

Short Communication

The rise and fall of network techniques in project management

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Network techniques are powerful tools to aid the planning and, to a lesser degree, control of projects, but their significance has often been overstressed. It is important that users or students of these techniques understand that merely using a network does not constitute project management. One way of gaining this understanding is by examining the history of networks in the first two decades of their use in project management.

It will be seen that network techniques have gone through the same cycle as many other management techniques — at first they are widely acclaimed as the answer to management's problems, then disillusionment sets in and finally they come of age and are accepted as standard management tools.

In discussing the history of network techniques, most textbooks concentrate on their origins and their subsequent worldwide acclaim. The disillusionment that followed is seldom discussed.

The rise

- 1959 *Business Week* describes the famous 'Du Pont Case' — the first application of CPM¹ B-451 Messrs Fazar, Malcolm, Roseboom and Clark publish the first article describing PERT¹, B-450
- 1960 An editorial in *Time* magazine describes the first launching of Polaris and mentions the role of PERT in keeping the project on schedule. This occasion marks the culmination of the first application of PERT²
- 1961 An advertisement appears in *Fortune* magazine, hailing CPM as 'One of the greatest advances in project scheduling since the pharaohs . . .'³ p.45 During the same year, Kelley publishes his famous paper, 'Critical Path Planning and Scheduling — Mathematical Basis'⁴
- 1962 Bigelow manages to compile a 'Bibliography on Project Planning and Control by Network Analysis: 1959–1961,' containing sixty-three selected references.⁵

Carruthers⁶, p.360 calls the first years in the development of network techniques the 'Honeymoon Period'. Ryan⁷, p.24 states:

'Government, civilian contractors, consultants, and engineering and business schools rushed to master this

complex tool, which was hailed as a panacea for cost and time overruns. It was proclaimed as *the* planning and control technique par excellence. The Department of Defence made it a requirement for all large research and development projects. Innumerable articles and books were written about PERT, explaining it and telling how to use it.'

Krakowski recalls that PERT was spreading like a chain letter and that its trademark, 'a few circles connected by confidently poised arrows', was a common feature of third-class mail. The name 'PERT' became so fashionable that it turned into a common noun, like 'aspirin'⁸, p.37 Maynes⁹, p.23 states that virtually every firm in the aerospace field was engaged in a frenzied attempt to either invent or implement a PERT system.

The fall

The oversell of PERT and CPM and their numerous variants had created a great faith in the potential of these techniques. As a result, users did not evaluate the results they were obtaining and the popularity of networks kept growing until it reached a peak in the U.S.A. in 1965. Some observers, however, had noticed years before that all was not well.

- 1962 Avots warns against overenthusiasm, insufficient experience in application and the inherent weaknesses of network techniques¹⁰, p.27
- 1963 Boverie notes that PERT is not being applied as successfully as its potential warrants and that as many applications have failed as have succeeded¹¹, p.3
- 1964 Baker¹², p.65 warns that PERT is not a panacea and continues:
'Unfortunately, the introduction of the PERT-CPM system has created a paradise for empire builders and "overnight experts". In many cases individuals who have attended a two- or three-day seminar on PERT-CPM have established themselves as authorities on management systems and have sold a "bill of goods" to companies that have been forced by contractual obligation to implement this new technique.'
In the same year Martino, one of the so-called fathers of the arrow-diagramming concept, notes that it has become fashionable to employ network specialists¹³, p.101
- 1965 Schoderbek reports that special PERT departments exist in many companies and that these departments are separate from the project manager. He also finds that some companies who are using PERT have retained their traditional planning and control systems and are operating a dual system¹⁴, pp.201,206
Ryan discovers that PERT charts are prepared and updated because of contractual requirements, but that managers are using Gantt charts to manage projects⁷, p.25

Paulson states that some contractors were forced to subcontract their project scheduling because the contract required weekly or monthly computer reports¹⁵, p.276.

- 1967 Due to the profusion of literature on networks, Battersby states that the terminology has become confusing and that as a result, 'PERT has been adopted by the United States Government (and by many private companies) as the standard description of any method of industrial or military planning which begins with the drawing of a network'¹⁶, p.3
- 1970 Vazsonyi calls the popularity of PERT a pseudo-event created by image makers¹
- 1971 *Engineering News Report* notes that it is ironical that many network diagrams quietly end in the wastepaper basket⁷, p.25
- 1972 Koontz and O'Donnell state that in recent years one hears little or nothing about PERT in military and aerospace circles. Network diagrams are being produced, but they are not used for the actual control of operations.⁷, p.25
As from 1972, the United States Department of Defence no longer requires that PERT be used for its contracts.⁷, p.25
- 1974 Concerning the use of networks in Project Management, Bobrowski states: 'Everybody knows what it does, but nobody knows how to make it work'¹⁷, p.30
- 1976 Of 102 articles on network analysis listed in the *Business Periodicals Indexes* for 1971-76, only one describes an actual application¹⁸. The rest discuss refinements of technique⁷, p.25
- 1977 Ryan writes about 'PERT's strange disappearance'⁷, p.24.

Conclusion

The early years of network application in projects were characterized by an overemphasis on these techniques. This is illustrated by the fact that many textbooks, especially the older ones, discuss network techniques only, while the process of managing a project is neglected. This overemphasis compounded management's disillusion with networks.

But project management has survived and networks are still being used. The only difference is that networks are now seen in their correct context — their use forms only a part of managing a project.

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