

Peer Review

Review of: "Inner Speech, Self-Regulation, and the Modular-with-Feedback Theory of Free Will"

Wieslaw Galus¹

1. Institute of Plasma Physics and Laser Microfusion, Warsaw, Poland

The authors address the subject of free will, which continues to be controversial among psychologists, neurologists, and philosophers of mind. The reference to the Modular-with-Feedback theory is commendable, supplementing it with the role of Inner Speech, which selects dominant modules and leads to awareness of the content contained in the distinguished modules. In this way, they aptly combine the role of inner speech with self-control and the “meta-ethical” aspect of free will: modular competition is consistent with observations on inter-area oscillations and inhibition, and feedback fits into the scheme of learning and neuroplasticity.

One can find here consistency with at least two popular theories of consciousness. The competition of modules and the subsequent “global dominance” resembles the broadcast to the workspace in the Global Neural Network Workspace theory. Directed attention causes the “ignition” of the frontal-parietal network; selected data are globally broadcast and available for planning. In contrast, inner speech is an explicit metalevel representation (thought about thought), which makes it similar to the Higher Order Thoughts theory. This is also consistent with earlier work on the prefrontal-parietal network (PPN). The PPN combines attention, working memory, and content awareness processes and thus provides empirical neural correlates of awareness for directing.

What is worth emphasizing is the justification that directed awareness is equivalent to directing an intentional, narrative stream of attention that can select a goal and pull the brain resources needed to achieve it. Without such a “reflector,” there would be no free choice in the sense proposed by the authors. There would be no competition in terms of plans or the possibility of consciously reevaluating them.

The authors supplement these ideas with elements of ontological dualism, alternative, random selection of modules, and special quantum structures reminiscent of the Orch-OH theory. All these proposals agree

that consciousness becomes a “spotlight” only when it selectively allocates neuronal resources to something that is valuable for the subject.

However, this does not increase the explanatory value of the theory presented in the article. In particular, GNW does not require ontological dualism or randomness, and HOT does not require oscillatory competition or special quantum structures, which are considered to be unconfirmed by experiments, and at this stage, unfalsifiable.

The authors rely on the speculative theory of Buschman and Kastner, according to which inhibitory neurons create lateral inhibition of neighboring neurons and increase the synchronization of high-frequency oscillating modules. This is supposed to increase synchronization between regions and, by inhibiting neurons of competing modules, strengthen the module as a local attractor. In this way, we can hypothetically see that our probable behavior is predetermined by our history, which will cause some neural circuits to oscillate more strongly than others. The problem is the weak empirical foundations of the aforementioned theory.

The ontological justification is not a fortunate choice, despite the correct assumptions. The authors refer to their own “Entropy Theory of the Emergence of Consciousness,” combining Landauer with quantum-microtubular speculations, hypothesizing that irreversible computations destroy information, increasing entropy, which is supposed to prevent full prediction of the conscious state and secure free will. A “hidden monism” arises: the psyche emerges from physics but remains causally effective. This would be a wonderful conclusion if the justification for using the concepts of information and entropy to explain phenomenal consciousness were not weak. There is no data that conscious acts generate greater entropy than unconscious processes. The physical space of states in organisms is immeasurably larger than the amount of information representing the sum of knowledge organized in mental states. The energetic phenomena associated with the creation of neuronal representations of this knowledge are negligibly small in relation to the energy supporting life processes.

It would be interesting to hear the authors’ position on the neurobiological theory of consciousness called the Motivated Emotional Mind, which also refers to the justification of the limited will of natural and artificial systems. This purely biophysical theory is presented in the article Neurological Foundations of Moral Responsibility (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4933128). Perhaps in the next version of their article, the authors will manage to combine their own valuable hypotheses with a reductive model of the conscious mind.

Declarations

Potential competing interests: No potential competing interests to declare.