**Edward de Bono**


An Explanation of the Brain as a System and the Creative Tool PO


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The research of Dr. Edward de Bono is important and should be understood by design practitioners who want to improve their ability to generate creative ideas in a design situation. While education traditionally has focused on literacy and maths, the ability to think effectively—in this case, generate ideas—has been forgotten and neglected. *Creativity* is a vague term, and is commonly regarded a gift or a talent that can not be learnt. As designers, we rely on the ability to create something out of nothing, and originality is valuable—if not necessary. Designers use a variety of tactics in order to produce good ideas, but few of these are rooted in science and an understanding of how the brain functions. The problem might be that designers are unaware that such ideas and techniques exist. It might also be based on misconceptions about what creativity is. By studying de Bono's work one can learn how to use the brain more efficiently and—ultimately—become more able to produce a higher number of ideas in a design environment. The following text will explain how the brain organises itself, how it is a system that has to be beat in order to generate creative ideas and how it can be done. Simplicity as a value will also be discussed.

Edward de Bono is considered the leading authority in the field of creative thinking, and created the concept of *lateral thinking* (de Bono, 1967). His background is in medicine and psychology (Chiaramonte, 1989), and his book *The Mechanism of Mind* from 1969 was the first documentation of how the brain works as a system. All his ideas have stood unchallenged for 40 years; "fundamentals do not change" (Powell, 2007, p.1059). The techniques that he has developed are being used equally with four-year-olds in school and with some of the world's largest companies (de Bono, 2007). He believes firmly in simplicity, and all his

techniques are stripped down and easy to learn and to use.

It is important to distinguish idea creativity from artistic creativity. Edward de Bono deals exclusively with idea creativity. The term creativity has been taken over by the arts, and there is no term in the English language to separate idea creativity from artistic creativity. de Bono's theories will not be of much help if one sets out to become a Bach or a Michelangelo. They will, however, be of use if you set out to design a novel product or solve a problem that requires a creative solution.

A vital concept to understand, and the foundation of his work, is the theory of the brain as a self-organising information system. When the brain receives information, it organises itself based on experiences from the past that have already left their marks. Edward de Bono presents the following analogy in the book *Po: Beyond Yes and No*: A spoonful of ink is poured onto a towel spread out flat. The ink is absorbed and leaves a permanent stain. The stain can be referenced to by coordinates taken along the edges of the towel. A spoonful of hot ink is poured onto a bowl of jelly. The ink melts the jelly slowly, but cools down quickly. A depression has been made in the surface of the jelly. The ink stains represent information input. When several spoonfuls are poured onto the towel, more permanent stains are made. They never change; it becomes a record of everything that has happened to the towel. When several spoonfuls are poured onto the jelly, the holes will connect and the ink will flow into the existing depressions and make them deeper. The jelly is self-organising; the towel is not (de Bono, 1973).

*Figure 1: My Wife and Mother-in-Law by W.E. Hill (after Covey, 1990, p. 26).*

What can be considered further evidence for this theory, is seen in our sense of visual perception. A Harvard Business School instructor brought a stack of cards to a lecture (see Figure 1). Half of them had picture A printed on them, and the rest had picture B. One stack was passed out to the right side of the audience, and the other half was passed out to the left. The students were told to study the picture for ten seconds and hand it back in. Picture C was then projected on a big screen, and the students were to describe the illustration. Almost everyone saw the person they had seen on their initial cards, and a big discussion followed. Half the group thought she was a 20-year-old girl with a feather in her hair; the other half saw an old, crooked woman (Covey, 1990). What had happened was that their brains had formed a pattern for that particular picture, leading to a conclusion of what the picture was of. When the third picture was shown, they instinctively fit the picture into the created pattern, and they

thereby offered little thought to alternative perceptions.

Let us consider the following scenario: C is a design brief that you have been given. A and B are two possible solutions to this brief. You sit down and have a look at what is asked from you, and you realise that you have encountered something similar before: you have been exposed to solution A in another situation. If you have experienced solution A, it will become an obvious choice, and solution B may never be found or considered—even if it might be a simpler, more efficient and more fitting solution. Similarly, people who had seen picture A in the experiment at Harvard, had difficulties seeing the old lady, and vice versa.

This is not only a problem when you know one and are happily oblivious of the other; there is also a problem when you have two similar alternatives. This problem is discussed in the book the Mechanism of Mind. "When a situation has two alternative explanations, both of which are equally valid, then the definitive selection capacity of the memory-surface will choose one and completely ignore the other" (1969, p. 93). The selection process makes very rigid and absolute decisions, and two individuals faced with the same question can end up with two very distant solutions—without acknowledging the validity of the opposite answer.

The patterns generated by the brain are asymmetric; we go along the deepest patterns without noticing the side track. If we—randomly or by using techniques deliberately—get over to the alternative track, "the route becomes obvious in hindsight. This is the basis of both humor and creativity." (de Bono, 1988). When the solution becomes logical in hindsight, we believe that

the solution could have been found logically from the start; this is a belief that makes us focus more on logic rather than creativity. In a passive, self-organising system like the brain, an idea that is logical in hindsight is not necessarily accessible by logic in foresight (de Bono, 1988).

The theory that the mind is a self-organising system is what creates problems in the creative phase of a design project. You read the brief, and instantly your brain tries to fit the incoming information into one of the existing patterns—into one of the depressions in the jelly. That is perfectly human and is essential for everyday thinking. It enables you to do things on cruise-control, such as tying your shoes or riding a bike. It will not, however, give you ideas for a great design. Since your mind is literally working against you when it comes to generating original ideas, you will have to learn how to break out of the patterning system. "To bump our thinking out of these ruts, we need strategies to find more fruitful paths and create new patterns", according to the official de Bono Institute in Melbourne (2006). The tools and processes of lateral thinking were designed to help you to do that; to move across patterns— lateral movement.

PO is the fundamental tool of the creative system. It is a word created by Dr. de Bono for this purpose. Its need arises from "the deficiencies of the special memory-surface" (1969). He argues that "the use of PO is a skill that can be learnt and practised just as you learn to drive, cook, surf or play golf" (1973, p. 22). Its function is purely creative, just like the function of yes/no is judgemental. PO is a tool that acts to break down patterns and conquer arrogance and dogmatism. It introduces discontinuity, and helps you move sideways across patterns

instead of getting trapped by them and being led in their tracks. To use PO as a specific

thinking tool, there are three basic uses, introduced in the chapter Creative Po in *PO: Beyond

Yes and No* (de Bono, 1973, chap. 5):

**PO1 - The Intermediate Impossible**

This process can be said to be an extremely powerful variant of the word *suppose*.

It is built upon the concept that wrong and/or impossible ideas can be used as

gateways or stepping stones to ideas that are not wrong. It is a way to jump over

the barrier of judgement, and continue in a seemingly wrong direction. This tool

is often used as *provocative statements*. From a graphic design point of view, an

example might be "PO this copy should not be readable". The objective is to

explore unfamiliar landscape, and see where the provocation is leading. Results of

this PO could be to have the text presented in the braille system, a feature for

audio playback of the same text, communicating the same message purely

pictorial, or special glasses that make the copy readable.

**PO2 - Random Juxtaposition**

This requires a completely random word, and is a technique to form ideas

between two concepts that have no previous connection in your memory bank.

This technique provides two unrelated starting points, and your brain will try to

find a path to connect the two concepts—a process that will force you to explore

new thoughts and ideas. "The subject was cigarette. The random word was traffic

light. From that quickly came the suggestion of putting a red band around

cigarettes so that the smoker had a decision zone. If he or she stopped at the red band, then the smoker was gaining control over his or her smoking habit." (de Bono, 1988).

**PO3 - Challenge for Change**

The third use of PO is simply a judgement by-pass technique. It is an invitation to generate alternative solutions and fresh thinking, even if an adequate and fitting solution already is found. It is a formal way of saying "Why?", "Why this concept?", without getting a defence of the initial idea as an answer. It is an attempt to fight complacency and arrogance, by putting an existing idea to one side and keep on searching for new solutions. It sums up the following statement: "That is one way of looking at things and it is perfectly valid, but it does not exclude other ways, so let us try to find some" (p. 107).
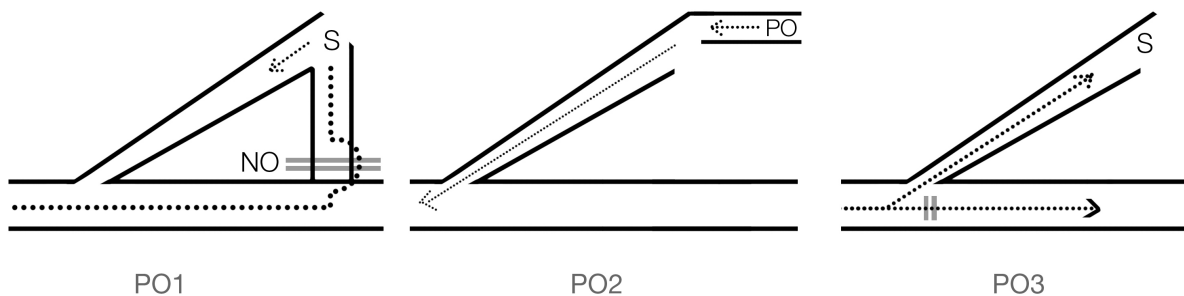


*Figure 2: The three POs explained visually. The straight pipe represents the most available pattern, the S represents the solution and the diagonal pipe represents the logic way from the main track to the solution. (after de Bono, 1973, pp. 95-108)*

A major point that de Bono advocates, is to suspend judgement throughout the entire creative phase. Critical thinking and creative thinking are two incompatible processes. Another author in the field, Dr Michael LeBoeuf, agrees, and introduces the following analogy: "To use your judgement and imagination simultaneously is like stepping on the brakes and the accelerator of your car at same time" (leBoeuf, 1980, p. 60). One must allow invalid statements, untruths and steps in seemingly wrong directions, in order to create a mental environment for creative thinking. This is a vital principle that needs to be understood and practised. High-paced, effective idea generation without any room for critical thinking will result in a much higher number of ideas, which then can be judged critically and logically in the selective phase. A thought that presents itself as a bad idea at the time, might lead you onto something else— something that you would not have seen if you had abandoned the initial thought. This is a significant part of lateral thinking, and it is fundamentally different from vertical thinking. "The need to be right all the time is the biggest bar there is to new ideas" (de Bono, 1990).

Katie Konrath, who recently finished a Master's in Creativity and Innovation at the University of Malta, is a certified lateral thinking instructor. She explains that the more ridiculous the PO is, the better the creative output will be. The goal is to make your brain so "disturbed by the apparent lack of connection between your creative challenge and the PO statement that [it] will plumb its depths for any connection possible" (personal conversation, 31. May 2007). She, too, mentions the dangers of judgment. If you get selective in the generative phase, your creativity will be drastically limited.

On another note, de Bono discusses the rising need for simplicity in all aspects of life—not excluding visual communication. de Bono himself is an admirer of the skills of the cartoonist, and calls it creative simplicity at its best. We tend to settle with what is adequate, without considering that there can be a better or simpler solution. In his book Simplicity, de Bono argues that simplicity as a value should be considered equally important to time, cost and other sought-for values (1999). Similar to the Intermediate Impossible (PO1) in idea generation, the principle of *provocative amputation* is introduced to find ways to simplify. The process is to—without judgment or further examination—throw out elements to determine whether or not they are necessary to achieve the desired result. In an interface design, this would be done by removing one and one feature. With a graphic design piece, you consider each element to see if it is vital for the design. The design studio 37signals is advocating this approach in their book Getting Real (2006): "Take whatever you think your product should be and cut it in half. Pare features down until you're left with only the most essential ones. Then do it again."

As mentioned in the introduction to this text, education systems are neglecting creativity. In his speech at TED Talks in 2006, the education visionary Sir Ken Robinson argued that, "Every education system on earth has the same hierarchy of subjects (...). At the top are mathematics and languages, then the humanities, and at the bottom are the arts. Everywhere on earth." (2006). Robinson argues that we do not grow into creativity; we are educated out of it. That might very well be the reason for the need of Edward de Bono's research.

This text has explained that Edward de Bono's research provides an understanding of how the brain functions as a system. That understanding can be used to overcome the natural barriers that restricts your creative sessions, and thereby improve your creative capacity. There are several misconceptions about creativity, and de Bono addresses them all in a way that is simple enough for youngsters to use and simple enough to make academics angry (de Bono, 1999, p. 75). The fundamental theory is the concept of the brain as a self-organising system, and the lateral thinking techniques revolves around the effort to the patterns created by this system.

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