MULTIASPECTIVE THINKING IN DECISION MAKING

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THE DECISION TO OPEN FIRE

A Danish observation post in the Tuzla area in ex-Jugoslavia came under fire from Serbian forces on friday the 29th of april 1994. A rescue operation was started. Ordinarily the Serbian shooting would stop when the UN-tanks arrived but not so this time – on the contrary Serbian anti tank missiles were fired and the tanks had to take cover. The Serbian fire did not stop. Lt.Col. L. R. Møller who were in charge of the rescue operation had to decide what to do. In his recollections of the events Møller writes (2001, p. 280): "The fire was placed with incredible precision and I considered for some seconds how I should react." What did he do? What did he think about in this short time?

THE MULTIASPECTIVE PERSPECTIVE

In the information processing paradigm which has dominated cognitive psychology since the 1950'ties human thinking tends to be seen as a sequential processing of elementary, singular pieces of information. This paradigm is not unproblematic (Olsen 1982) and if departure is taken from thinking as it shows itself in our lived consciousness quite another picture emerge. As William James (1890, p.239) pointed out: "Consciousness, then, does not appear to itself chopped up in bits". Therefore thinking is not aptly described as a "chain" or "train". Better metaphors according to James are "river" or "stream", and he named it "the stream of thought". Edgar Rubin (1927) took this point of view a step further when he argued against the "analytic-synthetic psychology" of that time. Rubin warned that psychologists should be very careful when they isolated psychological entities (from the field of consciousness) and imputed a status as "elements" (or "mechanisms") to them. In the first instance these isolated entities must be considered "aspects" of a totality. Whether these aspects (e.g. "red" or "attention") also can be considered as "building stones" or "mechanism" in or behind consciousness is another matter. It should be noted that "aspect" is a general term, which can refer to anything but the whole in question. Elements and mechanisms are of course also aspects, and it is not argued that the stream of thought is unstructured.

When looking at human thinking from this perspective it cannot be denied that a multitude of "aspects" can be focused upon, and these aspects does not necessarily follow each other in a more or less fixed sequence. A multitude of aspects can exist simultaneously in the human thinking. This point is further enhanced by the fact that the stream of thought does not involve a complete discourse but is "thinned out" and condensed compared to full-blown verbal formulation.

"Multiaspective thinking" is simply the human thinking considered from this perspective. In order to reach a realistic understanding of what the decision-maker think

we have to keep the multiple aspects in sight. The proposal is that even in decision making under pressure we will find that a multiplicity of aspects is involved.

FORMS OF THINKING IN DECISION MAKING
A distinction between form and content of thinking is often relevant, although it is not easy to argue for a strong separation between these aspects. Nevertheless we will suggest that it is relevant to operate with three forms of thinking which can be recognized in the stream of thought, namely:

- The *unbounded, fluid structuring* which is open and changeable and only coupled to the present situation in a loose manner.
- The *situational, pre-established structuring* which is more fixed and schematic and more tightly bound to the present situation.
- The *controlled, elaborative structuring* which is flexible and abstract and goal directed in a manner which involves both the actual situation and the possible situations or situational perspectives.

These forms of structuring are not mutually exclusive. Most often they coexist and are overlapping or they may transform into each other. But at any time one form of structuring may dominate the stream of thought either resulting from situational or dispositional factors or resulting from

- *metacognitive monitoring* which is essential to the conscious control of the stream of thought.

The *unbounded, fluid structuring* can lead to creative results because the stream of thought can move in unexpected directions, but it can also make it difficult to reach a goal because of its vague and unstable character. Taylor (1963, p. 366) describes how some of his subjects reacted on verbal fluency creativity tests in which quantity of output counts:

"I have often thought that at least some of the extremely high scorers on ideational fluency may in their test performance be approaching the manic´s wild flight of ideas which shows a rapidly deviating train of thought, flowing almost unguided from one tangent to another. There is some doubt that such persons are very capable of identifying which one or two of their voluminous number of ideas are best and thus worth singling out for some particular purpose."

Unless the results of the unbounded, fluid structuring are reworked the chances of arriving at a creative products are limited.

From a theoretical point of view is the unbounded, fluid structuring related to the psychoanalytic concept of "primary processes", which does not follow the logical, rational principles or the reality principle (Freud 1900), furthermore it is related to Werner´s description of the diffuse, syncretic thought (1948) characterized by both lability and rigidity, and to Vygotsky´s idea of the unstable "pseudo-concepts" which precede the "genuine concepts" (1933).

In the Danish phenomenological tradition Østergaard (1962) has modified these ideas into a scheme which presents the development of thinking in three "stages": 1) The stream of thought is at first characterized by loose, vague and undifferentiated items, 2) these items are then developed into more articulated, differentiated, concrete items in singular situations and 3) at last these are generalized and integrated in abstract, flexible thinking. This scheme is the background of the multiaspective perspective and it is now proposed that the stream of thought (normally) includes all of the three aspects.

The *situational, pre-established structuring* is the reproductive thinking in terms of previously learned routines, procedures or more or less "automatic processes". In the framework of Rasmussen (1983) this structuring covers both the "skill-based" and the "rule-based" decision making. The reason we also call the pre-established structuring "situational" is that this structuring most often spring from or is closely tied to specific situations. The situational, pre-established structuring also has both positive and negative sides. Eysenck (1982, p. 22) contrasts the automatic with the controlled processes: "Automatic processes function rapidly and in parallel but suffer from inflexibility; controlled processes are flexible and versatile, but operate relatively slowly and in a serial fashion."

The *controlled, elaborative structuring* is what we ordinarily call thinking and it corresponds to the "knowledge-based" decision making in the framework of Rasmussen. Most often it is consciously controlled and goal-directed, it is well-considered and deliberate and it is often flexible and abstract. As mentioned it can also be slow and furthermore it can be troublesome and long-winded.

In the stream of thought these structures can co-exist and sometimes they are called upon by the situational demands but at other times it is the thinker who chooses how to think about a problem. Therefore the multiaspective model includes a *metacognitive monitoring* component which has a self-reflective function and which is in family for example with the higher-level supervisory attentional system (Norman & Shallice 1986) and the metacomponent comprising higher-order executive processes used in planning, monitoring, and evaluating task performances (Sternberg 1985).

THE DECISION STYLE QUESTIONNAIRE
A questionnaire, which gives respondents opportunity to report on the preferred style of thinking in decision making, has been constructed and tested. The questionnaire consists of 18 items. The content of the items is attitudes toward decision making or decision making situations in which the decision-maker can indicate his or hers preferred style of thinking by choosing among three propositions. For example:

14. When there are many options to choose among
    a) I am careful not to get lost in details.
    b) I do take it as an opportunity to look at things in new ways.
    c) I prefer to reach clear priorities through analysis.

16. In a really dangerous situation it is best
    a) to act decisively.
    b) to keep an eye open for the special way out.

c) to think through what can be done.

The a's are related to the positive side of the situational, pre-established structuring (the rapid decision style), the b's to the positive side of the unbounded, fluid structuring (the creative decision style), and the c's to the positive side of the controlled, elaborative structuring (the well-thought-out decision style). After having made their choices the respondents count them, thereby they get their "decision style profile" and they are asked to indicate on a 7-scale the degree to which this profile gives the right picture of their decision style.

Lastly the respondents answer four questions concerning their metacognitive monitoring and execution. In the first question the respondents indicate on a 7-scale how often they notice their own way of thinking (from very seldom to almost all the time). In the next question they indicate (on a 7-scale) how often they change their way of thinking actively during decision making. In the third question they indicate (on a 7-scale) how often they choose thinking style before they enter a decision making. In the last question the respondents are asked whether they are aware of automatic changes in their way of thinking due to the situational demands. They can answer "yes", "no", or "have not thought about it".

The questionnaire gives a rough and simplified picture of the multiaspective thinking in decision making. The details and the dynamics of course are missing, but as a starting point for further inquiry it is sufficient. Originally, the purpose of the questionnaire was to provide information, which could be used in military leader competence development. This purpose is still alive but is now supplemented with more general research and development purposes.

SOME RESULTS
Until now 199 respondents ranging from officer academy cadets to officers participating in the Joint Senior Staff Course have answered the questionnaire. There are some smaller differences between the different groups, but below we will focus on the participants in the Joint Senior Staff Course (N = 95).

Do the officers regard their decision style profile as correct?
The respondents are asked to evaluate the correctness of their own decision style profile. 74% choose the upper halves of the 7-scale indicating that the profile is more correct than wrong. 17% choose the middle "4" indicating that the profile is both right and wrong. As mentioned above the questionnaire gives only a simplified picture, and this of course has also been noticed by the respondents (only 6 respondents choose to say that the profile is totally correct).

Do the officers have the same decision style preferences?
It is not unreasonable to assume that officers will tend to prefer to make decisions in a certain way, but the answer to the question is "no". The data show high variability in decision style preferences. Some officers prefer to make rapid decisions based on experience, others prefer to think through, and still others like to make room for the imagination - and of course some like a little of each. Nevertheless the statistical mean

(which would be 6 for each style if the preferences were evenly distributed among the three thinking styles) is

The rapid decision style:	**7.0**	(Std. Dev.: 3.1)
The creative decision style:	**4.7**	(Std. Dev.: 2.9)
The well-thought-out decision style:	**6.2**	(Std. Dev.: 3.4)

It can be noticed that the officers seem to prefer the rapid and the well-thought-out decision style a little more than the creative style.

Which decision style would officers like to develop?
One of the items in the questionnaire gives an answer to this question. The item is

> 17. If I should develop as a decision-maker then I would like
> a) to be better to rapid and effective decision making.
> b) to be better to creative and innovative decision making.
> c) to be better to well-thought-out and over-viewing decision making.

Not surprisingly 50% of the respondents choose "to be better to creative and innovative decision making". 25% choose "a" and 25% "c".

Which decision style is the preferred one when there are many options or when the situation is really dangerous?
These questions are answered in the above mentioned items (14 and 16). When there are many options 38% are careful not to get lost in details (rapid decision style), 27% take as an opportunity to look at things in new ways (creative decision style), and 35% prefer to reach clear priorities through analysis. These results mimic the results of the general decision style preferences above, but in a really dangerous situation 65% choose to act decisively (rapid decision style), 12% choose to keep an eye open for the special way out (creative decision style), and 22% choose to think through what can be done. Notice that it is far from everyone who chooses the rapid decision style.

Do the officers reflect on their form of thinking during decision making?
67% choose on the 7-scale from the middle ("now and then") to the top ("almost all the time"). 32% choose from the lower half of the scale - and only 3 respondents choose the bottom "almost never". The last question, where the respondents are asked whether they are aware of almost automatic changes in their way of thinking, is of course also a metacognitive question: 56% answer "yes", 6% answer "no", and 36% "have not thought about it". The conclusion must be that military leaders are prepared to state that they engage in metacognitive monitoring at least now and then. Actually, it could be argued that expertise is not just a matter of routine thinking and doing, but is also a matter of reflective thinking and control (Olsen & Rasmussen 1989).

These results are of course based on self-reporting. To get a broader and maybe more correct picture we will have to use other methods of data-collection, but nothing in our present data suggest that the military decision maker has a one-track mind.

Theories and models of decision making which picture the decision-maker in a non-complex manner may turn out to be one-track theories. If we want to understand, train

and support the military decision maker, we have to understand, train and support in a manner which takes account of the complexities.

WHAT DID LT.COL. L. R. MØLLER DO AND THINK?

Lt.Col. L. R. Møller did engage the Serbian positions which were brought to silence, and he recollects his thoughts in this way (p. 280): "Thousands of considerations were reviewed and concluded upon in an extremely short period of time". If we wanted to count separate considerations we would have to conclude that he exaggerated the number. Actually he mentions about a dozen in the text, but of course we do not have to take "thousands of considerations" literally. On the other hand if we do accept the aspective perspective on thinking, then we may be able to see that a complex of different forms of structuring and other aspects are at work, and the different aspects range from the most clear and focal to the most fading and peripheral. We must counteract our tendency to chop the stream of thought up in bits, but if we try anyway we will end up with a considerable amount. It is obvious that the colonel engage in controlled, elaborative thinking. It is just as obvious that an analysis will show situational, pre-established forms of structuring which are the results of the training and experience of the colonel. It is less obvious that we will find unbounded, fluid forms of structuring, but they will be there – either in the background or integrated in the other forms of structuring.

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