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**Title: Where philosophy meets neuroscience: towards a multidisciplinary understanding of 'evil' through the concept of neuronal plasticity**

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Numerous philosophers as well as scientists have tried to approach evil over the years, trying to elucidate its essence and true nature. There have indeed been sound arguments for both sides and approaches, yet the exact nature of evil may still be considered a mystery, which only art could potentially reach at its heart.

At times, some have even preferred the writing of the term as 'evil' or Evil, denoting that there is some inherent distinct metaphysic substance, especially in contrast to the evil one receives and perceives it as harmful for himself. This has led to great prejudice and superstition before the era of brain function understanding. Additionally, ever since Descartes has separated mind from the body, man has tried to deal with a world which stood opposite from him, where the individual considered oneself as a distinct entity. After quite a lot of debate in philosophy, the concepts of embodied consciousness and enactive perception appeared to bridge the gap between idealism (mind) and empiricism (body), permitting a unified conception of the human being. However, mental illness, as well as inexplicable and unreasonable behavior remained for a long time within the scope of metaphysics in philosophy, denying any causal relation with science. To be clear, with the term science, we hereby conceive the necessary (non- contingent) and universal (not singular or individual) knowledge regarding nature and the world as a whole.

The apparent discontinuity between the function of neural circuits of the brain and the conscious perception of the self has been specifically labeled as the "hard problem of consciousness". Neuroscience, namely brain imaging and neurophysiology, has enormously helped shedding light to various mechanisms involved in human thinking, emotions and decision making. The discovery of mirror-neurons in the brain and the concept of neuronal plasticity were the cornerstones for a universal model of human thinking. The brain is therefore considered as formable and formative at the same time, that is to say neuroanatomy imposes neurophysiology and vice versa: structure determines function, as well as function modulates structure. In this way, brain plasticity operates on three levels: a) *developmental plasticity*(i.e. the individual constitution of every brain, consisting of modeling of the neural networks within the brain, which begins within the uterus and continues until infancy), b) *modulation plasticity*, where neuronal synapses undergo modification (remodeling) through the years, in response to environmental stimuli and c) post-traumatic plasticity, with regard to psychological trauma, where the neural connections exhibit the capacity for repair of a lesion, albeit at a certain cost.

**Keywords:** Evil, Neuronal Plasticity, Consciousness, Mind-Body Dualism, Embodied Cognition, Enactive Perception, Hard Problem of Consciousness, Mirror Neurons, Philosophy of Mind, Neuroscience and Morality, Mental Illness and Metaphysics.**(Up to 250 words)**

**Biography**

**Dr. Georgios B. Kasimatis** is a board-certified Consultant Chief Orthopaedic Surgeon at Orthopedicare in Athens (Nea Irakleio and Marousi), holding MD and PhD degrees from the University of Patras**. (Up to 100 words)**