

This chapter is a summary of TGD inspired theory of consciousness as it is towards the end of 2025 and of its applications to biology. This article gives a summary of TGD inspired theory of consciousness as it is towards the end of 2025. In the TGD framework, it is not possible to discuss consciousness without the TGD view of space-time and quantum. Also the applications to quantum biology and neuroscience have been essential in the development of ideas. The basic inspiration has come from the deep philosophical problems of recent day physics and philosophy of consciousness. The TGD view of consciousness can be seen as a generalization of quantum measurement theory: the observer as an outsider becomes a part of the system.

The basic new elements are zero energy ontology (ZEO) as a new quantum ontology forced by the new view of space-time as 4-surfaces analogous to Bohr orbits of particles as 3-D surfaces. The dynamics of the classical space-time obeys holography = holomorphy principle. The failure of a strict classical determinism provides geometric correlates of intention and cognition. ZEO allows us to solve the basic problem of quantum measurement theory, allows free will, and provides a new view of the relation between geometric time and subjective time.

Physical existence, identified as the mathematical existence of quantum states: one can speak of quantum Platonism. Conscious existence is identified as quantum jumps between them and can be seen as two different kinds of existence. The classical non-determinism gives rise to quantum jumps giving rise to conscious entities, selves, and the ordinary quantum jumps are predicted to change the arrow of time. This means death and reincarnation of self with an opposite arrow of time.

Also the number theoretic visions of TGD is central. A key implication of the number theoretic vision is a hierarchy of Planck constants h_{eff} making possible quantum coherence in arbitrarily long scales crucial for the coherence of living matter. p-Adic length scale hierarchy is the second number theoretic prediction. The applications to quantum biology and neuroscience rely on these hierarchies.

In this chapter, the key notions and ideas of TGD, especially those relevant to consciousness and quantum biology, are summarized. The TGD view of consciousness emphasizing recent progress is summarized. The basic ideas and applications to quantum biology are also described. Also the number theoretic visions of TGD is central. A key implication of the number theoretic vision is a hierarchy of Planck constants h_{eff} making possible quantum coherence in arbitrarily long scales crucial for the coherence of living matter. p-Adic length scale hierarchy is the second number theoretic prediction. The applications to quantum biology and neuroscience rely on these hierarchies.