

Preface

When I was five, my mother gave me a copy of Jonathan Norton Leonard's *Crusaders of Chemistry*. I still have it, signed and dated by her, 1938. Long after I had forgotten the other chemists, I remembered the one who measured. He is the subject of the chapter in Leonard's book entitled "Henry Cavendish, the Measuring Machine," which concludes: "So lived and died the coldest, most unhuman mortal who ever wrote his name large in the history of science His sole interest was to measure the objects in the material universe." Many years later, my boyhood fascination with the measuring machine returned, transformed into a scholarly interest in a scientific genius. I entered the field of history of science with a dissertation on his work, and for many years after, I saved every fact I could find about him. Popular histories of science like Leonard's take material from scholarly works. We do not have to look far to discover the source of Leonard's characterization of the man who was a measuring machine. It was the nineteenth-century chemist George Wilson's fascinating biography, *The Life of the Hon^{ble} Henry Cavendish*.

Although I have reservations about the measuring machine, I greatly admire Wilson's portrait of Cavendish, and I am in its debt for my understanding of the man. I took up the study of the history of science in part to learn how the scientific view of the world came about. If such a view does actually exist, I thought it probably applied to me, an initial reason for my curiosity. From my study of scientists of the past, I came to think that Cavendish came as close as any to holding a scientific view of the world. Even in his case, it was not exclusive. He came into the world with an aristocratic take on it.

The origin of this book is a diagnosis of Cavendish by the eminent neuropsychologist Oliver Sacks, which appeared as a brief communication in the scientific journal *Neurology* in 2001. Skeptical of recent claims of Asperger's syndrome, a form of autism, for historical figures, Sacks considers Cavendish an exceptional case, finding the evidence for his autism "almost overwhelming."¹ In his memoir the same year, *Uncle Tungsten*, Sacks says that upon rereading Wilson's biography

¹ Oliver Sacks, "Henry Cavendish: An Early Case of Asperger's Syndrome?" *Neurology* 57 (2001): 1347.

of Cavendish, he has concluded that Cavendish was a “unique autistic genius.”² The same nineteenth-century biography was the origin both of the man as measuring machine and of the man with a psychological disorder. Below I examine these characterizations and their connection.

In 1996, Christa Jungnickel and I published a biography of Cavendish. We pointed out that because of his strange behaviors he invites a psychological approach, but that it was not the approach we took, as we explained. At the end of the biography, we briefly mentioned possible psychological descriptions of his behavior such as social anxiety, shyness, and embarrassment. We pointed out that he also showed “autistic-like traits,”³ which we listed, citing Sacks, who had introduced us to the world of autism with his moving account of the autistic scientist Temple Grandin.⁴

Three years later, we brought out an improved version of our biography, in which we again briefly brought up psychological descriptions, but this time we omitted any mention of autism. Autism is a disorder that begins in childhood, and almost nothing is known about Cavendish’s childhood; also certain criteria for autism seemed a questionable fit, and we wanted the biography to be solid. Since then I have found in recent writings on the subject a growing acceptance of a more inclusive understanding of autism together with a trend in clinical thinking that favors an autistic continuum approach. In the present book, I consider Sacks’s diagnosis of Cavendish’s autism, which has been on my mind for the past dozen years.

Besides Cavendish, a number of eighteenth-century scholars – for example, Jeremy Bentham, John Howard, Carl Friedrich Gauss, and Emmanuel Kant – have been diagnosed with a form of autism. Without doubt, they all showed autistic-like traits. They pursued their interests obsessively, with little regard for what people might have thought. They also leave us wondering. Might their non-social behaviors have come about through choice? Might they have avoided society and ignored convention in pursuit of their goals because they could afford to? Did they show the same traits as autistic persons with the significant difference that the latter had no choice in the matter?

²Oliver Sacks, *Uncle Tungsten: Memories of a Chemical Boyhood* (2001; New York: Vintage Books, 2002), 121.

³Hugo Lidbetter writes that Jungnickel and McCormmach “got very close to suggesting” that Cavendish may have had Asperger’s syndrome. We got closer than that: we say it. Since this book went to press, an article by Lidbetter was brought to my attention. The author’s purpose is to make a “systematic exploration” of Sacks’s claim that Cavendish had Asperger’s Syndrome. His article consists of matching Cavendish’s behaviors with the Gillberg diagnostic criteria for Asperger’s syndrome. He thinks Cavendish had this disorder. “Henry Cavendish and Asperger’s syndrome: A New Understanding of the Scientist,” *Personality and Individual Differences* 46 (2009): 784–93, on 784. I thank Steve Silberman for this reference. Lidbetter brings Christa Jungnickel and me into his discussion. In this connection, he makes some mistakes. The reference to Asperger’s syndrome is: Christa Jungnickel and Russell McCormmach, *Cavendish* (Philadelphia: American Philosophical Society, 1996), 368. This edition is given the short title *Cavendish* (1996). The later edition is *Cavendish, the Experimental Life* (Lewisburg: Bucknell University Press, 1999), 304–9. The short title is *Cavendish* (1999).

⁴Oliver Sacks, *An Anthropologist on Mars* (New York: Vintage, 1995). Temple Grandin, *Thinking in Pictures and Other Reports from My Life* (New York: Doubleday, 1995).

I re-examine Cavendish in light of Sacks's suggestion and the questions it raises. I look for evidence that supports it as well as evidence that does not. I look at possible alternative ways of understanding Cavendish. Shortly after his death, and probably before, the word "eccentricity" was used to describe his behavior. What did his eccentricity consist of? In the society of his time, and for a person of his rank, how exceptional was his eccentricity? Behaviors that are disquieting to us may have been well tolerated in his setting, in which case we may ask, Is there any reason to look for a neurological abnormality? A proper study of these and related questions requires the length of a small book.

Sacks says that Cavendish had an "astounding" achievement and life, and that having reread his biography he is "if anything more mystified."⁵ I too have unanswered questions. I understand some things about Cavendish, enough to have written a biography about him, but it is an incomplete biography. These many years later, I still look for a fuller understanding, which I equate with explanation. This book has an additional motivation. Without an understanding of Cavendish's behavior, he appears simply strange, an object of curiosity at best, of moral judgment at worst, drawing pity or scorn. To leave him that way unnecessarily is a shame. He was an outstanding scientist, and one of the most baffling personalities in the history of science. A fuller understanding of him benefits both his biography and the history of science.

At the end of a recent biography of the physicist Paul Dirac, the author Graham Farmelo suggests that his subject was autistic. In a review of the book, the distinguished physicist and science writer Freeman Dyson takes issue with its claim of autism, citing Dirac's friendships, which he finds hard to reconcile with autism. The physicist Jochen Heisenberg, son of Werner Heisenberg, agrees with Dyson's criticism and goes beyond it, associating the claim of autism with "a certain kind of facile, if interesting, deconstruction of character."⁶ There are reasonable grounds to question Farmelo's, as most any, historical diagnosis, and there are strong feelings about diagnosing the great and the dead. I realize that any biographer who approaches his subject from a psychological perspective and is in a mental state other than fear and trembling is in a deep sleep.

In the days following Cavendish's death, his once close colleague Sir Charles Blagden told the president of the Royal Society that Cavendish was "a true

⁵ Sacks, *Uncle Tungsten*, 120.

⁶ Graham Farmelo, *The Strangest Man: The Hidden Life of Paul Dirac, Mystic of the Atom* (New York: Basic Books, 2009). Based on Dirac's thinking and behavior, Farmelo is persuaded that Dirac was autistic, and further that his autism was important for his work: "Yet again, it is possible that this correlation [visual thinking] between autistic characteristics and Dirac's behavior is a coincidence, but, in light of other such correlations, this seems unlikely. I believe it to be all but certain that Dirac's behavioral traits as a person with autism were crucial to his success as a theoretical physicist." Other correlations referred to here are Dirac's "systematic" ordering of information from physics and mathematics, "self-centredness," and "concentration and determination." These traits do not explain Dirac's talent, but "give some insight into his unique way of looking at the world." *Ibid.*, 425. Freeman Dyson, "Silent Quantum Genius," *New York Review of Books*, 25 February 2010. Jochen Heisenberg, "Plain Talk about Dirac," *ibid.*, 13 May 2010.

anchor: could always depend on knowing what was right for him.”⁷ Blagden was perceptive. The course of life Cavendish chose for himself was surely right for him. He made no major mistakes in his work or in his other activities. It took vigilance, for the world that was right for him was a small portion of a greater world, which could upset his life, and which he confronted with painful awkwardness. Some people may find it difficult to empathize with a person who is as complete within himself as Cavendish appeared to be, but they probably will not find it difficult to sympathize.

In the history of science, we may find no better fit between science and character and temperament than we do in Henry Cavendish. The fit was eminently efficient, there being practically nothing left over. It was Cavendish’s singular desire to seek truth and knowledge of the physical universe, and science offered this truth-and-knowledge seeker a lifetime of opportunity. Endowed with a fine reasoning mind, keen sensory perception, and skilled hands, he exercised the full measure of his faculties in his pursuit of the laws of nature. Marked traits of his personality — caution, persistence, thoroughness, objectivity, accuracy, and precision — were engaged in the pursuit. Further marked traits of his caused him great distress in certain social situations. He entered fully into a company of scientific men, which held some of the social risks of any company, knowing it was right for him, as it was for anyone who was serious about science. It was fortunate for Cavendish that such an activity, science, existed, for it enabled him to make a nearly complete life for himself. It is hard to think of any alternative that would have served him half as well.

The book is divided into three Parts. For the heading of Part I, I have selected Blagden’s quotation, slightly altered: He always knew what was right for him. The first chapter introduces Cavendish the aristocrat and Cavendish the natural philosopher. Chapter 2 discusses the psychology of scientists and the biographical problem of Cavendish. Chapter 3 describes his behaviors in everyday life. His peculiarities take center stage here, necessarily, for they have been the basis for accounts of his personality. The intent here is to organize the evidence, not to put him on display. Chapter 4 treats his behaviors at work. Chapter 5 treats aspects of his personality. Chapter 6 summarizes a number of earlier interpretations of Cavendish. The next three chapters analyze Cavendish’s personality. Readers will encounter repetitions in the book. Descriptions of Cavendish’s behaviors, which are introduced as evidence in Chaps. 3 and 4 are reintroduced for comparison in the chapters dealing with his personality. Cavendish’s luminous thinking on scientific problems is treated fully in existing biographies and other studies and is not repeated here.

Part II is about journeys Cavendish and Blagden took in 1785–87 to observe the industry and geology of several regions of Britain. The journals they kept are probably the best single source of information about the kind of interest Cavendish

⁷24 February 1810, Charles Blagden Diary, Royal Society 5: 426.

took in the wider world, and as such they illustrate facets of his personality. They also have an interest of their own as descriptions of technologies of the early Industrial Revolution.

Part III contains various sorts of materials that supplement Parts II and III, which are the substance of the book. The materials consist of a transcript of the journal of the 1785 journey, improved family trees for Cavendish, accounts of Cavendish's houses and his claim to own Holker Hall,⁸ and discussions about the disorder autism.

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⁸The two chapters about Cavendish's houses are largely taken from Jungnickel and McCormmach, *Cavendish, the Experimental Life*, rev. ed., in press.

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with Extraordinary Peculiarities

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