

## SOLVING THE SOCRATIC PROBLEM—A CONTRIBUTION FROM MEDICINE

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### ABSTRACT

This essay provides a medical theory that could clarify enigmas surrounding the historical Socrates. It offers textual evidence that Socrates had temporal lobe epilepsy and that its two types of seizure manifested as recurrent voices and peculiar behaviour, both of which were notorious hallmarks of Socrates. Common and immediate criticisms against the methodology of retrospective diagnosis are addressed first. Next, the diagnostic reasoning is presented in detail. The possibility of temporal lobe personality in Socrates is also considered. The important implication of this theory is that one of the charges against Socrates, introducing new divinities, was a now well-known neurologic symptom.

Cet essai développe une théorie médicale qui pourrait clarifier l'énigme entourant le Socrate historique. Il apporte des preuves textuelles que Socrate souffrait d'épilepsie temporelle, laquelle se manifestait par deux types de crise, le fait d'entendre des voix et un comportement étrange, deux caractéristiques notoires de Socrate. Dans un premier temps, les critiques habituelles et immédiates formulées contre la méthode du diagnostic rétrospectif sont examinées. Ensuite est présenté en détail le raisonnement diagnostique. La possibilité que Socrate ait possédé une personnalité épileptique temporelle est également considérée. Cette théorie implique principalement qu'une des charges retenues contre Socrate, le fait d'introduire de nouvelles divinités, était un symptôme neurologique aujourd'hui bien connu.

### INTRODUCTION

This contribution from medicine, or more specifically neurology, is made in the spirit of interdisciplinary inquiry into the enigmas surrounding the trial and execution of Socrates. Here, I submit a theory that at least some of the enigmas can be clarified if we understand that Socrates had a medical condition, temporal lobe epilepsy in contemporary medical terminology, without its being recognized at that time. According to this theory, he was an epileptic visionary who was extremely talented intellectually but was eventually rejected by his contemporary community due to his eccentric

and nonconforming behaviour and remarks. Some of his odd behaviour and remarks originated, at least in part, in his neurological condition but were never understood as such by his peers, or even himself.

The methodology of this claim is called pathography or retrospective diagnosis. This methodology is admittedly controversial, and I have already addressed many criticisms of this approach elsewhere, and offered my reply and defence.<sup>1</sup> Since this methodological objection is often the reason for rejecting medical theories of a historical figure, and such has been the case for Socrates, I first review previously published medical analyses of Socrates briefly and then discuss the points of controversy over retrospective diagnosis. I maintain that this somewhat unorthodox and defensive structure is justified, lest readers give up on reading the rest of this article based on the prevailing skepticism toward retrospective diagnosis. After these background reviews, I present diagnostic reasoning and its implications for the historical Socrates, concentrating on a potential contribution to the existing understanding of Socrates' behaviour, which is a key to understanding the enigmas surrounding his trial and execution.

I am not a philosopher or classicist, but a neurologist also interested in philosophy. Reading the primary sources in the original language is beyond my ability. I rely on well-established translations and interpretations of the primary sources.<sup>2</sup> Numerous nonmedical theories to explain the odd behaviour and remarks of Socrates have been published, and going over each of these is beyond the scope of this essay due to space limitations.<sup>3</sup> Suffice it to say that the sheer volume of these diverse theories and opinions may suggest no reasonable agreement among Socratic scholars on the nature of Socrates' enigmatic behaviour and remarks.<sup>4</sup> My discussion is mostly limited to the three ancient authors, Plato, Xenophon, and Aristophanes, who were contemporaneous witnesses of Socrates' behaviour and remarks.

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<sup>1</sup> Muramoto 2014.

<sup>2</sup> Translations used are as follows: For Plato, Cooper 1997; for Xenophon, Marchant and Todd 1988; for Aristophanes, Arrowsmith 1969. In my original work, I collaborated with a classicist proficient in classical languages (Muramoto and Englert 2006).

<sup>3</sup> To name several representative publications that I consulted on this subject in philosophy, classics, and history, Guthrie 1971; Edmunds 1986; Nussbaum 1985; Reeve 1989; 2000; Vlastos 1991; McPherran 1996; Joyal 1997; 2005; Brickhouse and Smith 2000; 2004; 2005; Kraut 2000; Smith and Woodruff 2000; Vlastos et al. 2000; Brisson 2005; Destrée 2005; Dorion 2005; McPherran 2005; Nancy 2005; Van Riel 2005; Weiss 2005; Bussanich 2006; Long 2006; Nails 2006; Waterfield 2009a; 2009b; Hughes 2011.

<sup>4</sup> According to Bussanich (2006: 206), Gregory Vlastos was quoted as saying that Socrates' *daimonion* is "the gravest of the difficulties we all have to face in our effort to make sense of Socrates."

## A CONTRIBUTION FROM MEDICINE

### A BRIEF OVERVIEW OF PREVIOUS MEDICAL THEORIES ON SOCRATES' BEHAVIOUR

Possible medical conditions, particularly mental disorders, that might have afflicted Socrates have been mentioned sporadically. Even his contemporary, Xenophon, already wrote that some might think that the *daimonion*, or personal voice that only Socrates could hear and that he variously called the “divine sign,” the “spiritual sign,” and “my prophetic power” was a delusion due to the fear of execution. Xenophon disagreed with this theory.<sup>5</sup> According to Owsei Temkin, a medical historian, the seventeenth-century French physician Jean Taxil quoted Aristotle as listing Socrates as an epileptic, along with Heracles, Empedocles, and Plato. Taxil’s thesis was that all demoniacs were epileptic, and he used the word “epileptic” too loosely.<sup>6</sup> Taxil apparently misinterpreted the Aristotelian *Problems*, which listed these philosophers as “melancholic.” In fact, a careful reading of the Aristotelian *Problems*, Book XXX.1, indicates that only Heracles is considered epileptic, and all the philosophers in the list are merely melancholic.<sup>7</sup> Nonetheless, Taxil set a tradition of considering these Greek philosophers as “epileptic.”

From the mid-nineteenth century onward, when modern scientific understanding of medical and psychiatric conditions started to evolve, more medically oriented theories emerged. Joyal concisely reviews such theories.<sup>8</sup> The French philosopher and physician Lélut considered Socrates mad because of his hallucinations and delusions.<sup>9</sup> Meanwhile, the English classicist Jackson agreed that Socrates was subject to hallucinations, yet he rejected Lélut’s claim that he was also delusional.<sup>10</sup> In his book *A History of Western Philosophy*, Bertrand Russell raised the possibility of insanity.<sup>11</sup> The possibility of epilepsy in the modern concept was first mentioned by the pioneering Harvard epileptologist William G. Lennox,<sup>12</sup> who included

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<sup>5</sup> Xenophon. *Memorabilia* IV.8.1. Cf. Harris (2013, 297), “... while Socrates’ disciples evidently treated the phenomenon [*daimonion*] with respect, there seems to be no evidence that even his numerous contemporary detractors tried to use it as proof that he was mad.”

<sup>6</sup> Temkin 1971: 161; Taxil 1602.

<sup>7</sup> Hett 1970.

<sup>8</sup> Joyal 1997: 47, footnote 11.

<sup>9</sup> Lélut 1856: 173–174.

<sup>10</sup> Jackson 1874: 241–242.

<sup>11</sup> Russell 1947: 109. “There seems hardly any doubt that the historical Socrates claimed to be guided by an oracle or *daimon*. Whether this was analogous to what a Christian would call the voice of conscience, or whether it appeared to him as an actual voice, it is impossible to know. Joan of Arc was inspired by voices, which are a common symptom of insanity. Socrates was liable to cataleptic trances; at least, that seems the natural explanation of such an incident as occurred once when he was on military service.”

<sup>12</sup> Lennox 1960: 703.

one sentence in his 1960 textbook about the possibility of temporal lobe epilepsy in reference to *Symposium* 174d–175c. While the present author, along with Walter Englert, presented more systematic evidence for temporal lobe epilepsy than Lennox in 2006,<sup>13</sup> we failed to cite one previous work, which only recently came to our attention: Naso and Vera had already pointed out similar textual evidence of Socrates' epilepsy.<sup>14</sup> The major difference from our study is their conclusion that Socrates had the sacred disease. As discussed later,<sup>15</sup> we do *not* believe that he did. In her comprehensive biography of Socrates, the historian Bettany Hughes also mentioned the possibility of “petit mal” and “cataleptic seizures.”<sup>16</sup>

At any rate, these theories have been almost completely rejected or dismissed by the current mainstream scholarship on Socrates. For example, referring to such past attempts to attribute Socrates' behaviour to medical conditions, Joyal wrote, “To be sure, it is in research on the divine sign that some of the low points in the history of Socratic scholarship have been plumbed.”<sup>17</sup> In the next section, I review several reasons for the rejection of medical theories in general and retrospective diagnosis in particular and provide a preliminary defence.

A BRIEF OVERVIEW OF THE CONTROVERSY OVER RETROSPECTIVE DIAGNOSIS  
The most common and fundamental resistance to this approach among philosophers, classicists, and historians, or more broadly, scholars in the humanities and social sciences, is the charge of reductionism. The critics would argue that medicine and science cannot and should not explain away the complexity and richness of our understanding of human history and historical figures.<sup>18</sup> Another concern is diachronic differences in the ontology, epistemology, and semantics of human diseases. The critics are skeptical about the past existence and knowledge of medical conditions that we can describe and diagnose today. For this reason, they reject retrospective

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<sup>13</sup> Muramoto and Englert 2006.

<sup>14</sup> Naso and Vera 1996.

<sup>15</sup> See footnote 62.

<sup>16</sup> Hughes 2011: Introduction, third section, second paragraph. Petit mal and temporal lobe epilepsy differ in terms of pathophysiology and clinical manifestations, even though laypersons often describe the symptoms of complex partial seizure mistakenly as “petit mal.” There is no such terminology or concept as a “cataleptic seizure” in modern epileptology.

<sup>17</sup> Joyal 1997: 47.

<sup>18</sup> According to this line of thought, Socrates' odd behaviour and remarks are *sui generis* and not subject to scientific or medical analysis. Another reason for widespread resistance against reductionism is religion-based. In the case of Socrates, Smith and Woodruff (2000: 7) commented, “we can see why people would fear that the general use of reductive arguments would lead to atheism.”

diagnosis as too speculative and anachronistic.<sup>19</sup> Furthermore, there seems to be a deep-seated prejudice against any medical and mental condition and disability, even among the academic community, perhaps because they feel that illness and disability somehow devalue the academic and social esteem of a person. The label of mental illness has been used to attack and discredit academic and political opponents,<sup>20</sup> which would only aggravate discrimination against people with mental and physical disabilities. For all these reasons, few scholars are willing to examine such a theory with an open mind.

Let me first clarify where I agree with the critics: I agree that a type of medical reductionism that reduces a social, political, or historical event into an encompassing medical explanation is absolutely untenable; human social interactions are far more complex than a medical explanation. I also agree that publishing a medical diagnosis of a historical person could have serious ethical implications, including those for his or her esteem and reputation.<sup>21</sup> Regarding anachronism, I readily admit that many problematic cases of anachronism were published in the past, as discussed shortly.

On the other hand, I maintain that explaining someone's specific behaviour from a medical and neuropsychiatric viewpoint does not necessarily entail reductionism. Nor is this an attempt to debase a historical figure by applying a label of "insane" or "crazy." If a medical theory is presented as an overarching explanation of a key action of a historical person or a major historical event, I believe it is a short-circuited reductionism. If, in contrast, a medical theory can fill gaps in our understanding of a specific behaviour and deepen our views of the person, it is not a case of reductionism, but of enrichment. Almost every one of us has medical conditions at some point in our lives, which affect our behaviour, thoughts, and remarks. Some of such behaviour cannot be understood fully unless it is examined in the context of the underlying medical conditions. Why should a historical person be treated differently by excluding such an approach? The theory I present here is intended to complement existing theories on the historical Socrates, not to refute or replace them.<sup>22</sup>

Regarding the charge of retrospective diagnosis being too speculative and anachronistic, I have already provided a lengthy reply elsewhere.<sup>23</sup> In my view, this criticism originates in the critic's confusion and conflation between nosology, or the scientific classification of diseases, and medical diagnosis, which is fundamentally hypothesis building under the uncertainty of a physician–patient encounter. In this sense, almost every medical

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<sup>19</sup> Leven 2004; Karenberg and Moog 2004; Karenberg 2009.

<sup>20</sup> For example, according to Ahonen (2014, 223), "Madman' was among the favourite insults exchanged by ancient philosophers."

<sup>21</sup> Muramoto 2014: 8–9.

<sup>22</sup> See footnote 84 for further clarification.

<sup>23</sup> Muramoto 2014.

diagnosis, particularly clinical diagnosis, is speculative even today, in that it is almost always a probabilistic judgment under uncertainty. Clinicians work most of the time based on a working hypothesis built from limited information about a patient using Bayesian probabilistic judgment<sup>24</sup> at each turn of events. The clinician's judgment is not what is true or false, but what is more or less likely. They work toward the higher likelihood as the working hypothesis (what is *most* likely) and then adjust it at the next turn of events, using another Bayesian statistical judgment.<sup>25</sup> This reality contrasts with a widespread misconception, particularly among nonclinician medical historians and medical humanists, that a medical diagnosis must be either correct or wrong, when a "correct" diagnosis is merely a more likely diagnosis more congruent with what we know about the patient than a "wrong" diagnosis. Thus, like most other medical diagnoses, I do not claim that the diagnosis of the historical Socrates is "correct" in the sense of the misconceived notion of medical diagnosis as a binary judgment. Here I claim merely that this retrospective diagnosis is more congruent with what we know about the historical Socrates than other theories.

Regarding the charge of anachronism, there are interesting and complex ontological and epistemological challenges, which I also addressed in my previous article. Here, I briefly introduce this challenge using epilepsy as an example. We now have the modern concept and definition of epilepsy. Let us call this epilepsy-modern. We also have the ancient concepts and definitions of epilepsy, as described in the Hippocratic, Platonic, and Aristotelian corpora, among others. Call this epilepsy-ancient. With these definitions and concepts, there are three approaches to understanding the condition of a historical figure as "epilepsy." (1) A standard approach is to analyze that person's presentation in terms of epilepsy-modern. This approach primarily uses the modern knowledge of epilepsy, using epilepsy-ancient only as a secondary consideration. This is standard because there are simply no other ways for modern physicians to meaningfully evaluate any patient, historical or modern.<sup>26</sup> (2) We could analyze the historical person using only epilepsy-ancient. This is purely the work of historians and classicists. The question

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<sup>24</sup> Muramoto 2014: 7–8. The major difference between retrospective diagnosis and modern clinical diagnosis is that the latter can always be corrected by the next new information we obtain in a clinical context, whereas no such opportunity is available for retrospective diagnosis, because it is a hypothesis about a past event. In this sense, retrospective diagnosis is viewed as unverifiable, which is a major source of frustration for critics who accept only scientific verifiability.

<sup>25</sup> To emphasize this dynamic aspect of medical diagnosis, recent medical education tends to use the term "medical decision-making" in place of the traditional "medical diagnosis."

<sup>26</sup> For a cautious affirmation of this approach for retrospective diagnosis, see Grmek 1989: 2: "We have no choice but to express ourselves in the medical idioms—using the terms and, more significantly, the concepts—of our own time." This

is whether a historical figure had epilepsy *according to ancient standards*. For this project, modern medical knowledge could distort the analysis from modern perspectives, and there is no place for modern physicians to contribute. Unfortunately, since the results of such studies can be interpreted only in the context of ancient knowledge, any further analysis using modern concepts and logic is necessarily anachronistic. (3) The most problematic approach is to equate or conflate epilepsy-ancient and epilepsy-modern and mix the terms and concepts together. While some scholars simply equate the “sacred disease,” as described in the Hippocratic corpus, with epilepsy-modern, this is a typical and glaring case of anachronism; there are many conditions that are included in one but not in the other.<sup>27</sup> To sum up, approach (3) is an obvious case of anachronism, while approach (2) is anachronistic if and when analyzed in our modern discourse. That means that approach (1) is the only way to analyze a historical person using modern medical understanding and discuss the significance from our perspective. Obviously, however, it is still extremely important not to mix the concepts and terms of modern medicine and ancient sources, lest we fall into the trap of approach (3).

#### WHAT IS TEMPORAL LOBE EPILEPSY?

Having defended against a common, immediate, and blanket rejection of this methodology, I now introduce the basic diagnostic concept of temporal lobe epilepsy for nonmedical readers. Epilepsy is defined as a syndrome of unprovoked recurrent seizures. In other words, epilepsy is diagnosed when a patient has a characteristic combination of different seizures and other related symptoms. A seizure is not a diagnosis of a disease, but a symptom of different medical conditions, and is defined as “a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain” which can be detected by clinical manifestations, electroencephalographic recording, or both.<sup>28</sup> In other words, a seizure is a transient neurological symptom caused by an abnormal and excessive electrical activity in the brain. One can have a seizure without epilepsy, because a seizure can result from (be provoked by) many different medical conditions, such as a low sugar level or sodium level in the blood, and can occur as an isolated event. On the other hand, epilepsy, also known as seizure disorder, always manifests itself with seizures that are unprovoked and recurrent.

What we now understand as temporal lobe epilepsy is not a unitary disease entity. It is a subset of epileptic syndromes consisting of a characteristic combination of two types of seizures, simple partial seizures and complex

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paradigm of using modern knowledge and technologies to understand ancient diseases is also widely used by paleopathologists.

<sup>27</sup> According to [Presti \(2013: 221\)](#), “the question of the definition of epilepsy in the Greek medical texts of the classical period is far from being solved.”

<sup>28</sup> [Engel and Pedley 2008](#); [Browne and Holmes 2008: 1](#); [Fisher et al. 2005](#).



partial seizures.<sup>29</sup> The condition typically begins in childhood.<sup>30</sup> The excessive electrical activity of these seizures is localized in the temporal lobes. As a syndrome, not a disease, it can result from various underlying etiologies. One important distinguishing feature of temporal lobe epilepsy is that these partial seizures are nonconvulsive, not manifesting the classic clinical features of epilepsy—falling down, twitching and jerking, and complete loss of consciousness and continence—unless the partial seizures of temporal lobe epilepsy secondarily generalize to the entire brain (secondary generalized seizure).<sup>31</sup> As long as the patient does not develop a secondary generalized seizure, it is not easy to recognize these symptoms as epilepsy in the meaning commonly known to laypersons.

Temporal lobe epilepsy as a syndrome has been recognized since the mid-nineteenth century, when there were no diagnostic technologies.<sup>32</sup> According to the medical historian Owsei Temkin, there is a passage suggestive of temporal lobe epilepsy in the Hippocratic corpus, *the Sacred Disease*, the classic treatise on epilepsy. Yet the Hippocratic author did not associate such a condition with the sacred disease.<sup>33</sup> The condition undoubtedly existed in the era of Hippocrates, a contemporary of Socrates, but most likely it was not recognized as a type of epilepsy. In the mid-nineteenth century, it was first recognized as a “dreamy state,” yet as usual with most other historical diagnostic classifications, it included many different conditions other than temporal lobe epilepsy. It was John Hughlings Jackson, a British neurologist and pioneering epileptologist, who established in the late nineteenth

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<sup>29</sup> Note that the classification and naming of seizures and epilepsies have been constantly evolving. This essay uses those of the late twentieth century. Various alternative terminologies such as “psychomotor epilepsy,” “psychomotor seizure,” and “psychic seizure” were used in the past. In the twenty-first century, naming and classification continue to evolve following the evolution of diagnostic technologies. The critics may argue that applying such rapidly evolving diagnostic terms and classification to a historical person is anachronistic and too speculative. That may be true for conditions in which the underlying pathophysiology itself has evolved, such as infectious diseases, genetic diseases, and many other disorders caused by changing environmental factors. But most basic manifestations of human pathophysiology, such as fever, cough, diarrhea, and jaundice, have never changed: it is our understanding, classification, terminology, and diagnostic technology that have evolved. The basic pathophysiology in the human body itself has not changed in historical times regardless of diverse terminologies and classifications. Seizure and epilepsy are such a basic human pathophysiology, regardless of how we name and classify them.

<sup>30</sup> As discussed in the next section, this is one of the key features of the condition of Socrates.

<sup>31</sup> Generalized seizures are commonly known as “grand mal.”

<sup>32</sup> For a history of temporal lobe epilepsy, see [Temkin 1971](#).

<sup>33</sup> [Temkin 1971](#): 316–317; *Hippoc. Morb. sacr.* 1.19–28; [Hippocrates 1923](#): 141. The Hippocratic author gives those symptoms as examples of conditions that are no less sacred than the sacred disease itself, but that nobody thinks are sacred.



century that the condition he variously named “epileptic dream,” “mental automatism,” and “dreamy state” originates in the temporal lobe.<sup>34</sup>

Simple partial seizure, one of the core manifestations of temporal lobe epilepsy, consists of recurrent brief episodes of various sensory experiences: seeing various images, hearing various sounds and voices, smelling certain smells, and tasting unusual tastes, for example.<sup>35</sup> The term “simple” indicates the absence of impairment of consciousness, and “partial” indicates that the seizure involves only a part of the brain, not the entire brain. Simple partial seizure causes only brief intermittent sensory experiences without any other ill effect. The other core manifestation of temporal lobe epilepsy, complex partial seizure, involves various degrees of altered consciousness, confusion, dreamy state, and memory loss—hence it is “complex.”<sup>36</sup> Patients with complex partial seizure often appear to be in a state of trance or stupor, being partially responsive or completely unresponsive, or they may appear to be responding to their environment and continue ongoing activities with somewhat diminished capacity. Such activities are often automatic (automatism). But the patient exhibits few or no convulsive movements or losses of postural tone (the patient does not fall down). These patients are often partially or completely amnesic about the event afterward. Those episodes can be brief, lasting for seconds to minutes, but can occasionally be prolonged, sometimes for hours. Most experiences during seizures are subjective, so that bystanders may not notice anything abnormal. But automatism and altered consciousness can manifest themselves as certain odd behaviours, such as confused action, arrest of movement, and trancelike conditions.

#### HOW IS SOCRATES DIAGNOSED WITH TEMPORAL LOBE EPILEPSY?

Retrospective diagnosis of temporal lobe epilepsy in Socrates is purely a clinical diagnosis. It is solely based on his lifelong history of symptoms and behaviour, described mainly by Plato, and some by Xenophon, with a dubious contribution by Aristophanes. This diagnosis is a clinical pattern recognition by an experienced neurologist, and obviously not by modern technological diagnostics. Here, I have to provide a narrative history of my own encounter with the patient Socrates.<sup>37</sup>

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<sup>34</sup> Temkin 1971: 344–346.

<sup>35</sup> This corresponds with the recurrent voice that Socrates told us he had been hearing since childhood.

<sup>36</sup> This corresponds with several of Socrates’ episodes of delirious confusion and memory loss, as detailed later.

<sup>37</sup> The following account may appear too personal and anecdotal for an academic paper, but it is intentional, in order to demonstrate the reality of clinical diagnosis for nonclinical readers. To demonstrate how a medical diagnosis is actually made even to medical students, let alone to a lay audience, is not easy and simple. It is generally perceived that making a medical diagnosis is as simple as obtaining a diagnostic test and getting a positive or negative result. To the contrary, even in this age of medical

When I first encountered Socrates, I was a practicing neurologist, seeing many patients day in and day out, some of whom had temporal lobe epilepsy. By then, I had followed probably over 30–40 patients with temporal lobe epilepsy throughout my career. They often gave me fascinating and memorable stories of their subjective experiences. These stories were so unique and characteristic that clinical history alone often gave me a reasonable certainty of the diagnosis of temporal lobe epilepsy. While new medications in modern times are mostly successful in controlling those episodes of sensory experiences and altered consciousness, my patients still told me of occasional breakthrough episodes when they missed a dose or two, and certainly recollected those experiences that occurred before they initiated medication.

While seeing these patients during the daytime, I also started my study of philosophy and ethics in the evenings as a foundation for the further study of medical ethics. Reading Plato was the very basis of my study project for philosophy. I had known Plato and Socrates only superficially until then. As I started reading from the *Apology*, and then *Euthyphro* and other early to middle dialogues, I could not help noticing the descriptions of the unusual behaviour and remarks of Socrates. They were very similar to what I had heard many times from my patients with temporal lobe epilepsy. One of the most representative descriptions was found in the *Apology*:

I have a divine or spiritual sign which Meletus has ridiculed in his deposition. This began when I was a child. It is a voice, and whenever it speaks it turns me away from something I am about to do, but it never encourages me to do anything. (*Apology* 31d)

“Well, this is almost exactly what some of my patients told me,” I said to myself. One of my patients, who was a well-respected psychologist, for

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informatics and well-established diagnostic guidelines, the clinical diagnosis still requires a unique pattern recognition and probabilistic intuition of an experienced diagnostician, whose expertise can be transmitted only through many personal experiences of similar patterns.

This section is meant to show how the classical sources triggered an experienced diagnostician to generate a patient-relevant clinical hypothesis, also known as a clinical diagnosis, through pattern recognition. Through this personal narrative, I intend to show that physician–patient encounter and clinical decision-making are bound by intimate personal interaction at a specific time and place. Contrary to the expectation of critics of retrospective diagnosis, clinical decision-making and clinical diagnosis are fundamentally and inherently a personal and individualized enterprise. Personal narratives play a central role in such an enterprise. We clinicians immerse ourselves in patients’ subjective experience by listening to their narratives and reexperience their symptoms and suffering, while putting everything into the perspective of our own medical and scientific knowledge and the wealth of previous personal narratives of similar patients.

example, said that when she started doing some physical activities, she occasionally heard a very brief funny voice, and at the same time she had to stop the activity.<sup>38</sup> It did not happen to her all the time, and she was not able to predict it. It started in her childhood, but she did not seek medical attention until her adulthood, when she started experiencing occasional episodes of confusion (complex partial seizure), which triggered her visit to a neurologist.<sup>39</sup> I thought, therefore, that the story given by Socrates was very typical of temporal lobe epilepsy, but it could just have been my biased imagination. After all, when you have a hammer in your hand everything looks like a nail. So I tried to ignore this thought and continued to read on. But then I came across the descriptions of Socrates hearing the same voice again and again, and they all had the same characteristics. Soon, the entire Platonic corpus became the medical record of Socrates, and besides studying the Platonic philosophical theses, I became more and more interested in analyzing Plato's as well as Xenophon's and Aristophanes' descriptions of the behaviour of Socrates.

While hearing a brief intermittent and vague voice is characteristic of simple partial seizure, its presence alone is not convincing of the diagnosis of temporal lobe epilepsy. What I found convincing in the subsequent reading was the presence of the second type of seizure. This second type is complex partial seizure as I defined above. As described in the next section, there are at least three places in Plato's corpus that depict such episodes in Socrates. Let us now go over the main diagnostic features described in the Platonic corpus.

#### SYMPTOMATOLOGY OF SOCRATES' NEUROLOGICAL DISORDER

As I mentioned above from *Apology* 31d, Socrates had recurrent episodes ever since he was a child of hearing a voice that commanded him to stop or refrain from certain actions.<sup>40</sup> According to Plato, the voice, or "*daimonion*," visited Socrates unexpectedly, abruptly,<sup>41</sup> and irrelevantly to the importance of the context in which he was placed.<sup>42</sup> The duration of this episode was usually very brief, probably a few seconds to a minute at most, and it often

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<sup>38</sup> The exact phenomenology of stopping an action seems very difficult for these patients to explain. My anecdotal experiences with them suggest that some sort of discomfort prevents them from continuing the action. It is unclear whether this was the case with Socrates or he actually heard vague words such as "stop!" or "don't!" Nevertheless, Socrates never attributed exact words to the voice (except in the *Theages* and the Xenophonic corpus).

<sup>39</sup> For further story of her diagnosis and treatment, see footnote 59 below.

<sup>40</sup> Pl. *Ap.* 31d; Pl. *Theages* 128d; Xen. *Mem.* IV.7; Xen. *Ap.* 4.

<sup>41</sup> Pl. *Phdr.* 242b–c; Pl. *Euthyd.* 272e–273a.

<sup>42</sup> Pl. *Ap.* 31d; 40a "[*daimonion*] opposed me, even in small matters, ... but now that ... I was faced with what one might think ... the worst of evils, my divine sign has not opposed me"; Pl. *Euthyd.* 272e–273a.

came when he was about to initiate an action or speech,<sup>43</sup> though the visit was quite unpredictable. The voice seems to have been inarticulate; Socrates did not attribute any specific words to it, except in the *Theages* and in the Xenophonic corpus. Socrates thought the *daimonion* was almost unique to him,<sup>44</sup> and he never identified the source of the voice.

As stated above, this manifestation is considered typical of simple partial seizure. In general, seizures are precipitated by certain very specific factors, and the patient can anticipate when a seizure might come because of these known precipitating factors, though the prediction is not always correct. There are many different precipitants described in the neurological literature. For example, some patients have seizures in response to certain sounds, certain visual stimulation such as lights and images, and as in the case of Socrates, certain actions or speech.<sup>45</sup> Hyperventilation associated with those actions, particularly talking, could also be a common precipitating factor. The major differential diagnosis for such a symptom is the auditory hallucinations of psychosis. Schizophrenia and mania are the most important in this category, while ear diseases with unusual tinnitus and chronic alcoholism are much less likely possibilities. We will come back to differential diagnosis later.

In addition to these descriptions consistent with simple partial seizure, there are at least three apparently independent descriptions that are consistent with complex partial seizure. The first episode is found in the beginning of the *Symposium*, 174e–175c, where there is a vivid account of Socrates' bizarre behaviour with testimony from a close friend. The story begins with a scene where Socrates leaves for Agathon's house to join a drinking party. While Socrates was walking briskly (recall that his usual precipitating factor was physical activity), somehow he lost track of what he was doing and wandered into a neighbour's porch, where he stood and was unresponsive to calls for a while. His close friend Aristodemus testified that "it's one of his habits: every now and then he just goes off like that and stands motionless, where he happens to be. I'm sure he'll come in very soon, so don't disturb him; let him be."<sup>46</sup> This is most likely a complex partial seizure precipitated by exercise. The episode was triggered by walking briskly, and in other contexts, by standing up or talking (see below, *Phaedrus* 263c–d). Physical activity seems to be the common precipitating factor for both simple and complex partial

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<sup>43</sup> Pl *Phdr.* 242b–c; Pl. *Euthyd.* 272e–273a.

<sup>44</sup> Pl. *Resp.* 6 496c: "it has happened to no one before me, or to only a very few."

<sup>45</sup> Sturm et al. 2002.

<sup>46</sup> Pl. *Symp.* 175a–b. Strikingly, even today this observation is commonly reported by family members and caregivers who are familiar with the spells of their loved ones with temporal lobe epilepsy. This is also advice most neurologists give to patients with temporal lobe epilepsy and their caregivers: there is no need to panic over such abnormal behaviour as long as the patient is in a safe environment, because it is almost invariably self-limited and reversible.

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seizures in the case of Socrates, which is not unusual given the close relationship between the two types of seizure. Sometimes a simple partial seizure occurs as an aura of a subsequent complex partial seizure.

The second episode is found in *Phaedrus* 263c–d. After delivering his first speech on love, Socrates is about to cross the river and leave, when he experiences the *daimonion*. He understands this visit as a sign that he has committed an offence against the gods in his first speech.<sup>47</sup> Socrates retracts the first speech and delivers the second speech, which is the complete antithesis of the first. But the interesting fact, which is noticed not by Socrates but by Phaedrus, his interlocutor and witness to the episode, is that Socrates cannot remember the details of his first speech “at all because I [Socrates] was completely possessed by the gods.” He asks Phaedrus, “Did I define love at the beginning of my speech?”<sup>48</sup> Socrates also cannot remember the details of the speech of Lysias which he heard earlier, asking Phaedrus to read the same introduction twice (a total of three times in this dialogue).<sup>49</sup> While most commentators take Plato in this context as simply depicting Socrates playfully pretending to be forgetful, or perhaps an instance of Socratic irony, Socrates’ own words about his state of mind during the speech suggests that he was indeed experiencing some disturbance. He says during the first speech, “don’t you think, as I do, that I’m in the grip of something divine? [...] don’t be surprised if I’m quite taken by the Nymphs’ madness as I go on with the speech. I’m on the edge of speaking in dithyrambs as it is.”<sup>50</sup> Another pertinent fact is that this experience roughly coincides with the visit of the *daimonion*, which triggered his conversion from the first to the second speech. It is quite possible that Socrates was indeed in amnesic confusion around the time he was visited with the *daimonion* and felt that he was “completely possessed by the gods.”<sup>51</sup> The whole episode is suggestive of a combination of a simple partial seizure, in which Socrates heard the *daimonion* without losing consciousness or memory, and a complex partial seizure, in which he had altered consciousness and memory impairment while confusedly delivering the unintended first speech as a manifestation of automatism, around the same time. Probably he was in and out of complex partial seizure while he was speaking. He seemed to have some partial recollection of his phenomenology during the first speech, as he explained later, “almost from the beginning of my speech, I was disturbed by a very uneasy feeling.”<sup>52</sup>

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<sup>47</sup> Pl. *Phdr.* 242b–c.

<sup>48</sup> Pl. *Phdr.* 263d.

<sup>49</sup> Pl. *Phdr.* 262e and 263d–e.

<sup>50</sup> Pl. *Phdr.* 238c–d.

<sup>51</sup> Pl. *Phdr.* 238d.

<sup>52</sup> Pl. *Phdr.* 242d. An immediate objection from the critics would be that there is no point in taking Plato’s depiction of Socrates so literally in this context, because the *Phaedrus* is after all a drama created by Plato, and not intended to be interpreted as

I further speculate, based on anecdotal reports from some of my patients, that this uneasy feeling or discomfort is the very reason Socrates had to stop an action that had triggered the *daimonion*. In other words, if he continued the action or speech despite the visit of the *daimonion*, he would enter this uncomfortable situation, which is the onset of mental confusion, or “the grip of divine” in his own words, due to complex partial seizure.<sup>53</sup>

Complex and simple partial seizures are sometimes not clearly demarcated clinically and electrophysiologically. These two can coexist, or one can follow immediately after the other. In such a series of seizures, the excessive electric firing spreads from one area of the temporal lobe to another. The phenomenology of seizure is a matter of the propagation of electrical activity between the temporal neocortex (outer surface of the lobe), where a sensory function is activated with normal consciousness, which is a simple partial seizure, and the mesial (inner surface) temporal lobe or the limbic cortex, whose activation alters consciousness and memory, which is a complex partial seizure. The patient may still appear to be speaking and behaving normally during such a series of seizures, but in retrospect he is found to have been intermittently in a confused and amnesic state. As already noted earlier, the common precipitating factors of Socrates’ simple and complex partial seizures are physical activities and speech, and this event in the *Phaedrus* also confirms these precipitants (delivering a speech and trying to cross a river). It might also be relevant to this context that seizures have been interpreted as god or spirit “possession” or “grip,” which is almost universal across cultures and historical times.<sup>54</sup>

The third description of episodic neurological symptoms is narrated by Alcibiades, Socrates’ lover and student, in *Symposium* 220c–e. While serving in a military campaign with Alcibiades, Socrates was standing in one spot all day as if he was thinking about some problem. This caught the attention of his fellow soldiers, but Socrates did not pay attention to them, nor did he come to meals or go to bed. It lasted until the next morning. Unfortunately, unlike the other two episodes, the description of the phenomenology lacks

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an accurate description of medically interesting behaviour. I address the problem of the “Platonic factor” just before the *Conclusion* and reply to this objection. For now, I agree with the critics that the entire drama is Plato’s creation, but I submit that it is still possible that Plato framed his own philosophical themes inside the framework of Socrates’ well-known pattern of behaviour and remarks to make the drama realistic.

<sup>53</sup> See also footnote 38 for the phenomenology of stopping action. This may also be what happened to Socrates when he was walking briskly to the party (Pl. *Symp* 174e–175c). It seems possible that if he had stopped walking at the onset of the first symptom when he “lost himself in thought” (174e), he could have avoided going into a prolonged trance on the neighbor’s porch.

<sup>54</sup> Temkin 1971. It seems to make perfect sense for Socrates to name simple partial seizure as “divine sign” and complex partial seizure as “divine possession” or “divine grip,” as they are closely related each other.

enough details, which makes diagnosis of the seizure type, if it was a seizure, somewhat more conjectural. However, its similarity to the episode in the neighbour's porch before the drinking party in *Symposium* 174e–175c, which had typical features of complex partial seizure, and the testimony by Aristodemus that this happened randomly and recurrently to Socrates, renders it plausible to consider this episode as an unusually prolonged version of complex partial seizure or complex partial status epilepticus, a type of nonconvulsive status epilepticus.<sup>55</sup> Status epilepticus is defined as “a condition characterized by epileptic seizures that are sufficiently prolonged or repeated at sufficiently brief intervals so as to produce an unvarying and enduring epileptic condition.”<sup>56</sup> Complex partial status epilepticus is a prolonged episode or a series of frequently repeating episodes of complex partial seizure, which can last up to many days.<sup>57</sup> The major differential diagnosis of this description would be absence status epilepticus, another type of nonconvulsive status epilepticus, and catatonia, or catatonic stupor, a symptom of psychosis, which Bertrand Russell called “cataleptic trance” and suspected Socrates had.<sup>58</sup>

Now we have seen two apparently independent episodic neurologic symptoms, simple partial seizure and complex partial seizure, that converge into one syndromic diagnosis of temporal lobe epilepsy. However, a diagnostician still has to go through one more crucial step before diagnosing this patient with temporal lobe epilepsy with reasonable certainty. Obviously, we cannot subject Socrates to modern technological diagnostic methods, such as electroencephalography or magnetic resonance imaging, which is the usual next step.<sup>59</sup> But at the very least we need to consider differential diagnosis and establish a probabilistic judgment that other diagnoses are less likely than what we suspect.

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<sup>55</sup> Williamson 2008.

<sup>56</sup> Williamson 2008: 677.

<sup>57</sup> Cockerell et al. 1994.

<sup>58</sup> See footnote 11. Russell 1947. Almost all past attempts to explain Socrates' behaviour in neuropsychiatric terms ended up with a concept in the broad spectrum of major psychosis (“insanity,” “hallucination,” “delusion,” “cataplexy or catatonia,” “madness,” etc.).

<sup>59</sup> However, negative tests do not necessarily rule out temporal lobe epilepsy, and sometimes clinical diagnosis takes precedent in such cases. For example, the well-respected psychologist I introduced earlier who had symptoms very similar to those of Socrates initially had a completely normal EEG (brain wave test) and MRI (brain imaging test). She went through trials of medications, and her seizures completely stopped with one medication that is highly effective in treating temporal lobe epilepsy. After two negative EEG tests, the third EEG test finally revealed occasional “temporal spikes,” which are the diagnostic feature of temporal lobe epilepsy, and confirmed the clinical diagnosis. In this sense, the diagnosis of Socrates without any technological tests may not be so farfetched after all, even in today's practice.



As mentioned above, the major competing diagnosis<sup>60</sup> is major psychosis, particularly schizophrenia with auditory hallucinations and catatonic stupor. While the duration of the episodes of confusion and their abrupt onset and cessation, and the vagueness of the message of the *daimonion*, are much more typical for temporal lobe epilepsy than for schizophrenia, the critical key feature of Socrates that almost rules out schizophrenia and major psychosis is the fact that this condition started in Socrates' childhood and remained stable and intermittent without signs of serious progression through his old age. As stated above, temporal lobe epilepsy typically starts in childhood, but childhood-onset schizophrenia is very rare, and the prognosis of those rare cases is very poor, even in modern times when the condition is treated.<sup>61</sup> Socrates' robust physical and mental health through age 70 and his accomplished career and settled marital life are almost unthinkable in a lifelong schizophrenic without the benefit of modern therapeutics. In contrast, this clinical course is still possible in the case of temporal lobe epilepsy, as long as it is mild.<sup>62</sup>

Let us take stock of the diagnostic features at this time. [Table 1](#) summarizes the diagnostic features in the texts with corresponding seizure types.<sup>63</sup>

It is the fact that Socrates was habitually experiencing, since childhood and throughout his life without major physical or mental disabilities, the two types of seizure that are both known to originate in the temporal lobe and known to happen in typical patients with temporal lobe epilepsy that convinced me of the diagnosis of temporal lobe epilepsy. It is this syndromic convergence of apparently unrelated events, described in different places in the Platonic corpus, without meaningful connections among those in the

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<sup>60</sup> The critics of this theory would insist that the major competing diagnosis is that Socrates was neurologically normal: his remarks and behaviour had no medical basis. My response is: Why, then, have scholars been puzzled by this "problem" for centuries and unable to reach any reasonable agreement using a nonmedical explanation?

<sup>61</sup> [Remschmidt et al. 2007](#). Note also that it is entirely unclear if such a rare condition really existed in ancient times.

<sup>62</sup> Many accomplished professionals have lifelong temporal lobe epilepsy. Those people in general have a mild and stable clinical course. One possible explanation of the mildness of Socrates' case is that there is no record that he had secondary generalized seizures, a hallmark of a wider involvement of the brain. While the lack of such a report does not entail the evidence of absence, since generalized seizures (grand mal) are so easily recognizable in a layperson's eyes even in the era of Socrates, commentators would have mentioned it as a typical feature of the sacred disease if he had one. This is also the reason that in contrast to [Naso and Vera \(1996\)](#), I conclude that Socrates did *not* have the sacred disease as known by the Hippocratic author.

<sup>63</sup> Adapted from [Muramoto and Englert 2006](#).

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Table 1. Seizure types, diagnostic features, and textual sources of Socrates' temporal lobe epilepsy

Seizures	Diagnostic features	Textual source
Simple partial seizure (SPS)	Childhood onset, repetitive and recurrent	Apology 31d, Theages 128d
	Voice commanding Socrates to stop his action	Apology 31d, Theages 128d
	Voice indicating Socrates' duty	Apology (Xenophon) 12
	Irrelevant to the importance of context	Apology 31d, 40a-c
	Unexpected and abrupt occurrence	Phaedrus 242b-c Euthydemus 272e-273a
	Brief duration of episode	Euthydemus 272e-273a
	Socrates felt it unique to him or rare for others	Republic 6 496c
	Provocation by initiating action or speech	Phaedrus 242b-c Euthydemus 272e-273a
Complex partial seizure (CPS)	Habitual and sporadic occurrence	
	Socrates goes off and stands motionless	Symposium 174e-175c
	Unresponsiveness	
Amnesic confusion (series of SPS and CPS)	Predictable and spontaneous recovery	
	No memory of speech Socrates just delivered	
	He felt "completely possessed by the gods"	Phaedrus 263c-d
Complex partial status	Occurrence close to an episode of SPS	
	Standing outside all day, no eating or sleeping	
	Appeared to try to solve a problem	Symposium 220c-e
	Disconnected and unresponsive to environment	
	Onlookers were mystified	

mind of the author, who had no knowledge of temporal lobe epilepsy, that makes this diagnosis particularly plausible.<sup>64</sup>

But is this still just the biased observation of one diagnostician? In general, many clinicians actually diagnose or at least strongly suspect that a certain person seen or met or heard about has a medical condition, without formally examining that person, when the story and manifestation are very typical or diagnostic of such a condition. Most of these diagnoses by pattern recognition, or so-called “Augenblick” diagnoses, are correct so long as the presentation is as typical as seen in textbooks, but of course they are not perfect. Here, I have to emphasize that the diagnosis of temporal lobe epilepsy in Socrates is just like that. As a pattern recognition by an experienced diagnostician, it is by no means a perfect and absolute diagnosis. But it still works as the first diagnostic hypothesis most of the time even today. Such a diagnostic hypothesis usually leads to further diagnostic testing to confirm the hypothesis.<sup>65</sup> In the case of Socrates, while we cannot subject him to modern technological diagnostics, I argue that this first diagnostic hypothesis is, in a sense, more plausible than those of my patients whom I saw in my clinic, because almost no patient can give at the first visit such a detailed lifelong history of seizures from multiple witnesses. In other words, the history given by Plato that I reviewed above is much more thorough and informative than I could get from most of my patients at their first visits before diagnostic testing. (Of course, it took a much longer time and greater effort to gather this diagnostic information from the ancient sources.) This is an important advantage of retrospective diagnosis that the critics miss. Let us now turn to the next examination to see if this theory can make any contribution to our understanding of the historical Socrates.

#### THE HISTORICAL SOCRATES RECONSIDERED

How did his temporal lobe epilepsy possibly influence his thoughts, remarks, and behaviour? Did it contribute to his conviction and execution? Such questions can never be answered definitively even today when all medical information is known about one individual. In this respect, I wholeheartedly agree with the antireductionist that human thoughts, behaviour, and social interactions are too complex to be explained away, or reduced, by medical explanation. Nevertheless, as mentioned earlier, I can make some

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<sup>64</sup> One might call the description of these symptoms “double-blind description,” as neither Socrates, the patient, nor Plato, the describer, had any idea about the diagnosis, yet two people blindly described so accurately the very specific phenomenology of temporal lobe epilepsy.

<sup>65</sup> Nevertheless, as noted in footnote 59, this process of confirmation through diagnostic testing is not that simple. Often the first test is negative in mild case, and these cases are treated based on clinical impression alone. Modern technological diagnostics are not necessarily the gold standard of medical diagnosis.

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contributions toward filling gaps in trying to answer the question of what kind of person Socrates really was, or the so-called Socratic problem.<sup>66</sup>

The first and most important contribution I can make from this theory is that his personal god, or the *daimonion*, was not the creation of Socrates, but was his genuine, authentic experience. It is not at all bizarre or enigmatic, but typical of a now well-known neurological symptom. The visit of the *daimonion* was not something he could control or bring on, and Socrates himself was baffled by its unexpected visits or the absence thereof. In this sense, he was unjustifiably accused of something he could not control. Socrates simply remained true to his own genuine experiences throughout the trial, even until his death. If Socrates had learned the association between the voice and his initiation of certain actions through his lifelong experiences, and if this association was sometimes predictable and sometimes not, and if, when he had continued to act despite the *daimonion*, he may have experienced some very uncomfortable feeling of confusion, which is the onset of complex partial seizure, it seems quite understandable that he interpreted the voice as trying to turn him away from certain actions. As was customary in those days, it was quite natural to interpret such warnings as a god's commands.<sup>67</sup> While Socrates himself described the *daimonion* as "familiar" and unique to himself, it was never as familiar and unique as his own creations: he never owned it. Socrates never said what the *daimonion* exactly was but only described how it came to him. This explanation was definitely not appealing to the jury, and only instigated the accusation of "introducing new deities."

Another important contribution is that at least some of Socrates' notorious behaviour, wandering into a neighbour's porch and standing as if he were frozen in a totally inappropriate context and not continuing with his expected actions, or being confused and forgetful about the wrong speech he just delivered, can be accounted for by his complex partial seizures. Undoubtedly, as the testimony of Aristodemus indicated,<sup>68</sup> Socrates had such episodes of bizarre behaviour many times more than Plato described, which probably helped establish his notoriety of "strangeness" (*atopia*).<sup>69</sup>

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<sup>66</sup> Guthrie 1971: 6.

<sup>67</sup> As mentioned earlier, Socrates may have considered such experiences of a complex partial seizure as "the grip of the divine" or "divine possession," which was the prevailing concept of seizure and epilepsy in his time, as told by Hippocrates. And if a simple partial seizure is the warning against the "divine possession," it is logical for Socrates to call such voices a "divine sign." Yet he never had a secondary generalized seizure, as far as we can tell from ancient sources, which is the hallmark of the sacred disease. Socrates' claim of a "divine" sign without the qualifying overt manifestation of the "divine" disease might have been considered unacceptable in his community.

<sup>68</sup> Pl. *Symp.* 175a--b.

<sup>69</sup> Vlastos 1991: 1.

The next consideration is what kind of a person Socrates possibly could have been if he indeed had temporal lobe epilepsy. If temporal lobe epilepsy is mild, which was likely the case in Socrates, as stated above, he might not have had any visible abnormality as a result of the underlying seizure disorder. There are many normally functioning people today, such as highly accomplished professionals, artists, and intellectuals, who live almost normal lives with temporal lobe epilepsy. Socrates' temporal lobe epilepsy may not have had any impact on his personality and intellectual accomplishment as long as it was mild. However, depending on the severity of this condition, patients with temporal lobe epilepsy are also known to manifest several different symptoms. Is there any reason to suspect that Socrates had other symptoms that were associated with his temporal lobe epilepsy beyond hearing voices and occasional episodes of confusion, amnesia, and strange behaviour? We do not have sufficient evidence to answer this question unequivocally. However, there are several lines of circumstantial evidence that raise the possibility that his temporal lobe epilepsy might have influenced Socrates' personality. From here on, my discussion is certainly more speculative than my account of the diagnosis of temporal lobe epilepsy itself.<sup>70</sup>

Many important neuropsychological functions are located in the temporal lobes, including language perception and comprehension, auditory perception, memory, integration of visual information, and emotion. Depending on the extent of the lesion in the temporal lobes, all these functions can be affected. However, the situation in the patient with temporal lobe epilepsy is more complicated than simple damage in the temporal lobes, such as tumours, strokes, or brain injury. Because the lesions responsible for temporal lobe epilepsy are usually small, sometimes of microscopic size, they may not cause any tangible loss of function. A more important functional change in temporal lobe epilepsy is the sequel to the chronic and repetitive excitation of the neurons in the temporal lobes, also known as a "kindling effect." Such chronic and repetitive electrical excitation can result in a complex conglomeration of enhanced and diminished functions, which are responsible for various neuropsychiatric complications of chronic temporal lobe epilepsy.<sup>71</sup>

The "epileptic personality" and "temporal lobe personality" have been described in the neurological and psychiatric literature for over a century, including the description by the German psychiatrist Emil Kraepelin in the

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<sup>70</sup> Some readers may wonder why we discuss such a speculative account of personality here. Besides a possible resolution of the discrepancy between Aristophanes and Plato/Xenophon in their portrayal of Socrates as discussed below, epilepsy has been implicated in other historical religious leaders, most notably the apostle Paul and Mohammed (Saver and Rabin 1997). Our insight into the personality of Socrates, who was also highly religious, might shed some light on the ongoing discussion on the relationship between religiosity and epilepsy.

<sup>71</sup> Blumer 1975.

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early twentieth century.<sup>72</sup> Fyodor Dostoevsky is considered one of the famous figures to have had an epileptic personality.<sup>73</sup> D. Frank Benson (neurologist) and Dietrich Blumer (psychiatrist) together describe the epileptic personality succinctly as follows:

A complex syndrome of personality and behavior changes follows (or rarely, precedes) the onset of temporal lobe seizures, or of generalized seizures with presumed involvement of the temporal lobes. While sexual arousal and response tend to be reduced, there is often a profound deepening of emotional responses. This deepening includes penting up and episodic discharge of anger and rage on the one hand, and intensification of ethical-religious feelings on the other. The need to be good-natured, helpful, and God-fearing is much more prominent than the highly publicized violence-proneness. The deepening of emotional responses affects much of the patient's psychic life. The so-called epileptic "viscosity" may be viewed as a result of the intensified ethical sense: there are no trifles; the right or wrong of every item needs to be considered along with all ramifications; no issue can be easily dropped; these patients become long-winded in speech and often feel the need to put down their thought in lengthy writings; they tend to be remarkably without humor, in general, and without appreciation of sexual humor in particular.<sup>74</sup>

I quote this rather long description of epileptic personality because some, but not all, features are reminiscent of the personality of Socrates.

The late Norman Geschwind, the famous behavioural neurologist, together with Stephen Waxman, described four features of the personality traits of temporal lobe epilepsy: hyposexuality, hyperreligiosity, hypermorality, and hypergraphia.<sup>75</sup> Profound interest in philosophical issues, which are likely related to hyperreligiosity and hypermorality, is also seen in these cases. Because of Geschwind's contribution to the delineation of the personality disorder of temporal lobe epilepsy, the syndrome is often called the Geschwind syndrome. Typical cases of the Geschwind syndrome in the population of temporal lobe epilepsy are considered uncommon, and its specificity to temporal lobe epilepsy has been challenged in the neurology

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<sup>72</sup> Kraepelin 1904.

<sup>73</sup> Hughes 2005; Geschwind 1984.

<sup>74</sup> Blumer and Benson 1975: 165.

<sup>75</sup> Waxman and Geschwind 1975.

literature.<sup>76</sup> But many epileptologists and neuropsychiatrists dealing with temporal lobe epilepsy acknowledge its existence in clinical experience.<sup>77</sup>

By reviewing the above description of the personality and behavioural features of temporal lobe epilepsy by Benson and Blumer, and the traits of the Geschwind syndrome, we cannot help noticing a certain resemblance to Socrates' personality. There is no need to mention Socrates' "hyperreligiosity" and "hypermorality," and his intense interest in and meticulous care for philosophical issues. Regarding Socrates' "hyposexuality," we find in his discussion of love in the *Symposium* and *Phaedrus* that his interest is not in carnal love but in asexual love, which is the prototype of what we know as "Platonic love." One conspicuous exception to the typical temporal lobe personality is the lack of "hypergraphia." In fact, Socrates left no written document. However, his untiring, inquisitive, and unremitting questioning could be interpreted as an oral version of hypergraphia, or more generally "hyperdetailed, lengthy, excessive, and persistent verbal output."<sup>78</sup> As seen in the above quote, Benson and Blumer suggest that hypergraphia might be a collateral manifestation of long-windedness of speech, which Socrates most likely had. The other conspicuous absences in Socrates, in Plato's and Xenophon's portrayals, are mood swings, temper tantrum, and rage, which are also described in the temporal lobe personality and the epileptic personality. One hint that Socrates might have exhibited at least some of the traits of the temporal lobe personality may come from the portrayal of Socrates by Aristophanes in his comedy the *Clouds*. If Aristophanes wanted to ridicule and lampoon Socrates by caricaturing his undesirable personality traits, some features of the temporal lobe personality would have been an easy target for him. If we look at Socrates in the *Clouds* through this lens, it might be said that his hyperreligiosity, hypermorality, and "viscosity" are expressed in a very distorted fashion.<sup>79</sup>

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<sup>76</sup> See a debate between [Devinsky and Najjar 1999](#) and [Blumer 1999](#).

<sup>77</sup> [Benson 1991](#): 420. My personal anecdotal observation is that the prevalence of temporal lobe personality is declining in modern times, as most patients with temporal lobe epilepsy are effectively treated from childhood, and the long-term sequel to this condition is diminishing.

<sup>78</sup> [Benson 1991](#): 413.

<sup>79</sup> Regarding hyperreligiosity, the clouds in the comedy might be viewed as the distorted representation of Socrates' personal deity (see [Edmunds 1986](#)). As for hypermorality, teaching sophistry might be a twisted caricature of Socrates' unique and unconventional morality. "Viscosity" is a term frequently used in psychiatric literature to describe a behavioural trait of the temporal lobe personality, which is explained in the above quote of [Blumer and Benson 1975](#): "there are no trifles; the right or wrong of every item needs to be considered along with all ramifications; no issue can be easily dropped." In the *Clouds*, his tenacious questioning about trivial details of natural sciences and grammar might be a representation of this trait.



The flip side of this speculation is that, in contrast to Aristophanes' portrayal of Socrates, which is very pathetic, Plato's and Xenophon's Socrates might be viewed as "too good" and too exemplary a personality for a chronic epileptic. It has been widely accepted among Socratic scholars that a substantial portion of Plato's Socrates has been modified by the "Platonic factor" for various reasons, including Plato's own philosophical agenda, which he wanted to put in the mouth of Socrates, his need for a perfectly moral, virtuous, temperate, and religious Socrates for the dramatization of his dialogues, and above all, his overwhelming admiration of his best teacher.<sup>80</sup> Likewise, Xenophon's Socrates might have been distorted by his intense admiration of the late Socrates; Xenophon wrote those dialogues almost as eulogies to defend and clear Socrates' name, and mostly from second-hand stories. On the other hand, Aristophanes, whose reliability in providing information on the historic Socrates has been largely rejected, might have been exaggerating certain features of the historic Socrates that the other two authors downplayed in their dialogues. This conjecture, however, is by no means a straightforward implication of the diagnosis of temporal lobe epilepsy.

#### THE PROBLEM OF THE PLATONIC FACTOR

Finally, I deal with important criticisms in relation to the Platonic factor. My argument that Socrates had temporal lobe epilepsy relies almost exclusively on Plato's descriptions of Socrates' behaviour and remarks. The critics would point out that if Plato's description is considered embellished by his bias, which is widely accepted by Socratic scholars, our diagnosis of temporal lobe epilepsy may not be so reliable after all. My reply to this objection is as follows. First, the descriptions of Socrates' simple partial seizure or the *daimonion* are unlikely to be embellished because this was already widely known among the public and was almost a requisite and distinguishing feature of Socrates. Moreover, the *daimonion* is indispensable in Plato's discussion of Socrates' religion. Thus, it is unlikely that Plato and Xenophon significantly altered this feature.

Second, and in contrast, the three descriptions of complex partial seizure seem less straightforward. Still, the two episodes in the *Symposium* (174e–175c, 220c–e) are conveyed by multiple witnesses, Aristodemus and Agathon in the scene at the drinking party, and Alcibiades and fellow soldiers in the scene at the military camp. The presence of multiple contemporaneous witnesses and accounts makes it less likely, in my view, that these accounts are entirely fictions created by Plato as opposed to narratives based on public knowledge, at least to some extent. A more significant challenge is encountered in interpreting the episode of confusion in the *Phaedrus* 263c–d, since the entire dialogue seems to be a fiction consisting of a private conversation of only two men, Socrates and Phaedrus. What might have been the reason that Plato portrayed Socrates as being confused and delivering a

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<sup>80</sup> Brickhouse and Smith 2004; Vlastos 1991; Guthrie 1971.

wrong speech first, and then as becoming partially amnesic about it, asking embarrassingly confused questions? As mentioned earlier, a common interpretation would be that this is only a comical and playful interlude of no import, or an instance of Socratic irony. But this explanation does not answer why Socrates has to be so obviously confused and disoriented in this portrayal, as opposed to his usual pretended ignorance. Besides the space limitation, since this author is not qualified to offer any further exegetical and literary interpretations, and the *Phaedrus* has been the subject of intense study by numerous scholars, I humbly offer several possibilities and leave them for further study by qualified experts.

The present medical interpretation of *Phaedrus* 263c–d holds that Plato simply used Socrates' habitual episode of confusion and amnesia, which was recognized by then as his hallmark, to depict the protagonist Socrates in a way more realistic to the historical Socrates.<sup>81</sup> Plato needed to put two contradicting speeches on love in the mouth of the same protagonist Socrates consecutively in the same dialogue. What else would be a better framework of such a sudden conversion than using the well-known hallmark of Socrates, the *daimonion* and an episode of delirium? It is realistic for the portrayal of the protagonist Socrates, and at the same time instrumental in introducing his sudden conversion in the drama.

A more calculated dramatic effect is also a possibility.<sup>82</sup> One of the most important themes of the *Phaedrus* is divine madness, which Plato may have considered an ideal attribute of the philosopher. As such, Plato may have wanted to depict Socrates as a superimposed image of being gripped by divine madness when he became delirious while delivering the speech against divine madness. Another speculation is that Plato may have considered Socrates' divine voice (*daimonion*) and divine grip (delirium, or confusion and amnesia) as entirely positive attributes of the divinely mad philosopher, Socrates, as opposed to the symptoms of a nonphilosopher afflicted by human madness, which is an undesirable illness.<sup>83</sup> In other words, Plato may have portrayed Socrates as the embodiment of divine madness. The problem of this interpretation, however, is that the "madness" displayed by Socrates in Plato's portrayal has every feature of human madness, namely disturbed human cognitive abilities. Nevertheless, this may not be a

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<sup>81</sup> In other words, these descriptions of Socrates' odd behaviour are no more likely to be "tainted" by the Platonic factor than other peculiar hallmarks of the historical Socrates, including the conspicuously unusual face, strolling barefoot in Athens in dirty clothes, and other unfavorable features of Socrates that Plato did not refrain from incorporating.

<sup>82</sup> I am indebted to an anonymous reader of *Mouseion* for the consideration of madness as a widely used trope of philosophers in ancient sources. For further discussion on madness in Plato's work, see Jouanna (2013: 103), Ahonen (2014: 38), and Thumiger (2017: 44).

<sup>83</sup> Cf. Ahonen 2014: 40.

problem if the difference between the two types of madness is their origins, not their symptomatology.

#### CONCLUSION

There is a reasonable certainty that the historical Socrates was an epileptic, suffering from temporal lobe epilepsy, and his *daimonion* was most likely the symptom of simple partial seizure, one of the common symptoms of temporal lobe epilepsy. The second type of seizure of temporal lobe epilepsy, complex partial seizure, most likely manifested itself as his habitual confused behaviour, which established his notoriety for “strangeness.” This theory could potentially fill the seemingly irreconcilable gap between the bizarre and irrational Socrates on one hand and the perfectly rational and virtuous Socrates on the other, or the so-called Socratic problem. I further speculate, based on the epilepsy theory, that the personality of the historical Socrates might have had some features of Aristophanes’ Socrates, even though they were exaggerated out of proportion in the *Clouds*.

Does this theory give any new insight into the trial and execution of Socrates? I do not know the answer for sure, and I would like to leave this question to be decided by the community of Socratic scholars. One thing this theory indicates is that one of the specifications of the charge of impiety against Socrates, the introduction of new deities, was an unwarranted accusation according to our contemporary standards. But beyond this point, all I can say, based on this theory, is that the underlying neurological condition, temporal lobe epilepsy, likely influenced significantly the behaviour and remarks of Socrates throughout his life. How this information can be incorporated into Socratic scholarship remains to be seen.<sup>84</sup>

Finally, as a postscript, I would like to share one observation that struck me throughout this research. That is the remarkable accuracy of Plato in describing the symptoms of simple and complex partial seizures. His vivid descriptions of those episodes are remarkably accurate when we consider that Plato probably did not know much about seizures and epilepsy, beyond what the Hippocratic author described in *The Sacred Disease*, in which the

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<sup>84</sup> I would like to remind the readers of my earlier statement that this theory is not meant to be a reductionism or to refute or replace other theories, but to complement them (footnote 22). This medical theory can and should be incorporated into other theories to the extent possible. For example, historians provide a theory that Socrates was tried and executed as a scapegoat of the political struggle between the democrats and the remnants or supporters of the Thirty (Hughes 2011; Waterfield 2009a; 2009b). This theory is by no means incompatible with the present medical theory, because a made-up accusation is not at all uncommon in politically motivated trials. In other words, whatever political, social, or religious reasons might have played a crucial role, Socrates’ eccentric and nonconforming remarks and behaviour must have been the easiest way to condemn this man who had, unbeknownst to everybody including himself, an undiagnosed neurological condition as the reason for such behaviour.

author suggests that similar manifestations of temporal lobe epilepsy were not considered sacred in those days. At the same time, it is also worth mentioning that Socrates' own description of his *daimonion* was also remarkably accurate and authentic in light of the current knowledge of simple partial seizure. It seems to me that these findings are another piece of evidence that these ancient philosophers had extraordinarily keen eyes and observant minds.

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