

Why Do Students and Teachers of Body-Oriented Psychotherapy Training Schools Need to Understand the Neurophysiology of Emotions?

An Orientation for the Article, "Recent Research in the Neurophysiology of Emotions"

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Research regarding the Neurophysiology of Emotions has blossomed over the past twenty years. This has been connected to new techniques for laboratory study such as Neuro-Imaging (Positron Emission Tomography and Functional Magnetic Resonance.)

This article will offer examples of neurophysiological models that emerge from laboratory research. The goal will be to connect these neuronal-functional models to clinical questions in psychotherapy.

Students and teachers in Body-Oriented Psychotherapy programs, will find this presentation of special interest. Why is that? The Body-Oriented approach means to focus on emotions and on others parts of one's psychological life using theories and practices that "integrate mind and body." Specifically, this means that **our approach integrates "verbal" expression with "non-verbal" bodily expression and contact.** One of the goals is to dynamize the Protagonist's emotional life and favour positive change. ("Protagonist" refers to the patient, the client, the person who we are trying to help and who is the leading player of his life.)

Therefore, beyond listening to the Protagonist's words, the Body-Oriented Psychotherapist **tunes into his own body messages** and those that come from the Protagonist: *Breath, gestures, posture, facial expression, voice tone, pitch and rate, that reinforce or modify explicit and intuitive understanding.* Thus the Body-Oriented Psychotherapist's practice develops this capacity for a "double attention," toward both mind and body.

What "Recent Research in the Neurophysiology of Emotions" Offers

How can we understand the "body process" and relate it to the "mental process"? The following section offers several yet more specific questions that the Body-Oriented Psychotherapist might wish to raise, and which the article on the Neurophysiology of Emotions will answer. I have indicated the specific researcher whose model we have used, in the article that follows this "orientation," in order to respond to these specific questions.

1. What is the connection between an emotional **knot** and a neurophysiological **knot** between the **sympathetic and parasympathetic systems**, that is, the two parts of the autonomic nervous system that runs throughout the brain and body? (Researcher: Ernst Gellhorn)
2. How does "**deepening of the emotion**" – which the Body-Oriented approach is especially adept at facilitating -- help undo the emotional knot and re-establish an equilibrium between the sympathetic and parasympathetic? (Henri Laborit and Ernst Gellhorn)
3. What are the **five levels of the brain** that constitute the neuronal pathway of the sympathetic and parasympathetic? (Alan Schore) How can the knowledge of this hierarchical neuronal structure help us understand psychosomatic illnesses such as gastrointestinal ulcers as well as the physiological "depth" of emotions?

4. What are the negative physiological consequences of **"paralysis when faced with stress"**? Especially when this state of inhibition is prolonged over time? (Henri Laborit)
5. How is our "attention" (an explicit focus of consciousness) become influenced by our "action"? What is the neurophysiological explanation? More specifically, how do the **sub-cortical** systems – the basal ganglia and thalamus – interact to influence the brain's **cortical** areas that underly attention? (Gerald Edelman)
6. Why does a person become more vulnerable to memories with overwhelming emotions when **alone**? Especially when there is no action program?
7. How can we explain that certain forms of "active emotional expression and positive behaviour" can help **contain** emotional trauma? What neuronal pathways clarify the mechanism?
8. How can the activation of basal ganglia action patterns increase awareness at the moment and favour memory in the future? (Gerald Edelman)
9. What is the relation between traumatic experience and language? What therapeutic approach can be suggested? (Bessel Van Kolk)

The Insights Offered by Using a Neurophysiological Map of the Brain

While consciousness is associated **only** with cortical brain processes, that is, with the top of the brain, our conscious states are deeply influenced, at every moment, by brain processes that lie below the cortex, that is, by sub-cortical brain processes. In this way, "non-conscious" messages reach our conscious minds.

1. And the **Freudian unconscious**? There is debate. One model is that experiences that can potentially become conscious must be based upon cortical processes. The sub-cortex does not have the architecture that is sufficiently complex to "hold" consciousness. But the movement from a repressed thought (experience, emotion) to a conscious thought may depend upon the sub-cortical influences. Therefore, to know the structure of the sub-cortical dynamics can throw light upon opening the repressed unconscious, as well as upon countless other conscious dynamics (attention, free association, memory, planning, evaluating).
2. The concept of **"distributed processes"** means that **all** parts of the brain are interacting at every moment. Therefore, **every** brain process can contribute, potentially, to influence and change all brain states and all conscious states. (This opens many doors toward thinking about the validity of different psychotherapy schools and their complementary approach in helping people.)
3. **We can now better understand how a "change of thought" is often insufficient** for changing an emotional dynamic, even if we feel that we know "the origin" of the problem. The problem, a disequilibrium, involves processes at all levels of the brain, as well as in the body. Each level is connected to the others, but also has its own dynamic. (Semi-autonomous systems) Therefore, the therapeutic transformation must take place at all levels. Once again, Body-Oriented Psychotherapy favours the simultaneous transformation at all levels.
4. "Intuition" means the coming into consciousness of a thought or action that was not previously present, but which seems meaningful for the situation at hand. The map of the brain gives support for the relevance of intuition. **The sub-cortical messages influence on-going thoughts and actions. Thus they can create surprises and modifications.** The "deeper knowledge" that reaches the cortex can come from different levels: the diencephalic nuclei of the amygdala, hippocampus, thalamus and basal ganglia. Going deeper we have the hypothalamus and the central gray matter.

Still deeper, in the lower pons and the medulla (together, the brain stem) we have the centers that produce and distribute everywhere in the brain at four basic brain activators: dopamine, serotonin, acetylcholine and noradrenaline. And at the bottom of the brain we have the solitary nucleus and the dorsal-motor nucleus of the vagus nerve, which serve to create input's and receive output's from our visceral organs. Thus the source of our "visceral intuition."

All these lower brain processes send messages "upwards." The upshot? Cortical functions are influenced, and this gives us "intuition."

6. This dynamic, **from bottom to top**, influences much more than intuition. It influences emotional humour, pleasure and pain, mental and physical energy, learning capacities, action readiness, self-world connection, and more. The point is that **our consciousness is like the foam on top of a wave that is riding upon the wave's force.**

7. The impact of our therapeutic interventions (words, gestures and contact) can always have slightly different results from our intentions. And occasionally radically different results, when we have made an error! Thus we must learn from the immediate feedback, verbal and non-verbal, perceived and intuited, received from our Protagonist. This ontological dilemma, **"I can never know for certain what the results of my actions will be!"**, can make us humble and favour our intuitive sensitivity to the other.

The neurophysiological map helps us create this respect for the "inner unknown," the unknown of the Other and our own unknown. Our cortical consciousness rides on the waves of our dynamic sub-cortex, and this sub-cortex is in intimate relationship with our body. The Protagonist is in the same condition. We are constantly receiving emotions from our amygdala, self-other connections and other spacial relations from our hypothalamus, action "readiness" from our Nucleus Accumbens, action strategies and routines from our basal ganglia, moods and different forms of arousal from our lower brain centers, visceral sensations and intuitions from our lower brain stem, and so on. All this stuff of life is out of awareness. But it's no myth.

So the psychotherapeutic adventure will always be an adventure.

Conclusion: The above guidelines are but several conclusions that can be drawn from understanding the neurophysiology of emotions. Students and teachers of psychotherapy can hypothesize other clinical applications of the following neurophysiological maps. And search out other maps as well. The point is to create a language in which we can share our notions and methods in such a way that our friends and colleagues can know what we are talking about