Enhancing Your Creativity: A 10-point guide

I do not seek the meaning of creativity.
I seek the experience of being creative.

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Small children are experimental and creative learners. The socialisation process in modern societies, both at home and at educational institutions, does not enhance and develop their creativity. On the contrary, their creativity is discouraged in many ways. I conceptualise creativity developmentally*: It is possible to use activities, teaching methods, motivation and procedures to enhance and develop creativity, even in older people*.

This booklet gives some tips that can be used both at home and at work to explore, enhance and develop ones own creativity and the creativity of others. Each suggestion is presented from a practical viewpoint and then related to some of the tools and concepts that scientists and artists use in their creative endeavours.

Educational systems are primarily designed to teach children to look for the one right answer. This is not always a good strategy in problem solving because often it is the second, third or even tenth 'right' answer that is the best to solve a problem. In some cases ten 'right' answers might not do the job, but a combination of them could give the needed impetus to a real solution. Nothing is more dangerous than an idea, when it is the only one you have.

For more creative thinking, we need different viewpoints. *Divergent thinking* is needed to produce as many ideas as possible. The best way to get a creative idea is first to get a lot of ideas. This is why professional photographers take so many pictures when shooting an important subject. They may take twenty or sixty shots. In doing this, they will purposely change the different parameters of the shoot. That is because they know that out of all the pictures they take, there may be only a few that capture what they are looking for. The process of selecting those few is known as *convergent thinking.*

Based on my experience as a teacher and lecturer in the area of creativity and problem solving, and as a facilitator

for groups of professionals in creative workshops and conferences, I have reached the following conclusion: *The lack of divergent thinking ability is the main bottleneck in the creative process of persons and groups.*

This bottleneck could be ameliorated if each individual would work on developing his own divergent abilities. Very simple means, tools or exercises can be utilised. Below I outline some simple guides to enhance a person or a group ability to diverge. These guides or tools are the most popular. Each have been used and are still used in practice by many people, including artists, scientists, and other problem solving professionals.

1. SOFT THINKING

Ideas rose in clouds; I felt them collide until pairs interlocked, so to speak, making a stable combination.
H. Poincaré

Most professionals are hard thinkers. Hard thinking emphasises the following concepts: logic, reason, precision, consistency, work, exactitude, algorithms, efficiency, results, reality, directness, focus, analysis, specificity, abstraction, etc. Economists, engineers, and scientists are hard thinkers, but you also find hard thinkers in the fields of management, sociology, and psychology, to name some few.

Soft thinking emphasises the following concepts: metaphors, dreaming, humour, ambiguity, play, approximation, heuristics, pleasure, process, fantasy, paradox, diffusion, hunches, generalisation, analogy, etc. Soft thinking is a useful approach for divergent thinking.

Soft thinking tries to find similarities and connections among things and processes, while hard thinking focuses on their differences. Soft thinking is how the right hemisphere of the brain solves problems, while hard thinking is the favourite approach of the left hemisphere.

Similes and metaphors are excellent tools that can help to think something different. A simile is a figure of speech explicitly comparing two unlike things, e.g. in *cheeks like roses*. A metaphor is a figure of speech in which a word or phrase literally denoting one kind of object or idea is applied to another to suggest a likeness or analogy between them, e.g. in *the ship ploughs the sea*. A simile always contains the words *as* or *like*.

Similes and metaphors can help to a get a different slant on a problem. For instance in the early twentieth century, Niels Bohr develop a new model of the atom by comparing

it to the solar system. Within this framework, he figured that the sun represented the nucleus and the planets represented the electrons. The use of similes or metaphors is a way of thinking and a way of seeing. When it is used, it brings about a certain view of a matter a kind of focused insight.

All theories of organisation and management are based on implicit similes or metaphors that lead us to see, understand, and manage organisations in distinctive yet partial ways. Thus, it has been considered the use of metaphors to give new insights of organisations by regarding them as machines, organisms, brains, cultures or political systems.

Make a metaphor or a simile for a problem with which you are currently dealing or an idea that you are developing. To do this, simply compare your concept to something else and then see what similarities you can find between the two ideas, i.e., use one idea to throw light on another. Think about this: How is developing a knowledge policy for a firm similar to coaching a football team? How is managing a group of consultants similar to conducting an orchestra? How is developing a sales strategy similar to courting a woman?

Similes and metaphors are essential elements in poetry. They encompass other poetic devices as well, particularly imagery, which is the use of descriptive language to create pictures in the reader's mind. Poetry emphasises rhythm, other intricate patterns of sound and imagery, and the many possible ways that words can suggest meaning. Poetry derives from a Greek word, *poesies*, meaning "making" or "creating".


soft
hard
vicos

2. Deconstruction / Reconstruction

Every act of creation is first
of all an act of destruction.
P. Picasso

Creative thinking is not only constructive; it is sometimes destructive. Often you have to break out of patterns, routines, rules, establish ideas, organisations and systems, to discover or create something new. To change, you have to destruct first. Then you can reconstruct or redesign. Be flexible. In this way you can produce many alternatives. This is how to diverge.

Many times, one falls into habits and routines. Your mind becomes lazy and out of shape, as you fall under the seduction of repetition. You follow set patterns and rules without noticing what is going around you. Suggestion: Observe how you do things and try doing them differently. Take a different route to work. Play the role of some famous person for a day. Play the revolutionary and change the rules. Have rule-inspecting and rule-discarding sessions. Finding and eliminating outmoded rules can be a lot of fun.

Almost every advance in art, medicine, agriculture, engineering, marketing, politics, education, and design occurs when someone challenges the rules and tries another approach. Copernicus broke the rule that the universe was anthropocentric. Beethoven broke established rules in composing his symphonies. Einstein broke the rules of Newtonian physics when he suggested relativity. Creative thinkers are constantly challenging or breaking the rules.

Some rules are so successful that they become immune to criticism. These are known as “sacred cows”. Go after your sacred cows. Periodically inspect your ideas and assumptions to see if they are contributing to or inhibiting

your creative thinking. If the latter, destruct, eliminate and then innovate. This is a creative pattern.

If social poetising is the act of giving form to something by naming it, then deconstruction is the act of removing that form, at least on a temporary basis. *Deconstruction* is a process of demystifying a text, a narrative, an organisation or a system, by taking it apart to reveal its arbitrary logic and assumptions. The text or narrative to be analysed may be well-established (e.g., a problem formulation, a plan or a proposal) or may have been informally generated in an organisation by a group. Deconstruction examines what is left out of a text, what is not mentioned, excluded and concealed. Deconstruction does not cause us to see things as scattered and formless, but it does have the beneficial effect of showing us that things are not as simple as they seem.

Deconstruction reverses the process of construction and shows us how artificial is our ordinary taken-for-granted view of the social world. Deconstructions reveal the internal contradictions within discourses, and identify suppressed tensions or conflicts in a text. We need to look for what has been suppressed within the text, because usually whenever a discourse appears unified or whole, something must have been suppressed for it to appear so. Deconstructing implicit assumptions and breaking the boundaries of a system can give the basis for the reconstruction of a new text or system.

Some examples of deconstructive strategies are: Focus on marginalized agents or elements, expose false distinctions, look for assertions that make explicit or implicit recourse to claims of "naturalness", analyse what is not said or deliberately omitted, focus on disruptions and contradictions, and use metaphors to dispel inaccuracies.

You can shake, assault, massage, caress, and take a whack at the habits, rules, and conventions that keep you thinking the same old stuff. Do the opposite of what is

expected. Perhaps play the fool and see what crazy ideas you can come up with. Reverse your perspectives. You will see things differently. Niels Bohr felt that thinking like a fool was essential. During a tense brainstorming session, he told colleague: “We all know your idea is crazy. The question is whether it is crazy enough.”

As soon as you have made a thought, laugh at it. Getting into a humorous state of mind not only loosens you up, it enhances you creativity. First, humour stretches you thinking; it shows you patterns for thinking something different. Second, humour forces you to combine ideas that are usually not associated with one another. Third, humour permits you to take things less seriously. Humour may not solve your problem, but it will put you in a more conductive mood to do so.

Art objects, art installations, computer arts, etc. are usually developed based on a process of deconstruction and reconstruction. This process is the creation of art from art or technical artefacts. Sometimes this process of creation becomes art in itself. For example a word processing program enables its users to easily write, correct and modify prose or poem. It allows its user to create art. Designers expend hours, days, and weeks designing the interface. Their goal is to create a user-friendly environment. Sometimes, the finished interface becomes art, in itself. In fact, certain deconstructed interfaces have already been sold to museums to be displayed as artistic works. This process of deconstruction/reconstruction has also been used in other art disciplines as for example: virtual architecture, sensual computerised experiences, and performances.

3. Imagining

I have always imaged that Paradise
will be a kind of library.
J.L. Borges

Practice and cultivate your imagination. Imagination is the ability of see or visualise a problem from different perspectives. The open-minded attitude of the artist typifies the kind of thinking you use in the imaginative phase when you are generating ideas. Picasso said once: “Every child is an artist. The problem is how to remain an artist after growing up.”

The “what if” technique is an easy way to get your imagination going. There are two steps: First, simply ask “what if” and then finish the question with some contrary-to-fact idea, condition or situation. Second, answer the “what if” question. The provocative answers you find can show directions for new ideas, but you have to formulate many “what if” questions. Einstein had to do that before he boarded his imaginary elevator.

Some examples: What if my organisation becomes non-hierarchical? What if I become the boss of my boss? What if we elect our bosses by lottery? etc. Asking these questions is not only fun, it also gives you the freedom to think along different lines. It is a manner of freeing yourself from the deeply ingrained assumptions you have about your work and your personal life. Or, you can also ask what if someone else was solving your problem, for instance: Leonardo da Vinci, Jesus, Nelson Mandela, Ghandi, or perhaps a seven-year-old schoolgirl. What special expertise would they add? What innovative changes would they make?

These questions by themselves may not produce practical, creative ideas. The answers are usually impractical or improbable, but their value consists in that they lead your

thinking in alternative patterns, they help you to diverge. Even if the probability that any given “what if” question will lead to a useful idea is not very high, the more often you practice this process, the more productive you will become.

Imagination is an essential ability in art as it is the case of Trash Art, Installation Art and Conceptual Art. Picasso took some elements of an old bicycle and make a sculpture of a bull. You can train your imagination by collecting some solid waste from a container and use it for creating pieces of art as sculptures, objects or installations trying to communicate a message or a concept. Once I found in a container an old TV set, a carpet and some candles; then I arrange these objects in a space of the gallery as a little church. Then I entitled this installation: *The new altar*. Using my imagination I was able to give a message (a concept) using simple and cheap materials, a message that everybody could easily understand.

Einstein formulated the importance of imagination and fantasy in the following sentences:

- Imagination is more important than knowledge.
- 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.

4. Playing

Without this playing with fantasy no creative work has ever yet come to birth.
C.G. Jung

A natural medium for creative expression is play. To play means to engage in recreation, to deal in a light speculative manner, to move or function freely within prescribed limits, to perform music, to act in a dramatic production, to engage in a game, etc. All these activities can enhance your creativity. Play involves the language of imagination, the emotions, the senses, the inner self, active participation and freedom to invent and imitate. Play allows for the ventilation and release of negative energy. It encourages creative, growth-oriented self-expression and communication. Essential ingredients of play include humour, manifest joy, spontaneity and creativity.

Play is a creative process and a safe way for people to try out, explore, experiment, and fumble about with ways of learning. Creative play provides an opportunity to: develop the imagination, think independently, cooperate and communicate, healthfully release emotions, experience freedom of choice and engage in health-engendering recreation.

There is evidence that play increases: problem solving skills and abilities, creativity and creative thinking skills, and social skills. Some people allow themselves to play only when they are under the influence of some mind-altering substance, drugs, food or alcohol. They are afraid of their inner child and need an excuse to justify their creative expressions. People of all ages must be able to find healthy ways to play in order to have rich, full, joyful, creative lives.

The performing arts of theatre and court entertainments provided opportunities for Leonardo da Vinci to put his

mechanical and automated inventions and scenic apparatuses to work, while given free rein to his taste for humour and brilliant strokes of inspiration. He was playing. An analogous, playful spirit is discerned in the precision and detail of his extraordinary drawings of mechanical looms and clocks.

I have observed in the development of software that one can experience two extremes. The first extreme is when writing software is considered work. The developer relentlessly chases a bug. He perfects a piece of code through sheer persistence and fortitude. It can be satisfying, but it is not fun. The other extreme is where writing software is play. Experimentation yields unexpected solutions. The patterns revealed by the trail of a bug lead to insights. Crafting a solution is a tangible, creative experience. Many professionals have experienced these two sides of the creative process. The play side allows them to experiment with various approaches to generate new ideas, e.g. to diverge. The work side enables them to put it into a useful form, i.e., to converge.

Let’s say your organisation is having difficulties from competition by other firms. You can play with this problem. Select a group of people and create a game that simulates your problem, for instance let one member of the group be a princess and everyone else in the group be suitors for the hand of the princess in marriage. Or, within an organisation you can use theatre to solve some management problems and conflicts by changing roles, for instance let the director be the secretary and the secretary be the sale manager, etc. and the carry out a performance.

You can train your playing abilities with the masters of creative play: children. Play is a serious business for young children and the opportunity to play freely is vital to their healthy development. One of the strongest benefits of play is the way it enhances communication and social development. Play is a self-expressive activity that

draws on the child's powers of imagination. Play is open-ended, free form and children have the freedom to try out new ideas as well as build on experiment with the old.

Improvisation theatre is the area where different techniques are used to enhance the ability of the actors towards spontaneity and creativity. The art of the instructor is to create synergy effects when combining the fantasy of two or more players.

5. Exploration

Know or listen to those who know.
B. Grawan

A creative thinker needs the raw materials from which new ideas are made: knowledge, experiences, concepts, facts, feelings, etc. These raw materials might come from different disciplines. You can find something innovative if you venture off the usual path. To be an *explorer* is to search for ideas outside your speciality, to look about or through without being systematic and to pay attention to unusual patterns. Use as many different senses as possible and look out for anything that might be of interest.

An important activity in divergent thinking is to recognise the basic idea of one situation and to apply it to another. For instance, the roll-on deodorant was an adaptation of the ballpoint pen. Even that was inspired by the way children make big snowballs. Understanding the behaviour of electricity was inspired by scientific knowledge about the flow of water. If you are working in the area of design of IT-systems, probably is a good idea to explore in the areas of architectural design, engineering design, product design, design of strategies, forest management, design of organisations, etc. You can get innovative ideas and learn about tools and methods. Most advances in science come when a person or a group is forced to change fields of interest.

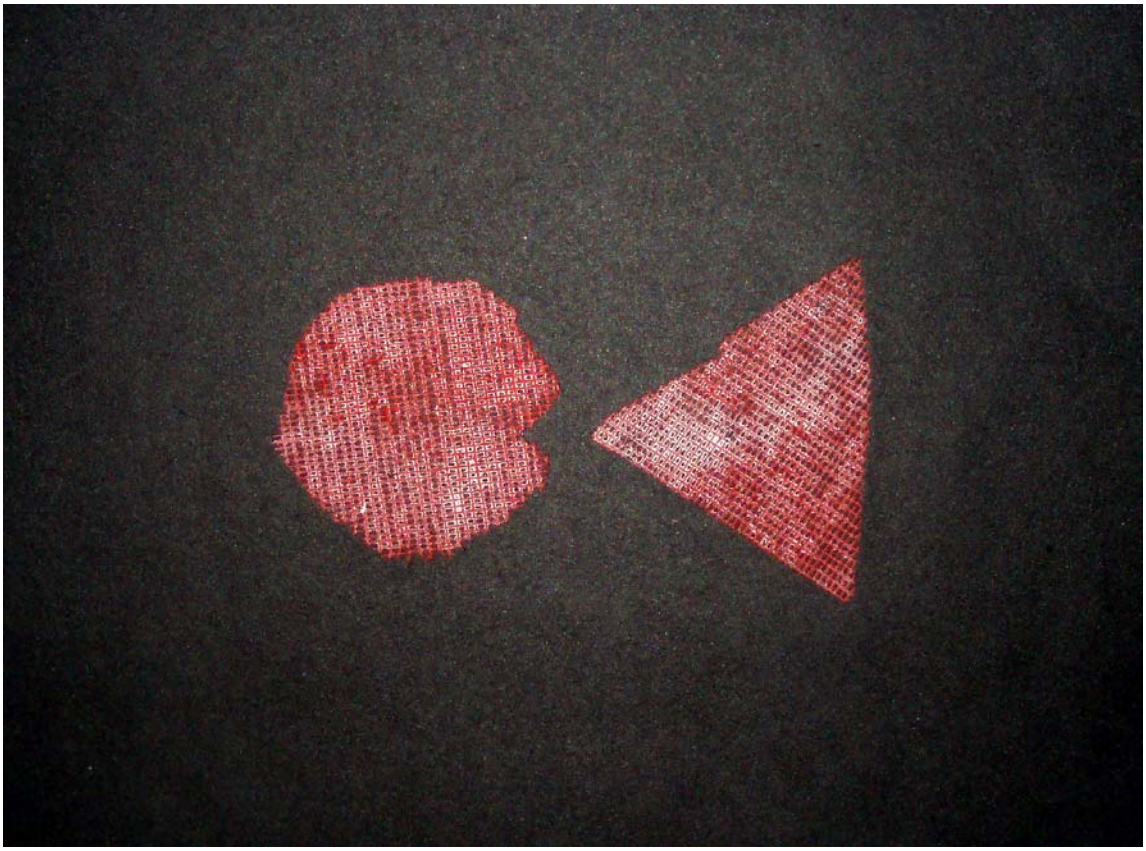
A problem does not necessarily belong to a specific field. A problem will usually have technical, economic, human, social and political aspects. Economists will always reduce a problem to an economic problem. Engineers will regard it as a technical problem. And so on. This is the curse of specialisation. To explore is not only to get ideas from other disciplines, but also to regard a problem from different perspectives, to break boundaries, enhance cross-fertilisation and create innovative approaches.

When going to parties, reunions, meetings and conferences, I am always looking for a conversation with somebody working in an area new to me. I learn a lot from people who love to tell about their work. I have had interesting conversations with a circus clown, an air traffic controller, a bus driver, a comedian, a nurse, a prostitute, a priest, a librarian, and a gardener. As an explorer, I am always looking for ideas outside my disciplines, I think of it as searching for gold.

To be an explorer means to find good information around you. I found good ideas in fashion shops, garbage dumps, museums, airports, restaurants, botanical gardens, and other places. Natural surroundings are great places to explore for ideas. Mother Nature has solved a variety of problems in a creative way. Bionics is a field of engineering in which ideas from natural systems are adapted for human uses.

One of my favourite's activity as an explorer is to go to libraries. I will look on bookshelves that I have not seen beforehand will randomly pick up some books for further study. Often, I will find a book about an area or a subject that I did not know it even existed. That book I will borrow for further study. My favourite part of the library is the section of books for children. One can also be an explorer in the Internet. But, you should be very critical about the information you get from internet searches.

Leonardo da Vinci wrote: "It should not be hard for you to stop sometimes and look into the stains of walls or ashes of a fire, or clouds, or mud or like places, in which…you may find really marvellous ideas". Da Vinci was an explorer, studying water, the flight of birds, human anatomy; drawing buildings, houses, machines, people and animals; working with astronomy, mathematics, engineering and theatre. But, this technical and scientific research was always a sort of preliminary investigations and preparations for his works of art.



6. Dialectical Thinking

The philosophers have only interpreted the world in various ways; the point is to change it.
K. Marx

Dialectical thinking has two main characteristics. First, it places all the emphasis on change; it talks about process and movement. Second, it states that the way change takes place is through conflict and opposition. Dialectics is always looking for the ambiguities, contradictions, paradoxes and conflicts within people or situations as the main guide to what is going on and what is likely to happen.

The three main propositions that are put forward about opposites and contradictions:

- The interdependence of opposites, e.g., light supposes darkness.
- The interpenetration of opposites, e.g., there is some light in every darkness and some darkness in every light.
- The unity of opposites, if we take an opposite to its very ultimate extreme, and make it absolute, it actually turns into its opposite, e.g. if we make either light or darkness absolute, we cannot see anything. Thus, we are blind.

When thinking dialectically in creative workshops. Workshop participants pit two or more opposing views in competition with each other, developing each by providing support, raising objections, countering those objections, raising further objections, and so on. Key benefits of applying a dialectical approach to creative problem solving are:

- The participants are forced to identify opposing options, and
- The discussion helps to yield a strong, informed perspective that stands up to criticism.

Let us hear from some dialectical thinkers:

- Picasso: “Art is a lie that makes us realize the truth.”
- Bohr: “There are two kinds of truth, small truth and great truth; you can recognise a small truth because its opposite is a falsehood. The opposite of a great truth is another great truth.”
- Einstein: “Am I or are the others crazy?”

The above-mentioned quotations are paradoxes, e.g. statements that are apparently contradictory or absurd and yet might be true. Artist and scientists know that paradoxes are crucial to the creative process. That is because they force you out of narrow thought paths and challenge you to question your assumptions. Dialectical thinking is a way to deal with paradoxes. Bohr, Einstein, Marx, Hegel, etc were great dialectical thinkers.

Let’s see some practical applications of dialectical thinking in connection with creative processes. Consider a situation is modelled in hard terms, e.g., focusing in economical and technical aspects (thesis). Now, model this situation in soft terms, e.g., focus on the human and social aspects (antithesis). At this point, we have two opposites. Lastly, we try to unite them, developing for instance a process to approach the situation from two different perspectives (synthesis). This approach may be called divergent thinking by dialectical thinking.

Looking for ambiguities is a good way to train for dialectical thinking, when you are looking for new ideas. For example, what is half of 8? Logical thinkers will answer 4. But, if you assume that the question is ambiguous, you will look for other answers such as 0, 3, E, M, S, etc; all depending on how you define “half”.

Designers of tools, artefacts and computer systems focus primarily in the properties of their creations, often forgetting the way in which they are going to be used, e.g. the environment and the users habits. In such situations, dialectical thinking can contribute to the

elaboration of different kind of solutions, appropriate for different situations.

Listen to your dreams. Dreams are the sources of many ambiguities and paradoxes. Often, if you are working with a difficult problem, your dreams will provide some extra analysis about the problem that is plaguing you. It is well known in art and science that good and innovative ideas have first appeared as dreams. This is the result of the so-called incubation process.

In art, dialectical thinking is always present. For instance, a painting is dialectical related to its frame, and the frame and the painting have to be a unity, wholeness or in dialectical language, a synthesis. A sculpture and an installation are related to the space where they are located. Object and environment is a unity. You find dialectical thinking in the theory of colours. For example, red is dialectically related to green. Redness is enhanced by greenness and vice versa. Some rules for dialectical thinking developed within different artistic disciplines are:

- Take nothing for granted
- Be spontaneous
- Transform
- Break patterns
- Look for contradictions

7. Learning from Failure

I think and think for months and years.
Ninety-nine times, the conclusion is
false. The hundredth time I am right.
A. Einstein

Errors are a message that you are diverging from the well-travelled route. They are not a sign of weakness. A large part of creative thinking is not being afraid to fail. If you are not failing now and then, it is a sign that you are not trying anything very innovative.

Failure only means that we known what does not work and gives us the opportunity to try a new approach or practice to get better. Failure does not mean that you are incompetent because you did not get it right or do it well the first time. If you do fail, you learn what does not work, and the failure gives you an opportunity to try a new approach.

Consider the story of a new bank president who went to his predecessor. Upon being introduced, he quickly said: I would like to know what have been the keys of your success. The older man looked at him for a moment and replied: “Young man, I can sum up in two words: Good decisions.” To that, the young man replied: “I thank you immensely for that advice, sir. But, how does one come to know which are the good decisions.” “One word, young man”, replied the old man: “experience”. “That is all good and well”, said the young executive: “But, how does one get experience?” “Two words”, replied the old man: “bad decisions”.

Use error as a stepping-stone to a new idea. In reality, the whole history of discovery is filled with people who used erroneous assumptions and failed ideas as stepping-stones to new ideas. Columbus thought he had found a shorter route to India. Edison knew 1800 ways not to design a light bulb. One of Madame Curie’s failures was

radium. An inventor is almost always failing. He tries and fails maybe a thousand times. He experiments and tries over and over and keeps trying and failing until he learns what will work. He knows how to fail creatively.

We learn by our errors. An individual's errors are the whacks that lead him or her to think differently. Negative feedback means that the current approach is not working, and it is up to you to find a new one. We learn by trial and error. If you hit the bulls eye every time, either the target is too near or too big, or both.

Chance favours only the prepared mind; this is *serendipity*. Strengthen your "risk muscle". You keep it in shape by trying new things. Taking risks means experimenting with life, gaining experiences and learning about yourself and others. By strengthening your risk muscle, you are increasing your courage and self-confidence. By trying something you have not tried before you are being courageous. It demands courage to be creative.

Science and art history informs us that stories of great success are also stories of great failures. At school, Einstein was so dull that he was called "Dull Albert". His teachers described him as: mentally slow, unsociable and adrift forever in his foolish dreams. Darwin wrote: all my masters and my father considered me, a very ordinary boy, rather below the common standard in intellect. Keynes failed every year his examinations in economics. Van Gogh was unable to sell his paintings. Many great painters had experienced the same failures. These men were like other men. The only difference was that every time they failed; they bounced back. This is called failing forward, rather backward. You learn and move forward. Ask yourself after every failure: What did I learn from this experience? Learn from your errors and keep going.

8. Collaboration / cooperation

Great discoveries and improvements invariably involve the cooperation of many minds.
H.G. Bell

Effective collaboration involves the use of the strengths of the individual members in the problem solving process. It is a purposeful interaction, formed to solve a problem, to create or discover something or to change something. We need collaboration because in the modern society we cannot “do it all” by ourselves. We need knowledge, insights, comments, questions and ideas from others. Other perspectives add value and richness to our own. Collaboration is a constructive way to create divergent thinking. In effective collaboration, individuals learn to identify their strengths and talents as well as increase self-esteem by sharing and achieving common goals.

The following goose metaphor captures the essence of collaboration. Why do geese fly along in a V formation? By flying in a V formation the whole flock adds at least 71% greater flying range than if each bird flew on its own. When a goose falls out of formation, it suddenly feels the drag and resistance of trying to go it alone and quickly gets back into formation to take advantage of the lifting power of the bird in front. When the lead goose gets tired, it rotates back in the formation and another goose flies point. Finally, when a goose sets sick or is wounded and falls out of formation, two other geese fall out with that goose and follow it down to lend help and protection. They stay with the fallen goose until it is able to fly or until it dies; and only then do they launch out on their own, or with another formation, to catch up with their flock.

Collaboration is a central capability in many kinds of sport. This is for instance the case of football. A football team’s effectiveness is not only conditioned by the capability of each member but by their ability to collaborate and support each other. Football can become art when

collaboration and individual capabilities produce a synergetic performance. In jazz music, jamming is the practice of free style jazz improvisation. In this type of music, the musicians play, or riff, off of one another to create in a collaborative way new sounds, at once unpredictable and harmonious.

Collaboration abilities can be strengthen trough cooperative learning and group problem solving. Cooperative learning requires communication among group members while solving problems. Members are expected to interact with one another as they take on roles. They collectively engage in solving problems, explain their thinking to one another and discuss ways to resolve conflicts as they arise. The group arrives at common understandings only when the individuals in the group are able to present their points of view and to discuss their perspectives on problems.

The necessary features of successful cooperative learning experiences are: positive interdependence, individual accountability, interaction, communication and discussion. In cooperative learning activities, individuals learn: to deal with differences, to recognise each other's strengths, to show respect by acknowledging the contributions of all group members to the task at hand, to take turns, to gain practical experiences in dealing with peers who are culturally, academically or physically not like themselves, and to engage in the process of sharing their experiences and ideas.

9. Process / Product

I travel not to go anywhere, but to go. I travel for travel's sake. The great affair is to move.
R.L. Stevenson

Two central elements in any problem solving activity are the process and the product. Rational problem solving, the one usually practiced by professionals and scientists, focus on the product. Creative problem solving, the one practiced usually practiced by artists, focus on the process. There is indeed a dialectical relationship between the process to moves and the product. Innovative products demand a central emphasis on the process.

The product or deliverable or result of problem solving can be firstly a material thing, for example a manufactured article or secondly, it can itself be a process, for example an improved method for customers or for clients.

There is a series of process steps for creative problem solving to guide one through what at times can seem like a daunting jungle. The key guidelines are the need for periods of divergent thinking, followed by a period of convergent thinking. The value of focusing on the process is shown most vividly when problem solving with groups. This is more complicated than working alone, although potentially capable of producing more creative and effective solutions. Actually, most of the guidelines presented above are focusing on the process.

In connection with problem solving with groups, it is a good idea to appoint a manager of problem solving process, *a facilitator*. Actually, there are two social processes to be managed: the problem solving process and the group process. The problem solving process is the way the group acts to solve the task of generating ideas going through divergent and convergent phases. The group process is related to the manner in which the individuals in the group work together, how they learn,

how they communicate, their social and power relationships, and how they deal with conflicts. Obviously, these two processes interact in various degrees. In ideal group work, these two processes support each other. We talk about *group dynamics,* when energy and synergetic effects are created in the group work as a result of well-balanced processes where the task is just as important as the group trust and identity.

The facilitator is constantly thinking (reflecting) and listening to the deliberations in the sub-groups so he can suitably intervene (decision making). An intervention means communicating with the group, giving information and knowledge, and encouraging the participants to think about important topics.

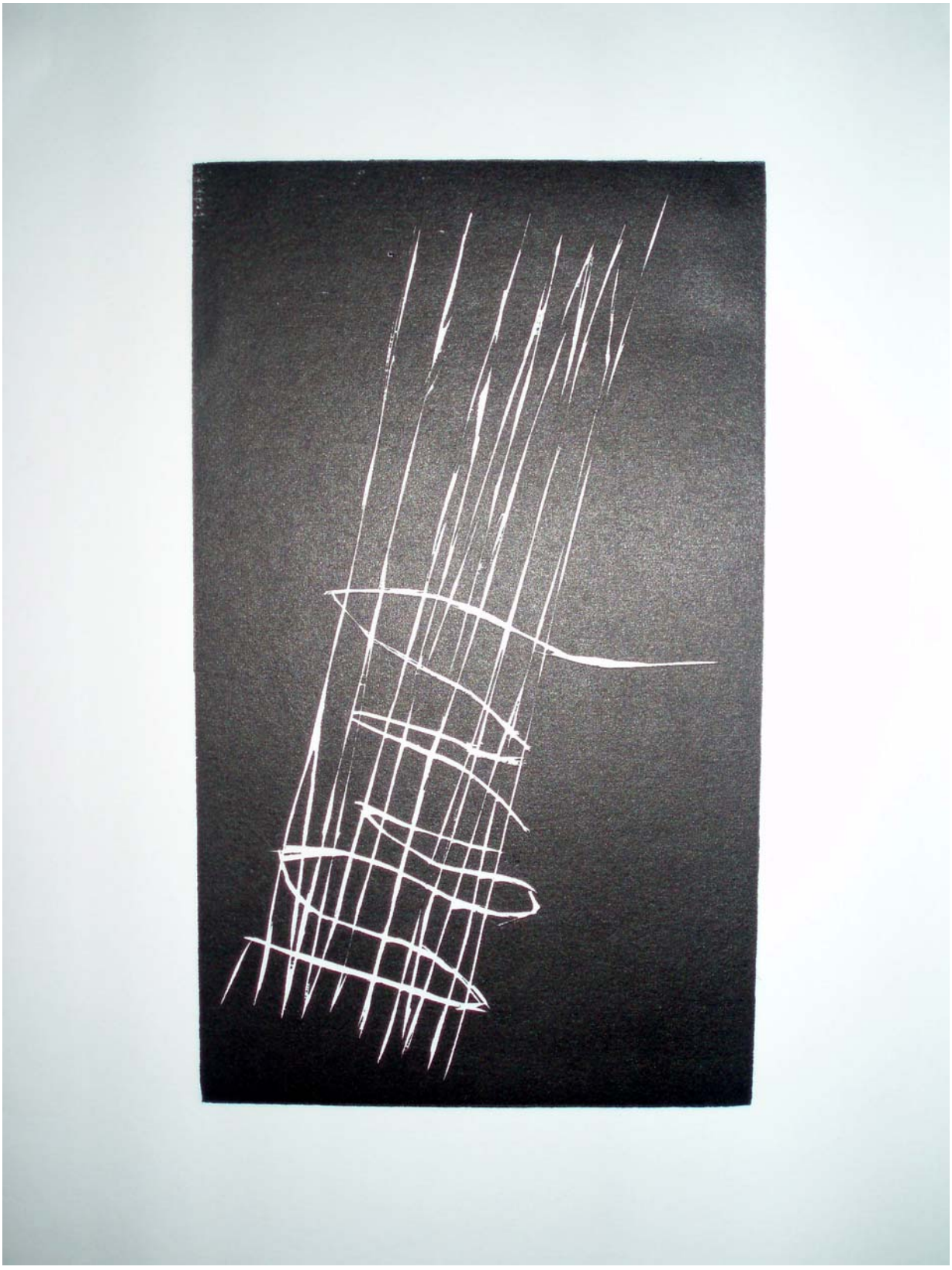
Let us elaborate now about the essence of the facilitation process, i.e., the attributes by means of which facilitation as management can be qualified or identified. As we have seen, facilitation is a purposeful process carried out by one or several persons that goes forward between two interacting processes. First, the logical/rational/legal process carried out by a purposeful group (the problem solving group) that wants to achieve some goals. This process has been called the problem solving process, and is the scene of objectivity. Second, the non-logical, irrational, or illegal process that refers to the chaotic social interactions provoked by each single participant, by the participants' relations to each other, or by the participants' relations to the facilitator of the group. These interactions bring into play the participants own subjectivity, intuition, fantasy and feelings. This second process can be called the problem destruction process and is the scene of much subjectivity.

The facilitation process will move in the grey zone between the scene of objectivity and the scene of subjectivity. The rational and the irrational processes are fighting one another. Each one wants to impose over the other. They are in conflict, but they need each other because, while the problem solving process seeks to

achieve realistic solutions, the irrational process will be the basis for the production of new ideas. Rationality needs chaos, and chaos needs rationality. Due to this contradiction, rationality vs. chaos, we can stipulate that facilitation is a *dialectical* process.

Management also involves three other central factors: Power, communication and learning. These factors are always present in any facilitation process and should be reflected upon and articulated before, during and after the problem solving process. Facilitation becomes an art when a synergistic effect is achieved due to the constructive interaction between rational and irrational processes. The facilitator then becomes the director of a performance, where each participant plays a central role. By the end of the performance, if synergy has been created, all the participants will explode in a rush of happiness and pleasure; the pleasure of working creatively and collectively to achieve some goals. It is the same feeling that football players experience after a match where the victory has been the result of a combination of individual creativity, collective hard work and suitable facilitation (coaching).

Concluding, we can first stipulate that being member of a problem-solving group can enhance your creativity and your ability to participate in collective creative processes. Secondly, learning the art of facilitation is an important qualification when working with problem solving. It demands a lot of creativity to support a group in a creative problem solving process.



1O. Everyday creativity

Great thoughts reduced to
practices become great acts.
W. Hazlitt

Everyday creativity is the ability to see a situation in many ways and to continue to question until satisfaction is reached. All human beings are creative and their creativity can be enhanced or discouraged in many ways. Any time people are confronted with situations for which they have not already learned and practiced a response; some degree or kind of creativity is needed.

Creative thinking is much more than using our fantasy to produce innovative ideas. Creative thinking can become a lifestyle, a personality trait, a way of looking at the world, a way of interacting with others and a way of living and growing. Living creatively means developing your talents, tapping your unused potentials and becoming what are capable of becoming through self-discovery and self-discipline. Then life becomes art. The richest fuel for ideation is first hand experience.

You can develop your creative abilities by approaching everyday problems in an innovative way. Four of the key abilities are: Fluency, flexibility, originality, and elaboration. *Fluency* is the elaboration of many ideas, alternatives or solutions. *Flexibility* is the ability to process information or objects in different ways given the same stimulus. *Originality* involves getting away from the obvious and commonplace from habit bound thinking. *Elaboration* is the ability to embellish ideas with details.

There are plenty of ways to train and develop your creativity at home. Playing with children can be a very rewarding experience. Get some paper and some crayons and draw fantasy figures. Or, get some clay to construct small sculptures. You could also invent new games. If you do not have children, visit a family with children and

propose some creative activities. Picasso wrote: “Every child is an artist; the problem is how to remain an artist once he grows up.”

Creative cooking can become one of the most challenging activities. To create a new dish that combines in innovative way nutrition, taste, smell and sight can be a nice experience. Your friends or family will be ready to give you feedback and evaluation of your performance. In cooking, learning by failure is very important.

Train at home with your family the abilities of group problem solving. For instance, plan your holidays or what to do the next weekend. You will be surprised how easily children learn to facilitate and to use simple, creative techniques. These learning experiences will be very useful for your children in their future at school and later at work. You can also plan and carry out a party in a creative way.

The community where you live there are surely demanding problems that lend themselves to group problem solving in a creative way. How to deal with waste, energy, or IT problems usually demands collaboration and creative solutions. Group problem solving can also be established in the community groups that practice sports, games or hobbies.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Microsoft

References

The following e-book gives a broad introduction to creativity research, methods and techniques and their applications:

Vidal, R.V.V. (2006) Creativity and Participative Problem Solving – The Art and the Science, IMM, Technical University of Denmark
That can be downloaded free-of-charge from:
http://www2.imm.dtu.dk/~vvv/CPPS/