



Holotropic Neurofeedback

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Neurofeedback Psychology

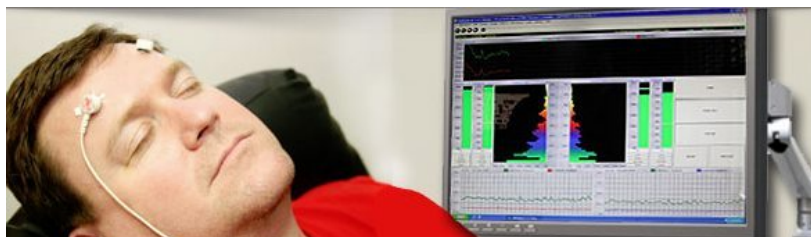
Neurofeedback is not simply a treatment or a means of conditioning, it is a holistic view of optimal function based on self regulation. Neurofeedback does not have the same objective as clinical psychology because clinical psychology is a model of dysfunction, whereas neurofeedback is a model of function. Psychology is essentially normative because it considers the average as the preferred state. Clinical psychology is reductive; neurofeedback is integrative and holistic.

Optimal function is not the same as the absence of dysfunction; optimal function is a state that is better than average. Neurofeedback can explore optimal states because neurofeedback embraces the notion that the brain is part of a self-optimizing system. Clinicians neither need to know the optimal state nor must they lead their clients to it. Because neurofeedback allows the brain to train itself it does not shoehorn everyone into a preconceived picture of health.

Neurofeedback Yoga

The Sanskrit word yoga means "to join." Like neurofeedback, yoga is a practice that aims to describe rather than explain. Both practices deal with the mind holistically. There is a better correspondence between neurofeedback and yoga than there is between neurofeedback and Western medicine.

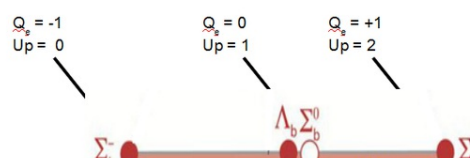
Neurofeedback has descended from medicine, psychology, and neurology but presents a more holistic picture of the working of the mind and body. Neurofeedback is outgrowing its parents and its parental influences are holding it back.



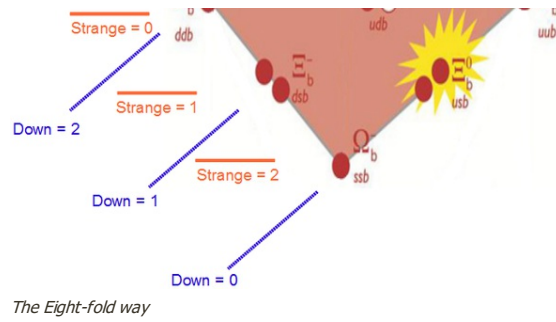
The medical view of neurofeedback is as inappropriate as a medical view of spiritual health. The neurological view of neurofeedback is largely useless because it offers no understanding of higher mental processes. The reductive, synaptic view of the function of the nervous system, in addition to being only a crude approximation, is dumb to issues of integration. Not only is the nervous system not like a digital computer, but we have no understanding of how cognitive structure emerges from nonlinear coupled systems. Neurology cannot explain what neurofeedback describes.

Of Postures and Particles

Vedantic yoga provides a template for neurofeedback's description of mind that is better than anything science presents. The



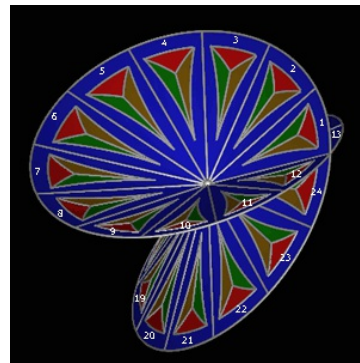
Hindu Vedas divide yogic practice into eight "limbs," from which Murray Gell-Mann whimsically defined his "Eight-fold Way" of nuclear particles, a picture without any correlation to the Vedas.



When applied to neurofeedback, the eight arms of yoga provide a complete map of one's potential for higher experience, and each arm corresponds to an aspect of mind that neurofeedback recognizes and can train.

The eight limbs of yoga

Applying the vedic model does something similar for neurofeedback as it did for particle physics: it highlights areas where things that we have not yet seen should exist. For physicists this led to the discovery of the Higgs boson, whose existence was surmised by the symmetry that the picture imposed. For neurofeedback a similar holistic map implies structures in mind that we have not yet seen. Or it suggests an alternative way of looking at functions whose relations are unclear or misunderstood.



t-Riemann surface

The Eight Limbs of Neurofeedback

Here are the eight limbs of yoga described in "The Yoga Aphorisms of Patanjali," of whose many translations I prefer that by Prabhavandana and Isherwood. The date and identity of Patanjali are unknown but guesses are between 400 BC and 400 AD.

Yogic Term	Principal Focus	Neurofeedback Term	Neural Focus
Yama	Right action	Discernment	Boundaries, limits
Niyama	Observance	Intention	Goal state, clarity
Asana	Body energetics	Posture	Somatic comfort and regulation
Pranayama	Breath	Autonomic nervous system	Deep brain regulation
Pratyahara	Detachment	Emotional/analytical balance	Obsession, addiction, depression
Dharana	Concentration	Focus	Arousal, planning, sequencing
Dhyana	Meditation	Awareness	Attention, balance, recognition
Samadhi	Union with God	Triune brain integration	Unity, connection, and co-regulation

Linking scientific thinking and spiritual practice brings a new discipline into being. This new discipline has features that are similar to other new or incomplete disciplines: like taxonomy it enumerates structure, like alchemy it describes process, and like the early days of quantum mechanics (the Bohr model of the atom) it suggests simple biological models (such as "what fires together, wires together") that should not be taken too literally.

Each limb deserves a discussion of its own. If it provides nothing else this picture separates and clarifies different processes and functions. Some, like regulating the autonomic nervous system, are already familiar to us. Others, like achieving triune brain integration, are less familiar.

Synergy in Marriage

Like any conjoining of different disciplines this integration provides insights and raises questions. Perhaps the greatest insight is a neural description of transcendent unity as the full integration and regulation of one's whole system.



This description makes it abundantly clear that God is in everyone and is accessed as a state of being. Biological mechanists would claim this explains the divine but, since the "ghost" has still not been found in the machine, neurofeedback provides no explanation and sets no limit. We still don't know whether the consciousness resides in the brain, in the whole individual, in the human collective, or in still larger structures.

In this marriage neurofeedback gains a complete picture of the human experience. Such a complete picture is entirely foreign to medicine's focus on dysfunction. Forging a complete picture of mind is a pursuit specific to the holistic enterprise. Establishing a correspondence between yoga and neurofeedback drops this into our lap. We should run with it.



Marilyn Monroe doing asana yoga. Today we wear pants.

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