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- Computerized Critical Path Planning
- The Power of Positive Reinforcement Part I.
- Suggestions — Your Way to Management Support
A SPECIAL MESSAGE TO "VALUE WORLD" READERS

This issue of "Value World" contains a "tear-out" advertising rate card which has been provided for your use. Through the use of this card, you are afforded the opportunity to communicate your message to a very select group of professional people representing a broad cross-section of the American economy.

Advertising in "Value World" reaches approximately 3,000 subscribers who are company Presidents, Managers, Practitioners, and Teachers in the specialty fields of Performance Improvement, Employee Suggestion Systems, and Value Engineering/Analysis. "Value World" serves as the "Journal" for these three groups of specialists, and is widely circulated among fellow practitioners throughout business, industry, government agencies, and educational institutions. If you do not handle the advertising for your company, please bring "Value World" and the advertising rate card to the attention of the people who do, and encourage a series of ads in "Value World" — the results may surprise you!

From the standpoint of a reader of "Value World", paid advertising will be of long lasting benefit to you. Through effective advertising we will be able to continue improving "Value World" in appearance, technical content, and quantity of published articles. Our production, handling, and mailing costs continue to climb, but we can offset these added costs and still improve "Value World", with a combined effort to secure and retain tasteful paid advertising for "Value World".

Won't you join with us and help us accomplish this worthwhile objective of an even better "Value World" at no increase in cost to members of our three Societies? Do your part now, and make use of the "tear-out" advertising rate card to bring in that new advertising account.

Best regards,

C.P. Smith

CPS/kn

ABOUT THE COVER:

AUTUMN MIST
Northwood Picnic Area, Two Mile Run County Park, Franklin, Pennsylvania.

PHOTOGRAPHIC CREDIT: John Patrick Woloszyn
Park Ranger

NOTE: Picture Entered in PENNBANK Arts Competition, Northwestern Pennsylvania Region.
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and

SOCIETY OF AMERICAN VALUE ENGINEERS
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EDITORIAL POLICY: Provide readership with informative, interesting and timely communication relative to Value Analysis, Value Engineering, Idea Programs, Productivity, Motivation, Creativity and Performance Improvement; VALUE WORLD will act as a vehicle enabling the readership to express themselves professionally in advancing the state of the art. VALUE WORLD is dedicated toward establishing a mutual bond among those seeking to better the quality of working life and to establish a communication network through which participating technical society members can interact for mutual benefit.

CONTRIBUTIONS — Contributions to VALUE WORLD are welcome in the form of letters to the BITS and BARBS column, technical articles, introduction of new techniques, photos and material for cover stories. VALUE WORLD accepts no responsibility in connection with any liability that might occur as a result of material published; the views and opinions expressed by the contributors do not necessarily reflect those of the Publisher or participating Societies. VALUE WORLD is published bi-monthly by the Society of America Value Engineers, 220 N. Story Rd., Irving, Tx. 75061.

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Bridging the gap between cost and value

The building design and construction industry is well served by a large number of business, professional and trade associations dedicated to delivering a better building in a shorter time at a lower cost.

One relative newcomer that deserves and has been getting more recognition is the Society of Value Engineers (SAVE), Box 210887, Dallas, Texas 75211. Founded in 1959, it might be an unfamiliar name to some because it has been more concerned with manufacturing than with buildings.

But no matter. The fact that the principles of value analysis are broadly applicable to many disciplines is all the more reason why the building industry needs to take a closer look at it.

Value engineering is not simply cost cutting. Nor is it the same as life-cycle cost analysis, although that is part of it. In brief, value engineering as it applies to construction represents an interdisciplinary effort to analyze the function of a building or system and to achieve the essential objectives at the lowest overall cost without sacrificing performance or quality.

Common sense? Of course. But, as practiced by SAVE members or under federal procurement contracts, it’s a well organized, disciplined brainstorming about what something is worth and how to make it worth more.

Value engineering is primarily about performance, time and cost. Hold one constant and try to improve the others. By-products frequently include increased reliability, easier maintenance and expanded applicability.

The record to date documents mind-boggling possibilities for improvement in every significant area. Hal Goldman, New York construction manager and SAVE member, cites studies showing a minimum of $60 saved for every $1 spent on value engineering workshops.

Obviously, the haphazard application of “common sense” in the ordinary course of business leaves many stones unturned. It’s still true that the cost of things is better known than their value.

A recent study by the Department of Defense identified the most frequent sources of value engineering ideas: additional design effort, 28%; cost considerations, 23%; advances in technology and questioning specifications, each 14%.

One of the lessons of the middle 1970s was that cost does not equal value. If we are to avoid a repetition of that era, now is the time to become more value conscious. SAVE can help. Its disciplined approach and its emphasis on relating design to cost, a job plan, and similar requirements already are demanded by the federal government and will be demanded by increasing numbers of value-conscious private owners.
SO LONG SOCRATES

At an international gathering recently, an American colleague and I were engaged in conversation with two Japanese visitors. One, a Kawasaki representative, questioned:

"How do you so successfully utilize value techniques working with design engineers?"

It was ironic.

Here was Kawasaki, who lets the good times roll — all over Yankee soil — asking us about success? Japanese imports account for probably ninety percent of motorcycle sales in the U.S. today. Yet, here we were assuming the role of expert in answering this query on design cost effectiveness.

It smacked of Marvin Thornberry telling Mickey Mantle what batting stance to use against a high hard one.

Are we becoming a Nation, more of talkers than listeners?

Also, observing people in airport terminals, one need not be a behavioral scientist to notice the phenomenon of people talking to each other — simultaneously; often lost in their own deliveries, and occasionally prodding their inattentive listener with a finger in the chest.

There is nothing wrong with talking; there is something wrong with talking incessantly.

Maybe it goes beyond just simply talking or listening. I have a theory that we have become so accustomed to noise — piped-in music, stereo head gear on trips, etc. — that we just can’t stand silence.

In hunting the primitive North woods all my life, I have seen little change in creature’s habits over that period. But, hunters habits have changed tremendously.

We now tend to gang hunt, enjoying another’s company, as opposed to hunting alone; go shallower in the woods and leave earlier for home. Walkie talkies are common.

It would seem that we cannot stand the stillness; and if that is true we were missing a lot.

Quiet has its unique Beauty.

The ability to listen is a Virtue.

And one that needs some cultivation.

Socrates had the right idea.
He learned how to talk. Best of all, he learned how to listen.
HAPPY BIRTHDAY —

ASPI held its 10th Annual Conference on September 21 and 22 in Tempe, Arizona.

Congratulations to ASPI for its progress during the past decade and sincere wishes for its continued success.

ASPI is based at: 790 Broad Street
Newark, New Jersey 07102

Mr. Thomas O'Connor is the ASPI President and Alex Petchkurow is the Value World Contributing Editor.

WHAT'S DIFFERENT ABOUT VALUE ANALYSIS?
The crucial difference between conventional cost reduction and value analysis is that cost reduction is *part*-oriented and value analysis is *function*-oriented. The objective in cost reduction is just that, and the only question asked is "how can this part be made for less cost?" The objective in value analysis is to perform the necessary *function* at least cost, and the basic question is "how can the necessary function be accomplished reliably for less cost, and with improved value?"

Production Engineering, July
Donald E. Hegland
Associate Editor

AUTO RECALLS: 'WHY DO THEY HAPPEN?'

As an avid and dedicated value engineer, I could not but notice the plurality of recalls of all makes and models of cars and assorted trucks which occur so often lately. The reason for this fiasco seems to be a multitude of shortcomings in the wake of production, with a common denominator of impaired quality and safety in one way or the other.

Quality and reliability requirements do have an important economic effect upon product cost, requiring a good hard look at quality control practices to achieve cost reduction. Consequently, the quality assurance program is one of the most important tools at management's disposal to measure and oversee that the job is properly and most economically done — particularly that economy should not demean quality.

Maks A. Stojich
South Pasadena
(Excerpt from August 2nd column
in St. Petersburg Times.)

A real chance can be recognized only by a prepared mind.

Louis Pasteur

RIGHT ON, MEL —

I just finished the article, "How to cash in on cost-cutting programs," (IA, July 10, '78, p. 21). It comes as quite a revelation that one can "cash in" by having "purchasing" do what its supposed to, or that expensive new capital investment will generate savings.

Let me suggest yet another cash-in scheme. Why not sell the companies' assets and terminate its employees? That way you'll cut 100 percent of the costs.

We need more cost, not less. Cost generates profit. Just make sure the costs are buying value for your customer.

No one buys cost-cut or cheap goods. People buy beauty and value. Most business executives, when faced with this logic, usually reply, "Well yes, that's what I meant when I said cost reduction."

Well, if that's what you meant, why not just come right out and say it? We're going to cash in on added value.

Melvin A. Hunter
Past President
Society of American Value Engineers
St. Louis Gateway Chapter
(Iron Age - September 11, 1978)
As a member of the team for selecting my successor, I felt a need for a systematic method of judging various desirable characteristics of candidates in a meaningful manner. I found help in VALUE WORLD, JAN/FEB 78 article in the Techniques To Try column.

The following characteristics were considered important for the Value Engineering position in the construction industry:

1. **PROFESSIONALISM** - This refers to self-improvement, association with professional organizations, certification and similar matters.

2. **COMMON SENSE**

3. **SALESMAHNSHIP** - Ability to make an effective presentation and provide necessary follow-up.

4. **PERSONALITY** - Ability to relate to people in a way that promotes harmony.

5. **INITIATIVE**

6. **SYSTEMATIC** - Ability to maintain good records and run a good office.

7. **ENGINEERING EXPERIENCE** - Background in formulating projects and preparing designs.

8. **CONSTRUCTION EXPERIENCE** - Background in construction phase of the design/construct cycle.

Weight factors were assigned to the importance of the various characteristics and the individual candidates then graded 1 to 5 (high) on each characteristic. The weight factor was then multiplied by the grade to provide characteristic sub-scores. The sum of these products then is the final score, disclosing that candidate A was favored over B, by an 84—70 score. TRY IT!

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<tr>
<td>Weight Factor</td>
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<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Candidate A</td>
<td>4/20</td>
<td>3/6</td>
<td>4/16</td>
<td>3/6</td>
<td>3/12</td>
<td>5/15</td>
<td>4/8</td>
<td>1/1</td>
<td>84</td>
</tr>
<tr>
<td>Candidate B</td>
<td>3/15</td>
<td>5/10</td>
<td>2/8</td>
<td>4/8</td>
<td>4/16</td>
<td>3/9</td>
<td>-</td>
<td>4/4</td>
<td>70</td>
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NOTE: Mr. Wales received the Joy Manufacturing Company — A. E. Mudge Award for this paper at the 1978 SAVE Conference.

BSME — The Cooper Union Institute of Technology
MBA — Northeastern University, Boston

With General Electric 33 years, in Engineering and Marketing positions in headquarters and in the field, Value Engineering Specialist since 1966, serving as a consultant to other Divisions of GE, outside companies, Universities, and Government Agencies.

Married, three sons. One - Air Force Academy
One - West Point
One - Still in High School
The following report profiles a very successful value engineering effort to upgrade the GE switchgear product line. It was started with the switchgear panel mounted overcurrent protection relay, and when this was completed, the switchgear equipment itself was analyzed. The relay selected for study was a mature design, had wide customer preference, and was in large scale production. Management realized that making a bigger winner of a proven winner can have greater potential profitability than improving costly, weaker items. Selecting this particular relay was also a courageous decision, because it was a high volume item with much to be lost if any VE changes did not improve it. Management outlined these objectives:

1. Reduce the cost by one third to offset inflationary trends.
2. Reduce the parts count by one third, to also help reduce indirect cost.
3. Preserve and improve features for greater customer acceptance.
4. Increase flexibility of application by reducing the size by 25%.
5. Limit consideration to electro mechanical principles.

Organizing for the task was a bit unusual. A CVS was selected from within the GE Company, but from another operating division in an unrelated industry, providing two advantages:

1. Familiarity with the GE Company, but —

2. Removed organizationally from the product division, eliminating the bias that constrains many VE projects when directed by a member of one of the line organizations.

Scheduling was also unique. It was “open ended”, with the team meeting every Friday until the job was done fifteen weeks later. This permitted each team member to stay on top of his normal job, and also have time to gather needed data, while allowing the important incubation to work its magic. A conference room, well equipped for slides, films, privacy, but centrally located for easy access to consultants, the factory, files, and other conveniences was scheduled on a priority basis for the duration. All charts, blackboards, and other necessary impedimenta were available.

None of the team members except the CVS had ever participated in a VE exercise, so the initial portion of each Friday meeting was spent in learning the fundamentals through lectures and visual aids. Then, after a mid-morning complimentary “coffee and doughnut” break the team buckled down to applying the techniques to the relay. Traditional VE approaches formed the basic theme, of course, but with a few more unique twists that made the study outstandingly successful:

1. Hardware of all kinds was accumulated and displayed, including both domestic and foreign, GE and non-GE, current and obsolete.

2. As many consultants as could appropriately contribute from within the GE Company, were invited to participate.
3. Visits were made to vendors, and other GE plants, ensuring an understanding of the state of the art for all pieces, parts, and principles of the operation and manufacturing processes.

During the information phase, a traditional cost model was constructed, containing eleven elements of cost. The function analysis was also conducted along traditional lines, and the basis was thus formed for assignments of functional worth. At this point, however, a unique tactic was employed. It was decided to construct a “Future Cost Model”, reflecting the management goal. This put some tangible goals “up front” as a challenge to the ingenuity and persistence of the team. Whenever a “future cost” of an element had to be increased, an appropriate reallocation to hold total “Future Cost” in check, was made. The speculation phase was permitted to run on for much of the fifteen week period, with no arbitrary “cut off” time imposed while the innovation was short of its goal. This freedom from a time constraint was a unique feature of this phase, helping to ensure meeting of the “Future Cost Model” goals.

The real proof of the Value Engineering technique is, of course,
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the return on investment that may be expected. To ensure that this important aspect received full, consistent, and clear treatment, two tactics were employed:

1. The financial representative on the team was selected because he was the most knowledgeable cost man in the entire operation, and he was the single consistent authority on the project from start to finish. His control of all the numbers used throughout the VE study, from the first meeting in January, 1973, through the implementation phase, was not compromised by substitution of other financial representatives during the study.

2. A “J” curve, See Figure 1, showing the added investment schedule, and the added profit schedule, was developed and included in the original report. The value of this curve can be appreciated when it is apparent that it cannot be constructed until all aspects of the business, including, for example, future market and sales forecasts, and all expenses, are cranked into the formula. The use of the “J” curve is a highly recommended practice, for it is very effective in putting the final payoff projection into sharp focus for each involved manager and top management to review as a basis for approval of the study and the allocation of the resources required.

Implementation! Many are the VE studies that have never been implemented. The reasons are legion, ranging from personality conflicts at one extreme, to technical inadequacy at the other. The subject is too great for discussion in this paper, and it is too important to be treated lightly. Suffice it to say that the team did an outstanding job of putting a report and a presentation together and received the authorization for implementation within a few weeks, just long enough for review and assimilation by the VPGM, and his staff and line people involved.

When the report was approved, a project team was appointed to carry out the detailed development, and the full implementation activity was given high visibility and management support. They were assigned a special “Skunk Works” area in which to work in a tightly integrated fashion, and the VE team captain was also assigned to the team, to ensure not only the effective transfer of technology as proposed, but also the transfer of enthusiasm and motivation, developed by the team during the Value Engineering concept phase.

If a VE study is not just a “fire drill” under pressure for quick results, authorized by a General Manager as a desperation move, it will stand a much better chance for successful completion and it will be a thorough analysis. The time required for this task took three years, not an unusual gestation period when all the drawings are being changed! The full task, therefore, was not completed until 1976, with announcements to industry in the August, 1976 trade journals. Acceptance has been quite good, and it does appear that the new design will have a long and useful life. An interesting sidelight to this study was the conclusion of the manufacturing representative on the team, who said: “This is the most fun I’ve had since joining the company. We should do everything like this!” Another sidelight was the selection of this project for exhibit to the Congress at the 1975 reception on Capitol Hill, because it was of such significance that the management authorized the “sneak preview” to the Congress as an illustration of what VE can do for industrial productivity in this country!

Because top management gave the project top support, the study was classic VE at its best. It combined a good mix of every VE tactic in pursuing and achieving the goals on schedule, and with harmonious cooperation between the two teams: The VE concept team, in confirming the feasibility of the goals, concepts, and the direction for the implementation, and the Project Implementation team in their effective achievement of all the original goals. It also proved to all the members of both teams, that it is not necessary to select a project or product that is in trouble, when the company may be better served by selecting the best, and bet on bettering it!

The VPGM’s reaction to the activity was to authorize the larger VE study the following year on the switchgear equipment itself. Accordingly, a new team was formed in 1974 to again apply a comprehensive VE effort to GE “Metaclad” switchgear and once again the VE team, followed by the Project Implementation team, produced the GE “POWER/VAC”, a product so greatly improved that it was announced in the November 1976 issue of Electrical World as “The most significant new metalclad switchgear design in 40 years”.

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Better The Best and Bet on It

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The IAC relay, before VE.

A successful product — The most widely used protective relay in the world.

The IFC, after VE

Smaller, simpler, better!

It has always been said that Value Engineering is a team operation. In the production of usable products, processes, or procedures, however, those of us who practice Value Engineering must always appreciate that the VE team, per se, is but one member of the larger team that includes General Management and all of line operations. There are probably many among the unwashed who are yet to experience the excitement of participation on a real “pick and shovel” Value Engineering concepts team, where precious gems are discovered and brought to the surface in the form of the VE team study report identifying the recommended concepts. However, it must always be recognized that it is not until the larger team of General Management and well managed line operations, particularly engineering and manufacturing operations, takes these rough uncut stones and puts them through a period of intensive development that polished jewels emerge.

This new GE Switchgear product, the new POWER/VAC metalclad switchgear with its new IFC protection relay, is evidence that properly selected VE studies, followed up by good overall management, with emphasis on good engineering and manufacturing follow up, works best when the overall “Team of Teams” functions in harmony. Real progress, measurable in profit dollars, is then not only possible, but probable! □
Abstract

If a plant’s Marketing, Engineering, and Purchasing functions are isolated in a distant “Central Office”, the most successful VA approach is usually a working seminar. Like any seminar, thorough and complete preparations insure the success of the group.

This paper describes an effective tool that organizes the hundreds of details associated with planning a VA seminar. Through Computerized Critical Path Planning, a computer-developed timetable can be utilized to insure thorough and complete attention to all of the details. The paper not only describes the tool, but also explains its uses, advantages, and development for different plant situations.

Introduction

Successful Value Analysis studies require an effective team to apply the VA Job Plan. Representatives from Sales, Purchasing, Production Control, Manufacturing, Industrial Engineering, Quality Control, Tooling, and Product Engineering all add the necessary expertise required for a successful team effort. How can an effective team be formed, though, when several of these groups are isolated from the manufacturing plant in a remote Central Office over one thousand miles away? The Central Office could move closer to the plant, or the plant could move closer to the Central Office. A more feasible solution, however, is to form a committee and conduct a forty-hour seminar to value analyze the product.

Like any meeting, the thorough complete preparations insure the success of the seminar. The planning must cover every detail. For example, the preparations for one forty-hour session required over 160 different activities, ranging from choosing the kickoff dinner menu to preparing the VA Job Plan training lecture, and even to purchasing some spare projector bulbs. All of these details contribute to the overall success of any VA conference; at the same time, however, the large number of activities make planning a conference a time-consuming job.

This paper describes an effective tool that can help the VA manager plan seminars; Computerized Critical Path Planning (CCPP). With a forty-hour investment, it will give the VA manager the ability to plan an entire conference (up to 7,000 activities) in five to fifteen minutes. Once the disk file is established and “debugged”, the manager simply inputs the start date, finish date, and any holidays during the planning period on five control cards. The program then provides in a matter of minutes:

1. A daily activities listing, detailing what activities need to be done each day to meet the earliest possible finish date;
2. A bar chart showing the earliest possible start and finish dates, the latest possible start and finish dates, and the “critical path” (described later);
3. A summary report that breaks the overall project into logical segments (or milestones) and then groups the planning activities by these milestones;
4. Any one of eleven other different standard reports; and
5. Any custom report that the manager wants (without the manager needing to know complex computer programming).

Continued on page 11
The three following sections discuss Computerized Critical Path Planning. Section I describes the critical path method for planning projects, while Section II provides an example of CCPP for a forty-hour VA seminar. Section III details guidelines for applying CCPP to different situations.

Section I: Critical Path Planning

This portion of the paper describes how CCPP plans activities and establishes dates for any given project. It does not detail the actual input for the computer program; the appropriate program manuals provide this information. (Several of these manuals are listed in the references.) This description of CCPP, geared to the VA manager, highlights three basic areas: CCPP as the manager's tool, the Five-Step Method for critical path planning, and the advantages available to the manager through computerized critical path planning.

**CCPP: THE MANAGER'S TOOL**

Computerized Critical Path Planning is a tool, not a decision-maker. The method itself does not solve the problems associated with planning a conference; it is a guide for the effective manager. CCPP provides information in an orderly fashion: dividing the project into milestones aids the manager's overall comprehension, yet detail reports insure thorough and complete coverage of all activities. While CCPP shows the manager what must be done and when it's due, the manager himself must still decide on how to do the activities in time to meet the dates. In this sense, CCPP is a tool that, properly used, can improve the VA manager's effectiveness.

**In order to use CCPP effectively, the VA manager must possess a working knowledge of the general critical path procedure. The procedure follows five basic steps:**

1. Prepare a list of all activities.
2. Prepare a precedence diagram, based on the activities list.
3. Determine the time required to complete each activity (the activity's duration).
4. Determine the critical path for the diagram.
5. Calculate dates.

This section explains the Five Step Method and defines the associated terms through an example familiar to everyone: brushing teeth.

The first step in this example is listing the activities. Table 1 details the seven activities necessary to complete this event, from getting the brush and paste to rinsing and replacing the brush. After this list is completed, the second step (preparation of the precedence diagram) begins.

### TABLE I: BRUSHING TEETH

<table>
<thead>
<tr>
<th>KEY</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>A</td>
<td>GET BRUSH FROM DRAWER</td>
</tr>
<tr>
<td>B</td>
<td>GET TOOTHPASTE FROM DRAWER</td>
</tr>
<tr>
<td>C</td>
<td>REMOVE CAP AND PLACE PASTE ON BRUSH</td>
</tr>
<tr>
<td>D</td>
<td>BRUSH TEETH</td>
</tr>
<tr>
<td>E</td>
<td>PLACE TOOTHPASTE IN DRAWER</td>
</tr>
<tr>
<td>F</td>
<td>RINSE MOUTH</td>
</tr>
<tr>
<td>G</td>
<td>REPLACE BRUSH</td>
</tr>
</tbody>
</table>

**POSITION WANTED**

Suggestion System Administrator with 20 years' experience seeks position with company desiring to set up a program or update and revitalize an existing program. Will relocate for right opportunity. Please reply to Box B, National Association of Suggestion Systems, 435 North Michigan Avenue, Chicago, Illinois 60611.

**POSITION WANTED**

Suggestion Administrator Available — A bright, young, energetic individual with over three years' experience in suggestion related work is seeking a challenging position as a Suggestion Program Administrator or Suggestion Program Analyst. This individual has excellent qualifications, holds NASS Certification and is willing to relocate.

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National Association of Suggestion Systems
Box C
435 North Michigan Avenue
Chicago, Illinois 60611
(312) 644-0075
Critical Path Planning

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The precedence diagram is the major "plan of attack" for a project: it is the essence of critical path planning. This diagram illustrates activities in the order that they are performed. It also distinguishes between activities that are performed simultaneously with others and those that are dependent upon another activity's completion.

Figure 1 illustrates the precedence diagram for Table 1. While getting the brush, the person in this example also obtains the toothpaste from the same drawer. These two activities are carried out simultaneously. Removing the cap and putting the paste on the brush are dependent upon the previous activities (getting the paste and the brush). While brushing his teeth, the person in this example replaces the toothpaste back in the drawer (another example of a simultaneous activity.) After brushing, the next activity (rinsing) and then the last activity (replacing the brush) are completed.

After the precedence diagram is finished, the third step of the Five Step Method begins. This step, determining the time required to complete each activity, defines the durations for all of the activities. For this discussion, assume that all activities except brushing the teeth consume .25 minutes. Brushing the teeth itself consumes 1.5 minutes.

The fourth step (determining the critical path) requires analysis of the precedence diagram with the times listed for each activity. The critical path for any diagram is the route providing the shortest time possible to complete the entire event. Looking at Figure 1, the shortest amount of time that this entire activity could consume is 2.5 minutes, from points A and B (.25 minutes for both) to C (.25 minutes). This path, the bold line in the figure, is the "critical path".

Before starting the fifth step, one important aspect of the critical path must be discussed. If anything happens to the duration of any of the activities on the critical path, the total time to complete the entire event will be affected. To illustrate this point, consider the toothbrush example again. Suppose the individual in this example has a bad morning — he drops the toothpaste on the floor, bends over to pick it up, then applies the toothpaste to his finger instead of the brush. All in all, the total elapsed time for this cycle is now 3.0 minutes, instead of 2.5 minutes. The change in the activity's duration (.5 minutes) increases the total time for the entire activity by .5 minutes since the activity is on the critical path.

The fifth step in the Five Step Method is calculation of the dates. For more complex projects, the activities may take days to complete instead of fractions of minutes. In these real-life problems, the fifth step requires adding the duration of each activity on the critical path to the cumulative date, in order to establish starting dates for each activity.

For the purposes of this example, assume that each activity in the toothbrush illustration consumes one day, except for brushing the teeth (which takes three days). Figure 2 illustrates the process of establishing starting dates. If the event starts on 6/1, activities A and B occur simultaneously and take one day's duration to complete. Activity C starts on 6/2 (6/1 plus one day's duration for A and B). This same process (adding the duration of each activity on the critical path to the cumulative date) occurs all the way down the path.

Note that the activities not on the critical path are scheduled to complement the path; usually, more time than necessary is allotted for completion of these non-critical activities. This excess time is defined as float. Activity E in Figure 2 illustrates float: the activity's duration is one day, even though three days are allocated. The two extra days are the float present in this diagram.

Activities that have float can have more than one start and one finish date. Either an "earliest possible" or "latest possible" start or finish date may be determined from the chart. The early start date may be determined by applying the same method applied to an activity without float: adding the duration of the previous activity to the cumulative date. The late start date may be determined by subtracting the duration of the activity from the starting date of the next activity. For Activity E (Figure 2), the early start date 6/3 (6/2 plus one day's duration for Activity C), while the late start date...
Critical Path Planning
Continued from page 12

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**FIGURE 2: BRUSHING TEETH**

is 6/5 (6/6—the starting date for Activity F—less one day's duration for Activity E).

With the completion of the fifth step, the manager now has a detailed plan for the event. In a real-life project, the activities can range in numbers up to 7,000. Establishing the critical path and calculating the dates could consume an unreasonable amount of time. For this reason alone, the critical path method is an ideal application for computer assistance.

**COMPUTERIZED CRITICAL PATH PLANNING ADVANTAGES**

The computerized version of the critical path method parallels the manual approach just described. The manager must still complete the first, second, and third steps (the activities list, the precedence diagram, and the durations for all of the activities); the computer, however, will complete the fourth and fifth steps (establishing the critical path and calculating the dates).

For projects with a large number of activities, the advantages of using the computer for repetitive calculations and sorting are obvious. Computerizing the critical path method provides the VA manager with three major advantages: it gives him the ability to provide a detailed plan quickly (within minutes), to forecast the effort of shifting resources to solve critical path problems, and to adjust the plan (again within minutes) if the dates are not met in order to forecast a new completion date.

To illustrate these three advantages, a hypothetical case will be used. Suppose that one day, Joe Manager's supervisor called him into his office: "I've just received last month's Profit and Loss statement — the widget line is hurtin' for certain. See if you can do anything with it by the end of the month."

It was already the fifth of the month...that didn't give Joe a lot of time to prepare. With a short trip, Joe was in the Data Center revising the control cards, inputting the start and finish dates, along with the date of the holiday that fell at the end of the month. In five minutes, he had a detailed daily list of activities and a bar chart that showed him the critical path for the plan. The CCPP provided him with a **quick, detailed plan**, illustrating the first advantage.

Continuing with the example, Joe looked at the daily listing. The earliest possible completion date was the fifteenth of next month. Based on the bar chart, a large section of the critical path was spent on typing and copying. Another secretary on these critical days would cut the activity times in half. Revising the activities' times in the data and rerunning, Joe found five minutes later that he could now get the conference ready by the twenty-eighth of this month. By shifting the manpower he was able to forecast the effects on the completion date (the second advantage).

One-half hour after his first meeting, Joe got back with his supervisor. "The earliest that we can have the seminar (if we don't add any help or work any overtime) is the fifteenth of next month. If I could get one additional secretary for the third week of the month, though, I could have things ready by the twenty-eighth of this month." Joe's supervisor gave him the green light, as well as the help he needed.

The plan got underway. On the tenth of the month, however, Production Control gave Joe a call. It's inventory time, and they couldn't get the samples out of the warehouse by their deadline (the seventeenth). They were doing the work as they could and should have the samples ready by the twenty-first. Would this affect the completion date on the project?

By changing the completion date for this activity and making one more run, Joe found out what would happen. Five minutes after starting the run, he saw that the twenty-eighth was still good — only the dates for a couple of non-critical activities changed. CCPP provided Joe with the third advantage: the ability to rerun the plans if the deadlines are not met in order to determine any effects on the completion date.

**SUMMARY**

CCPP is a tool; used widely, it can help the VA manager make himself more effective and more efficient when planning conferences. Relieving him of the clerical aspect of planning, the method provides the manager more time to manage. By using the basic Five-Step Method and computerizing the fourth and fifth steps, the progressive manager will have the ability to provide a quick, detailed plan that can be modified just as quickly when the current situation demands.

The next major section of this paper describes one specific example of CCPP for a forty-hour VA seminar. Like the example for brushing teeth, the CCPP development follows the basic Five-Step Method.
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the time required to complete each activity, defines the durations for all of the activities. For this discussion, assume that all activities except brushing the teeth consume .25 minutes. Brushing the teeth itself consumes 1.5 minutes.

The fourth step (determining the critical path) requires analysis of the precedence diagram with the times listed for each activity. The critical path for any diagram is the route providing the shortest time possible to apply the time required to complete each activity. For this discussion, assume that all activities except brushing the teeth consume .25 minutes. Brushing the teeth itself consumes 1.5 minutes.

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The fifth step in the FIVE STEP Method is calculation of the dates. For more complex projects, the activities may take days to complete instead of fractions of minutes. In these real-life problems, the fifth step requires adding the duration of each activity on the critical path to the cumulative date, in order to establish starting dates for each activity.

For the purposes of this example, assume that each activity in the toothbrush illustration consumes one
ADVERTISING RATES

ALL PRINTING INSIDE BOOK • BLACK AND WHITE

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B) Closing date is 10th of month preceding cover date for space reservations and offset negatives. Publisher cannot guarantee proofs in time for corrections for materials received later than the above closing dates.
C) Printing: Offset
D) Binding: Saddle wire
E) Black & White: One piece offset negatives right reading emulsion side down, 110 - 120 line screen. Negative should compensate for blanket-to-blanket printing, allow for 7% to 8% dot gain. Tone density of halftones must not exceed 85%.
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B) Cancellation is not accepted after the 22nd of second month preceding cover date. Cancellation of any portion of a contract voids all rates and position protection.

B) All advertisements are accepted and published by the publisher upon the representation that the Agency and/or advertiser is authorized to publish the entire contents and subject matter thereof: In consideration of the publisher’s acceptance of such advertisement for publication, the Agency and/or advertiser will indemnify and save the publisher harmless from and against any loss or expense resulting from claims or suits based upon the contents or subject matter of such advertisements, including without limitation, claims or suits for libel, violation of right of privacy, plagiarism and copyright infringement.

D) The publisher reserves the right to refuse any advertising.

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THE POWER OF POSITIVE REINFORCING

PART I. CONCEPT OF POSITIVE REINFORCEMENT

BY

Myrt W. Webb

MYRT W. WEBB is a consultant to management in organizational and behavioral change. He was formerly Organization Development Consultant with a major aerospace firm. He is an Accredited Personnel Diplomate for Training and Development, sponsored by ASPA Accreditation Institute, and a member of the American Society for Training and Development. He conducts workshops in such areas as Organizational Behavior Management, Transactional Analysis, Communication, Motivation, Team Building, Consultation Skills, Supervisory Practices, and Managerial Skills. He resides in Malibu, California.

I live on a cliff overlooking the ocean where most residents guard against any efforts of their neighbors to restrict their ocean views with growing trees, television antennas, or man-made structures. This "guarding" usually takes the form of open verbal confrontations, fist fights, and law suits. Some try "reasoning with," which frequently results in stale-mate when one party considers the requirements of the other unjust. Some offended parties suffer in silence and some sell their property rather than risk confrontation with their offending neighbors.

One of these silent sufferers was a neighbor of mine who had been a listener to my "hot stove" discussions on Positive Reinforcement. A neighbor of his; a short-tempered, bull-of-the-woods type, had trees growing to the height that would soon cut off my neighbor's scenic ocean view. Of course, he challenged me as to how Positive Reinforcement could work in a situation like this. Following what I had counseled, my neighbor watched in silence and some sell their property rather than risk confrontation with their offending neighbors.

This effort at Positive Reinforcement by my neighbor paid dividends for both him and Mr. Bull; and it was much easier than confrontation and less expensive than a law suit. In similar circumstances, however, how often is it employed? Not very.

We live in a negative oriented society — we always have; and the complexities of our problems bring the negative aspects closer to the surface. Business, as a part of our society, is also negative oriented. We are even taught to compound it. Over the years I, as well as every other business manager I know, have been bombarded with educational efforts in the negative aspects, usually under the ruse of positivism, such as "Creative Aggression," "Constructive Discipline," "How to Win in Conflict," "Confrontation Behavior," "How to Beat the Union," "Progressive Anger," "How to Fight Fair," "Getting the Best of a Negotiation," "How to Stand Up for What You Stand For," "Winning through Intimidation," ad finitum. From these kinds of books read and workshops taken, I have reached the conclusion that they are mostly negative refinements on what has not worked very well in the past and tend to develop negative consequences for the future.

Positive Reinforcement, on the other hand, is an idea whose time has come. It is scientific and research based, and has proved in many companies that it increases productivity in measurable amounts. Better still, it consists of a group of easily learned and down-to-earth principles that can be analyzed, observed, and results measured.

Most managers and supervisors take to the learning readily, but application on the job is another matter. Most companies are so riddled with negative power base to force productivity that a turn to positive power base is a threat to the organizational culture. In organizational life, the closest I ever came to being fired was my challenge to this negative power.

I had counseled, my neighbor watched in silence until, one day, he observed Mr. Bull pruning and shaping some of his trees around his house. Whether he intended to top them to enhance the view will never be known, but my neighbor decided not to leave it to chance. He walked over to where Mr. Bull was busy trimming and, after introducing himself, expressed his appreciation for Mr. Bull’s efforts to trim, shape, and top his trees "as all good neighbors do." Mr. Bull laid down his equipment to respond to my neighbor’s admiring comments and glances. Thirty minutes later, after two beers each provided by Mr. Bull, the two parties had come to mutual agreement about the trees, complete with my neighbor’s offer to help with the job and to supply a chain saw — which he later borrowed from me.

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The Power Of Positive Reinforcing
Part I
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Many managers and failure to perform or to responsibly. Those who feel little

This is to answer, dear Reader, your question as to why, if Positive Reinforcement is so productive, it is not more widely taught and applied?

Also, the concept of Positive Reinforcement as it applies to management and business is not well known. Most practitioners, consultants, and teachers in this domain operate in schools, mental hospitals, universities, prisons, and the laboratory. The vast majority of industrial trainers, practitioners, and consultants advocate "inner conceptual behavior" based in humanistic psychology whose results, thus far, have not measurably increased productivity and have actually fostered, unwittingly of course, the negative climate as the means to increased productivity.

The manager or supervisor who undertakes a positive Reinforcement process needs to take on faith, these concepts about the people with whom they work:

1. PEOPLE LEARN TO SUCCEED BY SUCCEEDING, NOT BY FAILING. Success builds confidence; failure builds lack of it. I had an "oldtime" carpenter tell me once that the way he trained a young man was to "let him make mistakes." I should not have been surprised at the mistakes and delays on the home improvement he did for me. The same philosophy was espoused by the Head of a large company. "The way to develop a manager," he said, "is to put him in the job and watch his performance." Need I editorialize that this company is known in its industry for its high cost of operation, consistent cost overruns, and mediocre management?

2. AN EMPLOYEE, LEFT TO HIS/HER OWN RESPONSIBILITY TO COMPLETE A TASK, WILL PERFORM WITH SUCCESS, VS. FAILURE TO PERFORM OR TO MAKE ERRORS. Many managers and supervisors assume that people must be monitored closely to minimize errors. In my experience, the reverse is true. People who feel responsible react responsibly. Those who feel little responsibility are inclined to behave irresponsibly.

3. WHAT AN EMPLOYEE ACTUALLY DOES AND HOW SHE/HE PERFORMS TASKS ON THE JOB (OBSERVERABLE BEHAVIOR) ARE THE OVER-RIDING CONSIDERATIONS FOR THE SUPERVISOR, VS. CONCERNS ABOUT WHAT THE PERSON IS, HIS/HER VALUE SYSTEM, INNER FEELINGS, OR WHAT CAUSES PARTICULAR BEHAVIORS. Many managers, while testifying that they do not want to "play God," actually practice psychoanalysis on their people by examining their personal characteristics, inner motivations, and the causes of their behavior. This may be good for the manager's ego, but it is usually of little help to, and sometimes damages, the recipient. Managers are on safe and productive ground when they deal with the actual behavior and performance. Any person can handle how they perform. Many are not able to deal with what they have become, which is much more difficult to change.

4. BEHAVIOR IS THE RESULT OF ITS CONSEQUENCES: Or to put it another way; an employee's behavior on Wednesday results from what happened to him/her on Tuesday because of his/her behavior on Monday.

WHAT IS POSITIVE REINFORCEMENT?

Clinically speaking, a reinforcer is any event that occurs after a behavior and increases the likelihood that the behavior will continue or reoccur. There are three elements here: The situation surrounding the behavior which occurs; the behavior event itself; and the consequences, or what happens as the result of the behavior.

Three consequences are possible:

1. POSITIVE — one with which the employee feels rewarded, or a sense of satisfaction. This consequence reinforces that employee to continue behavior which brings more positive reinforcement.

2. NEGATIVE — one which the employee wants to avoid, diminish, or eliminate; such as tense work situation, nagging boss, silent boss, lack of job feedback, over-supervision, supervisor's "black book," rules to be obeyed, etc. The employee will expend considerable energy to avoid behavior that brings on negative consequences. This energy, however, seldom contributes to increased productivity. It is a defensive measure designed to cover his/her backsides.

3. PUNISHING — one that is applied directly to the employee, such as verbal criticism, hostility, orders, discipline (as usually done), pay docks, written reprimands, disapproving non-verbal gestures, etc. The punished one will tend to stop the specific behavior for which the punishment is given, but the resulting total job behavior may well be less productive and more disruptive than the original behavior that brought on the punishing consequences. This is how productivity was obtained from slaves! Is it any wonder that so many workers — yes, and managers as well, feel like slaves and often act like them in performing their jobs?

HOW DOES POSITIVE REINFORCEMENT GET ITS POWER?

Managers in my workshops, soon after they begin, frequently ask, "You mean that I don't have to be concerned with the inner feelings and the causes of why my people behave like they do?" An affirmative nod from me may bring the following, often asked suspiciously, "You mean all I have to be concerned with, to increase productivity of my work group, is their outward behavior that I can observe and react to?" Another affirmative response brings verbal and non-verbal signs of skepticism. This goes counter to all of their previous training!

I have experienced that managers and supervisors who have tasted the bitter fruit of negative organizational climates are most receptive to the power of Positive Reinforcing. Those who resist it fall into three groups, generally! Those who lack experience in supervising or managing; those who are threatened by an alternative that challenges the negative atmosphere through which they have climbed their career ladders; and those who put such little value on human behavior that the entire body of learning is trivial.

Many managers are skeptical of Positive Reinforcement as something to learn. They learned at their mother's knee. They have done it all their lives. Of course they have, but to be effective at it, a number of principles and rules must be followed of which they have been aware, have used out of sequence, or do not believe.
The Power of Positive Reinforcing
Part II  By: Myrt Webb

1. BEHAVIORS THAT ARE FOLLOWED BY POSITIVE CONSEQUENCES TO THE PERSON TEND TO CONTINUE OR TO BE REPEATED. This is the essence of Positive Reinforcement. Try it with anyone. People seldom feel rewarded just from their behaving a particular way. The good feelings come from the positive approval (reinforcement) of those around them as the result of their behavior. Predictably, they will strive harder to continue the behavior that brought on the warm feelings of approval.

2. A POSITIVE REINFORCEMENT MUST COME AFTER A SPECIFIC BEHAVIOR EVENT AND BE RELATED DIRECTLY TO IT. How often managers reward a person for their anticipated behavior. The Executive Officer of a small company told me that, after giving his employees a liberal across-the-board increase, he sent each employee a letter expressing his expectation that, after such a fine salary increase, their productivity, both individually and collectively, would increase in proportion. He was discouraged that productivity remained about the same. Of course; they already had their unearned reward!

My aged grandmother understood how to get productivity from me as a lad doing chores for her. The piece of hot apple pie with brandy sauce she had for me always came after I had performed the chores, never before! How often managers tell people to "keep up the good work," or refer to a unit as a "good work group" without anyone knowing the ingredients that make up the "good work" or the "good group." The recipients usually receive the general commendation with apathy or, as one person said to me, "Well, it's a lot better than a poke in the eye with a sharp stick." A clear and sincere positive reinforcement given after a specific behavior and tied directly to it, however, is a pony of a different hue. That shows in the upward curve of the productivity chart.

3. THE REINFORCEMENT, TO BE EFFECTIVE, MUST BE WHAT IS REWARDING TO THE RECIPIENT, NOT NECESSARILY TO THE REINFORCER. Most managers seem to believe that other people are motivated and rewarded by the same things that motivate and reward them. Whatever turns on their generator will charge the generator in the other person. They, consequently, get trapped by initiating perfectly good (to them) Positive Reinforcers that result in indifference or even hostility in the other person or in the work group. Before reinforcing, the manager needs to assure him/herself that the consequences actually will be rewarding to the recipient regardless of whether she/he sees it as rewarding for them personally.

Once, I had difficulty in convincing my organizational superior that attractive completion certificates should be issued for graduates of a series of educational workshops we were conducting because he, personally, didn't "care for such things." After awarding them on a trial basis, the certificates became closely guarded treasures, and woe to us if we inadvertently slighted anyone. People expect external and environmental rewards that are reinforcing to them.

4. THE BEHAVIOR TO BE REINFORCED MUST BE CLEARLY IDENTIFIED IN TERMS OF WHAT THE PERSON DID. Managers love to reinforce people for their "fine attitude," "forthrightness," "industry," "ability to produce," "efficiency," "technical knowledge," "initiative," "getting along with others," "effectiveness," "understanding nature," and hundreds of other value-loaded characteristics. Though they are nice to hear, they are vague and hard for the recipient to determine the specific actions that add up to the total characteristic. Power is maxi-mized when a specific action or behavior is rewarded. I learned this early in my organizational career. My teacher was my young secretary to whom I frequently referred as my "good right arm." She seemed pleased, but one day she stated that she didn't understand the term and she needed to know what she had done specifically to earn that title. From then on I reinforced her for concrete accomplishments. Her pleasure from these kinds of rewards was obvious, and it showed in her productivity. One day she told me that she now understood what "good right arm" meant, but the frequent appreciation I had expressed for her smaller achievements meant much more to her. "After all," she said, "Good right arm' is just a phrase." Then, she added, "It's simply what I am because of what I have done."

5. THE HIGHER THE FREQUENCY OF APPLYING POSITIVE REINFORCEMENT, THE MORE PROBABLE THE BEHAVIOR WILL CONTINUE OR BE REPEATED. I have heard managers tell their people, "As long as you don't hear from me, you're doing all right. But, screw-up and I'll be right on top of you." No reinforcement feedback for good works; just punishment for bad. Somehow, managers in our negative oriented business society, feel more comfortable when "straightening out" a person than they do for positively reinforcing for success. Take a lesson from your wife, or husband, as the case may be. Your marital bliss tends to be in relation to the frequency that feedback of love and approval is given and received verbally and non-verbally. So it is with your organizational marriage. Bosses and employees want it too. Frequent positive performance feedback produces a productive performance climate over the long run.

6. THE SHORTER THE INTERVAL BETWEEN THE BEHAVIOR AND THE REINFORCER, THE MORE PROBABLE THE BEHAVIOR WILL CONTINUE OR BE REPEATED. So often managers save positive performance feedback for the semi-annual performance review; or haul the person into the office, at a time that is convenient for the manager, and reinforce them for good works because "I'm feeling good today" or "I have a few minutes to spare now." Again, it is much better than a poke in the eye, but the impact is minimal. The time is past for high impact. Both reinforcer and recipient are usually awkward in giving and receiving. A sincere reinforcement, given as soon as possible after a deed by the recipient, has a powerful impact. The person connects the reinforcement with the specific deed about which she/he is already self-rewarded. Do it sometime and watch the effect, even with the most apathetic person.

7. IF THE MAGNITUDE OF THE REINFORCER APPROXIMATES THAT OF THE BEHAVIOR EVENT, THE BEHAVIOR WILL BE STRENGTHENED. At one time in my organizational career, a female staff

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member was rewarded for saving the Company $300. The usual reward was a framed Certificate of Appreciation and a handshake by the person's manager. Her Certificate, however, was presented by the Vice President, two line executives, the Manager of Industrial Relations, and me, her supervisor. The presentation was embel­lished by an elegant lunch, consumed by all of us, at one of the most expensive restaurants in the local area. The lunch probably blew most of the $300 savings. Back in the office, I asked her how she felt about the consequences of her deed. "I'll never do that again!" she emphasized. The reward was significantly more than the event warranted, as she saw it, consequently it was not reinforcing for her. We, the managers, had violated the Magnitude rule. Also, we had not determined what reinforced her. We concluded that, because we were reinforced by an expensive free lunch on the Company, she should be — but she wasn't.

More often, managers go to the other end of the scale and casually rein­force, in low key terms, for something an employee has "busted their tail on." How often we have heard, "I killed myself on this and that's all the thanks I get." Here, seeds have been sown for lower productivity. It is a safe bet the recipient will be reluctant to "kill" themselves the next time. One or two more demonstrations of this caliber and the employee will question whether they should put out much effort at all. To obey the rule, the manager needs to spend some time to determine what the appropriate positive reinforcer should be from the viewpoint of the recipient. When the deed and the reinforcement mesh, that's power.

8. REINFORCE FOR STEPS THAT INDICATE APPROXIMA­TION OR PROGRESS TOWARD A DESIRED BEHAVIOR — NOT JUST FOR COMPLETE SUCCESS.

Clinically, this is known as Shaping, and it is the one Principle that managers have the most difficulty accepting and applying. We have been students so long of the "Throw-them-in-and-see-if-they-swim" school that managers demand adequate performance now and superior performance tomorrow, with little effort on their parts to bring it about. As a consul­tant, I hear, "They've got to start producing right away or out they go," and "I don't have time to 'molly-coddle' people who aren't producing." My reactions are usually in three dimensions: (1) With governmental regulations as they are, you probably do not have much choice. You will probably spend less energy and money to develop a person's performance to your work standards than you will to go through the termination process. (2) Perhaps you need to think through your operation priorities. Just what do you have time to do? "I don't have time" usually translates into "I don't want to." (3) Managers usually see a sub-standard performing employee as an individual problem. Actually, it is an organizational one. Whatever happens to a worker also happens to the work group. All work groups members reverberate to what happens to any group member, regardless of how well they like them. Ousting a group member, no matter how well deserved, creates tension and a negative climate in the work group immediately. Conversely, efforts to develop a group member cause positive vibes in the others.

From time to time, in any organization, there are people whose behavior is deficient in one or more respects. Let's say that you have an employee on your staff who is late to work almost every day. Previous admonitions and warnings have corrected the behavior temporarily, but the tardiness behavior soon reasserts itself and you are back to "square one." Let's say that, for various reasons, the employee, with this errant behavior, it too valuable to lose. You decide to correct his behavior. Specifically, you want the employee to get to work on time.

First: You need to ask yourself some questions and to get some concrete answers. HOW FREQUENT IS THE LATENESS? Keep an accurate record of its frequency over a period of time. Clinically, this is called Base Lining. It gives you a base on which you can measure the effectiveness of your reinforcer; and it can keep you from making a fool of yourself. Once, I talked to an employee about his "habit" of leaving work early on Friday afternoon. Imagine my face when I discovered that he had done it only twice over an eight week period. I could have sworn he did it just about every Friday!

DOES THE LATENESS CON­STITUTE A PERFORMANCE PRO­BLEM IN YOUR ORGANIZATION? Referring back to my Friday afternoon friend, I actually created a problem where none existed. There is a serious question that behavior that does not detract from job performance needs to be addressed. Once I had an extremely attractive and productive staff member who frequently wore low cleavage att­ire to work. I came under considerable organizational pressure from bosses to induce her to cover up; which I resisted. I analyzed that what she wore was irrelevant to her job performance. I was unwilling to trade her productivity for a more conservative physical appearance.

IS THE PERSON CAPABLE OF MEETING THE BEHAVIORAL REQUIREMENTS? If the person is not capable, accommodations may have to be made, such as flexible time or staggered hours. Let's suppose that, here, your research has found that the lateness of your employee does fre­quently disrupt the work flow and he is capable of complying because he has gotten to work on time once and a while.

Second: Resist the temptation to talk to the employee "just one more time." This constitutes punishment to the person and it has no place in the process of Shaping; or in the whole body of Behavior Management, for that matter.

Third: Determine a positive rein­forcer that will be rewarding to the late­comer, not necessarily to yourself. Let's say that he has demonstrated lateness in the past, and is capable of complying because he has gotten to work on time once and a while.

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Third: Determine a positive rein­forcer that will be rewarding to the late­comer, not necessarily to yourself. Let's say that he has demonstrated high interest in a task that you are performing to the extent that he sometimes appears at your door during the day to discuss the task with you. He has expressed interest in knowing more about what you know. Aha! Here is an obvious reinforcer. The next time he appears at your door to get some of your knowledge, you say something like, "Gee, I really shouldn't take time during work hours, even though I enjoy talking with you about it — tell you what: I usually get to work about fifteen minutes before start time. If you'd like to get here a few minutes before start time any days, we could discuss it until start time." He agrees with enthu­siasm. Now, you must have the patience to wait until the employee fulfills the Contract. He may test you tomor­
The Power of Positive Reinforcing
Part II

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row by showing up late and coming in to discuss during the day. Remember, he has been rewarded for this before, so he expects that he can keep it up. Stick to your Contract! Now, you are beginning to operate with the principle of Extinction which says:

9. A BEHAVIOR, PREVIOUSLY REINFORCED, NO LONGER RECEIVES THE REINFORCEMENT. CONTINUED REOCURRENCE OF THE BEHAVIOR IS WEAKENED. No one is likely to change their behavior as long as their present behavior is reinforced. To change an undesirable behavior, the Reinforcer needs to determine what is reinforcing the present behavior, outwardly and environmentally, and to alter or to discontinue the specific reinforcer. The behavior will grind down when it is no longer rewarded.

A case in point was an obnoxious fellow on a foreign tour I took a few years ago. He played practical jokes, told dull stories, boasted continuously, showed off, and talked too much and too loudly. He was the center of attention, usually passively accepted by most of the tour members. This is not unusual. Bores are frequently aggressive attention getters. They disliked his behavior, but they seemed unable or unwilling to do anything to alter or to stop it. They reinforced his behavior with laughter and feigned interest. I explained Extinction to several members of the group after they noticed that I had paid little attention to the fellow. Most of the group quickly became Extinction practitioners, even beyond what I recommended. The fellow finished the tour in the company of a couple of adherents who continued to reinforce is behavior. He gave up on most of the group, which they preferred.

One problem that managers have with Extinction is their use of it, unwittingly, to discontinue desirable behavior. Oh yes, the Principle works the same for productive as well as disruptive behavior! Not long ago I had a young doctoral candidate working with me. We teamed on numerous projects and he was capable but lacking in experience and confidence. He delighted in the debriefing session in which we spent many hours. His development showed his capacity to absorb and to apply what he learned. He was highly motivated, but I finally decided that I could no longer afford the time we were spending in de-briefing. I stated that I thought he had developed sufficiently to dispense with the de-briefing sessions. An interval passed before I worked with him again. In a conversation with a colleague who had recently worked with him, I praised the young man highly. My colleague looked at me in surprise and wondered if we were talking about the same person. A later conversation with the young man revealed that I had, without thinking, employed Extinction in a counter productive way for him. He was no longer being reinforced for productive behavior.

Over the years I have observed multitudes of managers employ it under the hypothesis that “he’s a big boy now,” or “adults shouldn’t have to be ‘babied,’” or “why should you have to continue to reward people for what they’re supposed to do?” Gads, what a simple world this would be if people only would behave like they should. My biggest concern, though, is who decides how they should behave?

Now, back to your Shaping your perennial late-to-worker.

Fourth: Remember; I said at the outset that the tardy one “is late to work almost every day.” That means that, sometimes, he meets your requirements, but he usually does not. If he never arrives on time, there is a different problem that will be discussed later.

There may be some interval before he fulfills the Contract. If he does not do it within a reasonable time, your choice of a reinforcer is wrong. In the meantime, you must wait for the desired behavior to occur. Resist the temptation to remind him of the contract or to admonish him for his failure to fulfill it. If you do, you have undone all of your work so far. Both are punishers! Here is where most managers fall down. Their own vanity and cultural orientation prevent their forebearance, which has never been an American virtue.

One day soon, to your surprise, the tardy one pops his head into your office a few minutes before start time. You regain your composure and fulfill your part of the Contract. Don’t overlook it such as talking with him past the agreed time. When you finish at the agreed time, you express, sincerely, your pleasure at his coming in at a time when you could “bounce a few things off him.”

Now you have it! Chances are that his early arrival will increase with some frequency. Continue to reinforce him when he exhibits the desirable behavior, but resist admonishing him when he does not. You are now operating with:

10. CONTINGENCY MANAGEMENT: THE RELATIONSHIP BETWEEN TWO EVENTS (1) THE OCCURRENCE OF A DESIRED BEHAVIOR AND (2) THE PRESENTATION OF A REINFORCER. It is an “if — then” relationship. If the desired behavior occurs, then the reinforcer will follow. If the behavior does not occur, then the reinforcer is not presented. I remember how well my aged grandmother understood Contingency Management. I don’t recall her ever chastising me for neglecting a chore — I just didn’t get the pie!

Soon, your tardy one connects his getting to work early with a positive consequence. It is a safe bet that he will increase the behavior that gets a payoff. That is powerful!

This is all well and good, you say. You have him coming in early, but you are paying quite a price, personally, to continue it. You have to come in early and the Contract has become a burden on you to maintain his desired behavior, What can you do? Well, you can find another reinforcer. That may take some inventiveness on your part, but I am certain you are as clever as I, and look how quickly I came up with the first one! You can also employ:

11. INCONSISTENT POSITIVE REINFORCEMENT MAINTAINS BEHAVIOR. The continued application of Positive Reinforcement over a considerable length of time can become negative in its consequences to the recipient.

Some years ago I was called into a small independent bank to find out what could be done to reduce the 400% per year turnover among the employees. During my interviews with them, most of the employees discussed the 74 year-old starchy bank president, who, ten minutes before bank opening each morning, made his rounds to each employee and spoke to them in greetings and positively reinforcing ways. One teller summed up the feelings of the entire group: “When I came here three months ago,” she said, “I thought his daily greetings were nice. After a few weeks I didn’t care for it any more. Now, I’m planning to leave. I can’t stand it.”
SUGGESTIONS — YOUR WAY TO MANAGEMENT SUPPORT

Presentation Given to Michigan Chapter
NASS Conference, 1978

BY

P. D. Malboeuf

PAUL D. MALBOEUF is Industrial Relations Managers of a 90,000 employee automotive assembly division of the Ford Motor Co. He began his career at the Summerville plant (now closed) in Massachusetts in September of 1950.

The employee suggestion program has been under his supervision from that date to the present as his career unfolded.

His 27 years’ experience in management positions directly supervising suggestion program activities makes him an eloquent spokesman for both administration and management side of the causes and effects of suggestion program operations.

American Industry has come a long way during the last three quarters of a century. It has taken a lot of time to reverse trends which began long ago. One movement which may have been appropriate years ago, but which created an adversary labor-management relationship, is F. W. Taylor’s Scientific Management. Taylor wanted to create a rational organization. He proposed to systematize the operations of the plant. Taylor’s approach stressed efficiency, standardization of job performance, uniformity of behavior, discipline, and hierarchical authority. This approach was cold and logical. As a result of Taylor’s work near the turn of the century, time and motion experts were trained to study jobs to discover the one best way of doing them. The stopwatch and principles of motion economy became tools of the trade.

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Suggestion — Your Way To Management Support
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Don’t get me wrong. I’m not knocking time and motion studies or downgrading the importance of work standards. The point is that contrary to what Taylor’s system advocated, human beings are complex, emotional, social and sometimes non-rational. Scientific management either ignored the human factor or oversimplified it. We have started to discover, over the last 20 or 30 years, what makes employees identify with their Company and what they are looking for in their jobs. Employees have needs for recognition, reinforcement and for expressing their ideas. This is particularly true in view of the changing nature of our workforce. The younger, more educated employees want “a piece of the action”.

A number of alternatives have been developed to offset some of the negative aspects of F. W. Taylor’s system. In the 1950’s, the human relations movement began. This movement sensitized management to employees’ feelings, but it provided no lasting solution to the problem of how to accomplish organizational goals while at the same time satisfying employee needs. More recently, we have been hearing about Quality of Work Life programs. These programs are usually intended to improve working conditions, stimulate employee motivation, increase productivity, and improve product quality.

Inherent in all of the various participative systems are two fundamental ingredients — the need for two-way communication and the need to motivate. Analysis of a number of participative programs leads me to the conclusion that one program now in place meets both of these needs — a formal device for upward communication, which is usually where the communication shortfall is present and a motivator in the form of recognition and reward — the Suggestion Program. If the participative management concept is evolving in your respective companies, it will be recognized that you have pioneered two of its basic ingredients. In my opinion, you people who are directly responsible for the administration of the Suggestion Program in your business; you who are constantly caught somewhere in the middle between suggesters and management, command a lot of respect of which you may be completely unaware.

I have witnessed the problems that you face daily, and I am aware of the lonesome feelings that you sometimes experience. You get it from both sides. If you reject a suggestion, you hurt someone’s feelings. If you award a suggestion, your thanks is often a critical remark regarding the insufficient amount. If you pursue a good idea vigorously, you evoke criticism from those you pursue. If you don’t pursue the idea, your program flounders and you in turn are criticized. If you do a good job of follow-up with your evaluators, they growl at you, and if you don’t, they build up a backlog. Your constituents expect you to know a lot about every phase of your business, but many functions of the business fear that you already know too much. So, you see, I am aware of some of your problems. And if you think that I am alone in this knowledge, just try asking others of your acquaintance if they would like to change jobs with you. There are not very many people around you who feel that they have the stamina to take the kind of punishment that you experience every day. Respect is there. It is just hard to see.

It is perhaps that thankless, lonesome, feeling that gives birth to the frequent lament heard at your local, regional, and national conferences regarding “Management Support.” From the comments heard, it might be concluded that if you did just have management support, all of your problems would be solved. With management support, ideas would flow into the office, adequate help would be available to process, evaluators would respond quickly, ideas would get installed promptly, and your Suggestion Committee would automatically make generous awards. So, a lot of talk takes place on means and methods to sell management on the value and purpose of the suggestion program.

At the meetings and workshop sessions, you have heard some of the discussion on encouraging management support. You have probably seen some of the reports, and you have heard some of the clever plans developed to gain attention. All of this effort — all of this planning — all of this — to convince management that the program is worthy of their support: to show management that “there’s gold in them thar hills.” The hope is that if you make yourself heard, maybe they will finally see the light.

I agree that management needs and wants regular reports showing the program health and progress. But, assuming that our problems can somehow be magically erased by management support alone, from my position, appears to be dangerously short sighted. It is dangerous, because an attitude or belief of that nature shows itself in your reports unless you are especially careful. Management will feel insulted by the implications, and besides, in my opinion, it is dead wrong. Management created the suggestion program in your business! They didn’t do it to have something to kick around! No — you’ve got management support! You have always had it! The real questions is, how are you using it?

I would not presume to lecture you on business procedures, but it may be helpful for us to occasionally remind ourselves how these things work. Whether an executive is a sole proprietor, a partner, or an executive in a corporation, he follows standard procedures in meeting business needs. Once a need or a profitable opportunity presents itself to his attention he first consults his associates, and a decision is made on a method to meet the need. Sometimes needs are met by creating a new office, and staffing the office with employees assigned to the task of fulfilling the desired objectives. Thereafter, the business executive requires reports on progress. He looks to the office itself to come to him with plans for overcoming their problems. It almost never works the other way around. If he could take the time to solve all of the problems himself, the executive wouldn’t need the office or the staff. He reserves the right to evaluate and judge plans that are presented to him, and his rejection of the specific plan cannot be interpreted as lack of support for the objectives of the office. His decisions may be based on conditions that the office knows nothing about, but the decisions are his to make.

As a member of management at the Ford Motor Company, I have been presented with a number of plans formulated by the Suggestion Program people. Some of them I adopted, some I rejected, some were modified, and some were returned as unacceptable. Does that sound familiar? It should,
because it exactly duplicates the actions that are taken in response to suggestion program submissions. I am extremely proud of some of the plans I have approved.

At one Division of Ford, I approved promotional plans that were almost staggering in their extensiveness and cost. We gave prizes and gifts ranging in value from pen sets to new cars. A total Divisional promotion covering every conceivable detail was launched. As a result, the Division I am talking about, with 10,000 people, increased participation from 8,000 submissions per year to 28,000 submissions. Annual savings multiplied itself 9 times during the following three years, and that Division, then called the General Parts Division, has never been the same. Of course, that was several years ago when the country's economies were much better. The same plans, if presented today, would very likely be modified.

My present Division is the 90,000 employee Automotive Assembly Division. Those of you who have administered programs in large Divisions are aware of the difficulties in organizing promotional efforts that reach all employees with equal impact. It is like shaking an elephant's tail and waiting for the ripples to wag his trunk. Yet, plans have been presented to me that are accepted with great enthusiasm.

Another thing very much like a suggestion system is that some of the ideas are rejected. All of us who handle suggestions know what a rejection can do. It is inevitable that an irate suggester will storm into the office and proclaim his belief that the suggestion program is a management rip-off, and you, as the administrator, are part of it — now you know how management feels if you imply that they do not support your program. It hurts doesn't it? After all your hard, honest, unbiased work, you are told by the potential recipient of a cash award that the best idea he ever had was rejected because you didn't care! Needless to say, your immediate reaction tempts you to decide that you would be happy to reject any future suggestions he may submit. I don't know what the adoption percentage is in your own individual programs, but I can assure you that management's adoption percentage is about the same. Some of the ideas, for any number of reasons, simply cannot be put into effect.

While I am on the subject of adoptions and the negative psychological effects of rejections, I would like to share a recent suggestion system experience that I had in Japan.

The Oriental culture is acutely sensitive to rejections, and nowhere else in the world will you find more civilized, creative, ingenious methods devised to agree with an opposing point of view followed closely with the gentlest, almost imperceptible hint of opposition. The Oriental is cut fiercely by any opposition; he says it probably is a good idea before it's time, and a resubmission next year could easily change the decision.

Now let's get back to the question of management support. If your problem is submissions, processing time, award calculations, or whatever, I have a suggestion for you that will help you capitalize on the management support that I believe you already have. Follow your own guidelines for your suggestion system. Analyze the problem, develop a solution, and write it down. Make sure your points are real and documented. Then, make a formal proposal to your management for each of the problems you have. Start by defining the present situation, offer a workable, sensible solution, and list the advantages; you should not find that too difficult. It is really as easy as that, and your reward could bring you considerable satisfaction.

So, you tell me you did all of that one time and they turned you down flat! Where have you heard that before? OK, what did you do about it? Did you get mad and say "Forget them, this is the last time I will turn in a suggestion?" Did you tell yourself not to take it personally? Did you resubmit your idea a year later for reconsideration? Most important, did you yield to the conclusion that you don't have management support? Did you, or did you not "practice what your preach?"

My advice to you is precisely the same advice that you give your suggesters — only without the pun. Think up a new idea for solving the problem,
Suggestion — Your Way to Management Support
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or go on to the next problem. But, don’t stop trying. To quote some of your own literature, “Your next idea may be a winner!”

In essence, your suggestion program is a small model of business management, and you are the managers of the business. Without a constant flow of new ideas that meet your business needs, you will soon be bankrupt. You invite the employees to bring their ideas to you and you demand that they provide you with a specific idea designed to resolve a specific problem. You don’t care if the idea is worth 25¢ or a million dollars: — If the suggester hasn’t adequately presented his case, he isn’t going to get results. The ideas are investigated by looking at the installation cost, benefits, reliability, and their effect on other operations. Finally, they get approved or disapproved. As long as the flow of ideas continues, the best ideas can be identified and adopted, bringing health and prosperity to your business. The less beneficial ideas will be rejected — protecting the health of the business.

In carrying out those procedures, you are duplicating the procedures that will be put into motion when you take to management your own ideas for improvements in your suggestion system. It all makes sense. In short — business as usual.

One last thought. Don’t be surprised if your management is not surprised when you begin submitting your suggestions. They created the program in the beginning, and they know it’s potential. If you have been making regular reports on the program status, management knows the shape you are in. They have already guessed that some improvements can be made, and — they have been expecting you!

POSITION WANTED

Certified Suggestion System Administrator seeks challenge of setting up new, or revitalizing existing, Suggestion Plan. Six years of experience includes originating and managing suggestion and zero defects programs for multi-plant company. Has authored article published in professional journal, served as a Director of the National Association of Suggestion Systems, and has instructed at the Suggestion System Administrator’s Academy in Evansville, Indiana for the past two years. One and one-half years completed toward LLB degree. Please reply to Box A, National Association of Suggestion Systems, 435 North Michigan Avenue, Chicago, Illinois 60611.
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<td>entire cycle of any construction project.</td>
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