

# Review of: "The functional unit of neural circuits and its relations to eventual sentience of artificial intelligence systems"

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The author explains functional units, of brain mentioned by some brain researchers as 'the equimerec - units', which they believe to possibly combine 'the threshold logic unit' and 'the feedback control loop'. The authors tried to emphasize the importance of this theory in the context of advanced language-based AI systems. The author is bringing together the notion of closed loop control theory, Artificial NN and the Joe McFadden's "Conscious Electromagnetic Information Field Theory (cemi)", in a systematic way to support the 'the equimerec - units', theory.

The paper is well explained in terms of functional brain research which is probably the profession of the author. The attempt made to find resemblances between human brain neural circuits and artificial systems is important and useful to at least set-up alternative approaches in developing brain research theories. However, the attempt made towards the explanation of 'the equimerec - units', with the combination 'the threshold logic unit' and 'the feedback control loop in AI. may not be a consistent point of view. Perhaps the systematics of these two feedback mechanisms are different. If the neural feedbacks existing in brain tissue, to be resembled to backpropagation algorithm (feedback) in A.I. systems, then what is the supervise?, and how the supervision works in the biological system?. While the backpropagation loop in AI. runs based on error reduction with the help of supervision, the neuronal feedback usually take the responsibility of systematic regulations and prevention. It should be noted that the most understood way of cellular processing system and/or communication system bases on probabilistic charged chemical units transportation channels controlled by electromagnetic field and hence spectral translation structure that accomplishes mRNA units and so on....

Anyway, it should be noted that "Theory is Theory", no one can exactly say "Yes it is", yet.

Nevertheless, the development of further robust theories needs collaboration of professional scientists in many fields. Let us start with the basic universal arrangement of charged particles (positive and negative; e.g. dipoles) which create Electric field and hence (by the movement of charged particles) Magnetic field, and consequently the Force with the relation defined by  $F = (E + v B)$ , where  $v$  stands for the velocity. The universal rules need to be considered in chemistry, biology, physics, and so on while developing science. The living of universe (including brain), beside of combinatory of physical quantities and their spatio-temporal arrangement, depends on hybrid interaction of electric and magnetic fields (from nano-scale to macro scale) not only in cellular scale but also in chemical/atomic level involving in the process of living mechanism. That is, the structural organisation of cellular and hence specialised tissue modulates electromagnetic

energy flow and this electromagnetic energy excites back the cellular mechanism for continuing the life cycle.

In the literature usually one of the fields is emphasised in order to prove the theory developed within the context of author's profession (like Joe McFadden's). These theories, of course are very meaningful, but still not robust theories. Also some other scientists who may not be specialist in many fields try to benefit from other theories, methods and schematics in other fields to support their idea like the authors of the article under review. These kinds of studies could be appreciated as that:

Let us consider a large scale electronic circuit fed by some sensors as the input and generate some thing as the output. Some scientist measures the Electric field (such as EEG) around the micro scale wiring and integrated circuits, while some others measure the Magnetic field (such as EMG), some others measure current carried by wires, some others measure voltage, some others measures the brain images (such as fMRI) etc. in response to the changes to the input presented to the sensors. Each of which develops a specific theory centralised on their profession. On one hand, all of these theories are valuable need to be published, but on the other hand, they are lacking theories one should be aware of it.

Today, the manmade systems advanced in such a way that to be fully controlled by Cloud Computing. Including memory and other processes are executed within the cloud environment. Considering this fact and artificial cloud system notion, one can possibly claim that, why not "God father" does manage the universal running and controlling from "meta" spaces and/or "meta clouds". In this case, the brain may be considered as an interface circuit and/or a sensory network to the meta cloud. From this point of view, all of the units that recognize objects, perception, memorization of image patterns, and retrieval of those patterns as imagination are functioning there in meta clouds, for example. Therefore, if so, the brain remains to translate the data to the meta cloud system.

In my view, the mechanisms which are attributed to brain such as recognition, perception, memorization and retrieval (in any dimension) cannot be explained without involving physical structure and meta function of some entities such as DNA, mRNA, Proteins and their formation process, etc. All of the brain theories need to take into account the mechanism of these entities, which are not easily understood. It is a long story...

Finally, I should thank to Andrzej Brodziak, Filip Romaniuk for their nice work. I wish them good luck.