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## "Empathy" in Semiotics Satoshi Sako (Osaka University)

The aim of this presentation is to explore and develop the concept of "empathy" in semiotics, especially that of C. S. Peirce, with reference to studies on the mirror neuron system (MNS).

In Peirce's evolutionary cosmology, evolution has three modes. First mode of evolution is tychastic evolution (tychasm), which is based on natural selection (Darwinian way). Second mode is anancatsitc evolution (anancasm), which is based on cataclysm (outer changes) or genes (inner changes). Third mode is agapastic evolution (agapasm), which is based on inheritance of acquired characteristics (Lamarckian way) and has been most emphasized by Peirce. This anancatsitc evolution is driven by two powers: "sympathy" and "effort." But Peirce does not adequately explain "sympathy," and the expression "agapastic evolution" seems romantic. Therefore, my presentation refers to recent scientific researches on "empathy," in considering Peirce's idea of "sympathy."

Since the discovery of mirror neurons in the early 1990s, the MNS is largely regarded and researched as a neurophysiological basis of empathy, imitation and language. These researches have revealed that the MNS, a mechanism of empathy, is related not only to mechanisms for social perception, but also to mechanisms of body and action. Furthermore, the MNS is more deeply related to "perception of action itself" regardless of the distinction between self and other. These results have influenced fields beyond neourophysiology, such as psychology, ethology and even robotics, and have changed our ideas about empathy itself.

Although scientific researchers almost always use the word empathy, Peirce uses the word sympathy and does not use the word empathy. For this reason, we cannot directly link the researches on the MNS with Peirce's evolutionary cosmology. Also empathy and sympathy are often used in confusing ways in different fields. In this presentation, I refer to Wispé's view on empathy and sympathy. Lauren Wispé, an American psychologist, examines each genealogy and then redefines them as follows, "Sympathy is a way of relating. Empathy is a way of knowing." From this point of view, I re-explore Peirce's concept of "sympathy" and recent scientific researches on "empathy" and try to locate "empathy" in semiotics. By a way of conclusion, I discuss the potentiality of empathy in semiotics.