly in the medium of feelings and in the form of language.
- They are therefore processes of power-relating, that is, processes that both enable and constrain action.
- They are actions of communication and power reflective of human freedom.
- They are actions of communication and power-relating open to the detail of varying interpretations.
- They are actions of communicating taking the form of bodily gestures and responses, including the vocal ones of language, which call forth responses in others.” (ibid., p190)

The Reality of Life whilst Managing a Complex Project

In a research report soon to be published (Cicmil et al 2008) a team of researchers led by Dr Svetlana Cicmil used the lens of “Complex Responsive Processes of Relating” to examine the experiences of project managers and other participants of more than 27 projects in different industries in varied parts of the world.

The research investigated

- How project participants (PMs, team members, senior executives/sponsors; other stakeholders) perceive and experience ‘complexity’: unpredictability, power relations, ambiguity and change of plans over time, risk,.
- How is ‘project control’ enacted in practice? And what are the challenges?
- How do project practitioners understand planning in an indeterminate world?
- What is their experience with achieving a shared understanding of the project goal within a project coalition?
- What kind of ambiguity and equivocally practitioners face regarding criteria for qualifying projects as success or failure, and how do they cope with it?
- What do they do when they find themselves not being in control of projects?
- What are their experiences with integrating the project team: communication, cooperation, confidence and learning among project parties over the project’s life time?

Its conclusions were *inter alia* that

- Projects involve a particular kind of patterned conversational and power relating between people, and the role of such tools as work breakdown structures, activity networks and project schedules is help form these conversations and relationships.
- Project work can be viewed as a form of the self-organizing capacity emerging from these complex processes of communicating and relating, and the way that people make sense, moment by moment through self-reflection, on conflict and power in the local context.
- Power is therefore located in the processes of conversing and relating, rather than in any one individual.
- People experience feelings aroused by these processes of relating, emergence and self-organizing, and how they deal with these feelings when outcomes are not predictable will vary from person to person and culture to culture. Complexity, therefore, is unavoidable.
- This diversity of people and cultures, each of whom has an imperfect memory of past events the capability to act spontaneously, creates the possibility of transformation and novelty on projects and programmes.
- Perhaps the most telling observation is that, contrary to the paradigm implicit in so much taken-for-granted project management practice, “[a project] manager cannot stand outside organisational processes and control them, direct them or even perturb them in an intentional direction. All such intentions are gestures made to others in an organisation, and what happens unfolds from the ongoing responses.”

Conclusion – Putting People at the Centre of Project Management

Experienced managers of projects with a high degree of complexity have always known that it is mastery of talents such as political awareness, emotional intelligence or aligning people behind a common goal that make the difference between projects succeeding and failing. Organizations that undertake such projects and programmes also appreciate the importance of appointing the right leader to each critical programme.

Surely it is time for project management researchers, professional bodies and leading practitioners to recognise that people and how they work together in project-type settings should be the primary focus of our attention? And not simply through folk wisdom and anecdotal evidence, but through prolonged and rigorous study.

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