

## Why is reflective thinking uncommon?

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### Background

*Reflection* is a key element in the action research process (Reason & Bradbury 2001) and a main element in the theory of experiential learning (Kolb 1984) as well as in the practice of teaching and learning (Cruikshank 1987, Glimmett & Erickson 1988, Henderson 1992, Polland & Tann 1987, Posner, 1985, Russell & Munby 1992, Ross et al. 1993, Schön 1987). Notwithstanding the huge literature on reflection I have found a general unspecified use and broad meaning of the word among many teachers (Gelter 2003). Despite its power to improve learning and practice, reflection does not seem to be a spontaneous activity in our professions or every day life as we need actively dedicate time and effort to do reflections. We also have to request students to reflect in their learning. Also the clear identification in literature of the urge and the strong recommendations to reflection on practice, especially in teaching and nursing (Ghaye and Lillyman 2000), indicate that reflection is not an everyday professional behaviour. The only spontaneous reflection we do is when something goes wrong, when we fear failure or after a major life crisis. I will here propose cognitive causes to reflection being an uncommon activity.

### Reflection and thinking

As commonly understood, reflection is a conscious active process of focused and structured thinking distinct from free floating thoughts as in general thinking or day-dreaming. How our thoughts are generated is still an important research question in cognitive science. During reflection the relevant thoughts may be generated *per se* by the reflective process or reflection may be a process of selecting relevant thoughts that are spontaneously generated (figure 1).

#### Figure 1

The first possibility implies a genetic predisposition for reflection in the brain that facilitates the generating of relevant thoughts for reflection. As the growth of neurons is largely epigenetic (Damasio 1994) it is more plausible that reflection is a learned process of an unconscious selecting of spontaneously generated thoughts that are metaphoric "bend" back into the conscious focus while non-relevant thoughts are left to fade away. The first possibility implies that reflection is an evolutionary old cognitive feature while a learned selection process can be of more recent origin.

Important in understanding reflection is to understand the concept of consciousness. There are currently at least 12 schools of thought with different approaches to consciousness (Wilber 1997). One hypothesis with interesting implications for reflection is the distinction between the conscious "I" and the unconscious "Me" (Nørretranders 1996). In this view the notation "I" includes all the physical actions and psychological processes that are initiated by the conscious mind and the "Me" those that are not. The "I" is the conscious actor while the "Me" is the rest of my person. This corresponds to their linguistic use as in "I stopped me". We thus can regard conscious reflective learning as the learning of the "I" while unconscious learning is learning through the "Me". While the brain with 100 billion neurons has a bandwidth capacity of handling 100 billion bit/sec. the conscious mind has only a bandwidth of about 50 bit/sec. (Küpfmüller 1971, Zimmerman 1989, Nørretranders 1996). This means that the "I" has an information handling capacity of only 1:100 000 000 000 to the "me".

### Grasping the world

There are two modes of grasping the world according to Kolb (1984). These correspond to the two dimensions in the learning process as the concrete experiencing of events and the abstract conceptualisation of it. The first is called apprehension and is a way of summarizing our sensations. The second is called comprehension and is a way of introducing order in such sensations and making them communicable. The former uses phenomenal language referring to felt qualities of experience, the latter uses physical language referring to descriptive symbols. Through feelings we become acquainted with things but by our thoughts we know about them. In communicating our conceptualisation of the world we need to transfer our feelings about the world to our internal cognitive language "mentalese" (Fodor 1975) or make it explicit orally or written through a language. Thus our broad-band perception and internal conception of the external world has to be reduced 1000000:1 to our cognitive conscious mind with an information carrying capacity of about 50 bits per second to be expressed in a language (Trinker 1966, Nørretranders 1996).

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This dual-knowledge epistemology has gained compelling support from Roger Sperry's "split-brain" studies indicating a functional specialisation of the two hemispheres of the neocortex (Sperry et al. 1969) into a left mode comprehension function and a right-mode apprehension mode (Edwards 1979). This theory of two distinct, coequal and dialectically opposed ways of understanding the world has also support from psychology where Zajonc (1980) showed that feeling and thinking are separate processes where feeling and affective judgment occurs before cognitive analysis, a conclusion also made by neurobiology (Damasio 1994). This suggests a basis for the process called intuition – that intuitive behaviours are guided by a broad-banded affective judgement in the apprehension process not available for the conscious. This view of an affective apprehension mode as the primary way to knowing about the world is supported by human evolution where non-verbal communication based on expressed feelings precedes verbal language communication based on logical and analytical conceptualisations. This emotional way to act towards the environment predates humans and is an adaptive feature in most animals. Neurobiology has found that feelings regulate our attentions and influence our logical reasoning and this might be a consequence of feelings being an ancient survival mechanism (Damasio 1994). Our awaken brain investigates and probes constantly our internal and external environment to determine what is important for our survival. Our awareness mechanisms support our neural network such as it can be focused on important things in our internal or external environment while monitoring or ignoring unimportant things. Feelings and attention are quick and strong adaptations for a quick general judgment about the situation on the basis of our basic needs and values (to survive, eat, mate, social care) and action on threats in the environment. The slower narrow-bandwidth cognitive logical comprehension of the situation would not be adequate in dangerous situations. It is better to escape many times bases on imprecise feelings and intuition than stay once to obtain more detailed analysis and die well informed (Sylwester 1995).

Our awareness system has a short time memory buffer that let us keep only a few information bits in our conscious mind at any time, "Millers magic number 7" (Miller 1956) while we decide to go on to analyse other feature in our environment or keep the information in our long time memory to use in future similar encounters with the environment. The benefit with this limited conscious capacity of our awareness is that it forces us to focus on a limited area of a huge sensational field. Thus feelings regulate our awareness that regulates learning and memory. Memory has the evolutionary task to prepare us for similar situations or let our experience guide us in new situations. Our conscious mind is like a flash lamp constantly flickering around our perceptive world and we need to put in energy and effort when trying to keep our conscious flash light in one spot (Figure 2).

### Figure2

This may partly explain why keeping focus on reflection is not an easy and natural everyday activity. Keeping our conscious too focused on one thing for longer times could be of survival danger in a hazardous environment. Our flickering awareness has thus an evolutionary survival value.

An further important finding is that all our actions starts unconsciously - the execution of our conscious determined actions are always initiated by unconscious brain activity that start 0.5 seconds before the action (Liber et al. 1983). This delay in the conscious "I" means that our conscious cannot initiate action, but only chose to execute them! Our consciousness "I" is a result of our brain activity where thousand billion nerve cells reduces in a half second 11 million bits of sensory information to 50 bits of consciousness and erase the traces of all that information not used so that those 50 bits can be used to consciously understand the world (Senjowski et al. 1988). With such limited information, the "I" cannot react on the world, it must be done by the "me" based on the total information at hand guided by our primary survival mechanisms expressed as our feelings. Our brain is thus an enormous information reduction device (figure 2) enabling the brain to focus on what is important for survival. If the primary analysis by our feelings and intuition is not enough the conscious "I" can do a more careful analysis which is the process of reflection, which however takes time. A football player does not have the time to be conscious of what he is doing. He does think while playing but he is not conscious deciding what and why he is doing things (as go right or left). When something has to be done very quickly the "I" cannot be involved. Only the "Me" has the capability to react. The amazing consequences are that I have a free will, but it is not my conscious "I" that has it, it is my unconscious "Me". The "I" is thus a user illusion of my self and due to the half second of delay, the "I" cannot have control of my actions and decisions. Only when time permit the "I" has control, that is only when we can reflect, actively think about what we are doing, we can have conscious control of our actions, like

when we learn to drive a car. The conscious is delayed half a second because the brain has to create a suitable picture of the world. In our experience of the world sensations from all our senses are compiled to an internal picture or "feeling" of the world that is experienced by our conscious (figure 2). If the brain did not have a half second to reduce the information content and synchronise the different impressions from our sensations of the world we would get a shaky or jittery picture of the world (Nørretranders 1996). The "I" thus experiences the world half a second after the "Me" has compiled it and already made decisions of how to react to it. This is a pure survival mechanism – if the conscious "I" ruled, both the information at hand to make decisions (50 bit/s) and the slow information handling (sequential linguistic thinking) would result in a low survival value in the complex world.

### **The evolutionary recent "I"**

Another amazing finding (Jaynes 1976) is that before 3000 years ago people had no consciousness "I" but only a "Me". People reacted automatically according to their feelings and what the Gods told them. Jaynes proposed that peoples souls had two sides that correspond to the right and left brain hemisphere. The non-linguistic activities such as intuition in the right hemisphere were communicated to the left hemisphere through internal voices that "talked" in the heads of the people. These voices were interpreted as the voices of the Gods inside them and from these voices they got to know what to do. When we obtained the capability of having a picture of the world, which you can reflect over, you can through reflection imaging yourself in this world and see yourself from the outside and thus think into situations and wonder how you should react. The "I" concept is this capability to have a map of the world in which one is part of and to be able to reflect consciously about what to do in this world. This gives the "I" a free will while during the "Me" period people were controlled by the Gods (intuitive voices) and guided by more basic survival values through their feelings. When the "I" appeared its function was to control the persons actions based on feelings through reflection and free will according to an external value system, the personal and cultural ethics. The concept of a free will seems to first appear in the dawn of our civilization and became incompatible with the existence of Gods that acted through commanding voices. This led to the Gods became external and more to learn from as in Greek mythology then to be commanded from. The "I" became a value system for the actions of the "Me", to reflect over what the "Me" has done or should do. The new monotheistic God concept became the rescue for the "I" when it became confronted with features of the "Me" (happiness, love, hate, evil) that it could not explain or control. The "I" had to confess that there is something that is bigger than it self – the "Me" which the "I" is normally unconscious about, a kind of divine within. Prayers, meditation and ceremonies are contact ways to this inner divine. The "God inside" is the part of the human that the conscious "I" cannot explain (Nørretranders 1996).

### **Conclusions**

I suggest that the conscious capability to reflect appear not to be an evolutionary old feature and genetic determined capability of the mind, but rather a historically recent learned feature, which could explain why reflection not yet has become a natural every day activity in our life. This recent logical conscious thinking based on the left hemispheric capability appear to have its historical origin in the dawn of the western society and the development of a free will in society while the original intuitive emotional way of interacting with the world has to some extent been lost. I see the capability of reflection and act according to its conclusion as an important part of a free soul and a culture based on democracy. Reflection is thus more than just a learning tool. It is an important ethical tool to take control of your own life letting the conscious "I" use social and personal values to guide your actions rather simple survival values determined by the "Me", which easily can be controlled by others. To know the existence of the "I" and "Me" with their information handling limitations and to see the benefits of reflection for my every day actions and values could lead to a more balanced view and understanding of myself and my interactions with the world.

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Figure 1. Reflection as a learned selection tool to keep the mind focused on one problem under reflection.

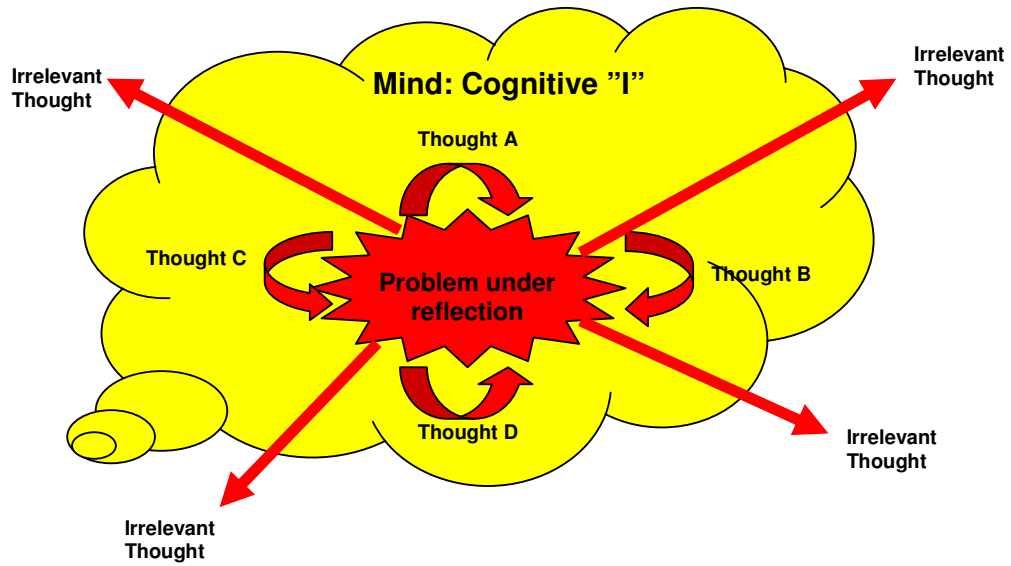


Figure 2. The conscious mind as a narrow bandwidth flash exploring the perceived world.

