

## Invited Article

# New Thinking

Edward de Bono

The traditional practice of medicine provides an excellent model of our thinking behavior. A child is brought into the clinic by his mother. The child has a rash. The doctor thinks of a range of possibilities from food allergy to measles. The doctor then makes a judgement or diagnosis based on signs, symptoms, history, tests (to exclude other possibilities), environmental factors, etc. If the doctor judges the condition to be measles then the probable course of the illness is known, as are the possible complications and the traditional treatment. This is an excellent and effective system.

Before modern medicine a constellation of signs and symptoms were given a particular name, say XXX. Experience had shown that for the condition XXX the best treatment was a concoction of herbs labelled YYY. There was no need to do anything more than recognise the standard situations and provide the standard remedy. Modern medicine is a little bit better because we seek to understand the underlying system disorder in addition to identifying the standard “named” condition.

After the fall of Rome in about AD 400, there followed the “Dark Ages” in Europe. The greatest leader at the time was Charlemagne who could not read or write. Then came the Renaissance. The Arab philosophers and scholars in Spain re-introduced into Europe classic Greek thinking. This was a breath of fresh air. Human kind now had a more central position in

the universe. It was now possible to use logic and reason to work things out rather than rely on divine inspiration or Fatwas from the hierarchy.

Not surprisingly, this wonderful new thinking was eagerly embraced by the “humanists” who wanted to do some non-church thinking. Rather more surprisingly, the Christian Church led by people such as Thomas Aquinas of Naples also embraced this new thinking.

The main interest of the church was to use Aristotelian argument to prove heretics wrong. The search was for the “truth”.

At that time, schools and universities were largely run by church people. Such people had little interest in perception. In religion the starting concepts and axioms were given. It is how they were used “logically” that mattered. So there was little attention to perceptual thinking.

There was not much place for “creativity” in religion. Nor was there much call for “constructive” or design thinking. The main emphasis was on judgement and argument.

So this wonderful new thinking introduced at the Renaissance became the standard mental software for Europe and has remained so to this day. This software is excellent just as the front left wheel of a motor car is excellent. But the front left wheel is not enough by itself.

The basis for this “new thinking” was the thinking of the classic Greek “Gang of Three”. There was Socrates who was trained as a Sophist. These were people trained to be very skilful in the use of words and argument. Like lawyers today, they could reach any conclusion if paid enough. In the majority of the dialogues of Socrates there is no positive outcome at all. When his irritated listeners asked why everything was always “wrong”, he pointed out that his role was to show up what was wrong. Then there was Plato who, as a young man knew Socrates although he was not formally a pupil of Socrates. Plato wrote up Socrates in his, Plato’s, writing as Socrates never wrote anything. Plato was strongly influenced by the mathematician Pythagoras. Plato believed that just as there were ultimate truths in mathematics there should be ultimate truths everywhere.

The final member of the Gang of Three was Aristotle who introduced logic of the inclusion/exclusion type. From experience Aristotle showed how we created boxes, categories, labels etc. Once we could identify the standard label we knew at once what came with the label. Something could be in that “box” or outside “that” box. It could not be half in and half out. Nor could it be anywhere else.

So dominant is this thinking that when a Russian immigrant

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in the USA developed “fuzzy logic” in the 1970’s all the learned journals refused to publish anything on fuzzy logic because it contravened Aristotle’s principles. Fuzzy logic claims that something may be partly in the box and partly elsewhere. This could not be allowed !

### Judgment is not Enough

So our traditional thinking habits are based on identifying a standard situation and then providing the standard answer. One hundred per cent of education is about this. Ninety percent of thinking thereafter follows this model.

This thinking is excellent at identifying “what is”.

It is useless at designing “what can be”.

The creative, constructive and design aspects of thinking have been almost totally neglected in favour of judgement and argument.

This type of thinking has been excellent in science and technology and almost useless in human affairs.

If a scientist is working with the element “iron” then the properties of iron are known, permanent and constant. So iron can be put together with other materials to create technology.

In human affairs, people are not predictable. They are also changeable. If you call someone an “idiot” then that person is no longer the same person you called an idiot.

In human affairs there is a great need to “design a way forward” rather than “judge a way forward”.

Before any negotiating conference there should always be a “design conference”. The purpose of the design conference is to put forward new concepts, fresh alternatives and further possibilities. This provides much more to work with when negotiating starts. To move into negotiation with hardened positions and then to use lawyer type argument is not very effective – as we see again and again in world affairs.

### Why do we need Creativity?

There is a sound mathematical reason why creativity is essential and not a luxury.

We live over time. Information comes in over time and not in one lump. Periodically we need to make the “best use” of the information we have in order to make sense of the world around, to design a way forward or to make a decision. So we have a system with two broad characteristics : input of information over time and the periodic need to make the best use of such information.

We can model such a system in many ways – one of which is shown here.

There is a simple game in which one letter at a time is given and you need to arrange all the letters to give a known word.

A	+T
AT	+C
CAT	+S
CATS	+O
COATS	+R
ACTORS	+F
FACTORS	

We can see how many of the changes are simple additions or insertions. But there is one change which is a total change. The letters have to be radically re-organised to give ACTORS.

Any system with an input of information over time and the periodic need to make the best use of the information will always be sup-optimal.

This is because the sheer sequence of the information plays too large a part in its disposition. We get committed in a particular direction because of a particular sequence of arrival of information. The purpose of creativity is to break free of these established sequences.

### The Nature of Creativity

The brain is designed to be brilliantly uncreative. We should be very grateful for that. The purpose of the brain is to make stable patterns for dealing with a stable universe. That is the opposite of creativity.

One day a fellow got up in the morning and wanted to figure out how many ways he could get dressed with eleven items of clothing. He put the task to his IBM pc. The computer worked for forty hours non-stop. This is hardly surprising. With eleven items of clothing there are 39,916,800 ways of getting dressed. If you were to try one way every minute, you would need to live to be seventy-six years old using your entire life trying ways of getting dressed.

The mathematics are simple. There are eleven choices for the first item, ten choices for the next, nine for the next etc. If you multiply all of them you get that figure.

Life would be impossible if we had to think that way.

The purpose of the brain is to make routine patterns from incoming information.

We set up a routine pattern for getting dressed and as soon as we recognise the “getting dressed” situation, we use the routine pattern. That is the excellence of the brain.

All this was explained in my book “THE MECHANISM OF MIND” which was published in 1969. That book was read by the leading physicist in the world, Professor Murray Gel Mann who commented that I was writing about such things ten years before mathematicians started working with self-organising systems, chaos and complexity. He should know since he set up the leading body in the world dealing with complexity: the Santa Fe Institute.

What happens if there is a side track to the main pattern? Do we have to decide which track to take? If we did life would again be impossibly slow. The way the nerve networks are linked up a larger area of activities gets larger and a smaller one gets suppressed. There is nothing magic about this. Any two semi-stable systems in tandem will work this way. So the side track gets suppressed and we move along the main track.

If, somehow, we move across to the side track, then in hindsight this seems very obvious and logical. Every valuable creative idea must always be logical in hindsight otherwise we could not give it value.

What we have then said for two thousand five hundred years is that if an idea is logical in hindsight then we should be able to reach that idea in the beginning and creativity is unnecessary.

This is totally and completely wrong in an asymmetric system. But since we have not been dealing with self-organising asymmetric systems we have never realised this.

Imagine an ant on the trunk of a tree. What are the chances of that ant reaching a specified leaf? At every branch point, the chances diminish by one over the number of branches. In an average tree the chance of reaching that leaf is about one in eight thousand.

Now imagine the ant sitting on the specified leaf. What are the chances of that ant reaching the trunk of the tree? The chances are one hundred percent or one in one. There are no forward branches in that direction. It is our failure to understand asymmetric systems that leads to our failure to understand creativity.

There is no magic about creativity. Creativity is the behaviour of information in a self-organising asymmetric information system. Humour is by far the most significant behaviour of the human brain. Humour tells us more about the operating system than does anything else. Humour indicates a self-organising system that makes asymmetric patterns. We go along the main track and then suddenly get taken to the side track. Suddenly we see things differently.

An old man of ninety goes to hell. As he wanders about he sees a friend of about the same age, sitting there with a beautiful woman sitting on his knee.

He says : "Is this really Hell? You seem to be having a good time."

His friends looks up and says : "It is Hell alright. I am the punishment for her!"

The same mechanism is to be found in insight and creativity.

## Formal Methods of Creativity

These are the formal methods of lateral thinking. They are all based on the behaviour of asymmetric systems. Such methods can be learned and used deliberately. Using just one of these methods a group of workshops generated 21,000 ideas for a South African steel company in one afternoon. This goes far beyond waiting for inspiration.

There is the method of "Challenge" where we look at some accepted concept or method and challenge it. The challenge is never to validity but to uniqueness. Ideas settle into what is called a "local equilibrium" which is satisfactory but far from the best.

In the nearly nineteen seventies I was doing a workshop with Shell Oil and I challenged the way oil wells were traditionally drilled. I suggested that instead of drilling straight downwards the well should move horizontally at a certain point. Today almost every oil well in the world is drilled this way because the yield from such wells is between three and six times the yield from traditional wells.

There are formal frameworks and check-lists for the challenge process.

Another process involves "extracting the concept" and then finding other ways of delivering the concept. I was once asked whether parking meters should be installed in a busy shopping

area to prevent commuters parking in the road all day long. I asked what the concept was. The concept was to get as many people as possible to use limited parking space. I said that if this was the concept we would carry it out in a much simpler way. Instead of parking meters there would just be markings on the road. You could park there for as long as you liked – provided you left your headlights fully on. Because you are running your battery down, you park there for the shortest possible time. There is now a "downward pressure" on your space occupation.

Techniques like "the concept fan" allow you to move from broad concepts to concepts and then to ideas.

There is a mathematical need for provocation in any self-organising system. Yet "provocation" is almost the exact opposite of our normal thinking. With provocation you can put in a statement which you know to be wrong and contrary to experience. Then you use a mental process of "movement" to move from that provocation to a sound idea.

I invented the word "PO" to signal a Provocative Operation.

The provocation: "Po you die before you die" changed the nature of life insurance in North America. Life insurance companies would now pay out seventy-five percent of the death benefits as soon as you were diagnosed with a serious illness – instead of after your death.

Then there is "random entry". If you start at a different point you follow a different pattern routing. In science a random event has often triggered important insights. All this can be done deliberately instead of just waiting for inspiration.

## Argument

Argument is a crude, primitive and highly inefficient way of exploring a subject. The Six Hat method is much more efficient and can reduce meeting times to one fifth or less. Each of the Six Hats indicated a mode of thinking which everyone follows in parallel. This makes use of changes in brain chemicals. The method is now widely in use in major corporations and also with children in schools.

## Background

After completing my medical studies in Malta I went to Oxford where I studied Psychology. From psychology came an interest in thinking. From my work on the more complicated systems of the body (circulation, respiration, renal system, endocrine system, etc) came an understanding of self-organising systems. This was then applied to neural networks and that is how it all started. Much psychology is based on empirical description. My work has proceeded from a basic understanding of self-organising systems and this allows the design of specific thinking tools. For creativity the most relevant book is SERIOUS CREATIVITY (published by Harper Collins or APTT).

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