A Typology of AHA's

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As we attempt to improve creative effectiveness around the world, it might be helpful to have a better understanding of the AHA experience. More precisely what distinguishes one type of AHA, idea, insight from another. Once we have given names to these different types of AHA'S it will facilitate discussion and learning.

For any invention or idea, there seem to be many possible sources or routes to the idea. For many years, inventors always described their process as one of logical inference, until a few were willing to describe their "irrational" AHA or Eureka experiences. It seems logical that if we understand the different kinds of AHA experiences these people had, and if we find ways to encourage that experience in individuals and groups, then more great ideas might emerge.

Many people seem to use approaches to enhancing creativity that only apply to a small part of the spectrum of ideas. One way to expand the potential of deliberate creativity is to organize these various real world AHA experiences into a category system or typology, and consider ways to enhance all parts of the spectrum.

This essay explores the advantages of distinguishing between ideas that are more or less deliberate in their process, and which are more or less in the clear part of the conscious mind. It may well be that different cultures approach deliberate creativity from different parts of the typology, just as different professions emphasize different parts. It is hoped that this discussion will generate different category systems that fit the phenomena even better. (This is definitely a work in process.)

Insight through Methodology/tools and techniques AHA's (deliberate and conscious)

One of the most common approaches to deliberate creativity is a structured set of listings, evaluations, discussions and conversations in which each step has different rules in order to facilitate different types of thinking. Brainstorming is a conversational listing process in which judging comments are discouraged. This is followed by an evaluation phase in which the group looks for potential among the ideas, then tries to further develop the potential. The creative problem solving process uses a series of brainstorming loops to look at objectives, facts, problem statements, ideas, etc. in a process to understand and solve more complex situations. These processes are key aspects of many different deliberate problem solving processes and programs targeted at many different kinds of problems. This may be the most common approach to deliberate creativity in solving problems, especially in business.

Insights through Imagery/Visualization AHA's (Deliberate, sub/unconscious)

It is hard to imagine Einstein inventing relativity theory with brainstorming. Cartoons have been published of a brainstorming Einstein writing many different versions of E = MC2 on a blackboard. Those who have read biographies of Einstein know that he developed many of his key concepts by building mental images and thought experiments for the various elements, such as imagining himself riding on a beam of light, looking in a mirror. After he worked out the ideas through these visualization exercises, he created the mathematical language to describe it to others. Many have talked about Einstein having a unique brain to think these things, but he also had a unique education in which he was taught to represent scientific problems as visual images.

Nicola Tesla was also known for deliberately manipulating the images in his mind. It was even rumored that he could construct a mental picture of an electric motor, leave it running in his mind for a week, then come back and check for wear points.

This is not simply a difference of using images instead of words, because the deliberate conscious techniques often use pictures, maps, blue prints, etc.

Insights through Dreaming AHA's (Non Deliberate, sub/unconscious mind)

Once inventors and artists started admitting to less rational processes for the AHA's behind inventions, a great many stories were brought forward. Elias Howe got the critical element of his invention of the sewing machine from a dream in which African cannibals had captured him, but strangely, each of their spears had a hole in the spearhead. Upon awaking, by moving the hole in the machine's needle to the end, he was able to get the mechanism to work.

Friedrick August Kekule von Stradonitz got several of his scientific discoveries from dreams. One night in that pre-sleep dream phase he saw snakes dancing in the air, then biting their own tails, an image that led him to understand the ring structure of the benzene molecule. Samuel Taylor Coleridge told the story of a complete poem coming to him in a dream, but as he attempted to write it down a visitor interrupted him and he was not able to remember the rest. His development of that was the poem "Kubla Khan".

Many others around the world have reported having information coming to them in dreams, and trusted that information enough to act upon it, whether looking for a lost item or choosing one's path in life.

Insights through Observational/Accidental AHA's (Non-Deliberate, Conscious)

A very different source of invention was people who perceived the same world everyone else did, but saw very interesting implications and possibilities. Bette Nesmith Graham was a typist who was very frustrated when IBM's new carbon ribbons put letters on the paper that were very difficult to erase. At previous jobs she noticed that artists and sign painters did not erase their mistakes, they painted over them. So she obtained some white paint that matched the paper well and was able to correct mistakes cleanly. This became the product known as "liquid paper" and made her quite wealthy.

Many are familiar with the invention of the vulcanization process by Charles Goodyear, who had commandeered his wife's stove to mix up different mixtures of chemicals to create a rubber that was strong enough to be used as an automobile tire. None worked. Then he noticed that in the mess he had made on the stove was some hardened rubber that had all the properties he needed. Instead of seeing a mess to clean up, he realized that processes of heating and cooling could "cure" the mixtures into the material he needed.

Others are familiar with the story of a German chemist Constantin Fahlberg who was working as a student at Johns Hopkins University in the chemistry laboratory of Ira Remsen. One night at dinner he found much of his food to be very sweet, and realized that his hands still held one of the chemicals he had been assigned to work on that day. His patent of that material became saccharin.

As we look over these different examples and sets of stories, we can sort them by two key dimensions which can form the basis of a typology model.

Horizontal Axis: deliberate or non-deliberate process

Our horizontal axis distinguishes between the deliberate or non-deliberate nature of the process.

The deliberate processes in which we are busy seeking a solution and chose a process of thinking seem to demonstrate that the effort of processing information will generate a solution. The deliberate uses a methodology or procedure for getting ideas. There is an effort made to seek a solution. Brainstorming is a deliberate process. Combining ideas such as clocks with radios to get clock radios would be a deliberate process. Imagery as Einstein used it was a deliberate process.

	Deliberate	Non Deliberate
Preconscious Subconscious Unconscious	Guided Imagery/Visualization ✍ Einstein ✍ Tesla	Dreaming ✍ Benzene Ring ✍ Sewing Machine ✍ Kubla Khan
Conscious	Methodologies ✍ Brainstorming ✍ Creative Problem Solving ✍ TRIZ ✍ Value Engineering	Observation/Connection ✍ Velcro ✍ Saccharine ✍ Liquid Paper ✍ 3M Post it Notes

The non-deliberate processes seem less active and more about receptivity. Alex Osborn described this as "The part of the creative process that calls for little or no conscious effort" and "Ideas spontaneously well up into our consciousness". Others speak of intuition as the process of ideas emerging into our minds with no idea of their source or process. This is also similar to the concept of illumination in which many religious books were said to consist of God speaking into the mind of the writer, who just brought it out into the world as words or art. Alex Osborn recommended "purposeful relaxation" as a way to "invite illumination".

Dreaming would be a non-deliberate process. Accidental or unexplained AHA's that just suddenly emerged such as the discovery of saccharin would be considered non-deliberate.

Some find the very structure of a deliberate process to be an inhibitor to their receptivity to ideas. The preferred position on this spectrum certainly differs by profession and by national culture.

Vertical Axis: Sub-conscious/Conscious

Many of these stories relate creative ideas and insights to processes that seem to take place in parts of our mind that we cannot perceive, whether preconscious, unconscious, or subconscious.

The distinguished mathematician, John Von Newman,spoke of his belief in what he called the subconscious. According to Alex Osborn, Von Newman "testified that he often went to bed at night with an unsolved problem on his mind and woke up the next morning able to scribble the answer on the scratch pad he kept at his bedside." Another example of the unconscious mind at work would be the poet Milton, who would on occasion wake up his daughters to dictate to them.

Different levels of consciousness come into play when we look at this spectrum. An example would be Einstein. With guided imagery/visualization a person is certainly conscious but can also be in a very relaxed dreamlike state. So much so that it is not uncommon for people to fall asleep during guided imagery sessions. This state of consciousness would be somewhere between deep sleep and full consciousness. However, both imagery/visualization and the dream state seem to allow easier access, either deliberate or non-deliberate, to the unconscious wisdom or unconscious mind. Many artists and writers, as well as many inventors are very clear about this openness to and exploration of the images and patterns within the mind.

The conscious end of the spectrum is more in touch with our conscious mind rather than our subconscious mind. Brainstorming is a conscious deliberate attempt at creativity. Again, looking at the discovery of saccharin, Fahlberg was in his conscious mind observing and making a connection even though he was not following a deliberate process.

Summary

Many of the most commonly used creative tools seem to fall into the conscious, deliberate quadrant. However, many interesting ideas emerge from the sub-conscious/unconscious mind quadrants. It may be useful for more facilitators to learn to teach and lead methods such as guided imagery to help tap more deeply into the subconscious/unconscious mind.

As we move in the direction of non-deliberate we begin to see that the key element is receptivity -- looking at our dreams and at the world in a receptive way, open to possibilities, connections, and implications. One method for this might be to use deliberate techniques such as brainstorming and visual imagery to help people recognize the values of this material, then provide support for exploring ideas and the world, such as writing materials by the bed, writing on first awakening, scheduling walks in stimulating environments, etc.

Eventually, as deliberate techniques prepare the mind with more information and as the receptivity is increased to the signals from the sub-conscious/unconscious parts of the mind, more interesting and powerful ideas may begin to emerge. The synergy of all four quadrants working together may be the most powerful engine of creativity.