

Avenanti and Aglioti observe that sensory and emotional components are represented in separate nodes of a complex neural network referred to as the “pain matrix.” They credit Lipps for the introduction of the idea of empathy into the psychology of aesthetics through his observation of individuals’ experiences while contemplating artworks. Lipps’ “extension of this concept to the domain of inter-subjectivity supported the notion that empathy is inherently linked to an inner imitation process” (p 235). Avenanti and Aglioti define empathy as the ability to have a direct experiential understanding of others’ feeling states and inner states (p 242). The capacity for empathy allows us to “directly recognize others as *persons* like us” (p 242). As they put it, “A basic mechanism in the empathic experience may involve the transformation of the third-person visual information about others into first-person bodily representations” (p 242). In some ways, we incorporate that which we witness. Somatic resonance—the ability to experience another person’s pain—is fundamental to understanding others and therefore essential to social cohesion.

Part 3 concerns “The Dream.” In chapter 12, “The Dream in the Dialogue Between Psychoanalysis and Neuroscience,” Mancia reminds us that Freud overturned the conventional meaning of dreams. Dreams, Freud argued, were not sent from the gods but were derived from our own unconscious wishes and sometimes from our fears. Freud began to theorize different systems, representing perception, memory, instincts, and reality.

Mancia observes that while dreams provide gratification of repressed desire, “they enable the unconscious to pick its way through censorship to reach the P-C [perception and consciousness] system” (p 306). He addresses some differences in the ways we now interpret dreams, highlighting the manner in which “the discovery of the implicit memory and the unrepresed early unconscious . . . and their connections with the experiences of early infancy—sometimes traumatic—has given the dream another, particularly valuable, dimension in theory and clinical practice” (p 312).

Mancia updates dream theory by addressing implicit memory and the early unrepresed unconscious, pointing out how the mother “contains, touches, watches, and speaks to the baby and her capacity for *rêverie*” (p 313), all filed in the baby’s implicit memory system. Although the child will have no conscious recollections of such interactions, Mancia points out that they will impact the child’s emotional and cognitive life, helping to reconstruct the past that this material impacts. Such material can “influence the infant’s mind and subsequent processes of repression” (p 314).

In part 4, “The Fetus and the Newborn,” Piontelli’s chapter addresses the emergence of behavioral phenomena and developmental trends observed in early life. It also identifies “mutual emotions” and their impact on twin fetuses.

Psychoanalysis and Neuroscience is an engrossing book. I recommend it for both its content and its insistence on a more interactive alliance between psychoanalysis and neu-

rosience as vital to fully elucidating the origins of particular feelings and memories. It is an important book for psychoanalysts, psychotherapists, and neuroscientists.

Ethel S. Person, MD
New York, NY
espersonny@aol.com

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1. Caruthers M. *The Book of Memory: A Study of Memory in Medieval Culture*. Cambridge, UK: Cambridge University Press; 1994.

MIND WARS: BRAIN RESEARCH AND NATIONAL DEFENSE

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MIND WARS IS APTLY TITLED. IN IT BIOETHICIST JONATHAN MORENO considers the intersection of brain research and national defense as well as his own ambivalence about such discordant applications.

More than a serious work of public policy, the volume is a son’s quest to understand the work of his psychiatrist father, who pioneered lysergic acid diethylamide (LSD) experiments in the 1960s and who associated with prominent investigators of that era. Among his father’s closest friends was Harvard psychologist Henry A. Murray, who developed personality and aptitude tests and was himself a collaborator of Timothy Leary.

Murray, “the paradigm of the dignified Ivy League professor,” was an icon in the Moreno family. Among the author’s treasured possessions is a congratulatory letter from Murray to his parents when he was born. Consider Moreno’s shock when he learned of Murray’s other life: He had strong ties to the intelligence community as the Office of Strategic Services chief psychologist. During the Cold War, with support from the intelligence community, he conducted personality studies on Harvard undergraduates with the intention to optimize enemy agent interrogation and prisoner-of-war resistance. The studies “involved psychological torment and humiliation.” Among the 21 subjects was Ted Kaczynski, the eventual Unabomber, who was enrolled in 1959, when he was a Harvard sophomore.

Moreno categorically condemns Murray because his subjects had little to gain and were exposed to considerable risk, violating any sense of ethical proportionality. Definitively, he asserts that “by any reasonable measure, the Murray experiment flunked that test.” This is more than an objective assessment of fact. It is also a subjective renouncement of a personal hero who breached the trust of his student-subjects and the admiring Moreno family.

The Murray saga left an imprint on Moreno’s ethical sensibility as he considered the rendezvous of soldiers and science, national security imperatives, and the

equally compelling question of “cognitive liberty.” There is both intellectual fascination with the work and ethical repulsion, perhaps reflective of a deeper fear about a betrayal of trust. This ethical stance is accentuated by the first-person voice that often enters the text, as when Moreno recounts his experiences as a staff philosopher on high-ranking commissions such as the presidential advisory committee on human radiation experimentation. These autobiographical digressions add color to the science and indicate the author’s familiarity with the array of federal agencies involved in national security and medical research.

Among them is DARPA, the Defense Advanced Research Projects Agency. DARPA draws special attention because of its funding of unclassified studies conducted at various universities. Included in such work are conventional prosthetics research and “neuromics,” an effort to have machines and brains interact to improve real-time human performance in battle. A related program is AugCog, Augmented Cognition, which seeks to blur the “boundary between artificial and natural intelligence.” This would use helmets that sense a soldier’s emotions and then transmit appropriate combat orders based on telemetric findings. When in place, these devices theoretically could rob combatants of autonomous behavior, conceivably depriving them of making ethical choices.

These efforts are linked to other DARPA programs to improve the “war-fighter’s” endurance, alertness and vigilance. Research is also pursued on the differential genetics of the fear response, in pursuit of a hypercourageous, though perhaps judgment-impaired, soldier.

Other agencies have funded projects on remote viewing to cultivate a capability to visualize what one has never seen; neuroimaging to identify potential terrorists based on specific activations in response to faces of known terrorists; and efforts at brain fingerprinting, an oxymoron belied by its improbability.

Some of this stuff is frankly unbelievable and highly speculative. Indeed, Moreno’s frequent allusions to *Star Trek* made me wonder whether this was science or science fiction. Separating fact from fiction is critical, because this essential insight will assist us in the regulation of neuroscience research, potentially squelching promising developments if we mistake fantasy for reality.

This is more than an academic concern. The emerging—and promising—field of deep brain stimulation and neuro-modulation continues to labor under the hyperbolic fears about mind control alleged during the psychosurgery debate of the 1960s and 1970s. This wariness persists despite the conclusion of the 1977 National Commission Report on Psychosurgery that dismissed these fears as unfounded.

While Moreno is right to warn of future threats to an open society, I worry that his nonclinical perspective and immersion in the national security complex has led him to see that sector, vs that of civilian medical research, as the engine of clinical innovation. Midvolume he confesses:

If mind reading and ideas about eventual mind control are oversold, and whether some of the technologies I’ve described turn out to be successful or only a passing hyped fantasy, it is important to remember that the basic point of neuroscience is to gain knowledge about the human mind that might someday be important in fighting neurologic diseases. Yet not even the most seemingly benign brain research project—even one that is funded only by civilian health research agencies—can totally escape the attention of those concerned about civil liberties.

Achieving this balance will have critical implications for our understanding of dual-use research and innovations that can both benefit humankind and make war on us. To stigmatize research because of speculative harms when therapeutic benefits are at hand would be a defeat in the war on brain-based illness.

Moreno deserves credit for having the courage to go where no bioethicist has gone before. His philosophical forays into mind-brain questions are learned, and his narrative about the rise of big science and the “garrison state” represents a provocative historical synthesis. His endorsement of continued funding of DARPA to sustain valuable dual-use studies and keep contentious work in the sunshine of the civilian academy is pragmatically wise. So too is the suggestion of a national security advisory board for neurosecurity under the auspices of the National Academies.

Mind Wars is not the last word on this fascinating, frightening, and potentially transformative corner of neuroscience and neuroethics. But it is the first.

Joseph J. Fins, MD
Division of Medical Ethics
New York Presbyterian-Weill Cornell Medical Center
New York, NY
jjfins@med.cornell.edu