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In Memory

Cora Parker Thomas (1885–1976)
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Shakespeare’s Brain: Embodying the Author-Function

DID SHAKESPEARE have a brain? “In proposing this slightly odd question, I am conscious of the need for an explanation.” Readers may recognize my second sentence as the first sentence of Michel Foucault’s “What Is an Author?” an essay that established its redefinition of an author as “a complex and variable function of discourse” so successfully that it is my question, and not Foucault’s, that now seems odd.1 Earlier critics used to assume, of course, that Shakespeare had a mind. G. Wilson Knight, for example, could argue that the “imaginative atmosphere” of Timon of Athens “seems to reflect the peculiar clarity and conscious mastery of the poet’s mind.”2 Knight’s sense that Shakespeare’s mind was both clear and masterful represents the kind of authorial control over a text that Foucault was particularly at pains to question. Psychoanalytic critics still assume that Shakespeare possessed the Freudian apparatus of conscious and unconscious minds, but the centrality of the unconscious mind to this approach allows these critics to avoid the assumptions about clarity and control that trouble other author-centered criticisms.3 The implications of a Shakespearean brain, however, have been almost entirely overlooked.

Shakespeare provides a particularly appropriate test case for a literary theory that purports to offer a new way of conceiving authorship, especially one that challenges the Foucauldian deconstruction of the author in several ways. Shakespeare enjoys a status in popular culture, in the Anglophone world and even beyond, as perhaps the archetypal author; the very nature and process of his authorship forms the subject of a recent popularly successful film. However, Foucauldian theory, along with a new emphasis on the collaborative nature of play production in early modern England, has led Shakespearean scholars to form more complex and qualified notion of Shakespearean authorship. A focus on Shakespeare’s brain allows us to attend to Shakespeare as author without losing the complexity offered by contemporary theory.

Using a cognitive literary and cultural theory derived from the cognitive sciences, I want to try to reintroduce into serious critical discourse a consideration of Shakespeare’s brain as one material site for the production of the dramatic works attributed to him. Current cognitive science offers the grounds for a number of theories of human subjectivity and language
that are beginning to be reformulated in ways that make them readily applicable to the reading of literary and cultural texts. Virtually all branches of cognitive science are centered on investigation of the ways in which the mind (the conscious and unconscious mental experiences of perception, thought, and language) is produced by the brain and other bodily systems. A literary theory derived from cognitive science, then, offers new ways to locate in texts signs of their origin in a materially embodied mind/brain. From this perspective, I argue that at least several of Shakespeare’s plays experiment with different forms of polysemy and prototype effects in ways that leave traces of cognitive as well as ideological processes in the text. Further, I show how these traces of cognitive process reveal not only the possibilities but also the limits of individual agency within a biological body and a cultural matrix. I suggest that cognitive theory offers new and more sophisticated ways to conceive of authorship and therefore offers new ways to read texts as products of a thinking author engaged with a physical environment and a culture.

Cognitive theory has provided a number of approaches to literary texts, but my emphasis here is on the spatial patterns and structures, derived from early experiences of embodiment, which at least some cognitive scientists posit as the bases of human thought and language. I argue that in each of the plays examined here a network of words, connected in part by spatial metaphors, functions as a structural element that reflects in its outlines some of the patterns and connections of Shakespeare’s mental lexicon. I believe that Shakespeare uses these words as focal points for explorations of the spatially centered experiences of cognitive subjectivity, as it figured in the development of the “individual” in the early modern period and as those new individuals were represented by fictional characters on the space of the platform stage. In many ways the plays are as much about the coming into being of cognitive subjects in a variety of environments as they are about the construction of cultural subjects by a variety of discursive formations; the plays represent what it is like to conceive of oneself as an embodied mind, along with all of the problems and dilemmas that condition entails.

As F. Elizabeth Hart argued recently, contemporary materialist theory remains haunted by lingering and unacknowledged formalisms inherited from Saussure and Derrida. A corollary of this foundational formalism, to which I will return, is the tendency of many recent materialist critics to assume that the physical reality of Shakespeare’s body had little relevance to the texts of his plays. Following Foucault, they disperse the Shakespearean body into an immaterial author-function, occluding Shakespeare’s material existence in time and space. As Graham Holderness, for example, suggests, “These plays were made and mediated in the interaction of certain complex material conditions, of which the author
was only one.” The consequence of this realization, however, has not been to consider the place of the author as one material condition among many; instead it has been to “deconstruct the Shakespeare myth” in order to discover “a collaborative cultural process” in which the role of the writer is effectively written out. Examination of authorship as “a collaborative cultural process” has, in fact, proceeded along the lines suggested by Foucault, with questions about authorship shifted to such broader questions as, “What are the modes of existence of this discourse? Where does it come from; How is it circulated; Who controls it? What placements are determined for possible subjects?” (138).

Now, questions such as these have become common starting points for several approaches to Shakespearean and other early modern texts. One especially valuable kind of study has pursued the implications of the collaborative nature of textual production in the Elizabethan and Jacobean theater and in the preparation of printed texts of the plays. Margreta de Grazia and Peter Stallybrass, for example, have argued that acknowledging “the materiality of the Shakespearean text” leads to an interrogation of “the category of the single work,” that of “the discrete word,” “the unified character, who utters the word, and the autonomous author, who is credited with the work.” They quite rightly point out the many ways in which the Shakespearean text is fractured and multiple, a product of a “collaborative field” rather than a single controlling genius. Their conclusion, however, is strikingly similar to Foucault’s: they end with an almost identical call to dethrone the “solitary genius immanent in the text,” which is, “after all, an impoverished, ghostly thing compared to the complex social practices that shaped, and still shape, the absorbent surface of the Shakespearean text.”

Although Stallybrass and de Grazia break new ground in applying Foucault’s insights more specifically to the processes of textual editing, the trajectory of their article essentially retraces Foucault’s well-worn path and ends in the same place. It cannot get beyond this point, I would argue, because assuming a “ghostly” author involves denying the presence of a material human body as a central participant in the “complex social practices” shaping the text. And if the presence of the author is denied or circumscribed in this way, then any discussion of the nature of the social practices involved must be prematurely truncated. If we refuse to see the author at all, then the questions raised by Foucault can never be answered, only endlessly rediscovered and rearticulated.

Even Stephen Greenblatt finds his circulation of social energy in textual traces rather than in the processes of producing a text. He similarly begins with the concept of a total artist, “at the moment of creation complete unto himself,” and makes the expected move of rejecting him. He too rediscovers the “collective production of literary pleasure and interest,”
locating that collectivity on the even more basic level of “language itself” as “the supreme instance of a collective creation” (4). His rejection of admiration for the “total artist” in favor of the “study of the collective making of distinct cultural practices and inquiry into the relations among these practices” (5) leads to a by now familiar set of questions: “We can ask how collective beliefs and experiences were shaped, moved from one medium to another, concentrated in manageable aesthetic form, offered for consumption.” (5). Greenblatt’s use of the passive voice here signals his desire to avoid acknowledging the materiality of the author, for in strictly material terms it was the author’s hand that physically “shaped” letters on the page, the author’s eyes that scanned treatises on exorcism, the author’s brain that directed the transfer of bits of them to his own texts, the author who “concentrated” these bits into an aesthetic form and received payment when they were offered for consumption.13

Recently there has been a salutary emphasis on the importance of the material body in the early modern period; however, the body and especially the brain of the author have been signally absent from such studies, largely because of the continuing influence of Foucault and Althusser on theories of embodiment and subject formation. In *The Tremulous Private Body*, Francis Barker offered a Foucauldian argument that the early modern period saw a process through which the body was “confined, ignored, exscribed from discourse” in the interests of the formation of a disciplined and disembodied bourgeois subject.14 Recent work on the body has complicated and problematized Barker’s account, in most cases without eschewing the Foucauldian position that the body is a product of discourse and that the early modern experience of embodiment was constructed by the dominant classed and gendered discursive formations of the period. Jonathan Sawday, for instance, has argued that the Renaissance might be described as a “culture of dissection” that “promoted the beginnings of what Michel Foucault has analyzed as the ‘surveillance’ of the body within regimes of judgement and punishment.”15 Gail Kern Paster has similarly traced, in remarkable detail, the influence of the prevailing early modern theories of humoral physiology on the experience of embodiment as depicted in drama of the period, especially as it supported “continuous interpellation of the subject” based on “an internal orientation of the physical self within the socially available discourses of the body,” especially discourses of class and gender.16

Certainly, the effects of discourse in shaping perceptions of the body cannot be denied. As Paster argues, “No matter what the physical facts of any given bodily function may be, that function can be understood and experienced only in terms of culturally available discourses,” so that “the interaction between bodily self-experience and its discursive realization . . . takes place in and through culture or its more politically conceptual-
ized cognate, ideology” (4). However, this new scrutiny of bodily experience in relation to discourse has paid relatively little attention to the brain, the material place within the body where discourse is processed and therefore where discursive construction, if it occurs, must be located. This may well be because the formative theories of Foucault and Althusser provide little sense of the actual processes through which discourse becomes embodied within the human brain. As Judith Butler has remarked, Foucault “does not elaborate on the specific mechanisms of how the subject is formed in submission. Not only does the entire domain of the psyche remain largely unremarked in his theory, but power in this double valence of subordinating and producing remains unexplored.” Butler similarly notes that Althusser’s influential account of interpellation is presented, not literally (as it might occur within the subject), but as a staged “social scene” (the hailing policeman) that appears to be “exemplary and allegorical” (106). And Butler herself, in attempting to use psychoanalysis to understand the mechanics of subject formation missing in the accounts of Foucault and Althusser (and reciprocally to use Foucault and Althusser to provide a critique of psychoanalysis), takes up the Marxist and psychoanalytic terms for the location of the subject and the subjectifying process—soul, psyche, ego—but never considers the brain as the material site where discourse enters the body, where entry into the symbolic occurs, and therefore where the subject is constructed.

Scott Manning Stevens, in an essay tracing the seventeenth-century controversy over whether the heart or the brain was to be considered the seat of the soul and thus of the self, suggests that the heart remained a central popular and religious symbol of selfhood even after medical discourse began to recognize its location in the brain because “the brain... seems tied to its own physicality and function, oddly separate from the more evocative term ‘mind.’” Stevens argues that modern critics (like seventeenth-century writers) “may be simultaneously protective of the singularity of an individual brain while fearing that a deeper understanding of its functions will reduce mental life to a biological phenomenon (albeit wondrous) and not a spiritual mystery.” For Foucault and Althusser, it is perhaps power itself, and the processes through which it takes discursive form and penetrates the subject, that must remain mysterious, indeed mystified, a mystification that might be threatened by considering how discourse is materially processed inside the brain.

It is this failure to think about the brain that prevents most contemporary accounts of subject formation in the body from noting that just as surely as discourse shapes bodily experience and social interactions shape the material structures of the brain, the embodied brain shapes discourse. Terence Deacon argued recently that the human brain and language have evolved together, each exerting a formative pressure on the other. He sug-
gests imagining “language as an independent life form that colonizes and parasitizes human brains, using them to reproduce.” Deacon notes that “the relationship between language and people is symbiotic” and that “modern humans need the language parasite in order to flourish and reproduce, just as much as it needs humans to reproduce. Consequently, each has evolved with respect to the other. Each has become modified in response to the peculiar constraints and requirements of the other” (112–13). Thus, although Deacon acknowledges the powerful force of culturally shared symbolic systems in shaping our sense of self, he also describes in detail the processes through which the physiological constraints of the human brain have shaped our linguistic and symbolic systems.

While Deacon makes his arguments on an evolutionary scale, focusing on the long cohistory of language and the brain, critics like Elaine Scarry and N. Katherine Hayles have argued that individual subjects have a pre-discursive experience of embodiment that cannot be assimilated into discourse. Wilma Bucci provides a particularly useful synthesis of work by a number of cognitive scientists to summarize the position that “we can identify a prelinguistic stage in the thought development of the human child” wherein, through “perceptual analysis” of sensory experiences in the world, a child forms concepts “through image-schemas based on spatial structures.” Because most of our thought seems inextricably bound up with language, it may be hard to imagine that one can exist without the other. However, evidence for the existence of pre- or nonverbal mental function takes many forms; Roger Shepard and Jacqueline Metzler’s work on the mental rotation of three-dimensional objects provides a particularly clear example. They found that subjects who were asked to determine whether drawings of three-dimensional objects represented different orientations of the same object used a process of mental rotation, rather than logical or verbal analysis, to solve the problem. The cognitive psychologist Jean Mandler, who developed the theory of perceptual analysis, emphasizes that preconceptual image schemas are not accessible to consciousness, since “no language of thought is directly accessible,” and that they are not concrete, picturelike images but “dynamic analog representations of spatial relations or movements in space” that form a kind of “architecture” of thought: “its meaning resides in its own structure,” which can then be mapped onto conscious images and eventually language. George Lakoff’s theories of “experiential” conceptualization also suggest that our most basic concepts—up and down, inside and outside, movement toward a goal—are based on our experiences of living in our bodies, while Jean Mandler suggests a slightly different list of these schemas, including animacy, causality, agency, containment, and support. Gerald Edelman’s theory of “neuronal group selection” attempts to provide a neuroscientific model for the kind of “semantic bootstrapping” de-
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scribed by Lakoff, in which our embodied brains create meaning out of experience of an environment.27

More complicated linguistic structures and rational concepts are similarly built up on these basic spatial schemas. Mandler provides as an example the basic image schemas of “containment” and “support,” which, she argues, allow the early acquisition of the prepositions in and on in English-speaking infants.28 According to Lakoff, all thought is fundamentally “imaginative, in that those concepts which are not directly grounded in experience employ metaphor, metonymy, and mental imagery—all of which go beyond the literal mirroring, or representation, of external reality.”29 According to such a model, metaphor becomes not an aberration from or exception to primarily logical processes of meaning but a basic component of thought and language. As Mark Turner has suggested, “Processes such as metaphor and metonymy, which most linguists deport to the alien realm of literature, are implicit and indispensable in ordinary language.”30 Similarly Antonio Damasio has offered an account of the embodied brain that stresses the implication of feelings in the most seemingly rational processes of thought.31 Cognitive science thus provides increasingly convincing evidence that the body does shape thought and language, that the early experiences of living in the body are the armature on which consciousness and thought are formed.

The barrier to considering the brain of an author such as Shakespeare as one material source (among many) for his texts is, of course, that a long-dead author is not available to us in any living, material form. Any attempt to take into account even a living author must usually slide into talk about the immaterial “concepts” or “intentions” behind the material text that we possess. In The Material Word: Some Theories of Language and Its Limits the Marxist linguists David Silverman and Brian Torode clearly articulate this problem. Silverman and Torode argue against the Saussurian position that “linguistic communication consists in the transmission of immaterial ideas or concepts from one person (speaker or writer) to another (hearer [sic] or listener) by means of material signs such as marks on paper or vibrations of air waves.” They find Saussure’s belief in an extratextual “reality . . . which, he supposes, is somehow held in the brain of the communicating person,” to be the source of the problem since “the brain is unavailable to the researcher. Its content, conceptual or otherwise, remains mysterious, and can only be the subject of speculation or arbitrary assumption,” a “speculative mysticism” and, even worse, “idealism” in treating “the material sign as the mere appearance of an underlying ideal reality.”32 This “speculative mysticism” or mystification is the source of Stallybrass and de Grazia’s “ghostly” genius and Greenblatt’s invisible hand.
But Silverman and Torode’s assumption that “the brain is unavailable to the researcher” is not quite true, although literary and cultural critics almost universally proceed as if it were. Cognitive sciences—including cognitive psychology, neuroscience, linguistics, anthropology, and studies in artificial intelligence—continue to open windows into the workings of the brain and to explore the relationship between the material brain and our immaterial concepts of mind. Of course cognitive researchers are unable to understand completely even the simplest brain functions and so may seem very far indeed from explaining the processes that produced some of the most complex texts ever written. However, using computer models, studies of aphasia and other instances of brain damage, studies of language acquisition, linguistic errors, and categorization across cultures, as well as magnetic resonance imaging (MRI) and positron-emission tomography (PET) to reveal areas of activity as the brain carries out specific functions, these theorists are now beginning to chart the ways in which, to cite Stephen Kosslyn and Oliver Koenig, “the mind is what the brain does.”

Using this research to retheorize authorship does involve a potentially essentialist assumption that most human brains share biological and chemical components, but as we shall see, this assumption does not prevent a consideration of the ways in which material culture interacts with, shapes, and is shaped by those physical attributes. Indeed, cognitive science offers the more radical idea that social and cultural interactions have materially altered the physical shape of the brain. Nor does use of concepts from bodies of knowledge commonly called “sciences” prevent us from acknowledging the role of culture in shaping their assumptions and investigations. Although I want to avoid a scientific positivism that would consider scientific insights as objective knowledge superior to the tenets of literary and cultural criticism, I do believe that theory can be derived from scientific knowledge and considered to have truth value equivalent to that of other current bodies of theoretical speculation. I would only ask that we apply to cognitive theory the same tests we apply to other kinds of theory, that is, simply to consider whether it convinces or intrigues or interests us, and whether it provides us with a useful model for interpreting texts and cultures.

Cognitive scientists do not present a uniform version of the nature of “concepts” in the mind and their relation to language; however, as we have seen, they do complicate Silverman and Torode’s assumption that such concepts are necessarily and completely unavailable to us. Cognitive science at present comprises, roughly speaking, two broad approaches: the approach that holds that the brain works according to logical rules in ways that are analogous to digital computers and the one that argues that mental functions are shaped by their evolution within a human body and
are not essentially in accordance with formal logic or analogous to computer programs. These two approaches are not mutually exclusive in every detail, and although I use material from both, I have found the second, with its focus on semantics and the cognitive bases of meaning, to be more useful for the interpretation of literary and cultural texts.

Research on visual perception, memory, and category formation all suggest that concepts exist in the mind as visual models and also as discursive propositions, both developed from the preconceptual schemas described above. Cognitive scientists have suggested a number of ways in which structures of language probably reflect cognitive processes. From a cognitive perspective, the relationship between concept and language is significantly different from the paradigm suggested by the Saussurean semiotics on which postmodern literary and cultural critics tend to rely. John R. Taylor uses cognitive research in color terms to sketch out the differences between semiotic and cognitive theories of language. Saussure’s most influential arguments posited (1) that linguistic signs are arbitrary with respect to the connections between phonetic form and meaning and between meaning and the world. The phonetic form red has no necessary connection with the meaning “red,” nor does it have any necessary connection to any phenomenon actually existing in the world. In Taylor’s words, Saussure argued that “reality is a diffuse continuum and our categorization of it is merely an artifact of culture and language.” Saussure also held (2) that language is a “self-contained, autonomous system”: “concepts, i.e. the values associated with linguistic signs, are purely differential”; that is, they arise purely from difference from other terms in the system and not with reference to any extrasystemic reality. Silverman and Torode are not alone in accepting these Saussurean concepts as the basis of their theory of language and culture. As Hart has noted, Derrida’s Of Grammatology deconstructs Saussure’s distinction between speech and writing but accepts the basic concepts of arbitrariness, self-contained systemicity, and meaning produced by difference. Lacan, of course, similarly relies on Saussure for his account of the role of signification in the formation of the unconscious, as does Foucault for his argument that subjects are embedded within powerful discursive systems. In general, postmodern concepts of both the fragmented subject and its construction by an ideologically charged symbolic order can be traced to Saussure.

On the other hand, cognitive theory, in Taylor’s words, “strongly emphasizes the non-arbitrary, motivated nature of language structure.” From a cognitive perspective, language is shaped, or “motivated,” by its origins in the neural systems of a human body as they interact with other human bodies and an environment. This theoretical position has profound implications for postmodern concepts of subjectivity and cultural construction. In the first place, although the relationship between a partic-
ular phoneme *tree* and the concept that it represents is arbitrary, the meaning of the concept itself is grounded in the cognition and experience of human speakers and is structured by them. Cognitive subjects are not simply determined by the symbolic order in which they exist; instead, they shape (and are also shaped by) meanings that are determined by an interaction of the physical world, culture, and human cognitive systems. In Terence Deacon’s formulation, the human brain and symbolic and linguistic systems have coevolved, and each has exercised a formative influence on the other.

Research in cross-cultural use of color terms can convey the differences between semiotic and cognitive theory more clearly. A semiotic paradigm assumes that colors “exist” in the real world as an undifferentiated spectrum; thus, distinctions among different “colors” are completely arbitrary, a product of cultural convention. According to a semiotic model, all color terms in a system would have equal value because their meanings are determined by their differences from one another; red is red because it is not blue or green. Similarly, each “red” would be equal in status to every other “red.” The work of Brent Berlin and Paul Kay, however, suggests that those terms work differently. They found that although speakers of different languages tend to locate the barriers between color terms (e.g., between the terms for blue and green) quite differently, they nevertheless tend to identify the same shades of blue and green as “focal,” or exemplary, colors. As Taylor explains, “Although the range of colours that are designated by red (or its equivalent in other languages) might vary from person to person, there is a remarkable unanimity on what constitutes a good red.” Berlin and Kay also found that the color terms available in widely different languages tend to “progress” in a predictable way. If a language only has two color terms, they will designate focal black and white. If there is a third term, it will always designate red, and a fourth term will designate yellow or green, followed by blue, then brown, then gray, orange, pink, and purple in no particular order.

These findings correspond to research on human perception of color, which suggests that focal colors comprise wavelengths of light that affect the cone cells in the retina most strongly. Color is created, in Terence Deacon’s words, “by the brain as a means of maximizing distinctive experiences of photons striking the cones of the retina in blended streams of different wavelengths.” Through a process called “opponent processing,” the brain opposes signals from three different types of cone cell to obtain a “difference signal.” Deacon argues that this process of “opponent processing” yields the structure of “color complementarity”—that is, that colors exist in relation to one another on a color wheel, green opposite red and blue opposite yellow. Deacon further argues that this complementary structuring of the spectrum causes perceptual biases that, over time, cause
color names in all languages to evolve in similar ways. Colors may exist in nature as an undifferentiated spectrum, then, but the human perceptual system divides them in predictable ways. The meaning of red is thus produced by an interaction of wavelengths of light, the human retina, a human cognitive system that can extend the concept of red to other, similar but not identical colors, cultural conditions (e.g., the range of colors available in a desert environment as opposed to those available in a rainforest), and a system of signs that arbitrarily links the phoneme red with a particular set of sensory and cognitive phenomena. Meaning in this sense is not entirely arbitrary, nor is it wholly produced by differences within an independent and self-contained system of signs.

Color research (as well as other work on categorization) suggests that mental models of many concepts are probably stored in human memory systems in radial categories that yield “prototype effects”: when asked to make judgments about membership in a category, subjects identify certain members of the category as more typical examples of it than other members. As Taylor has suggested, prototype effects shatter the Saussurean assumption that all members of a category have the same status and also the classical logical assumption that categories have firm boundaries and that membership in a category is defined by a set of common features. Instead, a semantics based on the concept of prototypicality and related phenomena such as “domains,” “frames,” “scripts,” and “mental spaces” posits meanings that have fuzzy boundaries and emerge from complex sensory and cultural experience, structured by cognitive conceptual categories. Instances of multiple meaning such as polysemy, metaphor, and metonymy are, according to such an approach, not exceptions to regular rules of meaning but are instead manifestations of the ways in which structures of meaning normally work. Cognitive linguists have traced a number of ways in which word meanings are based on complex domains of cultural knowledge and are extended beyond their original reference through metaphor and metonymy to form “chains” of linked meanings. They have also shown how features of grammar are “motivated” by cognitive structures, for example, how tense sequence in English conditionals can be related to the structure of mental spaces that lie behind the semantic content of the sentence. Like postmodern theory, these cognitive approaches recognize that human cognition and the symbolic systems through which it works are neither unified nor primarily rational. For cognitive theory, however, the preeminence of fuzzy categories in human mental functioning does not imply complete lack of agency or a triumph of irrationality. If you do not expect human cognition to be unified or logical, a way is cleared to supplement deconstruction (which essentially rediscovers its fragmentation and irrationality over and over again) with analysis of the patterns that do emerge from cognitive processes.
These cognitive theories of meaning may, in fact, accord with early modern linguistic understanding and practice more closely than does a Saussurean model, much as the cognitive concept of an embodied mind seems closer to early modern humoral physiology than the radically dualistic post-Cartesian paradigm. Ellen Spolsky suggests that early modern paintings and texts often engage the relationship between mind and body in explicitly self-conscious ways.55 Judith Anderson has argued that early modern theories of word meaning were less “lexicalized” or restricted by an official dictionary definition than current theories and that they acknowledged a “fundamental metaphoricity” of language, which Saussurean linguistics would deny.56 Anderson, indeed, notes the resemblance between Lakoffian theories of metaphoric extension and early modern reliance on etymological links to concrete material roots in defining abstract words.57

We might even revisit Foucault’s influential argument in The Order of Things that the early modern period experienced a shift from categorization based on analogy to a more “rational” system based on difference. Foucault emphasized that this change involved “the substitution of analysis for the hierarchy of analogies,” an analysis that is now able to yield (in theory) a kind of certainty and closure that was not possible before: “Complete enumeration, and the possibility of assigning at each point the necessary connection with the next, permit an absolutely certain knowledge of identities and differences.”58 Foucault is, of course, concerned to question this certainty and to suggest the ways in which the new “rational” modes of analysis are themselves the products of (and necessarily biased by) discourse. However, his critique of rationalist analysis is contaminated by his own assumption of a Saussurean theory of meaning based on difference.59 In different ways, cognitive science has also come to question this classical rationalism and to replace it once again with a theory of meaning that is based on analogy, metaphor, and interrelationships between the mind and the world.60 Whereas Foucault was concerned to provide a critique of assumptions about the inevitability and truth of rationalism, cognitive theory moves forward, in a sense, to explore the implications and possibilities of its a-rationality but also helps us look backward toward systems of thought that preceded the ascendancy of reason.

Portraits of Shakespeare emphasize the large dome of his forehead, accentuated by a receding hairline; he must have had a brain. And if he did, and if sixteenth-century brains functioned even approximately as modern ones do, it must have comprised occipital, temporal, parietal, and frontal lobes, as well as the gyri and sulci (bulges and creases) that neuroscientists have identified as important landmarks within the brain.61 And if Shake-
spear’s brain functioned as most normal brains do today, then the formation of a sentence—“Whether ’tis nobler in the mind to suffer / The slings and arrows of outrageous fortune. / Or to take arms against a sea of troubles, / And by opposing, end them,” for example—probably involved activity first in the occipital, posterior superior parietal, and posterior inferior temporal lobes, central to the generation of mental images, and then in the perisylvian cortex (those regions of the brain located near the sylvian fissure, also called the lateral sulcus), where the images (slings and arrows, arms, sea) and concepts (grounded, perhaps, in a Lakoffian metaphoric structure, “life is a war”) would be associated with appropriate words and formed into a grammatically acceptable sentence. The construction of the sentence would probably have involved the formation and linking of several “mental spaces,” or temporary areas of knowledge, in this case, perhaps, metaphorical spaces (sea, arrows) that could be mapped onto a more abstract conceptual space (life is difficult; should I commit suicide?). Within those regions of his brain, complex neural networks working simultaneously (and for the most part without conscious awareness or direction) would first generate the image and then search Shakespeare’s associative memory for the appropriate lexical, cultural, syntactic, and grammatical information needed to form a meaningful sentence, and, once it was formed, send to his hand the neural messages necessary to record it on paper. The choice of individual words (my main concern in this book) would be shaped and constrained by stored prototypes (based on cultural knowledge), by the coordinate and collocational links within stored semantic fields, and by innate structures of syntax, sound, and lemmatization. Within Shakespeare’s brain, culture and biology met to form him as a subject and to produce his texts. Within the matrix of cultural prototype and biological structure, “Shakespeare” would nevertheless have experienced some sense of choosing from among various workable semantic and syntactic possibilities.

It is worth briefly considering why the insights of cognitive neuroscience and psychology have been so neglected by literary and cultural critics, who continue to rely on Freudian (or Lacanian), Derridean, Foucauldian, and Althusserian theoretical models for constructing their views of authorship and its relation to culture. One reason may be that these theorists and the critics who use them literally speak the same text-centered interpretive “natural” languages. Traditional theoretical models seem more relevant to studies of texts because they are themselves text-based. Unlike cognitive sciences, which take the brain as their focus of study and which often use formal languages (such as mathematics or computer “languages”) to describe them, the text-based theorists listed above study the literary and cultural productions of the mind and use recognizably literary discourses to interpret them. Because cognitive sciences are pri-
arily descriptive of physical states and processes rather than interpretive of the verbal and textual products of those processes, they seem less obviously useful as interpretive tools.

Another reason for our neglect of cognitive sciences may lie in their relatively primitive state and in the passionate disputes and disagreements that make their findings so controversial. Since cognitive scientists do not agree on such seemingly basic concepts as the nature of intelligence, the relative roles of innate capacity and cultural forces in developing cognitive abilities, and how the brain processes information, it might seem impossible to derive even a stable *theory* of mind from their morass of conflicting assertions. Nevertheless, I believe that cognitive theory may provide some help in getting around the current critical impasse between those who assume an author with conscious control over the text he produces and those who assume that cultural construction leaves little or no room for authorial agency. While it is true that many areas of cognitive science share a similar split between innatist and cultural constructivist views of cognition, the cognitive sciences do seem to offer more theoretical orientations that assume some combination of the two. Cognitive theory also treats consciousness, intentionality, agency, and meaning in ways that both resemble and differ markedly from most postmodern literary and cultural criticisms, so it offers the possibility of seeing our own most basic assumptions from a different perspective. The current theories of cognitive psychology seem to some extent to corroborate our view of the author as fragmented, unable consciously to control language, unable to evade the mandates of his culture. But they also open a space for a more informed speculation about the role of the author within culture and the role of culture within the author’s brain.

I want to begin by summarizing some of the suggestions about selfhood, consciousness, and especially language processing offered by researchers in cognitive neuroscience and psychology. Although to attempt such a summary at this point, when cognitive theorizing about these issues is provisional at best and when any such account must necessarily oversimplify complex issues, may seem foolish, I believe that it is important to provide a larger theoretical context, however tentative and piecemeal, for the linguistic concepts that are central to this book. Here again, on most of these issues it is possible to discern a split between cognitive scientists who view the brain as essentially computerlike—logical, mechanistic, processing (not creating) objective reality—and those who stress that brain function is biological, embodied, and not essentially logical.

In a sense the mind-body problem is easily resolved, as the philosopher John Searle has suggested. The passage cited above from Kosslyn and Koenig, “the mind is what the brain does,” sums up the dominant cognitive position. In this respect, as I have suggested, contemporary cognitive
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theory resembles the pre-Cartesian, Galenic materialism that shaped early modern concepts of body and mind. Cognitive scientists are a long way from understanding how the brain produces the mind, however. Although computer programs and psychological testing are useful in providing models of behavior that can reveal how the mind is embodied, links between behavior and physiology are still fairly crude.

The cognitive emphasis on the embodiment of thought offers the possibility of a more radical materialism than does current Marxist theory, since it attempts to explore the literally material origins of the self. Cognitive theorists do recognize the problematic nature of our perceptions of “reality,” acknowledging that what seems to be our direct perception of reality is in fact “illusory: what we perceive depends on both what is in the world and what is in our heads—on what evolution has ‘wired’ into our nervous systems and what we know as a result of experience.” Nevertheless, cognitivist mental concepts seem to be “material” in three ways; (1) they emerge from and consist in the neural matter of the brain; (2) they are shaped by perceptions of physical “reality” and by the experience of living in the body; and (3) they use metaphor to extend concepts derived from material experience to immaterial abstractions. F. Elizabeth Hart has suggested that a cognitive “materialist linguistics” similar to that outlined here establishes a “systematic continuity among three elements: the . . . human mind; the semiotic sign through which that mind finds expression; and the culture from/into which the mind absorbs/produces convention.” Mental representation, then, involves the material brain, its perceptions of material culture (from its embodied perspective), and its internal models of those perceptions. A cognitive materialism would differ sharply from Marxist theory in assuming that the subject participates in the creation of meaning as it interacts with material culture since, as Michel Pecheux describes it, the Marxist position assumes “the independence of the external world . . . with respect to the subject, while at the same time positing the dependence of the subject with respect to this external world.” In this sense it might respond to Paul Smith’s call for an amendment of Marxist theory “in order to clarify the human person who is constructed at different moments as the place where agency and structure are fused.”

Cognitive science also offers theories of consciousness that both resemble and differ from currently dominant paradigms. Many researchers in both computer and neuroscience fields seem to agree that most mental functions are unconscious. Although literary critics are usually willing to posit a Freudian or Lacanian unconscious consisting of drives and desires that have been repressed, cognitive functions are generally treated as if they were largely conscious. However, since the brain has billions of neurons working simultaneously to perform different functions instantane-