Creative Facilitation

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Cover picture: Biblioteca España - Giancarlo Mazzanti (2007) – Medellin, Colombia.

The Spain Library is located on top of one the highest mountains surrounding the city of Medellin. It is both a social centre and a landmark supporting and symbolizing the efforts from the city of Medellin in developing one of the most violent quarters of the city into a safe and sound community. It sits at the top of an extension of the Medellin Metro, a Cable Car that runs up the mountain like a blood vessel feeding and connecting this neighborhood with the rest of the city.

The Biblioteca España, as it is called in Spanish, contains a library, a concert hall, day care for children and other social institutions to support the community. And through its architectural qualities - aesthetics, fit in the surrounding scenery, a landmark overviewing the city, and its careful and practical execution - it is also a wonderful demonstration of a city that wants to invest and care for its people.

More info:

www.giancarlomazzanti.com/

www.plataformaarquitectura.cl/2008/02/19/biblioteca-parque-espana-giancarlo-mazzanti/

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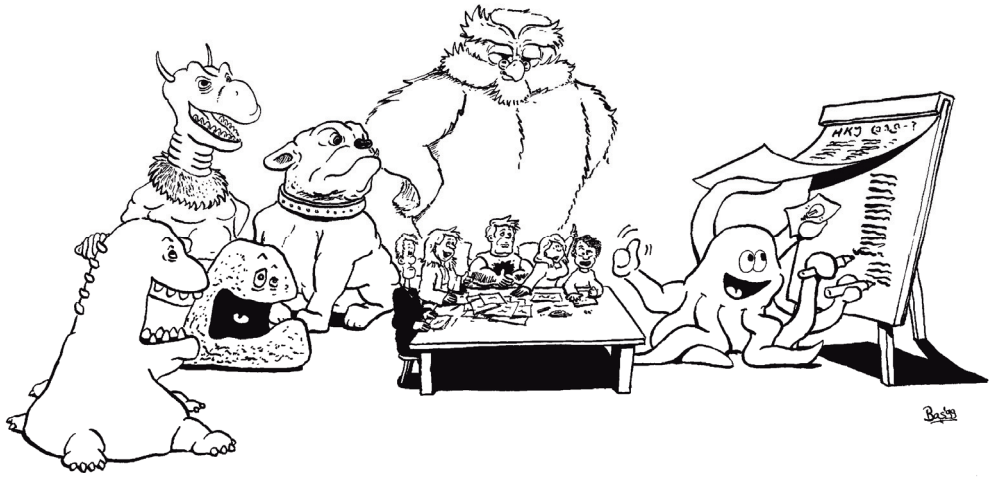

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The Mindmap that started it all (1998)

Preface

Why write a book on Creativity when there are so many on the market? A first reason is a personal one: to realize a synthesis of the many thoughts, ideas, models and experiences I have adopted and practiced over the years; it is about cleaning up conversations between practice and theory and the development of new approaches in the projects I have been involved in. The second reason is to have a document which addresses the specific educational demands of design engineering students at our faculty of Industrial Design Engineering when learning to design new industrial products. And finally, it comes forth from the idea that, although there are great books on the matter, I haven't come across 'my' ideal book. Now, I am not implying that this is exactly that book, but in its development over the years, at least it does approach this idea more closely.

This document is a work in progress. When coaching or running sessions, I often find myself discovering, or even explaining things live in a way that I haven't seen documented that way before. Sometimes it is questions from participants that make me discover new important issues. So, this book has seen a whole range of editions, starting in 1998, at first in Dutch, later on set forth in English. In each edition, new ideas have been included and others skipped, and it will probably continue to evolve this way in the future.

My roots in the field can be traced back to my youngest age, both in hobbies and in professional life. Designing speakers or surfboards, or when coming up with an easier production system for mechanical parts, creativity has always been part of my equations.

A more systematic approach of creativity and facilitation can be traced back to the participation in courses on Creative Problem Solving by Jan Buijs and Kees Nauta at the Delft University of Technology (1989). Other important inputs come from a course on 'Expertise in the Application of Creative Techniques' with the Centre for the Development of Creative Thinking (COCD, Antwerp, Belgium, 1991) with Roger de Bruyn, Manu De Bruyn and Pros Vanosmael, a course on Creative Visualisation by Ghislaine Bromberger, and my collaboration with the TNO Innovation Consulting Group (TNO-IAG) with Patrick Colemont and in parallel my assistance and participation in a number of Creativity & Innovation Conferences organized by the European Association for Creativity and Innovation (EACI, 1991 - 1997), which in turn led to contacts with people like Chris Barlow and Janet Finley at the Illinois Institute of Technology (IIT), Robert Alan Black from Cre8ting (Athens, Georgia, USA), and Will McWhinney with whom I have conversed and collaborated on Creativity, Organisational Development, Systems Thinking and setting Paths of Change

for many years. Will passed away in 2007, but his friendship, ideas and critical assistance continue to resonate profoundly throughout my being.

Although theoretical knowledge and understanding are important and useful, the real learning happens in a conversation with experience. That's why I am immensely grateful to the clients who gave me the opportunity to be a facilitator in key innovative projects, among many others: Pierre Brisson (European Space Agency), Igor Heller (RWS-RDZH), Rolf Jongedijk (City of Rotterdam), John Weebers in the project Wegverlichting, RWS (Ministry of Infrastructure), André Noordegraaf and Ad de Rooij with projects like Kritallisatie 21 and 4B Consulting, also from RWS and Hester van Leeuwen and Rob van Berlo from the City of The Hague.

Another source of learning and testing assumptions are the countless almost daily conversations when coaching IDE students through their first facilitation steps at the faculty of Industrial Design Engineering in our course on Creative Facilitation. Time and again they are the living proof of how fruitful creative practice is in both professional and personal development.

In 2006 Paul Karis and myself produced the original English text in three weeks time! I want to thank Paul for his wonderful enthusiasm and commitment to take up such an almost impossible task and assist me in producing this English material for our Master course at the Faculty of Industrial Design Engineering: Creative Facilitation. Also a word of thanks to Joanna Facey and David Bloch for their insightful comments and Hanneke Bergmans who took up to redo the lay-out and produced many extra illustrations and overviews to facilitate the reader's experience.

I owe a lot to my partner and colleague Helga Hohn, with whom I reflect on these subjects all the time, supporting and complementing each other in our respective projects, (me being more an object oriented engineer, she being more a people's person) and who has been a continual support in developing ideas for this book.

And a special word of thanks to Jacques Schievink of the VSSD for helping me getting this publication 'on the road' and delivering the finishing touch with each new edition.

Delft, March 2009

Contents

0 Introduction

As far as we can look back in human history, we see products being imagined and developed to deal with specific needs like procreation, hunger, thirst, protection from the climate and dealing with danger, and stories to explain the inexplicable. And so, creativity is an integral part of our human talents and functions, together with intelligence, memory, intuition, social skills and emotions. It is everywhere: in our mind, in our fingers, in our body and in our senses; maybe it equates to consciousness, encompassing physical sensations, through abstractions such as signs, symbols and language, up to notions such as values and including a sense of beauty[1]. So the dancer and the musician in Figure 0.1 create and thereby make a story come to life. All that is what creativity is about.

Seen from another angle, listening and reading are also creative activities. Everyone transforms words into inner images of their own. According to Kees Fens, journalist with the Dutch newspaper De Volkskrant: “It is not you reading the book, it’s the book reading you”. What he meant was that when looking at the little black dots on a page, which we call letters, words and sentences, we, ourselves, in our minds, conjure up the images that we see while reading. These internal images are also the outcome of a creative process. This is supported by the idea that people often comment that “the movie wasn’t as good as the book”. In a movie, details are ‘coloured in’ by a film director; when reading a book you do this yourself. Watching a movie is a much more passive experience. I believe that part of the pleasure of reading comes forth from this active visualization triggered by the markings on the page. In fact no communication would be possible without at least some form of creativity.

0.1 Learning to Create

A question that often arises is: ‘Can one learn to be creative ?’ In my view, the question is similar to questions such as ‘Can one learn to eat ?’ and ‘Can one learn to breathe ?’ We all do it, but one can specialise oneself, one can learn to make delicious Japanese sushi, or some heavenly Genovese pesto, or one practices yoga or scuba diving and learns to breathe more efficiently. The same can be said about creativity: everyone is creative, but it can be enhanced and sharpened, and practiced with much more scope, richness and quality.

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[1] Question: “When you have a bee in your hand, what’s in your eye ?”
Answer: “Beauty, since beauty lies in the eye of the beholder”

Although there are probably innate capabilities and traits, learning to use one's creative capabilities more acutely happens through experience: observing people with creative tasks, trying new recipes, finding out what works and what doesn't, and last but not least, discovering oneself in the context of such creative tasks. So the answer is 'Yes, you can learn to be creative' but, like eating and breathing, we all do it by nature already.

Figure 0.1: Dancer and Musician (Source: Charles Jencks, Post-Modernism, 1987)

0.2 The Creative Facilitation course

At the Faculty of Industrial Design Engineering (IDE) a course on Creative Problem Solving has been running since 1987, with well over a 1000 students participating over the years, earlier on in groups of twenty, but more recently also with groups of eighty and more.

The course used to be called Creative Problem Solving (CPS), mainly as a reference to the Buffalo CPS process as developed by Alex Osborn and Syd Parnes. Since the start of a new Master programme at our faculty in 2003, we changed the name into Creative Facilitation. This led to a change of emphasis in the course. Over the years, many of the techniques introduced in this course have diffused into other courses and design exercises throughout the IDE curriculum. The students who now participate often have prior knowledge and experience of basic creative skills like brainstorming, -writing, -sketching, using post-it's and flip charts, and sometimes even facilitating their own sessions, before coming to this course. So, besides elaborating and expanding creativity techniques, a higher emphasis is now put on facilitation, in other words the designing and leading of creative processes in teams.

The whole course is run over a period of about seven weeks. It starts with a two hour introduction upon which students have to study the literature (this book) and write a personal learning contract on "What I intent to get out of this course for me personally".

General structure of the course

- Introduction;
- Stories and pictures from earlier courses;
- Personal contract: 'What do I plan to achieve during this course';
- Using a white book or Dummy to collect learnings;
- Literature study;
- Guided exercises as introductions to new techniques and procedures;
- Fish bowl sessions;
- Writing / designing session plans;
- Executing sessions with real problem owners;
- External sessions with real problem owners and non creativity trained participants;
- A report with personal experiences and reflections.

From the 2nd week till the 6th week, students work one day a week on creative facilitation, starting with guided exercises, gradually moving towards more and more independent facilitation. During the last week, a three day block is set up during which external problem owners are invited to join the group and work on their problems together with students, sessions generally taking half a day.

Figure 0.2: Some personal contracts

Figure 0.3: Using a Dummy to take notes and reflect on experiences

This is preferably done outside the faculty, often in ‘Nature Friends Homes’ (Nivon) with simple lodging and self cooked meals. It is a very intensive three day conference, full of sessions, with problem owners (e.g. managers, designers, entrepreneurs, colleague students) joining us for a couple of hours and leaving with a bunch of ideas under their arm. Once students have experienced participating in sessions and at least led one session within the student group, they have to set up their own external session. So, after having experienced all types of creative processes and techniques within the familiar group, students now have to run a session outside this group with non-CF participants. One might call this their master’s project in Creative Facilitation.

And to round it of, all these experiences have to be ‘cleaned up’ and reflected upon in an individual report.

0.3 Group or Individual?

This book is written from the perspective of collaborative creative work. But what about some of the great creative minds of our society, such as painters, architects and composers? Although these professionals may have ‘assistants’ they often rely on their own intuition and expertise. Creative work also depends on focus, and this does get lost sometimes when shared and discussed too widely. An important part of the process is intuitive with a combination of idea generation, knowledge, experience, and critical reflection, sometimes at such a deep level that only very few can acknowledge and understand. Some sharing with others will take place, but mostly limited to trusted friends and colleagues; the actual pushing forward of the idea will be the work of that individual. In such cases, focus and concentration seem to be the essential ingredients to come to really valuable and fruitful concepts.

Another observation of creative process is that ideas don’t come for free. They are the result of hard work, experimenting and reflecting, sometimes letting go for a while, coming back to a subject, etc. Disappointment, failures and unexpected costs are all part of the process. Creativity can be extremely demanding, and only those with enough motivation, enthusiasm and energy will be able to pull through such journeys.

At the same time, there is a trend in having more and more creative work done in teams, in all kinds of multi-disciplinary and multi-cultural settings. Issues that are put on the agenda grow in span and complexity, e.g. presently more and more taking into account sustainability and globalisation. More stakeholders with extending multidisciplinary views have to be involved at earlier stages in development projects.

So, in my view, there is not necessarily a discussion about whether individual or group creative work would be better. It all depends of the context. But it should be noted that this book is primarily aimed at creative sessions and workshops, creative collaboration and the design and facilitation of creative processes in such multifaceted social contexts.

0.4 Objectives for this book

- To develop a common language among students to be able to share experiences, reflections and learnings;
- to provide a range of techniques and interventions to design and execute creative processes;
- to provide insight in the theoretical backgrounds of creative processes;
- and hopefully an encouragement to use every opportunity to experience creative processes.

0.5 Structure of the book

It would seem logical to present subjects in the order as they would typically be used during a creative session. As described in Chapter 1, over the years I have discovered that students follow a different sequence in terms of discovering and developing facilitation skills and I came to the idea to use this sequence as a basis for this book's structure.

After reading the first couple of chapters (at least up to chapter 3), you are encouraged to participate in creative sessions and acquire real experience of creative group processes after which you can come back to the book to continue learning and expanding your facilitation skills.

The first part, i.e. Chapters 1, 2 and 3, will provide a general view and introduction on creativity and principles of idea generation. We will also have a look at learning processes, and more particularly at learning to become a creative facilitator. Then, we'll build an overview of the whole process, after which rules will be presented, rules that will be helpful when a group is working together to generate fruitful ideas and concepts.

After these introductory chapters we'll dive into specific techniques with respectively Chapter 4 on Idea Generation, Chapter 5 on Selection, Chapter 6 on Problem Analysis and finally Chapter 7 on Presentation and Implementation.

Then, we come to the third part, which is about how to fine-tune one's session's and facilitation skills. Chapter 8 will be specifically oriented at Facilitation and Process Consulting; in Chapter 9 you'll find suggestions on what might be needed to set up really great sessions, and in Chapter 10 you'll find an account of such a great session as an example of all the previous.

A recommendation: don't just read the book! Get involved in sessions as soon as possible, and as often as possible, and then use this book as a companion.

And may you then experience many wonderful sessions.

1 Setting the Scene

The term ‘Creativity’ should not be pinned down to one single description or definition. Different geographical cultures will ascribe different meanings to the term. For example, take the difference between the more Anglo-Saxon oriented societies (USA, UK, the Netherlands, Germany) and the more Latin approaches in France, Spain, Italy and Mexico[2]. Being at home in both worlds, I presume to say that the Latin approach might be more people oriented, poetic and anecdotal, whilst the Anglo-Saxon approach might be more functional and business oriented. Between professions interpretations may also differ. To an engineer creativity is different than it is to a business manager. And artists will have yet other ideas about creativity.

Within the context of product development, I like to use the perspective as put forward by Roger De Bruyn (COCD, 1991) who states that ‘creativity’ encompasses the conceptual part, and that ‘innovation’ contains both this conceptual part and its implementation. This division has a practical value, as creative sessions are often restricted to mental and hypothetical exercises. The material implementation follows when moving to the implementation phase.

But although this distinction is often made, it remains artificial. When visiting the industrial designer Paolo Orlandini in Milan I discovered literally hundreds of scale models of chairs. In this office one makes relatively few sketches. Models are being produced, first small, but gradually progressing to life size. Quite “sketchy” at first, these models gradually become more and more detailed toward full scale working prototypes. Each in-between stage is tangible and therefore a good guide for reflection and consideration of consecutive development steps. As such I reckon it would be wrong to separate thinking, doing and experiencing into distinct activities.

Building on De Bruyn’s earlier distinction, one might say that the ideas and concepts generated during a creative session are not so much a conceptual (mental) exercise as they are hypothetical. In the follow-up of a session, concepts will be further tested before being elaborated, materialised and implemented. During the session itself, one might say that the closer participants can be to the outside world ‘real’ experience, the better it would be to get a grip on what is essential. And now, instead of just verbalising ideas during a brainstorm, we open up a space with many more techniques. To name but a few: sketching, storyboards, collage, model building, collages, guided fantasy, dance and choreography, and improvisation theatre.

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[2] The Mexican scholar Mauro Estrada Rodriguez has done extensive research on the subject of differences between Spanish-Mexican and Anglo-American approaches (Rodriguez Estrada, 1986).

In our day-to-day activities we are so accustomed to use text, almost automatically implying all kinds of rules and associations about reasoning, truth, political correctness, etc. and we forget that all these happen in a domain full of abstractions distancing ourselves from the actual issue or experience. By using alternative media (like drawing or miming), we allow other dimensions in our perception or consciousness, e.g. emotions like hope and fears, uncertainties, convictions, intuitions and aesthetics to name but a few.

On the one hand, it's about being conscious and gaining worthwhile observations of an issue, and on the other to have a space where we have more liberty to generate surprising and useful ideas.

Figure 1.1 Creating through models – Paolo Orlandini (source Conti, 1993)

1.1 A Natural Learning Process

I wonder if you can still remember the stages you went through to obtain your drivers license (taking for granted that you ever got that far).

You may remember that steering the required curve was already quite a challenge. A bit later you even managed to avoid hitting the curb even though you were using the clutch and switching gears at the same time. The height of this new skill was when you could drive away on a steep hill without the engine stalling. Once these more elementary operations became somewhat automatic, you were able to learn to back up into a small parking spot, etc. And eventually you could concentrate more easily on observing other road users and anticipating tricky situations. And once this had been trained sufficiently you started to make longer trips, and to enjoy the scenery and having good conversations with your travel companions.

A similar process takes place when students start with the creative facilitation course. At first we observe that they are mostly interested in idea generation, and then mainly through brainstorming. And very early on, they also discover icebreakers as a real fun activity. Generally speaking, during the earlier self-run sessions, some 60 percent of the time is spent on icebreakers and idea generation.[3]

After having experienced some sessions on this basis, students start to see the limitations of this approach. That's a good moment to remind them that there are many other idea generation techniques to be found in various sources, this book being one of them. Two developments now take shape: On the one hand, new creative procedures are being experimented with: Synectics, Story telling, Future Perfect and Guided Fantasy to name but a few (which will be described later on). But a more essential development now also starts to take place: as one's understandings grow, students stop using literal textbook procedures and start experimenting to enliven the process for the particular issue they are working on. That's the moment when processes start to 'take off' in terms of richness and depth.

In parallel, students start to understand that although idea generation is important, attention should also be given to recognising quality, at first by applying selection techniques, but then also by elaborating and presenting ideas more properly. This is 'enforced' by setting up presentation moments to colleague students, to staff and to problem owners.

An interesting observation is that with the experience of whole sessions one starts to oversee what is needed to make a session 'land'. So students start to oversee what's needed to do this properly, e.g. to have a number of concepts ready and to be able to present these on the agreed upon moment. So, as one

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[3] Although we do have some early data on this subject, this has not yet been published officially. In upcoming CF courses, we'll collect more data to inventorise and check this hypothesis.

acquires confidence in 'landing' properly, it becomes less important to keep both feet on the floor when experiencing one's first flights with more exotic techniques such as analogies and guided fantasy.

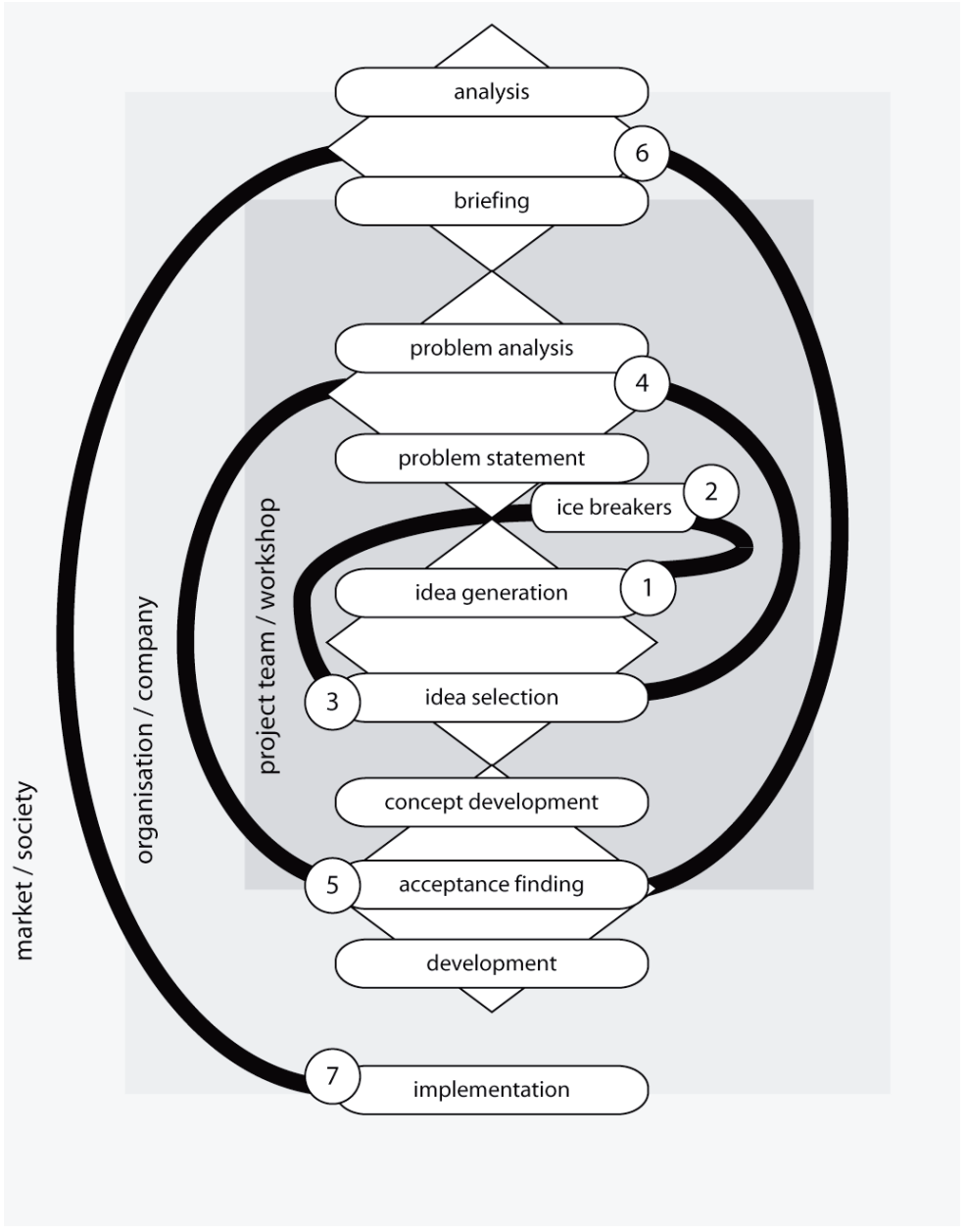

Figure 1.2: A natural sequence of learning for Creative Facilitation

As selection techniques are experienced and discovered, students start to discover that a proper analysis is part of the equation for setting up a good session plan. Intake conversations with problem owners now grow in importance, especially also from the moment an implementation phase is taken into consideration.

With the accumulated experience of standing in front of a group and leading a group through a creative process, sessions become more and more custom made unique happenings. One starts to see a story line running through a session plan. Problem Statements, Ice Breakers, Idea Generation all start to fit together in one inspiring and natural scenario. We call this a 'One Story Session'.

Theory and practice now become more innate and natural, in other words participants don't necessarily experience distinct steps anymore. The process starts to look like a natural flow. For most, this is also the moment when the course stops, unfortunately. But reaching this point should give students enough confidence to continue facilitating sessions on their own.

The following learning steps might be: acceptance finding (and the political implications around the implementation of ideas and innovation), change processes, including systems thinking, managing innovation, and last but not least ethical aspects of innovation, e.g. sustainability.

What's interesting to note in Figure 1.2 is that in parallel with learning about designing and running sessions, the scope of the analysis of the issue dealt with gradually grows as well. So, when at first it'll often be limited to the workshop itself and the team, with experience, this scope will grow to include, first the organisation within which or for whom the session takes place and later on, markets and society.

1.2 Creativity through the ages

Socrates wrote that creative thought comes to us as inspiration from the Gods. And ideas don't 'show up in our minds' when rational, but when man is 'outside himself', when he is without reason. This is because the Gods take away good sense before they inspire him with new ideas. As such, thinking would stand in the way of a good reception of such divine revelations. In those days, the Greek also believed that originality was a gift given to us by heavenly daughters of Zeus and Mnemosyne: the Muses.

In the dark Middle Ages, the church played a dominant role in our societies through dogma and inquisition. And although important creative work was being produced, this generally happened at the service and within the rules provided by the church. The church defined what and how certain themes ought to be presented, including rules for composition and form. One also has to consider that in those days science and religion were not seen as separate entities. And it is the church that developed and defined knowledge in an attempt to keep worldly life with religious dogmas connected as one.

In the meantime, also due to Moorish occupation of Spain, some islands of independent development, e.g. Toledo, were able to proceed with scientific development all through these dark ages.

It is through the Renaissance, Humanism and Reformation that a renewed image of mankind and his role in the universe took shape. Two important events mark this change. First there is the discovery by Copernicus that 'the earth is not the centre of the universe', which of course rocked the deepest foundations of the medieval church. And secondly, the French Revolution, through which the equality of rights and self-determination of all individuals got to be put on the map which found its shape in the French national motto 'Liberté, Fraternité et Egalité' ('Liberty, Fraternity and Equality')

What one sees here is a changing source for creative thought: first breathed in by the Gods (inspiration), then creative production at the service and within the rules and imagery of the church, to the present sense of free will and belief in one's own creations.

Thanks to scientific advance and the industrial revolution, the influence of mankind on his surroundings has grown exponentially, and there are few places yet untouched by human planning left. We are really facing the limits of this growth. Where we first assumed limitless development and the free use and disposal of natural resources, there is a growing understanding that we are really part of one large and complex system. The attention for sustainability is part of this new understanding, e.g. in the form of books like 'Cradle to Cradle' (McDonough & Braungart, 2002).

What this might mean for Creative Facilitation is that as the issues grow in complexity, more and more creative collaboration will be needed, having to bridge many cultural, political and professional differences if we want to tackle the theme we are presently facing: sustainable well-being, whether it be social, economical or environmental.

1.3 'Natural' Sources of Inspiration

This book is about what one might call 'Applied or Facilitated Idea Generation and Concept Development.' Before starting to develop all kinds of techniques and procedures, let's have a short look at a wider range of sources for inspiration before concentrating on techniques as used specifically during creative sessions.

1. Play

The first and most natural source of inspiration and learning (they mostly go hand in hand) is of course play. At the earliest moments in life, a baby and its mother 'play' with each other, smiling and making contact. During our childhood we spend a lot of time playing, but over the years we learn to 'behave', and slowly on play is excluded from our 'normal' register of behaviours. Play mostly starts with simply having fun, without any objectives or goals other than to spend time in some enjoyable or otherwise passionate way.

So, although play mostly doesn't have a predefined objective, a lot of learning for later life happens during these early playing years. Our social skills develop, and talents and preferences may be discovered and further explored, and most of all, one learns to know oneself and become confident in a multitude of situations and activities.

During creative sessions, play ought to be considered as part of the design; playful interaction and exploration are essential elements in a good session, it provides a space in which we can 'imagine the yet unthinkable' (and then make it thinkable ;-) The present popularity of facilitated sessions is at least in part due to the fact that we can legitimise play. Now play has become functional in attaining some objective.

If you are interested in the subject of play, Piaget (La psychologie de l'enfant, 1966) and Winnicot (Playing and Reality, 1971) might be two good sources. A more recent publication is Serious Play by Michael Schrage (2000) which is actually more about design and innovation then actual play, but still good reading.

2. Expertise

A second source of knowledge and ideas (not necessarily inspiration) is expertise. It is about remembering relevant knowledge, look it up, or find people who can provide you with the necessary answers. All too often, sessions are set up for questions that have been solved some other time in another place and by other people.

Let me share a little anecdote: One day, I get a phone call from some governmental agency asking if I could assist in doing a session about a particular motorway in the Netherlands, about traffic jams and such. I had done a session on exactly that same subject three months earlier, and I mentioned the name of my then client. It happened to be his neighbour on the same floor, but he had no knowledge of this earlier project whatsoever. We concluded our phone call with him visiting his neighbour and asking for a copy of those results.

Although at times it is good to reinvent the wheel (e.g. in new circumstances, or to revitalise one's understanding of what a wheel is supposed to be and do), generally speaking if it's about a wheel, look it up.

3. Analogy and Metaphor

To extend this idea of applying expertise, learning and creating often happen by trying to apply existing knowledge to situations and problems not yet encountered. By looking for connections between the known and the new, we can find similarities or analogies. And once a first understanding is acquired, like a bridge, now unfamiliar elements in the new can be 'placed' more easily, and an understanding can 'grow'.

Now, in art, think of poetry, painting and music, analogy and metaphor are used extensively. Just think of all the poems that are written to express one's feelings for a loved one.

This subject of using analogy and metaphor will be explored in much more detail later on, as these are a great help to acquire a deeper understanding and as they can help to get a grip on intuitve hunches, ideas not yet expressable in concrete words.

4. Biomimetics

A special case of using analogy is Biomimetics. Many inventions and discoveries were made by observing nature and finding out how certain problems are solved there. E.g. by observing bats and wondering how it is that these animals can fly around in caves in complete darkness, or how bees can recognise certain flowers. And then from such studies discover that bats use sound echoing to get an 'image' of the space they are flying in, and bees use different wavelengths of light than we humans can see. From the moment one starts to understand such a 'mechanism', one can try to simulate such functionalities and look for applications in the 'human realm' and ultimately develop new products. Examples of the ultrasonic vision can be found in early autofocus systems on photo camera's (Polaroid being one of the first) and remote controls. Later on such systems were also developed into non-invasive materials research and medical diagnosis.

This principle of using nature as an example for 'human' problems is known under various names: Biomimicry and biomimetics to name but two. Literally, the term biomimetics means to imitate life. In practical terms, biomimetics is mostly an interdisciplinary effort aimed at understanding biological principles and then applying these to develop human technology. In doing so, one sees collaborative efforts of biologists, zoologists, chemists, physicists and engineers working together in combining their respective expertises.

5. Just Do It

A third source of finding inspiration starts with 'Just do It', get your hands dirty and don't be afraid to make mistakes, all the while learning and discovering while experimenting and experiencing. It is a pragmatic stance, maybe even play-like, starting in acquiring experience, and if it doesn't work right away, reflect to think up the next experiment or reformulate your problem statement. Chances are that creativity will show up when needed (and it most often does!), but sometimes frustration shows up just before. Let it come in, and creativity generally follows in its footsteps, they are kind of an odd couple.

This stance is also about 'Trial and Error'. So again, get your hands dirty, acquire experience and then through trial and error develop solutions. Many objects around us have come to be through centuries of trial and error. Think of the development of cutlery, musical instruments, housing, etc. etc. Although there may be breakthrough moments, optimizations are being applied continually to such objects on the basis of daily usage.

One may also say that trial and error starts with the 'Experience' step in the Kolb Experiential Learning Cycle. As such, a pragmatic approach is part of getting hands-on experience for a better understanding of your subject and gradually developing good solutions.

A general recommendation in Innovation[4] is to make as many mistakes as you can, but of course as early as possible when the consequences of such errors are still bearable and unconsequencial.

6. Serendipity

Now a very different angle is Serendipity. You may have been working hard to solve some problem, and at some point you discover irregular outcomes from your experiments, like Alexander Fleming did when he was observing colonies of bacteria developing in petri dishes. One day when checking all the dishes lying around, he found some bacteria cultures that weren't growing as planned. It is when analysing this 'problem' that he discovered that some fungy had found their way into the petri dishes, breaking down the growth of these colonies. This led to the discovery of Peniciline in 1928. So serendipity is about finding ideas for problems you hadn't imagined before.

Another example is the 3M Post-it, where at some point a glue was developed which didn't really stick. It seemed useless till the moment one discovered that office people had started using it to attach notes to furniture and computer monitors. These could easily be removed without leaving a trace, and even be reused. It's only after somebody came up with the suggestion that Post-it's might very well be a commercially viable proposition, that 3M started to market these. The rest of the story is well known.

7. Letting Go

The next level is when inspiration doesn't follow in the footsteps of frustration. You are stuck, and have no clue what to do next. This might be a good moment to let go for a while. Go for a walk, or to an exhibition, or whatever, even going to the bathroom can do the trick. You are stuck in some thinking pattern that you can't discern yourself, and you need the distraction to make space for other perspectives to come up in your mind. Remember earlier on when the Gods had to take away reason before inspiring man with an idea? You have to allow for intuition to play a role, and structured thinking can block this. Letting go to allow for some inner voice to whisper new options in your ear: "Hey, what if . . .?" Of course, such a whisper is no more than a hypothesis and you need to check it, but who knows, it might be just what the doctor ordered.

8. Intuition

And finally intuition, the holy grail of creativity? Scholars like Agor (1986) described intuition as 'a logical operation, which happens subconsciously'.

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[4] In the sense of Innovation = Creativity + Implementation

Although this description does seem to cover a large part of the field, it is still limited to 'logic', something that would happen rationally on the basis of memory and experience. Instinct, feeling and aesthetics don't come into the picture, which I think is too limiting. An analogy for intuition is that of an iceberg. In comparison to our outward five senses, intuition can be seen as an inward sixth sense.

What we perceive as intuition is only the top of an iceberg, most of which lies below our consciousness. To use these 'hidden' thought processes it is important to listen very carefully to inner associations, images, maybe musical tunes, that come up on the visible stage of one's consciousness and then question oneself, e.g. 'Why is it that I think of this?' or 'What might be the relevance of these thought wanderings in connection to issues I am working on?' One becomes one's own active spectator.

Expressed in a more imaginative way: because of all the turbulence you may be immersed in, in some unarticulated mass of questions, perplexity, frustration and hypotheses, you are unable to see through the muddy waters. The turbulence must first come to a rest, dust has to settle down, and only then may you be able to capture subtle intuitive hints and triggers to make new connections and find new perspectives.

Inner quietness, for example by closing your eyes, taking a deep breath and 'looking inward' is a simple way of accessing one's intuition. One can support it by asking 'What's the first thought that comes to mind?', and then referring back to issues one is working on consciously. One can train this capacity through relaxation exercises and through meditation.

1.4 Vision Creativity and Form Creativity

Creative sessions are oriented towards generating ideas as hypothetical representations of useful solutions. This is what Vanosmael & De Bruyn called 'Vision Creativity'. But when elaborating ideas, when developing such ideas into 'real world solutions', e.g. tangible products or a Marketing Plan, all kinds of constraints have to be taken into account. To name a few: price, ergonomics, acceptance, attractiveness, life cycle, production, reliability, disposal and sustainability. So, this is not about generating interesting ideas, it is about making ideas work in the world. They called this 'Form Creativity', the materialisation or actualisation of an idea.[5]

As a matter of fact, this is a much more challenging phase, demanding lots of creativity, experience and expertise together to pull through this part of the creative task. Whereas in Vision creativity, in a manner of speech, a child can do the job (and literally come up with great new perspectives), when elaborating ideas, experts, designers and otherwise experienced specialists are

[5] personally I call this 'design', but I also want to respect Vanosmael & De Bruyn in articulating this distinction, and so use their original wording.

needed to do the job. The challenge now becomes to respect what's new and special in an idea (and the more innovative the idea is, the more a 'suspension of disbelief' attitude is needed) to keep what is special about it and to make it workable and feasible, within all the constraints 'given by the world'.

In this book, we will mostly deal with 'vision creativity'. In chapter 7, we will look at the start of the more 'form creative' steps in a development process, in terms of concept development, acceptance finding, project planning and provide some 'handles' on how to present concepts. But these are only described as far as they may be, or seem relevant during and directly connected to a creative session.

1.5 A little Creative Thinking Course

1. Association

One could say that our knowledge consists of a close network of notions in our mind, connected together in associative networks. When generating ideas, we want to 'wake up' as many of these links as possible to have these available as a source of idea generation: from rhinoceros to goldfish, from electron to Bible and from carpet to road bridge. Each of these concepts could at some point be a source for some principle or approach towards solving a problem or changing one's perspective on an issue.

By association, one can generate lots of concepts in a short time, for example: starting from the term white, one can think of black, death, snow, skiing, my note book, black letters on a white background, the sky and a film screen. Once you start, it quickly 'explodes' in a multitude of colours and movements, almost like in fireworks.

Aristotle coined five different associative mechanisms:

polar opposites	white – black, high – low
part and wholes	finger – hand, shoe – shoelace
closeness	station – train, pen – ink, pen – paper
causal effect	fire – burning – pain, snow – sliding – fun
analogy	birch – oak, duck – swan, smoke – gas

When using associations, one can choose between two different approaches: a flower association and a chain association. The former is meant to generate associations close to the first term, the latter is meant to distance oneself from the initial term, to free oneself from existing thinking patterns.

Flower and Chain associations (ref. COCD 1991)

Through a Flower Association, one generates associations around a central term. Of course the earlier mentioned rules for associative thinking from Aristotle can all be used. In a very short time, one can thus develop a huge 'field' of associations.

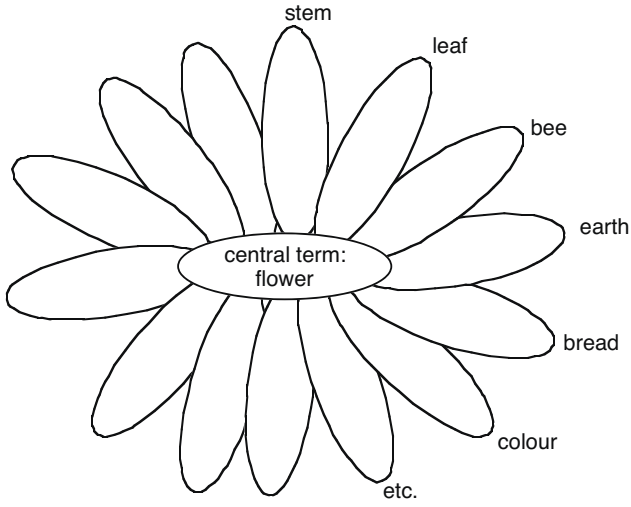


Figure 1.3: Flower association

When people make up such flower associations, they will often at first generate rather common associations (black → white). After some 10 or so associations, more creative and individual associations will start to appear. If one wants more creative and 'wider' associative ideas, a chain association might be more interesting.

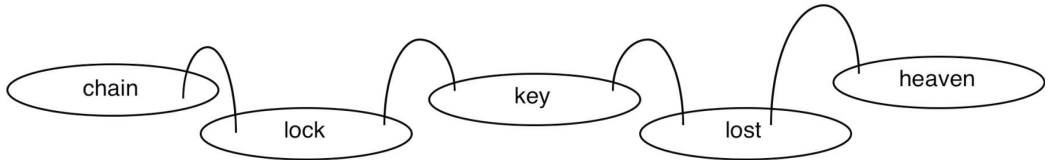


Figure 1.4: Chain association

Starting from some term, with a key association associations are generated following each other up, moving further and further away from the original concept. Whereas flower associations are meant to explore some idea and its neighbouring concepts, chain associations are meant to go on more distant explorations to free oneself from habitual thoughts.

At the beginning of an idea generation step, it may be worthwhile to let the group do some flower associations, just to warm up the grey mass between one's ears.

2. Bisociation and Forced-Fit

When people speak of brainstorming, it is often limited to a free-flow of associative ideas. But there's another important mechanism that consists of connecting two unrelated terms or concepts. Koestler (1964) coined this mechanism as a bisociation: connecting two concepts which have nothing in common at first sight, but on closer examination connections can be

discovered, through which new perspectives on the original issue emerge. This is pictured in Figure 1.5.

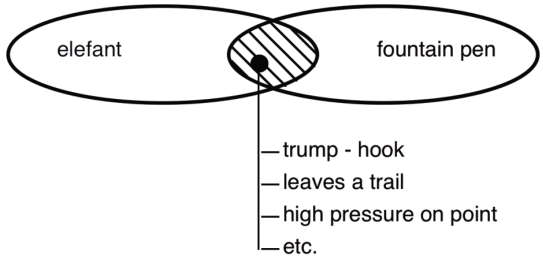


Figure 1.5: Bisociation (Koestler, 1964)

To train the 'brain muscles', and after a group has done some associative exercises, one could have the group make up connections between terms in some exact number of intermediate steps, in this example, three:

chair	_____	_____	_____	celestial body
cup	_____	_____	_____	lighthouse
A	_____	_____	_____	Z

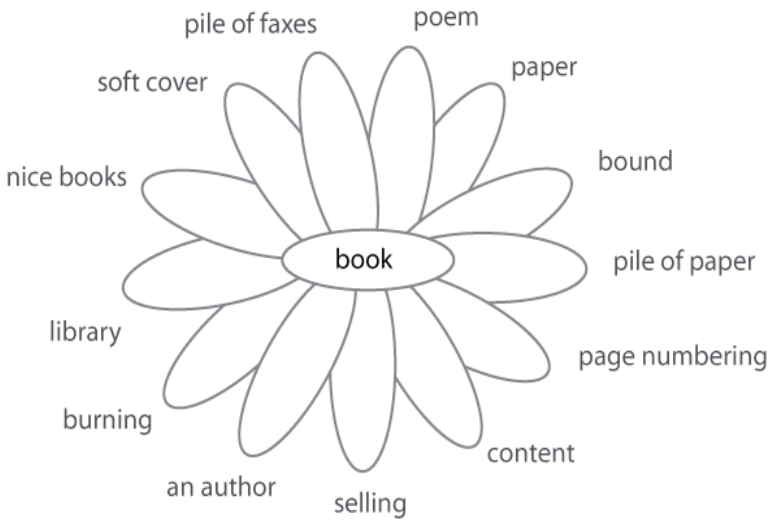
One could also vary this fixed amount of steps, e.g. do it in 6 steps, or in 1 step. An extra teaser is to ask that all terms ought to start with the same letter in the alphabet, which leads to yet other connections. Again, after some exercise, one will find that one can always make these connections; it's really about 'making' (instead of 'finding') a connection.

These exercises have two objectives. On the one hand, it is a good warming up, on the other hand it is a good introduction to learn about 'forced fit', a very important creative mechanism, which is somewhat more difficult to master than simple associative thinking. At first it may seem absurd to connect a fountain pen with an elephant. But when exploring this connection somewhat further, how about 'comparing' the clasp of a fountain pen to the trunk of an elephant. And then, why not use this clip as a trunk, drawing ink from a reservoir, and not getting inky fingers when refilling the fountain pen. And taking this a step further, now by association, why not use this clasp as a pump. As you see, by making such a connection, completely new approaches to a known problem come into view.

1. Take a problem
   Example: How to put more activities in an eight-hour working day ?

2. Take a word from the dictionary
   Example: 'book'

3. Make a flower association around the word 'book' :



4. Connect some of these terms back to the original problem :

paper	Paper is thin – could you make your tasks 'thinner', e.g. by executing these faster and more efficiently and piling them up more easily ? Or, could you sort them: small tasks (telephone calls at some predefined moments, in one go), bigger tasks at other moments when you can concentrate and prevent distractions ?
bound	Might it help to close the door, to isolate oneself somewhat, maybe to work from home on some days ?
an author	Do you have to do everything yourself or could you delegate some tasks ?
burning	Could you skip certain tasks: "sorry, can't do it" ? Maybe you need to develop a polite way to say no, and/or put some of your pet topics aside.
beautiful books	To execute each task with attention and care, to concentrate on one task at a time and forget about everything else.
poems, rhyme	Can I combine certain tasks ? Synergy ?

5. Selection and implementation