**Lecture: Neurophenomenology of Flow and Meditative Moving**

**10th Feb. 2016 (University of Chichester Dept. Dance – MA programme)**

**“Flow”** – by Mihaly Csikszentmihalyi

Mainly examined in the field of psychology, but also neuroscience, sports science, and technology.

[Sensations]

* Focused concentration
* Sense of control
* Merging of action and awareness
* Loss of self-consciousness
* Losing track of time
* Autotelic or self-rewarding experience

🡪 Addictive ‘high’ feeling, and is said to involve extended high performance, increased accuracy, speed, etc.

[Conditions]

* Clear goals and immediate feedback
* Equilibrium between the level of challenge and personal skill

🡪Example activities:

Skiing, surfing, reading, calculating, video games, playing music, cooking…

Meditation = somewhat different? 🡪 deeper concentration (introspective, self-referential nature)

**Mindfulness & meditation** – Mindfulness or meditation (Vago, 2012):

1. Focused Attention Concentration: attention to mental or sensory object – repeated sound, mantra, imagery, visceral or somatic sensations (leading to non-conscious meta-awareness)
2. Open Monitoring Receptive meditation: active monitoring, accepting, and labeling of sensations and thoughts, without bias or judgement, leading to conscious psychological development of meta-awareness.
3. [Affection-enhancing practices: conceptual elimination of barriers between self & others, as well as compartmentalization between “good” people and “bad” people / contemplative unraveling of irrational judgements = most explicit, conceptual meta-awareness.]

**Eastern influences in dance:**

* Somatics & Dance Movement Therapy: e.g. Detta’s classes ⇒ close to Open Monitoring
* Improvisation: Almost every dancer does this nowadays, either as training or performance ⇒ often times a combination of Open Monitoring and Focused Attention
* Nihon-buyo & Butoh: This is my specialty field. Significance is unconscious spontaneity, letting go of self-monitoring (non-conscious meta-awareness), and eventually letting go of subjective experience as well ⇒ done mainly through Focused Attention

**East – West difference??**

1. E: Focus, refinement, introspection VS W: Creativity, novelty, expression
2. E: Strong emphasis on embodiment, enaction, quieting the mind through body motion VS

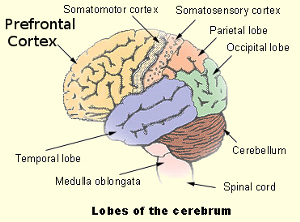
W: Physical skills, technique, outward projection, end products.

**The neuroscience of ‘flow’**– what actually goes on in the brain?

[Systems & anatomy of the brain]

🡪Explicit system (“conscious”, “aware”, attention-shifting, decision-making, analyzing) = governed by the dorsolateral-prefrontal cortex & operated in other areas of the cerebral cortex – we are programmed through society to use this area.

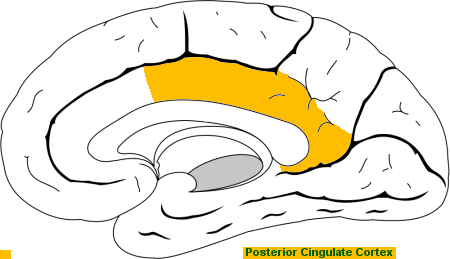
🡪Implicit system (“sub/un-conscious”, “unaware”, habit, intuition, instinct) = deactivation of the prefrontal cortex / direct communication between other cortical areas, limbic system and cerebellum



Explicit 1. Narrative Self: autobiographical, conceptual, social sense of self (objective)

↕ 2. Experiential Self (EES & EPS): immediate, sensory, bodily (subjective)

Implicit 3. Self-Less: lack of sense of self and agency (no subjectivity or objectivity)



1. Narrative Self = Default Mode Network: idle, mind-wandering, self-reflection (VMPFC, PCC)
2. Experiential Self = Task Positive Network: attention & focus on immediate task (DLPFC, TOP)
3. Self-Less = no explicit network activated: “automatic” actions (TOP and other limbic systems)

🡪Default Mode Network shuts down as the Task Positive Network takes over.

🡪As the Task Positive Network also shuts down, a hypo-frontality (decrease in cerebral blood flow in the prefrontal cortex) occurs.

🡪 ‘Flow’ COULD be measured through fMRI.

🡪While many dance activities involving mindfulness stops at 2. (still reaching ‘flow’), some meditative dancers try to reach the state of 3. (a “deeper flow”).

[FLOW cycle: brain waves & chemicals]

1. Beta (rapid) phase: alert, ready for action, struggling to find a solution, or to resolve something

* Cortisol (stress hormone responsive to stress, metabolism, blood pressure control)
* Norepinephrine / Noradrenaline (neurotransmitter allowing focused activity in the Task Positive Network & speeding up muscle reaction, mobilization for action)

= High heartrate, fight-or-flight state

* Excess increase of adrenaline = too much stress resulting in break down & cognitive impairment
* Conscious lowering of adrenaline = slowing respiratory system resulting in relaxation (Alpha)…

1. Alpha (regular) phase: relaxing, finding a point of resolution and releasing tension

* Nitric Oxide (neurotransmitter allowing effective learning and memory formation)
* Endorphin (morphine-like pain reliever & sedative neuropeptide)

1. Theta (slower) & Gamma-bursts (hyper-rapid) phase: just before going to sleep OR ‘Flow’

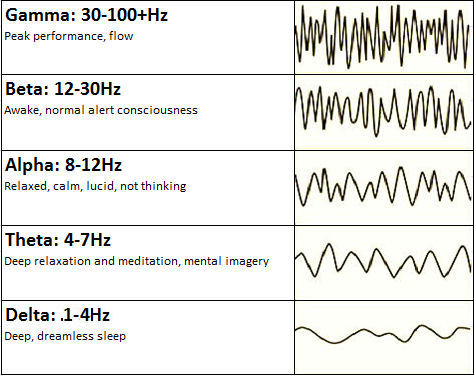
* Dopamine (neurotransmitter causing reward-motivated behavior, increased motor control)
* Anandamide (neurotransmitter enhancing pleasure and non-linear, lateral thinking or spontaneous linking of disparate ideas)
* Serotonin (neurotransmitter responsible for positive moods and blocking anxiety)
* Endorphin (continued from Alpha)

1. Delta (slowest) phase: recovering from previous brain activity & solidifying thoughts

* Oxytocin (hormone responsible for feelings of affection & desire for social bonding)
* Serotonin (continued from Theta-Gamma)

🡪 ‘Flow’ COULD be measured through EEG.

🡪 According to this evidence, ‘flow’ may be a chronological, cyclical state-occurrence; this suggests that ‘flow’ cannot be permanently sustained.



Reference:

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