

BOOKS

Tesla—a Flamboyant Visionary and an Under-Appreciated Genius

Wizard: The Life and Times of Nikola Tesla—Biography of a Genius

Marc J. Seifer
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Reviewed by Robert H. March

Though the name Nikola Tesla is hardly obscure, his role in the early development of the electrical industry is not widely appreciated. Nonetheless, there exists a small but ferociously loyal Tesla "cult" that sees him as a neglected genius whose scientific vision was centuries ahead of its time and whose inventions were either purloined or suppressed by jealous rivals and greedy tycoons.

Tesla's most remarkable achievement was to conceive the polyphase ac induction motor, as well as modern power generation and the long-distance transmission system that goes with it. This was back in the 1880s, when the electrical industry was confined to dc lighting systems with a service reach of no more than a few hundred meters.

Thomas Edison recognized Tesla's talent and brought him to work in his US laboratory in 1884, but they soon parted company over Edison's dogged commitment to dc. Tesla's moment of triumph came in 1894, when the Niagara Falls power plant opened service to Buffalo, New York, with a system based largely on his patents, which he had unwisely sold to the Westinghouse Corp.

Fame followed swiftly. Tall, dark and gaunt, with a regal carriage and a penetrating gaze, Tesla fully fit the popular image of a genius. His flair for showmanship gave rise to spectacular public demonstrations, most of them based on his celebrated induction coil. These deeply impressed the press, the public and a string of investors, most of whom would know bitter disappointment. For Tesla was a rest-

less visionary who carried most of his inventions to the proof-of-concept stage and a patent, but he showed little interest in the final polishing into a marketable product. A promising fluorescent light lay neglected while Tesla spent John J. Astor's investment in it on more speculative projects.

Had Tesla teamed with a competent partner, less impatient than he, he might have been fabulously productive. But by predisposition, Tesla was a loner. He remained a lifelong celibate, though hardly an ascetic. A stranger to frugality, Tesla spent money as fast as it came in (or faster) on high living: a suite at the Waldorf-Astoria, dinners at Delmonico's, suits from the finest tailors. He enjoyed the company and the respect of New York's financial and cultural elites.

Tesla's decline began in 1901, when he induced J. P. Morgan to invest in a wireless transmitter designed to reach ships at sea and possibly span the Atlantic. But stung by Guglielmo Marconi's transatlantic success, Tesla decided that mere wireless telegraphy was beneath him. He would build a transmitter with worldwide reach, with hints that it would be upgradable to a system that would provide cheap wireless electric power to the nation and possibly the entire globe. The initial stake quickly ran out, and Morgan refused to sign on to this more ambitious scheme. Since Tesla had impetuously assigned Morgan a majority interest in the underlying patents, it proved impossible to attract new investors, and the transmission tower he had built on New York's Long Island was ultimately scrapped to cover Tesla's unpaid hotel bills.

Indeed, through most of the development of wireless, Tesla designed far more powerful transmitters and selective receivers than did Marconi, but he lacked the latter's determination to build and demonstrate a modest system step-by-step to the point of becoming a commercial success. Tesla rejected an offer of partnership by Lee DeForest, a combination that could well have dominated the development of radio.

Tesla envisaged himself as nothing less than a savior of mankind. Only he could bring cheap electric power to the remotest farm and hamlet, freeing

the human race from the burden of manual toil! Feminists may note his conviction that, once sheer muscle power was thus depreciated, the natural superiority of women would assert itself. He was convinced that power transmitted at the extremely low frequencies of global resonance would traverse the planet unattenuated until snatched from the sky by a suitable receiver. He would pursue this unworkable vision to the end of his long life, in 1943, emerging from isolation from time to time to regale the press with boasts of even more fantastic inventions such as "death rays."

Tesla was born in 1856 to a Serbian family living in Croatia and was educated at the Polytechnic in Graz, Austria. His understanding of the science underlying his work was superior to that of Edison or even Marconi, but clearly inferior to that of Charles Steinmetz or of fellow Serb immigrant Michael Pupin. For example, Tesla believed that his transmitters generated non-Hertzian longitudinal aether waves that moved faster than light.

Though biographer Marc Seifer accepts the notion that character flaws contributed to Tesla's downfall, he does support much of the Tesla cult myth, taking some of Tesla's scientific misconceptions at face value. He attributes to Tesla the invention of the laser, and he hints darkly that Morgan suppressed wireless power transmission to preserve the profits of his utility companies. If one discounts these serious demerits, this is a well-researched (but not always well-written) biography that gives an interesting glimpse of the interactions of inventors, financiers and the public in America's Gilded Age.

Macmillan Encyclopedia of Physics

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It is a brave venture to compile an encyclopedia of physics from scratch; John Rigden and his five coeditors—Jim McGuire, Helen Quinn, David Schramm, Roger Stuewer and Carl To-

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