The Future of Project Management

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Introduction

I wrote this article in 1992 as a commentary on the past and future of project management. Now, nearly a decade later one can marvel at the advances that have been made, but wonder how much we have really learned about project management in the intervening period.

What innovations are we likely to see in the theory and practice of project management in the next ten years? How will efficiency be improved, and what will be the key elements of project management circa 2000? Will it even exist, or will it be supplanted by some new management fad?

If we are to gain any insight into the future of project management, it behooves us to examine its evolution in the past. For while project management as a "profession" with its current "technology" may be the vogue of the late twentieth century, the problems of managing projects have been around since ancient history.

Starting with the Pyramids

For example, some of these problems were encountered in the construction of the earliest pyramid at Saqqara in Egypt, which was the first stone building of any size to be found in the world. It was commissioned by King Zoser of the third dynasty and while the king was the "sponsor" of this project, the "project manager" was one of his ministers, Imhotep.

We are told that "Although no trustworthy details of the lives of Zoser and Imhotep have come down, we can be sure that they were able men who worked long and effectively together. Probably Imhotep was a universal genius like Archimedes and Leonardo da Vinci. Such was his repute as a physician, architect, writer, statesman, and all-round sage that in later times collections of wise sayings circulated under his name."[1]

Thus was born the reputation of the project manager. This particular project was not without its own problems, however. The account goes on "[previously] . . . Egyptian kings and nobles were buried in a tomb called a mastaba . . . [but] . . . Zoser and Imhotep . . . built a stone mastaba of unusual size and shape. It was square instead of oblong like its predecessors, and was over 200 feet on a side and 26 feet high.

"Not yet satisfied, Zoser and Imhotep enlarged this mastaba twice by adding stone to the sides. Before. the second of these enlargements was completed, the king changed his mind again. He decided not only to enlarge the structure still further, but also to make it into a stepped pyramid, resembling four square mastabas of decreasing size piled one atop the other. Then Zoser changed his mind once more. The tomb ended as a stepped pyramid of six stages, 200 feet high on abase 358 by 411 feet. . ."

Scope creep and Exercising Control

Since a creeping scope was clearly evident during this project's implementation, one must conclude that Imhotep was well acquainted with the principles of scope change management. On the other hand, it is doubtful if Imhotep was plagued with the current-day problems of "gaining and retaining team commitment", for he had available to him a powerful enticement. Those who failed to perform could be summarily executed.

Today, this form of incentive has been mostly discredited, though not entirely. Its modem-day equivalent, summary dismissal, is to be found in the corporate world, but has the attendant difficulties of endless litigation if not conducted in a very careful manner.

Over the centuries, the classic master-servant relationship continued to serve projects well, for major works continued to be built, including the seven wonders of the world. It was not until the early twentieth century, however, that serious attention was given to the idea of "management", and then only in the context of maintaining efficiency and continuity of an on-going operation, rather than for the development of a "project. Many and varied have been the techniques promoted from time to time, some with catchy buzz names. While some have stood the test of time, others have passed by only as temporary "management fads".

One suspects that many were created simply to catch the imagination for purposes of selling consulting services to senior management — a sort of elixir of (management) life! Nevertheless, project oriented techniques began to emerge such as work study, graphical portrayal of activities (Gantt charts), management-by-objectives, and more recently, total quality management.

Technical versus People Management

A particular and major breakthrough was the development of "network analysis" and the concept of "critical path". This grew out of the US Navy's complex Polaris program and NASA's Apollo program in the fifties and sixties. For many years and even to the present day, the critical path method, or CPM, and its associated "probability" techniques have been viewed as the essence of project management in terms of planning and controlling project performance.

More recently, however, we have seen a definite shift to the "human" side of project management and the incorporation of techniques essential for dealing with people equitably and effectively. At the same time, there has been a growing recognition that the creation of large physical projects, such as facilities and infrastructure, are not the only types of project to which these techniques can be applied. Indeed, projects can be many and varied, including "intellectual" type projects such as the introduction of new administrative systems, attitude changes and even cultural changes have been attempted in some organizations.

Today, we have a much better understanding of the holistic aspects of project management. For example, we know that project management and corporate management have fundamentally different orientations as indicated in Table 1. Specific differences between "project' and "enterprise" management are shown in Table 2. We also know that a "project" is essentially a "process" which leads to the

delivery of a "product" within the confines of certain "constraints".. Occasionally, the term "project" is used loosely in substitution for the term "product", but this inevitably leads to confusion.

Enterprise		Project	
Direction			
Goals:	***Continuity*** defined by sets of Objectives	Purpose:	***Change*** defined by sets of programs
Objectives:	defined through Strategies	Programs:	Defined through sets of projects
Process			
Strategies	achieved through Tactics	Projects:	Achieved through sets of Tasks
Tactics:	achieved through consistent Activities	Tasks:	Achieved through variable Effort
Activities:	result in ***continuous*** product	Effort:	Results in ***unique*** product

Table 1: A Hierarchy of Management Orientation

Enterprise (Period based)	**Project** (Plan-Accomplish based)
Output is defined within department's responsibility	Objective is an exception to the usual routine
Desired results are generalized, influenced externally	The required result becomes specifically identified
Goals and deadlines are general	Goals and deadlines are specific
Routines are related	Activities are related
Management based on market forecasting	Management based on project forecasting
Reporting based on long-term financial accounting	Reporting based on short-term project accounting
Products are identical and in large quantities	Specific product is unique (or very limited)

Table 2: Enterprise versus Project Management

We know too that this project process is susceptible to the application of a systematic and logical sequence. In its most basic form, this may be described as "Plan first, then produce". The benefit of applying such systematic logic is that the process itself may be improved in its performance.

The Implications of Improving Performance

Why should we want to improve performance? Because the overall goal of project management is not only to achieve successful results but to be seen to have done so. This translates into stakeholder or "customer satisfaction".

Over the last two decades, there has been much study and discussion on the contents of the project management process. Currently, the Project Management Institute has identified ten major elements forming the Project Management Body of Knowledge (PMBoK). These consist of four core objectives (or constraints): the management functions of scope, quality, time, and cost; and four interactive and adaptable management functions of risk, human resources, contract/procurement and information/communications. In addition there are the elements of integration and success, all of which can be managed.

This complex relationship can be conveniently illustrated as shown in Figure 1.

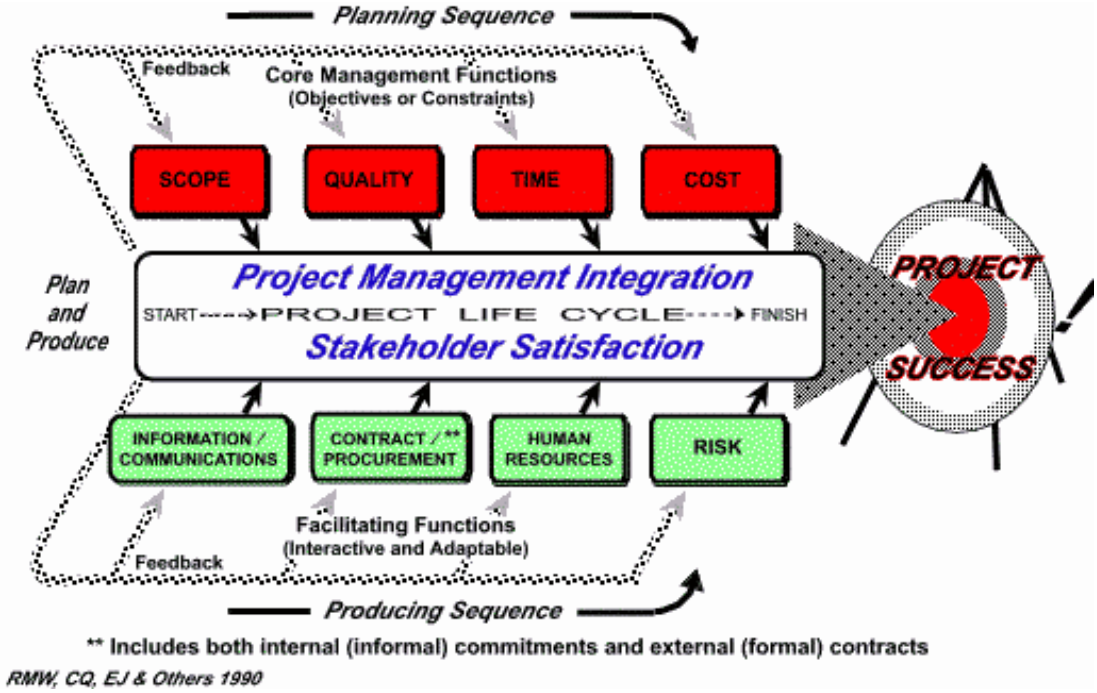

Figure 1: Project Management Integration — The Source of Success

Craft-work, Brain-work and Leadership

While both craft-work and brain-work projects encapsulate all the attributes of project management, brain-work projects such as software and management systems nevertheless require a different focus. The creation of physical products generally exact some degree of logical sequence in their construction, which favors hierarchical, linear type thinking. Products of the mind are not so constrained, although they will benefit from a logical and systematic approach. On the contrary, such projects benefit more from developing team commitment through lateral, cooperative and concurrent thinking.

Consequently, the type of leadership required is also different. The former type of project responds better to "command and control' leadership, whereas the latter responds better to the delegation of responsibility and authority within the context of defined goals and objectives. "Empowered work teams" is the current buzz word, a device to bring management focus on activating and motivating project team members by playing on an individual's natural need to feel valued. Nevertheless, without true integrative leadership, the results can be fragmented, controversial and lack substance.

So what do we see in the next ten or more years? Perhaps the first point is that another ten plus years is minimal in the overall scheme of things.

Certainly, judging by the many projects that fail to reach their optimum potential or just downright miscarry, there will be plenty of opportunity for education and training in the art and science of project management. There will be broader understanding that success criteria are not best defined by time and cost objectives, but by scope and quality objectives, especially quality. There will be promulgated a better understanding that management of a project encompasses proactive tradeoffs between the four parameters of scope, quality, time and cost as suggested by Figure 2, and not just time and cost alone. Moreover, the basis of successful decision will vary more with the type of project and the phase and stage in its life cycle than in management style.

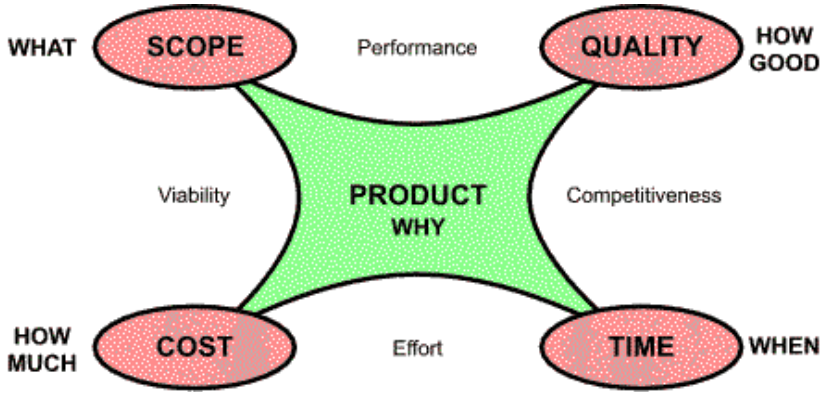

Figure 2: The Tetrad Tradeoff — Four Objectives or Constraints

But the shift in application of project management from physical to intellectual projects has highlighted an interesting dichotomy in the nature of human beings. On the one hand there are the "technologists" who, striving to make a new world, are filled with the lusty enjoyment of material creativity2[2]. On the other there are the "existentialists" who, rejecting dogma, prefer to rely on the passions, impulses, urges and intuitions that are the basic ground of our personal existence[3].

Thinkers and Feelers

In short, there is a split between *thinkers* and *feelers* and the impact on project work should not be underestimated.

When confronted by project goals and objectives, there are those who obtain satisfaction through the successful achievement of these goals and objectives. Their concerns stem from ensuring that the

necessary time and resources are available and within their power to control. These are the thinkers who are usually involved by choice and often represent management.

The feelers, however, tend not to be stimulated by setting goals and objectives and indeed see it as being of little or no consequence. In their view, the only important thing about goal-setting is that the goals should be broadly based, loosely defined and flexible. Typically, they are the stakeholders and constituents and their satisfaction comes, if at all, not from a sense of achievement but from participating in the process.

We can see this dichotomy as far back as our story of Imhotep and King Zoser. Imhotep was clearly a thinker and achieved what he achieved through a satisfaction of "getting things done". King Zoser, on the other hand, was a feeler and was obviously greatly concerned about how he would feel incarcerated in his magnificent mastaba.

Finally, a look into the Future [which is now]

Today, the pendulum of management thought has swung towards "participative management" which is the buzz word for corporate management's attempt to bridge this gap. We can already see this trend emerging in project work, and we can expect to see this trend continue. Indeed, the greater the number of stakeholders and constituents that are involved in the end results of a project, whether it be internal administrative or external infrastructure, the more important it is.

Unfortunately, these project constituents are rarely accountable for the project's time and cost, at least in the short term. Consequently, "participation" in the project process may become stalled and even reversed, exacting a terrible toll in terms of the project's core constraints.

As populations grow and the share of the world's resources diminish, we can confidently expect the rate of change to accelerate. Project management will continue to be the most powerful vehicle for handling these changes in an orderly manner. However, to do so there must be a progressive reconciliation or accommodation between the two view points of thinkers and feelers. This will be the challenge of the next decade and beyond.

In the longer term we can expect to see the pendulum swing back once more towards firmer leadership, an attribute desperately needed in today's world of population, environmental and political crises.

To do so, project management leadership concepts will change progressively in response to the external demands of a better informed and discerning public and an increasingly better educated work force. Internally, the change will encompass the electronic revolution; socio-technical systems (wherein the team itself shares responsibility with accountability for self-management in defining all steps, execution, and project deliverables); and shared power (distributed leadership or partnering). The skill sets needed for these different and changing environments will be identified and the means developed for transferring them to project-managers-in-the-making through education.

The rewards will be the survival of civilization — no less.

[1] Sprague de Camp, L., The Ancient Engineers, Ballantine Books, new York, February 1974, p2l.

[2] Ibid., p 113.

[3] Florman, Samuel C., The Existential Pleasures of Engineering, St. Martin's Press, New York, 1976, p xi.