

The Genius and Scientific Discoveries of Nikola Tesla

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What is the Tesla factor? It might be deemed a mixture of chance and selflessness, that inventive genius which works towards broader, holistic goals; a genius with the selflessness of a shaman and the morality of an ascetic. Wherever one places Nikola Tesla in the canon of scientific discovers and inventors, there is little doubt he comes top of the tree, however vast that canopy tends to be.

Going through the small, though charming collection of items at the Nikola Tesla Museum in Belgrade, one is struck by the man's ascetic genius. It is all frugality and dedication, a sort of priest of learning who also disseminates what goods he has. The patents he took out, the discoveries he marketed, had everything to do with the commonweal and virtually nothing to do with his bank balance. It would come to cripple him later in life, a man who died impecunious and alone in Room 3327 of the Hotel New Yorker, having been injured in a hit and run.

His genius was one that was constantly plagued by a stretch of chance and ill-luck. The museum features a sample of the Tesla coils which could transmit and receive radio signals at certain frequency, using electrical energy. But in 1895, chance intervened with a fire that destroyed his work, which would have featured the transmission of a signal 50 miles to West Point, New York.

The young Italian Guglielmo Marconi, who is still thought by some to be the pioneering inventor of the effective wireless radio system, took out the first wireless telegraphy patent in 1896. To transmit signals across the English Channel, however, he had to make use of a Tesla oscillator.

The issue of patents would prove to be a running battle, with Marconi attempting to make inroads in the United States with applications that were rejected over the course of repeated applications over three years. "Many of the claims are not patentable over Tesla patent numbers 646,576 and 649,621," came the coolly dismissive language of the US Patent Office in 1903. Marconi had shown "pretended ignorance of the nature of the 'Tesla oscillator'" which could only be regarded as "little short of absurd".

Marconi was undeterred, and the Marconi Wireless Telegraphy Company shot up in stock value. Investments poured in from Andrew Carnegie. Thomas Edison also contributed. In 1904, buoyed by additional backing from J. P. Morgan, Marconi tried again. This time, the US Patent Office displayed a good deal of fickleness in reneging on its initial hostility to Marconi, awarding him the patent for the invention of radio.

To show that history has less reason than weasel-like cunning, the Nobel Prize committee

decided to jointly award the prize in Physics to Marconi and Karl Braun in 1909. The siding factor had been Marconi's work in wireless communication.

That bout of scientific pugilism did not end there. On June 21, 1943, months after Tesla's death, the historical record was, at least to some degree, corrected by the US Supreme Court. The patent rights for Marconi were declared invalid and awarded to Tesla. The Marconi Company had sued the US government for using four patents in the US Court of Claims. The four tuned circuits covered by Tesla's patents were held to have preceded Marconi's. The inventor, John Stone, also gave Tesla priority.

The battle over radio was but one aspect of Tesla's at times maligned work. An even more formidable prospect remained Thomas Edison, putative inventor of the light bulb and phonograph. Edison was the consummate pragmatist with good lashings of ruthlessness. He was brilliant but threatened. Money did matter – he had, after all, established the first investor owned entity in 1882.

Tesla, in contrast, seemed the antic dreamer, and one who saw concepts as structured totalities before pen and paper touched. He was the true eidetic, reading Goethe's Faust in Budapest and seeing before him the electrical field. The brilliant Serb tended to operate in the world of the unseen – rays, currents, electromagnetic fields.

The "current wars", as they came to be called, were bloody and toasty affairs. They featured Edison's efforts to, if one can pun on this, short-circuit Tesla by a direct attack on the supposed evils of alternative current (AC). Try it, Edison suggested, and die. Edison believed that direct current (DC) – his envisaged world view of the electrical field – would dictate energy consumption. Alternative current had to be discredited.

The tried recipe involved inflicting death on chosen animals. He had engaged on an orgy of electrical killings across a range of stray animals: dogs, cats, cows, horses. Edison's most famous casualty was the much abused elephant Topsy, which he electrocuted on January 4, 1903 in Luna Park with an enthusiasm verging on the fanatical. Such murderous enthusiasm stood him in good stead to be the technology wizard behind the electric chair, the science of the grim reaper.

The Belgrade museum does not linger over scientific fractiousness, though it does introduce the theme. It rather chooses to see the oeuvre of electricity as one vast family of ambitious inventors stretching back to Thales. The Chicago Exposition saw Tesla's thinking on alternative current transformed into material worth. It convinced the science heavies such as Lord Kelvin that AC was worth striving for. It also paved the way for the Niagara Falls Power Project and Tesla's polyphase conductor.

Tesla's vision would have terrified, as it already did then, the fossil fuel burners and the plunderers of the earth. It was an envisaged world of free, and for the most part wireless electricity, transmitted via harnessing global points.

While he continued to investigate the possibilities of such a vision, one virtually impossible without colossal investment and good will, he was already noting humanity's insatiable appetite for energy. This is where the priestly side of Tesla came in, the preacher for economic, prudent use.

His calls fell on the deafest of ears and the heaviest of pockets. J. P. Morgan, Wall Street's

indispensable representative, eventually ditched him. His laden pockets were also doing the talking. Accounts abound that Morgan did so because Tesla was not achieving his aims. The contrary point is more plausible: Tesla's success would have meant Morgan's failure, an energy world without money.

The museum is filled with various models. The guide on this occasion resembled a pimply Keanu Reeves, and his tall, lean figure mechanically relayed the discoveries of Tesla and his various achievements. The Columbus egg device is particularly striking for children and children at heart. Christopher Columbus showed how he could make an egg stand - by hard boiling it. Tesla showed how electromagnetic fields could propel the fizzing egg upwards and move across the surface. These were points of convergence four hundred years after the "discovery" of the Americas, though it is fair to say that both men have vastly different views about commerce and conquest.

Such museums tend to overcompensate in the practical department, encouraging participants to engage with certain exhibits. The truth is that, for such a figure, more should be had. Tesla's entire life has become fragmented, and scattered through several museums with enthusiastic personnel who have persevered in keeping his role as a preeminent scientific genius alive. The modern Serbian state struggles with adoring its cultural and scientific heroes. The sporting superstars tend to push the cerebral ones out, and into distant corners - Novak Djokovic tends to come first in all the stakes.

For all that, the compact space offers an intimate setting filled with a curious array of visitors. The Tesla name continues to weigh heavily in the inventor's world, though it should be heavier. The crew today worshipping at his altar: fascinated Russians, a few gawky Americans on missionary work, a gaggle of intrigued Chinese, and an Aboriginal Australian jazz singer whose father so happened to be Serb.

A degree of chaos also prevails: tours for school students are also arranged. Appointments are kept haphazardly. The lack of organisation and punctuality is total in that regard. The staff seem disoriented and frazzled by some guests who expect more, be it in terms of minutiae or scientific gossip. There are misunderstandings as to when Serbian and English sessions are to be held.

But the visitors, in the main, are seduced by the electric charge of Tesla's world. They come to sample the classic shock devices - generators where audience members can participate with fluorescent tubes to test the electromagnetic field. Children squeal; adults sigh. And they ask for more. This was always Tesla's point: energy, to be sampled by all.

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