EINSTEIN’S FAVORITE CREATIVE THINKING TECHNIQUE: COMBINATORY PLAY

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Think of how Albert Einstein changed our understanding of time and space by fantasizing about people going to the center of time in order to freeze their lovers or their children in century-long embraces. This space he imagined is clearly reminiscent of a black hole, where, theoretically, gravity would stop time. Einstein also fantasized about a woman’s heart leaping and falling in love two weeks before she has met the man she loves, which lead him to the understanding of acausality, a feature of quantum mechanics. A caricature of special relativity (the relativistic idea that people in motion appear to age more slowly) is based on his fantasy of a world in which all the houses and offices are on wheels, constantly zooming around the streets (with advance collision-avoidance systems).

Einstein summarized the value of using your imagination to fantasize best when he said **“When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge.”**

**THOUGHT EXPERIMENT:**Try to solve the following thought experiment before you read the paragraph that follows it. The thought experiment is attributed to the German Gestalt psychologist Karl Dunker.

One morning, exactly at sunrise, a Buddhist monk began to climb a tall mountain. The narrow path, no more than a foot or two wide, spiraled around the mountain to a glittering temple at the summit. The monk ascended the path at a varying rate of speed, stopping many times along the way to rest and to eat the dried fruit he carried with him. He reached the temple shortly before sunset. After several days of fasting and meditation, he began his journey back along the same path, starting at sunrise and again walking at a varying speed with many stops along the way. His average speed descending was, of course, greater than his average climbing speed. Is there a spot along the path that the monk will occupy on both trips at precisely the same time of day?

If you try to logically reason this out or use a mathematical approach, you will conclude that it is unlikely for the monk to find himself on the same spot at the same time of day on two different occasions. Instead, visualize the monk walking up the hill, and at the same time imagine the same monk walking down the hill. The two figures must meet at some point in time regardless of their walking speed or how often they stop. Whether the monk descends in two days or three days makes no difference; it all comes out to the same thing.

Now it is, of course, impossible for the monk to duplicate himself and walk up the mountain and down the mountain at the same time. But in the visual image he does; and it is precisely this indifference to logic, this superimposition of one image over the other, that leads to the solution. The imaginative conception of the monk meeting himself blends the journeys up and down the mountain and superimposes one monk on the other at the meeting place.

Your brain is a dynamic system that evolves its patterns of activity rather than computes them like a computer. It thrives on the creative energy of feedback from experiences real or fictional. You can synthesize experience; literally create it in your own imagination. The human brain cannot tell the difference between an “actual” experience and a fantasy imagined vividly and in detail. This discovery is what enabled Albert Einstein to create his thought experiments with imaginary scenarios that led to his revolutionary ideas about space and time.

Imagination gives us the impertinence to imagine making the impossible possible. Einstein, for example, was able to imagine alternatives to the sacred Newtonian notion of absolute time, and discovered that time is relative to your state of motion. Think of the thousands of scientists who must have come close to Einstein’s insight but lacked the imagination to see it because of the accepted dogma that time is absolute, and who must have considered it impossible to contemplate any theory.

Einstein described his favorite creative thinking technique as “combinatory play” in a 1945 letter to his friend Jacque Hadamard as the essential feature in the way he thought. Our brains are conditioned to associate similar subjects but have great difficulty are forcing connections between two dissimilar and unrelated subjects or images that seem to have no associations. Our educated and practiced ability to associate similar concepts limits our ability to be creative (apples and oranges are fruit). We form ‘associative walls’ that makes us very efficient at finding common associations  but it discourages us from looking for connections between dissimilar subjects.

Overcoming these associative habits is probably one of the most important skills when it comes to creative and innovative thought. It is no coincidence that the most creative and innovative people through history are experts at forcing new connections between dissimilar subjects through combinatory play. I’ve traced the technique back to Leonardo da Vinci who wrote in his notebooks “It is not possible to think simultaneously of two subjects, no matter how dissimilar, without connections being formed.

**EXAMPLE: CAN YOU GROW A BOOK?**

Following is an example of how I used the technique with a publisher who was looking for more innovative ways to publish books.

The question I asked him to think about was “What is impossible to do in your industry, but if it were possible would change the nature of your business forever?”

The publisher kept a dream diary. He told me that when he had an interesting problem, he would write “key” words in a notebook by his bed before he went to sleep. When he awoke, the first thing he would do was to try to recall his dreams and record everything he could remember. Then he told me about a dream he had in the past that fascinated him.

He dreamed he was planting seeds in a large field. He nurtured the plants as they grew.  Each plant grew into a large cabbagelike head. When the plant ripened, the leaves unfolded revealing a book. Each plant produced a book. Excitedly, he raced from row to row opening each book. They were all different. Some were fiction, others were nonfiction, children’s books, coffee table books, dictionaries, biographies. He flipped through the books laughing and laughing. That was the answer to my question he said. It is impossible to grow books.

He and I discussed the meaning of the dream about growing books. We realized the impossibility of growing books but listed all the connections we could think of between growing plants and publishing books. One connection was that trees are planted and harvested for the manufacture of paper and paper is used to publish books.

Why not publish books that become trees? This would be a way to educate and inspire young readers about the need for ecologically responsible behavior. The idea the publisher decided to pursue is to publish storybooks for children about trees. The book can then be planted (planting instructions are included) and will grow back into a tree. The books will be handstitched, made from recycled acid-free paper and biodegradable inks and the cover is embedded with poplar tree seeds. Each copy comes with planting instructions. Readers are encouraged to plant and name their tree and to care for it as it grows. The marketing department plans to have the book displayed in bookshops, where it can be seen germinating by customers.

**HAVE YOU EVER SEEN A CAR CRY?**

In another example, Toyota engineers believed that the manufacture of an automobile that is a live, breathing creature is impossible. The attributes of living creatures are, for example, breathing, growing older, reproducing, feeling emotions, and so on. They brainstormed for possible connections between attributes of living creatures and autos.

The Japanese engineers for Toyota decided to develop a car that they say can express moods ranging from angry to happy to sad. The car can raise or lower its body height and ‘‘wag’’ its antenna, and it comes equipped with illuminated hood designs, capable of changing colors, that are meant to look like eyebrows, eyes, and even tears. The car will try to approximate the feelings of its driver by drawing on data stored in an onboard computer. So, for example, if another car swerves into an expressive car’s lane, the right combination of deceleration, brake pressure, and defensive steering, when matched with previous input from the driver, will trigger an ‘‘angry’’ look.

The angry look is created as the front end lights up with glowering red U-shaped lights, the headlights become hooded at a forty-five-degree angle, and downward-sloping “eyebrow” lights glow crimson. A good-feeling look is lighting up orange, and one headlight winks at the courteous driver and wags its antennae. A sad-feeling look is blue with “tears” dripping from the headlights.

Stretching  your  imagination by trying to make impossible things possible with combinatory play between unrelated subjects makes it possible to create ideas you cannot get using your usual way of thinking.