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New Literary History, Volume 32, Number 3, Summer 2001, pp. 563-584 (Article)

Published by The Johns Hopkins University Press
DOI: 10.1353/nlh.2001.0044

The Poetics of Tourette Syndrome: Language, Neurobiology, and Poetry

Ronald Schleifer

> The "I" of the lyricist . . . sounds from the depth of his being: its "subjectivity" in the sense of modern aestheticians is a fiction.
>
> Friedrich Nietzsche, *The Birth of Tragedy*[1]

> The neural bases of human language are intertwined with other aspects of cognition, motor control, and emotion.
>
> Philip Lieberman, *Human Language and Our Reptilian Brain*[2]

In this essay I want to examine the relationship of poetry to the neurobiological condition known as Tourette Syndrome. Tourette Syndrome is clearly an organic condition that involves, among other symptoms, the seeming emotion-charged use of language, the spouting forth of obscene language that, as researchers note, "may represent" among other symptoms "a common clinical expression of underlying central nervous system dysfunction."[3] The uncanny verbalizations of Tourette's, as David Morris has argued, are apparently connected "to subcortical structures [of the brain] that permit them to tumble out unbidden, like a shout or cry."[4] Poetry also, in the description of the semiotician A. J. Greimas, attempts to create the "meaning-effect" of a "primal cry," an "illusory signification of a 'deep meaning,' hidden and inherent in the plane of expression," in the very sounds of language.[5] Language, as neuroanatomy has demonstrated, involves various regions of the brain, especially Broca's area in the frontal region of the neocortex and Wernicke's area in the posterior area of the cortex. Both the cortex and neocortex have been consistently associated with more abstract modes of reasoning.[6] But subcortical regions of the brain, especially the thalamus, the hypothalamus, the amygdala, and the basal ganglia—regions that have been called our "reptilian brain" since humans and other primates inherit them from earlier and less complex life forms—have also been associated with language. Studies in experimental neurobiology have closely correlated these areas of the "reptilian" or "old brain" with motor activity, basic instincts, and emotions.

New Literary History, 2001, 32: 563–584

Poetry, I am contending, in its more or less intentional and willful activity, calls upon all of these neurological resources of language—so that in poetry, as in the neurobiology of language more generally, the strict distinction between language and motor activities is less and less apposite. This contention, I believe, is illuminated by an examination of Tourette Syndrome in its more or less unintentional and impulsive activity. Just as the facial tattoos of Maori warriors create the "effect" of the facial signaling of aggression,[7] which is part of the behaviors of many primate species and has clearly been associated with cortical and subcortical regions of the brain (especially the amygdala, the seat of emotions in primates containing what researchers describe as "face-responsive [neuronal] cells"[8]), so poetry creates the effect of the vocal signalings of primates, which, it seems clear, manifest themselves involuntarily in Tourette Syndrome. In this essay I argue that the conventions and resources of poetry and of what Roman Jakobson calls the "poetic function" of literary language more generally[9]—fascinations with the sounds and rhythms of language, with rhymes and repetitions, with its chants and interpersonal powers—haunt the terrible and involuntary utterances of Tourette Syndrome in its powerful connections between motor activity and phonic activity.

But before I begin in earnest, let me make clear what I am *not* doing. I do not want to suggest that Tourette Syndrome is not a terrible ailment, occasioning powerful distress and appalling disruptions in people's lives. Oliver Sacks makes this clear in his book *Awakenings,* in which he describes the "immense variety of involuntary and compulsive movements [that] were seen" in postencephalitic patients after they were treated with L-DOPA, including virtually all of the involuntary and compulsive symptoms of Tourette Syndrome I will describe in a moment.[10] Describing these symptoms shared by his patients and people suffering from Tourette Syndrome, Sacks quotes a line from Thom Gunn's poem "The Sense of Movement": "One is always nearer by not being still." "This poem," Sacks writes, "deals with the basic *urge* to *move,* a movement which is always, mysteriously *towards*." This is not so, he says, for the patients he encounters: they are "*no* nearer for not being still. [They are] no nearer to anything by virtue of [their] motion; and in this sense, [their] motion is not genuine movement" (*A* 16–17).[11] In the same way, the motor/phonic symptoms of Tourette's I describe do *not* constitute poetry: the language uttered by people who have Tourette's may no more resemble poetry than their involuntary movements resemble pantomime. But the powerful connections between linguistic and motor activity—between the meanings and materialities of discourse exhibited in the meaningless rhymes, rhythms, and invectives of

Tourette's—manifest, I believe, the fact that the sources and resources of poetry are seated deeply within our primate brains.

I

Let me begin, then, by quoting Sacks's elegant description of Tourette Syndrome written several decades after the first edition of *Awakenings*.

> In 1885, Gilles de la Tourette, a pupil of Charcot, described the astonishing syndrome which now bears his name. 'Tourette's syndrome,' as it was immediately dubbed, is characterized by an excess of nervous energy, and a great production and extravagance of strange motions and notions: tics, jerks, mannerisms, grimaces, noises, curses, involuntary imitations and compulsions of all sorts, with an odd elfin humour and a tendency to antic and outlandish kinds of play. In its 'highest' forms, Tourette's syndrome involves every aspect of the affective, the instinctual and the imaginative life; in its 'lower,' and perhaps commoner, forms, there may be little more than abnormal movements and impulsivity, though even here there is an element of strangeness. . . . It was clear to Tourette, and his peers, that this syndrome was a sort of possession by primitive impulses and urges: but also that it was a possession with an organic basis—a very definite (if undiscovered) neurological disorder. (*WH* 92)

Tourette Syndrome, Sacks noted a few years later in *An Anthropologist on Mars,* is "characterized, above all, by convulsive tics, by involuntary mimicry or repetition of others' words or actions (echolalia and ecopraxia), and by the involuntary or compulsive utterances of curses and obscenities (coprolalia)," leading some to "strange, often witty" associations, others to "a constant testing of physical and social boundaries," and still others to "a constant, restless reacting to the environment, a lunging at and sniffing of everything or a sudden flinging of objects" (*AM* 78). As this suggests, Tourette Syndrome inhabits the juncture between biological formations and cultural formations, between the motor tics of Tourette Syndrome—squinting, tapping, arm waving, sticking out the tongue, even licking objects—and its phonic tics—clearing the throat, sniffing, barking, repeating verbal sounds, rhymes, puns, shouting obscenities. There is a strange energy to Tourette Syndrome that Sacks describes throughout his work and that, as I will display later in this essay, Jonathan Lethem embodies in his recent novel, *Motherless Brooklyn*.

What fascinates me about this syndrome—as it does Sacks, Lethem, and even David Morris in his powerful study of late twentieth-century illness, *Illness and Culture in the Postmodern Age*—is the continuity it

presents between motor and verbal activity. The latest experimental work on the neurology of language, as outlined in Philip Lieberman's remarkable book, *Human Language and Our Reptilian Brain,* argues forcefully and persuasively for tight connections between motor activity and language skills by focusing on the seat of vertebrate motor activity in the subcortical basal ganglia.[12] Lieberman cites studies that suggest that "the cerebellum and basal ganglia should no longer be considered as purely motor structures" but instead involved "in cognitive processes" (*HL* 89)[13]; and he even suggests that the evolution of hominid upright walking is closely connected to the evolution of language (*HL* 143, 151). This connection between body and language—between seemingly immaterial cognitive activity and our bodily life—is underlined in Tourette Syndrome (even though Lieberman doesn't mention it) which, by definition, essentially combines, in the words of a handbook on Tourette's, "the presence of multiple motor tics (twitches) and one or more vocal tics (or noises)."[14]

At least since the Enlightenment, the connection between body and spirit has often been denied. In a defining instance, René Descartes argued that language is the very sign of the immaterial soul in humankind and that automatic, mechanical phonic responses to experience, were they possible, would have nothing to do with meaningful language or meaningful gesture. "We can certainly conceive of a machine so constructed," Descartes wrote in the *Discourse on Method,* "that it utters words . . . if you touch it in one spot [and] if you touch it in another it cries out that you are hurting it," but "it is not conceivable that such a machine should produce different arrangements of words so as to give an appropriately meaningful answer to whatever is said in its presence, as the dullest of men can do."[15] Like Descartes's machine, tics of Tourette Syndrome, whether they are phonic or motor, respond to the world in a machine-like way without presenting any of the "appropriately meaningful" responses that Descartes describes.

Yet the tics of Tourette Syndrome convey meaning and provoke responses that raise questions about the ways in which the "appropriateness" of response is measured and the ways in which the materialities and meanings of discourse are bound together. "Tics," Sacks argues, "can have an ambiguous status, partway between meaningless jerks or noises and meaningful acts. Though the tendency to tic is innate in Tourette's, the particular *form* of tics often has a personal or historical origin. Thus a name, a sound, a visual image, a gesture, perhaps seen years before and forgotten, may first be unconsciously echoed or imitated and then preserved in the stereotypic form of a tic" (*AM* 81). In a more scientific discourse, James Leckman and Donald Cohen describe "severe tic disorder as a model neuropsychiatric disorder that exists at

the interface of mind and body."[16] Sacks's narrative descriptions in "Witty, Ticcy Ray" and "A Surgeon's Life," Leckman and Cohen's scientific accounts, and Jonathan Lethem's first-person novelistic treatment offer a wide array of discussions of Tourette Syndrome and allow for its being taken up, like the sounds of language themselves, to a host of differing ends. Tourette Syndrome, then, situated "partway between meaningless jerks or noises and meaningful acts" at the "interface of mind and body," seems to take up the very materiality of language and underlines its materiality even as it also preserves it *as* language. Thus Dr. Carl Bennett, the subject of Sacks's most recent essay on Tourette's, "A Surgeon's Life," notes that "it is just the sound [of particular words] that attracts me. Any odd sound, any odd name, may start repeating itself, get me going." "Echolalia," Sacks goes on, "freezes sounds, arrests time, preserves stimuli as 'foreign bodies' or echoes in the mind, maintaining an alien existence, like implants. It is only the sound of the words, their 'melody,' as Bennett says, that implants them in his mind; their origins and meanings and associations are irrelevant" (*AM* 88–89).

Such frozen and arrested sound is a resource for poetry, its rhymes, alliteration, its "melody," even (or especially) the odd sense of the impersonalness of its most intimate references. Nietzsche's *The Birth of Tragedy,* as I suggest in my first epigraph, offers a fine meditation on the impersonalness of lyric poetry. Nietzsche repeatedly associates lyric poetry with "primordial" existence and even the "primal cry" that Greimas mentions. In Dionysian art, he writes, "we are pierced by the maddening sting" of the pains of "primordial being itself just when we have become, as it were, one with the infinite primordial joy in existence, and when we anticipate, in Dionysian ecstasy, the indestructibility and eternity of this joy. In spite of fear and pity, we are the happy living beings, not as individuals, but as the *one* living being, with whose creative joy we are united" (*BT* 104–5). Nietzsche came to disavow the exuberance of this writing, but what I want to suggest is that the impersonal energies he sees called upon and transformed in lyric and tragedy may well be connected to primordial, "reptilian" brain structures. Gilles Deleuze describes a version of this impersonalness in Nietzsche when he argues that, for Nietzsche, "a phenomenon is not an appearance or even an apparition but a sign, a symptom which finds its meaning in an existing force. The whole of philosophy is a symptomatology, and a semeiology."[17] It is the genius of art to apprehend impersonal phenomena—perhaps even unintentional phenomena—as meaningful. Similarly, Sacks argues in the 1982 Epilogue to *Awakenings* that "Nietzsche, almost alone of philosophers, sees philosophy as grounded in our understanding (or misunderstanding) of the body, and so looks to the ideal of the Philosophic Physician" (*A* 279). Thus Nietzsche describes

"the catharsis of Aristotle" as a "pathological discharge" which philologists are not sure "should be included [either] among medical or moral phenomena" (*BT* 132). While I do not argue that poetry is in any way an "impersonal" medical condition, the physiological condition of Tourette Syndrome sheds light upon its working and its power.

A striking example, that makes the seeming unintentional impersonalness of meaning and poetry its very theme, is D. H. Lawrence's poem, "Tortoise Shout." This poem articulates the sexual cry of a male tortoise, its "tortoise eternity, / Age-long, reptilian persistence."[18] Before offering a Lawrentian baroque sexual allegory, the poem reduces itself, so to speak, to sounds that are almost unintelligible, "This last / Strange, faint coition yell / Of the male tortoise at extremity, / Tiny from under the very edge of the farthest far-off horizon of life" (366).

> A far, was-it-audible scream,
> Or did it sound on the plasm direct?
>
> Worse than the cry of the new-born,
> A Scream,
> A yell,
> A shout,
> A paean,
> A death-agony,
> A birth-cry,
> A submission,
> All tiny, tiny, far away, reptile under the first dawn.
>
> (364)

"The Tortoise Shout" is attempting to articulate—or at least to describe—"deep," primordial meaning, a primal reptilian cry.

II

Here, then, is precisely my thesis: that resources of language most starkly apprehensible in the extremity and dysfunctionality of Tourette Syndrome are a source of much of poetry's power. More specifically, human language, as Lieberman contends, "is overlaid on sensorimotor systems that originally evolved to do other things and continue to do them now" (*HL* 1),[19] and that poetry calls upon all the resources of what he calls the "functional language system," based upon the subcortical or the "reptilian" brain as well as the neocortex, to achieve its power and its meanings. To make this argument, I want to reiterate Greimas's semiotic description of poetry. Greimas has noted that "at the moment of

perception" a listener eliminates "about 40% of the redundancies of the distinctive phonological features unnecessary for the apprehension of meaning."[20] "Inversely," he argues, "the reception of the poetic message can be interpreted as the valorization of redundancies which become significative with the changing of the level of perception, valorisation which would give rise to the apprehension of regularities . . . of sound, of connotation as it were, and not only of denotation."[21] By "valorisation" Greimas means that superfluous redundancies of sound—but also redundancies of grammar or even semantics—come to constitute a level of meaning or a "meaning-effect" rather than simply a vehicle for meaning that can be eliminated once meaning is communicated. Such "meaning-effects" are the *phenomena* of meaning: the felt sense of comprehension, the signifying whole beyond the individual elements of a sentence, for instance, or the logic of an argument, the genre of an extended discourse, the moral of a tale.[22] But the phenomena of meaning-effects include other "felt senses" discourse provokes, such as sadness, anxiety, fear, joy.[23] And poetry, Greimas is arguing, creates or provokes all of these effects by taking up and using—in Sacks's language, by freezing and arresting—the "disposable" material redundancies of language in ways that make them essential.

This description of poetry, emphasizing as it does the phenomenal *materiality* of language, is at odds with the traditional opposition between matter and spirit. Again, Descartes makes this clear when he notes that "it may happen that we hear an utterance whose meaning we understand perfectly well, but afterwards we cannot say in what language it was spoken." In *The World,* he uses this example to argue for a mechanical description of light: "if words, which signify nothing except by human convention, suffice to make us think of things to which they bear no resemblance, then why should nature not also have established some sign which would make us have the sensation of light, even if the sign contained nothing in itself which is similar to this sensation? Is it not thus that nature has established laughter and tears, to make us read joy and sadness on the faces of men?"[24] Descartes's subject reads rather than participates in emotion; language is always a vehicle for meaning, never a provocation, a meaning-effect.

Moreover, his reference to the "joy and sadness on the faces of men" is particularly apt because it is probable that the neurobiology of emotions—which include joy, sadness, and a seemingly innate ability of primates to respond to faces—is closely connected to the strength and strange fascination of Tourette Syndrome,[25] its *situation* at the juncture of motor and verbal resources, between the intentional verbal meanings of discourse and its seeming unintended force. That is, in its combinations of motor and phonic tics Tourette Syndrome uncovers redundancies

that are often ignored. Lionel Essrog, the Tourettic narrator of Jonathan Lethem's novel *Motherless Brooklyn,* says as much: "Tourette teaches you what people will ignore and forget, teaches you to see the reality-knitting mechanism people employ to tuck away the intolerable, the incongruous, the disruptive—it teaches you this because you're the one lobbing the intolerable, incongruous, and disruptive their way."[26]

Early in the novel, Essrog introduces himself in ways that demonstrate how Tourette Syndrome seems to depend upon and emphasize (if not valorize) the materiality of language.

> Lionel, my name. Frank and the Minna Men pronounced it to rhyme with *vinyl*. Lionel Essrog. *Line-all.*
>
> Liable Guesscog.
>
> Final Escrow.
>
> Ironic Pissclam.
>
> And so on.
>
> My own name was the original verbal taffy, by now stretched to filament-thin threads that lay all over the floor of my echo-chamber skull. Slack, the flavor all chewed out of it. (*MB* 7)

"Filament-thin threads." There is a strange hauntingness of the phonological and metaphorical language here: even the extended metaphor of "taffy" possesses a filament-thin materiality, and its combination of slackness and flavorlessness in the context of the almost metaphysical wittiness of the conceit presents almost intolerable incongruity.

These aspects of Tourette Syndrome—its hovering between meaning and meaninglessness in the sounds and meanings of language, its revelations of the "reality-knitting" aspects of discourse, its playfulness and wit, its pathos and bathos—all these things, as Greimas says, are what poetry does as well, are sources and resources for poetry. "What is common to all [poetic] phenomena," he argues in a precise semiotic description, "is the shortening of the distance between the signifier and the signified: one could say that poetic language, while remaining part of language, seeks to reachieve the 'primal cry,' and thus is situated midway between simple articulation and a linguistic double articulation. It results in a 'meaning-effect' . . . which is that of 'rediscovered truth' which is original and originary. . . . It is [an] illusory signification of a 'deep meaning,' hidden and inherent in the [phonological] plane of expression . . ." (*NM* 152). The double articulation of language *is* the opposition between material signifier and immaterial signified, between the "distinctive phonological features" Greimas describes and the semantic wholes apprehended as meaning that do not seem, phenomenally, reducible to any part or even any precise combinations of parts.[27] Poetry, in this definition, attempts to create the illusion, the "meaning-

effect," that the signifier of the symbolic and communicative system of language becomes what cognitive neuroscience calls the "vocal signals" of primates (RA 174).[28] The "vocal signals" neuroscience describes, even when they make possible or manifest primate social organization, are themselves not structures of communication. They are "primal cries" in which the distance between signifier and signified, between sound and import, does not exist. Unlike the language Descartes describes in *The World*, the import of a vocal signal cannot "eliminate" its material manifestation, the mechanical signals of primates.

In important ways the phonic tics of Tourette Syndrome seem to be *simply* mechanical, self-stimulating vocal signals. The fact that in clinical trials three decades ago both motor and phonic tics were suppressed by dopamine-blocking drugs—haloperidol, in early instances[29]—suggests its mechanical nature. Indeed, as Leckman, Riddle, and Cohen note, "the basal ganglia and the substantia nigra are widely considered to be the neuroanatomical regions associated with a variety of movement disorders including Parkinson's disease, encephalitis lethargica, Huntington's disease, and tardive dykinesia. Although the neuropathological correlates of TS remain to be fully established, the presence of abnormal movements in TS, suggestive neuropathological data, and a substantial body of pharmacological and metabolic data implicating neurochemical systems localized in these regions have led to the hypothesis that the pathophysiology of TS and related disorders may involve some dysfunction of these areas" (PT 105). Here, as in the neurobiology of emotion—which is, like Tourette Syndrome, associated with subcortical regions of the brain—Tourette Syndrome seems to realize itself in relation to what has been called our "reptilian brain." Tourette Syndrome, Sacks writes, like "Parkinsonism and chorea, reflects what Pavlov called 'the blind force of the subcortex,' a disturbance of those primitive parts of the brain. . . . In Tourette's, where there is excitement of the emotions and the passions, a disorder of the primal, instinctual bases of behaviour, the disturbance seems to lie in the very highest parts of the 'old brain': the thalamus, hypothalamus, limbic system and amygdala, where the basic affective and instinctual determinants of personality are lodged" (*WH* 95–96). Echoing, repetition, puns, punctuated language—erasing in its barks and noises the distance between the signifier and signified even as it excites the emotions and passions: this description of Tourette might help us to see some of the resources of language poetry attempts to "reachieve."

The most well-known aspect of Tourette's, its coprolalic barking of obscenities, is tied up with the materiality of language—both its material soundings but also its material neuroanatomic pathways. In fact, David Morris has argued that in important ways "midbrain and limbic structures

[function] in the control of obscene words" (*IC* 174). In this argument, Morris assumes that cognitive/expressive language *simply* originates in the neocortex and, for that reason, is distinctly "human." "Human speech," he writes, "however it developed during the long history of evolution, did *not* develop from the cries and vocalizations of nonhuman primates. Human speech differs fundamentally from animal cries in the sense that it proceeds from an entirely different region of the brain" (*IC* 174). Certainly neurological studies have shown, as both Lieberman and Deacon note, that "neocortical areas do not appear to regulate voluntary vocalizations in nonhuman primates; neither cortical lesions nor stimulations affects their vocalizations" (*HL* 99).[30] And more strikingly, Jane Goodall observes that "chimpanzee vocalizations are closely bound to emotion. The production of a sound in the *absence* of the appropriate emotional state seems to be an almost impossible task for a chimpanzee."[31]

But, as might already be clear, I am suggesting that Morris is not altogether correct in his contention that all speech differs simply and fundamentally from the primal cries of primates.[32] In fact, even Morris suggests some aspects of primal discourse inhabit language when he cites studies that demonstrate that "aphasias that cripple or destroy normal speech, leaving patients unable to talk or write, sometimes preserve untouched the ability to swear like a sailor" (*IC* 174; *LI* 301), and he goes on to argue that "an obscenity, after all, is more like a cry than a word. Or rather, it belong to a special class of words that serve as the direct expression of emotion" (*IC* 174). A friend and brilliant scholar who suffers from Tourette's has warned me not to romanticize Tourette Syndrome in the ways that R. D. Laing romanticized schizophrenia a generation ago. Morris, in this passage, comes close to such romanticization insofar as he is suggesting that the tics of Tourette's are interpersonally expressive. There is, as Morris says, a class of words that serve in powerful ways to express emotion, but their use—or really "mention"—in Tourette Syndrome is not expressive even if they can create the "effect" of expression. Still, the phonic "mention" in Tourette of sounds which function in verbal "use" most forcefully juxtaposes the biological and cultural formations inhabiting language which I mentioned earlier.[33] In his study Morris argues that "the obscene achieves its apparently ineradicable place by weaving together powerful elements of our biology, psychology, and social life" (*IC* 166). These "weavings" involve "old brain" subcortex as well as the neocortex, including the basal ganglia that Lieberman argues constitutes an essential part of the functional language system, and together—as elements of biology, psychology, and social life—they serve poetry.

Finally, the tics of Tourette Syndrome, both motor and phonic, are

closely associated with obsessive-compulsive behavior.[34] Such behavior blurs or suspends the opposition between intentional and involuntary actions insofar as it shapes itself in relation to context.[35] A host of scientific studies have demonstrated that ten to forty percent of patients subject to tic disorders "report *obsessional thoughts* and exhibit *compulsive behaviors*" (DD 10),[36] and Sacks's case histories also make this abundantly clear, as does Lethem's powerful fictional portrayal of Tourette's. As I already suggested, the verbal manifestations of Tourette's are often context sensitive (*CB* 2–3), taking the form of repetition of sounds including echolalia, but also palilalia, "the repetition of the patient's own last word, phrase, or syllable" (*TSF* 21), and, as both Sacks and Lethem portray, they often take the forms of verbal rhymes and puns. Neurobiologists suggest that obsessive-compulsive behavior may be closely connected to grooming behavior in other mammals,[37] and Lieberman argues that such behavior—regulated in the subcortical basal ganglia—is parallel to the syntax of language (*HL* 87). Thus, the very neurobiology of language—including "phylogenetically 'primitive' neuroanatomical structures found in the brains of 'lower' animals, such as the cerebellum and basal ganglia" (*HL* 20)—suggests the opposition between the intentional activities of mind and the automatic activities of body is more complicated than we thought. Terrence Deacon notes that "even for humans, the essentially automatic and unconscious nature of many stereotypic calls ["primal cries"] causes them to erupt without warning, often before there is time to interfere with their expression. . . . This curious conflict between simultaneously produced intentional and unintentional behaviors offers a unique insight into the nature of language. The superimposition of intentional cortical motor behaviors over autonomous subcortical vocal behaviors is, in a way, an externalized model of a neural relationship that is internalized in the production of human speech" (*SS* 244). This conflict is present, in notably different ways, in Tourette Syndrome and in poetry.

III

That is, even if Tourette Syndrome arises from biological grounds, it involves, as Morris suggests, elements of psychology and social life as well. Sacks notes that, in the momentary freedom from Tourette Syndrome when Dr. Bennett performs surgery, "one is seeing something at a much higher level than the merely rhythmic, quasi-automatic resonance of the motor patterns; one is seeing (however it is to be defined in psychic or neural terms) a fundamental act of incarnation or personation, whereby the skills, the feelings, the entire neural engrams

of another self, are taking over in the brain, redefining the person, his whole nervous system, as long as the performance lasts" (*AM* 98). Sacks is talking about the ways in which Tourette's seems to be "suspended," momentarily, by rhythmic activity in general and, in this specific case, by the art of surgery. In "Witty, Ticcy Ray," he presents Tourette's in the opposite fashion, when he quotes Ray claiming that he can't imagine his life without his tic: "I consist of tics," he says, "—there is nothing else" (*WH* 98). "He said," Sacks concludes, "he could not imagine life without Tourette's, nor was he sure he would care for it" (*WH* 98). In both these cases Sacks is depicting what the neurologists Cohen, Bruun, and Leckman describe in the "Preface" to *Tourette's Syndrome and Tic Disorders: Clinical Understanding and Treatment*. Tourette Syndrome, they say, "affects individuals at the core of their experience of themselves as being in control of their own movements, statements, and thoughts."[38]

At the heart of this "core" is language. Tourette Syndrome affects this core as it manifests a kind of "material language" in relation to what Sacks describes as "selfness" and its connection to the seeming intentionality of language. It is "often difficult for Touretters," Sacks writes, "to see their Tourette's as something external to themselves, because many of its tics and urges may be felt as intentional, as an integral part of the self, the personality, the will" (*AM* 102).[39] Early in *Motherless Brooklyn* Lethem describes the progression from early motor tics in patients suffering from Tourette Syndrome to phonic tics. (Clinicians note that motor tics usually start occurring at about age 7 while phonic tics usually occur between four and seven years later.[40]) For a time, Lionel's ticcing took the form of kissing the other boys in the Brooklyn orphanage. "The kissing cycle was mercifully brief," he writes.

> I found other outlets, other obsessions. . . . [Instead, I was] prone to floor-tapping, whistling, tongue-clicking, winking, rapid head turns, and wall-stroking, anything but the direct utterances for which my particular Tourette's brain most yearned. Language bubbled inside me now, the frozen sea melting, but it felt too dangerous to let out. Speech was intention, and I couldn't let anyone else or myself know how intentional my craziness felt. Pratfalls, antics—those were accidental lunacy, and more or less forgivable. Practically speaking, it was one thing to stroke Leshawn Montrose's arm or even kiss him, another entirely to walk up and call him Shefawn Mongoose, or Lefthand Moonprose, or Fuckyou Roseprawn. (*MB* 47)

Lionel's description of unwilled intention, so to speak, is the problem of Tourette's and, in a way, the problem of poetry. Words call themselves forth by sound and rhythm, by their performability, that—however "crazy" they seem—*feels* intentional.

In "Tradition and the Individual Talent" T. S. Eliot describes "the bad poet" as one who "is usually unconscious where he ought to be conscious, and conscious where he ought to be unconscious. Both errors tend to make him 'personal.'"[41] Another way to say this is to describe poetry as the articulation of the kind of language I have been describing throughout this essay: the *material* articulations of language that gather up the power and emotions of seeming subcortical primal cries within its discourses. "T. S. Eliot." Neuroscientists repeatedly abbreviate Tourette Syndrome as "TS." Could there be a link here? If there is, such a link is "Tourettic": it traffics in the materiality of language, making material *sound* intentional and meaningful, making impulse seem conscious. That is, the mechanical echoings, repetitions, rhythms, and emotionally charged phonic tics of TS present themselves as meaningful sounds and, as perhaps obscenities themselves do, trigger or are simply associated with more or less automatic emotional responses. Behind this "link" between the sounds and energies of poetry and discourse is the assumption that lyric poetry does not only—or does not simply—"express" the poet, but that it also articulates what I described earlier in relation to Nietzsche as "impersonal energies," articulations which are *apprehended* in particular conscious and unconscious manners.[42]

This is, I believe, at least a part of what Eliot—and in their different ways Nietzsche and Lawrence—mean by "impersonal" poetry, and what Lethem repeatedly figures in *Motherless Brooklyn* as the "boiling" of language. "Beneath that frozen shell of sea," Lionel says, "a sea of language was reaching full boil. It became harder and harder not to notice that when a television pitchman said *to last the rest of a lifetime* my brain went *to rest the lust of a loaftomb,* that when I heard 'Alfred Hitchcock,' I silently replied 'Altered Houseclock' or 'Ilford Hotchkiss' . . ." (*MB* 46). Language boils in poetry. Listen, for instance, to T. S. Eliot's "Ash Wednesday":

> If the lost word is lost, if the spent word is spent
> If the unheard, unspoken
> Word is unspoken, unheard;
> Still is the unspoken word, the Word unheard,
> The Word without a word, the Word within
> The world and for the world;
> And the light shone in darkness and
> Against the Word the unstilled world still whirled
> About the centre of the silent Word.
>
> O my people, what have I done unto thee.[43]

All the material resources of poetry are here: rhymes, alliteration, repetition, the puns of *rime riche,* unmarked quotation, incantation that almost barks. Signifier and signified approach one another to the point of signal, to the point of primal cry: "the Word without a word, the Word within / The world and for the world." In this poetry an insistent material discourse pushes, almost Tourettically, towards a word without a word within the world whirling and still.

In the passage from "Ash Wednesday," for instance, Eliot gathers together the energies of language to make the unheard word whirl the world provokingly, startlingly, affectingly. "Tics," Sacks says, "are like hieroglyphic, petrified residues of the past and may, indeed, with the passage of time become so hieroglyphic, so abbreviated, as to become unintelligible (as 'God be with you' was condensed, collapsed, after centuries, to the phonetically similar but meaningless 'goodbye')" (*AM* 81). Hugh Kenner describes the mechanism by which the signifiers of what he calls "post-Symbolist" poetry float, tic-like, above meaning. Citing a couplet from Shakespeare's *Cymbeline,* "Golden lads and girls all must / As chimney-sweepers, come to dust," he describes the "magic" that "irradiates the stanza" so that "we, the heirs of Mallarmé and Valéry and Eliot, do not simply pass over 'golden' but find it richly Shakespearean." Moreover, he goes on to describe what Sacks would call the hieroglyphic abbreviations of this poetry: he notes that in Shakespeare's Warwickshire "golden boys" are the name for dandelions, and they are called "chimney-sweepers" when they go to seed. "We may want to say," he argues, "that Shakespeare wrote about happenings in the world, the world that contains mortal men and sunlight and dandelions, and that a post-Symbolist reading converts his work into something that happens in the language, where 'golden' will interact with 'dust' and 'wages' and 'lads' and 'girls' and 'chimney-sweepers,' and where 'dust' rhymes with 'must,' mortality with necessity."[44]

Greimas describes the phenomena of modern poetry very much in these terms: modern poetry aims, he argues, at "'abolishing syntax,' that is to say, diminishing as much as possible the number of functional messages" in order to iterate "a certain number of semic categories" which constitute poetic communication.[45] For Greimas the "semic categories" are the "distinctive features" of meaning or semantics parallel in organization to the distinctive phonological features I cited him mentioning earlier. Semic categories, he argues, "probably contain the universals of language,"[46] by which he means categories organizing experience shared by all people.[47] Many of these categories—of spatial relationships, of emotional response to experience, of motor balance in the world—neurology suggests, depend in important degree to subcortical regions of the brain. And many of them are mimicked, disrupted,

incongruously enacted in the motor and phonic symptoms of Tourette Syndrome.[48] In Greimas's analysis, then, modern poetry aims at creating a semantics that is seemingly without syntax, which is to say a semantics in which the opposition between word and thing—between the two articulations of language or between the opposition of linguistic and motor activity—pushes towards the "rediscovered truth" of a simple rather than a double articulation.

The verbal tics of Tourette Syndrome are, like the modern poetry both Kenner and Greimas describe (in their remarkably different idioms), something that happens in the language that disrupts and dislodges by means of the intolerable, incongruous, and disruptive materiality of language. Such materiality is no simple metaphor: it is literally materially inscribed within our brain structure and brain chemistry, powers we share with primates and other mammals that bubble forth to disturb and affect us in the impulsive utterances in Tourette Syndrome and that are gathered up to one degree or other in poetic discourses. Poetry enacts what I'd like to call the "intentional materiality" of discourse we can hear in Tourette Syndrome and in T. S. Eliot. Listen to the end of section 5 of "Ash Wednesday" (earlier, I cited the beginning of this section):

> Will the veiled sister between the slender
> Yew trees pray for those who offend her
> And are terrified and cannot surrender
> And affirm before the world and deny between the rocks
> In the last desert between the last blue rocks
> The desert in the garden the garden in the desert
> Of drouth, spitting from the mouth the withered apple-seed.
>
> O my people.
>
> (AW 91)

Eliot's feminine rhymes—"slender," "offend her," "surrender"—slide "her," the unnamed Mary, into an unaccented schwa, an unheard word, a vocal signal. Like Lionel's "Altered Houseclock," Eliot's echoed sounds, repeated words, even the spondee of "the last blue rocks" slowing down the line, or his archaic "drouth," mispronouncing our English to rhyme with mouth, all play with sounds and meanings to create an illusion of articulated but not quite apprehensible meaning hidden and inherent in the seeming "signals" of poetry.

Such play is, of course, more than play. As Dr. Bennett told Sacks, Tourette Syndrome is "not gentle. . . . You can see it as whimsical, funny—be tempted to romanticize it—but Tourette's comes from deep down in the nervous system and the unconscious. It taps into the oldest,

strongest feelings we have. Tourette's is like an epilepsy of the subcortex; when it takes over, there's just a thin line of control, a thin line of cortex, between you and it, between you and that raging storm, the blind force of the subcortex. One can see the charming things, the funny things, the creative side of Tourette's, but there's also that dark side" (*AM* 100). Poetry, too, sometimes taps the oldest strongest feelings we have, even as it puts up a thin line of control. Moreover, it does so in uses of language that, again at times, picks up the *materials* of language that Tourette's articulates, cursing, rhyming, patterning discourse—above all *embodying* discourse—to provoke and arouse elements of our oldest emotional lives.

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NOTES

1 Friedrich Nietzsche, *The Birth of Tragedy and The Case of Wagner,* tr. Walter Kaufmann (New York, 1967), p. 49; hereafter cited in text as *BT*.

2 Philip Lieberman, *Human Language and Our Reptilian Brain: The Subcortical Bases of Speech, Syntax, and Thought* (Cambridge, Mass., 2000), p. 2; hereafter cited in text as *HL*.

3 Stanley Fahn and Gerald Erenberg, "Differential Diagnosis of Tic Phenomena: A Neurologic Perspective," in *Tourette's Syndrome and Tic Disorders: Clinical Understanding and Treatment,* ed. Donald Cohen, Ruth Bruun, and James Leckman (New York, 1988), p. 51. For a remarkably detailed history describing the controversy of whether Tourette Syndrome is an organic or a psychogenic illness, see Howard I. Kushner, *A Cursing Brain? The Histories of Tourette Syndrome* (Cambridge, Mass., 1999); hereafter cited in text as *CB*. Kushner thoroughly examines the major scientific studies of and cultural conflicts surrounding Tourette's in the last century and concludes that "Tourette syndrome is an organic disturbance brought about by malfunctions connected with signaling in the basal ganglia" (pp. 192–93).

4 David Morris, *Illness and Culture in the Postmodern Age* (Berkeley, 1998), p. 170; hereafter cited in text as *IC*.

5 A. J. Greimas, "La linguistique structurale et la poétique," in *Du Sens* (Paris, 1970), cited and translated in Ronald Schleifer, *A. J. Greimas and the Nature of Meaning* (London, 1987), pp. 152–53; hereafter cited in text as *NM*.

6 Chomskian linguists limit language to these areas. Thus, Steven Pinker argues that "we can narrow down our search" for the brain centers of language "by throwing away half of the brain" (*The Language Instinct* [New York, 1994], p. 299; hereafter cited in text as *LI*). Others suggest that language, like many other brain functions, is a distributed network that utilizes wide areas of the brain (see Lieberman, *Human Language and Our Reptilian Brain,* and Terrence Deacon, *The Symbolic Species: The Co-Evolution of Language and the Brain* [New York, 1997], hereafter cited in text as *SS*). But all agree that the cortex and neocortex are important, especially in more abstract forms of thinking: "functional magnetic resonance imaging (fMRI) data confirm the cognitive role of the dorsolateral-prefrontal-striatal circuit [the "frontal lobe"] in intact human subjects" (Lieberman, *Human Language and Our Reptilian Brain,* p. 113; see also Deacon, *The Symbolic Species,* chapter 10 and Lieberman, *Eve Spoke: Human Language and Human Evolution* [London, 1998], p. 70).

7 Daniel McNeill, *The Face* (Boston, 1998), p. 302.

8 John Aggleton and Andrew Young, "The Enigma of the Amygdala: On Its Contribution to Human Emotion," in *Cognitive Neuroscience of Emotion,* ed. Richard Lane and Lynn Nadel (Oxford, 2000), p. 113. See also Nathan Emery and David Amaral, "The Role of the Amygdala in Primate Social Cognition," in the same volume, p. 179; hereafter cited in text as RA.

9 Roman Jakobson, *Language in Literature,* ed. Krystyna Pomorska and Stephen Rudy (Cambridge, Mass., 1987). By "poetic function" Jakobson is describing that aspect of language which exists outside its referential, emotive, conative, communicative, and semiotic functions. He most fully describes this in "Linguistics and Poetics," where he argues that "any attempt to reduce the sphere of the poetic function to poetry or to confine poetry to the poetic function would be a delusive oversimplification" (p. 69). "Poetics in the wider sense of the word," he writes, "deals with the poetic function not only in poetry, where this function is superimposed upon the other functions of language, but also outside poetry, where some other function is superimposed upon the poetic function" (p. 73). Derek Attridge situates Jakobson's poetics within the opposition between conceiving poetry as functioning "to heighten attention to the meanings of words and sentences" and conceiving poetry as "a linguistic practice that specifically emphasizes the material properties of language . . . [that] provides pleasure and significance independently of cognitive content" (Derek Attridge, *Peculiar Language* [Ithaca, 1988], p. 130). The second of these conceptions, that of the "poetics" of the material properties of language, can be discerned in the neurobiological dysfunctions of Tourette Syndrome. In fact, many of the technical descriptions Jakobson offers as manifestations of the poetic function—including paronomasia, echo rhyme, alliteration (*Language in Literature,* p. 70), and, more globally, focus on syllabic phonemes (p. 73), which is to say the material sounds of language—describe phonic symptoms of Tourette Syndrome. The second of these conceptions emphasizes the reception or apprehension of poetic discourse rather than its intentional production.

10 Oliver Sacks, *Awakenings* (New York, 1999), p. 16; hereafter cited in text as *A*. Howard Kushner identifies postencephalic tics and those of Tourette Syndrome (*A Cursing Brain?,* pp. 66–71). L-DOPA stimulates the production of the biochemical neurotransmitter dopamine, and drugs that suppress the symptoms of Tourette Syndrome, such as haloperidol, block dopamine.

11 It is notable that Gunn is describing in this poem the felt *coincidence* between semantic "sense"—the mysterious future-oriented "purport" of language that Louis Hjelmslev describes as the best definition of meaning (*Prolegomena to a Theory of Language,* tr. Francis Whitfield [Madison, 1961], pp. 50–55)—and physical movement, a coincidence that Tourette's, in its combinations of phonic and motor tics, clarifies by disrupting. Here, I need to acknowledge, and I hope to participate in, Sacks's remarkable and powerful sympathy and respect for people suffering from the "variety of involuntary and compulsive" motor and phonic tics, including people suffering from Tourette Syndrome. In *Awakenings,* but also in later essays more directly focused on Tourette Syndrome I quote throughout this essay, Sacks, like W. H. Auden's father, Dr. G. A. Auden, does not always regard Tourette Syndrome "as purely deleterious or destructive in nature. Less zealous to 'pathologize' than many of his colleagues," Sacks observes, "Dr. Auden noted that some of those affected, especially children, might be 'awakened' into a genuine (if morbid) brilliance, into unexpected and unprecedented heights and depths" (p. 17). This is certainly the phenomena he describes in the two case histories of Tourette's I cite, "Witty, Ticcy Ray" (Sacks, *The Man Who Mistook his Wife for a Hat* [New York, 1987]; hereafter cited in text as *WH*) and "A Surgeon's Life" (Sacks, *An Anthropologist on Mars* [New York, 1995]; hereafter cited in text as *AM*).

12 Lieberman argues, "what is offered here is a starting point, a theory that relates phenomena that are seemingly unrelated, such as why the pattern of deficits associated with the syndrome of Broca's aphasia involves certain aspects of speech production, lexical access, and the comprehension of distinctions in meaning conveyed by syntax, why similar effects occur in Parkinson's disease, why children are able to learn language after massive cortical damage, why recovery from certain types of brain damage is problematic, and why aged people who speak slowly also have difficulty comprehending distinctions in meaning conveyed by complex syntax or long sentences" (*Human Language,* pp. 16–17). Lieberman does not examine Tourette Syndrome, yet it seems clear that his attempt to relate "phenomena that are seemingly unrelated" helps to establish the connection between the motor and phonic tics of Tourette Syndrome. Neuroanatomical studies as well as Oliver Sacks's narrative histories argue for the connection between the complex symptoms of Tourette's and the "movement disorders" (the motor dysfunction) of Parkinson's disease (James Leckman, Mark Riddle, and Donald Cohen, "Pathobiology of Tourette's Syndrome," in *Tourette's Syndrome and Tic Disorders,* pp. 104–5; hereafter cited in text as PT. See also Sacks's repeated references to Tourette's in the latest revision of *Awakenings* [1999]). What is striking about Tourette's is that its motor dysfunction is combined with phonic (and sometimes verbal) tics.

13 Lieberman cites F. A. Middleton and P. L. Strick, "Anatomical Evidence for Cerebellar and Basal Ganglia Involvement in Higher Cognition," *Science,* 31 (1994), 460. For an extended argument about the role of "emotion, feeling, and biological regulation in human reason," see Antonio Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain* (New York, 1994), p. xiii.

14 Mary Robertson and Simon Baron-Cohen, *Tourette Syndrome: The Facts* (Oxford, 1998), p. 45; hereafter cited in text as *TSF.*

15 René Descartes, *Discourse on Method,* in *The Philosophical Writings,* vol. 1, tr. John Cottingham, Robert Stoothoss, and Dugald Murdoch (Cambridge, 1985), p. 140.

16 James Leckman and Donald Cohen, "Descriptive and Diagnostic Classification of Tic Disorders," in *Tourette's Syndrome and Tic Disorders,* p. 9; hereafter cited in text as DD.

17 Gilles Deleuze, *Nietzsche and Philosophy,* tr. Hugh Tomlison (New York, 1983), p. 3.

18 D. H. Lawrence, "Tortoise Shout," in *The Complete Poems,* ed. Vivian de Sola Pinto and Warren Roberts (New York, 1964), p. 365; hereafter cited in text by page number.

19 See also Lieberman, *Human Language,* pp. 123, 156 and Deacon, *The Symbolic Species,* p. 298.

20 Lieberman describes such redundancies in discussing the difficulties of following "even 'well-formed' speech recorded under ideal conditions." "We are generally unaware of these problems," he writes, "because we 'fill in' missing information, overriding acoustic phenomena that conflict with our internally generated hypotheses concerning what was *probably* said, and the probability involves a weighting of semantic and pragmatic information derived from parallel, highly redundant processing. Many of these phenomena can be explained if we take into account the distributed, parallel processing that appears to typify biological brains" (*Human Language,* pp. 24–25). This description takes its place within Lieberman's larger argument for the redundant and overdetermined nature of Darwinian evolution. "Indeed," he writes, "speech perception is not a strictly 'bottom-up' process in which only primary acoustic or articulatory information is available to a listener. Many studies have demonstrated that what a listener 'hears' also depends on lexical and pragmatic information" (*Human Language,* p. 58). Such pragmatics, he argues, is not "logical" but "proximate": "evolution is a tinkerer, adapting existing structures that enhance reproductive success in the ever-changing conditions of life" (*Human Language,* p. 166; see also Leiberman's *Eve Spoke,* pp. 18–20, and Damasio, *Descartes' Error,* p. 190). A chief example of this aspect of his argument is what he calls "motor equivalence," "the

ability of animals and humans to accomplish the same goal using different muscles or different body parts" (*Human Language,* p. 39). Terrence Deacon, in his richly detailed neurological study, *The Symbolic Species,* also describes evolution as different from a simple logical hierarchy, organized around "different ways of achieving the same goal" so that "neural distribution of language functions need not parallel a linguistic analysis of those same functions" (p. 286).

21 Greimas, "Introduction" to *Essais de Sémiotique Poétique* (Paris, 1972), cited in Ronald Schleifer, in *A. J. Greimas and the Nature of Meaning,* p. 152.

22 Oliver Sacks describes a similar phenomenal "signifying whole" in terms of the permanence of a biological "engram." "Many neuropsychologists," he writes, ". . . have spent their lives 'in search of the Engram' [that more or less permanence-effect produced by stimulation by means of which] . . . individual skills and memories may survive massive and varied extirpations of the brain. Such experimental observations . . . indicate that one's *persona* is in no way 'localisable' in the classical sense, that it cannot be equated with any given 'centre,' 'system,' 'nexus,' etc. but only with the intricate totality of the whole organism, in its ever-changing, continuously modulated, afferent-efferent relation with the world" (*Awakenings*, p. 239).

23 See my *A. J. Greimas and the Nature of Meaning,* p. xix.

24 Descartes, *The World,* in *The Philosophical Writings*, vol. 1, p. 81.

25 One of the oddest of the symptoms of Tourette Syndrome—one I return to later when I discuss the impulse to kiss other orphans that the narrator of Lethem's novel, *Motherless Brooklyn,* feels—is the urge to bite and lick things. A similar symptom (found in rhesus monkeys investigating "objects with their mouth instead of their hand") often accompanies Klüver-Bucy Syndrome surgically induced in primates. This syndrome also includes "profound emotional disturbances" (Emery and Amaral, "The Role of Amygdala," p. 162; see also Aggleton and Young, "The Enigma of Amygdala," p. 108). In fact, the Klüver-Bucy syndrome is a significant part of the evidence of the role of the subcortical amygdala in emotion (including "verbal signals" in primate mating [Emergy and Amaral, p. 174]).

26 Jonathan Lethem, *Motherless Brooklyn* (New York, 1999), p. 43; hereafter cited in text as *MB.*

27 For a short discussion of double articulation, see my *Analogical Thinking: Post-Englightenment Understanding in Language, Collaboration, and Interpretation* (Ann Arbor, 2000), pp. 55–57, 64.

28 In his translation of Ferdinand de Saussure's *Course in General Linguistics,* Roy Harris renders *signifier* as "signal" rather than signifier (LaSalle, Ill., 1983). This is a problem—in a translation, I should add, that vastly improves the existing one—on two levels. First is the level of culture: for decades "signifier" has been the common term, and one can hardly ignore a term's history and currency in making a translation. And second on the level of sense: Saussure's *signifier* is precisely *not* a signal insofar as it exists in a structure of double articulation.

29 Kushner, *A Cursing Brain?* pp. 133–43, cites Janice R. Stevens and Paul H. Blachly, "Successful Treatment of the Maladie des Tics, Gilles de la Tourette's Syndrome," *American Journal of Diseases in Children,* 112 (1966), 541–45.

30 Lieberman cites P. D. MacLean and J. D. Newman, "Role of Midline Frontolimbic Cortex in the Production of the Isolation Call of Squirrel Monkeys," *Brain Research,* 450 (1988), 111–23, and D. Sutton and U. Jurgens, "Neural Control of Vocalization," in *Comparative Primate Biology,* ed. H. D. Stiklis and J. Erwin, vol. 4 (New York, 1988), pp. 635–47. See also Deacon, *The Symbolic Species,* pp. 235–36.

31 Jane Goodall, *The Chimpanzees of Gombe: Patterns of Behavior* (Cambridge, Mass., 1986), p. 125.

32 Terrence Deacon notes that "language evolved in a parallel, alongside calls and gestures, and dependent on them—indeed, language and many human nonlinguistic forms of communication probably co-evolved. . . . This is demonstrated by the fact that innate call and gesture systems, comparable to what are available to other primates, still exist side by side with language in us. Their complementarity with and distinction from language are exemplified by the fact that they are invariably produced by very different brain regions than are involved in speech production and language comprehension" (*The Symbolic Species,* p. 54).

33 For a fine discussion of the philosophical opposition between the "use" of a term in discourse and its "mention" when it is being discussed, metalinguistically, without functioning within discourse, see Jonathan Culler, "Convention and Meaning: Derrida and Austin," *New Literary History,* 13 (1983), note 11. While Culler is arguing for the deconstruction of this opposition, I employ it here to distinguish between more or less intentional "use" and unintentional "mention." Later, however, I note the manner in which behaviors which Sacks describes as "pseudo-actions" complicates the force of the Tourettic mention of obscenities (see note 48 below).

34 J. A. Gray, "Framework for a Taxonomy of Psychiatric Disorder," in *Emotions: Essays on Emotion Theory,* ed. Stephanie Van Gooze, Nanne Van de Poll, and Joseph Sergeant (Hillsdale, N.J., 1994), p. 50. Gray cites D. L. Pauls, J. F. Leckman, K. E. Towbin, G. E. P. Zahner, and D. J. Cohen, "A Possible Genetic Relationship Exists between Tourette's Syndrome and Obsessive-Compulsive Disorder," *Psychopharmacology Bulletin,* 22 (1986), 730–33. See also Kushner, *A Cursing Brain?* pp. 205, 216.

35 The *Diagnostical and Statistical Manual of Mental Disorders-IIIR* categorizes obsessive-compulsive behavior as "intentional": compulsions, it states, requires "representative, purposeful and intentional behavior that is performed according to certain rules or in a stereotyped fashion" (cited in Kushner, *A Cursing Brain?* p. 197). This definition has generated strong disagreements concerning whether obsessive-compulsive behavior is part of Tourette Syndrome between those who contend that TS is *simply* organic and completely unintentional in its manifestations and those who contend it is psychogenic. Leiberman notes that "many neurological disturbances in humans (such as Parkinson's and Huntington's diseases, obsessive-compulsive behavior, depression) can be traced to disrupted basal ganglia circuits" (*Eve Spoke,* p. 106). The ability to "suspend" or postpone motor and phonic tics in response to contexts also creates the effect of blurring the opposition between intentional and unintentional behavior (see *A Cursing Brain?* p. 7; and Sacks, *The Man Who Mistook* and *An Anthropologist on Mars*).

36 See also Kenneth Towbin, "Obsessive-Compulsive Symptoms in Tourette's Syndrome," in *Tourette's Syndrome and Tic Disorders,* pp. 137–49.

37 J. A. Gray, *The Neuropsychology of Anxiety: An Enquiry into the Functions of the Septo-Hippocampal System* (Oxford, 1982), p. 443.

38 Donald J. Cohen, Ruth Bruun, and James Leckman, "Preface," to *Tourette's Syndrome and Tic Disorders,* p. xiii.

39 See also Sacks's *Awakenings,* pp. 109–11.

40 See Ruth Bruun, "The Natural History of Tourette's Syndrome," in *Tourette's Syndrome and Tic Disorders,* pp. 21–39, esp. 22–25.

41 T. S. Eliot, "Tradition and Individual Talent," in *Selected Prose,* ed. Frank Kermode (New York, 1974), p. 43. We can provocatively compare Eliot's description of poetry to Antonio Damasio's description of cognition in an experiment designed to elicit reasoned predictions from subjects, some of whom suffer from brain damage. "I suspect that before and beneath the conscious hunch there is a nonconscious process gradually formulating a prediction for the outcome of each move, and gradually telling the mindful player, at first softly but then ever louder, that punishment or reward is about to strike *if* a certain move

is indeed carried out. In short, I doubt that it is a matter of only fully conscious process, or only fully nonconscious process. It seems to take both types of processing for the well-tempered decision-making brain to operate" (*Descartes' Error,* p. 214).

42 Again, this comports with the structural linguistics in the context of which Greimas and Jakobson offer their analyses of poetry. Early in his career, Greimas describes the transformation of historical to formal or structural linguistics in the twentieth century as the creation of "a linguistics of perception and not of expression" ("La Linguistique structurale et la linguistique structural," *Le Français moderne,* 31 [1963], 55–68; my translation). By this he means that linguistics turned to phenomenology and pursued the manner in which signification is apprehended rather than (or along with) the ways it is generated. Certainly, the language of Tourette Syndrome can be understood to be subject to a phenomenological poetics. In fact, I would suggest that a neurological examination of some of the "impersonal energies" inhabiting Tourette Syndrome particularly and language more generally lends itself nicely to a phenomenological materialism.

43 T. S. Eliot, "Ash Wednesday," in *Selected Poems* (New York, 1964), p. 90; hereafter cited in text as AW by page number.

44 Hugh Kenner, *The Pound Era* (Berkeley, 1971), pp. 122, 123.

45 A. J. Greimas, *Structural Semantics,* tr. Daniele McDowell, Ronald Schleifer, and Alan Velie (Lincoln, Neb., 1983), pp. 153–54.

46 A. J. Greimas and J. Courtés, *Semiotics and Language: An Analytical Dictionary,* tr. Larry Crist, Daniel Patte, and others (Bloomington, 1982), p. 278.

47 For Greimas, such semantic categories, following the structures of Saussurean linguistics, are purely *relational*: in *Structural Semantics,* for instance, he "sketches" what he calls "the *semic system of spatiality*" (p. 36) in terms of binary oppositions. (That is, he analyzes "spatiality" as consisting of "dimentionality" versus "nondimentionality"; and "dimentionality" consisting, in turn, of "horizontality" versus "verticality"; and "horizontality" consisting, in turn, of "perspectivity" versus "laterality"; and so on.) In a similar fashion, in an appendix to *Awakenings,* "Parkinsonian Space and Time," Sacks aligns Parkinsonian experiences of time and space with Leibniz's relative conceptions of time and space as opposed to Newton's absolute conceptions, calling them "convenient (or conventional) constructions or 'models'" (p. 339). Similarly, Darwinian accounts of natural selection describe adaptive strategies as "proximate," and, like the Saussurean notion of the "arbitrary nature of the sign" or Sacks's notion of the conventionality of space-experience, as more or less "convenient." Thus, for instance, sounding a lot like Claude Lévi-Strauss, Lieberman argues that "evolution is a tinkerer, adapting existing structures that enhance reproductive success in the ever-changing conditions of life" (*Human Language,* p. 166). In arguing for the continuity of reason with our bodily life, Damasio also describes evolution as "thrifty and tinkering" (*Descartes' Error,* p. 190).

Still, biological adaptations are not quite *purely* relational—or as *purely* nonreferential—as language is sometimes described in Saussure or even Greimas. (Deacon offers a finely textured account of referentiality in relation to brain function and learning in *The Symbolic Species,* pp. 59–92.) Thus the "convenient" and thereby "arbitrary" nature of a primate's "normal" spatial sense, as opposed as it could be to the very different experiences of space of frogs or even dogs (see Katherine Hayles, "Constrained Constructivism: Locating Scientific Inquiry in the Theater of Representation," *New Orleans Review,* 18 [1991], 76–78), is always *contingently arbitrary*: it is contingent, that is, on the "ever-changing conditions of life." Thus, when Sacks describes the "violently deforming forces" his postencephalitic patients are subject to that "drive" them to "misperformance and miscognition" in experiences in which "normal" spatial and temporal relationship do not function (*Awakenings,* pp. 344–45; see also Sacks's discussion of spatial experience for people with Tourette's in *An Anthropologist from Mars,* p. 83), those "universals" of spatial and temporal

apprehension—the "universals" of meaning, experience, and language—are governed by contingent adaptive needs particular to primates. "Eating fruit," Emery and Amaral argue,

> is a relatively simple task for most primates. Good color vision is required to locate specific types of fruit and to assess the level of ripeness or toxins that may be present. Olfaction and taste are also important indicators of the palatability of food. Highly distributed resources such as ripe fruit require a highly developed spatial memory system to remember where a previously encountered desirable or plentiful food source is located within a forest environment. A fine level of dexterity may be required to reach fruits in the high branches of trees, and fine manipulative ability may be required for removing the skin and seeds of some fruits. ("The Role of the Amygdala," p. 170)

Fruit eaters, they also argue, "are usually highly social" since "the majority of fruit-eating primates eat green or bitter fruits, which are plentiful and clumped in large resources, thereby enabling many animals to feed in one tree," which thus "provides increased opportunities for social interaction" (p. 170). Here, then, they argue for the adaptiveness of dexterity, fine vision, spatial sense, and communicative systems based upon the arbitrary contingencies of adaption to an ever-changing world. They also argue that all of these adaptations use and modify subcortical resources of the brain, especially the amygdala. The "universal" primate and human sense of space—our performance and cognition of it, and even the misperformances in some of the symptoms of Tourette's—offers a way of bringing together the "cultural formations" of structural semantics and the biological formations of Darwinian materialism. It offers the possibility of emphasizing an (arbitrary) materialism that can, in fact, be accommodated by structuralist and semiotic accounts of meaning and experience.

48 Sacks calls such mimicking "pseudo-actions" and "simulacra of action and meaning": "Mrs. Y.'s tics," he writes in *Awakenings,* "*look* like actions or deeds—and not mere jerks or spasms or movements. One sees, for example, gasps, pants, sniffs, finger-snappings, throat-clearing, pinching movements, scratching movements, touching movements, etc., etc., which could all be part of a normal gestural repertoire. . . . These pseudo-actions, sometimes comic, sometimes grotesque, convey a deeply paradoxical feeling, in that they *seem* at first to have a definite (if mysterious) organization and purpose and then one realizes that in fact they do not" (p. 109). Here Sacks is describing the kind of "pseudo-intentionality" that Lionel Essog describes in opposing the "accidental lunacy" of kissing to the seeming intention of his verbal tics. And this phenomena gets even more complicated in that the subjects of Tourette Syndrome often "camouflage," as my friend told me, unintentional action with seeming intentional gestures. Lethem narrates such "camouflage" throughout *Motherless Brooklyn,* and Sacks describes it explicitly: "When I questioned Miss H. about this symptom [a lightening-quick movement of the right hand to the face] . . . she replied that it was 'a nonsense-movement'. . . . Within three days of its appearance, however, this tic had become associated with an intention and a use: it had become a mannerism, and was now used by Miss H. to adjust the position of her spectacles" (p. 136).