



# Placing pure experience of Eastern tradition into the neurophysiology of Western tradition

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While the presence or absence of consciousness plays the central role in the moral/ethical decisions when dealing with patients with disorders of consciousness (DOC), recently it is criticized as not adequate due to number of reasons, among which are the lack of the uniform definition of consciousness and consequently uncertainty of diagnostic criteria for it, as well as irrelevance of some forms of consciousness for determining a patient's interests and wishes. In her article, Dr. Specker Sullivan reexamined the meaning of consciousness in the DOC taxonomy and proposed to go away from the routinely used clinical definition of consciousness as “wakeful awareness”, and adopt the meaning that is common in the Eastern tradition which is a form of “pure experience” (Specker Sullivan 2018). She further argued that understanding consciousness as a “pure experience” is ethically relevant for DOC patients. This suggestion is original, novel and important since it preserves the importance of the notion of consciousness for the clinical practice while simultaneously offering an additional ethical tool for the moral decisions in medicine. At the same time, without placing such Eastern notion in the Western tradition it is difficult to see how pure experience could be usefully operationalized to make sense in the clinical practice with DOC patients. It is so because pure experience is a subjective phenomenon which is completely inaccessible in noncommunicative DOC patients and also it does not express behaviorally (Monti et al. 2010), therefore some objective-like operationalization is needed. This is why the fusion of Eastern and Western traditions is required to gain the full potential of

Dr. Specker Sullivan's suggestion. We propose that such fusion could be achieved on the basis of the Operational Architectonics (OA) theory of brain–mind functioning (Fingelkurts et al. 2010, 2013a) which suits ideally the purpose due its compatibility with both Western and Eastern traditions of consciousness.

In short, the OA theory states that local fields of transient functional neuronal assemblies (functional coalitions of individual neurons) are equivalent to elemental operations which can be conscious (phenomenal) in a sense that they self-present phenomenal features or qualia. Such simple operations are reflected in the local electrical brain fields (that could be reliably measured by electroencephalogram—EEG) in the form of quasi-stationary segments, which can be conceptualized as standing waves within a 3D volume (Fingelkurts et al. 2010, 2013a). These segments are temporally limited in time, so that their lifetime is marked by so-called rapid transitive periods (RTPs). As a matter of fact, the totality of all infinitely many local fields undergoes a continuous sequence of transitions on multiple temporal scales resulting in enormous multivariability of possible phenomenal features (qualia) (Déli et al. 2017). However, to have a full experience of any phenomenal object, including the self, several features/elements of that object (shape, color, smell, texture, etc.) should be spatially and temporally integrated. In agreement with the OA theory, different (simple) phenomenal features that are presented in the brain by local fields/operations generated by different transient neuronal assemblies are temporal synchronized (coupled together) to self-present complex phenomenal objects (and the self being one of such objects, Fingelkurts and Fingelkurts 2011; Fingelkurts et al. 2012b). As a result of such dynamic and self-organized process, metastable brain states—operational modules (OMs)—emerge (Fingelkurts et al. 2010, 2013a). Thus, according to the OA theory, any complex phenomenal object has internal structure where every element in its turn also has its own internal structure and so on, all the way down to the simplest elemental

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This is a commentary on “Pure experience and disorders of consciousness” by Laura Specker Sullivan.

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phenomenal features. Such architecture signifies a clear nested (and dynamic) hierarchy and, as empirical research has shown, serves as the needed ingredient of brain organization that allows conscious thoughts/images of different complexity to be expressed in the brain (Fingelkurts et al. 2012a). OM as a “virtually” wholistic conglomerate of local fields, similarly to the local fields, also changes abruptly through a RTP. During the RTP, a set of local bioelectrical fields (which constitute any given OM) produced by transient neuronal assemblies (that are located in different brain areas), rapidly loses functional couplings with one another and establishes new couplings within another set of local bioelectrical fields; in this way demarcating a new OM in the volumetric operational space–time continuum of the brain (Fingelkurts et al. 2010, 2013a).

This description is also analogous to the Eastern thought tradition in conceptualization of human consciousness. Here, the Buddhist epistemological school Yogācāra is specifically interesting due to its focus on cognition, consciousness, perception and epistemology (Chadha 2017). According this school, the mind can be reduced to fundamental elements (dharmas) that populated baseline (pure) mentation or experience, which serves as repository of potentialities of all basic habits, tendencies, and latencies accumulated by the individual (Chadha 2017). Within the OA model, this level is presented by the multiplicity of local electromagnetic fields that potentially could present vast variability of features or qualia. Further, Buddhist thinkers propose that from the apprehension of pure experience the afflictive mentation (including self-awareness) is arising, thus bringing to life the phenomenal forms (objects, images, scenes, concepts) that supervene on the arrangement of co-present dharmas and are at the same time luminous and self-present (Chadha 2017). This level of mind description corresponds within the OA model to the nested organization of multiple OMs (coalitions of many co-present local electromagnetic fields) which are responsible for the subjective experiences of objects, thoughts, concepts, including the experiential selfhood that are immediately present within the mind (Fingelkurts et al. 2010, 2013a). Thus, the brain–mind OA could be considered as a plausible framework that productively unifies the Eastern and Western thought traditions about consciousness, where the actual physical potentiality for consciousness is considered seriously (Fingelkurts and Fingelkurts 2018). Here, the actual physical potentiality for consciousness means that it is actually physically possible because it is both consistent with the laws of nature and the actually-obtaining state of affairs (see for a discussion Vukov 2018).

Application of OA methodology to the analysis of EEG registered from patients who are in unresponsive

wakefulness syndrome (UWS) or in the minimally conscious state (MCS), clearly showed that the whole brain nested OA is either completely disrupted as in the case of UWS or partially preserved as in MCS (Fingelkurts et al. 2012a), thus allowing to differentiate patients with fluctuating consciousness from those who are unconscious. Furthermore, it could reliably predict the clinical outcome (recovery of consciousness) of UWS patients in the period of 6 months (Fingelkurts et al. 2013b) or even 6 years (Fingelkurts and Fingelkurts 2017) after brain injury, thus pointing to the ability of OA methodology to reveal the actual physical potentiality for consciousness (Vukov 2018). This latter feature is essentially important for the ethical debate analyzed in Specker Sullivan paper (Specker Sullivan 2018). Indeed, if we view the actual physical potentiality for consciousness as morally salient, then the patient with UWS that has a potential for consciousness will fall into a different moral category than those other UWS patients that do not have a potential for consciousness. This is so because for such an UWS patient the prospective potentiality for consciousness is medically possible, given enough time, the proper care, and rehabilitation intervention. After all, any patient who eventually regains consciousness must have had the actual physical potentiality for consciousness all along from the most beginning—that is a general feature of potentiality (Vukov 2018).

Furthermore, if one considers the importance of the prospective potentiality for the autonomy in the context of a “living will” (Mappes 2003), then establishing a substituted judgment (that is the will of the patient is determined by a family member or a doctor) when a patient is no longer able to declare his or her current wishes has sense only if such actual physical potentiality could be reliably established. Therefore, knowledge of the state of brain OA beyond clinical assessment in patients with UWS is absolutely imperative for establishing a substituted judgment and can be quite helpful when there is a need to establish or even justify particular treatment scenarios (Fingelkurts and Fingelkurts 2018). Moreover, knowledge of actual physical potentiality for consciousness can influence the communication behavior of family members that has important ethical implications also (Friedrich 2011): they may, for example, feel more compelled to directly address their non-communicative relative if potentiality for subjective experience could be demonstrated through, for example, brain OA neuroimaging technology, while clinical signs of consciousness are absent.

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