

The Self

Based on *Synaptic Self* by Joseph LeDoux (2002)
With elaboration by Jay Gould 12/15/04

The big question in neuroscience: How does the *sense of self* (not just *mind and consciousness*) emerge effortlessly from the *electrochemical activities* of the protoplasmic mass of one's brain? (pp. 10, 12, & 301) {Note: all italics are mine.}

Your *self*, the essence of who you are (your personality, etc.), reflects patterns of interconnectivity between neurons in your brain—i.e., your *synaptic interactions*: You are your *synapses*. (pp. ix, 2, 4, & 12)

“The self is the *totality* of what an organism is physically, biologically, psychologically, socially, and culturally.” (p. 31, see also p. 26)

The self is the result of the *interaction of nature* (genetic inheritance) and *nurture* (experience, learning, and memory—both explicit and implicit). (pp. 9-30 & 307)

The self is a *dramatic ensemble* of various aspects that are not usually manifest simultaneously. (p. 31)

The self involves both *explicit/conscious aspects* (e.g., self-awareness and self concept) and *implicit/unconscious aspects* (i.e., those not immediately available to consciousness: both preconscious and unconscious in Freudian terminology). (pp. 27, 28 & 31)

“The existence of a self is a fundamental concomitant of being an *animal*.” Regardless of whether they have the capacity for *self-awareness*, all animals have at least *implicit selves*. (p. 27)

“The self can be understood in terms of *brain systems* involved in *learning and storing information*, in explicit and implicit systems, about things that are significant in peoples' lives.” (p. 31)

The *key to individuality* is not to be found in the overall organization of the brain, but rather in the fine-tuning of the underlying networks with their *cells and synapses*. (p. 36)

“*Synapses* are ultimately the key to the brain's many *functions*, and thus to the *self*.” (p. 64) “Break the *connections*, and you lose the functions.” (p. 304)

“*Synaptic plasticity* occurring in multiple neural systems is coordinated in the process of *assembling, and maintaining, the self*.” (p. 307) {Note: This involves *parallel encoding; convergence* and *super-convergence zones; bottom-up plus top-down processing*--e.g., *executive control functions of thoughts in working-memory*, i.e., *downward causation*; as well as *emotional states*. (pp. 310, & 315-322)}

“We all have the same brain systems, and the number of neurons in each brain system is more or less the same in each of us as well. However, the particular way those neurons are *connected* is distinct, and that *uniqueness*, in short, is what makes us *who we are*.” (P. 303)