

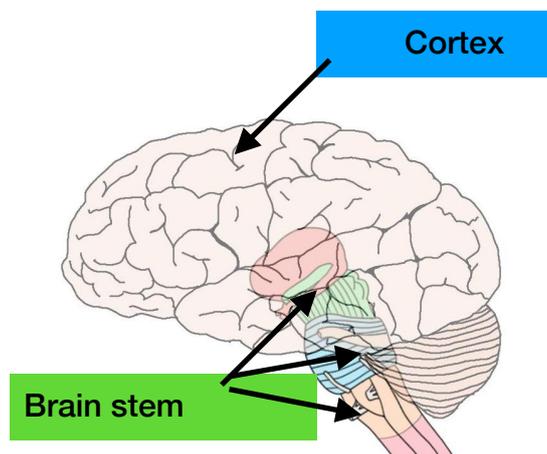
# **Neuroscience, Narrative and PMLD Webinar with Professor Mark Solms, 21st April**

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What follows is my attempt to put the key aspects of the theory from *The Hidden Spring* into the context of work with children and adults who have severe and profound intellectual impairments. Actually the findings are very relevant to other groups as well!

## **Neuroscience**

For the purposes of this seminar we are looking at the cortex and the sub-cortical (brain stem) areas of the brain



Traditional science holds that the brain stem performs automatic functions, whereas the cortex is the seat of conscious action and thinking.

Mark's theory turns this around. Much of cortical activity is unconscious, and the seat of consciousness is actually a tiny area in the brainstem - ie consciousness is **subcortical**

He starts with the question of what it means to be a child born without a cortex - (hydrocephalic) what is her lived experience?

Such children are emotionally conscious, and that means that they are  
a) aware b) can learn from experience.

So what is the purpose of consciousness, and what is the process by which consciousness occurs?

## Consciousness

"Consciousness is felt uncertainty"

The purpose of all organisms is to survive, which means to be as adapted to the environment as possible. A fully adapted organism is in a **settled state**, functioning automatically, not needing to use energy to consciously perform adaptations, or predictions. The organism needs to be able to predict what is going to happen, and ideally this is automatic, learned behaviour enabling us to return to a settled state from an aroused state.

However, not all environments are predictable. There are always novel, unpredictable situations that the organism (in this case, us) encounters.

The disruption of encountering uncertainty leads to arousal of emotions which are consciously felt. These feelings evaluate whether the uncertain event/experience is positive or negative,

This in turn stimulates perceptual arousal in the cortex (where up until this point perceptions and sensations have been unconsciously processed).

Leading to an evaluation "*I feel THIS (emotional consciousness) about THAT (perceptual consciousness)*".

This is how we learn from experience.

## Emotions

Jaak Panksepp, whose taxonomy is used, identified 3 types of affect:

1. Bodily needs, interoceptive, eg. hunger, thirst, respiratory
2. Sensory, exteroceptive- (resulting from external stimuli) eg. surprise, disgust, pain.  
These are *simultaneously internal feelings and external perceptions*,
3. Instinctual emotions -

SEEKING (curiosity, exploration, enthusiasm) a generalised interest in the world, the default state

RAGE (anger, frustration, annoyance) when things do not go as predicted )

FEAR (basic survival mechanism)

PLAY (social relationships, experimentation, creativity, laughter, surprise)

CARE (need for care, but also need to give care; love, affection, attachment)

LUST (sexual desire)

PANIC/GRIEF, sadness, depression, despair. Depression involves the mirror opposite of SEEKING, derives initially from separation anxiety.

Other emotions arise as combinations or blends of these basic affects, with -at a more complex level, cognitive elements added (eg. jealousy, guilt).

Feelings are THE most important aspects of our existence. They are not just reactive, they are what enable consciousness and prediction.

## Learning

Affective arousal is what enables **voluntary behaviour** (ie intentional, willed activity; making choices of how to act in the here and now p. 100) and **learning**. *Arousal states inscribe our various lessons more deeply in the channels of our brains (131)*<sup>1</sup>

*Generalised arousal is higher in a being who is **S more alert to sensory stimuli of all sorts, M more motorically active and E more reactive emotionally.** (308).*

It follows that **uncertainty** is the key driver of learning. Without the introduction of uncertainty our lives are lived automatically. Uncertainty stimulates affects, active volitional feelings.

- *Unknown, unexpected, disordered and unusual stimuli produce and sustain arousal responses (310). CNS arousal **depends** on surprise and unpredictability*

The Cortex specialises in uncertainty.

## Memory

Memories are of two types: **cortical** memory and **subcortical** memories.

From the point of view of the organism, the role of memory is to enable **prediction** of how to act in particular contexts. This is most efficient and effective when it is **automatic**. *Procedural memories* are one example - riding a bike, getting from a to b on a well known route.

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<sup>1</sup> so you are more likely to remember a route when you were anxious and alert than if you are going to the same place on autopilot

When uncertainty is encountered, as we have seen, affect or emotion is aroused. Subcortically there are also *emotional memories*.

Both procedural and emotional memory traces generate **responses**, but **not images**.

Memories are our learning from experience.

Cortical memories are “declarative” - they can be called to mind (it is possible also to have unconscious automatic cortical memories that are there in the background all the time). A declarative memory generates an image from our sensory perceptions, which come together with the emotional memory trace. The perceptual images provide the context for the emotional evaluation (*I feel THIS about THAT*). The process results in a virtual representation of the world at cortical level - both the sensory impressions, and what we feel about them. *cortical processing consisted mainly as thin the activation of 'memory images', suitably rearranged to predict the next cycle of perception and action..*

This memory is preserved and consolidated at an unconscious level (so that when you encounter the same situation, you can predict how to act) - but if the consequence is NOT as anticipated, the memory trace is re-activated, becoming “live” or unstable, so that a new prediction can be made. This is the process of **reconsolidation**.

The business of the cortex, amongst other things, is to manage memory.

### **Selfhood**

Having a subjective identity is a consequence of a self organising system, separate from its environment, constantly inquiring of itself (as it were) “what must I do to survive?”. Feelings and sensations are inherently subjective experiences (p. 166).

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### **What follows?**

It's important to bear in mind that Mark chose extreme cases of brain damage to illustrate his theory. But hydrancephaly (lack of cortex) is extremely rare. Hence we can hazard a guess that most of the individuals described as having profound and multiple disabilities, with whom we live and work, and care about, will have some level of cortical functioning.

Our starting point is that the way we respond to individuals is absolutely critical. Mark made this very clear - the child he describes had a lot of stimulation from loving parents.

1. Recognition that people who have cognitive impairments affecting cortical (higher level) brain functioning, are emotionally conscious, and aware and possessed of selfhood. They may not be able to consciously reflect on what the feeling is, or what it means, but they do experience a range of emotional reactions.

In discussion, Mark answered the question of how to make meaning with people with PMLD by saying that we are too hung up on meaning as to do with language - it is *affective meaning* we need to explore.

2. A starting point is to recognise and make room for, the expression of the basic emotions;

What might this mean, in practice? For example, recognising and helping someone to manage FEAR; giving them opportunities to CARE for others or for animals or plants; ensuring they have opportunities for SEEKING - exploring and being curious. We mustn't forget the interoceptive (eg. calm) and sensory affects as well...

3. Recognition that a degree of uncertainty is essential to enable us to learn from experience. It is the management of that uncertainty that is critical (because however hard you try as a service provider or family member, you can't eliminate uncertainty altogether. Uncertainty stimulates cortical function ("Consciousness is felt uncertainty").

4. Recognition of how memory works; stimulating, consolidating and reconsolidating memories is the basic process underpinning learning from experience. We should be recognising that people with profound disabilities do remember. They may not be able to think about their memories, but they have them - emotional, sensory and procedural.

Memories can develop, change and disappear -

5. Recognising that the process of encountering uncertainty leads to emotional arousal, and activated memory traces, stimulates voluntary action, cortical awareness, and conscious perception.

## **Narrative**

What does this have to do with story?

*by activating memories we can strengthen, alter, and even erase them.*

*I feel THIS about THAT*

Storysharing® (<https://storysharing.org.uk>) is the approach I developed over 20 years that fits very well with the theory of emotional consciousness.

Mark does in fact refer to personal co-constructed narratives as one of the main ways of activating and working with memory, although the quote is about “higher level processes”.

He made it clear in our discussion that there is indeed an **emotional arc** of story that operates through nonlinguistic and paralinguistic form (exclamations, body movements, facial expressions, and vocal patterned intonation, rhythm) ( ? ! =)

In Storysharing® we focus on the *small stories* we tell about things that have happened to us personally - not big life stories but the tiny anecdotes which seem to take up 60-70% of social conversation -and which *externalise and make explicit our learning from experience*.

The model draws on the work of William Labov from the 1960s, who holds that all stories are narratives, but not all narratives are stories, and whose conditions for judging whether something is a story seem to me to map rather neatly onto key elements proposed for learning and self organisation in *The Hidden Spring*

There are 2 key conditions..

1. An event that is unusual enough to be noticed and attended to.... That's the “uncertainty” element
2. An emotional dimension - the story is driven by **affect**. Labov calls this “evaluation” because it is how the narrator senses and communicates the meaning and significance of the event, signalling to others how they should judge it. Labov considers that the emotional dimension is equally important to the structural dimension - just as Mark emphasises the fundamental significance of equality emotional consciousness.

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## What follows?

The theory suggests that **storying personal experiences** could be a way to:-

1. Manage uncertainty - in fact create some small uncertain events that are then stories. You have to have an event that is worth paying attention to!
2. Stimulate the differentiation of emotions, starting with curiosity or SEEKING.
3. Telling is a process of social reconsolidation.- updating the memory and altering or extending the associated sensory percepts and feelings.
4. Telling needs to be active - it's not enough to tell a story TO someone - they need to be active and aware of their own telling.
5. Mark's theory recognises that an activated memory can be - and often is - a social reconstruction of an event.

A fuller version of this paper is in development. Do contact me for any questions.  
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