



The Society of Cost Estimating and Analysis

# The Dayton Coster Greater Dayton Chapter

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## 2006 - 2007 DAYTON CHAPTER

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## *President's Message: Linda Turner*

Hello all! I'm glad to report that the SCEA board has survived this unusually cold winter, with no ill effects. We have had several successful events during the last few months, and I applaud everyone's helpfulness and willingness to make your Dayton chapter of SCEA such a success. Read on for a quick re-cap!

Jeremy Mitchell and Janet Marshall have spear-headed two top-notch charity events for the chapter in the last few months – look for more details later in this newsletter on the SCEA Adopt-a-Family Christmas gifts, as well as the annual Bowl for Kids' Sake event. Bowl for Kids' Sake supports the greater Dayton Area Big Brothers/Big Sisters program. SCEA had a great turnout for the bowling, and all who attended had a fun time. Even those of us who didn't bowl (guilty as charged!) had fun socializing with the gang.

In January, the chapter hosted a luncheon at the Wright Patt Club and Banquet Center, which featured Mr. Rich Hartley as the luncheon speaker. Mr. Hartley did a fantastic job of bringing the luncheon attendees up to date on current Air Force initiatives to improve the availability of cost expertise within the FM career field. SAF/FMC's focus is on increasing the number of cost estimators in the Air Force, as well as improving the training and experiential assignments of estimators, to develop the quantitative skills the Acquisition corps so badly needs. By increasing the numbers of estimators, the community will have an opportunity to establish some developmental cost estimating positions so that a larger number of FM professionals have an opportunity to grow cost skills by working a variety of estimates on multiple programs.

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## *Upcoming Chapter Events*

SCEA Certification Exam ..... 14 Apr  
 Joint ASMC Luncheon ..... 19 Apr  
 SCEA Luncheon ..... May

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## *President's Message (continued)*

In addition to the activities noted above, the Dayton SCEA chapter held a Krispy Kreme doughnut sale. With the leadership of Scott Boyd, our Ways & Means chair, we brought in over \$100 for future chapter activities. Thanks to everyone who supported the sale – and a BIG thank you goes out to Booz-Allen Hamilton for donating funds to cover a portion of the costs. The proceeds from the sale will be used to provide networking opportunities for chapter members in the future. We hope you all can join us, when the events are scheduled.

I would like to say a quick word on the death of Mr. Mark Davidson the first week of March 2007. As an ASC/FM retiree and the Dayton Quantech business manager, Mark was a staunch supporter of the Dayton SCEA chapter. Mark has faithfully attended almost all of the SCEA events for the last several years, and he will truly be missed. Our thoughts and prayers are with his family in this time of sorrow.

In closing, I would like to encourage all SCEA members to attend our upcoming events for the Chapter. Next week, the Dayton SCEA chapter will have the pleasure of presenting an award to a graduate of the AFIT Cost Masters' degree program, for the outstanding Cost thesis within the program. We are planning a luncheon in April, as well as a networking lunch or Membership Mixer in May. Please make plans now to join me in New Orleans for the National SCEA conference in June – it should be an information-packed week (as well as an opportunity to become CCE/A certified) from 12-15 June. I, personally, am looking forward to some fine cuisine in the Big Easy!

### *Spotlight: Mr. Scott Boyd*



I recently re-located from the Washington DC-area and re-joined federal service after ten years as a support contractor. I volunteered for the vacant SCEA fund-raising board seat and have held one fund-raising event so far – selling Krispy Kreme donuts.

I started out at Andrews AFB as a Palace Acquire Cost Analyst in AF Systems Command, received a Masters degree in Cost Analysis from AFIT and worked at the Air Force Cost Analysis Agency. I left Federal service to work as a Cost Analyst at the National Reconnaissance Office for a support contractor. I also supported several Naval Air Systems Command program offices, the Marine Corps Systems Command, several Army program offices, and the Coast Guard, all as a Cost Analyst. In addition, I taught the basic ACE-IT course in DC for two years.

My wife, Michele, and I moved to the Dayton area to raise our two children closer to their grandparents, uncles, aunts, and cousins. I look forward to additional fund-raising events and welcome any ideas you have to keep our local SCEA chapter funded.

# COMMITTEE UPDATES

## Bowl for Kids' Sake By Jeremy Mitchell

The Big Brothers Big Sisters (BBBS) of the Greater Miami Valley held their Annual Bowl for Kids' Sake fundraiser on 12 March 2007. As always, the Greater Dayton Society of Cost Estimating and Analysis (SCEA) participated in the event. Over thirty bowlers with ties to SCEA came out to Poelking Lanes South near the Dayton Mall for an afternoon of fun bowling action.

This year SCEA had seven teams of participants. Thanks to all of the following bowlers who came out to support this great cause:

Janet Marshall	Deborah Matulka
David Wirth	Greg Nelson
Dorrey Sanders	Kerrie Schieman
Jeremy Mitchell	Sharon Jenkins
Sarah Mitchell	Craig Shanske
Damian Gainer	Marlene Malson
Dustin McGlothen	Earl Kessinger
Kortney Taylor	Tammy Bertke
Kim Sanner	Mr. Bertke
Cindy O'Neill	Allen Carlson
Rich Prim	Teresa Yantis
Bill Reiley	Charlie Kapaku
Shirley Ark	Ron Vorhis
Jan Shaw	John Allen
Jim Shaw	Chris Tuttle



Earl Kessinger, Kerrie Schieman, Craig Shanske, and Nancy Kessinger

In addition to all of the bowling fun, many of the SCEA participants won door prizes, enjoyed pizza and various beverages, and won coupons for free games of bowling.

Thanks to all who participated in this year's event. We hope to have more support, and even more fun, supporting the 2008 Annual Bowl for Kid's Sake.



Dustin McGlothen, Damian Gainer, and Darius Gainer



Kortney Taylor with husband, Aaron

**A True Gift  
By  
Janet Marshall**

Christmas has a different meaning for everyone; however, one universal thought remains, Christmas is the time of year for giving and not so much receiving. More and more, this universal truth seems to get pushed aside by fancy gifts, decorations, and Black Friday (Sales, Sales, and Sales). In order to make sure that the gift of giving continues on in our hearts, SCEA puts together a fundraiser every year that bestows a needy family with a marvelous and unforgettable Holiday experience. In December 2006, SCEA was able to provide this experience to a local family here in the Dayton area. This awe inspiring event was able to take place due to the incredible donations that were made. Over 45 gifts were provided ranging from clothes and toys to everyday household items. It was truly a humbling event.

Everyone is presented with hardships at one point or another in there lifetime. How amazing it was to see the overwhelming offerings the SCEA community made. This family went from little hope to ecstatic joy because you cared about them. It really makes you stop and take a look at yourself and your family; and give thanks for what you have.

As for our family this year, they are so very thankful to all of the people that donated and SCEA for taking the time out to do what they did. SCEA would also like to thank all of the participants for their contributions and hope that everyone had a great Holiday.

**Ways and Means Update  
By  
Scott Boyd**

SCEA held a Krispy Kreme donut sale on 26 January in the lobby of building 553. We had 9 pre-ordered sales and sold an additional 25 dozen donuts. Many thanks to all who participated and donated to the event! Future donut sales and other events are being planned now. Please contact Scott Boyd with your fundraising ideas.

**SCEA Dayton Cost Advertising Opportunities  
By  
Amy Smith**

On behalf of the SCEA Greater Dayton Chapter , I would like to make you aware of a great advertising opportunity available to you. Advertising space is available in the SCEA Dayton Coster, our chapter newsletter. A few companies have already taken advantage of this opportunity and their ads are included in this issue. Ad sizes and prices are as follows:

½ page ad: \$50  
¼ page ad: \$25

A digital file is preferred in the form of a .jpg or .gif file. This is an excellent, yet inexpensive, opportunity to advertise your employment opportunities or special events. If interested, please contact Amy Smith at [Amy.Smith4@wpafb.af.mil](mailto:Amy.Smith4@wpafb.af.mil), or telephone (937) 656—9598, for further information.

## SCEA Greater Dayton Welcomes Mr. Richard K. Hartley, SAF/FMC

By  
**Amy Smith**

At the January 23, 2007 SCEA Greater Dayton Chapter luncheon, the chapter welcomed Mr. Richard K. Hartley, SES, Deputy Assistant Secretary for Cost and Economics, Office of the Assistant Secretary of the Air Force for Financial Management and Comptroller. Mr. Hartley presented a very insightful briefing entitled, "Air Force Cost Estimating: Current Issues and Initiatives." Mr. Hartley shared his perspective on the challenges facing the Air Force Cost Estimating community based on his experiences, which include Executive Director of the Air Force Cost Analysis Agency, Chairman of the Air Force Cost Analysis Improvement Group, Chairman of the Air Force Services Organization Board of Directors, and Director of the National Reconnaissance Office (NRO) Cost Group. His discussion ranged from challenges in the current environment, including cost realism and increasing demand, to key contributing factors to cost growth and credible cost estimating requirements, all while considering strategic priorities and best practices.



Mr. Hartley addressing the SCEA Greater Dayton Chapter  
on the current cost estimating environment

Elections for the SCEA Dayton Chapter Vice President/President elect, Secretary and Treasurer for the 2007-2008 will be held in May 2007. Nominations are scheduled to be held 26 March - 20 April. Self nominations are encouraged. Nominations need only include the name of the nominee and the position the person is nominated for. Official notification of the opening of nominations as well as directions on where to submit nominations will be provided via e-mail to the membership. The SCEA Nominations Chair is Charlie Kapaku, 53197 - contact Charlie or Linda Turner at 55655 if you have any questions.

## 2007 SCEA National Awards

The Society of Cost Estimating and Analysis (SCEA) National Awards Committee is soliciting nominations for the 2007 SCEA National Awards. There are four categories for the National Estimator/Analyst of the Year awards. The categories are: Management, Technical Achievements, Education, and Service to the Society. The Awards Committee also accepts nominations for the SCEA Lifetime Achievement Award. This award provides SCEA the opportunity to recognize individuals who contributed significantly to the field of cost estimating and analysis over many years. In the selection of award recipients, the SCEA Awards Committee will take into consideration the individual's contributions to promote the purpose of SCEA to improve cost estimating and analysis in government and industry and enhance the professional competence and achievements of its members by:

- Promoting and enhancing the profession of cost estimating and analysis
- Fostering the professional growth of its members
- Enhancing the understanding and appreciation of cost estimating, analysis and related disciplines throughout the general public
- Promoting a Common Body of Knowledge as a standard for individual excellence
- Advocating a uniform Code of Ethics for the profession
- Rewarding achievement through an appropriate program of recognition and certification
- Providing forums and media through which experiences with the principles and techniques of cost estimating and analysis may be reported, discussed and published in furtherance of public interest
- Fostering, promoting, and conducting research and educational programs
- Developing and maintaining standards of proficiency and performance
- Cooperating with other organizations and individuals, having common or related purposes, in furtherance of public interest
- Providing an opportunity for government, industry and academia to collectively discuss and comment on related proposed or suggested subjects of common interest

Establishing standards in the terminology, conduct and application of cost estimating and analysis SCEA Awards Committee will follow these guidelines:

1. All nominations must be submitted on the SCEA Award Nomination Form.
2. Any member of SCEA may submit a nomination.
3. The Awards Committee will categorize all nominations based on the Nomination Type block checked on the Nomination Form.
4. Only one of the following categories may be selected: Management, Technical Achievement, Education, Service to the Society, or Lifetime Achievement.
5. If the Awards Committee believes a nomination should be categorized differently, the Committee may change the category, with the concurrence of the nominator.
6. The Awards Committee may refuse to review data that cannot be verified easily.
7. Nomination forms must not contain any proprietary or classified information.
8. All Nomination Forms will be kept and maintained by the Awards Committee.

The awards will be presented at the 14<sup>th</sup> Annual SCEA Conference at the Marriott New Orleans Convention Center, New Orleans, Louisiana, June 12 - 15, 2007. For more information about the conference, please visit <http://www.sceaonline.net>.

Nominations for the Dayton area should be submitted to the Dayton Chapter Awards focal point, Mr. Bob Novak, at [Robert.Novak@wpafb.af.mil](mailto:Robert.Novak@wpafb.af.mil), by COB April 10, 2007. The Board will then review the nominations and select nominees to go forward to the National Awards Committee.

# LESSONS LEARNED/BEST PRACTICES

## A Theory-Based Critique on the Improbability of Developing “Realistic” Schedules

By

**Ross Jackson, Director of Education**

### *Introduction:*

“The goal [of reality-based acquisition] is to establish, at the outset of the program, mutual, realistic expectations for content delivered, schedule of delivery, and cost” (Sambur, 2002, p.3). With this statement, the link between “realistic” schedules and defense acquisition is provisionally established. This link is further codified in Air Force Instruction (AFI) 63-101 (2005), *Operations of Capabilities Based Acquisition System*. As stated in AFI 63-101, “this process [evolutionary acquisition] should result in higher fidelity requirements that are time-phased to a more realistic schedule with more accurate cost estimates” (p.10). Given the important links between realistic program schedules, program costs, and the ability to proactively manage defense acquisition programs, it is understandable that some set of methods be developed to address the nexus of these three concerns. In regard to the development of schedules, there are many approaches and/or tools one may apply in an attempt to obtain greater program realism: “evolutionary acquisition” (AFI 63-101, p.6) and “schedule risk assessments” (Crowell, 2006, p.5) are two illustrative approaches. However, while the possibility exists that one may develop a more realistic schedule by using these tools and acquisition approaches, it does not follow that one will necessarily obtain a realistic schedule as a result. Developing a realistic schedule may be more difficult than simply trying to accurately assess task durations, or deciding on an acquisition approach. Further, developing a realistic schedule may be more difficult than adjusting for the programmatic risks.

The topic of acquisition schedules may be constructively narrowed by focusing attention on the critical path of a schedule. Gutierrez and Kouvelis (1991) explain that, “it is almost axiomatically stated that planned project schedules, obtained using critical path analysis, will be optimistic (Feiler 1972, Schonberger 1981)” (p.990). Stated somewhat differently, critical-path analysis may produce schedules which are unrealistic. Yet, while both research and experience provide some insight into the systemic and persistent difficulty associated with the development of realistic schedules, program managers often act as if neither the research nor the experience of Department of Defense acquisition applies to their particular program. This phenomenon is analyzed in the paradoxes section of this article.

Despite some program managers’ assessments to the contrary, the possibility exists that developing realistic schedules is, at best, improbable due to the interaction of three theoretical constructs: 1) Parkinson’s Law, 2) task risk, and 3) schedule shocks. While many other factors potentially influence the improbability of obtaining realistic schedules, and some factors may exist which may increase the probability of obtaining realistic schedules, these three aspects are perhaps minimally sufficient for one to call into question the viability of consistently obtaining the desired outcome of realistic program schedules. This issue is further complicated when one addresses the related matter of schedule realism over the entire duration of the program. This issue is addressed in the time-index portion of the article.

Three preliminary words of caution are worth making explicit. First, the focus of this study is on the improbability of obtaining realistic schedules. One should be careful not to assume that improbability in any way denotes unimportance. On the contrary, obtaining realistic schedules is considered to be extremely important, however improbable. Second, this analysis deals with average tendencies, from a theoretical perspective, and not with any specific outcome. It is quite possible that a given individual or program exhibits attributes which are contrary to the generalizations presented in this paper. However, while exceptions are likely to exist, the overarching tendency is still relevant in understanding the general phenomenon. Third, the term realistic is almost certainly “over/under defined” (Korzybski, 1933/2000, p.lxiv), meaning that the term realistic has a definition which is too verbal, and lacks extensionality – or specific, concrete links to “real world” examples. A potential conflict between “intensional

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## A Theory-Based Critique on the Improbability of Developing “Realistic” Schedules (Continued)

[*sic*]” and extensional definitions is explained by Johnson (1946) in the following terms, “agreement as to how we should define our terms, intensionally [*sic*], by no means insures agreement as to what the terms are to stand for, so far as actual examples are concerned” (p.201). In other words, we might all agree as to what the definition of realistic is, in a verbal sense, but disagree as to what specifically constitutes an illustrative example of a realistic schedule. Consequently, the term realistic is perhaps too ambiguous for the purpose of this theory-based critique. For this study, realistic is simply defined as a forecast which is determined to be accurate *a posteriori*. It should be clear that one limitation of this definition, from a pragmatic perspective, is that the realistic-quality of the schedule can only be assessed after-the-fact – which somewhat paradoxically renders the assessment of schedule realism largely inconsequential. Despite the limitation associated with this key definition, it is perhaps informative to push forward with a deeper critique of this topic.

This article contains an overview of Parkinson’s Law, task risk, and schedule shocks. These introductory concepts are used to foster a shared understanding from which one can progress to a point of appreciating some of the potential paradoxes associated with pursuing a policy of schedule realism. The General Semantic principle of including a time-index (Bois, 1966/1975; Hayakawa, 1939/1964; Johnson, 1946; Korzybski, 1933/2000) is presented as one constructive method for effectively dealing with a specific subpart of the issue of schedule realism (i.e., time-contingency). A brief conclusion and recommendation section is used to bring this article to a close.

### *Parkinson’s Law:*

According to Downs (1967/1994), “C. Northcote Parkinson’s famous first law states that, ‘Work expands so as to fill the time available for its completion’” (p.16). In essence (according to this construction), humans have a tendency to adjust the pace at which they work to correspond with the amount of time allotted for a given task. While this statement may not be overly surprising to the self-reflective individual or the sociologist, it appears to be potentially undervalued from both a cost analyst and a program management perspective. The potential undervaluation of this phenomenon is strikingly odd due to the relevance of schedule analysis in successful cost estimating and program management. If humans have a tendency to adjust their work to the amount of time allotted for a given task, then once a schedule is determined, humans will calibrate their work effort to that duration, *ceteris paribus*. It is possible, perhaps likely, that many schedules do not account for this human response. This is potentially the case even for the subset of tasks on the critical path.

Gutierrez and Kouvelis (1991) indicate that, “critical path analysis ignores work force behavioral issues, and fails to model behavioral implications about critical and noncritical activity durations, that subsequently may cause project delays” (p.990). It is possible that ignoring the way in which individuals approach and execute work would tend toward systematic error. If Gutierrez and Kouvelis are correct in their assessment, then there are likely ramifications in regards to schedule realism. The schedule issues associated with Parkinson’s Law are further complicated by the potential impacts of task risk and schedule shocks. These two concepts are more fully developed in the following section.

### *Task Risk and Schedule Shocks:*

In conjunction with Parkinson’s Law, task risk and schedule shocks may complicate one’s ability to develop realistic schedules. The schedule risk around task durations (i.e., task risk) is likely lognormal in its distribution (Graves, 2001). What this means is that task durations could always be longer than that which is stated in a schedule, but there is a limit as to how much shorter any given task could be. If one sets “T” to represent the time duration of a given task, the minimum limit on this task would be T-T (or zero). This could occur due to further analysis revealing that a particular task was not necessary to the process. While a given task might be avoided (i.e., its task duration becomes zero), it is not possible, at least from a common perception of time, for tasks to take negative time. In contradistinction, the upper limit of a task duration is theoretically limitless (i.e., infinite); although pragmatically one would assume that political pressures would eventually limit a duration which is approaching infinity through cancellation of the program. Again, using “T” to represent the time duration of a given

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**A Theory-Based Critique on the Improbability of Developing “Realistic” Schedules (Continued)**

task, the maximum limit could be as high as 2T, 3T, 250T, etc. The lognormal distribution accurately models this phenomenon. This situation alone is sufficient to cause serious concern in regard to schedule realism. However, this issue is further complicated by the issue of schedule shocks.

In dealing with schedule shocks it is perhaps beneficial to start with a brief thought-excursion. On a piece of paper, make two columns: at the top of the left column make a “-” sign, and at the top of the right column make a “+” sign. Now under the negative column list things that could occur to shrink the schedule, and under the positive column list those things which could occur to extend the schedule (please note that the terms positive and negative are used to indicate what is happening to the schedule durations, and does not denote the desirability of these events occurring to the schedule). Was one of the lists easier to make? Is one of the lists longer than the other? It is likely the case that one could list a great many things (almost limitless) which could cause the schedule to extend. It is perhaps much more difficult to list things which could shorten the schedule. What this thought-excursion helps to illustrate is that schedule shocks are potentially not normally distributed (i.e., there are a great many more positive schedule shocks than there are negative schedule shocks). This phenomenon, if true, has significant consequences for those interested in schedule realism.

The issues provisionally developed in this and the preceding section can be synthesized into a multiple, conditional statement: If people adjust the pace at which they work (on average) in accordance with Parkinson’s Law, and if the risk around task durations is lognormal, and if the distribution of schedule shocks is biased toward positive schedule shocks (i.e., shocks which cause an extension in the schedule), then over time schedules will exhibit the pronounced tendency of being overrun (which is certainly the case for major defense acquisition programs – at least as anecdotal evidence supports). Consequently, based on the confluence of these three factors, developing realistic schedules appears to be improbable, at least from a theoretical perspective. While it may be improbable to develop realistic schedules, it is possible that this predicament can be more effectively handled by both cost analysts and program managers. The potential solutions offered in this article are far from obvious. Therefore, before the recommendations of this article are presented, it is perhaps constructive to discuss some of the paradoxes associated with this phenomenon, as it is through an understanding of these paradoxes that the proposed recommendations make sense in an organizational context (Weick, 1995).

*Paradoxes:*

Stone (1997/2002) describes paradoxes in the following terms, “paradoxes are nothing but trouble. They violate the most elementary principle of logic: Something cannot be two different things at once. Two contradictory interpretations cannot both be true. A paradox is just such an impossible situation” (p.1). This type of deconstruction of one of the central principles of logic is consistent with the principles of General Semantics as developed by Korzybski (1933/2000), extended by Bois (1966/1975), and popularized by Hayakawa (1939/1964) and Johnson (1946). The goal of developing realistic schedules, when viewed in conjunction with an awareness of Parkinson’s Law, task risk, and schedule shocks, potentially reveals several interesting paradoxes which may contain an opportunity to more effectively achieve the desired end state. Three paradoxes are briefly addressed in this section of the article: 1) program manager’s optimism, 2) risk identification and incorporation, and 3) multiple purposes of schedules. As stated previously, through an awareness of these paradoxes one may develop the ability to work creatively with the tension which is created from holding conflicting views in a way which allows one to transcend the habitual and reflex-like interpretations which may tend to inhibit the generation of novel and potentially more effective solutions.

As mentioned in the introduction section of this article, program managers may exhibit a tendency to view their particular program as being special (i.e., their program will not unfold according to the typical defense acquisition experience (assuming such a “typical” experience exists)). On one hand this could represent an awareness of the logical fallacy of division, where the attributes of the system cannot be assumed to be manifest in any particular subpart of that system (Hanson, 1994). However, and somewhat paradoxically, this same belief in the special nature of one’s program may also demonstrate a form of planning fallacy. The planning fallacy, according

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**A Theory-Based Critique on the Improbability of Developing “Realistic” Schedules (Continued)**

to Roy, Christenfeld, and McKenzie (2005), is characterized by being “overly optimistic about how long it will take to perform a task in the future, even though people are aware that in the past they have not finished our tasks by the predicted time (Kahneman & Tversky, 1979, 1982)” (p.742). As it relates to cost estimating and schedule realism, program managers may believe that one will be able to fundamentally alter observed reality through having a plan. So, in regard to the logical fallacy of division, program managers’ optimism may be appropriate; but, in regard to the planning fallacy this optimism may be ill-founded. To some degree this paradox helps to illustrate that program managers are called to fill multiple roles (at least two) which may be partially incompatible. On one hand, program managers need to be optimists (i.e., believing that their plans will be effective and that things will ultimately be “ok”). On the other hand, program managers are required to provide a realistic appraisal of the current program status and likely resulting vector. Collins (2001) describes this type of role conflict as the “Stockdale Paradox” (p.13). And while program managers are perhaps called to play conflicting roles, or in some sense to embody a paradox, they are also called to contend with a potential paradox in how one is to effectively deal with the programmatic risks. This is one area where cost analysts may be able to contribute knowledge in developing a practical solution.

Defense acquisition programs likely have some degree of risk and uncertainty. Crowell (2006) indicates, “uncertainty exists in all programs” (p.6). To some degree then, defense acquisition programs will likely need to address risk in some fashion. A potential paradox exists between risk identification and the effective inclusion of risk information in a programmatic sense. On one level, and this seems to be the preferred interpretation at this point in time (circa 2007), one should conduct a schedule risk assessment, and incorporate these results into one’s program schedule (Crowell). However, and this is where the potential paradox comes in to play, it is possible that by incorporating the results of the schedule risk assessment into one’s program baseline, one is simply moving the baseline schedule to the right, which will in turn provide a new baseline from which Parkinson’s Law, task risk, and schedule shocks take their combined effect. In other words, it is possible that by incorporating the results of the schedule risk assessment into one’s program schedule, one is actually making things “worse” (in terms of project duration). Further empirical research is needed to determine if incorporating cost and schedule risk into programs is creating greater program stability, or if it is creating more problems than it solves. In determining a more effective approach to dealing with identified schedule risks, one might benefit from considering that schedules may serve multiple purposes, and that these purposes may sometimes work against each other.

As previously indicated, another paradox of schedule realism may be the result that schedules potentially serve multiple purposes. Looking at only two of the possible cross-serving purposes of schedules should help to illustrate the issue. To be useful from an Earned Value perspective, a schedule needs to be relatively stable. In order to provide an accurate assessment of the current status and likely projections of completion, a schedule needs to be relatively flexible. Developing a schedule which is both stable and flexible is no easy task. It is perhaps the case that cost analysts and program managers are looking for schedules to indicate too much information, and that schedules cannot often serve multiple functions sufficiently well. By illustrating these potential paradoxes associated with pursuing schedule realism, it may be possible to develop a more effective process that may facilitate eventually accomplishing the goal of developing realistic schedules.

Dealing with the potential paradoxes of schedule realism is an important aspect of eventually obtaining schedule realism. The difficulty of effectively dealing with these paradoxes, and paradoxes in general, may result from paradoxes forming a sort of “parallax view” (Žižek, 2006). In a parallax one is unable to see multiple views simultaneously. In dealing with the complex issues of defense acquisition, it is perhaps insightful to attempt to maintain, at least a partial view, of the multifaceted perspectives available. One potentially beneficial way of dealing with the paradoxes of schedule realism is to incorporate the General Semantic principle of including a time-index to the schedule. The concept of a time-index is presented in the following section.

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## A Theory-Based Critique on the Improbability of Developing “Realistic” Schedules (Continued)

*Time-Index:*

While it is certainly possible that many schedules may already have a date affixed to them; this does not necessarily provide the philosophical grounding associated with the General Semantic notion of a time-index. Incorporating a time-index into one’s assessment may help to limit extrapolations (both one’s own and those of others), and may imply the distinction between what is known today versus what cannot be known about the future. Korzybski (1937/2002) states, “what I say today may be correct, for tomorrow I don’t know” (p.66). This statement and its implications have significant application potential to the assessment of schedule realism. It is possible that a realistic schedule, at a given point-in-time, becomes an unrealistic schedule over time. As events unfold (most notably for the purposes of this article, due to the potential interaction between Parkinson’s Law, task risk, and schedule shocks) a once realistic schedule may become unrealistic over time. Johnson (1946) contends that, “no two things are exactly alike; no one thing stays the same” (p.59). Including a time-index, and understanding it as such, might help to make explicit the potential time-contingency associated with schedule realism. Equations 1 and 2 further explicate the General Semantic principle associated with the time-index as it could be applied vis-à-vis schedule realism:

- (1) Realistic Schedule<sub>A</sub> ≠ Realistic Schedule<sub>B</sub>
- (2) Realistic Schedule<sub>A-2000</sub> ≠ Realistic Schedule<sub>A-2007</sub>

Under such a formulation, one’s attention can be focused toward several key aspects. First, equation 1 helps to illustrate that what constitutes a realistic schedule for program A may not constitute a realistic schedule for program B (i.e., there is likely not a “one-size-fits-all” approach to obtaining schedule realism). Second, equation 2 helps to illustrate that one cannot work toward a realistic schedule, obtain it, and assume that once obtained the quality of realism will last throughout the entire program. On the contrary, one must continually reassess the realism of a schedule. The time-index can aid in heightening one’s awareness of this concern.

Certainly incorporating a time-index will not “solve” the problems associated with schedule realism. But including the time-index may help to increase one’s awareness that realism is not a quality which one can obtain and hold; rather, realism is a quality which needs to be continually reassessed in a dynamic and interrelated world. In other words, schedule realism<sub>today</sub> does not necessarily equal schedule realism<sub>tomorrow</sub>, etc. Through understanding the concepts behind the time-index, by appreciating the fluid nature of accuracy and realism as they are made manifest in a time-contingent environment, one should be better able to articulate why a schedule at one-point-in-time was realistic, and at another point-in-time is no longer realistic. In other words, it is not necessarily the case that “defense contractors lie about their schedules... , etc.” or that “program managers don’t know what they are doing... , etc.” These types of “easy” explanations are perhaps not much more than rhetorical justifications used to package the phenomenon. It is possible that individuals dealing with a complex and dynamic world (one where many attributes can combine to extend program schedules, and few things exist which can fundamentally shorten program schedules) must continually adjust their assessments, and periodically adjust their schedules. The next section provides a brief conclusion of the points developed in this article. Some tentative recommendations follow the conclusion.

*Conclusion:*

In this article the topic of schedule realism is addressed. Based on the confluence of Parkinson’s Law, task risk, and schedule shocks it seems that obtaining realistic schedules is potentially improbable. Furthermore, the improbability may largely be regardless of whether or not one accomplishes a schedule risk assessment. In fact, the possibility exists that directly incorporating the results of the schedule risk assessment into the schedule may actually make the situation “worse” rather than “better” (in terms of program duration). In dealing with these issues several paradoxes were briefly presented: 1) program management optimism, 2) risk identification and incorporation, and 3) multiple purposes of schedules. The General Semantic concept of including a time-index is presented as one way to increase

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awareness of the time-contingency associated with schedule realism. The analysis presented in this article is a theory-based critique. Due to the theoretical nature of this article, the article itself is not above critique. The following represents a brief critique of this critique.

There are many ways one could reject this study (in part or in total). The following is a list of some of the more direct critiques of this study: 1) one could reject that Parkinson’s Law explains how workers in defense-related industries approach their work, 2) one could reject that the risk associated with tasks is lognormal, 3) one could reject that the distribution of schedule shocks is biased toward positive shocks (i.e., shocks which extend the schedule), 4) one could accept these premises, but reject the conditional conclusion of improbability, 5) one could reject this article as being theoretical, or 6) one could accept all of these things, but contend that through effective “incentives” the government can counteract these negative aspects, and consequently develop realistic schedules.

For those that reject the central point developed in this article (i.e., that it is improbable to develop realistic schedules) one has to contend with one rather obstinate observation; defense programs have historically tended to overrun in terms of both cost and schedule (Packard, 1986), and programs continue to overrun cost and schedule today (Monaco & White, 2005). Stated somewhat differently, *prima facie* evidence supports the claim that obtaining realistic schedules is improbable. To some extent, an attempt is made in this article to bring some of the largely ignored aspects of schedule realism to the fore. Some of these aspects, as presented in this article, may appear in retrospect to be obvious. This is perhaps unfortunate. Johnson (1946) notes that, “scarcely anything is more difficult to learn than something that is obvious” (p.47). One should take great pains to continually reassess those things which one considers to be “obvious.” Many times through such study one can reveal that the obvious contains untested assumptions and presuppositions. One such presupposition might be that obtaining realistic schedules is possible. Some theory-based elements (e.g., Parkinson’s Law, task risk, and schedule shocks) may partially explain the roots of this improbability. A further General Semantics critique of this topic would likely focus attention on the extensional content of the term realistic. The question of realism may not be accuracy in a strict sense, but instead accuracy in terms of degree.

As previously mentioned there is a potential difference between absolute accuracy and relative accuracy. In dealing with schedule development there is a potentially infinite number of ways to be partially incorrect in one’s schedule assessment; there is only one way to be completely correct. As a result, the odds are categorically against being exactly right in one’s schedule assessment. Consequently, it might prove beneficial to focus on determining how much latitude (i.e., tolerance) one has in developing a schedule which is incorrect (in the strictest sense), but still considered to be “realistic.” This appears to be a more pragmatically defined problem; however, one which is much more likely to be answerable only in individual contexts (i.e., this problem will require a unique solution, on a program-by-program basis). In addressing this issue the following recommendations are proffered for further consideration and debate within this community of cost/schedule analysts and practitioners.

*Recommendations:*

Each of the three recommendations developed here should be viewed as the culmination of the brief analysis presented in this article, and as the starting point for further analysis and debate. As such, these are considered to be provisional recommendations, which could likely benefit from further refinement. Korzybski (1933/2000) developed one of the classic General Semantic formulations in the following terms, “a map is not the territory it represents” (p.58, author’s emphasis retained). In our case, a schedule can be interpreted as representing a “map” for the “territory” of a defense acquisition project. In this way, a schedule is a map for a territory which doesn’t yet exist. As a consequence, one might expect that the schedule is an imperfect abstraction from an uncertain, and to some extent unknowable, future; and is therefore prone to error. The following recommendations may lessen the shock associated with dealing with the likely schedule overruns.

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First, cost analysts and program managers should incorporate a more robust understanding of the concepts behind the General Semantic map/territory relationship. This understanding should be communicated through the “expectation management” (Sambur, 2003) process between program offices, the war-fighters, and acquisition decision-makers. To some degree all levels of management should expect schedule overruns, and be “surprised” if the program completes on time (instead of the other way around). The exact magnitude of the schedule overrun may not be known, but it is perhaps prudent to calibrate one’s expectation that a given schedule likely represents the minimum time that the effort will take, and that it will most-likely take longer (perhaps much longer). Given this expectation, program managers should take great pains to articulate that schedules (especially for complex development efforts) are inherently uncertain, and that there are forces working against schedule realism (e.g., Parkinson’s Law, task risk, schedule shocks, etc.). These forces are largely outside the direct control of program managers. While the forces discussed in this article are perhaps resistant to program management intervention, this does not mean that cost analysts and program managers should “sit back” and “do nothing.” Far from it. Cost analysts have the responsibility of assessing schedule realism in conjunction with generating program cost estimates. Program managers have a duty to manage the program and the schedule. However, program managers should begin to understand that their “victories” in the realm of schedule realism will likely take the largely unsatisfying type of “... things would have been even worse if this management intervention did not take place.” This type of impact, is both difficult to demonstrate conclusively, and as stated before rather empty in its personal fulfillment potential. This is an unfortunate situation. Cost analysts should try to be sensitive to this situation, and the corresponding pressures and frustrations, when dealing with program managers and the generation of program office estimates and schedules.

Second, cost analysts and program managers need to develop a more pragmatic and effective way to deal with the paradoxes developed in this article. Somewhat paradoxically, it may be the case that an effective way of dealing with paradoxes is not to attempt to “solve” them by determining which view of the parallax, or which side of the paradox, is “correct,” but rather it might prove beneficial to try to prolong the creative tension which arises from holding conflicting views. Through this process one may develop solutions which move beyond the obvious solutions being employed (which are currently not producing very impressive results), and toward nuanced solutions which contend with both the theory and observed reality of dealing with the schedules of defense acquisition programs.

Third, further research is needed to ascertain the net impact associated with modeling and incorporating cost and schedule risks into defense acquisition program estimates. While there are certainly some valid reasons to incorporate risk, it is possible that the net impact of this action is to increase the base from which more expensive cost and more extensive schedule overruns eventually occur. Without the data either position reflects not much more than an assumption or belief. Given the magnitude of defense acquisition programs it would seem imprudent to pursue a policy founded upon data-free analysis.

In summary, these provisional recommendations follow largely from the material presented in this article. By constructively addressing these (and other) issues within our cost estimating community the possibility exists that more informed positions may be developed. This is especially relevant given the potential improbability associated with obtaining realistic schedules, and the lack of clarity concerning the actual content associate with the term “realistic,” which is the stated goal. Until these aspects are more constructively addressed it is difficult to imagine how any claim to schedule realism can be cogently made.

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