

# Vitiello 教授 特別公開講演会

3/11 (金) 15:00-16:30 横浜国立大学総合研究棟 S201 室 A/B

(事前申込不要 / 使用言語: 英語)

## My Double, the arrow of time and consciousness

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### 要旨

The activity of the brain, in its permanent relation with the environment, is characterized by the formation of spatially extended domains of neuronal synchronized amplitude modulated (AM) oscillations and their rapid sequencing[1-4]. Brains dissipate metabolic energy at rates 10-fold greater than other organs and the brain phase transitions between different dynamical regimes appear to be crucial in the engagement with the environment in the action-perception cycle. Getting information from the outside world makes the brain dynamics intrinsically irreversible, it introduces the Now in our experience, the feeling of the past and of the future, of the arrow of time pointing forward in time[5]. Without getting information there would be neither forward nor backward in time. In the dissipative quantum model of brain[5], the mathematical formalism requires the doubling of the brain degrees of freedom. These represent the environment to which the brain is coupled. The physical meaning of the doubling is the one of ensuring the balance of the energy flux between the system and the environment, which appears then described as the time-reversed copy (the Double) of the brain. Time-reversed since the energy flux outgoing from the brain is incoming into the environment, and vice-versa. The act of consciousness resides in the permanent dialog between the brain and its Double[5]. Laboratory observations show that reversed-in-time copies of the AM patterns are also formed in the brain, so that every source becomes a sink and vice-versa. The AM patterns model the otherwise inaccessible environment, yet they are not in the environment, so the Double is a massively coherent, highly textured brain activity pattern that can spring from the past and predict the future. This leads us to propose that the Double is mind, not matter, yet it is completely entangled with matter[6]. The unity of knowledge emerges from the very same brain activity, which proceeds from information to meanings. Consciousness, and knowledge stemming from it, is translational and transcultural with respect to the many different facets under which Nature can be viewed and studied. Our discussion may be considered a contribution toward the solution of “the division problem of the world into parts to which an individual existence can be attributed” [7], which Cassirer called the “ingenious vision of the world” [8].

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- 5.G.Vitiello, My Double Unveiled (John Benjamins, Amsterdam 2001)
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7. R.Haag, Int. J. Mod. Phys. B10:1469-1472 (1996)
8. E.Cassirer, Storia della filosofia moderna, III (Il Saggiatore, Milano 1968)

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