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CALCULABLE CREATIVITY SYNERGIES: THE ROLE AND USEFULNESS OF CALCULABILITY IN THE CREATIVE PROCESS

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Abstract: According to public opinion, routine and creativity are far from each other, or calculability and creativity even stand in contrast with each other. The main point of creativity is to achieve a result different from the usual, creating something incalculable. However, the *process* leading to a creative result is much more calculable, and we generate a creative idea in a much more calculable way than many people might think. The way in which we get to the creative result does not have to be unusual.
Besides, of course there are a lot of factors we need to consider to get a creative result. Moreover, some people can be significantly more creative in the same circumstances and similar routines. Nevertheless,creative thinking can be improved. We might develop routines and habits which help thinking creatively. Determination, hard work, and not giving up have a key importance in creative results. There are several well-known, calculable elements with a great impact on creativity.
Our study summarizes the synergies of two seemingly opposite concepts: calculability and creativity. The explanation of the notion of creativity is followed by a description of creative thinking, creative people, popular misbeliefs, brainstorming, the generation of ideas, and the usefulness of habitualness and calculability in the creative process. The study concludes that calculability and creativity do not stand in contrast to each other – contrary to popular belief, calculability enhances and facilitates creativity, which also plays a significant role in successfully facing the challenges of administration and management.
Keywords: Creativity, process, idea

INTRODUCTION: WHAT IS CREATIVITY?

According to the most widespread definition in literature, creativity is the act of generatinga valuable, previously non-existing thing. (e.g. George, 2007; Amabile, 1996; Oldham & Cummings, 1996; Walton, 2016).

The basis of different definitions of creativity is that they refer to achieving results through connecting and modifying already existing samples. Altogether, the result is creative if it is relevant and valuable as an original. (Amabile, 1998). Creating the forms of disorder and chaos might even be new and different from everything existing; however, we do not call them creative for their lack of value (de Bono, 2007/b, 2009).

The condition of creativity is the idea. The idea is born through combining existing things (Rekettye et al., 2012–13; Foster, 2009; Gladwell, 2005). We might have a new idea that is invaluable and irrelevant to the problem. In that case, we cannot speak about creativity, either.

We often refer to creativity in the world of art, because every work of art is new and valuable (McNerey, 2010). As a matter of fact, we do not always realize the value at once. The inducement of creativity in the world of art is good aesthetic sense. This ability is absolutely different from the creation of new ideas. There are no different words for creativity in the generation of new ideas and creativity in art. Artists might be phenomenal in their own areas; however, they are not necessarily equally good at creating a new idea in business. This difference is really important (de Bono, 2009; McNerey, 2010).

1. CREATIVE THINKING CAN BE IMPROVED

The rate of creativity is possibly different, but everyone might have creative ideas. There are personal differences in creativity, similarly to mathematical or sports skills. After all, not everyone turns out to be an Olympic champion, but most people can run a half marathon after sufficient training.

The rate of creativity mainly depends on the following three things (Kaszás, 2011):

Information, samples in hand, and combinational ability

How many earlier results and samples do we know, and how well can we combine them? The information we stock in our brain provides the base of creativity. The bigger the base of knowledge, the more combinations we can put together.

Originality, modernity

How much can we recognise new features, create new possibilities, and get rid of routines and samples? Reproductive thinking based on past experiences creates barriers around thinking. On the contrary, productive thinking generates newer and newer questions from newer and newer aspects in our brain.

Relevancy

How well can we tie our thinking to usability, i.e. how relevantly can we think? The answer is creative if it solves a problem. For this, we also need regular thinking in a sense.

To improve creativity, we have to give path to thoughts and ideas. Wrong problem-solving thinking generally leads back to a faulty, one-aspect point of view. If we take every idea with prompt criticism, and the way of thinking is originally narrow, we do not have the chance to earn creative results (Kaszás, 2011). To improve creativity, we have to change that way of thinking. Without creativity we ourselves create barriers for our thoughts and ideas.

1.1. Misbeliefs in connection with creative thinking

Many people suppose that creative thoughts are born somewhere beyond conscience, we encounter them accidentally, and that is why having a creative idea depends on factors beyond our control (de Bono, 2009).

1. In reality, information coming from outside is organised into samples in our brains, and through connecting these they might result in a new, relevant meaning. Creative results must be looked for inside our own brain to be able to create new connections and possibilities. The question is whether we can utilise the pieces of our lexical knowledge correctly, or we handle them as independent pieces of information (de Bono, 2009; George, 2007).
2. Creativity is often considered as a special talent that is only possessedby the chosen few. However, the ability of thinking creatively is a skill possessed by everyone. Creativity is an ability that can be studied, improved, and applied (de Bono, 2009; Novotney, 2009; Adams, 2015).
3. Another misbelieve is that we need to be free of inhibitions in order to think creatively.

As a matter of fact,being free of inhibitions is important for creativity, but is not enough. If we tie someone's hands and give him/her a violin, it is obviousthat he/she will not be able to play the violin. On the other hand, it is also clear that unbinding his/her hands would not be enough to play the violin.

Unfortunately, a lot of people think that if we free our mind of inhibitions it will be creative. This is not right in that sense (Kaszás, 2011; Epstein, 2000).

4. Creativity = wangling. This assumption is fostered by the fact that wangling people must be creative. Creative people trying to find the result of a matter do not stop at the first idea. They think over different ideas until they find the result, which less creative people cannot do. Therefore they come up with amore favourable result that they can apply well. However, the general phenomenon of wangling is not the same as creativity (de Bono, 2009).

1.2. Characteristics of highly creative people

The characteristics of highly creative people have been investigated and examined by many researchers. The common personal features and behaviour characters of people reaching significant creative results were best put into shape by Hungarian-born psychologist Mihály Csíkszentmihályi, the father of the flow theory.

According to Csíkszentmihályi (2009), the most important feature of creative people is complexity, i.e. they own thoughts and behaviour forms at the same time, while these are present separately in others. This complexity is exemplified by the following ten pairs of contradictions:

1. Creative people have a lot of physical energy; however, they can stay silent, work intensely and relax.
2. Those who reach significant creative results are smart and naive at the same time.
3. Their attitude is playful, but on the other hand, it is also orderly, constant and headstrong.
4. They balance between the two edges of fiction: fantasy and unimaginativeness.
5. They cover both poles of the extrovert-introvert scale.
6. They are both shy and proud at the same time. For they can clearly see earlier contributions in their workplaces, they are able to put their own work into another perspective.
7. They escape from strict gender stereotype roles. They have both masculine and feminine features.
8. They are rebels and iconoclasts, however, in some senses, conservative and respectful of traditions.
9. They are passionate in their work, but can view it objectively as well.
10. Through their passion, they find a lot of joy in their work, but they also live through a lot of suffering.

From the abovementioned aspects arises the fact that creative people adjust themselves to any situation in order to reach their objectives, and they can manage anything that is at hand. Guilford (1967) was the first to put down the characteristics of creative people, such as the claim to break with routines, the aim for changes and new things, and, as a basic motive, are searcher-experimentalist drive. Maslow (1971) considers self-realisation as the main motive of creativity. Creative people have strong feelings inside to realise their personality in a creative way.

According to Barron's results (1988), creative people are characterised by a great desire of knowledge, curiosity, (intellectual) drive for cognition and great autonomy, high self-power, confidence and emotional stability. In their interpersonal connections they are objective nonconformists. They are characterized by a wide range of interest, aptness, abstract thinking and intellectual activity. Their psychodynamics are more complex and differential, and in connection with this they prefer complex stimuli. They tolerate ambiguity as well.

2. PRACTICAL METHODS OF CREATIVE THINKING

2.1. Divergent or lateral thinking

Edward de Bono (2007a, 2009) mentions lateral thinking, while a considerable part of the literature (pl. Amabile, 1996; Calvin, 1997; Barron, 1998; Novotney, 2009) speaks about divergent thinking in the case when we let our thoughts roam, making a difference from convergent thinking aiming for a specific objective (Gladwell, 2005).

According to de Bono (2009), lateral thinking is an idea generating and problem solving method in which we create ideas through viewing existing things in a new way. We might consider logical thinking as the opposite, in which case we go ahead with a chosen idea. Lateral thinking tries to avoid the problem with the help of a radically different approach.

2.2. The six thinking hats method

The six thinking hats method is also associated with Edward de Bono (2007a). This method can be well used in business life, and has been applied by several multinational firms. The six thinking hats method is the method of inciting common problem solving and common creative thinking. The main point is controlling the thinking process, and encouraging parallel thinking as opposed to quarrelling.

With this method, participants of the group examine the problem together, go through different aspects, and examine possible solutions as well. Different aspects are represented by hats of different colours, also providing the name of the method. The six hats represent the following aspects: facts, emotions, opposition, advantages, creativity and process.

With the help of this method, we can avoid the tension of different opinions and, furthermore, avoid an even greater barrier of creativity, opposing people representing different opinions. Common aspects release great extra energy.

2.3. Brainstorming

Brainstorming is the basis of most creative problem solving methods. Individual sand members of the group simply suggest ideas and discuss them. Success is based on the segregation of idea-generating and criticism (Walton, 2016).

According to Osborn (cited by Kaszás, 2011), the developer of this method, the name 'brainstorming' refers to the fact that we use our brain to storm and demolish a problem. There are hardly any areas of problem solving where we could not use brainstorming. This is why a lot of people know about it,but use it in a misunderstood and ineffective way.

The five basic rules of brainstorming are the following (Kaszás, 2011):

1. More ideas to examine
2. No criticism during idea generating
3. On the other hand, participants should also develop each other's ideas
4. The wildest ideas are hopeful
5. Ideas are the common property of the group

It is important to note that brainstorming is not completely a problem-solving method, as it is mainly used to generate ideas. There are several steps after brainstorming until a problem is solved.

Compared to idea-generating in a group, we can get more effective and better results if the participants have collected their own ideas beforehand. (Papp-Váry, 2011; Walton, 2001)

2.4. Methods of generating ideas

When looking for the answer to any problem, it is important to look for more solutions. Never be satisfied with the first one! The following methods show us how to generate newer and newer ideas (based on Foster, 2009).

1. Enjoy it!

Make problem-solving enjoyable. Based on experience, the best ideas always come from people who find more joy in the process of problem-solving.

2. Be children!

The child inside us is creative. Adults are bandaged by knowledge, bonds, and the huge number of rules and presumptions. Children are free, and their character is that they see the world as it is, and not the way adults have taught them. Children only know 'the now'. Lose your inhibitions, and try to be a child!

3. Believe that ideas are coming!

Believe that there are several ideas and solutions to the problem, and these ideas are inside our heads. Do not stop at the first thought! If you do not believe that there are a lot of ideas, you cannot reach these ideas. The difference between ones who are full of ideas and ones who have no ideas is just that the former ones believe in their own idea-creating ability.

4. Make mistakes!

We need a range of false solutions to reach the right ones. Those who are afraid to make mistakes narrow down their own thinking. In fact, we have to find delight in false ideas for they take us closer to the proper solution. The value of having a false idea is bigger than having alack of ideas.

5. Get out of the groove!

Do unusual things to get yourselves out of the routine!

3. CALCULABLE CREATIVITY?

3.1. Creativity needs engrossment, determination

Giving up is the death of creativity (Lucas, Nordgren, 2015). Creativity needs determination, so it needs time. Speaking about creativity, we generally underestimate the importance of determination. Seeking for more results, generating newer and newer ideas is only possible through hard work.

Even if we consider a single sparkle of thinking, the thinker deals with the given problem intensely for a while before the moment the sparkle appears. Creative results arrive right after that seasoning process; that is when we can live that so called Eureka effect.

After an initial unsuccessful period, many people give up trying, and say that they have no creative solution for a given problem (Mérő, 1994). They suppose that the idea should have arrived, so they often give up if they are stuck in thinking. However, creative results can be increased with determination (Lucas, Nordgren, 2015).

3.2. The 'time of day effect'

Research proves that from the aspect of the individual, the time within the day influences creativity. The literature calls it the 'time of day effect' (Wieth, Zacks, 2015). In a non-optimal time, feeling-fatigued, outworn, attention is less focused, and inner control is decreased. Due to the lower rate of control, thinking wanders and is influenced by former experience that expressly favours creative solutions. To approach a problem in a new way, we need exactly that state (Wieth, Zacks, 2015).

It is possible that we get closer to solving a given problem at the optimal time, in a relaxed state. Nevertheless, when we need a new approach, it is worth trying a step out of the box, rethinking the matter in another time of the day.

3.3. Make it a habit

However strange it sounds at first, you can make creativity a habit (Epstein, 2000; Novotney, 2009).

To make creativity a routine, Epstein (2009) suggests the following:

1. Collect new ideas and put them down! That provides the basis of the usual brainstorming process as well.
2. Search for challenging tasks! Even if something does not look very promising at first, the existing ideas in your head may eventually generate new ones. Epstein's example (how to teach our dog to fly) shows us that the process is important, not the result.
3. Extend your knowledge! Deal with different specialities, not only coherent matters. All that helps diverse thinking.
4. Compass ourselves with interesting things and people! Any new experience (opera, special dinner, etc.) stimulates thinking.

Amy Novotney (2009) looked through several research results regarding creativity influencing factors. According to a study published in Creativity Research Journal (Vol. 20, No 1.), creativity increases if we work on the abovementioned four areas. During the research, 74 Californian workers took part in creativity training that focused on the development of these four skills. 8 months later the skill of generating new ideas increased by 55%.

Research proved that people underestimate their own creative thinking if they have tried to solve a problem, but do not manage to solve it within a short period of time. If they are stuck in solving the problem, they tend to give up. They are certain that they cannot go on. However, with some determination and newer and newer attempts, the generation of creative ideas can be increased (Novotney, 2009).

CONCLUSION

According to popular belief, creativity and calculability are two very different, if not opposite notions. The aim of creativity is to achieve something that is unusual, surprising or incalculable. However, using calculability and routine within the creative process facilitates the generation of a creative idea – the way to a creative result is much more calculable than many people would think.

The study summarized the synergies of two seemingly opposite concepts: calculability and creativity. Drawing on the most prominent authors of the topic, the writing explained popular misbeliefs, and analyzed the basic aspects of creativity: creative thinking, creative people, brainstorming, the generation of ideas, and the usefulness of habitualness and calculability in the creative process.

As our study proved, calculability and creativity do not stand in contrast with each other. Moreover, calculability supports creativity, an important aspect of successfully addressing the challenges of administration and management.

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