The Neuroscience of Touching and Gesturing

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In his new book *Out of Our Heads: Why You Are Not Your Brain, and Other Lessons from the Biology of Consciousness* (2011) Alva Noë quotes the late Nobel laureate co-discoverer of the structure of DNA, Francis Crick, who proposed an astonishing hypothesis, in a book by this name, that hypothesis being "you, your joys and your sorrows; your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules" (5). Noë responded that what he finds interesting is how astonishing this view isn't! And he turns to show how common are views that "there is a thing inside each of us that thinks and feels and wants and decides."[1] He acknowledges, as clearly we would protest, that Crick is proposing something quite different than a spirit or soul or even a mind, yet his point is really that it has been common, if not the exclusive approach, to understand consciousness by looking within. Recently neuroscientists have sought consciousness in the "brain in the skull," as I have come to call it, and Noë recounts this for us as well.

Noë then turns to what he considers to be a "really astonishing hypothesis" and he states it this way, "we must look not inward, into the recesses of our insides; rather, we need to look to the ways in which each of us, as a whole animal, carries on the processes of living in and with and in response to the world around us. The subject of experience is not a bit of your body. You are not your brain. The brain, rather, is part of what you are."[2] Well, I must say that I was immediately perked up by the phrase "the processes of living in and with and in response to the world around us" because to me this could refer to nothing other than gesturing in the rich sense. Yet, Noë never mentions the word gesture in the book. He has a chapter on "Habits" that borders upon a discussion of gesture, yet it tends to emphasize the negative association of habit rather than something like Pierre Bourdieu's notion of *habitus*. Noë discusses perception somewhat, yet even here he focuses on vision. And he seems not to know of the extensive philosophical work on perception by Merleau-Ponty and others.

Still, I find Noë's book of great interest in its unspoken affirmation of the essential role that gesture plays in the formation and existence of consciousness. It powerfully affirms, from a perspective of neuroscience and biology, that our study of gesturing, especially if understood in its richness, will be central in the era of the study of culture and religion that is just beginning.

I want to just briefly reflect on movement/gesture/touch from the perspective of neurophysiology. As I have just indicated neuroscience tends to focus on the brain, the central nervous system. Even when the sensorimotor system is invoked it is often the sensorimotor cortex that is the implied reference, that

[1] *Out of Our Heads: Why You Are Not Your Brain, and Other Lessons from the Biology of Consciousness* (2011) Alva Noë, p. 5.
[2] Ibid., p. 7.

is the part of the brain that "controls" movement. When the proprioceptive and other interoceptive aspects of the nervous system are included they are usually referred to as providing "feedback" for the benefit of the central nervous system, that is, the brain.

Yet, our persistent inquiries and reflections on the role of movement/gesture/touch/posture suggests that a revised valuation of the sensorimotor system is important; especially important for as background for building a deeper and richer appreciation of dancing.

Leroi-Gourhan's understanding of gesture as both agentive and heuristic or exploratory is essential to our revised position. Groping (*tattonement*) is the gestural patterns of reaching out to the world. Touch is the way we articulate this connection be it external encounter with some physical other or the inner touch of proprioception, motion/body awareness relative to the environment. We have come to see that gestural patterns create what are variously understood as bodily concepts, image schemas, basic level categories. All of these are the foundation for and the building blocks of conceptual thought and constructions of meaning. These are the foundations by which we have a sense of self and the world. They are all based in movement/gesture/touch which have a primacy, a firstness in the sense C. S. Peirce indicated, to our sense of self, identity, environment, meaning, consciousness, thought.

Thus, while we understand the neurophysiological system we need see that movement is not simply the result of commands from the central nervous system, but rather that movement has a place of inseparability from the very rise of the sensorimotor cortex and the sensorimotor system. These neurological systems develop and take shape under the tutelage of movement and operate as much in response to proprioceptive stimulus as they direct physical movement by firing muscle tissues.

It seems most essential that we understand that the sensorimotor system, an emphasis on movement/gesture/touch obviates any need to make reference to the pesky issues that accompany the separation of brain (central nervous system, sensorimotor cortex) from body (proprioceptive, muscular, skeletal). Anything short of the whole system distributed throughout the body is just dead tissue.