CHAPTER 8

PEDAGOGY AND THE HERMENEUTIC DANCE: MIRRORING, PLASTICITY, AND THE SITUATED WRITING SUBJECT

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The move away from Linda Flower and John R. Hayes' cognitive process model was driven in part by the writing studies' need to acknowledge the social contexts in which writers (including student writers) write. The cognitive process model is based upon four interrelated principles: that the writing process is best understood as "a set of distinctive thinking processes," which are used during the act of composing; that these processes have a "hierarchical, highly embedded organization;" that the act of composing is guided by the "writer's own growing network of goals;" and finally, that goals are created based on the writer's purpose and on new information gained through the act of writing itself (Flower & Hayes, 1981, p. 366). This conception of process, along with the protocols from which it was derived, did a great deal to advance composition as a discipline, and to expand the focus of writing instruction from the document produced to include the writer herself. This, in turn, brought the identity and constitution of the writing subject into the scope of inquiry. For example, in 1976, Susan Miller wrote that the writing process is "personal, private, and necessarily self-expressive" but ultimately the product was "public" and "judged by someone else" (1976, p. 94). Almost 25 years later, Thomas Kent (1999) wrote that writing was always "public, interpretive, and situated," ushering in the postprocess movement (p. 1). Although Miller's description evokes a consistent, though internal, process that is exported to be judged by a member of the public, Kent's description evokes a more fluid process by which external and social forces are internalized to shape the writing subject, who engages in a process of public expression.

Just as recent interest in neuroscience provides the opportunity to revisit cognitive process theory, so too does it serve as an opportunity to recontextualize Kent's 1993 paralogic rhetoric, from which the tenets of postprocess theory emerged. Kent's initial argument was that meaning is always negotiated through a "her-

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meneutic dance" (1993, p. 87), in which communicating parties "shift ground" through "guesswork" (p. 40) until they reach a moment of "triangulation" (p. 89) in which one's own mind, the mind of the other, and the shared world are all in accordance. This process is not a generalizable one, because each communicative interaction takes place during a specific, unrepeatable moment in time; it is not a rational one because triangulation may be based on such things as "skill, intuition, taste, and sympathy" (Kent, 1993, p. 40). Kent provides a useful starting point for several reasons: (1) his theory is an attempt to theorize the social mind; (2) it has been revisited, developed, and criticized at frequent intervals over the last fifteen to twenty years; and, most importantly, (3) its central metaphors of triangulation and hermeneutic dance intuitively map onto the concepts of affective neuroscience I will address in this chapter: mirror neurons and the plasticity of the brain.

The shift away from cognitive process, beginning with the social turn and extending through postprocess and beyond, has taken place against a backdrop of increased general philosophical and cultural attention to the affective, material, and contingent, a move which has, in many ways, ushered in a new wave of interest in brain science. In the 1990s, as the energy behind the cognitive process model was waning, interest in neuroscience, particularly in the areas of affect and plasticity, was gaining momentum. Taken together, these advances seem intuitively to support a move beyond a monolithic and decontextualized model of the cognitive process, and what we, as teachers, know about the role of affect in the writing classroom. While some critiques of process theory made from a postprocess perspective have been reductive, the hierarchical logic of cognitive process theory, while recursive, is not situated. Subsequent theoretical turns have deepened the consideration of context and situation as constitutive of the writing subject, first socially and discursively, and more recently, materially. Similarly, cognitive science has shifted its attention from abstract, "hardwired," and hierarchical cognitive processes to networked, plastic, neurological processes. In other words, thinking about the writing subject from a neurological rather than cognitive perspective is analogous to thinking about writing from a postprocess rather than process-oriented perspective.

Neurological inquiry into the writing process provides a mechanism by which to extend the composition theories roots in the cognition, while also incorporating a more complex and expansive notion of identity, in which the writing subject is also a historical and embodied subject whose past and current environmental conditions and experiences, both discursive and non-discursive, serve as ground for cognition. However, it is the temptation of hard science's aura of "epistemological certainty" that led Chris Mays and Julie Jung (2012) to warn against a wholesale incorporation of neuroscience. However, as Mays and Jung further point out, neurorhetorical inquiry differs from cognitive pro-

cess theories in that it "presupposes the *un*finished nature of these [cognitive] processes for purposes of foregrounding the contested claims, competing epistemologies, and diverse disciplinary perspectives that circulate in the intersection of rhetoric-composition and social neuroscience" (2012, p. 43). Though I agree that a hasty application of neuroscience to pedagogy is to be avoided, I also argue that the implications of a shift from a presupposition of finishedness to one of unfinishedness provides ample theoretical ground in which to work out some of the complexities of that very intersection. I further argue that, rather than framing neurorhetorical inquiry as an appropriation, a productive first step looks at rhetoric-composition theory *alongside* developments in neuroscience, regarding each as an iteration of a broader cultural and philosophical shift from a humanist to a posthumanist perspective, or, more specifically, a shift from a situation model to an ecology or assemblage model.

Neuroscience and rhetorical theory converge around questions about the ability to know the minds of others. Kent's paralogic rhetoric is based on triangulation, in which there are three points of alignment necessary for successful communication: we must know our own minds, the minds of others, and the shared world (1993, p. 89). For Kent, "we cannot know our own minds—the concepts that form our thoughts—without knowing the minds of other language users; consequently, no split exists between our minds of others or between our minds and objects in a shared world" (1993, p. 92). Kent characterizes this move as "radically anti-Cartesian," which it is indeed, in terms of the division between the mind of one and the mind of another. However, the means of communication via triangulation is still based upon conceptual and linguistic models, in which the point of triangulation's triangle is abstract and disembodied; the shared ground that creates facilitates understanding is discursive. However, the cognitive load of consciously triangulating each communicative interaction would be insurmountable and endlessly proliferating; there is no mechanism for connecting the two minds to the world. If, however, we consider how the body might be a conduit for understanding others in the world, we ground the mechanism of triangulation in such a way that each interaction is uniquely situated, but operates within the parameters of the material situation, and with a level of automaticity that is more aligned with lived experiences of communication. Mirror neurons and plasticity are two embodied mechanism for knowing the minds of others.

TRIANGULATION AND MIRROR NEURONS

One neuroscientific concept of particular interest to rhetoric and writing is mirroring, because of traditional interest in mimesis, and the more contemporary

role of modeling in learning and communication. In this volume, Dirk Remley points out that mirror neurons are central to persuasion, in that speakers will want to establish and maintain affinities with their audiences. Similarly, the neuroscience of mirroring behavior allows for a new reading on Kent's notion of communicative triangulation, in which the point of shared meaning is not abstract and conceptual, but rather an automated mechanism located in the very material of the brain. If we conceptualize mirroring as an automatic neurological function, it changes the way we think about how to foster the second of the habits of mind in the *Framework for Success in Postsecondary Writing*: openness. In particular, the third method of fostering openness is for students to "listen to and reflect on the ideas and responses of others." If, in fact, mirror neurons do what many cognitive neuroscientists claim they do, openness (and similarly, engagement, flexibility, and metacognition) is not based on consciously controlled intellectual intervention, but rather is a condition of embodied being, akin to Emmanuel Levinas' (1969) phenomenological account of the face-to-face encounter (a connection that Diane Davis [2010] makes in *Inessential Solidarity*).

Mirror neurons are associated with motor behaviors firing both in the performance of a particular action or expression, and when an action or expression is observed. The original experiment that led to the discovery of mirror neurons was conducted by a group of neuroscientists in 1992 in Parma, Italy, with the intention of examining the relationship between cells associated with perception and cells associated with movement. Through a serendipitous set of happenstances during these experiments, neurophysiologists Vittorio Gallese and Alvin Goldman (1998) noticed that clusters of cells in the F5 area of the brain lit up both when the macaque was performing an action, and also when they observed the action being performed. By 1996, they had coined the term "mirror neurons" to describe these cells (Gallese, Fadiga, Fogassi, & Rizzolatti, 1996).

Mirror neurons are instrumental for establishing an affinity with another person, by syncing up neural (and therefore limbic and kinetic) activities, and also for delineating the boundaries between self and other. More specifically, mirror neurons are located in the parietal and frontal lobes in humans, areas that are associated with motor function. In monkeys, mirror neurons fire in response to viewing transitive acts, or action associated with a concrete object, such as grasping an item of food. In humans, however, mirror neurons fire in conjunction while viewing both transitive acts and intransitive acts, which are not associated with a concrete object (Rizzolati & Siniglia, 2008, p. 117). Additionally, mirror neurons fire differently for the same action according to the intention behind the action, such as reaching for a cup to drink from it vs. reaching for a cup to clear it from the table (Iacoboni, 2008; Rizzolati & Siniglia, 2008). The combination of these two factors allows for the possibility that the mirroring of

gestures and bodily comportments are a means for the transmission of affects. This is a radical shift away from the traditional Cartesian relationship between mind and body in which the body is a ground and a conduit, rather than a container, for emotion and cognition.

Due to the radical implications for subjectivity, identity, relationships, and learning of all kinds, upon their discovery, mirror neurons become the focus of scholarly attention at an exponential rate. In 2000, four papers were published with mirror neurons mentioned in the title or abstract. In 2010, there were 135. By 2008, Marco Iacoboni was making such claims as:

> Building on and paralleling the research on monkeys, brain imaging and magnetic simulation data on humans have revealed a mirror neuron system that fulfills the same functions that it does in monkeys. In humans, however, its role in imitation is even more critical because imitation is so foundational for our exponentially greater capacity of learning and for the transmission of culture. Human mirror neuron areas also seem important for empathy, self-awareness, and language. (p. 260)

According to Iacoboni, we understand one another's emotional and affective states most quickly and effectively through mirroring and embodying the affect ourselves. Mirror neurons fire in response to the expressions and gestures; those responses extend into the limbic system, which governs the endocrine and autonomic nervous systems (and also includes the amygdala, which is central to primary emotion and affects social decision-making). According to some research, the neural foundation of mirroring behaviors provides the embodied basis by which "the sender and receiver [are] linked by a common understanding of what counts" (Rizzolati & Sinigaglia, 2008, p. 153). In other words, mechanisms of communicative triangulation are embodied, and the material mechanisms by which we understand contexts for utterances and gestures are inextricably linked to emotional centers in the brain. With time and repetition, connections and pathways are built into the brain itself; there is no clean delineation between the material and social because our bodies and brains are shaped by our movements through and within social forces and practices just as surely as the practices are shaped by material conditions.

Like Iacoboni, many neuroscientists argue that work on the role of mirror neurons in affectability suggests that a great deal of the openness necessary for "reading" people's intentions and emotions is shorthanded neurologically. One illustration of this is a study by David Neal and Tanya Chartrand (2011) conducted a study on people's ability to recognize and interpret the emotions of

others based on the mirroring of facial expressions. The experiments in the study asked subjects to identify emotion portrayed in photographs that are cropped to reveal only the eyes and eyebrows. The first experiment of the study examined the emotional response of people who had received Botox injections, which hamper one's facial mobility. The second experiment used a restricting gel to increase skin resistance to muscular contractions, which in turn strengthens the neural signal associated with the facial expression. The subjects who had received Botox performed worse than the controls at recognizing emotion in facial expressions, while those who had been treated with the resistance gel performed better. It is important to note that Botox recipients were still able to recognize the emotions of others at approximately the same rate (70%) as control groups; however, they were significantly slower at doing so (Neal & Chartrand, 2011, p. 5). Neal and Chartrand concluded that mirroring behaviors, enabled by neural mechanisms, moderate the recognition of emotional states, suggesting that, in the absence of an inhibiting factor, the recognition of others' emotions is embodied and automatic. In the presence of inhibiting factors, expressions and comportments are "read" consciously and cognitively, through theory-building, rather than automatically and affectively. In addition to the emotional reading described by Neal and Chartrand, additional processes traditionally thought by neuroscientists to be "higher order and therefore attributed to cognitive systems; for example the perception and recognition of actions carried out by others, imitation, and gestural and vocal communication" may in be supported by the neural substrate that lies in the motor system (Gallese & Goldman, 1998; Rizzolati & Siniglia, 2008, p. 20).

The flurry of scientific interest in the potentially revolutionary implications of mirror neurons beginning in the 1990s also resulted in an increased incorporation of neuroscientific concepts in pop culture. In 2012, *Wired* magazine called mirror neurons "the most hyped concept in neuroscience," citing unsubstantiated claims made online and in social media, in which mirror neurons were touted as the cause for everything from people's enjoyment of romantic comedies to the benefits of hospital patients' having visitors (Jarrett, 2008, para. 4). Products and services were developed: Lumosity.com, for example, claims in its TV ads to offer "a workout for your brain" (Lumos Labs, 2012). Similarly, Neurodrinks claim to be "functional beverages based on science," containing ingredients designed to enhance energy, focus, sleep quality, or to reduce stress (Neuro, 2016, para. 2). In short, the rapidity with which neuroscience concepts, most often mirror neurons, were appropriated into popular culture made it difficult to sort out relevant discoveries, like those of Rizzolati and his team, from reductive misappropriations of the research.

Despite the rapid public interest in neuroscientific concepts in the 1990s

and into the twenty-first century, some in the scientific community were more skeptical of the implications of mirror neurons than Iacoboni. For example, the connection to higher-order linguistic and cognitive function is not fully accepted. Robert Spunt and Matthew Lieberman (2012) claim that making judgments about emotion relies on the mentalizing systems, which are separate from the mirror systems; this reliance, they argue, "severely undermines the notion that the mirror system is the primary basis for emotion understanding" (p. 2). In 2008, Gregory Hickok published an article pointing out eight problems with mirror neuron theory, which was the basis for his 2014 book *The Myth of Mirror Neurons: The Real Neuroscience of Communication and Cognition,* which argues that there is not sufficient direct evidence that mirror neurons are the basis of action understanding in monkeys, and that in human cases the evidence actually makes a case against the theory.

Controversies like these serve as the basis for Jung and Mays' caution, cited above, against the wholesale adoption of neuroscience into writing studies, despite composition's historical association with cognitive science. The first wave of cognitive inquiry in composition—Flower and Hayes (1981), Janet Emig (1977), and others—did a great deal to lend disciplinary legitimacy to composition, similarly based on an aura of certainty. While the specific mechanisms of mirror neurons remain in question, which merits caution about certain types of appropriation, it is also the case that the phenomena related to mirror neurons are more relevant to writing studies than the neurons themselves. As Dylan Dryer and David Russell point out in this volume, "[North American Writing Studies] wants to change the way we think about writing and help people understand how writing makes us think, without much background or interest in the specific mechanisms of how 'thinking' and 'writing' gets done." While in many ways this is a critique of the field, it is also the case that the epiphenomena of connection, intersubjectivity, and mind-reading, because of their radical implications for identity and subjectivity, are relevant to writing studies whether mirror neurons are their mechanism or not. Developing and assessing teaching practices based on intersubjectivity is in line with a broader cultural and philosophical shift of which mirror neurons are just one part.

The complexities of social interactions are such that these habituated connections and responses are a way to offload a great deal of the cognitive and conceptual work necessary to establish a common communicative ground. Iacoboni (2008) describes this new understanding of how we understand one another as a radical departure from what he calls "theory theory" (p. 71). He explains that, prior to the discovery of mirror neurons, a small number of scholars proposed an alternate theory, known as "simulation theory." In the "moderate" version of simulation theory, people understand the minds

of others by engaging in a "cognitive, deliberate, and effortful" process of envisioning themselves in the other's position. In the "radical" version of simulation theory, we envision ourselves in the other's position through some sort of automatic process. Iacoboni states: "On this question I am a radical, since this automatic, unconscious form of simulation maps well with what we know about mirror neurons" (2008, p. 73). Since the discovery of mirror neurons, and subsequent studies by Iacoboni and others, simulation theory is now the more accepted theory of how we know the minds of others, even though questions about the role of mirror neurons have been raised. Even the Parma groups' most stringent critics, such as Gregory Hickok, acknowledge that both of these channels exist. Hickok's primary critique is not about the channel itself, but about his skepticism that cognitive information flows that way. Most people who are neurotypical and in familiar situations rely on automated interpretation and understanding of people's affective states, depoying a cognitive and rational process in situations in which the simulation channel is not effective, as demonstrated by Neal and Chartrand.

Iacoboni, in particular, explicitly links his own findings about mirror neurons to Maurice Merleau-Ponty's (2002) philosophies of embodiment and subjectivities/intersubjectivities. Merleau-Ponty's concepts of embodiment are also significant to the philosophical lineage of the materialist and posthumanist turns in rhetoric (they are also cited by Dryer and Russell in this volume). For the purposes of rhetorical theory, this parallel is most useful as a way to consider material iterations of the social than as an unqualified description of the mechanisms at play; it is this permeable and plastic vision of the social body, I argue, that has fueled the recent fascination with neuroscientific inquiry across disciplines and cultural venues. The overarching ideas of intersubjectivity and automaticity that make the potentialities of mirror neurons so radical are also at play in the rhetorical theories of the last 15 years, which are based on ecological models (Edbauer, 2005), posthumanist philosophies (Hawk, 2011), and attunement to one's environment and those who share it (Rickert, 2013). All of these rhetorics share, along with Merleau-Ponty, an attention to the body as an instrument of affect, which is prior to and shapes cognition.

PLASTICITY AND THE HERMENEUTIC DANCE

Though brain structure and function govern behavior in the abstract—meaning that the brain in the processing center in which perceptions are connected to one another and responses are generated at the cognitive level—in the enworlded body, behaviors and brain structure develop in a reciprocally parallel fashion. Just as the brain is useless without the senses, sensory organs, and nervous sys-

tem as a means of input, the body is useless without a world to perceive and interact with. A brain without a world has no experiences. When experiences are repeated, neural activity in the relevant areas of the brain is reduced relative to the neural activity associated with a novel experience. This is a result of irrelevant neurons "dropping out," leaving the relevant neurons to be more tightly associated with one another (Wig, Grafton, Demos, & Kelley, 2005, p. 1228). This is one reason why an expert performing a task shows less neural activity than a novice performing the same task; the brain has, through repetition, become more efficient with practice. This kind of brain reconfiguration is known as neuroplasticity. Though the most dramatic examples of and studies about neuroplasticity are among people who have sustained brain injuries or had strokes, which require that entire areas of the brain be remapped. However, the same basic phenomenon is at work in any form of learning.

Like mirror neurons, neuroplasticity is associated with motor function and emotional resonances more than with cognition as such; additionally, they are the mechanism by which embodied interactions with our environments and people in them sculpt the material of the brain, eliminating the boundaries between material and social. Very few characteristics are immutable. Some aspects of the genetic code are "hardwired," but most other aspects of subjectivity are plastic at various levels. Theories about brain structures that indicate that behaviors are hardwired were based in the now-obsolete idea that the brain did not produce new cells over the course of the lifetime, and further, that neural cells had specific roles that could not be changed (Draganski, et al., 2004). Though it is true that brain cells do not reproduce through mitosis, as do most cells, new brain cells can emerge from stem cells. Furthermore, existing brain cells can be reassigned to any role that becomes necessary based on interactions with the environment. The behaviors of the person, the tasks they perform, their interactions with the physical environment, are materially recorded in the structures of the brain, here pruning connections, there building them up with time and repetition, much like geological shifts from erosion and deposition. The brain is a relief map of enworlded experience, created through "a complex, multistep process that includes numerous time-dependent events occurring at the molecular, synaptic, electrophysical, and structural organization levels" (Sagi, et al., 2012, p. 1195).

Intimate and sustained interactions with people contribute to the maps of our brains. Our emotional experiences and routines are written on the brain and body, in ways that can be as fleeting as an adrenaline rush or as constant as embodied life itself. We can be conceptually primed to perform better in a singular and specific context, such as a test, or we can be primed and habituated throughout our lives with cultural expectations about our racial, ethnic, or gen-

der identities. Because the brain is the point at which perception, sensation, habit, and thought converge, it makes a certain kind of sense to draw a boundary at the skull and say that our brains are us, my brain is me. But, as Alva Noë (2010) argues, without a body and without a world, the brain is no more definitive of who we are than the appendix. Noë states ". . . the world itself can be described as belonging to the very machinery of our own consciousness. This isn't poetry; this is a well-supported empirical hypothesis. Perceptual consciousness, at least, is a kind of skillful adjustment to objects (and the environment) (2010, p. 65). As long as we have living bodies, objects and the environment are always already priming us to adopt a specific comportment within the world. Or, as Dryer and Russell put it in this volume, contextual effects not only interact with, but co-produce "the complete organism, including the nervous system—and the brain".

For example, it is a commonplace in cognitive science that "neurons that fire together, wire together." In other words, the more frequently that a specific combination of neurons is activated through interaction with the environment, the more likely it is that sparking one of them will also involve the others, even in an instance which wouldn't if not for the history of connection, have elicited that response. In the short term, synaptic connections resulting from the release of neurotransmitters can be developed as quickly as two hours (Sagi et al., 2012). These quick connections are more likely to be associated with motor tasks, which are in turn, connected with emotional centers (Masterson, 2015; Sagi et al., 2012). Long-term changes associated with the acquisition of a cognitive skill over the course of weeks or months changes involve the development of new cellular structures (Sagi et al., 2012)

Because the changes to the material of the brain are incremental, multilayered, and contingent upon specific physical and emotional interactions, no two learning experiences are the same, even for a single person. Emotional resonances transmitted through the mirror systems can, in some cases, "enhance or inhibit" the formation of pathways in learning new skills (Immordino-Yang, 2008; Masterson, 2015, p. 1). The process of internalizing the goals of others "is critical for imitation or other social learning to take place, as well as for empathy, in essence the vicarious experience of another's emotional state" (Immordino-Yang, 2015, p. 69). Here we see the neurological parallel of Kent's initial critique of cognitive process: cognition and learning are not discrete, ahistorical functions that work the same way in different brains at different times; rather, all of the existing pathways in the brain created by prior knowledge, as well as relevant emotional and physical states in the moment create the conditions that determine whether and how well one will learn. The neuroscience of affect as a substrate of cognition tells us more about pedagogy than the cognitive process of writing itself.

THE SOCIAL BRAIN IN THE WRITING CLASSROOM

Reflecting on his attempts to enact a pedagogy rooted in postprocess theories (despite the theories' own critique of the pedagogical imperative) Matthew Heard (2008) points out that the practices in which he and his students engaged were not substantively different from process-oriented practices: ". . . I continued to deploy draft workshops, in-class writings, group work, and even lecturing. The subsurface difference, however, was in the epistemological stance underlying the selection and implementation of each assignment and activity" (p. 295). These epistemological differences emerged in the relationships cultivated in the classroom. Similarly, Gary Olson (1999), Lee Ann Kastman Breuch (2002), and Paul Lynch (2013) invoke the importance of, as teachers, adopting a comportment of receptivity and openness. As in Kent's metaphor of the dance, in the end Breuch's argument is that the major goal of a pedagogy is a conscientious attunement with students' needs: "It means becoming teachers who are more in tune to the pedagogical needs of students, more willing to listen, more willing to *be moved* by moments of mutual understanding (2002, p. 146, emphasis mine). Both Breuch and Kent resort to metaphors of movement in their descriptions of what postprocess theory is really about; this points to the implicit but central role of affect in postprocess theory. Like Davis (2010), Olson (1999) draws upon Donna Haraway and Jean-François Lyotard, for whom "what is needed . . . is to move away from a discourse of mastery and abstract cognition toward a way of being that recognizes affect, the body, and openness" (p. 13). In other words, theory and practice fall into sync as affective practices and the structures in which they take place are taken as seriously as formative elements as are the narratives surrounding them. The practices themselves are the same as those in process, but teacher/student interactions and institutional structures, which were always-already functioning alongside traditional pedagogical narratives, are acknowledged as an inherent part of rhetorical learning.

In many ways, the habits of mind outlined in the *Framework*—curiosity, openness, engagement, creativity, persistence, responsibility, flexibility, and metacognition—are a way of answering the "Monday morning question" posed by postprocess pedagogies. As described by Lynch (2013), the Monday morning question is when, in response to a new theory, one is compelled to say, "That's well and good, but what do I do when the students show up on Monday morning?" In other words, the habits of mind are a practical means to address the social brain. Cognitive processes are no longer self-contained and knowable, and so the habits provide a means for managing the affective and behavioral conditions in order to indirectly facilitate learning within the traditional composition classroom structure. However, while the habits do respond to some of

the critiques posed by postprocess theories, specifically those about emotion and investment, they remain an attempt to create a systematic method of meeting institutionally determined goals. Such is the nature of the classroom. However, at its heart, postprocess theory is not only or even primarily a critique of process; rather, it is a critique of the rationalist institution that creates conditions that require cognitive process theory.

Though the habits of mind accommodate affect and behavior, they are not a means of incorporating automaticity into the structures and practices of writing instruction. As Sidney Dobrin (1999) pointed out, ". . . the knowledge that one is in a situation has no particular payoff for any situation you happen to be in, because the constraints of that situation will not be relaxed by that knowledge. . . . Being told you are in a situation will neither help you dwell in it more perfectly nor to *write* within it more successfully" (p. 351). In the context of the hermeneutic dance, then, an abstract understanding of the steps does not help you perform the steps more successfully or gracefully. The epistemic framework supporting a set of classroom practices will inform the instructor's performance of the steps and affective orientation toward the student(s), but an assertion of that framework does not offer more information to those within the situation than does simply working within it. Automaticity is best developed through one-on-one, problem-based interactions (Immordino-Yang, 2008, p. 71). From a postprocess perspective, Kent and Rául Sánchez (2011) have both advocated for a one-on-one mentoring system, in order to provide the flexibility and deep situatedness that best replicates a "real" writing situation.

As Charles Bazerman points out in this volume, "cognition and affect are best studied as responses to real writing situations and tasks." The converse is also true: writing is best learned through the repetition of cognition and affect in response to real writing situations and tasks. In what ways can we, as teachers and scholars, be receptive to the greater unpredictability inherent in engineering rhetorical situations and allowing them to develop? Many programs have moved in this direction by incorporating writing across the curriculum, writing in the disciplines, service learning and other client-based projects, as well as a vertical integration of writing instruction. These types of instruction are not necessarily considered postprocess, despite the fact that they provide the institutional infrastructure to enact postprocess theories within the context of the university: spaces that allow for the affective and material constituents that exceed the composition classroom to be integrated into learning, but that also do not remove the writing subject from the equation altogether.

In conclusion, Kent's (1993) notions of triangulation and the hermeneutic dance serve as useful analogues to the neuroscientific concepts of mirroring and plasticity. These concepts are mechanisms that demonstrate that emotion and

cognition is distributed among individual subjects, and that experiences shape the material of the brain. Kent's theory of paralogic rhetoric was an attempt to explain how people know the minds of others in order to communicate; it served as the basis for postprocess theories, which have been revisited periodically in writing studies since 1999. Each iteration of postprocess theory has more deeply integrated the role of affect and the body into the construction of the writing subject, and has more widely distributed the component elements of cognition. By 2011's edited collection *Beyond Postprocess,* many of the extensions of Kent's initial argument were influenced by posthumanist and new materialist philosophies. In these theories of mind and body, cognition is distributed among bodies, technologies, and environments, and the workings of the brain are conceptualized according to a networked logic rather than a computational logic. In this theoretical space, the cognitive and the social are not opposing influences, but rather are inextricably intertwined. As a result, while cognitive neuroscience dealing with the writing process itself remains in question, affective neuroscience has emerged as an influence on pedagogies and teaching practices.

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