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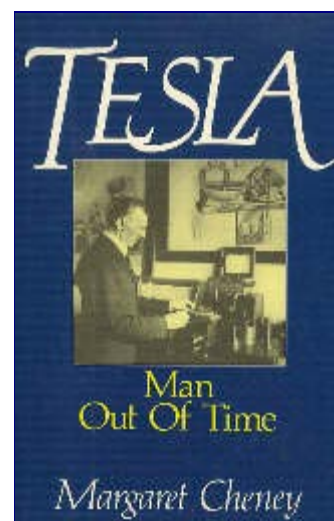


*A READER'S JOURNAL*

**Tesla**  
**Man Out of Time**  
by  
**Margaret Cheney**

ARJ2 Chapter: Evolution of Consciousness  
Published by Dorset Press/NY in 1981  
A Book Review by Bobby Matherne ©2012

In my only review of a Tesla book to date: [Tesla](#), A novel by Tad Wise, I said about this book, "After reading Margaret Cheney's *Tesla — Man Out of*



*Time* I thought the definitive biography of Tesla had finally been written — until I read Tad Wise's biographical fiction, which is a *tad wiser* and more insightful." At the time I read Wise's book, I had some dozen years earlier read Cheney's book and could be forgiven for what I see now as my glib underestimation of her book, except for the phrase *definitive biography* which certainly applies. She has given us a detailed and accurate biography of the man, of his amazing inventions, and of the life he lived, from his designing a blade-less turbine at six years old in a stream in Croatia to his feeding pigeons with his last dollar on his death bed. Fasten your seat belts to learn a bit about the one man who made possible the technology which powered the twentieth century and whose legacy of forgotten and hidden inventions lies like a large seam of precious ore waiting to be uncovered and mined for the twenty-first century.

This is a book that I first read thirty years ago, about six years before I began writing a review after reading every book, and [I](#) have lost or given away the original volume from that reading. This necessitated a completely new reading and this review is the result of that reading.

Over the years, my study of Tesla's life has led me to suspect that he was a high-functioning autistic person. His near-photographic memory, his ability to create intricate drawings of original inventions in his head, to create a 3-D versions of the inventions in his imagination and to watch them in operation far exceeds the abilities of most humans today. The only other person I know who could come close to this is Temple Grandin([1](#)) — she is autistic and displays many of the abilities and limitations of Nikola Tesla. He could implement visionary inventions and yet his personal relationships were severely hampered by his various idiosyncracies. For example, he could not eat without calculating the volume of each item of food, a compulsion which made him a poor dinner companion.

**[page xiii, Introduction by Leland Anderson] Despite the flashy, dramatic, and often limelight attention that Nikola Tesla was given in the heyday of his reign in the fields of research and engineering, he maintained a very private personal life. Being a loner — a perennial bachelor, working apart, not entering into corporate associations, and mixing friends — his personal life was obscure to outsiders.**

This poses problems for any biographer, as the Introduction notes above. John J. O'Neill's biography([2](#))

appeared shortly after Tesla's death in 1943, and *Prodigal Genius* stood for a long time as the only one available. This was the challenge Cheney faced as she approached writing a new biography of Tesla, in many ways a greater challenge than Tad Wise faced as he wrote a fictional novel about Tesla's life, he had the license of fiction plus the benefit of Cheney's biography as resource material.

Those who have seen the movie "Rain Man" are aware of the special compulsions which autistic people have, and the first few paragraphs of Cheney's book covers several of them, his multiples of 3, fear of germs, polishing silverware before using it, telephoning his dinner order ahead of time and having the maitre d' serve it to him. The Waldorf-Astoria Hotel was demolished to build the Empire State Building on its site late in Tesla's life, but he had certainly graced its building site on many occasions before then.

**[page 1] Promptly at eight o'clock a patrician figure in his thirties was shown to his regular table in the Palm Room of the Waldorf-Astoria Hotel. Tall and slender, elegantly attired, he was the cynosure of all eyes, though most diners, mindful of the celebrated inventor's need for privacy, pretended not to stare.**

**Eighteen clean linen napkins were stacked as usual at his place. Nikola Tesla could no more have said why he favored numbers divisible by three than why he had a morbid fear of germs or, for that matter, why he was beset by any of the multitude of other strange obsessions that plagued his life.**

**Abstractedly he began to polish the already sparkling silver and crystal, taking up and discarding one square of linen after another until a small starched mountain had risen on the serving table. Then, as each dish arrived, he compulsively calculated its cubic contents before lifting a bite to his lips. Otherwise there could be no joy in eating.**

**Those who came to the Palm Room for the express purpose of observing the inventor might have noted that he did not order his meal from the menu. As usual, it had been specially prepared beforehand according to his telephoned instructions and now was being served at his request not by a waiter but by the maitre d'hotel himself.**

Eccentricity and inventor are two words often tied together, but nowhere so often as in the life and habits of Nikola Tesla. We will leave the discovery of his other eccentricities to you, dear Reader, as we focus on the amazing list of inventions for most of the remainder of this review. If you feel a bit staggered by them, remember this is only a partial list of what Tesla could have done, had his primary property been given due consideration, the kind of consideration given any movie out of Hollywood, in which every person working on the movie has their name listed in the credits and receives a royalty check for proceeds from every copy of the movie made, distributed, shown, and sold to end users. That Tesla produced so many original inventions without such revenue is amazing. True, he had an agreement to be paid for every watt of power generation created using his invention, but bankers put pressure on George Westinghouse to get Tesla to sell this agreement for a one-time fee, which Tesla did for his good friend. That one-time sale for a reported million dollars would be worth billions of dollars *every year* to Tesla's estate today, I estimate. What difference would that make? you ask. Let me ask you a question in return: Do you ever read all the credits for a movie after watching it? Probably not, so why bother with the man whose ideas, his precious primary property, went into making your life better today? Who cares, right? Okay, how about if those billions of dollars were being used by the Tesla estate each year to bring to fruition the many inventions and discoveries of Tesla? Could you enjoy turning on a switch and having your home filled with a cool light without using any tubes or bulbs? Who knows what a boon it would be to the world if the estatee found a way of generating ball lightning and tapping electricity from it? How about delivering electricity completely without wires to the entire world? These are only a few examples.

**[page 3] "Fancy yourself seated in a large, well-lighted room, with mountains of curious-looking machinery on all sides. A tall, thin young man walks up to you, and merely snapping his fingers creates instantaneously a ball of leaping red flame, and holds it calmly in his hands As you gaze you are surprised to see it does not burn his fingers. He lets it fall upon his clothing, on his hair, into your lap, and, finally, puts the ball of flame into a wooden box."**

No one could explain how Tesla created the ball lightning, just one of many of his original ideas and discoveries that had been already stolen from him, so many that he did not care to explain how he created ball lightning. But he undoubtedly wrote it down somewhere, perhaps in those papers stashed away in obscurity at the Smithsonian. A similar thing happened to the roomful of cool light, no one today knows how Tesla did it. This is the result when a person's primary property is taken away without permission, the thieves do not know how to value it or use it fully. This can happen either by a sneak thief or a voter-authorized thief, the result is still thievery, except in the latter case the voter who authorizes the primary theft suffers most from its loss. Usually primary thieves know little of the value of the ideas they are stealing, especially if the thieves are voter-authorized bureaucrats such as the FBI agents who confiscated Tesla's lifework from his apartment after his death.

Tesla's method differs from most designers in that he would build the prototype in his mind and observe it run, noting even where it might vibrate and or prematurely wear out its bearings.

**[page 12, Tesla] "My method is different," he wrote. "I do not rush into actual work. When I get an idea I start at once building it up in my imagination. I change the construction, make improvements and operate the device in my mind. It is absolutely immaterial to me whether I run my turbine in my thought or test it in my shop. I even note if it is out of balance."**

A note about how different Tesla was from Edison and many others inventors:

**[page 13] He (Tesla) claimed that his method of visual invention had one defect that kept him poor in a monetary sense, though rich in the raptures of the mind: Potentially valuable inventions were often put aside without the final time-consuming perfection required for commercial success. Edison would never have allowed this to happen and hired many assistants to make sure it did not. In fact Edison was said to have a knack for picking up other inventors' ideas and rushing them to the Patent Office. With Tesla it was just the opposite. Ideas chased each other through his mind faster than he could nail them down. Once he understood exactly how an invention worked (in his mind), he tended to lose interest, for there were always exciting new challenges just over the horizon.**

For the enlightenment of readers who are unaware that Tesla existed, much less of what he accomplished and of the legacy of future inventions he demonstrated to be possible, I will devote much of the rest of this review to describing each of these inventions in brief. Some of these were patented; many were tested in his mind, spoken about, or demonstrated and some of these no other inventors have been able to duplicate them, up until now.

**1. Laugh Therapy:** at one point in school, Tesla came down with a mysterious illness which incapacitated him. The doctors gave up on him recovering, but young Tesla found Mark Twain's writings and laughed continuously, recovering in the process. Norman Cousins made a similar discovery with Marx Brothers films in his own life during the 1980s. (Page 16)

**2. Transatlantic Mail:** Tesla conceived of a tube underwater through which mail could be transmitted quickly, but the viscosity of the water made his idea impractical as he tested it out in his mind. (Page 17)

**3. Trans-global Ring:** Tesla imagined this ring, which would later find a semblance of reality in the geosynchronous satellites circling Earth today providing communication and GPS location.(Page 17)

**4. Alternating Current:** Tesla observed a Direct Current machine sparking continuously at its commutator and suggested to his professor "that the design might be improved by

dispensing with the commutator and by switching to alternating current." (Page 18) He went on to design and build such a system, damming up Niagara Falls for his hydroelectric project, something that, when he was only six years old, he had told his uncle he would do.

**5. AC Motors:** Tesla invented poly-phase induction, split-phase induction, and single-phase AC motors. All our electricity today is "generated, transmitted, distributed, and turned into mechanical power by means of the Tesla Polyphase System." (Page 24)

**6. ARC Lighting:** the Tesla arc lamp "was more simple, reliable, safe, and economical than those in current use. The system was patented and first put to work on the streets of Rahway." (Page 36)

**7. Cyclotron, Point Electron Microscope, Cosmic Rays, Radio Vacuum Tube, X-Ray, and Plasma streams:** these are listed together as Tesla demonstrated all of these effects long before they were ever named and put into practical use by other researchers and inventors. "Surely it would be an act of simple justice were the scientific community at least to acknowledge Tesla's pioneer discoveries in each of their fields." (Page 52 to 59, Quote on 59)

**8. Fluorescent Lighting:** "I am sure that [Tesla's] demonstration of these light sources at the Chicago World's Fair [1893] stimulated D. McFarlan Moore to develop and announce commercial realization of the fluorescent lamp. . . ." Roland J. Morin, Sylvania/GTE Chief Engineer. (Page 53)

**9. The Sun as Charged Body:** Tesla figured the Sun to be "an incandescent body carrying a high electrical charge and emitting showers of tiny particles." Although the Sun's source of energy is thought now to be nuclear fusion of hydrogen into helium, no one can explain why the temperature of the atmosphere of the Sun is so much greater than its interior. A charged object moving in an electric field as Tesla postulated would have exactly such a higher temperature in its outer surroundings. (Page 55 to 56)

**10. Aurora Borealis Explanation:** Tesla saw that the charged body of the Sun would emit rays which when impinging on the upper atmosphere of Earth would cause it to glow. (Page 56)

**11. The Electric Clock:** the very clock which, before quartz-tuned ones appeared, were ubiquitous on the kitchen walls and bedside tables for most of twentieth century. "[Tesla] developed a new kind of reciprocating dynamo adapted to his special needs in high-frequency currents — an ingenious single-cylinder engine without valves, that could be operated by compressed air or steam. The speed it attained was so remarkably constant that he proposed adapting it to his 60-cycle polyphase system, using synchronous motors, properly geared down, as a means of providing the correct time wherever in the world alternating current was available. This was the inspiration for the modern electric clock. Tesla, in his rush of discovery, took no time to patent a timekeeper either." (Page 61)

**12. Diathermy:** "In 1890 he announced the therapeutic deep-heating value of high-frequency currents on the human body." When my mother-in-law suffered from pain after several surgeries on her back, diathermy was applied to provide her relief. Tesla received some income from this invention which was widely copied illegally and immorally. (Page 61)

**13. Lightning:** Ben Franklin discovered that lightning was electricity. Tesla postulated that the electricity of lightning was built up during the falling of rain. From plans in Scientific American, several decades ago, I built an electrostatic generator which was powered by falling drops of water which created sparks of 10,000 volts. This device demonstrates the same electrostatic charge accumulation phenomenon which leads up to lightning. (Page 67)

**14. Radio Broadcasting:** ". . . in the spring of 1893 he described in detail the principles of radio broadcasting." He did this at the National Electric Light Association in St. Louis when he also made the first public demonstration of radio communication, two years before Marconi. Later Tesla said when asked about Marconi, "Sure, he did radio; he used 17 of my patents to do it." (Page 68)

**15. Melting Metals:** [In Chicago, 1892] Tesla also described heating bars of iron and melting lead and tin in the electromagnetic field of specially designed high-frequency coils. This was to have important commercial consequences many years later. (Page 74)

**16. Robotic Sub and Wireless Torpedoes:** "In 1898 Tesla made a celebrated demonstration in Madison Square Garden of a remotely controlled robot boat and torpedoes." When a student called it a wireless torpedo, Tesla snapped back, "You do not see there a wireless torpedo. You see there the first of a race of robots, mechanical men which do the laborious work of the human race." We are only today beginning to see the fruits of Tesla's vision implemented in the workplace and in combat situations. (Page 81)

**17. Aluminum Aircraft:** Around 1900, years before the Wrights' first flight, Tesla predicted that economic refining of aluminum using electricity would lead to aluminum being used to build aircraft. That year, the Pittsburgh Reduction Company received electricity from Niagara and soon became ALCOA, the Aluminum Company of America. (Page 88)

**18. Microwave Transmission:** ". . . metal pipes filled with gas — the metal being the insulator and the gas the conductor — supplying" electrical power to various devices. He was describing what is now called a "wave guide" for high-frequency transmission of electricity. (Page 91)

**19. Secondary Radiation:** Tesla reported in the Electrical Review of 1896 that he had already discovered secondary radiation months before Pupin announced his discovery, even tested various kinds of metals to find which kind made the best reflection of Roentgen rays. (Page 102)

**20 X-RAY Protection:** Tesla was aware of the danger to personnel of X-Rays and experimented to find that lead was the most effective shield. After his lecture to that effect to the NY Academy of Science in 1897, "lead shields came into general use." (Page 105)

**21. Liquid Oxygen:** Linde preceded Tesla in making liquid oxygen commercially, but, earlier than Linde, Tesla had designed and built an apparatus for liquefying oxygen in his laboratory. If his lab had not been destroyed, Tesla would have gotten the credit he deserved for both the idea and the implementation. (Page 107)

**22. Nitrogen Fertilizer:** With the tools of electrical resonance and circuits in exact synchronism, [Tesla] said, nitrogen could be extracted from the air and valuable fertilizer manufactured. My father worked in a nitrogen fertilizer plant using that process in the 1960s. (Page 114)

**23. Artificial Earthquake:** ". . . in 1898 while testing a tiny electromechanical oscillator, he attached it with innocent intent to an iron pillar that went down through the center of his loft building at 46 East Houston Street, to the sandy floor of the basement. . . . What Tesla was unaware of on this occasion was that vibrations from the oscillator, traveling down the iron pillar with escalating force, were being carried through the substructure of Manhattan in all directions. . . Buildings began to shake, windows shattered, and citizens poured onto the streets in nearby Italian and Chinese neighborhoods." (Page 115)

**24. Ore and Oil Exploration:** "By using mechanical vibrations with the known constant of

the Earth, [Tesla] also hoped to learn how to locate ore deposits and oil fields. Modern subsurface exploratory techniques were thus presaged." Ships in the sea today trail long lines of explosives which, when fired, send out the kind of vibrations that Tesla was talking about, and the recordings made of the reflected vibrations are used to explore below the seabed for oil and minerals. (Page 117)

**25. Light for Photography:** Tesla wrote to his good friend, Robert Johnson, "I feel confident I have a light which for photography will be better than sunlight, but I have no spare time to bring it to perfection." The New York Times took note of the important development of phosphorescent light by Tesla. (Page 120)

**26. High-Speed Rail Travel:** "[Tesla] was convinced, and so announced, that with properly built railroad tracks, trains running on AC/DC could safely travel up to two hundred miles per hour." Perhaps someday this will happen in Tesla's adopted country, but it is already available in other countries such as France's TGV and Japan's high-speed rail system. (Page 120)

**27. Airborne Drones:** The twenty-first century technology of the battlefield was anticipated by Tesla in 1919. (Page 129)

**28. ICBMs, Inter-Continental Ballistic Missiles:** About 1919, Tesla described futuristic aircraft to be guided remotely, "By installing proper plants it will be practicable to project a missile of this kind into the air and drop it almost on the very spot designated, which may be thousands of miles away." (Page 129)

**29. Computer Technology:** Leland Anderson writes, "I am puzzled by the reluctance of some in the computer technology field to acknowledge Tesla's priority in this regard. . . ." (Page 130) Computer systems contain billions of logic design elements such as Tesla holds patents on. He embodied them in electrical devices; today they are embodied in electronic devices. RJM NOTE: Tesla used AC signals and today we use DC signals, which makes Tesla's version imminently less susceptible to EMP (electro-magnetic pulse) from nuclear blasts which can fry low-voltage DC circuits of modern computers. Tesla used these signals to prevent enemy interference with his remote-operated boats and submarines. The US Army decided *not* to build Tesla's remote-operated boats because of their concern about safety from enemy interference. The Army brass were apparently not savvy enough to understand Tesla when he explained to them that he had already made his equipment interference proof. (Page 131)

**30. Fluidics:** The modern field of fluidics and fluid logic owes its origin to Tesla. "With the turbine he had invented a valvular conduit that enabled it to be used with combustible fuel. This unique conduit, with no moving parts, has recently been used in fluid logic elements, in which context it is referred to as a fluid diode. Tesla's 1916 patent . . ." (Page 200)

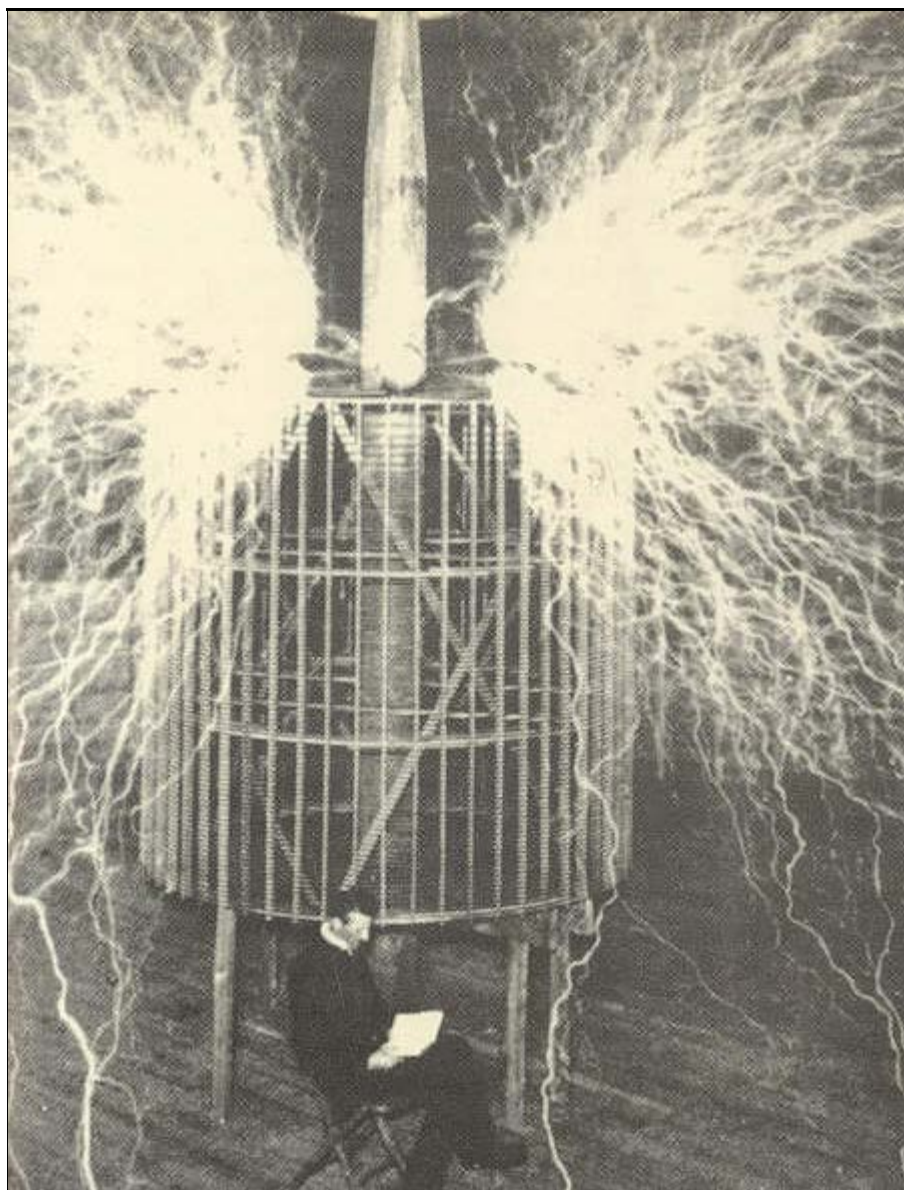
**31. VTOL, Vertical Take-Off and Landing Aircraft:** Also known as Tesla's Flying Stove, it was patented in 1928 and because of lack of funds, no prototype was built. Tesla was 72 when the patent was finally issued. Tesla's first concept of VTOL was in drawings destroyed in his laboratory fire of 1895! (Page 203)

**32. Electricity from Waste Gases:** [Tesla] "wrote proposals for manufacturers demonstrating that his turbine could be operated on the waste gases from steel mills and factories." Tesla was Green decades before Green was popular! (Page 203)

**33. RADAR:** 1916 was a financial low point for Tesla . . . "Yet somehow in this time of turmoil and heartsickness he polished and published the basic principles of what would be known — almost three decades later — as radar. (Page 207)



**34. ELF Extra Low Frequency Waves:** Given the disruption caused by thermonuclear war, Tesla's ELF method came into use by the U. S. Navy using 10 Hz signals to circle the globe and penetrate deepest waters. (Page 287)



overflowing measure.' " (Page 238)

**37. Electromagnetic Ray:** Tesla made a test of his huge transmitting tower at Montauk Point, Long Island, New York, which may have resulted in the famous and yet-unexplained event in Tunguska, Russia on 1908. See details here: <http://www.doyletics.com/arj/american.shtml#tesla>

These are not all the ideas and inventions of Tesla as there were many more in his laboratory notebooks which were burnt in the fire and many more in the notebooks confiscated by the forces of coercion after his death, but even this truncated list should speak to the value of this man's life, which would cause any thinking and moral person to ponder long and hard how we might give Tesla and his achievements their proper credit, both in gratitude and royalties.

For all his genius, Tesla was disliked and reviled by many people who tried to portray his Alternating Current inventions as something fearful and devilish. Rudolf Steiner notably defined evil as a good out of

**35. Geothermal Energy:** In 1931 Tesla created detailed designs of plans "for extracting electricity from seawater and another for a geothermal steam plant." (Page 241)

**36. Tesla Coil:** On Tesla's 75th birthday, "Robert Millikan wrote of attending a Tesla lecture at the age of twenty-five, one of the first demonstrations of the Tesla coil. 'Since then,' he wrote, 'I have done no small fraction of my research work with the aid of the principles I learned that night so that is not merely my congratulations that I am sending you but with them also my gratitude and my respect in

its time, and as Leland Johnson noted in his Introduction, "Tesla was indeed out of his time," likely inspiring the title of Cheney's fine biography. Like a *Modern Prometheus* (Chapter 1 Title) Tesla brought things from the future into our daily lives, like the electricity powering this computer I'm typing on. This connection to evil things, each being a *good out of its time*, may help explain the dislike many had for Tesla. This tendency has carried into the twenty-first century and shows up in the lack of recognition afforded Tesla's myriad of inventions, up until now. This tendency led some physics majors, as I once did, to regard him as someone who invented *only* the Tesla coil.

One man strove to get Tesla recognized, B. A. Behrend, who was in line to receive the prestigious Edison Medal. He persuaded the AIEE to award the medal instead to Tesla. Getting Tesla to accept it was not so easy. In his reply to Behrend, Tesla didn't bother to mention the shabby and immoral way Thomas Edison had treated him, both as his employee and as his competitor.<sup>(3)</sup>

**[page 216] "You propose," said Tesla, "to honor me with a medal which I could pin upon my coat and strut for a vain hour before the members and guests of your Institute. You would bestow an outward semblance of honoring me but you would decorate my body and continue to let starve, for failure to supply recognition, my mind and its creative products which have supplied the foundation upon which the major portion of your Institute exists."**

Yes, in recent years, physics has awarded him a physics unit, the *tesla*, which is the unit of magnetic flux density or *B* and is equal to one weber per square meter, but where is the Nobel Prize, where is the respect for Tesla's intellectual property? Nowhere to be found! Inventions such as those we have listed above are inspired by, based on, manufactured using, and sold for huge profits without a penny of royalty being paid to the Tesla estate. Tesla himself was nearly penniless in his own waning days. The huge stack of laboratory notes, designs for inventions, diagrams, etc., were confiscated, rightly understood, *stolen*, by federal agents, and they were filed away in the Smithsonian archives, not for future use, but to be forgotten, lest anyone take notice of Tesla's manifold contributions to the immense benefit of humankind across this entire planet!

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----- *Footnotes* -----

**Footnote 1.**

See my reviews of two of her books: [Emergence: Labeled Autistic](#) and [Thinking in Pictures](#). There are two movies about Temple Grandin and her life and work. The first is an Icelandic filmmaker's work, "A Mother's Courage" (2009), and the second is a 2010 release, 110-minute HBO documentary called "Temple Grandin". Both available on NetFlix in 2012.

[Return to text directly before Footnote 1.](#)

**Footnote 2.**

Anderson writes in the Introduction, page xiv, ". . . Tesla kept O'Neill at a distance, and O'Neill gleaned only what he was able to pry out of Tesla with great difficulty — certainly not the most ideal liaison for a biographer."

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**Footnote 3.**



Edison had his men build and sell to a state penitentiary an AC electric chair in order to cause fear of Tesla's Alternating Current products and promote his own DC current ones. Previously Edison had done a similar thing to discredit gas companies.

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