Introduction to the Physics of Active Observers

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Abstract. The greatest challenge facing science is its inability to account for a conscious observing actor who obviously populates the reality in which we exist.[1] This paper will address this deficiency by eliminating the fundamental assumption underlying contemporary physics that an objective universe exists independently of our own existence. We will instead assume that to first order approximation we active observers are self-contained activity cycles[2,3,4,5], which accommodate perturbing interactions with other activities by changing their internal dynamic state. This fundamental change will allow the development of an action-based physics that replaces fundamental particles with fundamental events and explains our conscious experience[6]. It will be shown that closed independent time loops contain a subjective mental and objective physical phase, which generate each other in fundamental existence activities. Our starting point will be Hamiltonian-Jacoby formulation of classic physics[7,8], which is the last major theoretical development directly tied to a realistic ontology. We will extend the concepts of classic physics by incorporating a conscious observing actor and his model of reality. This will extend quantum theory into the every day macroscopic domain, by realizing that our classic objective world is created through an automatic fusing of 1st-person sensations output from processing external interactions with 3rd-person explanatory sensations output by the execution of internal reality models grown in our memories. The architecture of change, quantified by action flow networks, will allow us to understand the role of alternative culturally dependent reality models within a single comprehensive framework. Alternative communication groups may develop different consensus reality beliefs, with different advantages and limitations, however all of them will be installed within a similar action flow architecture, which document the activities executed by acting observers. By applying Everett's assertion that all systems are observers[9] the physics explaining human experience is generalized to cover all systems whether dead or alive.

References

1) Stapp, H. P. (1993) *Mind, Matter, and Quantum Mechanics.* Springer-Verlag: Berlin
2) Hofstadter, D. R., (2007) *I am a Strange Loop*, Basic Books, ISBN 0465030793
3) Chopra, D., Kafatos M. (2017) *You are the Universe*, Random House ISBN 978-0-307-88916-4
4) Bhadra N. K., (2019) "A Human is a Miniature of Universe" , URL: https://www.researchgate.net/publication/336022080
5) Wheeler J.A., Zurek W.H. (1983) *Quantum Theory and Measurement*, Princeton University Press. For example, see "Law without Law" by Wheeler p 182 and Wheeler's U diagram
6) Baer W. (2020) Conscious Action Theory: an introduction to the event-oriented world view, Routledge Press, ISBN: 978-1-138-66746-4 (hbk)
7) Sotina N. (2014) "Derivation of the Schrödinger equation from the laws of classical mechanics, structure of physical vacuum", Physics Essays, Vol 27, No 3, pp. 321-326
8) Goldstein, H. (1965a), *Classical Mechanics*, Addison-Wesley, p 1 and chapter 9
9) Everett, H., (1957) "'Relative State' Formulation of Quantum Theory", *Rev. Mod. Phys*. Vol 29, #3