EDWARD DE BONO

The Mechanism of Mind

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PART TWO

36 *General Summary*

Of what use is consideration of the mechanical structure of mind? The brain is an inescapably physical system with a mechanical way of working. From a consideration of the possible working of the brain may come useful conclusions; from a dogmatic mysticism about its function will come nothing.

A few simple principles of behaviour can be put together to give a special memory-surface with four basic functions:

1. Separation and selection.
2. Combination and creation.
3. Extension.
4. Self-interest bias.

Together these functions provide a very useful information-processing system. This system is employed in the creation and evaluation of patterns, their establishment and subsequent recognition. The system is capable of both a gradual learning and insight learning. The behaviour of this simple memory-surface has processes analogous to consciousness, direction of attention, thinking and even humour. What this shows is that a simple mechanical system is capable of processes that at first sight seem mysterious and elusive.

There is no switch which makes the memory-surface handle important information in one way and trivial information in another. All information is treated in the same way according to the characteristic behaviour of the system. The behaviour of the system is characteristic enough to enable one to expect certain things. For instance, the patterns on the surface always tend to get larger and more firmly established. They become cliché patterns

which offer increased effectiveness in dealing with familiar situations, but much less flexibility in dealing with new situations. Another characteristic is that there is no efficient mechanism for erasing something that has been established on the surface. To erase something one actually has to increase the emphasis but at the same time make it lead to something unpleasant. In effect one signposts the wrong direction even more clearly than before but adds a warning to the signpost. This process leads to the creation or use of the necessary myth of evil.

The self-maximizing nature of the system also means that the edge of decision may be very fine. A very slight difference between two alternatives may be quite sufficient for one of them to be chosen and the other one completely ignored. For the same reason a slight emotional emphasis in an otherwise natural situation can make the emphasized choice very dominant over the unemphasized one. It is not a matter of balancing the emphasis. Like driving in cross traffic, once you get the nose of your car ever so slightly ahead then you move across with confidence.

Learning is a matter of putting a new pattern on to the surface or changing an established one. Ideally one would let a pattern follow its natural development, and only pay attention to sensitive switch points to make sure that the direction of development was the one desired. This would be much more effective than trying to force the pattern on to the surface all the time. The huge importance of attention sequences both for learning and communication follows from the nature of the surface.

There is a suggestion that such phenomena as insight, humour, aesthetics and rhythm all depend on the same surface behaviour. All arise from the special information phenomenon which involves change and expectancy. The opposite phenomenon may account for the NO reaction, indecision and frustration which involve expectancy that is not matched by change. These things could be dealt with in terms of pure surface behaviour.

Any variation in all the different processes that make up the functioning of the surface would be reflected in that functioning. There might be variations in the strength of a process, such as the inhibiting effect that limits the area of activation, or there might be variations in the speed of certain processes, such as the tiring

factor. These variations could lead to variations in surface behaviour that would be analogous to different levels of intelligence. Depending on the nature of the surface, the same rainfall might sculpt a smooth rounded landscape like the Sussex downs or a sharp-edged ravine system like the Colorado valley. It might one day be possible to measure intelligence by the rate of reaction of a particular enzyme system in a test-tube. For the same reasons the arguments between those who hold that there is a chemical basis for altered mental behaviour, and those who hold it to be a matter of unfortunate experience with incorrect pattern development, may be pointless. Chemical aberrations would override all others but the other aberrations could play a part even in the absence of chemical ones.

The most important thing that arises from a consideration of the information handling in the type of system proposed is the nature of the errors and limitations which are inherent in the system. The very great efficiency of the system taken as a whole carries with it certain inherent faults.

Basically the system is very poor at updating itself. There is no efficient mechanism for doing this. In fact the accretion method of treating information inevitably leads to the arrangement of the information being slightly out of date. This is due to the importance of time of arrival of information and the persistence of established patterns. The arrangement of information on the memory-surface must always be less than the best possible arrangement. Humour is perhaps the most revealing of all intellectual functions, since it can only occur in this type of system. Problems for which the solutions are obvious only after they have been found and other insight effects also indicate the type of system. If the system has no efficient method for updating itself it certainly has no method at all for getting ahead of itself. Nor is this a necessary disadvantage. From a functional point of view adequacy is quite enough.

The more specific faults of the system include its divisive tendencies, which create artificial entities and artificial separations between them. This is the phenomenon that has been described as polarization. The memory-surface efficiently creates patterns out of the confused information offered it by the environment.

But then these patterns take over, and instead of being a self-organization of available information they actually direct what information can be accepted. Once the patterns take over as cliché patterns or myths, then the prospects of changing such patterns are even more remote. Where the patterns are correct this is obviously an advantage, but where the patterns are imperfect it is another matter.

Leonardo da Vinci's diaries were lost for centuries for the simple reason that they were not lost at all. It seems that they had been mis-filed in some library. Had they been truly lost then there might have been a better chance of finding them. So it is with information that is incorrectly filed on the memory-surface by being fixed in a cliché pattern.

Once one is aware of the faults of the information-processing system one comes to realize that the main information sin is arrogance. Arrogance, dogmatism or a closed mind of any sort are so insecurely based on the fallible information-processing system that they would be pathetic if they were not sometimes dangerous.

For the same reasons the need to be always right, the insistence on this in education, and the basing of self-esteem on this need, cannot be justified unless it is tempered with the awareness that *for some part of the time one is inevitably going to be wrong.* It is these inherent faults of the information-processing system that make lateral thinking essential. Insight is so haphazard a mechanism that it cannot be expected to reduce the gap between the current arrangement of information and the best possible arrangement with any reliability. The purpose of lateral thinking is to bring about this insight type of re-structuring of information.

The sequential processes of vertical thinking as developed in logical and mathematical thinking are incredibly effective when one thinks how clumsy natural thinking is. Yet these sequential processes are not effective in bringing about the insight type of re-structuring of information. One cannot change a sequential pattern by developing it further. One needs some method of disrupting the sequence to allow another one to form. Lateral thinking is not an alternative to vertical thinking but an essential complement, which is made necessary by the nature of the

information-processing system. Lateral thinking increases the effectiveness of vertical thinking by providing direction. One cannot look in the right direction by looking more efficiently in the wrong direction.

There are, however, situations in which the mere disruptive effect of lateral thinking is sufficient. Once certain myths and patterns have been disrupted then the formation of better patterns may follow on its own. Lateral thinking has nothing to do with chaos for the sake of chaos. Disruption of a pattern in lateral thinking is only in order to let a better pattern form. Later the process can be repeated again. For this reason those chemical methods of disruption which work by upsetting the smooth co-ordination of the mind are useless, since the smooth working of the mind is required to snap the new pattern into coherence. The art of lateral thinking is to bring about the disruption while still retaining the ability to benefit from it in terms of coherent ideas.

Lateral thinking is a deliberate form of thinking like the other forms. And like them it requires training and practice before it can be developed into an effective skill. A general awareness of the nature and need for lateral thinking is of some use, but it will more often help one to recognize when lateral thinking has brought something about than to use it deliberately. PO is a new word designed to allow lateral thinking to be used as habitually as logical thinking is used through the agency of NO. PO expresses the lateral thinking function which cannot properly be expressed in ordinary language without it.

The precise function of PO has been dealt with in a previous section. It allows such things as the juxtaposition of two ideas which have no logical, sequential or other connection at all. The purpose of the juxtaposition is not to make sense in itself, but to trigger off something else that will eventually make sense. PO has a nonsense function, but a deliberate nonsense function which is mathematically essential for the system. PO also counteracts the rigid and polarizing tendencies of the system.

In a way PO could be considered the zero of the language system. It has no value in itself, but it functions to make possible operations that would be impossible without it.

For real effectiveness, PO would have to be built into the training and education system, just as the right/wrong concept is at the moment.

It may be felt that far too much attention has been paid to mechanical information processes, and that too little attention has been paid to the 'feeling' processes which can easily override the information processes. As suggested before, it is the information processes that provide the aim for the gun that is fired by a powerful emotional charge. It is the information processes that give rise to the divisive tendencies, to the creating of differences where none exist, to the creating of myths and bogeys. It is the information processes that create the patterns and recognize them. It is quite true that once the emotional aspect has taken charge, then no amount of further information may be able to change the aim. But this is no more than the persistence of established patterns which in this case are especially well established by the emotional emphasis. It is the original pattern which allowed the channelling of emotion that matters, and this was at some time an information process.

Far from reducing the importance of emotions, the nature of the special memory-surface elevates them into an essential position. The special memory-surface is a passive system, and on it information organizes itself into patterns. The emotions (called internal patterns in previous sections) are the only contribution which the memory-surface makes to these information patterns. Thus emotion in its broadest sense provides the sole mechanism of adaptation whereby more useful patterns achieve dominance over neutral ones. Emotions also provide the substance of self and individuality. Without the emotional aspect, exactly identical information patterns would be formed on memory-surfaces which had had a similar exposure to information. On account of emotional variability these patterns may be very different.

These considerations are fairly obvious. What is less obvious is that even abstract intellectual processes such as logical thinking would be impossible without emotion. The whole NO reaction, without which logic would not work, is emotional at least in its origin, even if it eventually functions in a symbolic form. Early training in the emotional content of NO can conceivably make a

big difference to the sort of thinking that is used later. Even apart from training, constitutional emotional variation may make a difference to the type of thinking that is available on different memory-surfaces. PO itself has an emotional content. All this is quite apart from the biasing and distorting effect which emotion can also exert on information-processing.

If information is the door that gives access to the world, then emotion is not just the paint on the door but the handle with which the door is opened. Emotion is essential to information-processing, not something apart. The division between intellect and emotion is another of the harmful polarizations that arise from the divisive tendencies of the system. Too often, emotion is thought of in terms of the caricatures and grotesqueries that are so often put forward as the stuff of emotion with the admirable purpose of attracting attention.

The artificial dichotomy between intellect and feeling creates a matched arrogance on either side. The feelers distrust the word-games of the intellectuals and the intellectuals distrust the aesthetic sighs of the feelers. The nature of the thinking process on the special memory-surface indicates that sequential thinking may be no more valid than non-sequential thinking. Therefore a feeling which is followed by a rationalization may be just as useful as a sequential approach. For example, the only useful ideas about freedom and justice arise as feelings first, which are then supported by reason and legislation. An intellectual approach ends up as a circular word-game. On the other hand the glorification of feeling as the only truth has led to the most damaging of passions.

The division between art and science is another of these polarizations. The two are but aspects of the same thing. Art is science with instant information. Science is art with progressive information. In both cases the aesthetics and the emotions are the same.

Since emotion is the major source of variability on the special memory-surface one might expect there to be an optimum level of emotionality for true creativity. At less than this level there would be too little change, at more than this level there would be too much fixity. It is true that the patterns fixed by over-emotionality might be worthwhile for their unusualness, but there would not be a creative fluidity about them.

The essential feature of the special memory-surface is that it is a passive system which provides an opportunity for information to organize itself. Much of the information comes from the environment, but a good deal is supplied by internal patterns which represent the needs and the emotions of the body that is using the memory-surface. The memory-surface comes to represent a biased record of cumulative experience of the environment. It is biased because it represents the interaction of the body and the environment. The limited area of activation moves over the memory-surface according to the contours of that surface. These contours are made up from an interaction of the internal patterns of the moment, what is being presented to the surface at the moment, and the record of what has happened in the past. Attention follows the movement of the area of activation. If one chooses to regard all the factors affecting the movement of attention as a 'self' which directs the attention, that is just another way of saying that attention passively follows the contours of the surface. The important point is that there is no separate agent which picks information out of the environment, stores it on the memory-surface then picks it off the surface in order to play around with it or use it.

The major theme of Eastern philosophy is the arbitrariness and artificiality of the separate units that have been carved out of the environment by the selfishness of the human spirit. The ultimate aim is to dissolve these separate units – and the self as one of them – back into the continuum of nature. Western philosophy, on the other hand, emphasizes the usefulness and sometimes the permanence of certain patterns. The ultimate aim is not to get rid of patterns, as in the East, but to achieve the right patterns.

A consideration of the information-handling processes on the special memory-surface makes one aware that the patterns on that surface are useful, but also fairly arbitrary. It is not a matter of decrying the deficiencies of the surface and getting rid of the patterns. Nor is it a matter of establishing the patterns as ends in themselves and enjoying their usefulness in that way. It is a matter of acknowledging the useful existence of the patterns but also being aware of the possibility of changing them to better patterns. So long as one is aware of this possibility then the

dangers of arrogant fixity are lessened. As a symbol of the possibility of re-structuring the information contained in the current patterns, the word PO is convenient. As applied to the ideas of others it indicates the possible arrogance of their point of view. As applied to oneself it indicates the possible arrogance of an individual point of view.

And in that sense it can be applied to the ideas put forward in this book.