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Review

Philosophy matters in brain matters

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ABSTRACT

Purpose: Although most neuroscientists and physicians would argue against Cartesian dualism, Descartes's version of the psyche/soma divide, which has been controversial since he proposed it in the seventeenth century, continues to haunt contemporary neurological diagnoses through terms such as *functional*, *organic*, and *psychogenic*. Drawing on my own experiences as a person with medically unexplained seizures, I ask what this language actually means if all human experience has an organic basis.
Methods: Close reading of a textbook chapter on psychogenic seizures.
Results: I expose the author's unreflective embrace of psyche and soma as distinct entities, his inherent bias against illnesses labeled psychogenic, and the implicit sexism of his position. I further argue that even when a patient's symptoms are not alleviated, heightened self-consciousness and narrative framing can strengthen his or her sense of agency and have therapeutic benefits.
Conclusion: The ethical treatment of patients requires a respect for their stories.

In a novel I am writing now, one of my characters says, "All dying people are Cartesian dualists." This overstatement hides a piece of the truth. Illness can make almost every person vulnerable to a mind/body split. If the ill person can still think clearly, he often suffers an acute feeling that his body has betrayed him, that it has gone its own way without him. The thinking, speaking ego, what I like to call the internal narrator, appears to exist independently of the afflicted body and becomes a floating commentator on the goings-on, while the symptoms of disease wreak havoc on the poor mortal body. Subjective experience often includes a self that observes illness, even though the very idea of the self remains a philosophical and scientific conundrum.

René Descartes's dualism—his assertion that human beings are made of two stuffs, spirit and matter—is unfashionable these days and has, in fact, been highly controversial since his own time. In her *Philosophical Letters* of 1664, the natural philosopher, Margaret Cavendish wrote, "I would fain ask them. . .where their Immaterial Ideas reside, in what part or place of the Body?"[1] Neuroscientists, many of whom, I dare say, have read little Descartes, repeatedly echo Cavendish's complaint about Cartesian dualism (one I share), and yet, it is important to state that as of now there is no consensual theoretical model for the brain-mind. The neural correlates of consciousness, NCC—which might help explain the chattering internal narrator inside each one of us—have not been found. The terms *neural correlates, underpinnings*, and *representations* do not close the psyche/soma gap, they expose it. What we have are overwhelming amounts of data, much of it from scans, but from other research as well, and that data is racing far ahead of any overarching theory of brain function.

But why is this important? And what does it have to do with doctor-patient ethics and medically unexplained symptoms? Medical knowledge is continually evolving and is always dependent on new research. But as Thomas Kuhn pointed out in *The Structure of Scientific Revolutions*, the course of that research also rests on paradigms, primary assumptions that lie beneath all scientific investigation, and sometimes those paradigms shift.[2] There is increasing recognition that the terms *functional* and *organic* may be misconstrued from the start and rest upon an artificial psyche-soma divide. As I pointed out by quoting Cavendish, materialist monism is hardly new. In his introduction to *Outlines of Psychology* (1895), Wilhelm Wundt carefully articulates the debates between metaphysical and empirical psychology and comes down clearly on the empirical side, arguing that from his point of view "the question of the relation between psychical and physical objects disappears entirely".[3] Bio-physicists, such as Hermann von Helmholtz in the nineteenth century, were materialists, as was Jean Martin Charcot, the French neurologist who never ceased hoping he would discover during autopsy the brain lesions that caused hysteria.[4] And Sigmund Freud who coined the term *conversion* for hysterical phenomena never stopped insisting that for him psychoanalysis was a "biological psychology."[5] In *Borderlands in Psychiatry*, published in 1943, Stanley Cobb, echoing Wundt, wrote:

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> I solve the mind-body problem by declaring there is no such problem . . .I would insist that the old dichotomies 'functional or organic,' 'mental or physical' are not only wrong, but lead to bad habits of thinking because they lead to static and obsolete ideas and do not allow for modern pluralistic and dynamic ideas of matter and structure. . .Anyone who stops to think realizes that no function is possible without an organ that is functioning and therefore no function takes place without structural change."[6]

This is indubitably true. Every phenomenal thought and feeling is accompanied by brain changes.

In my 2004 edition of *Campbell's Psychiatric Dictionary*, the word *psychogenic* carries the following definition: "Relating to or characterized by psychogenesis; due to psychic, mental or emotional factors and not to detectable organic or somatic factors."[7] The definition may be saved from dualism by the word *detectable*, but probably not. Nevertheless, it is interesting to ask whether the distinction between psychological and physiological should be erased from medical vocabularies or whether they continue to serve some useful purpose.

I am one of countless people in the world beset by an undiagnosed and medically unexplained symptom of a neurological character. I wrote a book about it called *The Shaking Woman or A History of My Nerves* that was published in 2009. The book is an interdisciplinary investigation of my symptom, which draws on insights from philosophy, the history of medicine, psychiatry, psychoanalysis, neurology, and neuroscience research. Early in the book, I describe the first shaking episode that occurred two years after my father's death in May of 2006. I had been asked to give a speech in memory of my father at a ceremony held on the campus of the college where he had been a professor for over forty years.

> Confident and armed with index cards, I looked out at the fifty or so friends and colleagues of my father's. . .launched into my first sentence, and began to shudder violently from the neck down. My arms flapped. My knees knocked. I shook as if I were having a seizure. Weirdly, my voice wasn't affected. It didn't change at all. Astounded by what was happening to me and terrified that I would fall over, I managed to keep my balance and continue, despite the fact that the cards in my hands were flying back and forth in front of me. When the speech ended, the shaking stopped. I looked down at my legs. They had turned deep red with a bluish cast.
>
> My mother and sister were thrown back by the mysterious bodily transformation that had taken place within me. They had seen me speak in public many times, sometimes in front of hundreds of people. Liv [my sister] said she had wanted to go over and put her arms around me to hold me up. My mother said she had felt as if she were looking at an electrocution. It appeared that some unknown force had suddenly taken over my body and decided I needed a good sustained jolting. Once before, during the summer of 1982, I'd felt as if some superior power picked me up and tossed me about as if I were a doll. In an art gallery in Paris, I suddenly felt my left arm jerk upward and slam me backward into the wall. The whole event lasted no more than a few seconds. Not long after that, I felt euphoric, filled with supernatural joy, and then came the violent migraine that lasted for almost a year, the year of Fiorinal, Inderal, cafergot, Elavil, Tofranil, and Mellaril, a sleeping-drug cocktail I took in the doctor's office in hopes that I would wake up headache-free. No such luck. Finally, that same neurologist sent me to the hospital and put me on the antipsychotic drug Thorazine. Those eight stuporous days in the neurology ward with my old but surprisingly agile roommate, a stroke victim, who every night was strapped to her bed with a restraint sweetly known as a Posey, and who every night defied the nurses by escaping her fetters and fleeing down the corridor, those strange drugged days, punctuated by visits from young men in white coats who held up pencils for me to identify, asked me the day and the year and the name of the president, pricked me with little needles—Can you feel this?—and the rare wave from the Headache Czar himself, Dr. C., a man who mostly ignored me and seemed irritated that I didn't cooperate and get well, have stayed with me as the blackest of all black comedies. Nobody really knew what was wrong with me. My doctor gave it a name—vascular migraine syndrome—but why I had become a vomiting, miserable, flattened, frightened ENORMOUS headache, a Humpty Dumpty after his fall, no one could say.[8]

Perhaps because I had had one seizure before, and had suffered from violent migraines with vomiting since childhood, not to speak of my unhappy stint in Mount Sinai, I did not rush to a neurologist. My headaches had often been preceded by auras, with their sparkling lights, black holes, supernaturally clear vision but also fogs, lifting feelings that gave me a sensation of being pulled upward, and just once, a Lilliputian hallucination, during which I saw a little pink man and pink ox on the floor of my bedroom. A single episode of shaking did not cause me undue alarm. It appeared to be another curious adventure in a life marked by neurological instability. I had febrile convulsions as an infant and since my mid-thirties have had paraesthesia or what I refer to as "the body electric." Because I had at the time of my first convulsive fit and still have an abiding interest in neuroscience, I asked myself what on earth had caused it. Because it appeared to have been triggered by the speech about my father, I began to suspect a diagnosis of conversion disorder or hysteria. The shaking fits happened again. They did not happen every time I spoke in public, only once in a while, and then while climbing hard and fast on a rocky mountain trail in the Pyrenees, out of sight of my companions who were far behind me, I felt light-headed, strange and, still panting from my exertion, I sat down on a rock to catch my breath and felt my whole body go into violent shaking yet again. I felt wobbly, drained and unwell for the rest of the day. I began to doubt my own diagnosis. Maybe my shaking wasn't hysterical. After all, the good news about psychogenic seizures is that they can't kill you.

During my medical saga, I saw a psychiatrist, a psychoanalyst, and a neurologist. My brain MRI showed nothing. The benzodiazepine lorazepam did nothing to quiet my shakes, but the Beta-blocker propranolol has been effective, although occasionally I have felt a buzzing, humming sensation in my body, which I take as a warning that without propranolol, I would probably be flapping like crazy. None of the doctors—they were all doctors—believed that I was having conversion episodes and yet, none of them could say exactly what I had either.

After I published my book, I received letters from physicians and researchers all over the world. (The book was translated into several languages.) There were two kinds of letters: those from doctors who were interested in some of the points I had made and either elaborated upon them or complemented me on my insights and those in which I was offered a diagnosis. It is fascinating to note that I did not receive two diagnoses that were the same. I especially remember a letter from a medical researcher who was convinced my shaking was being caused by a particular bacteria. Testing for the bacteria turned out to be so elaborate and limited to a few specialists that I never pursued it. So how to label my shakes: functional, organic, psychic, somatic, psychosomatic?

The *practical* use of the word *organic* turns on visible location—a brain lesion or abnormal electrical brain discharges that explain the symptom—but its use also unearths ideas about what is real and unreal. The bias is: if you can see it and name it, it's real. If you

can't, it's not. New technology has altered visibility. Oxygenated blood flow can be seen on scans, but blood flow is hardly a lesion. In popular culture it has become common to talk about depression as "a chemical imbalance", as if *balancing* a person's neurochemicals, whatever that might mean, can resolve the complex reality of depression. Schizophrenia has also become "an organic brain disease", although its cause is unknown. The reduction of psychiatric illness to brain processes comforts patients and their families because the evocation of neural networks appears to confirm the *physical* reality of their illnesses. Cultural and medical hierarchies about the psychic or physical nature of disease infect our attitudes toward them. Unfortunately, chemical imbalance and organic brain disease don't mean much, despite the fact that the brain is obviously at the bottom of these ailments.

Epilepsy is classified as an organic disease, psychogenic non-epileptic seizures or PNES as a functional disorder because no physical site of injury can be found. Nevertheless the two are often confused. EEG's may be ambiguous, and not all epileptic patients have revelatory MRIs. The neurologist who suspects PNES must become a medical detective, relying on a clue from her patient, such as a seizure triggered by some powerful emotional event. Then again, there are epileptic patients who can seize after a shock or a strong emotional experience, too. The doctor may note the failure of medication to stop the fits. Of course, medication sometimes also fails to cure genuine epileptic seizures. And because some epileptic patients also have PNES, the picture can grow pretty murky.

The Treatment of Epilepsy: Principles and Practice, 4th edition, 2006, has a chapter on PNES.[9] The author of this chapter adopts a confident authoritative tone, no doubt intended to buck up budding neurologists who might be worried about misdiagnosis. In a section labeled PSYCHOPATHOLOGY, he declares PNES a psychiatric disorder and rehashes the DSM criteria for somatoform disorders, factitious disorders, and malingering. Somatoform disorders are "the unconscious production of physical symptoms caused by psychological factors."[9] He then emphasizes that the patients are not faking, unlike the factitious folks and malingerers. He makes no comment on the controversies that surround the DSM's metamorphosing categories or its lack of etiology. He mentions that sexual trauma or abuse may play a role in psychogenic seizures, and then, at the very end of this small section, the reader is told, "From a practical point of view the role of the neurologist and other medical specialists is to determine whether organic disease exists. Once the symptoms are shown to be psychogenic in nature, the exact psychiatric diagnosis and its treatment are best handled by a psychiatrist."[9] To be brief: send the patient to the other ward.

Under the following section called MANAGEMENT, the reader is told how important it is for the neurologist to communicate the psychogenic diagnosis using words such as "psychological," "stress induced," and "emotional... The physician communicating the diagnosis must be compassionate (remembering that most patients are not faking), but firm and confident (avoiding "wishy-washy" and confusing terms)."[9] The author is clearly unfazed by any philosophical difficulties involved in opposing *organic* to *psychogenic*. He does not bother to say that emotion and stress are also organic processes, albeit not ones connected to specific, locatable brain damage. His discussion is inherently dualistic.

Rounding up his chapter, he names several "fashionable" syndromes that may be thought of as partly or "entirely psychogenic".[9] The words *entirely psychogenic* are followed by parentheses, inside of which we find the emphatic explanatory phrase "*without any organic basis*".[9] The implication is that they are somehow non-organic, but how can that be? Are psychogenic seizures unreal, ungrounded, and immaterial? Are they brought on by supernatural, spiritual forces? The syndromes he mentions include fibromyalgia, fibrositis, chronic fatigue syndrome, and irritable bowel. Note the use of the word *fashionable*. The word *fashionable* is a put-down that effectively turns these syndromes into flimsy, effeminate, short-lived phenomena, similar to this year's skirt lengths or a new rage for open-toed shoes. Fibromyalgia, fibrositis, irritable bowl, and chronic fatigue are all diagnosed far more in women than in men, but this may in part be due to prejudice. One study has shown that fibromyalgia appears to be under-diagnosed in men.[10]

The ethical implications of my semantic analysis of these passages are not difficult to extrapolate. It is not that distinguishing between epileptic and non-epileptic seizures isn't important or that their etiologies aren't different. Of course they are. It is that the author's supposedly neutral language is colored by a philosophically naïve, hierarchical conception of the physiological over the psychological. He does not even tip his hat to the truism that organic brain processes accompany all subjective psychological experiences. Nor does he cite research on the neurobiology of emotion and its implications for psychiatric illness.

During emotional shocks or trauma, the body goes into a state of emergency, and there is considerable evidence that repeated shocks create lasting physiological changes. Although the mechanisms are unclear and the results mixed, there is increasing evidence that both cortisol levels and hippocampal volume are affected, to give just two examples.[11–13] And epigenetic studies are beginning to uncover the effects of stress on gene expression. I will cite a single example, a 2010 paper in *Biological Psychiatry* "Epigenetic transmission of the impact of early stress across generations."[14] The study exposed male mice to repeated and unpredictable maternal separation, which had the effect of altering the profile of their DNA methylation—the modification of a DNA strand after it has been replicated. Comparable changes in methylation were seen in their offspring even though they were reared normally. To make it short, stress altered the pattern of gene expression not only in the parent, but in the next generation. That traumatic stressors appear to play a role in conversion disorder is well known but poorly studied, and yet the burgeoning research being done in affective neuroscience warrants, at the very least, a careful reevaluation of what we mean by *functional* illness.

Lurking beneath our author's use of the word *fashionable*, alas, is an implicit sexual bias that dismisses incompletely understood syndromes as all-in-your-head feminine complaints. The widely-held belief that psychogenic or conversion phenomena are up to ten times more common in women than in men, a statistic cited in the DSM, only increases the odds that sexism plays a role in the characterization of psychogenic illness. The truth is that conversion seizures have been recorded in the largest numbers among combat soldiers, most of whom, until recently, have been men. The trenches of World War I were seething hotbeds of psychogenic illness.[15] My guess is that the horror of helplessness in soldiers who were literally stuck in a hole as they watched their fellows being blown to bits, goes a long way in explaining why "shell shock" became *the illness* of the Great War. And it is not over. Many veterans of Iraq and Afghanistan also suffer from conversion seizures.

The problem is getting the Veteran's administration to recognize their suffering as *real*. A letter posted on line in 2007 by a veteran of both Iraq and Afghanistan may stand as exemplary. The man had myriad symptoms—headaches, a recurrence of odd smells, shortness of breath, fatigue, and seizures. After an EEG, he was told that his seizures were non-epileptic, the result of conversion disorder. I quote: "... the head of neurology, Dr. Sams, came in and stated that everything was in my head and it was all PTSD related". The patient was discharged and told to get physical therapy. It is not odd that he was puzzled. "... if it is mental", he writes, "then why am I going to physical therapy for it?".[16]

It is highly unlikely that the neurologist author of the textbook chapter on PNES would admit to naïve dualism, sexism, or bias against emotionally produced illness, but I suggest they are all present nevertheless. Historical context provided by medical history may serve as a corrective to these underlying prejudices. In the first of the fifteen lectures he gave at Harvard in 1907, collectively titled *The Major Symptoms of Hysteria*, Pierre Janet confronted the ambiguous character of what would now be called psychogenic ailments. The symptoms of the disease are, he says, "exceedingly numerous" and "its limits...very vague."[17] He acknowledges that contemporary authors do not agree about what falls under the term *hysteria*, but then goes on to articulate a far broader ambiguity that every doctor and every patient should bear in mind, "This indecision generally surprises young people. You think that, in science, things are perfectly definite, and you are very much astonished to find indecision in your masters. *In reality definiteness does not exist in natural phenomenon; it exists but in our systematic descriptions. It is the men of science who cut separate pieces out of a whole that nature has made continuous*... Physicians, it is true, may agree in certain cases, when there is a distinctly visible objective phenomenon characterizing such and such a lesion...but unfortunately we have nothing of the kind at our disposal to define diseases of the mind" (my italics).[17]

Janet was a neurologist and a philosopher. His Kantian inheritance is clear in his statement that it is we who cut the world into pieces. We cannot leap out of our minds, become omniscient, and see the world *as it is*. Objectivity in science is not an absolute, but one determined by consensus, as Janet points out, an agreement about a lesion, for example. And yet, those same "objective" categories change over time. In 1907, hysteria had not yet been handed over to psychiatry. Charcot, with whom the younger Janet worked at the Salpétrière hospital in Paris, regarded hysteria as a natural phenomenon, period, with an unknown physical cause. Hysterics were not *insane*. For Janet, hysteria had a psychobiological character caused by a mental dissociation of particular functions from others, through what he called "a retraction of the field of personal consciousness."[17] What is missing, he argues, is "the faculty that enables the subject to say, 'It is I who feel, it is I who hear."[17] Specifically addressing hysterical tremor, Janet writes, "In some rare cases, you can find behind the tremors, as behind the tics, the existence of a fixed idea separated from the consciousness."[17] Janet's idée fixe was an idea that had been unconsciously transformed into a somatic symptom.

Whatever its cause, a conversion seizure is involuntary and real. With scans, it is now possible to see visible asymmetries in the brains of conversion patients that resolve themselves when the affliction ends. This, of course, does not explain what conversion is even in neurobiological terms; it simply points to organic changes. In *The Shaking Woman*, I quote a paper in *Neurology* by Trevor Hurwitz and James Pritchard in 2006 published a century after Janet's lectures at Harvard: "conversion reactions are fixed beliefs of somatic dysfunction arising from psychological distress that control cortical and subcortical pathways to produce patterns of loss or gain of function that are not organic in the conventional sense."[18] This is no more precise than Janet's description in 1907, and a good deal less thoughtful. They also lift the term "fixed belief" from a much earlier era of psychiatry, probably from Janet. I also quote a 1998 paper in *Psychiatry Research*, in which the authors are more straightforward: "...the question of how special psychological processes transmute into neurobiology has yet to be answered."[19] I point out that this is exactly what Freud asked and hoped to answer in 1895 when he was working on his *Project*.[20] How do we ethically frame the murky territory of non-epileptic seizures?

The veteran, who after an EEG, is summarily told his symptoms are "all in his head" and sent off to physical therapy without further ado, has clearly been treated unethically. The problem is not the diagnosis of conversion necessarily, although I wonder about the man's olfactory hallucinations and whether his physicians may have missed something. The problem is that his subjective experience of suffering has been dishonored by cavalier treatment and, frankly, ignorance about the organic character of what is now called PTSD. The most terrible thing that can happen to a patient is to be robbed of the dignity of his own narrative.

Every illness has a story because every illness is a dynamic, not a static phenomenon that exists in time. Therefore static, mechanistic models, whether in neurology or psychiatry, inevitably distort the character of any illness. Patients must be allowed to tell their stories, and they must be listened to as experts on the nuances of their own symptoms. Their case histories are valuable as documents of an unfolding story, and no two narratives will be identical, but there is also a therapeutic value in telling itself, which is related to the all important question of agency. Every illness chips away at this aspect of the self. The disease or symptom creates feelings of helplessness, vulnerability, and a general sense that one lacks control over one's own life. But even when a disease or symptom persists without resolution, a sense of personal agency can be strengthened.

In *Injured Brains of Medical Minds: A View from Within*, edited by Narinder Kapur, a compilation of physician's self reports on their neurological disorders, a general practitioner, John Lisyak, who developed epilepsy late in his life, meditates on questions of illness and agency. "Understanding", he writes, "does not necessarily change the reactions but it makes a difference to their severity."[21] After stopping his medicine because he had been free of seizures for three years, he had another tonic–clonic convulsion that was followed by a depression. "However", he writes, "because of the knowledge I had gained this depression was not accompanied by the feelings of hopelessness. And even the 'funny' smell that returned together with the emotional dread wasn't nearly as disturbing because I understood what was happening".[21] His symptoms are identical. He uses the words *depression* and *dread* to describe them, but he acknowledges that his feelings have nevertheless been transformed by an increased understanding of the nature of his disease.

Knowledge creates a change in him, a change that I would argue is psychobiological and related to a greater sense of agency that arrives with understanding and narrative mastery. When I learned to accept my migraines as permanent fixtures in my life and to practice biofeedback in the face of them, my life changed and my pain lessened. The change is not just "mental". It is physical or psychobiological. There are increasing numbers of neuroimaging studies on depression, for example, which demonstrate that the abnormal activity of the prefrontal cortex seen in depression becomes normal after remission, when a patient has been treated with either fluoxetine or placebo.[22,23] Placebo is of course a top-down effect that involves beliefs, beliefs that trigger relief both through the release of endogenous opioids in the brain and by non-opioid mechanisms.[24,25] Exactly how belief, an idea, transmutes into physiological processes wasn't understood by Janet and it is not understood now.[26] In all events, there is increasing evidence for similar prefrontal normalization after talk therapy,[27,28] which may involve precisely the understanding Lisyak cites as having altered his relation to his epilepsy. And this brings us back to the internal narrator and Descartes' *cogito ergo sum*—that powerful subjective, if illusory, feeling of an "I" that exists beyond the body.

What human beings have that animals do not is a highly developed reflective self-consciousness that makes it possible for us to alienate ourselves in symbols. We can represent ourselves to ourselves in language. We can say "I" and that "I"

can tell a story, and how the story of an illness is told is crucial to how it is lived. I cannot emphasize this enough. Looking back on his life, John Lisyak remembers, ''not being able to do what other children could. The village fair'', he writes, ''that filled everyone with wonder and excitement made me feel uneasy, and I was never happy to go on the Ferris wheel''.[21] Nor was I. I simply couldn't understand why the rides that caused intense nausea, dizziness, and disequilibrium in me seemed so pleasant to other children. The neurological hypersensitivity—visual, auditory, tactile, olfactory—that arrives with migraine and/or epilepsy is not all bad. I, for one, am not willing to trade in my childhood sensitivities and raging pains, my many auras followed by headache, or even my peculiar epileptiform, maybe, maybe not pseudo-seizures, for a more normal trajectory because these events are not only part of my story, they have been crucial to my life as a writer of both fiction and nonfiction. I have sometimes wondered if I would have become a writer if I had not had my particular neurological disposition. But my pathological hypersensitivity (let us call it by its right name) has also served me well because I have been able to frame this quality of my being to my advantage through a self-narrative that recognizes strength in what is often regarded as weakness. Moreover, my insatiable reading in many disciplines and my subsequent thinking about the question ''what are we?'' have brought me what can only be called compensatory joy. If you can't cure yourself, you can certainly learn as much as possible about what ails you.

Philosophy matters because it informs diagnosis. I think it may be time for ''functional'' and ''organic'' to go the way of humors and be replaced by other more subtle understandings of biological processes. In the face of so much that remains unknown about brain function, intellectual humility matters and, as a physician, intellectual humility may involve explaining to a patient that you don't know what is wrong with him or her. It may mean being wishy-washy and ambivalent, rather than firm and confident. It may mean recognizing implicit prejudices in yourself against psychogenic and/or emotional, psychiatric illnesses as somehow effeminate and less ''real'' than a brain lesion. As a young woman with debilitating migraines, I was at times treated with condescension and exasperation by neurologists and medical professionals. Although some empathy in one's doctor is certainly desirable, an ethical position requires respect, above all, the simple recognition that the patient in front of you has an inner life as full and complex as your own.

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