

## Summary of Nov 27, 2007 meeting with Doug Watt

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Our conversation with Doug Watt was very stimulating, as usual. Although we did not address it as such, we were talking about implicit change. Doug's empirical stance eschews oversimplification of any kind, but particularly in the most complex system in the universe, the brain. Consequently, explanatory frameworks of causation and even correlation should be viewed very skeptically. He feels there is currently no real knowledge of *what* happens in the brain or *where* it happens when behavioral change occurs. It is "not researchable and research will proceed in mini-steps with incremental progress." And "when behavioral change does occur in the brain it will presumably take place in every axis of brain organization, including L-R, anterior-posterior", neuronal, neural net, and neurochemical. Of course these changes would be experienced in mind, and in the muscular-skeletal and visceral body.

"One simple way of conceptualizing change: 1) affective regulation would no longer be a Chinese fire drill; 2) learning how to recruit positive emotions and keep them in the driver's seat; 3) and in a simple minded way, inhibiting the prototypical negative affective systems, such as fear/rage(PAG), distress in the attachment system (PAG), and tuning down the amygdala."

Significant, i.e. lasting change could turn out to be comparable to developmental stages in childhood. As the child transitions from one to the next there is a *reorganization* of capacities, not simply an addition or subtraction of functions.

One concept Doug mentioned repeatedly is the balancing of systems. I understood it to mean that a given system is not simply turned up. Rather as that system turns up, many others are affected in a cascade fashion. Consequently, some others are also turned up while others are *actively* turned down. It seems we can use the word toxic literally to refer to neurochemical modulators that create a negative, withering, distress neural environment. At the relational level, as "toxic states (metaphorical)" are defused, "the reconditioning breaks long established negative associations while building positive ones".

Some more interesting points that I may or may not have heard correctly:

Depression: In animal models a whole chain of changes ensues. When depression turns to despair, there is an up-regulation of Cytokines, which promotes many features of a stress cascade. This cascade promotes shut down of positive adaptive functions, including hippocampus and presumably PAG, VTA etc. Cytokines affect the vagus n. directly and promote an increase in parasympathetic tone (in the extreme this creates the hypostimulation of dissociation).

Executive systems include PFC and *mid-line* systems such as the cingulate gyrus, (especially area25, the anterior and subcallosal portion which is the most affective portion of the cingulate) and inf. parietal areas.

R paleocortex is the tip of the *affective master correlating system*. It is the central system for internalizing social roles and attachment. Alan Schore commits himself powerfully by saying that every psychopathological event involves the R PFC. Doug feels there is relevance there but that it is too simple and formulaic.

Amygdala: Doug feels this nucleus correlates information between diencephalon and telencephalon, esp. *intense* and *complex* stimulation involving fear, rage, and sexuality. PAG and parabrachial nucleus, which sits in the pons below the PAG, are part of the RAS (Reticular activating system) and critical to arousal functions. Both are involved in pleasure and pain

VTA: Seeking/wanting system (dopamine): non-specific motivation and curiosity. Sensitizes the organism to go after the reward but does not participate in the consummation of the reward. Is under enormous feedback controls such as the nucleus accumbens (which is the ventral portion of two basal ganglia, the caudate and putamen). This nucleus is important in drug addictions. "The reinforcing properties of psychostimulants are proportional to their ability to increase the action of the neurotransmitter Dopamine in this structure." (Cognitive Neuroscience, Gazzaniga et al) I think Doug said that the nucleus accumbens can actually shut down the VTA thru the secretion of BDNF molecules. This area is involved in the motivational decline in bipolar illness.

Septal areas are involved in positive states and therefore in inhibiting negative states.

Hippocampus: Like all paralimbic structures has a dorsal spatial learning area/function and a ventral mood regulating circuit. It is here that antidepressants and therapy may have an effect, and it is here that neurogenesis takes place. But, he cautions, don't draw too many conclusions from the Globe article.

Alzheimer's: brain cell death involves tangles mostly dendritic. These are in fact a failure of the microtubules.

Doug feels that Jaak Panksepp believes that PLAY is the most neglected area in affective research