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CRUISING TO AHA!

Overview

Cruising to Aha! is a new creative problem solving system developed especially for small business groups with limited resources (money, time, and people). A totally natural process, its power and efficiency derive from mimicking the same three steps that world class artists, poets, scientists, composers and a host of other inventive geniuses seem to experience in order to create breakthrough ideas, products and new aesthetic forms. To insure success in a reasonable time frame, we add some modern "high speed enhancers" that shorten the time while maximizing chances for an exciting new solution. These steps: Extinction, Mutation, and Selection, are the ones Charles Darwin proposed (Darwin, 1859).

In our business process, Extinction translates into dismissal of existing ideas as remedies for a business problem causing concern, Mutation is an external stimulus or random event that triggers a new idea, and finally Selection is a technique for modifying the new idea into a workable solution.

In addition to our demonstrated success with "Cruising", there is a major benefit for small groups who use this process. Since much of the work in the creative process is solitary and subconscious, a great deal of the effort is individual, with group members participating by themselves at their own convenience, then, sharing their input on a password protected web site. Aside from significantly lowering demands on their conscious time and personal presence, this design actually increases everyone's creative performance—It allows the group to virtually "Cruise" to an aha while not significantly altering their daily routine. (See Appendix A—Roles, Structures and the Flow of Events in our 3-phase process on pages 46.)

Introduction

The Nine Dot Problem:

I was first introduced to Dr. Robert Weisberg, a professor of experimental psychology at Temple University here in Philadelphia, about 30 years ago. I was teaching a course in Creative Problem Solving at a large corporation where I was also head of basic research in New Product Development. I had recently learned to facilitate "CPS" having spent a week in June for the previous 3 years at the "The Creative Problem Solving Institute" which was housed at Buffalo State University in New York. A mutual friend suggested that Weisberg was doing exciting research in the creative process, and my group might benefit from hearing about it.

Weisberg talked with the group about his thorough studies using his graduate students over the previous 7 years on "The Nine Dot Problem". If you haven't seen this problem, it seems almost impossible to resolve. We are presented with a 3X3 matrix of 9 dots. The problem is to touch all 9 dots with 4 straight connected lines without your pencil leaving the paper. The solution involves going outside the boundaries of the matrix (fig.1). Of course, those boundaries are imposed not by the problem, but by the problem solver. Weisberg gave his students this problem and recorded them trying to solve it. The results he reported to us transformed my understanding of the creative process. The students were unable to go outside the self-imposed matrix boundaries until they had virtually guaranteed themselves they could not solve the problem by staying inside. THEY HAD TO ACCEPT THEIR INABILITIES BEFORE THEY COULD ENHANCE THEM!

Weisberg (1988) then went on to discuss his evidentiary studies of how our great creative geniuses in the arts and sciences resolved difficult work issues, seemingly using mental processes that were similar to those experienced by his graduate students. He researched the inventions and creations of Watson and Crick (the double helix), Edison (the Kinetescope), Picasso (Guernica), Kekule (the structure of benzene), Coleridge (Kubla Khan), Darwin (the theory of evolution), and a host of other inventive giants. In each case he demonstrated the same thing. "Novel solutions to problems come about in an EVOLUTION as one gradually moves away from the conceptions with which one began. This incremental process is set in motion by feedback demonstrating the inadequacy of initial thoughts and ideas, —"Wow what an aha experience this was for me. I realized immediately what I had known intuitively all the time. Not only were the conscious brainstorming sessions I had learned about in Buffalo, and was teaching, colossally inefficient, they were not part of the natural problem solving process for me, or for other creative people.

My associate, Peter Lloyd, and I then studied Darwin's theory as expressed in his 1859 book "On the Origin of Species". Darwin (1859) proposes that all creatures adapt to an ever-changing world by a process he called "Natural Selection". As species adapt from generation to generation, nature selects those species better suited to survive than their competitors. Darwin posits a 3 phase process for evolutionary change: Extinction, Mutation, and Selection. We discovered that the human creative process actually mirrors these steps. We then set about determining how, with the use of modern technology and a number of techniques we developed, we could significantly speed this 3 step process up for groups while significantly increasing the chances that breakthrough solutions to difficult problems could be found. Though the term "Speedy Evolution" seems like an oxymoron, it lives in our system. Following is a description of the 3 phases.

1. Extinction

In our business process, Extinction translates not only into dissatisfaction, but actual mental dismissal of existing ideas and habitual pathways as remedies for a situation causing concern. We can not overstate the importance of this step. Without the recognition that the old ideas don't work, new ideas are simply not available to our psyche. Consider the following two anecdotes:

Consider what you do when you misplace your car keys:

a. You look in places you habitually leave them. When this fails you….
b. Look in the same places, but this time with more focus, intensity, and a touch of obscene epithets. When this fails you…..

c. Think about where you were prior to loosing them, and try to retrace your steps. When this fails you…..
d. Make a random search in places you would not expect to find your keys, and if you're lucky, ---Aha! You find them. Then in a flash of recognition, you remember why they were there in the first place.

The most arresting part of this search episode, is that your keys may well have been on the periphery of your vision field when you began your initial search, but because you didn't expect to find them there, YOU COULD NOT SEE THEM!

> A true story…Years ago, a friend Eliot, was a creative director at BBD&O a multinational Advertising Agency located in the U.S. Eliot was in charge of the Firestone Tire account. He has just created (in his view) one of the greatest ads he had ever developed. Four weeks before the TV shoots were to take place, Eliot received a call from the legal department. They told him he could not use the ad because a Canadian agency had just run an ad that was too similar for another tire company. Eliot was devastated. Try as he might, everything he thought of was at a best a pale comparison to his initial creation. Finally, in a fit of frustration Eliot cried out. "I'll never be able to come up with anything that good again." That night he woke up at 3:00 A.M. with the answer…Two months later, an award winning ad campaign was aired by Firestone. It depicted a Firestone engineer at an awards dinner in his honor. His boss is shown giving a talk about how great the tire is that the engineer developed. At the end of his speech, the boss turns to the engineer and says "Now go and make it better." The ad closes with a flash of the engineer's now anguished face saying "I'll never be able to come up with anything that good again."

In both of these situations, the recognition of failure created a new state of receptivity in the problem solver's mind so that unusual thoughts and new patterns increased in perceived value. The unusual held more promise because once failure was accepted, notions of relevance and irrelevance shifted. The problem solver was now "freed" of being a slave to what he had previously considered to be important. Therefore, it becomes abundantly clear why a significant part of any creative process, in part, makes the irrelevant relevant.

The challenge now became creating this recognition state in the group—comprised of both the idea people (Ideators) and the Decision Maker (DM) in a relatively short time frame (see Appendix A for roles and structures in Cruising.). To do this, we decided to shift the focus of the group from the problem to the DM's thought process. This, it seemed, would automatically change the relevance hierarchy and allow fresh approaches to carry more weight. We do this by asking the DM to make a list of all his (her) failed attempts, including things he has considered, but rejected. He then creates a summary statement looking for the "pattern of failure". It details in 1 or 2 sentences why he thinks his ideas didn't work and what they were lacking. This has now created the explicit recognition of failure, and served to shift the group focus.

Another technique we use here is to ask the DM to consider and list all of the assumptions he is making about his situation that are so basic, that he doesn't consciously consider them when thinking about his situation. We then ask the group to systematically and con-

sciously reverse them to see what fresh approaches are suggested in preparation for the 1st idea episode in the Mutation phase of Cruising (Grossman, Rogers, Moore 1988).
(One business breakthrough that our assumption reversal inspired occurred with a large polymer company in the US who manufacture Polyvinyl Chloride (PVC). We were looking for new uses when 1 person in the group suggested "plastic coffins". The amount of negativity this idea created about the merits of wood vs. plastic, and the "dignity gap" between the two convinced me the idea was worth pursuing! (See Facilitator Appendix A). So, I then asked the group to verbalize their assumption(s) about plastic coffins that were so basic they didn't even consciously consider them. The first response was "Coffins are used to bury dead people." As soon as the group heard this, someone immediately offered "Plastic Pet Coffins" for consideration. This was a wonderful idea, and this new business was created in a plant in the Northwest of the US, and currently grosses 25+ million dollars a year.)

Finally, we do all this work remotely, on a password protected web site, to allow each individual in the group to consider new perspectives at their own convenience.
At the same time we save the time and cost of getting together until we reach the Selection Phase of our process where the interaction between the Ideators and the DM needs to be more immediate and spontaneous.

Even though we are ready to leave the Extinction phase of our process, you will see that some form of extinction goes on in the entirety of the next 2 phases until the breakthrough solution (which we think is inevitable) occurs.

1 MUTATION

Having dismissed all the old ideas and patterns, what do we put in their place? And, as always, how do we do this efficiently? We know the politically correct cliché; "no idea is a bad idea" is simply not true. Just look at all the energy we spent dismissing the initial batch. Fortunately, there was a wonderful study by Gordon and Pose (1981) reported in the Journal of Creative Behavior, "Conscious/ Unconscious Interaction in a Creative Act".

It has long been reported that the macro process of creative problem solving involves 4 steps: Preparation, Incubation, Illumination, and Verification (Wallas, 1926). In Preparation, the creator gathers information and tries to resolve the problem using methods and ideas that are familiar. When these are unequal to the task, because of the problem's additional complexity, newness or unique challenges, the creator enters the Incubation phase, leaving the problem alone, and doing some other work or leisure time activity. Incubation leads to the Illumination phase in which, as if out of nowhere, the new idea "presents itself" (this can take moments up to years!). Last comes the Verification phase, where the creator shapes the new insight into final form for implementation.

Gordon and Pose (1981) asked the question, what happens at the interface between Incubation and Illumination? In other words, what is the "micro-process" of the creative act? To answer this question, a group of people were selected who shared two common characteristics: They were deemed by their peers to be creative people, and they said they had the ability to recall in detail the step-by-step mental events they went through during the Illumination process, even though it only lasted for a split second or two.

One might well question the veracity of this last claim. They might have made the sequence up after the fact as justification for their insights, rather than a factual reporting of

events that actually occurred. Nevertheless, almost all of them, in one form or another, reported the same 4-step sequence of events:

1. I get a mental picture (an internal image) that is remote from the problem domain.
2. The image becomes fuzzy and distorted. There is generally a sense of motion (as in the rapid focusing and defocusing of an overhead projector).
3. The image momentarily disappears.
4. Finally, a new image takes its place; one which is a "resonance form" of the initial image, but is now back in the problem domain, offering the seed to a wonderful solution.

This study may seem difficult to digest, but there is a self-reported experience that occurred over 100 years ago that exemplifies what these folks were describing that occurred in the field of Organic Chemistry:

Friedrich August Kekule' was a professor of chemistry at Ghent University in the 1860's. He, along with a group of world renowned associates, was working to elucidate the structure of an organic molecule which had evaded all prior attempts at resolution. Here is what he wrote about his brilliant breakthrough ".....I turned my chair to the fireplace and dozed. Again the atoms were gamboling before my eyes. My mental eye could now distinguish larger structures....longer rows twining and twisting in snake-like motion. But look! What was that? One of the snakes had seized hold of its own tail, and the form whirled mockingly before my eyes. As if by a flash of lightening I awoke; ---- and this time also I spent the rest of the night working out the consequences of the hypothesis" (Rothenberg 1979).

The snake seizing its' own tail gave Kekule' the hexagonal structure idea of benzene---perhaps one of the greatest discoveries in Organic Chemistry of the 19th century.

What a wonderful example of the Gordon and Pose' (1981) study.

So it seems if we are to speed this process by providing stimuli for idea generation to our group, we need to meet two criteria:

1. The stimuli need to evoke mental images. The more sensory information in an idea, the greater the chances internal images will result---so stimuli must be SPECIFIC.
2. The stimulus, on the surface, may be far from the problem domain, or even impossible to execute, but some characteristic of it should provide a link with a potential solution.

This 2nd criterion is automatically met in our process, because we ask the group to always consider what's wrong with the ideas from the previous step, Decision Maker Evaluation, as a motivator for their next Idea Episode.

Idea Episodes

Mutation contains 3 separate idea episodes. Each episode has two parts: a. group idea generation and b. DM idea evaluation. (Appendix 1). In the 1st part of each idea episode there is no distinction between the DM and the Ideators—they all give ideas. It's only in the 2nd part, Evaluation, that the roles are separate.

FIRST EPISODE IDEA GENERATION:

The group is asked to consider the Decision Maker's gap as articulated in the summary statement at the end of Extinction and provide 1-3 ideas. At this juncture, no additional stimuli are provided. It is expected that the group's top of mind responses should be ade-

quate for them to suggest, what they think are exciting paths to consider. Here, there are 2 criteria for submission. They should strive to give specific ideas they think will work. They are also asked to be brief and not defend or explain their choices; this is up to the DM in the Evaluation phase. Of course, if they have more than 3 ideas that satisfy these criteria, they should submit them all.

FIRST EPISODE IDEA EVALUATION:
The Decision Maker gives a 2 part response to each submitted idea. First the DM lists what he (she) likes about the idea. Secondly he talks about any problem he has with it. After he goes through each idea, he takes 3 additional steps:

He makes a general statement concerning the group of ideas as a whole (in general what they seem to be lacking). Next, he talks in more detail about his favorite idea. Finally, and most importantly, he talks about the idea he most dislikes!

In this step, as in all others, we are looking for the Decision Maker's energy. This, above all else, provides us with fuel for the next idea episode.

If the DM sees an idea that he loves, he tells the group what he needs from them to make it work. They then simply accede to his request in the next episode.

Just as importantly, if there is an idea he hates, there is an embedded wonderful solution right around the corner. His emotional response is indicative that we have touched on the Real Problem. One that has not yet surfaced. And often, in my experience as a facilitator, one form of reversal of the submitted "bad" idea has yielded a beautiful solution. The group is instructed to keep this in mind in the next idea episode.

SECOND EPISODE IDEA GENERATION:
We now provide additional stimuli for the group to consider. (See Appendix B) These suggestions purposely move the group away from the constraints of the problem domain, and merely act as provocations to shake loose new perspectives. As before, the group is asked to consider the DM's 1st episode evaluation and again submit 1-3 ideas for consideration. Here, there is a need for the group members to be more creative, as they must modify the ideas that the stimulators suggest to yield practicality.

SECOND EPISODE IDEA EVALUATION:
Here again, the DM talks about what he likes and dislikes about each new idea submission. He also tries to identify the best and worst ideas and why he feels that way. He then focuses on the approach that seems to contain the seeds for a solution, and resolves to his satisfaction, many of the initial issues. He describes in detail all of the positive attributes he sees. He also summarizes, in one or 2 sentences, what is still missing for a wonderful potential solution. However, here he takes the additional step of distilling what's missing down to 1 or at most 2 words in preparation for the 3rd and final idea episode. Hence, if what's missing is how to convince other business stakeholders to "buy on" to a novel approach his favorite idea offers, his one word might be "Support".

THIRD EPISODE IDEA GENERATION:
After reviewing the previous evaluation, the group focuses on the path the DM is suggesting, paying particular attention to the DM's one word summary; again seeking 1-3 ideas

that practically and productively respond. To help in this 3rd and (hopefully) final episode, we suggest the following stimuli:

We have the group members go to www.Gocreate.com/animal—a problem solving system using animals as stimuli designed by Grossman and Lloyd (2011). The Ideators then click on "Online Tool" where there are 3 choices. Clicking on the 2nd choice, "Animal Crackers Online Tool", they find a list of 18 words. Clicking on the word that comes closest to the DM's one word summary at the end of the last phase, they find a series of animal pictures, each with a described behavior that successfully executes that word. Then, choosing the most intriguing animal adaptation, they attempt to convert it to a great idea for the DM. To help with this metamorphosis, we suggest they use our "Search for Utility", which we think might replicate the Gordon and Pose 4 step "Imagery-Fuzzed Imagery" process (1981 Gordon & Pose). This technique is detailed in the Selection phase of Cruising, where it is used again by the DM.

THIRG EPISODE IDEA

The DM now makes his final choices describing in detail the idea(s) he has chosen for a solution, and his potential plan of implementation for each. We are now ready for the final phase of Cruising to Aha.

3 SELECTION

In this 3rd and final phase of our process, which in Natural Selection, Darwin calls "The Struggle for Existence, the DM (with the aid of the group) creates a final wonderful solution and maximizes the chance for successful implementation.

This is by far the most difficult part. We are all too familiar with the sobering consequences of "Murphy's Law".

We use a 2 part process here. In the 1st part which we call "The Search for Utility", the DM tells the group what's positive about his final choice by responding to the following 5 questions:

The Search for Utility

a. What does the idea accomplish?
b. Under what conditions might there be a maximum benefit?
c. What's different about this idea from others considered previously?
d. What specific mechanisms cause this idea to function well?
e. What general principles guide the idea's successful operation?

In the 2nd part we ask the DM to list all of the potential problems that may get in the way of successful implementation. He does this by asking the group questions that start with the words "How to-". For example, if he thinks something may cost too much, he says "How to do this more cheaply?" or How to make the idea more cost effective? The group members now help once more by generating ideas that fill the remaining gaps while maintaining the spirit of the DM's choice.

Perhaps any creative process, including Cruising to Aha, is summed up most elegantly by the great French poet Paul Valery who said "It takes two to invent anything. The one makes up combinations; the other one chooses, recognizing what he wishes and what is important to him in the mass of things which the former has imparted to him. What we call

genius is much less the work of the first one than the readiness of the second one to grasp what has been laid before him and to choose it!"

Appendix A

Roles, Structures and the Flow of Events

1.Roles and Responsibilities—There are three roles in our groups: Decision Maker, Ideators (Idea Generators) and Facilitator.

Decision Maker The decision maker (DM) is the owner of the problem. Generally, it is this person who has the most personal stake in a successful outcome. As such he(she) has 2 responsibilities. The first is to provide information to the group and subsequently answer additional questions the group members may have in the Extinction Phase. Secondly, the DM is the evaluator of all the ideas the group generates in the last 2 phases (Mutation and Selection).

Ideator The Ideator's main responsibility is to provide great ideas to the DM. The Ideator also makes sure he understands the issues; he does this by asking open ended questions, mostly in the Extinction portion.

Facilitator The facilitator's responsibility is to manage the total process, and insure the ideators have what they need to generate great ideas for the DM. This involves maintaining lines of open communication among all parties, insuring each understands the other's point of view. He must especially pay attention to the energy of the DM and the group. Energy, both negative and positive, has the seeds of a breakthrough solution, and the group needs to pay special attention to it.

General principle of interaction: This process works best when there is a power sharing mentality. The more value the DM is able to find in the Ideator's suggestions, the harder the Ideators will work to generate ideas that the DM can use. The facilitator works with the DM to maintain this balance.

Most Important Ground Rule

The group is told to never let any instructions or protocols inhibit their ability to generate a great idea, or get in the way of their personal creative process. If they experience this, they contact the facilitator who will make every effort to accommodate them.

The Process

1. Extinction

The DM records a general overview of the situation causing concern.
He then details all the ideas he has attempted or consciously considered, and why he thinks they didn't work. The Ideators then ask open ended questions to help them prepare for the

Mutation phase of the groups work. The DM then responds to these until everyone feels they are up to speed'.

All this is done on a password protected web site, so the group's physical presence is not required.

2. Mutation

There are 3 episodes. Each episode contains 2 parts, Idea Generation, and Idea Evaluation. These are described in detail in the body of the chapter. In the Idea Generation portion, everyone can be an Ideator, even the facilitator (See Ground rule).

In the Evaluation phase, the group resumes the 3 role structure, with the facilitator attempting to insure that all ideas are fully understood by the DM. Here, the Ideators, are again, not present. Again all ideas and succeeding correspondence are recorded on the web site.

3. Selection

This proceeds as detailed in the text, however everyone's physical presence is preferred. This should be relatively short in duration (1-3 hours at most). Again everything is recorded.

Appendix B

Suggestions for Idea Generators in 2nd Episode of Mutation

Make something larger, extend it, increase its value.
Make something smaller, compress 2 functions into 1, miniaturize a component.
Reverse a basic assumption, change a path, rearrange a design, substitute an alternate.
Assume you have some superpower –strength, speed, intuition.
Change a natural law—suspend gravity, reverse time, create energy.
Eliminate a constraint—money, time, technology.
What would your child suggest?
Look for the worst possible idea—and reverse it.
Use something found in a park.
Involve an additional sense---smell, sound, touch.
Have a private conversation with your living or dead creative hero—what would they suggest.

Generate an idea(s) with a FATAL FLAW

a. It costs too much
b. It takes too much time
c. It is illegal
d. It puts the user at risk
e. It gives away a trade secret
f. It leads to undesirable clients
g. It gives mixed signals
h. It is addictive
i. It is culturally taboo

j. It requires too much user effort
k. It has an inappropriate dimension.

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Author's Brief Bio

Stephen R. Grossman is, by background, a paper and fiber physicist, inventor, author, and internationally known consultant in creative thinking. Grossman holds a number of US and European patents (including one for Cottonelle Bathroom Tissue), and 3 industry wide technical awards for creative performance as head of Basic Research in New Product Development for the Scott Paper Company. Subsequently, Grossman has co-authored two books and 40+ articles on creative thinking, including 3 lead articles in the Journal of Creative Behavior. His 1994 article in JCB (Grossman, S.R. 1994, Vol.28, 4th quarter, Transcendence as a subset of evolutionary thinking.) provided a backdrop for his new process "Cruising to Aha". His 1st book, Innovation, Inc. (1988), sold over 20,000 copies and is published in English, Spanish, and Hebrew. It has been used extensively by corporations in the US and Mexico, as well as The Institute for the Development of Thinking in Jerusalem, Israel. Aside from a host of multi-national corporations, Grossman has done extensive consulting interventions with NASA Goddard space Flight Center. He was the keynote speaker at the 4th International Symposium on Innovation in Quebec City.

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