X

X.10

PROBLEMS EXPERIENCED IN PROGRAM MANAGEMENT

Management.

Perhaps there is no word in our language today that has been used more often as an excuse for inefficiency and empire building. We usually say our problems are due to bad management and our successes are due to good management.

The importance of competent program management to this country's space age enterprises is unquestionable. Mr. Webb, NASA Administrator, has pointed out many times that success in the staggering technical and scientific endeavors, of today, demands that management state-of-the-art advances with the burgeoning technology.

Management, in my judgement, is not readily definable. If the problems of management could be solved by a simple formula, that formula would have been discovered long ago -- probably by Socrates or some other brainy Greek. And it undoubtedly would be posted on every bulletin board in every corporation and agency in the country. Since such a formula has never been discovered, everyone is free to talk, speculate, theorize, and philosophize about management; arrive at conclusions that are not scientifically valid. However, there are observations which can be made. My observations form the base of this speech.

I do not intend to criticize the work of NASA, DOD, and private industry, but rather to recognize our problems in program management, the learning period we are now in, and the work remaining to be done. Obviously, I cannot comprehensibly cover the subject tonight. Rather, I will concentrate on the broader and more philosophical areas of the subject with a few selected problem areas as examples.

As any segment of modern society, program management is shaped by its environment. From this environment, our modern day program management systems have evolved. And in many cases, I am afraid, evolved short of the ultimate.

Five factors which exert great evolutionary pressure are:

1. Historic posture of government versus business versus the educational system.
2. Lack of organized research on program management.
3. Communication deficiencies.
4. Orientation of present program management systems - its development and support of weapons.
5. Present management systems immaturity due to lack of experience.

Let us take a look at the first factor. If we are to bring about a fundamental improvement in the art of management, the full participation of the government, industry and academic community is required. This will not be easy, because of the different postures

of these totally dissimilar groups. We in government are primarily interested in achieving major defense or scientific objectives and in gaining taxpayer support by clearly demonstrating increased national security; a better way of life; or enhanced national prestige. Industry, on the other hand, must assure its existence and further growth by successfully competing for and gaining stockholder support by showing a profitable performance. The academic community bases its success on high standards of scholastic achievement. These are measured by their scholastic ratings and such factors as the notability of their staff; the size of the library; the quality of their fundamental research; and when possible, the national standing of their football team.

Some of these traditions are diametrically opposed acting as points of conflict in any attempt to bring about a union. Recently, we have taken steps to meld government and industry into a team to obtain mutually desirable objectives. Some progress has also been made between government and the academic community and industry and the academic community. However, progress has been in isolated areas and not in concert.

Program management research and development, the second influencing factor, has been spotty. And what has been done has been based either on a specific need or on the goal of scholastic recognition. As Mr. Webb has often expressed, a concerted effort is required to

bring together these groups into a cohesive program where each can contribute and benefit.

We have heard many reasons why this has not been done. Regardless, responsible leaders in these three areas should devote their efforts toward accomplishment of a cohesive program. Achievement of this objective probably will not be the result of one action or of one man's endeavors. However, if all levels of management will assume responsibility for promoting this cause, significant progress will be made, and the necessary organizations and support will be forthcoming.

Top management, of course, must play a major role. They, however, must depend on all levels to present ideas and to give advice on suitable actions. However, all this takes imagination! Many actions can be taken by the individual within his delegated authority that will contribute to the desired objective.

Standing in the way of our reaching a more cohesive program is a large communication problem. The dissimilar orientation of the government, industry and academic groups makes it very difficult to fully understand the motivations and concepts of each. Representatives of one group are not freely and openly accepted by another. Employment competition and devices to hold employees, such as retirement benefits, promotions, etc., are not structured to promote interchange of personnel. Personnel motivation in these three groups is inherently different. A comprehensive study is required to see

how these obstacles can be reduced or overcome.

Another factor is preoccupation. The key personnel in each of these areas are usually too busy to spend time in one of the other areas. This, too, must be overcome.

The next factor influencing program management is that there are two basic types of systems requiring program management: the weapons system for improving national security, and the scientific and space exploration system for improving the national standard of living and presitge. As we know, while these two systems have basic similarities, program management for one cannot be applied in toto to the other. Today, most of the research in program management has been performed from the purview of weapons systems. Additional research must be performed from the scientific system viewpoint.

The final factor is the relative immaturity of program management. In the past, the large job of developing a total program management has required a piecemeal approach. Only the most recent programs such as the C-5 air transport program can be considered to have a fairly mature approach. There remains the job of assessing the system in actual practice so that modifications and improvements can be made. As experience is gained, better ways are found to do the job. An example of this -- that you and I know well -- is the recent improvements in incentive contracting techniques, which are providing motivation for industry to optimize the management

tools available. Industry no longer takes the position. "It's your money. If you want it, we will do it". You now have a stake in the efficiency of the program and are carefully examining the government requirements imposed. This is certainly going to benefit both of us and bring about investigations that will rapidly mature program management.

Now, looking at some examples of specific program management deficiences, we find some of the basic problems are lack of experience and discipline plus the ever-present management power struggle.

A mature management system requires a large number of competent people trained in the use of the tools developed. Right now, this pool of knowledgeable people is far from adequate in number or experience. The experience that is available is most frequently in a particular technical or program management functional discipline. Well-rounded personnel with a thorough understanding of both the technical and management disciplines are a rarity. This creates a fragmentation of viewpoints which makes for a serious communications problem.

The creative nature of advanced development projects requires high-level personnel highly motivated, with personal initiative. These qualities are not compatible with the discipline necessary to make a management system work. This incongruity is a major

problem in making project management work in the real world situation.

Ever-present is the misunderstanding and power struggle among line, functional, and program management chains of command. In the nominal system the program manager must accomplish his job through line and function organizations. His own staff over which he has line authority usually consists of a few people who represent program management technical and management disciplines. He relies on the assistance of central staff for functional support in procurement, finance, data management, etc., and the line organization for engineering, manufacturing, testing, etc. The balancing of power between these factions requires an astute top executive. His job is made more difficult by lack of understanding of the proper role for each participant.

Present program management systems lack the flexibility to satisfy the requirements of most programs. Program requirements are present at all levels from the very top executive down through the subcontractor's internal organization. The character of organization varies from government agencies to industry to the academic community. The participants cannot change their mode of operation each time they obtain a new program or contract. Also, programs come in all sizes and degrees of complexity; consequently, the program management requirements are different.

A similar problem involves the fact that most program management techniques and documentation today are for the big DOD or scientific and space exploration type programs. This includes computer applications which today are one of the real stumbling blocks but in the future may hold the answer to choosing the right tools for the job at hand. At present each computer program for program management needs is laboriously invented and reinvented for each application. To adapt a current computer program to a new application requires much costly effort and time. Hopefully, more sophisticated computer programs can be developed that literally will change themselves to fit the requirements imposed.

Technological isolation within the organizations is also contributing to the problem of inflexibility. Each discipline goes merrily down the road toward its own objective, oblivious of its counterparts in other areas. They occasionally have a near-miss or a collision. This unfortunately causes friction instead of being recognized as a mutual discovery or the need for closer coordination. There is also competition for control of areas; this is a little like the opening of the Oklahoma territory in 1889. Everyone is rushing ahead to stake out his claim. This need not be, with leadership these diverse fractions can be brought into a converging series of advances.

The roots of this problem starts way back in school system training. Most school situations, except athletics and fraternal organizations, teach students -- and this includes all of us -- on the basis of individual performance. The student has all too little knowledge and training in the performance of the group, and I would say none in the performance of groups. Our compatriots in the academic world must take note of this need and do something about it.

A common problem in attempting to establish improved management systems is the inability of older and often higher-level managers to stay abreast of new developments. It is the rare top executive who voluntarily spends time updating his management knowledge. It is a little like the old farmer and the county agricultural extension agent when the latter tried to advise the farmer in more scientific farming methods. The farmer growled, "What can you show me? I've had many years of experience. Why, son, I've worn out three farms already."

This all may sound as if the management of major programs in the United States is in a sorry state of affairs. But you and I know this is not true. All of our major programs are staffed with very capable people, and people are still the most important assets to good management. Tools only enable management to do a better job by giving them visibility and systems for flagging and rating

problems in priority sequence so that their time can be efficiently used. A man of superior skill, capacity, endurance, intuition, judgement, and luck can prevail in a difficult management job and be quite effective; however, better tools would enhance his success and reduce cost.

In order to develop these better tools, a blending of skills is needed. Certainly, specialists in each of the major functional disciplines are needed as are experts in management, personnel relations, and computer applications. Perhaps required most of all are astute program managers who will take time out to spend a couple of years working in developing these tools. Some form of institute for advanced program management is required, where the government, industry, and academic community can work together to evolve the improvement that will go a long way toward better management. Care must be taken to balance these three participants so that the outcome is meaningful and useful. To be so, it must have inputs from all areas - theoretical and practical.

In spite of all the obstacles before program management, a few of which were discussed in this paper, it is a growing, developing tool; however, before program management can reach its optimum, it must be defined. In recent discussions on how to improve program management, a senior manager asked, "How can we clearly state what program management is? We certainly can't

intelligently organize and communicate if we don't have clearly established in our own minds and on paper what program management is." Col. Ben Bellis, a student of program management Air Force style, has described program management as "base line management" or " change management." You define the objectives and clearly set them down. Then you track the performance and as long as you are "on plan," no action is necessary. You manage only the "changes" from "baseline." This certainly is a good management technique but not a program management definition. Other ingredients are necessary to define program management. These must be clearly identified, and we should try to obtain a clear and mutual understanding of the character and extent of the subject. When this has been done, program management may have taken a big step in reaching the optimum.