

Deliberate Insight in Team Creativity  
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Abstract

Preliminary analysis of data collected from trained expert facilitators of ad hoc creative teams suggests that complex analytical techniques such as costed function modeling and decision criteria matrix may have far more impact upon a team's creative effectiveness than frequently researched measures such as idea quantity. An intriguing relationship in these data between complex creativity and the amount of time spent in evaluating ideas and planning their implementation seems to suggest that a shift in definitional focus from ideas to the insights which reveal those ideas may facilitate both research into team creativity and planning of more effective team problem solving.

Increasing the effectiveness of "cross-functional teams" used by many organizations to increase their effectiveness with complex problems and opportunities is a major concern of many organizations and many individuals. The term "cross-functional" refers to teams that involve representatives of each of the business "functions," such as marketing, engineering, production, etc. These teams have been around for many years, under labels such as "multi-discipline," "interdisciplinary," "task force," "diagonal-slice teams," "tiger teams," etc. The term is often used to refer to any team that involves the spectrum of perspectives needed to understand a problem completely.

While the techniques and concepts that have emerged from the research into individual creativity and invention certainly seem to benefit the performance of these teams, the "world-view" of these approaches to deliberate creativity seems to be a poor fit with some of the dynamics of these efforts.

Rhodes (1961) did a nice job of pointing out the various uses of the adjective "creative"

as applying to the four P's: person, product, process, and press (or environment). He also clearly delineated between the craftsmanship to produce a creative product (which might be quite mundane) and the idea that made it artistic or creative. New and better seemed to be the theme that everyone used for distinguishing creative ideas and products, but many noticed that there were often differences in the judgment of "new-ness" and "better-ness" between the creator and the rest of the world. Not only that, but different knowledge domains in the world might have quite different perceptions of newness and better-ness. One distinction that is often made is between creativity as the generation of an idea and innovation as the adoption or implementation of an idea.

So we have an idea centered model in which a person of some degree of creativity, working in an environment of some degree of creativity, following (consciously or unconsciously) a process of some degree of creativity, generates an idea of some degree of newness and better-ness in their own judgment that is seen as having some degree of newness and better-ness in some

knowledge domains, and which might be adopted and implemented by some person, group, organization, or culture, depending on its "resistance to change."

On the basis of this model, various research methods measure the rate of idea production, the diversity of ideas produced, the characteristics of people who generate more and better ideas, the resistance to change of others, and the impact of the ideas. Others try to relate the impact of an idea to the creativity of the idea, and the creativity of the idea to the creativity of the process, environment, or person.

Since the work of "cross-functional teams" is to deal with problems which are beyond the capacities of any one individual, which can only be understood and dealt with by an assemblage of people who understand the problem from different perspectives, the resulting dynamics conflict in many ways with the idea focused research paradigm:

1. Since cross-functional teams deal with cross-functional problems, many of their solutions are cross-functional. As a result no one person can fully understand many of the ideas. Therefore, it is difficult to find the "generator" or "inventor" of many of these complex ideas.
2. In many cases, teams work hard on a problem and develop and recommend new ideas, but follow-up on project impact determines that while none of those ideas were implemented, many changes have been made which are based on newly discovered perspectives that underlay the proposed, but rejected ideas. This seems like an impact of creativity, but what happened to the ideas?
3. How do you assess the creative effectiveness of a team effort when it is discovered that the idea they recommend and implement has been known to people in the organization or industry for many years? It does not seem to be enough to label it "innovation," "implementation," or "salesmanship," because it looks neither like project management nor selling. Something creative seems to be going on.
4. When creativity is defined as divergent thinking, the generation of ideas that transcend the existing assumptions, it is found that the less team members know of a problem and its traditional knowledge domain, the more divergent their ideas are. Therefore, in this perspective, to increase team creativity one should involve younger, less experienced people. However, I have consistently observed that the ideas of team members we label the most "resistant" can be the greatest contributors to team success. Experience and knowledge seem to have a strong positive effect on a team's creative success.
5. The term creative seems applicable to groups, organizations, and other social entities, yet there seems to be more to it than whether or not the environment encourages or facilitates individual creativity.

Bohm and Peat (1987) suggest that every field of research should experiment with alternative paradigms, simultaneously using different ways of looking at the phenomena to generate research and theory. To enable research design that better addressed cross-functional team issues, an alternate to the idea perspective for defining and discussing creativity was developed

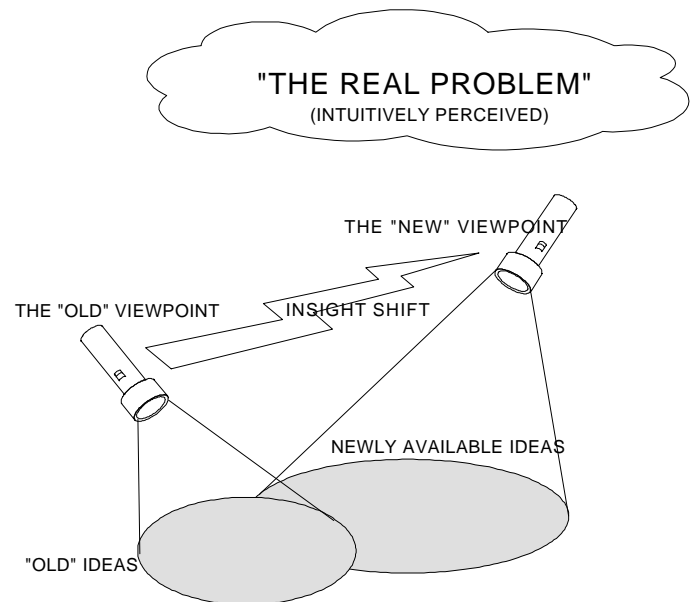
and used to generate items for inclusion in a survey of certified facilitators of cross-functional teams.

### An Insight Model of Creativity

Although research is generally aimed at assessing objective dynamics, the alternate approach used here has its roots in that most subjective and individualistic phenomenon of all, the "AHA" or "Eureka!" experience. Throughout history, various individuals have described this reaction a person has to getting an idea (Koestler, 1978). As an alternate paradigm, I would suggest that this intensely physical, emotional, and intellectual experience marks our fundamental recognition that a profoundly advantageous change has taken place in our thinking. I suggest that this self-perceived advantageous shift in perspective or paradigm can be seen as the essential and defining phenomenon of creativity.

Figure 1 is designed to explain this "insight model":

1. A flashlight has been chosen for the model as an analogy for our perception of a problem. The surface below represents all the things anyone could ever do. The area of that surface illuminated by the flashlight signifies the set of ideas that fit the problem statement. If the flashlight represents a problem statement or intention like "raise the bridge" the illuminated circle represents all the various actions that might raise the bridge.
2. A second flashlight represents a new formulation of the problem, such as "increase the gap between the bridge and the water" or "get tall boats past the bridge." The surface area that its



pool of light illuminates includes all the ways to accomplish that goal. In successful creativity, some of the alternatives illuminated or made obvious by this new viewpoint are better than the best of the ideas made obvious by the old perspective.

3. The lightning bolt labeled "insight shift" represents the shift to the new definition. Although getting such an insight might take years, when it happens, it seems as fast as that lightning bolt.
4. The cloud above represents the "real" problem, the complex interaction of wants, wishes, and reality that is only approximated by our viewpoints and problem statements. Locating the second flashlight of the new viewpoint closer to that cloud represents our perception of the closer fit of the new perception to the total problem.

It is certainly true that problem redefinition as a technique for discovering ideas has been discussed in more places than it is possible to mention, but for research in some areas, it might be useful to treat that shift in definition as the creative event, and

the resulting ideas as the after-effect, not as the creativity. In comparison to the idea focused paradigm, the structure and dynamics of this alternative model seem to have a better fit to some interesting issues about creativity and its reception, especially in cross-functional projects.

1. From the perception of someone holding to the old flashlight or perspective, these new ideas are outside the limits of the problem. This seems to be the "box" people refer to as "out of the box" thinking. It is interesting that what makes these new ideas valuable is not that they are out of the old box, but their better fit to the ultimate problem, as represented by the new defining vision. Therefore, it might be more appropriate to refer to creativity as "better box" thinking.
2. One of the more frustrating things about creativity is when we have struggled long and hard to discover a significantly advantageous idea, then we describe it to someone else, they see the idea as obvious, and therefore the creativity as trivial. In this model, it is pretty clear that if you describe the problem in terms of the second flashlight, the solution is going to seem relatively obvious.
  1. On the other hand, to a person with the old viewpoint, still only seeing by the old flashlight, the newly obvious ideas are outside their perspective, and make no sense, until they shift to a new perspective that fits the new idea. This certainly fits the reaction commonly labeled as "resistance to change."

One aspect of this viewpoint is that the AHA response as a measure of creativity is independent of idea generation. In this

model, when someone else's idea triggers an advantageous shift of perspective in you, you are being creative. This "appreciative AHA" is an essential aspect of team creativity. In a team situation, it is possible for a person to generate and state an idea that may give them a mild AHA, but triggers an intense AHA reaction in someone else who can better see the potential.

The AHA we feel when the shift happens is a very real experience. Its strength seems to depend on how much we care about the problem, how far we have to shift, and how much better the insight seems. If we care a great deal about a problem (or the person with the problem) and/or if the insight seems especially profound, we feel a tremendous surge of excitement, joy, and satisfaction. An evolutionary perspective might suggest that the energy of the response prepares us to use the idea and the strong pleasure feeling exists to attract the organism to being creative and learning new things about its environment.

Note of course that the strength of the AHA is not necessarily related to the potential impact of the insight or idea, since any AHA reaction of an individual or group is based on its own understanding and valuing of the problem. The less a person understands a problem or situation, the easier it may be to have the AHA experience, but such AHA's could be labeled trivial or irrelevant AHA's. On the other hand, a strong AHA reaction by the well-informed to their own or other's ideas can be seen as a strong indicator of successful creativity. And AHA reactions by those with the resources to make the changes, leads to almost instant implementation, or "innovation."

Group creativity. As groups develop, they develop patterns of group assumptions or

paradigms (Kuhn, 1970). When rigid and inaccurate sets of these assumptions cause disasters, we call them "groupthink" (Janis, 1972). These group assumptions exist almost independently of the individuals. For example, it is meaningful to ask a team member to state their beliefs about some assumptions, then to ask them what "the group" thinks. Very few people have trouble understanding this question and seeing a difference.

If a group or team has a certain viewpoint, then shifts to a new viewpoint which the group "knows" is closer to the real problem, then it seems that we can say that the group has been creative. In the same way, organizations have assumptions and viewpoints that can shift, giving us a way to investigate organizational creativity.

If creativity is that shift in viewpoint, the degree of creativity seems to relate in part to the number and strength of boundaries one had to cross. For example, in an organization, ideas that only affect a single department and which do not require changes at other hierarchical levels in the organization would be less creative than ideas that also require the boss and/or other departments to change assumptions and beliefs. Ideas that require the organization to change its definition of a problem would seem to be more profoundly creative. This is strongly related to Kirton's (1994) Adaptor-Innovator scale, in which adaptors make small shifts in the flashlights and innovators make larger shifts, but both are shifting closer to the same ultimate problem.

Acceptance and acceptability. Acceptance of ideas has long been seen as a problem faced by those who have seen themselves as successfully creative, but it can be attributed, at least in part, to the "acceptability"

of the idea, its fit to the expectations and goals of the client system. Therefore, this seems to be a good indicator of success for cross-functional teams, since their goal is not self-expression or creativity, but usable changes worth making.

Of course, sometimes the person evaluating suffers from lack of flexibility, what has been called "hardening of the categories," and has a difficult time seeing the advantage of any new perspective. However, I suspect that often the idea or shift of perspective which so excited the idea generator offers little or no advantage within the perceiver's understanding of the problem, and may even give a significant disadvantage. This may be the root of what is labeled "resistance to change."<sup>1</sup>

A logic for research. The reverse of resistance makes an interesting test of the creativity of a team. If a team generates an idea which requires an organization to shift its perspective on the problem, which affects a higher level in the organization than expected, or spans disciplines, that idea would seem to be more creative, and its acceptance by the organization would indicate a very high quality of idea as well as higher organizational creativity. Therefore, such acceptance could be used as an indicator of successful team creativity.

Team phenomena associated with the acceptance of such challenging ideas would seem to be important intervening variables which should be striven for when leading

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<sup>1</sup> If you believe that "resistance to change" is a stable human characteristic, simply imagine the most resistant person you know and estimate their resistance when they are informed that their income is going to double with no additional effort or consequences. I suspect most labeling of others as "resistant to change" is when they resist the ideas the labeler likes.

groups. Any facilitation methods associated with those intervening variables would seem to be important tools for team creativity.

A survey was developed which asked experienced experts in leading team creativity to assess specific cases from their experience on a variety of potential success factors drawn from the literature of creativity, from the literature of the field, and from the insight model of creativity above.

### A Opportunity for Investigation

The field of Value Engineering (Miles, 1971; Mudge, 1971) was selected because of the author's access to its members, an established international certification program for experts, and a forty plus year history of utilization around the globe in a wide variety of industries. The capacity of these teams to deal simultaneously with social and technical aspects, with the costs of production and value to customers, and with the inputs of many disciplines and stakeholders seemed to make them a good example of complex problem solving.

### Value Engineering

Generally, Value Engineering, also known as Value Management and Value Analysis, involves leading what are now called cross-functional teams to develop improvements to anything which has a design, including products, services, processes, buildings, facilities, and organizational structure. Its basic strategy is that every aspect of a design has an intended benefit, its function, and that among the alternative ways of performing that function are better ways to do things. Focusing creativity on the intended function, rather than on improving the current solution, is seen as giving better, more useful ideas. In the insight

model, this can be seen as a deliberate seeking for new flashlights or perspectives.

The method evolved during World War II as a way to deal with material shortages in production, and was applied after the war as a way to reduce product cost without reducing product value. It has been used to optimize almost every kind of constraint and criteria, including weight of aircraft components, size of miniature parts, and elapsed time in schedules.

Value Engineering studies vary widely in scope from a single part in an automobile to the design of a multi-million dollar water treatment plant. One or more teams are assembled with expert individuals from each of the disciplines and perspectives that seem relevant to the problem. These teams often meet for forty hours, sometimes over a single week, other times over several months. Studies are generally led by a trained leader through a multi-step job plan, very similar to the creative problem solving process (Parnes et al., 1977).

As part of the process each team reviews the available information, spends time discussing the functions which must be performed, generates ideas about the design, then selects and documents ideas for presentation to an outside decision making body, such as company executives, the original designer, or a client's representatives. It is then generally left to the "client" organization to select and implement ideas.

Function analysis. Value Engineering originated with the questions "What does it do?" and "What else will do that?" As it evolved, the field expanded those questions into a multi-level modeling process (function modeling or FAST diagramming) which maps the relationship from each aspect of a design back to the intrinsic goals

of the system or the customer (Bytheway, 1965; Snodgrass & Kasi, 1986). As a further refinement, the field has developed a way to allocate costs to these functions giving what is called a costed function model. Such a model allows a team to ask how much of the cost of a coffee cup is for holding the coffee and how much is for keeping the coffee warm. Such a model of an automobile would allow a team to understand how much of the cost of the car is for resisting corrosion or for adding passenger comfort.

While the intensely analytical nature of this technique would seem to conflict with many of the techniques used to increase divergent thinking, it is in fact one of the most powerfully creative elements in the Value Engineering process.

### **Research Method**

#### Survey Population and Design

Since 1974 the Society of American Value Engineers has operated a certification program for professionals in the field. Each person certified must have experience in the field, take specific training courses, submit a paper about a topic in the field, and pass a written test on the field. These "Certified Value Specialists" were utilized as experts for this study.

Of the more than 300 individuals certified, approximately 250 were members of the society with current addresses available. Each of these 250 was sent a questionnaire with a postage paid return address envelope. Forty-three were returned completed (17%) while another ten were returned with notes explaining why they would not be

able to complete the rather detailed questionnaire, for an overall return rate in excess of 20%. Seven of the forty-two responses (17%) were from countries other than the United States.

Each respondent selected three specific projects from their experience, at least one higher in success, and at least one lower in success, generating a total of 129 cases. For each team study they answered 80 questions, checking off a descriptive scale of five levels or alternatives.

### **Results**

#### Data analysis

Because of the nature of the response data, generally ordinal, but probably not equal interval and certainly not rational, Kendall's Tau-C was used from the cross-tabs function in SPSS to assess the strength of association between each pair of variables.

This test compares all the pairs of cases for two factors, determining how many times both factors were high or low, compared to how many times one factor was higher and the other was lower.

There was significant association between a great many of the variables, so only the strongest associations, those with a  $p < .001$  and a Tau-c  $> .3$ , were selected for analysis.

Strongest associations. Of the many strong associations this discussion will focus on those related to accepted high creativity, the strongest associated intervening variables, and the strongest facilitation oriented variables.

Table 1  
Associations of Input Variables to Intervening to Output

<u>Facilitative In-puts</u>	Intervening Variables				
	Function produces understanding	Function produces an AHA	AHA's for own ideas	AHA's for others' ideas	Idea quantity
Costed Function Model	0.4221 ****	0.4956 ****	0.1711 *	0.1936 **	0.2231 *
Decision Matrix	0.2129 *	0.3410 ***	0.2358 **	0.2894 **	0.2573 **
Idea Development Time	0.3284 ****	0.3080 ****	0.3269 ****	0.2242 ***	0.2296 ***
Implementation Planning Time	0.2887 ****	0.2935 ****	0.3808 ***	0.3700 ****	0.1411 *
<u>Acceptance of:</u>					
Multi-discipline ideas	0.3254 ****	0.3437 ****	0.3036 ****	0.2728 ****	0.1509 *
Ideas affecting higher level	0.2004 **	0.2904 ****	0.3468 ****	0.3080 ****	-0.0205
Ideas which shifted project definition	0.3289 ****	0.3257 ****	0.3085 ****	0.3654 ****	0.2282 **
* = p < .05    ** = p < .01    *** = p < .001    **** = p < .0001					

We can define "high creativity" by three of the items related to acceptance (or acceptability):

1. Acceptance of ideas affecting higher levels of management than management expected
2. Acceptance of multi-discipline ideas
3. Acceptance of ideas which required the organization to shift their view of some or all of the project

Looking at the intervening variables of group phenomena, four items emerged as strongly associated with these three acceptance items:

1. Use of function improves the teams understanding of the project
2. Use of function gives team new AHA's into the project
3. Team members got AHA's from their own ideas

#### 4. Team members got AHA's from the ideas of others

Surprisingly, quantity of ideas generated did not show up among the strongest associations with the high creativity variables. However, it is included in the analysis to serve as a contrast to the insight/AHA perspective.

The survey included a wide variety of input variables. Among those related to leadership of the team's interaction process, the following emerged as most strongly associated with the desired intervening variables:

1. Costed function analysis
2. Ideas selected with a decision matrix
3. Time to develop and improve the ideas
4. Time spent planning how to get ideas accepted and implemented

Table 1 reflects the strength of relationship among these elements, along the linkage from input to intervening to output. The direct linkages from input to output did not show equivalent strength and significance.

The table is organized so that input factors listed on the upper left are associated with intervening variables listed at the top right, which are in turn related to the output factors of "high creativity" listed at the lower left.

### Discussion

#### Analysis over Divergence?

As a first conclusion, the costed function analysis technique of value engineering seems to both generate a greater degree of understanding of the problem and trigger AHA's about the problem, which in turn

trigger the production of complex ideas (challenging discipline boundaries, organizational levels, and given problem definition) found acceptable by the client organization. Although this technique seemed to affect idea quantity, that same idea quantity seemed to have less of an impact on complex creativity success.

#### Idea Timing

The relationship of the other three input factors (decision matrix, idea improvement time and implementation planning time) to AHA's and successful creative ideas is intriguing, because these activities happen after the phase in which the teams creatively seek to generate ideas. It might seem that when a team gets a great and surprising idea that a team might decide to use a decision matrix or might decide to spend more time in idea development or implementation planning. However, because teams are drawn from so many different departments, companies, and geographical locations, schedules are drawn up well in advance and there is rarely an opportunity to take up more time of the participants. In addition, value engineering leaders tend to have their own preferred combination of methods, and would not decide to use a decision matrix just because the ideas got interesting.

Our usual model of creativity proceeds from information to insight to ideas to idea polishing and implementation. How can the extra time at the end of the cycle cause something to happen at the beginning of the process?

Maybe the biggest AHA's happen when you are trying to perfect, plan, and document the ideas.

If the real event of creativity is the shift of perspective, the learning of new and better

ways to look at things, maybe that insight development has some momentum, continuing over time with even better insights showing up later. Or maybe the process of trying to make new ideas better fit the real world triggers even better insights and ideas.

This idea certainly seems worth investigating. As a preliminary inquiry, the author discussed this phenomena with several professionals in Value Engineering. The typical response was: "You know, not that you mention it, some of the best, highest impact, and most surprising ideas have tended to show up on the last day, when we were in the middle of the rush to complete the proposal report."

If this phenomenon is real, a facilitator should plan on and encourage such last minute ideas. The potential impact seems to be tremendous.

### **FACILITATION IMPLICATIONS**

The first practical implication is that a team with a new and better perspective can probably find, plan, and implement better ideas relatively easily. The real trick lies more in finding that better viewpoint than producing lots of ideas. Rather than problem redefinition being seen as a tool for increasing idea production, brainstorming and other deliberate divergence can be seen as tools whose main relevance is their ability to facilitate and generate the advantageous problem redefinitions that are the "real" creativity.

The results seem to indicate that the team's AHA experience is a strong predictor of acceptance of the ideas. Interestingly, the facilitation factors with the highest impact on those AHA's seem to be more analytical than many creativity facilitators would value. A costed function model is an ex-

tremely analytical task, but a task which deliberately breaks the common assumptions about the project. The criteria decision matrix does the same for our understanding of the project criteria, forcing the team to examine assumptions and reset priorities. In each of these techniques, it could be said that the facilitators were going for "deliberate insight." By deliberately trying to discover better problem statements, the teams more quickly achieved advantageous insight.

Therefore, it would seem that facilitators should know of these and similar analytical methods and understand their potential as "insight technologies" for increasing the accuracy of perception without decreasing the flexibility of team members to shift allegiance to a new problem statement. After all, it is generally accepted that too much analysis can lead to paralysis (of the mind). It also suggests that other techniques which attempt to more directly target the insight, such as synectics (Gordon, 1961) should be considered.

#### Research and Theory Implications of the Insight Model

Those participating in this survey seemed to have no problem with the idea of "appreciative AHA's" or with categorizing proposals by their degree of challenge to various boundaries such as "level of organization affected," "multidiscipline," or "required organization to change its problem definition." In fact the survey seems to endorse the construct of insight (defined as advantageous shift of viewpoint) as a way to discuss creativity.

While this approach can mire the researcher in "the eye of the beholder" in understanding the subjective aspects of each creativity event, it does seem to enable research which is closer to real world phe-

nomena. The greatest difficulty for many researchers may be that the only person who can answer the question about the relative degree of individual creativity is the individual being tested. The only qualified assessor of a group's idea is that group. Experts in a field can only assess whether it is new and better to the field, not whether it is new and better to the individual or group, nor whether it is new and better for the real, multi-domain problem.

On the other hand, the concept of insight gives a clarifying question to use in assessing creativity of output: Did the idea change your perspective to one you feel is better? The concept also brings in acceptance or acceptability as a positively correlated measure of idea quality. If a test group and a control group submit their ideas on the same project to the same panel of experts and clients, variances in personal flexibility and knowledge are controlled for, and their assessment of quality and creativity can be used to assess relative quality of the groups.

As assessment techniques for viewpoint shift, evolve, and standardize, they can be used to approach other areas difficult to approach with current constructs, such as discovery creativity and organizational creativity.

Discovery creativity. Models focused on generating ideas seem inadequate to describe discoveries, such as Alexander Fleming's development of penicillin. His discovery consisted of noticing that airborne micro-organisms were killing bacteria, testing out his hypothesis, and spurring the development of a new type of medicine.

However, it has been pointed out (Edidin, 1988) that for decades, the laboratory notes

of researchers and the class notes of students refer to the phenomenon of something in the air killing off the bacterial cultures. In fact, researchers learned to always prepare multiple dishes, since they could certainly expect some of their cultures to be ruined.

Fleming's creativity seemed to be the flash of insight, the AHA shift to a new perspective. In the old perspective, bacterial cultures were being ruined. In the new perspective, killing of bacteria was seen as a way to overcome disease. The "idea" of the phenomenon existed all along. The AHA shift made new possibilities obvious.

Thus, discovery creativity seems to be congruent with seeing creativity as a shift of perspective that makes new possibilities obvious. We can therefore analyze events of discovery to isolate the particular shifts and attempt to discover factors that facilitate and support such shifts. We can use similar techniques to consider the process of adoption of such a discovery.

Organizational creativity. Various methods are available in the field of organizational behavior to assess the assumptions and beliefs of organizations. These methods should provide a way to identify events of shifted perspective when a new and better viewpoint is adopted. With such a process of measuring organizational creativity, it should be possible to better identify factors which facilitate this process.

Of course, since teams tend to be used as a strategy of organizations, organizational creativity will get a lot of attention as team studies look at processes of acceptance and adoption.

## Future Research

This survey and model generate a great many potential hypotheses about the phenomena of team creativity. Some of the relationships that the author is attempting to design research for are:

1. Is there a relationship between the creative strength of an idea (number of boundaries crossed and perceived strength of the AHA experience) and the impact on the outside world, such as savings or profit?
2. What are the relative insight generating strengths of various facilitation processes, especially analytical techniques? Does the House of Quality of the Quality Function Deployment method outperform the costed function analysis of Value Engineering that it is based on? How do these techniques compare to the fishbone charts of causality or the analytical methods of Kepner Tregoe?
3. Do brainstorming and other generative techniques proven to have an impact on idea quantity and novelty have similar impacts upon insight generation?
4. What impact does computerizing these various techniques have upon their positive impact on group and individual insight?
5. What are the underlying elements of the AHA experience? Is strength of caring for the goal part of the strength of the AHA? Are number and strength of assumptions another part? Is there some measure of personal flexibility that will predict one's ability to have an "appreciative AHA"?
6. Are there various aspects of facilitation that cause the individual team members to internalize the relevant issues of other team members so that their individual

AHA's are more representative of group AHA's?

## **SUMMARY**

A survey of expert leaders of multi-discipline teams seems to suggest that AHA's or shifts in viewpoint that the team sees as advantageous may serve as a useful definition of team creativity. Among the strongest contributors to advantageous insight seem to be the analytical techniques of costed function analysis and the multi-criteria decision matrix, and additional time in idea improvement and implementation planning.

These results seem to suggest that various analytical and developmental techniques that may negatively impact idea quantity and novelty may in fact have a strong positive impact upon team creativity. This research was partially based upon and seems to endorse a paradigm of creativity being individuals or social systems shifting their viewpoint to one they consider better rather than the traditional focus upon individuals producing novelty, suggesting that this alternative paradigm be explored by at least some researchers in the field of creativity.

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