CREATIVITY AND VALUE ENGINEERING TEAMS

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ABSTRACT

This paper discusses the difficulty of finding an action oriented creative person in our society and how the problem can be solved by the proper organization and development of a team. It also discusses several problems encountered in companies and in the development of a team and what to do about them.

INTRODUCTION

There are those who believe that out of the entire population in the world very few have the ability to come up with new creative ideas and also have the drive and characteristics to make them happen. There are so few, in fact, that we tend to remember them. There are Edison, Kettering, Roebling, The Wright Brothers, Ford, Sloan, Chrysler, etc.

What would happen if we could get the creative people together with the action people? Could we change the world? There is the possibility that we could make major strides in accomplishing our goals and in taking advantage of many of our creative ideas.

Although we are told that we are all born creative, we know that we begin to stifle our creative instincts at a very early age to fit into society. The mental blocks to creativity fall into four general areas: perceptual, cultural and environmental, emotional and intellectual, and expressive. Although we still retain the ability to be creative, we have applied constraints to our senses and no longer see opportunities for creative potential.

We must be aware of the problems we have created for ourselves if we are to regain our creative ability. Even knowing these, we cannot look for an instant improvement. We must have the inner drive to recover our ability and practice, practice, practice.

OVERCOME SPECIALIZATION

One of the factors that has caused us to limit this creative ability has been the increasing complexity of our society. It has not only made all of us specialists but has constrained and compartmentalized our thinking. Conversely, this complexity has brought the need for more creativity so we can simultaneously consider all of the factors of performance and availability for a cost that will satisfy the market place. The way to achieve a solution is with an interdisciplinary team that notonly brings all of the technical ability together but creative and action oriented spirits as well.

POPULATION AND ABILITY

A statistical finding applied to bureaucratic systems such as governments and large companies shows that the work capacity of a population sample will follow a typical distribution curve similar to Figure 1. The curve shows an expected distribution of athletic ability from low to Olympic Standard which can be readily measured.

The curve shows two countries, Country A, with a population of about 250 million people and Country B with a population of 25 million people. Country A can be expected to produce a large number of Olympic Standard athletes in many fields but Country B will only be able to produce an occasional Olympic ability athlete and it will never be able to predict when they may arise or in what field they may be.

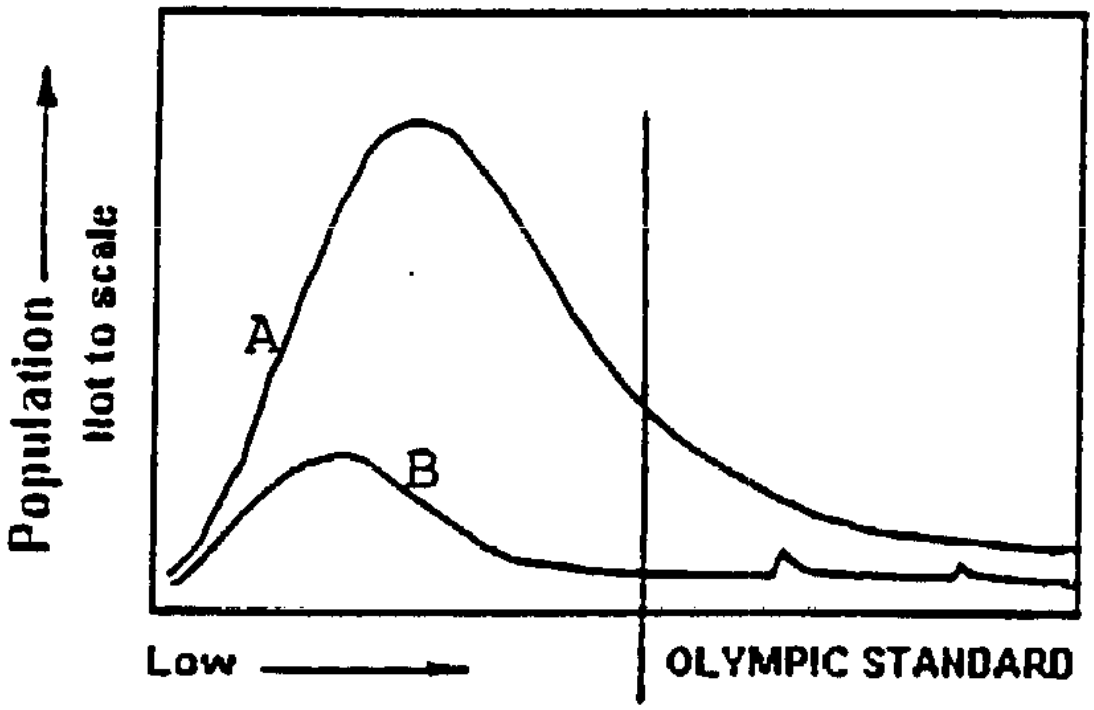

FIGURE 1

This hypothesis can be applied to business as well. For example, the U.S. is able to produce a large number of people capable of planning and directing large international operations. However, Britain, the Netherlands, France etc. must form a partnership to direct large international organizations such as Shell Oil, Lever Brothers, Airbus Industries, etc.

Since smaller groups are samples of the population of larger companies, it seems reasonable to assume that smaller groups within larger companies would have the same potential distribution of capabilities within a selected range, for example, creative and analytical people. However, the smaller the group the more difficult it may be to get a uniform sample with all requiredcapabilities. For this reason, one must be extremely careful in forming a small group of say five people. They must be selected based on the information they may have rather than their capabilities.

CREATIVE DISTRIBUTION

This brings up another interesting concept. If all of the people in a large group are analyzed, it will be found that they fall into a grouping as shown in Figure 2.

It has been found that in any group about 75 percent of the people tend to let things pass them up and do not make a conscious effort to produce new ideas or take any action to accomplish a task.

However, about 12 percent of the people are action oriented and can break through the barriers to action. They don't seem to have the creative ability but they sure can make things happen. Give them an idea and a goal and you can't see them for the dust. No obstacle is too great; there is always a way around it. In today's society, many of these people wind up in the news.

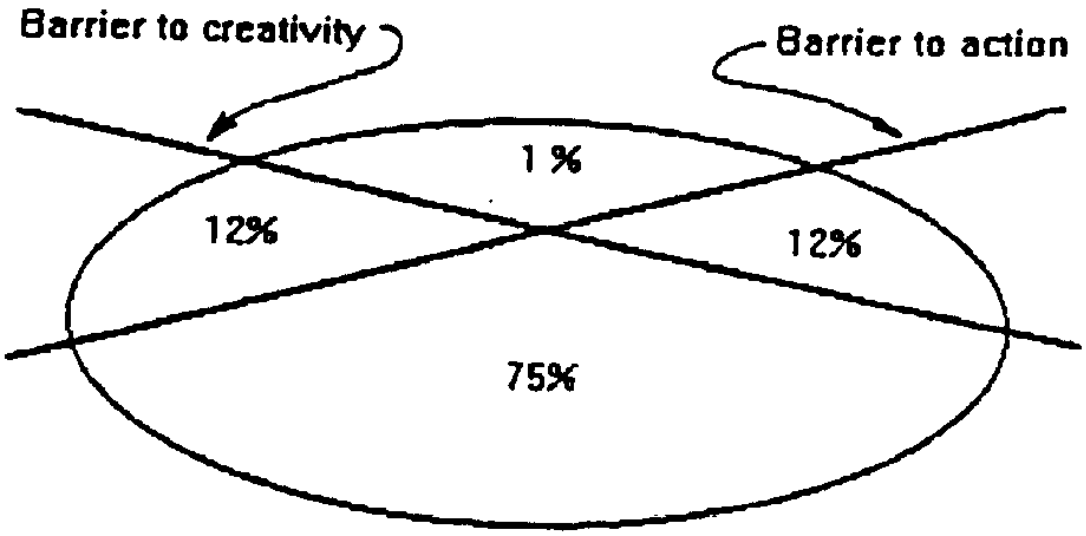

FIGURE 2

On the other hand, about 12 percent of the group are creatively oriented and have the ability to generate ideas but they do very little with them. They may talk a good game but they don't play. Many historians believe that Leonardo DiVinci was such a person.

Some people believe that he was one of the most creative individuals whoever lived but that he accomplished very little. He was so busy coming up with new ideas that he lost interest in those he had started and let them fall by the wayside as he jumped to the next idea.

How can we find these idea-action (IA) people. We must build a team. The individual will not change overnight but if we put the right mixtogether and build a team, the team will provide the effect.

So, we must work to build a team, not just a group of people working together but a group of people so involved that their brains are linked together to form a synergistic unit. Five people must be working as one.

We can see how difficult this is when we go back and look at athletics again. A football team may be a champion one year but not the next. A basketball team may win the championship for two years then disintegrate or keep on winning but not become a champion. What is the cause? The key element is knowledge and trust. They must know the rules and trust each other to do their share and support each member.

TOOLS FOR SYNERGISM

The VE system has several elements to create this integration. The first element is function definition to increase knowledge and understanding by providing a new outlook. The second is FAST. It is difficult for a group to remain apart during construction of a FAST diagram. Each brain is seeking a simple answer to How or Why. Of course, this only happens if it is recognized that the intent is to create thinking; it is not just a step in the process.

ROADBLOCKS TO PERFORMANCE

Our primary activity is conducting programs to assist companies and organizations in improving productivity, quality, performance and cost. In many cases, we have been instrumental in improving all of these factors simultaneously after which we are frequently asked to teach our methods to their people.

Whether we are conducting product improvement programs or educating personnel, we work closely with team participants to assure maximum benefit from our efforts. This gives us an opportunity to not only watch people work together but to get an in-depth understanding of their thinking processes and reaction to others both above and below them in the organization. After conducting hundreds of programs, we have been able to categorize several problems being faced by many firms. Some companies do not have people with the ability to solve their problems, others organize groups without any consideration for thehuman relations involved, thereby slowing program progress. Still others have been so constrained by the organization that they are working with only a part of the necessary information to achieve a successful program result.

These and many other difficulties can be found in any company. In some, one problem may be dominant; in others, several may be found. Whether it is one or many, these problems hinder competitiveness in the marketplace.

We have selected several examples of projects that have involved one or more problems to illustrate the need for team organization, cost awareness and human relations in conducting VE projects. These same problems may be extrapolated to hinder progress in any part of an organization.

The problems are:

1. Commitment
2. Team Organization
3. Negative authority figure

Commitment Example 1.

After the project has been selected and it has been determined that it offers a satisfactory potential benefit from improvement, a team must be organized and the necessary information collected before starting the workshop. In this case the project required a major product design improvement to prevent a cost increase of serious proportions.

A preliminary meeting was held to select and identify team participants and required technical and cost information. The person responsible for designing the product and the responsible manufacturing people were included. In addition, one person was included in the team as a liaison responsible for following all VE projects for the company.

The workshop was begun with an orientation outlining the VE process. Three things became readily apparent. The design engineer did not want to waste time following the process. Several people were withdrawn from the process for periods of time and others left early and came in late. After two days, we cancelled the project.

Careful review and analysis of the program identified several problems. Although the designengineer had not been able to solve the problem, he resented the intrusion of others even though he had agreed to participate. There were complaints that the information was not accurate even though its primary purpose was guidance. Lack of punctuality created a serious loss of time and the continuous withdrawal of people prevented the uniting of the group. Now the question is, "What can we learn from this experience so that we can prevent its happening again"?

Although many hundreds of projects had been organized the same way and produced successful results, this project failed. On reflection we determined that the first problem was a lack of a strong show of commitment to the project by the management in spite of many successful past projects. It may be that complacency set in and that it was felt unnecessary to emphasize the need. This led to sporadic attendance, lax participation and resistance to the method. In addition, although the liaison person had attended several VE projects, he had never taken any initiative towards aiding in conducting the project. He began to feel that he knew all about how VE was done and there was no need to waste time on such things as function definition, FAST, etc. Consequently, he sided with the dissenters. The result was a disaster for everyone. The participants did not learn the process, they did not produce a beneficial result and the company was faced with a large price increase. Management must open the project with a strong indication of expectations no matter how successful programs have been in the past.

Team Organization Example 2.

Although our standard procedures were followed relative to organizing a project team and in the collection of project information, nine people greeted me at the start of the project. Two of them were vice presidents who wanted to attend to observe the program. We pointed out that nine people were too many to form an effective team but for an additional charge, we could add an additional person and have two teams. An agreement was reached to have one team with seven persons including a vice president.

Under normal circumstances there is really no problem during the Information and Creative Phases with a large team. However, in a large group one or two persons are periodically withdrawn from the group and do not participate full time. These are not always the same people.

In the Evaluation Phase, when we are trying to develop concepts, the large group creates difficulty in developing a consensus. To eliminate this problem, the group was periodically split into two segments and brought back together to consolidate ideas. The groups were based on areas of expertise and the VE facilitator's observations made during the course of the project.

This use of two groups tended to expedite creative development and decision making. When the CVS determined that ideas were sufficiently developed by the individual groups, they were brought back together to evaluate and develop further concepts. Actually, rather than seven individuals, the two groups worked together to produce outstanding results acceptable to all.

Negative Authority Figure Example 3.

In organizing and developing a team it is necessary to select people with the required information. The VE process of function definition and FAST construction breaks down resistance to new ideas and visualization as new thoughts are uncovered. However, in rare cases, a negative figure with great authority may become a serious roadblock. We had this experience recently.

A design engineer with essential information was a member of the group and participated fully in both the Information and Creative Phases, However, when the team started to screen ideas the problem developed. He was so familiar with the product and its history that he could list dozens of reasons why it was not possible to change. To add to the problem, he took a substantial amount of time explaining why "it" couldn't be done. He was also frustrating the team. We had to get rid of him without creating a conflict.

Our problem participant was a very competent computer operator and he agreed to make a copy of our FAST diagram on the computer. By the time he returned, the problem was solved and he had to agree the ideas were possible. The result was a series of satisfactory recommendations.

GENERAL DIFFICULTIES

There are other problems such as the participant who doesn't put anything into theprocess, he only goes along for the ride. His performance is usually overshadowed by the others. There is also the problem of information, mainly cost. When cost information is readily available the program is expedited and results are improved. Trust and cooperation develop teamwork and benefits far beyond normally expected performance.

The biggest initial roadblock is time. It takes time to produce results. Our normal timetable calls for a 5 day workshop. We break a project into units of a size we feel will produce a profitable result. The first question is why can't it be done in 3 days.

Sometimes a project can be completed in three days when most of the participants understand the process. On the whole, we have proof that a three day VE project usually results in benchmarking with a 5 to 10 percent improvement. On the same project, a five day VE program based on function analysis and FAST can produce a 35 to 75 percent improvement.

It takes time to get the team to develop a compact relationship. It takes time to break the barriers to creativity and it takes time to screen ideas for a workable potential solution. If you want the benefit, you must make the investment.

SUMMARY

In most instances the Job Plan and the VE process resolves conflict problems and aids in building a team that is both creative and action oriented. The process of function definition, FAST and Function-Cost-Value analysis clearly identifies the problem. It brings out ideas that may never have been considered and highlights new opportunities. Frequently, a negative person at the start of a project becomes an enthusiastic presenter at the end.

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