A Quarter Century of Project Management Evolution

A Review of Managing High-Technology Programs & Projects (First and Third Editions by Russell D. Archibald)

Introduction

The original edition of Russell Archibald's book was published in 1976, well before project management organizations around the world started investing time in developing bodies of knowledge. At the time, there can be no question that this first edition was groundbreaking material culled from years of practical experience and exposure to many major projects. Over the intervening years many authors have pontificated at length, not just describing their experiences but introducing "new" ideas. Notwithstanding, it has been suggested that little really new has been developed and much of the verbiage amounts to a rehashing of already well-known concepts.

Now Russ has published his Third Edition (2003) so we thought that here is an opportunity to compare his latest book with the original first edition to see what is new or changed. This should give us an insight into how project management has evolved over the last quarter century, and also provide us with an opportunity to provide a perspective on Russ's latest thinking.

For convenience we refer to the 1976 version of *Managing High-Technology Programs & Projects* simply as " '76" and the latest version as " '03".

First Impressions

In comparing the two books side-by-side, the first thing we notice is that even though they both have the same foot print, '03 is twice the thickness of '76. However, due to increased paper weight, offset slightly by tighter page usage, the actual increase in content is closer to 50%. The second thing we notice is that '03 represents a substantial rewrite of the original '76 with several new chapters added as well as material added and deleted from the others. See Comparison of chapter headings below.

Another indicator is the relative size of the bibliographies. No doubt today there is a much greater volume of resource material on which to draw and this is reflected in the sizes of the two bibliographies. The '76 mustered around 70 entries compared to '03 with 120 entries – a substantial increase. Interestingly, this has had an impact on the writing of the book, on which we will touch later. As before the latest book is packed with good advice directed, as the title indicates, towards High-tech projects. However, much is of value to other types of project as well.

For us, one of the most attractive features is almost incidental, and that is the periodic sidebar entries titled "CEO Demands". These boxes list specific items: "What CEOs Must Demand" to accomplish the results suggested in the associated text. If adopted, these demands would establish a clear and positive environment for the conduct of successful projects.

Comparison of chapter headings

Third Edition, 2003	**First Edition, 1976**
1. Executive Overview	1. Program & PM in Industry & Government
2. Programs & Projects	2. Programs & Projects
3. Improving PM Capabilities	
4. Integrative Roles in PM	3. The Program/Project Manager
5. Integrative and Predictive Project Planning & Control	
6. Project Team & Key Human Aspects	
7. Organizing the PM Function & Office	5. Organizing the Program/PM Function
8. Managing Project Portfolios, Programs & Multiple Projects	4. Multi-project Management
9. Organizing the Individual Project Office & Project Team	6. Organizing the Project Office & Project Team
10. Planning & Initiating Projects	7. Planning the Project
11. Project Team Planning & Project Start-Up	
12. Authorizing & controlling the Work, Schedule, & Costs	8. Controlling the Work, Schedule & Costs
13. Project Interface Management	
14. Evaluating, Directing, & Closing Out the Project	9. Evaluating & Directing the Project 10. Project Close-Out or Extension

Shifts in focus in 25 years

Major shifts in focus between the two editions of the book over the last quarter century include:
From the *two* Key Concepts of '76

- The project manager's role as the "single point of integrative responsibility" and
- "Integrative Planning and control"[1]

To *three* basic project management concepts of '03

- "Points of integrative responsibility" as "several levels"
- "Integrative and *predictive* project planning and control" and
- Managing "the project team to integrate the efforts of all contributors"[2]

This suggests that the project manager is no longer the great single-minded and single-handed orchestrator of resources (and possible communication bottle neck) but rather suggests that integration responsibility is divided amongst leaders on several levels (with the inevitable difficulties of the matrix environment.) Such is the reality of today's projects!

Indeed, "project manager as the project interface manager" is the buzz phrase of chapter 13, '03.[3] The chapter describes the way that "contributing functional managers, project leaders, specialists (including outside contractors, consultants, vendors, and other); and the senior managers to whom these people report"[4] are coordinated. Russ goes on to define various meanings for the word "interface" with the focus of his book more on "the interaction between phases of a project" identified "through input-output analysis".[5] This leads to new material describing the importance of designing and documenting the project life-cycle processes that should be followed during the life of the project so that it can be duplicated and continually improved on future projects.[6] This in turn leads to a discussion of different types of project and appropriate "gates" between their major phases.[7] These are welcome developments.

Another shift is from the term "program" as "A long-term undertaking usually made up of more than one project [or] used synonymously with 'project' "[8], to programs and projects as strategic investments "managed on a portfolio basis".[9] This introduces today's fascination with portfolio management and concomitant advice on multi-project management under the direction of an enterprise-wide project management office, discussed extensively in chapters 7 and 8.[10]

A new chapter 5 provides emphasis on systems, tools and methods for integrative "predictive" project planning and control. As Russ says

> "Predictive means that the system forecasts what will happen in the future based on the current plans and estimates, with actual physical progress and reported expenditures constantly updating the schedule and cost forecasts and comparing these with authorized baseline budgets and schedules."[11]

Personally, we have never encountered any software system that successfully achieves this goal without human oversight and intervention. Further, the idea of forecasting to completion has been around since early project management. Still, special emphasis on the future and what can be managed as distinct from the classic status reports of perennial past performance, is most welcome.

Certainly, computer-supported project management information systems and powerful desktop software are new technological developments since the first edition. But choosing the right software in a rapidly changing market supply, when an organization requires stability in its information resource, is a real challenge.

Another development since 1976 is the importance of team planning and project startup discussed in chapter 11. Again, as Russ says

> "In recent years, the importance of the multidisciplinary project team has been recognized more widely and the power of project team planning has been discovered by many practitioners. This is becoming evident in the increased emphasis on systematic project startup using team planning workshops at the beginning of each phase of the project life cycle."[12]

Whether or not any of this is really new since 1976, or just a shift in emphasis, is perhaps debatable. Still, we do think that these changes are representative of the direction of project management as a whole.

Comments on other chapters

Under the heading "Improving Project Management Capabilities", Chapter 3[13] is new and covers the benefits and costs of systematic project management, formalized bodies of knowledge, maturity models, and recommended approaches to improvement. The discussion focuses on portfolio management but the advice offered requires subjective assessments. Given the current state of flux of these topics, it is difficult to make reliable judgments, especially by those most in need of improvement. Still, any operation suffering from any one of a long list of "Typical causes of poor project performance"[14] is clearly in need of expert help.

Chapter 3, '76, described the role of the project manager in various capacities.[15] This is replaced by Chapter 4, '03, which broadens the discussion to a variety of associated roles and their attributes in the project environment.[16] The bulleted lists of respective responsibilities provide clearer definition and valuable guidance.

Chapter 6, '03, describes project teamwork and some key human aspects of project management including the idea of commitment. Specific to project work, "Commitment is knowing where you want to go and being persistent in your efforts to get there."[17] We couldn't agree more. However, obtaining that commitment from someone else is a different slant and requires observable benefits and possibly negotiation. Russ suggests that you need to go beyond commitment with a willingness to be flexible and adopt innovative behaviors, these four in particular[18]

- Searching for improvement
- Challenging expectations
- Creating an open environment
- Encouraging risk taking

We are not sure of the appropriateness of these in all phases and certainly "searching for improvements" involves spending time and money to do so.

Russ suggests that the term "project management office" should be reserved for enterprise-wide project management activities, while the term "project office" should be used only to refer to a specific, individual project (or program) office.[19] This would make a lot of sense if the project management community at large could buy into this distinction. The various roles involved in this scenario are described at some length in chapter 9, '03, [20] which follows closely the contents of chapter 7, '76.[21]

Chapter 10, '03, is a major enhancement of chapter 7, '76. New to chapter 10 are concepts such as

- Project planning in the context of the project life cycle[22]
- Project objectives, strategies and scope[23]
- Formal project initiation using a project charter[24], and
- The "successive principle" for planning under uncertainty [25]

Russ observes that the "successive principle is an integrated decision support methodology or process that can be used to address a variety of business problems or situations, and is particularly well suited to conceptualizing, planning, justifying, and executing projects."[26] And "How it works. The successive principle incorporates the concepts of holistic, whole-brain, systems thinking and the team approach with the mathematics of uncertainty and probability."[27]

Driver-type project managers will love this kind of stuff of course, but the general description of the method that follows seems to track typical project risk management steps. The source's author, Steen Lichtenberg[28] subsequently reported great benefits from the approach.[29] Well, he would wouldn't he? The chapter concludes with a good flow chart of project planning steps based on Bob Youker's work.[30]

Chapters 12 and 14, '03, are minor updates of chapters 8, 9 and 10, '76, except that earned value receives a more in-depth treatment and the section on Project Management Information Systems has been dropped in favor of chapter 5, '03, discussed earlier.

Downside

In some parts of the book there are attempts to satisfy the current demand for gender equality, especially when referring to the project manager as he, she, him or her. Sudden introduction of the female form tends to disrupt the reader's flow of understanding. Personally, we have little time for special interest groups insistent upon disrupting the English language for short-term political gains. Still, there are ways around this unfortunate political fact of life. For example "If all required people are placed directly under the project manager *her* role is quite similar to . . ."[31] could readily be changed to "If all required people are placed directly under the project manager *then this* role is quite similar to . . ."

In a discussion of filling the role of project manager, Russ suggests "The effectiveness of a project manager is directly related to the continuity of responsibility through the life cycle of the project. . . [But when] the current project manager knows that at a certain point she will hand over the project to someone else, then the project manager will very likely cover up problems and defer difficult issues and hand them off to the new project manager."[32] This seems to be an unfortunate aspersion cast on our female counterparts (given our gender comments above). That aside, we contend that the range of management styles required across the full project life cycle, and hence personality types, is so broad as to be almost impossible to find a single person suited to filling the entire role.

An interesting section devoted to "Multiproduct Operations Planning and Control"[33] describes the nature of the problem for top management is "to have confidence that planning is directed toward optimum corporate and project performance."[34] However, in this section projects are treated rather like the production of custom widgets being processed in a manufacturing facility. This might be fine for the coordination of marketing and engineering in, say, a custom sheet metal job shop or even a custom-order production facility, but seems unsuited to large-scale unique or relatively unique high-technology projects.

The Appendices, '76, included several valuable checklists. We were sorry to see these dropped in favor of a single Appendix, '03, devoted to "An important concept for effective project management . . . using advanced planning and analysis methods coupled with an advanced project management computer software application package"[35] widely used in Russia. While interesting, it seemed to us out-of-place to be promoting a single software package in a general work of this kind.

Summary

As before, author Russell Archibald has produced a valuable work of reference, elaborating on and clarifying many aspects of his earlier writings. As the cover jacket says "A complete, practical, and proven approach to managing large-scale projects with emphasis on those involving advanced technology."

But back to our original question: Does our comparison reveal anything really new in the field of project management since the first edition in 1976? Well, yes and no. The field has undoubtedly been expanded into the higher echelons of management with portfolio and multi-project management. Some new techniques have been developed; particularly those supported by the ubiquitous personal computer and

dedicated project management software. But whether any basic fundamentals have since emerged is debatable.

Indeed, in 1976 Russ observed that[36]

> "No single organizational pattern has yet emerged to answer the following project management questions:
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> - How will the project manager responsibilities be assigned?
> - To whom should the project manager report? At what level, and within which part of the organization?
> - Who should be assigned as full-time project office members reporting only to the project manager, and who should contribute as project participants while remaining in their functional departments?
> - How are specialist staff skills in project planning and control, contract administration, finance, legal, and so on, best provided to project managers?
> - Who is responsible for development and operation of multi-project, integrated project planning and control systems?
> - Who should hold specific responsibility for multi-project management?"

These are pretty basic questions, and you would have thought that by now they would have been resolved in the form of "best practices". But no, we find that exactly the same text appears in the 2003 version.[37] So much for progress in the intervening period.

Indeed, an interesting if subtle transformation has taken place between the two writings. The first edition was clearly written in the prescriptive mode, that is, directing the reader on what to do. To the extent that the original work is incorporated into this latest version, this is still true. However, much of the new material in this latest version is abstracted from the work of the extensive list of authors shown in the bibliography. Not only does this then become descriptive, i.e. relating the work of others, but also one is left with the feeling that you need to obtain those original works to properly understand the text presented.

Nevertheless, this latest edition is a valuable addition to your personal library. But if you happen to still have a copy of the first edition, we strongly recommend you keep it for the valuable material it contained but is now no longer included.

References

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[1] Archibald, R. A., Managing High-Technology Programs and Projects ('76), Wiley, NY, 1976, p4.
[2] Archibald, R. A., Managing High-Technology Programs and Projects ('03), Wiley, NY, 2003, p19.
[3] '03 p331.
[4] '03 p330.
[5] '03 p332.
[6] '03 p41.
[7] '03 pp44-48.
[8] '76, p18.
[9] '03, p11.

[10] '03, pp145-198.
[11] '03, p107
[12] '03 p280.
[13] '03 pp54-81.
[14] '03 p68.
[15] '76 pp34-58.
[16] '03, pp82-106.
[17] '03, p141.
[18] '03, p143
[19] '03, p149.
[20] '03, pp201-225.
[21] '76, pp111-134.
[22] '03, p227.
[23] '03, p229.
[24] '03, p231.
[25] '03, p236.
[26] '03, p237.
[27] '03, p238.
[28] Lichtenberg, S., Experiences from a New Logic in Project Management, Dimensions in Project Management, Heidelberg, Springer-Verlag, 1990,pp137-154.
[29] Lichtenberg, S., Proactive Management of Uncertainty Using the Successive Principle – A practical way to manage opportunities and risk, Lyngby, Denmark, Polyteknisk Press, 2000, pp19-20.
[30] '03, p278, from Youker, R., A new Look at Work Breakdown Structures (WBS) (Project Breakdown Structure – PBS), Proceedings of the Project Management Institute Seminar/Symposium, Calgary, Alberta, Canada, October 1990, p712.
[31] '03, p160.
[32] '03, p95.
[33] '03, pp192-198.
[34] '03, p193.
[35] '03, Appendix, p361.
[36] '76, p79.
[37] '03, p145.