# Biology, Phenomenology, and Identity:

# Building Interdisciplinary Bridges

Frank P. DeVita

*Columbia University*

May 2016

**Introduction**

`

When someone asks me to tell him or her about myself, I don't offer my sequenced genome or a manifest of my material composition. Rather, I offer phenomenological and experience-based answers about my thoughts, attitudes, preferences, *etc*. On it's face, compositional identity seems and mental identity seem distinct, yet both perspectives validly describe "me." What then, do we mean when referring to "identity"? This paper is focused on the multidimensional analysis of human nature from biological, medical, social, psychological, and cultural perspectives to get a better handle on what exactly we may mean by "human nature." In the below I will argue (i) that biology and experience are both necessary conditions for the possibility of human identity, and (ii) that epigenetics helps us understand the relationship between compositional and human identity, and (iii) introduce the theory of embodied cognition in order to show that if we can intuitively understand identity as a biological phenomenon influenced by mental states *and* a mental phenomenon influenced by biology *without* an explanatory gap, and therefore better understand human nature.

**What is Identity?**

Identity emerges from the interface biology and mental life. From a biological perspective, my unique complement of genetic material grounds my *compositional identity*—the DNA in all my constituent cells is regulated and expressed, leading to the production of proteins that make up my living body. From a phenomenological perspective, my attitudes, preferences, ideas, beliefs, desires experiences, skills and talents make up min mind, or *mental identity*—my consciousness of these elements as part of my self, together with my immediate thoughts and experiences, memories and perceptions, make up my mind.

From an empirical and biological perspective, compositional identity is a clear-cut concept. My identity can be placed somewhere in the world by the detection of my DNA, and this is true for living things generally. If we know the genome sequence of an organism, we can, with reliable reproducibility, identify it through the presence of its genetic material. (We do this routinely in forensics and medical testing, for example.) Therefore, identity is grounded in DNA and its implications, i.e. RNA production, protein synthesis and the subsequent steps and incorporation, by DNA's instruction, into a discreet organism. However, human identity, and human nature more generally, is not only biological—there are essential mental aspects to human nature and identity that make things like culture, art and conversation possible. How then can we better understand the space between compositional identity and bodily composition on the one hand, and mental identity and self-awareness on the other?

Experience is as essential as biology for defining identity. We use experience to affirm or modify the beliefs, desires and thoughts that compose our mental identity. Experience is directly responsible for the thoughts and feelings that ground and inform actions, and is therefore an essential factor in the manifestation of human behavior. Behavior, in turn, is the mode by which we

interact with others, function in society, and contribute to culture. Mental identity then, is established reflectively through my thoughts, beliefs and desires, and outwardly through action and behavior. That is, I can identify myself through my experiences and act in response to them, and the resulting behavior, in combination with my appearance, enables others to identify me. My behavior is also neurobiologically mediated. As such, experience, because of its connection to socialization and culture, is as essential to identity as biology. Compositional and mental identity then, are two commensurate aspects of human nature. That is, human nature *is* having these two aspects identity, and further, the reflective self-consciousness (i.e., self-awareness) to realize this is the case. Therefore, understanding and exploring the links between biology and experience is necessary for understanding identity and human nature. Biological composition and mental life acting in concert to create a cohesive, distinctly human, phenomenology of experience ground these links.

The essential mental components of identity (e.g. beliefs, desires, thoughts, self-awareness) originate in the brain—a biological object. The existence of the brain, just like all other organs, is the result of differential gene expression localized to a particular part of the body during development. Therefore, the brain is as biological as anything else in the body, however it has special properties, namely those that make consciousness and human phenomenology possible. For centuries, this has been an intellectual thorn in the side of science and the humanities. How does the brain produce the mind? What are the neural correlates of consciousness? Am I my body or my mind? These questions were formulated by Descartes and have reformulated by philosophers, scientists, psychologists and others up to the present with (mostly) the same results: that the mind and consciousness are mysterious, or that they are reducible to brain matter. These are astonishing conclusions given the structures of conscious experience present over a lifetime across individuals (e.g. depth perception, language, reflective consciousness), and the mind's essential role in human action, society and culture—the things that differentiate us most drastically from the rest of the tree

of life. We have identified brain activity associated with experience, however we have not clearly articulated the details of the interface between biology and experience. Therefore, we have not articulated a satisfactory account of human nature. (This interface has, however, been discussed at length by philosopher of mind John Searle, who holds that consciousness and, by my reading, experience, emerges from the brain and is therefore a biological phenomenon.)

**Biological Identity and Phenomenological Perspective**

Epigenetics provides a better framework than pure physiology or neuroscience for understanding biology's relation to experience and the brain's relation to the mind. When I claimed above that my experience have an influence on my thinking and behavior, it seemed to be a qualitative. However, there is a body of evidence that links particular life experiences, such as migrating to a new climate or living in poverty, to particular epigenetic changes such as methylation status, that have physical and mental consequences (e.g. skin color and susceptibility to stress, respectively). If epigenetic dynamics change in response to experience, this implies that identity and human nature need to be studied *concurrently* through the lenses of biology (e.g. DNA sequence and epigenetics) and experience (e.g. mental life and phenomenology). If we can understand experience in terms of epigenetics and epigenetics in terms of experience, then we can, using molecular biology, epigenetics, phenomenology and sociology, hypothesize causal links between social and cultural phenomena such as poverty on the one hand, and their effects on biological phenomena such as gene expression on the other, and vice versa. With this kind of approach, biological identity is subject to the influence of mental states resulting from particular experiences, and mental states and identity are subject to the influence of biology on a conscious level.

Through this type of approach we can begin to resolve how experience shapes the brain, and how the brain shapes experience. To the latter point, I want to suggest the integration of a philosophical theory called *embodied cognition* (most succinctly developed by philosopher of perception Alva Noë for our purposes), which holds that experience is always from the perspective of being *embodied* and is grounded in an implicit *sensorimotor knowledge* we all posses. Under the approach, experience is treated as mutually, and equally biological and mental (perhaps *biomental*), without a clear demarcation. According to embodied cognition, I perceive things the way we do because I understand how my perspective changes with respect to the movement or possible movements of my body. For instance, from the embodied cognitive perspective, my perception of a sound is influenced as much by the position of my head, shape of my ear and body position relative to the sound as it is by the quality of the sound itself. Similarly for the visual perception of objects —I see an object as three-dimensional because I know, implicitly, that the object will reveal itself in accordance with my movement relative to it. If the body can influence experience, I maintain that genes can, as part of the body, therefore also influence experience. They are the gatekeepers to protein production in the brain that mediates neurotransmission, other neurobiolological phenomena and, by extrapolation, the action and behavior relevant to culture and society. Identity then, insofar as it is grounded in experience, action and behavior, can, again, be understood as a mental phenomenon subject to the influence of biology, and vice versa.

**Implications**

If identity, and human nature more broadly, are coherently and concurrently biological and mental, this has profound implications for neural science, neurology, psychiatry, psychology, sociology, philosophy and other fields. It implies that any study of *higher order* phenomena such as

consciousness, culture and community behavior *must* be considered in tandem with *lower order* phenomena such as gene expression and epigenetic regulation. This opens up a new sphere of possible questions about human nature that may have not been obvious in the past. For instance, a sociologist may become interested in genetic variants, a neuroscientist in the molecular biology of morality—the list goes on. Practically speaking, there are implications for the practice of medicine. For instance, we may begin to approach mental illness with a more holistic attitude, combining new methods in talk therapy in synergy with developing pharmacology approaches and mindfulness techniques. All this is to say that accommodation of the biological perspective into experience-based approaches and the experience-based perspective into biology may uncover fundamental truths about human nature.

**Works Consulted**

Darwin, Charles. *The Origin of Species*. Chapter 14.

Gage FH and Muotri AR. What makes each brain unique? *Scientific American*, Mar 2012. p28-31.

Insel TR and Wang PS. Rethinking mental illness. *JAMA*, May 2010, 303:19.

Kandel, Eric R. A new intellectual framework for psychiatry. *Am J Psychiatry* April 1998, 155:4.

Kandel, Eric R. The New Science of Mind. *The New York Times*, September 6, 2013.

Merleau-Ponty, Maurice. *Phenomenology of Mind*. Routledge.

Noë, Alva. *Action in Perception*. Representation and Mind Series, Bradford. 2006.

Ostrander, Madeline. What poverty does to the young brain. *The New Yorker*, June 4, 2015.

Pollard, Katherine S. What makes us human? *Scientific American*, May 2009. p. 44-49.

Searle, John. *Mind, Language and Society.* Masterminds, 2009.

Searle, John. *Intentionality.* Cambridge University Press, 1983.