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Randall Knoper **American Literary Realism and Nervous "Reflexion"**

American literary realism flourished in the late nineteenth century, along with rapid developments in the sciences of the brain and nervous system. The literature that was so devoted to accurate representation, in other words, grew in tandem with the science devoted to explaining how humans perceive and apprehend the world. While we have long assumed the importance of science to realist movements, the primary connection has been drawn rather narrowly, between scientifically objective observation and realist aspirations to truthfulness in representation. Scholarship has not attended to realist writers' interest in sciences of the brain and nervous system or explored the effect of rapid developments in neurology and brain biology on these writers' conceptions of mimesis. But there *was* an effect. As "mental physiology" intruded upon realist aesthetics, some of the writers we most associate with realism loosened their allegiance to the model of the detached observer and opened their conception of literary production to a biological model of image transmission. New ideas about the apprehension of reality—say, of the indexical reception of reality-impressions in neural tissue or the furrowing of memory pathways in brain circuits—dislodged the image of the cool, untouched, representing consciousness. And ultimately the model, of unconscious brain and nervous system processes as the manufacturers of literature challenged that of the conscious reporter.

My history here of the intersection between literature and neuroscience in the late nineteenth century is offered partly as a rethinking of American literary realism, in order to put back into the cultural configuration that includes literary realism the physiological psychology that was more or less dashed from view in the early twentieth century by behaviorism and psychoanalysis.¹ But this is also a more general story of relationship and exchange between literature and science, in which both scientists and literary authors worked to crystallize common cultural concerns; the preoccupation they all shared with questions of identification and duplicity, for example, replays familiar nineteenth-century anxieties about identity and dissimulation, and about signification itself, in urbanizing and modernizing societies. The profound way that gender colors conceptions of both the nervous system and literary creation—with effects we have come to criticize—also connects the scientific and literary cultures. My interest here, however, is more with the way the authors engage science and its discoveries, incorporate science in their thinking and their work, adopt its mistakes, and explore the implications of its conceptions. Most important, this is a story of how science complicated and changed these authors' ideas about the representation of reality, ultimately making "naïve realism" impossible. Moving beyond the ways that these authors were affected by science, this story shows too how they departed from scientific modes of thinking, probing the implications of the supposed workings of the nervous system, bringing home the unconscious operations and the fallibilities of perception that the scientists themselves managed to identify and then quarantine in their patients.

What follows, first, will be a tracing through nineteenth-century neurophysiology, of the idea that imitation and mimesis, and finally literary representation, are natural and biological functions, effects particularly of the nervous system and the brain. The territory includes not only American neurophysiology but also British psychophysiology and French neurology, which seem to be the sources upon which American writers drew most heavily. Several questions preoccupied scientists in these fields. They

wondered, for one thing, if mimetic impulses, or a mimetic faculty, might be automatic and unconscious, the result of natural bodily systems that operate independently of consciousness and the will. (Theories of imitation as reflex action of the nerves were central to this conception.) Of interest too was the question of whether such unconscious mimesis might be more accurate or truthful than mimesis influenced by consciousness, with its capacities for dissimulation and misdirection. But they also wondered whether such mimesis might be the effect of disease, whether its imitations might therefore be hallucinatory distortions, and whether it required such absolute identification—erasure of self—or suspension of reason and the will that it should bear the name of a morbid condition. Scientific investigators had to wonder, that is, whether the hysterics, somnambulists, hypnotized subjects, cataleptics, and spiritualist mediums, who were their main objects of study, displayed natural or diseased mimetic impulses. Potentially at stake, of course, was the very nature of artistic mimesis, so after this initial attention to neurophysiology, I will look at the interweavings of neurological conceptions of literary creation and representation with the literary theorizing and practice of Oliver Wendell Holmes, Mark Twain, and William Dean Howells. Holmes, a kind of protorealistic novelist as well as a professor of physiology, had the most full-fledged ideas about literary creation as "reflex action of the brain."² And his writing and ideas clearly influenced Twain and Howells. The latter two writers explored the interconnections of the nervous system, mental representations, and literary representation, and their explorations caused these two central figures of American literary realism to question and rethink their ideas about fictional representation. They opened realism to the uncertain processes of the organism.³

Sympathy, Reflexion, and Representation

In its most general, longstanding conception, which nineteenth-century fiction writers would still have held, the

nervous system was characterized as an avenue for representations. Stimuli entered the body through the senses, and the images formed traversed the body to produce mental, emotional, physical, or behavioral states, responses, or symptoms. This process was facilitated by the nerves; that is, the nervous system was the medium by which the world was pictured to consciousness—and the medium, too, through which the body represented its various parts to one another.⁴ Seventeenth- and eighteenth-century researchers had elaborated the ancient concept of sympathy, the involuntary mechanism by which organs not visibly connected reflected one another and through which, especially, an organ could respond to the diseased state of another.⁵ So, Robert Whytt, one of the eighteenth-century physiologists who gave the nervous system the central role in the body and, in most accounts, helped develop the concept of reflex response, described the "sympathy of the nerves," by which the smell of food makes saliva flow, irritation in the windpipe causes coughing, or, because of oversensitive nerves, irritation of the uterus or ovaries causes hysteria.⁶ Such notions of sympathetic nervous connections, often involving mysterious and immaterial resonances between body parts, persisted through the nineteenth century.⁷

Late in the century, from a decidedly materialist point of view, Henry Maudsley in his influential *Body and Mind* (1885) still declared that "all parts of the body, the highest and the lowest, have a sympathy with one another more intelligent than conscious intelligence can yet, or perhaps ever will, conceive." This means, he wrote as part of his argument for the physical basis of the mind, that the material circuits of the nervous system establish sympathetic connections not only between the digestive organs and those of taste, the respiratory organs and those of smell, and the organs of smell and those of sexual feeling but also between the brain and the heart, the lungs, and the abdominal organs. Through the nervous system, maladies of the lower organs could be sympathetically reproduced in the brain, causing mental disorders.⁸ And, of course, the mind recorded itself in the body, automatically and unconsciously. The nineteenth-century history of this idea

ranged from early-nineteenth-century phrenological signs, marks of mind and brain on the surface of the head, to cases of neurasthenia and hysteria in the last years of the century, the sort of cases of mind-body interaction to which Maudsley gave special attention. The human organism was thought to have an astonishing interconnectivity, in other words; throughout the century, the body was taken as a model communications network.

Maudsley's clinching examples of intrabody nervous communication, and especially of the effect of organs on the mind, come from the sexual system. Patently clear, he writes, are the mental influences of masturbation, menstruation, lactation, pregnancy, menopause, and irritation of the ovaries or uterus.⁹ In 1899 the American gynecologist Charles A. L. Reed reasserted this point, using the metaphor of the nervous system as a telegraphic system that was so often adopted in the nineteenth century to characterize nerve pathways and their means of electrical communication. The great sympathetic nerve, he writes, "furnishes an abundant supply of branches directly to the womb, the ovaries, the vagina and the external genitalia." The significance is that "the genital organs of women . . . are nothing more or less than a central telegraphic office, from which wires radiate to every nook and corner of the system, and over which are transmitted messages, morbid or otherwise, as the case may be; and it should be remembered right here that telegraphic messages travel both ways over the same wire; that there are both receiving and sending offices at each end of the line."¹⁰ The metaphor of the telegraphic system, whose central office was usually located in the brain, is notably upended here, a reversal that of course conveys a familiar message about nineteenth-century conceptions of women, and female hysterics, as governed by their bodies and reproductive systems rather than their minds. But it also reemphasizes communication that takes place between the far-flung parts of the body, quite independently of the brain. Interorgan communication was, again, a process of transmitting, or registering, representations—pictures in one part of the body of conditions in another. Dyspepsia could be the stomach's version of mental

distress, its mimesis of the mental landscape, its translation of brain storm into gastroenterological upset. The difficulty of diagnosing, or interpreting, the sign in one part of the body of a malady in another part did not seem immediately to raise the question of the reliability of the nervous system as a medium.

The representation of one body part in another, and the connection between the rest of the body and the brain, which was naturally the most interesting and complicated instance of such nervous system telegraphy, inevitably had ramifications for understanding self-expression and artistic representation. It was the reflex-arc theory of nerve action, I will suggest, that especially established the importance of the nervous system as a channel for literary writing among late-nineteenth-century American literary realists. Emerging from the theories in the seventeenth and eighteenth centuries about the sympathetic rapport between parts of the body, the theory of the reflex made explicit the process of representation in nervous communication. For the reflex was, exactly, a matter of reflexion, by which a sensory impression was reflected, as by a mirror, into a motor nerve, causing a muscular contraction. Also like a mirror because it was automatic, unconscious, and unwilled, the reflex was thought to work throughout the body, and even to affect mental processes, though in the 1830s Marshall Hall influentially, and temporarily, separated mechanical and material reflex responses from higher centers of consciousness.¹¹ Simply put, what Hall called the reflex-arc named the circuit of a sensory nerve linked by the central spinal cord or the lower brain regions to a motor nerve. Through it, a stimulus produced a movement without mediation or direction from consciousness or from the cerebral hemispheres.¹² This conception of sensorimotor acts initially served to explain automatic, instinctual, and some emotional actions—all as functions of the lower nervous system, matters of the spinal cord and brain stem. Although these reflex actions could to some extent be controlled by the will, they were distinct from the cerebral hemispheres, distinct from mental life and consciousness.¹³ And as mental life had no bearing on reflex response, so the concept of the reflex, in

Hall's understanding, had no pertinence to such mental functions as writing and literary creation.

Hall's duality between the lower-level reflex and the mental life of the brain was challenged, however, by various researchers. Most of these challengers insisted on a continuity of function between nerve cells of the spinal cord and those of the brain. Some even suggested that operations of the conscious mind itself operated through a principle of reflexion, as images came to consciousness and were then reflected into action.¹⁴ Notably, beginning in 1838 with his inquiries into spiritualist mediums, British physiologist Thomas Laycock published a series of studies that extended the idea of reflex function to complex mental operations.¹⁵ The reflex arc, for him, was not only the basic unit of the nervous system, but also a fundamental principle of its operation, and even the brain operated accordingly. The brain could be the end point of the reflex arc, or its beginning—that is, a lower-nervous-system stimulus (say, uterine irritation) could reflexively effect a mental response, but the brain's own activity could also reflexively effect further *mental* activity, and that mental activity could effect complex motor responses, quite apart from consciousness, attention, or the will.¹⁶ Impelled partly by the puzzling phenomena of people who could accomplish complex tasks while seemingly unconscious of what they were doing—spiritualist mediums but also hysterics, somnambulists, people who had been mesmerized or hypnotized, people who committed heinous murders in a supposedly mechanical and uncomprehending way, in short, people whose bodies seemingly acted in ways not directed by the will—Laycock, Maudsley, William B. Carpenter, T. H. Huxley, and others applied the idea of the reflex, as an automatic nervous mechanism independent of consciousness, to everything from walking a habitual route or playing the piano to writing a great work of literature.¹⁷

Especially important for two of the authors I will be considering, Oliver Wendell Holmes and Mark Twain, were the ideas of British professor of physiology William Carpenter. A prolific writer about physiology and the nervous system from the

1830s onward, in the fifth edition of his *Principles of Human Physiology* (1855) and more fully in *Principles of Mental Physiology* (1874), Carpenter importantly elaborated and extended Laycock's idea that brain activity is subject to reflex action. Carpenter made two basic arguments that are central to the history I am tracing here: first, that many of our mental processes are automatic, proceeding in an uncontrolled manner by suggestion and association along ingrained nervous pathways, and are therefore aptly called "reflex action of the Cerebrum"; second, that this reflex action takes place not only within the brain, but can also operate between an idea (or an emotion or sensation) and a motor nerve; that is, an idea, by reflex action and apart from the will, can cause purposive movement through an "ideo-motor" response.¹⁸ To exemplify the first category of cerebral reflex action, Carpenter pointed not only to the normal trains of thought that proceed involuntarily when one's attention is released (*PMP*, 251-55), but also to processes that operate unconsciously—dreaming, for example, or the experience of giving up on solving a problem or remembering a name only to find that the solution or the name spontaneously surfaces later (*PMP*, 469, 519, 522, 532-39). He called such reflex activity "unconscious cerebration" (*PMP*, 469). Ideo-motor responses are exemplified by the somnambulist who unconsciously finds his way about the house or the hypnotized woman who acts out the experimenter's suggestion. But Carpenter extended the phenomenon to telegraph operators or piano players, whose complex actions can proceed without conscious direction (*PMP*, xxv-xxvi); to dousers with divining rods, which dip toward water without the douser's conscious intent; and to spiritualist mediums, who sincerely believe that their automatic, planchette writing comes from the spirit world and not from their own minds (*PMP*, 279-81, 284-89, 292, 302-4). These people's actions are reflexively governed either by habitual chains of thought or by ideas otherwise implanted in their minds, say by hypnotic suggestion.

The instances of seemingly automatic, unwilling, reflex operation did not stop there. Orators can speak, Carpenter

observes, and musicians can play, lawyers can write litigation, poets can versify, math problems can be solved, and reasoning can go on while people are in somnambulistic states, "and it is a very remarkable fact that their purely Automatic action in this state will frequently evolve conclusions which Volitional exertion has vainly striven to attain" (*PMP*, 591, 594). Moreover, quite apart from somnambulistic states, a host of mental operations proceeded automatically, the effect of nervous system circuits, of brain pathways. Once triggered, memory progresses through mechanical associations (*PMP*, 429-30, 434), and "is essentially an automatic form of Mental activity," relying on "the mechanism by which past states of consciousness spontaneously reproduce themselves" (*PMP*, 465). Reasoning, analysis, synthesis, comparison, generalization, abstraction, and judgment could also go on largely automatically (*PMP*, 261-62). Imaginative conception, or the reproduction of "the mental 'idea' or representation of an object formerly perceived through the senses," can happen automatically too, as can the processes of the constructive imagination as it fashions images (*PMP*, 487-489). Indeed, Carpenter concludes, the "work of the Imagination is itself purely automatic," though "the Will can both set it going and keep it going by the fixation of the attention" (*PMP*, 512-13). It may come as no surprise, then, that Carpenter characterizes writing as automatic; the mind can become "engrossed with the subject," and the writer's habitual mode of operation will take over, the ideas flowing and "clothing themselves in words," and this "automatic action" continuing "uninterruptedly for hours" (*PMP*, 263). Finally, Carpenter declares that the operations of genius are "essentially automatic," possible to call into play by the will but apt to operate thenceforth "beneath the consciousness" (*PMP*, 510).

Poetry as Spasm, Paroxysm, and "Mental Neuralgia"

For Oliver Wendell Holmes, novelist and poet but also Harvard professor of anatomy and physiology, these developments

in mental physiology and the claims made about art as a function of the nervous system had a special resonance. Reflex action, what he still referred to as "the mechanical sympathy . . . of distant parts," was especially important.¹⁹ Holmes had probably met Marshall Hall in the 1830s in Paris, when Holmes was a medical student; he reported on Hall's work then, and later helped prepare for press the first American edition of Hall's *Principles of the Theory and Practice of Medicine* (1839).²⁰ But following Carpenter and Laycock, Holmes extended the concept of the reflex well beyond Hall's conception. This "doctrine of reflex action," he writes, which "started from the fact of the twitching of a decapitated frog's hind legs, has grown to such dimensions that it claims to solve some of the gravest questions in psychology."²¹ And in the persona of the unnamed "Professor" in *Elsie Venner*, Holmes declares, "Automatic action in the moral world; the reflex movement which seems to be self-determination," needs to be studied "as Marshall Hall has studied reflex nervous action in the bodily system."²² At the more modest end, Holmes wrote of "reflex vision," by which reflexion transfers "impressions from one retina to the other."²³ More grandly, in *The Autocrat of the Breakfast Table* (1858), Holmes declares that physiologists are becoming more and more interested in "the automatic and involuntary actions of the mind," and then, invoking William Carpenter, he notes that such automatisms range from the unconscious processes by which an idea deposited in the intellect establishes relations with other ideas, or a name is remembered after we have turned our attention to other matters, to the "spasmodic cerebral action" that issues in poetic expression. "A man abandons himself to a fine frenzy," he writes, "and the power which flows through him . . . makes him the medium of a great poem or a great picture. The creative action is not voluntary at all, but automatic; we can only put the mind into the proper attitude, and wait for the wind, that blows where it listeth, to breathe over it. Thus the true state of creative genius is allied to *reverie*, or dreaming." It is "poets and artists" who "exercise those faculties of the mind which work independently of the will, . . . who follow their imagination in their creative

moments, instead of keeping it in hand as your logicians and practical men do with their reasoning faculty."²⁴ The imagination works unconsciously, independent of the will. Literary art is automatic, the effect of a nervous mechanism. Poetic inspiration is like a spasm, and therefore like a hysteric's convulsion.

In *The Professor at the Breakfast Table* (1860), Holmes returns to the issue of the "hidden spring of reflex action," declaring that it may even control the will, while we think we are self-determining.²⁵ And in *The Poet at the Breakfast Table* (1872) he compares poetry to *tic douloureux*, a kind of "mental neuralgia," characterizing poetic expression as physiological: "You can't order these organic processes," he declares, "any more than a milliner can make a rose." When the orator's brain is aflame, or the poet's heart in tumult, "it is something mightier than he and his will that is dealing with him!"²⁶ However, it was in the talk he gave before the Phi Beta Kappa Society at Harvard in June 1870, "Mechanism in Thought and Morals," that he most pointedly addressed these matters of the nervous system and literary creation and brought poetry and art distinctly into the realm of the reflex function. Referring to Laycock's "On the Reflex Function of the Brain" and to Carpenter's work—but noting the contributions of Maudsley, James Mill, W. E. H. Lecky, Eneas Sweetland Dallas, and others—Holmes declared unconscious cerebration to be a doctrine that "seems almost to belong to our time" ("MTM," 278). Much in the manner of these other thinkers, he likens unconscious "mechanisms" of thought to breathing, a reflex response that, like our chains of mental association, can be affected but not stopped by the will ("MTM," 261, 267). He notes the emblematic examples of unconscious mental processes—when a memory returns to us after we have given up on it, when the brain solves problems while we are asleep, when people knit or play the piano without having to think about these actions ("MTM," 279-81). And then he characterizes the process of writing poetry as similarly "automatic and imperceptible" ("MTM," 282). The poet's emotion, he writes, comes without being willed and it changes in unexpected ways. Such "strange hysterics of the intelligence," he asserts, are "as

automatic, involuntary, as entirely self-evolved by a hidden organic process, as are the changing moods of the laughing and crying woman. The poet always recognizes a dictation *ab extra*; and we hardly think it is a figure of speech when we talk of his inspiration." That is, poetic inspiration comes from automatic, unconscious, reflexive operations of the brain and nervous system, the same sort of sources that cause symptoms of hysteria; the poet must keep his mind "passive to the influx from without," though ready actively to seize out of the eruptions from the unconscious only what will suit his poetic purpose ("MTM," 286).

When Holmes called his first two novels "Studies of the Reflex Function in its higher sphere" and declared his intent to "follow the automatic machinery of nature into the mental and moral world," his primary aim was to portray characters whose nervous-system biology in some way determined their moral or immoral behavior.²⁷ The narratives, however, can be readily understood, too, as stories of reproduction and representation, and as such they crystallize problems that emerge from the juncture of art and the nervous system. Elsie Venner, whose nervous system was poisoned by snake venom while she was still *in utero*, cannot sing, or play music, or even give articulate voice to her underlying, true, human, feminine inner life, because the natural impulses that would issue in such manifestations are inhibited by her "ophidian tendencies," by the snake-nature grafted into her nervous system (*EV*, 341-42, 418, 434-35). Elsie does need, however, to express herself through a snakely "fierce paroxysm" (*EV*, 388), and she does this especially by dancing. Abandoning herself to a "dancing frenzy that seized upon her," she winds her arms, undulates her body, and rattles her castanets (all secretly watched by her doctor) (*EV*, 147-48). If her true, or human, nature is obscured, without representation, her ophidian nature seemingly achieves full expression, as if, indeed, the reflex response can unconsciously, guilelessly, and transparently express *this* nature. Holmes suggests that Elsie's "dancing paroxysm" is a lower form of expression than poetry, or music—with the implication that her dancing is a kind of reflex spasm of the lower spinal cord, or merely the kind of

instinctual nervous response that a snake would experience. Apparently for Holmes, in much the same way that one's biology could be defective and issue in immoral action, or highly evolved and issue in moral action, so one's biology could reflexively express itself, in higher or lower forms of art, depending on one's makeup. But where, then, on this continuum, do we place female hysteria, or the "frenzy" and "hysterics" to which the poet abandons *himself*? Are there strata of unconscious reflexion? Higher and lower levels of unconscious cerebration? Do hierarchies of gender, of consciousness, of reason pertain here? Holmes poses but doesn't resolve the question of whether the automatisms, spasms, and hysterics that issue in art are somehow lower than the aesthetic fabrications of consciousness. Nor finally does he fix the status of cerebral reflex action itself.

Focusing again on a female with mixed inheritance in *The Guardian Angel* (1867), Holmes attributes the medium-like visions Myrtle Hazard experiences to a number of possible causes—all seemingly biological and neurological. It may be that her ancestors, Puritan and Indian, are reproducing themselves, in her body, in her multiple personalities, in her mystical visions. Her trauma of near-drowning may be producing hysterical hallucinations. And she may have visions induced by hypnotic suggestion. Quite a medium, in other words, Myrtle invokes conceptions of the unconscious artist, the representer of other beings and other scenes. And it is significant that Holmes chose to focus this novel, like *Elsie Venner*, on a young female character who might possibly be diagnosed as a hysteric. Hysteria, for so many of the psychophysiologists I have mentioned, was the exemplary case of reflex cerebration *and* of mediumistic mimicry and reproduction. It is also significant that, in *The Guardian Angel*, Holmes brings hysteria together with inheritance (often thought to be the root of hysteria) and hypnosis (thought by some, such as Jean-Martin Charcot, to be especially effective, or *only* effective, on hysterics). Joining inheritance, hysteria, and hypnosis as biological conditions for involuntary mental representations provided Holmes with a topical and controversial combination. But

the combination also brings to the foreground the abiding question of reflexion as a reliable mirroring, a question that lurks in any discussion of hysterical mimesis or hypnotic mimicry. What, for example, was one to make of the supposedly direct, faithful, passive reproduction of a hypnotic suggestion next to, say, the wildness of a hysterical hallucination? It is, indeed, primarily in Holmes's fictions that questions of the nervous system and fidelity of representation surface, and in both *Elsie Venner* and *The Guardian Angel*, disease, especially hysteria, becomes the ground for the question of truthfulness in the bodily, nervous-system registration of reality. Does disease, does hysteria, create morbid conditions of over-sensitivity and heightened imagination that distort reality? Or do these states heighten capacities of registration, recording, mimesis? Are "sick" women peculiar in their capacity to represent, or do they evince a tendency all humans have? These questions, engaged but suspended by Holmes, have a particular background in nineteenth-century neurophysiology.

Nervousness, Hysteria, and "Instinctive Imitative Propensities"

Hysteria, of course, has been characterized as the mimetic disease par excellence.²⁸ As Jean-Martin Charcot undertook his task of describing, classifying, and understanding the various disorders diagnosed as hysteria at the Salpêtrière, the first task was to distinguish hysteria from epilepsy, a job made doubly hard because, as he came to understand it, so many hysterics at the hospital skillfully mimicked epileptics.²⁹ As the definition of the disease settled into the now-familiar conversion disorder, its distinguishing trait came to be a malady of representation—the real problem, whatever it might be, disguising itself as something else. But the 1870s and 1880s saw a much more widely ranging discussion of "nervous mimicry," its causes and implications.

In 1875 the English physician Sir James Paget, for example, coined the term *neuromimesis* as a more precise

replacement for the catch-all term *hysteria* when speaking of a patient's involuntary imitation of a disease.³⁰ For Paget, neuromimesis is situated somewhere between the mind and the reflex, between consciousness and simple automatism—a formulation that understandably results in contradiction. On the one hand, he repeatedly insists that neuromimesis is not a disorder of the brain but instead "a disorder of other nervous centres," in which such centers are "too alert," excited, and sensitive, so that any impression on them is "too . . . vehemently reflected" ("NM," 236, 249, 186, 176). This is a version of involuntary, reflexive imitation, not involving the mind at all. On the other hand, he acknowledges that some mimicries might be "essentially mental," due to imagination, or fear, or abnormally focused attention ("NM," 183). It is as if Paget's distinction means to resurrect Marshall Hall's division between lower-level reflex and cerebral function, except that Paget situates neuromimesis as a middle term. But whether the mimicry involves lower or higher nervous centers, its primary feature is a malady of the will, a loss of control over nervous sensitivity or imagination. While this imitative disorder is typical of hysterics, and of anyone with a deficit of will—such as the subjects of mesmerism and spiritualism, who unconsciously conform themselves to another's idea—even people with "good nervous systems" are naturally susceptible to neuromimesis, so everyone has to cultivate the all-purpose cure, the training of the controlling will ("NM," 249). The paradox Paget offers is that forsaking the will can yield truthful representation; this illness of "vehement reflection" may not be a distortion of mimesis but, rather, a perfection of it. The confusion Paget poses is that by situating the conscious will on one side, he crucially mingles on the other side the uncontrolled and potentially distorting imagination and the automatic reflexion of neuromimesis; they exist in the uncertain territory where "cerebration" and reflex meet, where hallucination bleeds into involuntary imitation.³¹

In the United States, S. Weir Mitchell—physician, nerve specialist, novelist, friend of Holmes, acquaintance of Howells, and generally influential figure—made similar generalizations

about nervous mimicry in the two chapters he wrote on the topic for his *Lectures on Diseases of the Nervous System, Especially in Women* (1885). Mitchell situates nervous mimicry on a continuum from normal tendencies to hysterical disease, and in a range from involuntary and mechanical reproduction to conscious and highly duplicitous simulation. Thus, he explains, among the root causes of nervous mimicry are natural instincts to imitate, which "are deeply human, and exist in all of us in varying amount."³² Each of us naturally has "a tendency to automatic and unconscious imitation which is the parent of a good deal of mimicry of disease." For example, a physician looks at a "case of unilateral grimace" and unconsciously imitates it. A physiologist has diarrhea when about to give his first lecture, and has it every time before lecturing, for a year; he finally describes the problem to a physician, who adopts the same symptom before *his* lectures. People cough when forced to listen to someone else coughing for a long time. A husband of a pregnant woman vomits, in a case of sympathetic morning sickness ("MD," 61-63). These automatic mimeses are natural responses of the nervous system. But in states of "general nervousness," or in hysteria, "the qualities which we all possess are apt to take on a morbid development, and to get out of the limits of rational control" ("MD," 57). First, that is, there is a morbid oversensitivity; these subjects become highly sensitive registering and reproduction devices, for whom even the slightest hint can evoke a new symptom. Second, like Paget, Mitchell sees loss of control over identification and instinctual mimicry as the problem; he adds a notable twist by warning of the potential collapse of rational resistance against the "pleasure in giving way to instinctive imitative propensities" ("MD," 70). The danger of succumbing to this pleasure is a kind of loss of the sense of the real: the patients' "power to reason on the phenomena of the senses leaves them," Mitchell writes, "and what they conceive to be the case takes the place of that which is" ("MD," 65). We might say, differently, that the subject's reproduction of another's reality is so powerful and full that it displaces an accurate sense of her own. Paradoxically, while this unwilled and uncontrolled imitation—this automatic

identification with what the patient sees or hears—is one version of the malady of nervous mimicry, so too is the case of the hysteric who willfully acts out disease symptoms for an audience, in order to gain sympathy or attention, or to fool her caretakers. As Mitchell puts it, there is a range, from "simulation, not consciously imitative, to conscious unresisted simulation, and at last dissimulation" ("MD," 81). The natural, innocent form of unconscious imitation, of mistaking oneself for another, gathers a more positive aura about it than conscious mimicking of symptoms. But finally the prescription is to steer between two dangers: conscious duplicity, on the one hand, and, on the other, the unconscious loss of the self in the imitated image.

Finally, Alfred Binet and Charles Féré, experimenters at the Salpêtrière, went farthest in characterizing hysterical neuromimesis as a kind of accurate mechanism of reproduction. As Charcot's colleagues, they were interested in hypnosis and hysteria and in hypnotic states of catalepsy, somnambulism, and other altered states of consciousness, as effects of "reflex cerebral action."³³ Their book, *Animal Magnetism* (1888), is really about these topics and not about Mesmer's mysterious fluid; indeed, they reiterate the judgment by the Parisian commission that discredited Mesmer—that his supposedly mesmerized subjects, especially the women with their "more mobile nerves" and excitable imaginations, were simply imitating the actions and symptoms that they saw around them, through "the mechanical imitation which involuntarily impels us to repeat that which strikes our senses" (*AM*, 17).³⁴ Hysteria rather than animal magnetism was their quarry, and they note that the imitation of Mesmer's patients is akin to "the well-known contagious effect of example in all hysterical manifestations" (*AM*, 15). But Binet and Féré invest hysteria with extraordinary qualities. "It should be known," they write, "that some hysterical subjects become when hypnotized so sensitive and such delicate re-agents, that no word or gesture escapes their notice; they see, hear, and retain everything, like registering instruments" (*AM*, 192). Somnambulists and hypnotized persons, too, have heightened senses, and improved memories (they can

recall what conscious persons can't), which can enhance their capacities for imitation (*AM*, 134-37). On the one hand, this behavior is akin to the simple automatism of a cataleptic, a person reduced to a personality-less state, who will imitate "the experimenter" mechanically and will "echo" utterances "as if he were transformed into a phonograph" (*AM*, 283-84, 143). Like the cataleptics, hysterics and hypnotized subjects may mechanically imitate what strikes their senses—though, unlike cataleptics, they retain signs of personality and judgment, even in an unconscious state. But they also move beyond cataleptics in their capacities, for they are unusually sensitive recorders and reproducers. When hypnotized they surpass conscious people in these abilities. And truly unconscious, they are truly truthful, for deception and simulation occur only as consciousness and the intellect are brought into play (*AM*, 188). Such mechanical propensities for the accurate and truthful reproduction of reality, accomplished by biology and without the biases and interference of consciousness, posed an allure, I suggest, for realist writers.

Unconscious Cerebration, Memory, Writing, and Truth

Oliver Wendell Holmes on unconscious cerebration and the French neurophysiologists on automatic mimesis—these two sources provide the right reference points, I believe, for Mark Twain's conception of involuntary and unconscious mental processes of representing reality. For Twain not only knew Holmes's writings thoroughly—and as a subscriber to *Atlantic Monthly* would have kept abreast of Holmes's thinking—he also knew of "Charcot's pupils & disciples"³⁵ and "French" experimenters in hypnosis and "somnambolic sleep."³⁶ Susan Gillman suggests that the work on hypnosis and multiple personality done by Charcot and Pierre Janet at the Salpêtrière and by Ambroise Auguste Liebeault and Hippolyte Bernheim at Nancy "constituted perhaps *the* body of knowledge crucial to Twain's later years."³⁷ But a more general interest associating reflex responses

with the revelation of the truth seems to be present at least by the early 1880s. Huck Finn, disguised as Sarah Williams, brings his legs together to catch a lump of lead and reveals himself as a boy. And Tom Canty's learned reflex, his idiosyncratic startle response—to shield his eyes when surprised—reveals him, to his mother, as the pauper in prince's clothing. Jubiter Dublap, also in disguise in *Tom Sawyer, Detective*, reveals himself as the murderer by his unconscious, idiosyncratic, reflexive gesture of drawing a cross on his cheek.³⁸

These sensorimotor-like responses that expose truth are of a part, I suggest, with Twain's moments of unconscious cerebration. Tom Sawyer talks in his sleep and quite possibly reveals to his brother Sid his secret knowledge of the murder of Doc Robinson. Pudd'nhead Wilson falls asleep and finally solves the problem of whose fingerprints are on the knife that killed Judge Driscoll.³⁹ Perhaps Mr. X, the somnambulist riverboat pilot in *Life on the Mississippi* who steers his boat at night through treacherous waters, functioning better than if he were awake, is the best example. Twain says generally of the "pilot's memory," "how unconsciously it lays up its vast stores, hour by hour, day by day, and never loses or mislays a single valuable package of them all!"⁴⁰ That is, the process of registering the reality of the river, including Mr. X's detailed and most-accurate remembering, is automatic, unconscious. Mr. X's piloting, in turn, is a cerebral reflex action, an unconscious, "ideo-motor" response, to borrow William Carpenter's conception. I would suggest that this process of automatic registration, followed by a reflex piloting that is in effect a precise tracing of the river on the inky blackness of night, provides an analogy for Twain's understanding of his writing process.

"Unconscious plagiarism," the concept Twain borrowed from Holmes, exemplifies the process still further. In his speech at Holmes's 70th birthday dinner in 1879, Twain said that his dedication in *The Innocents Abroad* was "unconsciously plagiarized" from Holmes's dedication in his book of poems, *Songs in Many Keys*. He further explained that a couple of years before

publication of *Innocents Abroad* (1869), he had been stuck in the Sandwich Islands with nothing to read but Holmes's book of poems, which he read and reread until his "mental reservoir was filled up with them to the brim." He then "unconsciously stole" the dedication.⁴¹ In a 1904 autobiographical dictation, he further explained that having realized the plagiarism three years after *Innocents* appeared but still ignorant of the "mysteries of the human mind," he had guiltily written Holmes an apology. He got back a gracious answer, he reports, in which Holmes said that everyone unconsciously plagiarizes everyday; all of our phrasings come from our readings, none is original with us, and even when we think we are fresh, we at best just stamp the familiar with our personal style.⁴²

Twain's adoption of the concept of unconscious plagiarism demands attention for several reasons. First, it is a model of unconscious replication, a representation channeled involuntarily from the senses, into the "mental reservoir," and then onto the page. Second, it is a perfect example of Holmes's "unconscious cerebration" or "cerebral reflex action." Notably, Twain would have read some of Holmes's remarks on unconscious plagiarism as a cerebral reflex response before receiving Holmes's gracious letter—specifically, when he read *The Autocrat of the Breakfast Table*, and shared it with Livy, in 1869.⁴³ He would have also had the chance to read about unconscious plagiarism in Holmes's 1862 essay in the *Atlantic Monthly*, "My Hunt after 'the Captain.'"⁴⁴ And he would have had the chance to read about it as a kind of automatism in Holmes's essay on "Mechanism in Thought and Morals," also published in the *Atlantic Monthly*, in 1871.⁴⁵ The concept could have been developing latently in Twain for a long time.

In light of the equivalence Holmes makes between unconscious plagiarism and cerebral reflex action, the similarity between Twain's account of the plagiarism and his accounts of his writing process as "unconscious cerebration" seems all the more important. More than once Twain uses the same image of a mental reservoir or tank, and always as a resource that replenishes itself

through what he calls the never-idle "machinery" of "U.C.", or "unconscious cerebration." (He famously employs this image to explain how he finally finished *Tom Sawyer* after having run dry.)⁴⁶ This must be paired with Twain's equally well-known pronouncements that when he wrote he felt "like a mere amanuensis, . . . merely writing from dictation." He said repeatedly that he would let every book of his "write itself," and he would take dictation. But when the book "tried to shift to *my* head the labor of contriving its situations, inventing its adventures, and conducting its conversations, I put it away and dropped it out of my mind."⁴⁷ In other words, his remarks on his own writing process conform to notions of writing as a cerebral reflex, as an unconscious "hysteries of the intelligence," which registers sensory impressions and operates as a kind of automatic mimesis. There is the persistent sense in Twain's reflections on the writing process that this automatism, this pleasurable surrender, we might say, to a biological propensity for mimesis, yields something truer, more authentic, something free from the contrivances of consciousness.

But if it is science that, for Twain, shifts the possibility for fidelity to reality from a separate representing consciousness to a mechanical, unconscious brain, it is also brain science that undoes that hope. We see the glimmer of this shift in *Life on the Mississippi* (1883). There, the ideal process for learning the river, the mode of the accomplished pilot, is for the brain, with its trained faculties, to "instantly photograph" the details of the river—such as change of depth and bearings—and then store "the important details for future reference without requiring any assistance from him in the matter" (*LM*, 65). That is, the pilot's consciousness need not participate. And then, like Twain's writer-amanuensis, the pilot recognizes treacherous waters, and steers the boat through them, "instinctively," automatically—as Mr. X was able to do. But to some degree the perfect, involuntary, unconscious registration of every detail of the river in the brain is undone by the material flowing of the river itself, with its shifting sandbars, caving alluvial banks, moving snags, cut-off oxbows, and new channels. And the metaphorical insight begins to dawn that the river "that's in your

head" (*LM*, 40), as Bixby says, behaves in the same way as the river outside, undergoing a constant process of physical mutation and rechanneling. It is very plausible that Twain would have read two influential essays by Frances Power Cobbe, "The Fallacies of Memory," which was published in *The Galaxy* in 1866 shortly before Twain began to work for that paper, and the even better-known "Unconscious Cerebration" (1870). The latter essay proclaims the unconscious brain as extremely "veracious"; unconscious cerebration can "photograph" and reproduce scenes; and forgotten or suppressed truths, retained in all their detail in brain tissue, can come out under hypnosis, or while drunk, or in delirium.⁴⁸ This would support a Twainian idea of mental automatism, or cerebral reflex, as a mechanism that both recorded and reproduced images with fidelity to reality. But Cobbe's essay on *memory* stresses its "habitual mendacity," its mutability.⁴⁹ Memory, she writes, is like a finger-mark on shifting sand, obliterated by the river of our days if left unrenewed, and if renewed, modified, not the same. In her conception, memories are perpetually lost thanks to the very processes of registration, of flows, of pathways forged in our gray matter. Her two seemingly contradictory essays crystallize the division that Twain seems to have felt.

Any thought that looks new and fresh to us, Holmes writes as a way of explaining unconscious plagiarism, is really the result of "long trains of thought" and unconscious recombinations of ideas, of mutations and modifications (*A*, 31). In a metaphor that appears to invoke a neurological model, Holmes suggests that an idea can nestle into the brain and, if left by itself will eventually have "domiciliated itself, so to speak,—become at home,—entered into relations with . . . other thoughts, and integrated itself with the whole fabric of the mind" (*A*, 134). An idea is "an impression made on a living tissue," which changes and grows when one "is least conscious of it" (*MTM*, 56). Through this process, the brain generates ideas that look unfamiliar. By the end of his life, in *What Is Man?* (1906), Twain has fully turned this brain process into a generator of hodge-podge. His Old Man declares that anyone's

opinions, thoughts, writing (even Shakespeare's) are involuntarily and automatically forged, second-hand, from odds and ends unconsciously gathered from books, conversations, and so on; we can't even claim credit for putting the borrowed materials together, because the brain, our mental machinery, does that without consciousness or reflection.⁵⁰ In this melange, realism, in the sense of accuracy and fidelity, has gone by the wayside.

Intimations of the Organism

It is Howells, the theorist of realism, who perhaps puts most explicitly the questions that emerge from these crossings of neurophysiology and literature. In particular, he grapples directly with the question of whether "unconscious cerebration" might yield a truer, more reliable account of reality than consciousness does, with its dodges and self-deceptions. As part of this question, he engages the matter of whether the mimetic representations of unconscious cerebration are effects of disease, and whether they are instinctive but "brute" impulses loosed by a relaxed or diseased will. My focus will be on his novella, *The Shadow of a Dream* (1890), a fiction that marks the beginning of his "inward-turning" period, when, students of Howells generally agree, the author became preoccupied with what he eventually named, in a *North American Review* essay, "A Psychological Counter-Current in Recent Fiction."⁵¹ From 1890 through his last writings, Howells wrote a range of stories focused on what we might call "psychical physiognomies," to borrow one of his phrases.⁵² These included a number that can only be described as fictions of neurophysiology, especially those collected in *Between the Dark and the Daylight: Romances* (1907).⁵³ There we find stories of memory disorders ("A Sleep and a Forgetting" and "A Memory That Worked Overtime"), a story of hallucinations ("The Eidolons of Brooks Alford"), a story that might be one of hysterical mimesis ("A Case of Metaphantasmia"), and so on. *A Shadow of a Dream* and *Between the Dark and the Daylight* mark years in which Howells's thinking

was influenced by his research into dreaming, his reading of William James, his interest in the Society for Psychical Research, and his study of French neurology. The neurophysiology of mental representations became a pivotal concern.

In 1880 Howells described "unconscious cerebration" as "the scientific term for dreaming,"⁵⁴ and it was in terms of dreams that he explored this supposed reflex action of the brain. In his fullest statement, "True, I Talk of Dreams" (1895), he forcefully characterizes dreams as the product of a lower self, animal-like, primitive, unmoral, "merely natural man."⁵⁵ Although the "mind keeps on working" in dreams, the "supernal criticism" that operates when we are awake, that sits in evaluation of our mental processes and flights—and which comes from consciousness, or conscience, or the soul—is absent. This bears directly on the question of unconscious cerebration and literary creation, for, as Howells says in this essay, an imagination uncontrolled by consciousness and conscience is like the unbridled imagination in dreams; rather than doing "great things," it accomplishes only "little things, foolish and worthless things" (840). In fact, Howells says finally, "there is no analogy . . . between the process of literary invention and the process of dreaming. In the invention, the critical faculty is vividly and constantly alert; in dreaming it seems altogether absent" (841). Or, he says later, "The two kinds of inventing, the voluntary and the involuntary, seem absolutely and finally distinct" (843). While this point of view might not mesh at all with that of Howells's friend Mark Twain, or with that of Holmes, both of whom put great artistic stock in involuntary processes of the nerves and the brain, it clearly does resonate with the views of Howells's acquaintance S. Weir Mitchell, who emphasized the importance of conscious evaluation of the real and rational control over the instinctive mimetic propensities. However, near the end of his essay Howells notes that "I have verified in my own experience the theory of [Théodule] Ribot that approaching disease sometimes intimates itself in dreams of the disorder impending, before it is otherwise declared in the organism" (843). This may look at first like a small concession to the idea that unconscious cerebration

may apprehend realities consciousness misses. And it is only a momentary counter-current in Howells's general discounting of dreams and their unconscious brain processes. But it harks back importantly to *The Shadow of a Dream*, which invokes the same idea from Ribot, but which I believe can be read more fully as an engagement of Ribot's ideas about psychophysiology, and as a serious treatment of the unconscious recording and expression of a truth that eludes the supernal critic.

Ribot, professor at the Collège de France, and author of immensely influential books on diseases of the personality and memory (books translated into English), was very much a physiological psychologist.⁵⁶ Like the physiologists who wrote of reflex actions in the brain, or of unconscious cerebration, Ribot characterizes human beings as composites of nervous-system processes, some conscious, most not. "The brain is a sort of busy workshop where ten thousand different operations are going on at once," he writes. "Consciousness is the narrow wicket through which a very small portion of all this work becomes visible to us."⁵⁷ As with Laycock, Carpenter, and Holmes, in this conception higher-order mental processes, operating as mechanically reflex-like functions, can take place without consciousness. Ribot notes that poetic and scientific inventions can burst into consciousness—after having been developed in unconscious cerebration. Solutions to problems long studied can come unexpectedly, suddenly, automatically, from the brain's unconscious workshop. Obscure ideas can be ordered (8). Passions, such as love or hatred, can develop unconsciously, ignorant of themselves, and burst suddenly into consciousness.⁵⁸ He credits fully the creative richness of cerebral processes that take place outside of consciousness.

These ideas provide the perfect framework for thinking about Howells's *A Shadow of a Dream* (1889), a work, I will argue, that is concerned about whether organic and automatic processes of the mind can discern, register, and reproduce in dreams a reality that eludes consciousness.⁵⁹ In this story, Basil and Isabel March, whose point of view we have, pay a visit to Douglas Faulkner, a heart disease victim who is troubled by a recurrent dream. Though

Faulkner doesn't tell the dream to the Marches, they surmise that it is a jealous dream about the relationship between his wife, Hermia, and his friend Jim Nevil, who has been staying with the couple. In a conversation about dreams, Faulkner suggests that, instead of meaningless emanations from a savage unconscious, dreams can be a source of revelation. Then he invokes the same passage from Ribot that Howells's essay refers to, a passage from *Diseases of the Personality* in which Ribot writes of people whose dreams tell them of physical diseases they have. A man dreams of being bitten by a dog, Faulkner reports, and wakes up with a malignant ulcer on the spot of the bite; he dreams of an epileptic, and wakes to have his first fit; he dreams of a deaf-mute, and wakes with a palsied tongue. These are, Faulkner explains, "intimations of calamity from the recesses of the organism to the nerve centres, which we don't notice in the hurly-burly of conscious life" (32-33). Why shouldn't such unconscious sensings, and their revelation in dreams, he asks, extend beyond bodily illness, to the moral realm?

This is the question I want to foreground as the special concern of this narrative. Can the organism's unconscious nerve processes work more sensitively than consciousness, apprehending realities and reproducing them in dreams? Faulkner's physician, the nervous specialist Dr. Wingate, says no. Dreams *are* signs, he says, but only of mental disturbance, in this case caused by Faulkner's heart disease (34, 46-47); they are not otherwise representations of reality. But Wingate's close-mindedness clearly discredits him. After Faulkner dies (of a heart attack, while fending off the ministrations his anxious wife), the question is thrown onto the drama of Hermia and Jim—a drama mediated by the interpretations of Basil and Isabel March. When Jim and Hermia get engaged, suspicion is raised, and the possible truth of Faulkner's dream gains credibility. But when Dr. Wingate finally tells Hermia her dead husband's dream, the guilt she and Jim suffer, and their subsequent renunciation of each other (after a desperate and passionately kissing embrace), make Basil March think instead that, with the shadow of this dream over them and their relationship, they've wrongly convicted themselves of

unconscious lust and unfaithfulness. Basil and Isabel eventually learn the exact details of the dream from Faulkner's mother: In it Hermia and Jim are waiting for Faulkner to die so they can get married, and when he does die, the funeral and the marriage take place at the same time, in the same church, with him unable to stop it. The Marches, however—who from the start have felt drawn to Jim and Hermia and obviously want to give them the benefit of a doubt—finally deny that the dream has any substance, and Isabel in particular refuses to think that the pair could have secretly, unconsciously, loved each other, because she will not accept that our feelings are not at our bidding. Howells, it appears, sets the Marches up; their stretched interpretations and denials are too much, and the exertions of their consciousness undermine its credibility. Though Howells leaves the story pointedly ambiguous, the only conclusion we can draw, I think, is that, in line with Ribot's ideas about passions we don't realize, Jim and Hermia were indeed in love, and in accord with Ribot's ideas about the unconscious apprehension of reality, Douglas's dream *was* a revelation.

More than once, Ribot compares consciousness to the shadow that accompanies the steps of a traveler—a concomitant, a tagalong with other, unconscious nervous system processes, an ineffectual epiphenomenon (*Personality* 14, *Memory* 2) . While I don't want to make this carry *too* much weight, the metaphor does resonate nicely with Howells's title. While the shadow of Faulkner's dream has traditionally been equated with its tragic effect on Douglas, Hermia, and Jim, it also arguably refers to *consciousness*—the thing that dogs the unconscious cerebration of the dream, the various interpretations that swirl around the primary, unconscious process of the dream. A powerful suggestion lurks that the process of unconscious cerebration, resulting in the dream, is the more reliable apprehension and representation of the reality. The shadow of consciousness is the dim reflection, the convoluted cloud that obscures the primary meaning.

This story was only a start in Howells's grappling with the intersection of neurophysiology and representation. But it lucidly

posed the questions at stake. Were such mental representations as Faulkner's merely the effect of disease, manifestations of a mental distress that arose in sympathy with physical illness, but that otherwise were *not* representations of reality? Or did these organic, neural processes operating outside consciousness issue in mimed realities whose truth surpassed conscious apprehension? Was "unconscious cerebration" a lower-nervous-system phenomenon, perhaps only savage and meaningless, and hence not worth attention? And, by analogy, should a literary artist, a realist writer, credit those neural processes as circuits for literary representation, or should one insist that only the separate representing consciousness, the "supernal critic," is capable of cleaving to the truth, capable of distinguishing tricks of fancy from insights into the real?

The pursuit of questions posed by an emergent neuroscience brought Holmes, Twain, and Howells to different endpoints, or to different questions. Holmes, the scientist himself, was the most thoroughgoing in theorizing poetry and imaginative writing as "hysterics of the intelligence," or as an unconscious cerebration that lay in mutable brain tissue. And yet, when he examined hysterics of the intelligence in his novels, they not only had highly ambiguous status as expressive means, but they also were situated in young women, who were watched over by detachedly observant, wise, protective males, and whose stories were told as case studies, in the voice of reason and scientific scrutiny—from an stance unaffected by the neurophysiological processes at work outside the wicket of narrative consciousness. Science more radically pushed Twain's pursuit of representation, I would suggest, from the stance of the observer to the neurally embodied circuit. At first, he most fully entertained the idea that reality was more surely grasped by plain impressions on tissue, by the physical circuits of unconscious cerebration. But the stability of this circuit was eroded by its sheer materiality: The mutability of the body, including its brain and nerve cells, introduced contingency. If Howells never relinquished the "supernal critic" as fully as Twain did, for him the unconscious cerebration of

dreamwork was at least momentarily credited, in *The Shadow of a Dream*, with a fidelity to reality that the dodges and denials of interpretive consciousness precluded.

In 1883, Twain and Howells collaborated on a play called *Colonel Sellers as a Scientist*, which was designed to capitalize on the popularity of the main character in Twain's dramatization of *The Gilded Age*.⁶⁰ Among its various farcical elements is a phonograph which, as Sellers explains, "if you leave it open, and all set," will "eavesdrop, so to speak—that is to say, it will load itself up with any sounds that are made within six feet of it" (241). Such a phonograph remarkably resembles the mechanism of unconscious cerebration, with its promise of accurately recording *everything*, through a process of undistorted physical registration, and then, in effect, reflexively playing it back. But Sellers's phonograph is an occasion for burlesque, as it eccentrically mixes sounds up, plays back fragments in collage, and juxtaposes the serious with the low. Its operation eerily foreshadows the workings of the brain as understood by Twain's Old Man, as the machine of unconscious cerebration jumbles and mutates impressions and memories into mental hash. And it resonates with the "unconscious plagiarism" of Holmes and Twain, pressing it to the point where any sense of the origin of thoughts and impressions is lost amidst neural recombinations and criss-crossings. If Howells did not follow Twain to this breakdown of literary realism and representation itself, and instead clung by a thread to his supernal critic even as he allowed conscious apprehension to be challenged and transformed by unconscious cerebration, both these writers must be credited with crystallizing problems that mental science was generating. While scientists probed more and more into the biological vicissitudes of imitation and representation, tracing what they thought to be neural mechanisms of registration, but preserving still their objectivity and observational integrity above such vicissitudes, these American writers rethought their own observation and realistic representation in terms of this nervous-system biology. They put themselves in the place of the neuromimetic subject, and let their conception of the human

biological transmitter dislodge the detached observer. In the process they advanced literary realism to its precipice, and they used science to think themselves to a place well beyond the conceptions of scientists

¹ Jonathan Miller gives an excellent introduction to this psychology, and an account of its suppression, in his essay, "Going Unconscious," in the aptly named volume, *Hidden Histories of Science*, ed. Robert Silvers (New York: New York Review of Books, 1995), 1-35.

² Oliver Wendell Holmes, "Mechanism in Thought and Morals," *Pages from an Old Volume of Life: A Collection of Essays, 1857-1881*, in vol. 8 of *The Works of Oliver Wendell Holmes* (Boston: Houghton Mifflin, 1892), 277. Further references to this essay will be to this edition and will be cited parenthetically as "MTM."

³ I should note here the similarity between my argument and that of Jonathan Crary in *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, Mass.: MIT Press, 1990). One of Crary's main points is that during the nineteenth century the disembodied and decorporealized observer became reembodied; the observer thus became an object of observation, and the processes of vision were relocated in human flesh and tissue. Once situated in the unstable physiology of the body, vision had to give up conceptions of transparent reflection, and the way was paved for modernist subjectivism. In a very Foucaultian way, however, Crary thinks of science and art as parts of a pervasively interlocking field of knowledge and practice. My more particular history here accommodates more possibilities, conflicts, players.

⁴ George Frederick Drinka, *The Birth of Neurosis: Myth, Malady, and the Victorians* (New York: Simon and Schuster, 1984), 30.

⁵ On theories of sympathy, see Ruth Leys, "Background to the Reflex Controversy: William Alison and the Doctrine of Sympathy before Hall," *Studies in History of Biology* 4 (1980): 1-66, and Edwin Clarke and L. S. Jacyna, *Nineteenth-Century Origins of*

Neuroscientific Concepts (Berkeley, Los Angeles, and London: Univ. of California Press, 1987), 102.

⁶ Robert Whytt, *Observations on the Nature, Causes and Cure of Those Disorders Which Have Been Commonly Called Nervous, Hypochondriac or Hysteric: To Which Are Prefaced Some Remarks on the Sympathy of the Nerves*, 3rd ed. (1764; reprint, Edinburgh: printed for T. Becket and P.A. De Hondt; and J. Balfour, 1767), v, 1. On Whytt, see Leys, "Background," 9-10.

⁷ See Clarke and Jacyna, *Nineteenth-Century Origins*, 151. Whytt himself believed that sympathy was the effect of an immaterial soul that pervaded the nervous system (see Leys, "Background," 9).

⁸ Henry Maudsley, *Body and Mind: An Inquiry into Their Connection and Mutual Influence, Specially in Reference to Mental Disorders*, rev. ed. (New York: Appleton, 1885), 36, 37, 83, 85, 87-88. On the ideas of Maudsley and others concerning reproductive organ disorders as causes of hysteria and mental problems, see Roy Porter, "The Body and the Mind, the Doctor and the Patient: Negotiating Hysteria," in Sander L. Gilman, Helen King, Roy Porter, G. S. Rousseau, and Elaine Showalter, *Hysteria Beyond Freud* (Berkeley: Univ. of California Press, 1993), especially 251-55.

⁹ Maudsley, *Body and Mind*, 78-82. And on Maudsley, see Elaine Showalter, *The Female Malady: Women, Madness, and English Culture, 1830-1980* (New York: Pantheon, 1985), 112-25.

¹⁰ From Charles A. L. Reed, "The Genital Factor in Certain Cases of Neurasthenia in Women," *Gaillard's Medical Journal* 70 (1899); quoted in F.G. Gosling, *Before Freud: Neurasthenia and the American Medical Community, 1870-1910* (Urbana and Chicago: Univ. of Illinois Press, 1987), 98.

¹¹ Marshall Hall, "On the Reflex Function of the Medulla Oblongata and Medulla Spinalis," *Philosophical Transactions of the Royal Society of London* 123 (1833), 635-65, and *Lectures on the Nervous System and Its Diseases* (London: Sherwood, Gilbert, and Piper, 1836). On the history of the reflex, see Clarke and Jacyna, *Nineteenth-Century Origins of Neuroscientific Concepts*,

102-56; also see Leys, "Background," and Stanley Finger, *Minds Behind the Brain: A History of the Pioneers and Their Discoveries* (New York: Oxford Univ. Press, 2000), 221. The standard history is Franklin Fearing, *Reflex Action: A Study in the History of Physiological Psychology* (Cambridge, Mass.: MIT Press, 1970).

¹² Roger Smith, *Inhibition: History and Meaning in the Sciences of Mind and Brain* (Berkeley and Los Angeles: Univ. of California Press, 1992), 68-69.

¹³ Smith, *Inhibition*, 69. Clarke and Jacyna, *Nineteenth-Century Origins*, 128. Also Leys, "Background."

¹⁴ Clarke and Jacyna, *Nineteenth-Century Origins*, 133-39. Also W. F. Bynum, "The Nervous Patient in Eighteenth- and Nineteenth-Century Britain: The Psychiatric Origins of British Neurology," in *The Anatomy of Madness: Essays in the History of Psychiatry. Volume 1: People and Ideas*, ed. W. F. Bynum, Roy Porter, and Michael Shepherd (London and New York: Tavistock, 1985), 94-95.

¹⁵ Thomas Laycock makes the argument that hysteria is a disorder of the nervous system and that it operates by reflex transmission of ovarian irritation to the brain (see *A Treatise on the Nervous Diseases of Women; Comprising an Inquiry into the Nature, Causes, and Treatment of Spinal and Hysterical Disorders* [London: Longman, Orme, Brown, Green, and Longmans, 1840]). Later Laycock makes his argument about "the automatic and unconscious action of the cerebral hemispheres on the muscular system" in two works: *Mind and Brain*, 2 vols. (1860; reprint, New York: Arno Press, 1976), 2:10; and "On the Reflex Function of the Brain" (*British and Foreign Medical Review* 19 [January 1845]: 298-311). For a general discussion of Laycock, see Kurt Danziger, "Mid-Nineteenth-Century British Psycho-Physiology: A Neglected Chapter in the History of Psychology," in *The Problematic Science: Psychology in Nineteenth-Century Thought*, ed. William R. Woodward and Mitchell G. Ash (New York: Praeger, 1982), 122-28.

¹⁶ See Danziger, "Mid-Nineteenth-Century British Psycho-Physiology," 127-28.

¹⁷ Ibid., 124, 125, 127, 129, and L.S. Jacyna, "The Physiology of Mind, the Unity of Nature, and the Moral Order in Victorian Thought," *British Journal for the History of Science* 14.47 (1981): 109-32, especially 111-17. Danziger notes that Carpenter's "ideo-motor" conception is actually an elaboration of James Mills's declaration that ideas and sensations can produce movements apart from volition (129), and Johannes Müller put the idea forth not long after Mills; still, it was Carpenter who popularized the idea.

¹⁸ William B. Carpenter, *Principles of Mental Physiology, with Their Application to the Training and Discipline of the Mind, and the Study of Its Morbid Conditions*, 4th ed. (1874; London: Henry S. King, 1876), 105, 515, 130, 120-21; further references to this source will be to this edition and will be cited parenthetically in the text as *PMP*.

¹⁹ Oliver Wendell Holmes, "Border Lines of Knowledge in Some Provinces of Medical Science," *Currents and Counter-Currents in Medical Science, with other Essays* (Boston and New York: Houghton Mifflin, 1892), 246-47.

²⁰ See Eleanor M. Tilton, *Amiable Autocrat: A Biography of Dr. Oliver Wendell Holmes* (New York: Henry Schuman, 1947), 119-20, 157-59. See also the indispensable essay by Charles Boewe, "Reflex Action in the Novels of Oliver Wendell Holmes," *American Literature* 26 (November 1954): 303-19. Boewe's essay is focused on Holmes's "physiological psychology" and his conviction that reflex responses enter into the mental and moral realm and may diminish moral responsibility.

²¹ Oliver Wendell Holmes, "Crime and Automatism," *Atlantic Monthly*, April 1875, 469.

²² Oliver Wendell Holmes, *Elsie Venner: A Romance of Destiny*, vol. 5 of *The Works of Oliver Wendell Holmes* (Boston: Houghton Mifflin, 1892), 227; further references to this source will be to this edition and will be cited parenthetically in the text as *EV*.

²³ "Reflex Vision," *Proceedings of the American Academy of Arts and Sciences* 4 (1857-1860): 373-75.

²⁴ Oliver Wendell Holmes, *The Autocrat of the Breakfast Table*, vol. 1 of *The Works of Oliver Wendell Holmes* (Boston: Houghton Mifflin, 1892), 134-35, 189, 191, 187; further references will be to this edition and will be cited parenthetically as A.

²⁵ Oliver Wendell Holmes, *The Professor at the Breakfast Table; with "The Story of Iris,"* vol. 2 of *The Works of Oliver Wendell Holmes* (Boston and New York: Houghton Mifflin, 1892), 34-35.

²⁶ Oliver Wendell Holmes, *The Poet at the Breakfast Table*, vol. 3 of *The Works of Oliver Wendell Holmes* (Boston and New York: Houghton Mifflin, 1892), 101, 46.

²⁷ Oliver Wendell Holmes, introduction to *The Guardian Angel*, vol. 6 of *The Works of Oliver Wendell Holmes* (Boston: Houghton, Mifflin, 1892), viii-ix.

²⁸ This is still the way recent studies of hysteria characterize the disorder. See, for example, Elaine Showalter on hysteria as a "mimetic disorder" in which the unconscious mind "mimics culturally permissible expressions of distress," in *Hystories: Hysterical Epidemics and Modern Culture* (New York: Columbia Univ. Press, 1997), 15.

²⁹ See Stanley Finger, "Jean-Martin Charcot: Clinical Neurology Comes of Age," in *Minds Behind the Brain*, 194, and Ilza Veith, *Hysteria: The History of a Disease* (Chicago: Univ. of Chicago Press, 1965), 230.

³⁰ James Paget, "Nervous Mimicry," in *Clinical Lectures and Essays*, ed. Howard Marsh (London: Longmans, Green, 1875), 172; further references to this essay will be cited parenthetically as "NM."

³¹ On Paget, and neuromimesis in general, see Athena Vrettos, *Somatic Fictions: Imagining Illness in Victorian Culture* (Stanford, Calif.: Stanford Univ. Press, 1995), 81-90.

³² S. Weir Mitchell, "Mimicry of Disease," in *Lectures on Diseases of the Nervous System, Especially in Women* (Philadelphia: Lea

Brothers, 1885), 56; further references to this source will be cited parenthetically as "MD."

³³ See Alfred Binet and Charles Féré, *Animal Magnetism* (New York: Appleton, 1888), 175; further references to this source will be cited parenthetically in the text as "AM."

³⁴ Despite this discrediting, of course, mesmerism persisted into the nineteenth century and gained a new prominence in the 1840s, accommodating and even promoting, this time around, the idea that mesmerized subjects have a special capacity for imitation. Asserting that mesmerized subjects will echo the gestures of the mesmerizer with whom they are in rapport, and will even mimic his movements if he is in another room or otherwise out of sight—transmitting pictures of his movements via mesmeric fluid—antebellum-era mesmerists named this phenomenon "traction," or "simulated motion" (see Alison Winter, *Mesmerized: Powers of Mind in Victorian England* [Chicago and London: Univ. of Chicago Press, 1998], 53, 73).

³⁵ Samuel Clemens to Olivia Langdon Clemens, January 1894, *Mark Twain-Howells Letters: The Correspondence of Samuel L. Clemens and William Dean Howells, 1872-1910*, ed. Henry Nash Smith and William M. Gibson, 2 vols. (Cambridge, Mass.: Belknap Press of Harvard Univ. Press, 1960), 2:659.

³⁶ Samuel Clemens, notebook entry, 7 January 1897, *Mark Twain's Notebook* (New York: Harper and Brothers, 1935), 349.

³⁷ Susan Gillman, *Dark Twins: Imposture and Identity in Mark Twain's America* (Chicago and London: Univ. of Chicago Press, 1989), 47.

³⁸ See Mark Twain, *Adventures of Huckleberry Finn*, ed. Walter Blair and Victor Fischer (Berkeley and Los Angeles: Univ. of California Press, 1988), 72; *The Prince and the Pauper* (Berkeley and Los Angeles: Univ. of California Press, 1979), 115-17, 304; and *Tom Sawyer, Detective*, in *The Adventures of Tom Sawyer; Tom Sawyer Abroad; Tom Sawyer, Detective* (Berkeley and Los Angeles: Univ. of California Press, 1980), 412.

³⁹ See Twain, *Adventures of Tom Sawyer*, 90; and Mark Twain, *Pudd'nhead Wilson and Those Extraordinary Twins* (New York: W. W. Norton, 1980), 104.

⁴⁰ Mark Twain, *Life on the Mississippi* (New York: Bantam, 1956), 65; further references to this edition will be cited parenthetically in the text as *LM*.

⁴¹ Mark Twain, "Unconscious Plagiarism," *Mark Twain's Speeches*, ed. Albert Bigelow Paine (New York and London: Harper and Brothers, 1923), 77-79.

⁴² *Mark Twain's Own Autobiography: The Chapters from the North American REView* (Madison: Univ. of Wisconsin Press, 1990), 181-82.

⁴³ For the account of this reading, see Alan Gribben, *Mark Twain's Library: A Reconstruction*, 2 vols. (Boston: G. K. Hall, 1980), 1:317-18. Holmes's discussions of unconscious plagiarism are in *The Autocrat of the Breakfast Table*, in *Works*, 31, 144-45.

⁴⁴ Oliver Wendell Holmes, "My Hunt after 'the Captain,'" *Atlantic Monthly*, December 1862, 738-64; reprinted in Holmes, *Soundings from the Atlantic* (Boston: Houghton, Mifflin, 1880), 24-123. For the discussion of unconscious plagiarism, see *Soundings*, 72.

⁴⁵ Oliver Wendell Holmes, "Mechanism in Thought and Morals," *Atlantic Monthly*, May 1871, 653-54; see also "MTM," *Pages from an Old Volume*, 260-314.

⁴⁶ Samuel Clemens, autobiographical dictation, 30 August 1906, *Mark Twain in Eruption: Hitherto Unpublished Pages about Men and EVents*, ed. Bernard DeVoto (New York: Harper and Brothers, 1940), 197; also see Twain's letter to Emily G. Hutchings, 14 November 1902, in *Mark Twain the Letter Writer*, ed. Cyril Clemens (Boston: Meador, 1932), 25. Twain might have adopted "unconscious cerebration" as phrase and concept from Holmes, Carpenter, William Lecky, or Frances Power Cobbe (see Cobbe's "The Fallacies of Memory," *Galaxy* 1 [May 1866]: 149-62, and "Unconscious Cerebration" [1870], in *Darwinism and Morals and Other Essays* [Boston: George H. Ellis], 324-55).

⁴⁷ "Mark Twain on Thought-Transference," *Journal of the Society for Psychical Research* 1 (October 1884): 166-67; quoted in Gillman, *Dark Twins*, 139; see also *Mark Twain in Eruption*, ed. DeVoto, 243, 196.

⁴⁸ Cobbe, "Unconscious Cerebration," 345, 343.

⁴⁹ Cobbe, "The Fallacies of Memory," 156.

⁵⁰ Mark Twain, *What Is Man?*, in *What Is Man? and Other Philosophical Writings*, ed. Paul Baender (Berkeley and Los Angeles: Univ. of California Press, 1973), 128-30, 148, 176-83.

⁵¹ "A Psychological Counter-Current in Recent Fiction," *North American REView*, December 1901, 872-88. On this period in Howells's life and fiction, see especially the work of John W. Crowley, both *The Mask of Fiction: Essays on W. D. Howells* (Amherst: Univ. of Massachusetts Press, 1989), particularly part 2, and "Miracles of the Inner World," the last chapter of *The Black Heart's Truth: The Early Career of W. D. Howells* (Chapel Hill and London: Univ. of North Carolina Press, 1985), 150-60. Although my stress on Howells and psychophysiology goes in the opposite direction from Crowley's psychological and psychoanalytical framework, I am indebted to his research.

⁵² "Editor's Easy Chair," *Harper's Monthly*, October 1908, 798.

⁵³ *Between the Dark and the Daylight: Romances* (New York and London: Harper and Brothers, 1907).

⁵⁴ "Contributor's Club," *Atlantic Monthly*, June 1880, 859

⁵⁵ "True, I Talk of Dreams," *Harper's Monthly*, May 1895, 836-45.

⁵⁶ On Ribot, see Laura Otis, *Organic Memory: History and the Body in the Late Nineteenth and Early Twentieth Centuries* (Lincoln and London: Univ. of Nebraska Press, 1994), 14-16, 23. Also Michael S. Roth, "Remembering Forgetting: *Maladies de la Mémoire* in Nineteenth-Century France," *Representations* 26 (spring 1989): 49-68, and John L. Brooks, "Philosophy and Psychology at the Sorbonne, 1885-1913," *Journal of the History of the Behavioral Sciences* 29 (April 1993): 123-45.

⁵⁷ *The Diseases of Memory* (New York: J. Fitzgerald, 1883), 9.

⁵⁸ Théodule Ribot, *The Diseases of Personality* (Chicago: Open Court Publishing Co., 1891), 16.

⁵⁹ *The Shadow of a Dream and An Imperative Duty* (Bloomington: Indiana Univ. Press, 1970).

⁶⁰ Mark Twain and W. D. Howells, *Colonel Sellers as a Scientist*, in *The Complete Plays of W. D. Howells*, ed. Walter J. Meserve (New York: New York Univ. Press, 1960), 209-41.