

Nicola Tesla – a talk by Richard Hutley

When Einstein was asked if it was true that he was the world's greatest physicist, he replied 'I don't think so, you had better ask Nicola Tesla'.

Nicola Tesla was born in Serbia in 1856. He joined the Graz University of Technology but dropped out and continued without any formal qualification. Edison's background was similar.

However when the academic discovery immediately results in knowledge of immense financial value, then great minds with different skills are found to work both together or opposite each other. Nicola Tesla was a brilliant academic scientist but he knew at once that the practical application of his discoveries was of an order of which other scientists were unaware.

So first the fellow scientists had to be persuaded.

In his erudite and expertly presented talk Richard Hutley gave an all inclusive account, encompassing the discoveries and applied science in electromagnetism of the era, leading to electric power and its transmission. This despite the speaker's own admitted scanty knowledge of the underlying subjects, his personal interests lying in darts, semi-professional speedway and his work as a one man undertaker.

Much of Tesla's difficulty with his contemporaries lay in the realisation of the importance of the wireless transmission of electric power, this being facilitated by the use of alternating current, AC, which he invented, rather than direct current, DC. The physics is difficult, involving high frequency, high current and induction. He first demonstrated this in 1898 by sending power to an electric motor propelling a boat on a lake. This experiment has since been replicated. The superiority of AC over DC is because it oscillates so transmission happens with less energy loss.

He considered power to be present everywhere and that therefore it should be universally free. However he must have realised the impracticability of this ideal when he designed an electric meter.

He was very impressed by Edison who had made great advances and was delighted when he was appointed as an assistant. A prize was offered to anyone who could light up Manhattan, the \$50,000 prize offered was so high it was assumed it would remain safely unclaimed. Edison tried it, using his favoured DC system but he could do no better

than light up a small part of lower east Manhattan. The range was too poor. Tesla succeeded with AC but Edison would not allow him to take the prize. So Tesla left Edison and they were rivals ever after. This continuing intense rivalry extended to numerous claims and counter claims regarding inventions and patents. At one stage this reached the High Court – Tesla won on appeal. Tesla then set up the Tesla Electric Light Company in 1884 “to light up New York“ and filed many more patents. He won the contract to illuminate the Chicago World Fair against competition from Edison. When President Grover Cleveland pushed a button that lit nearly 100,000 incandescent lamps illuminating Tesla’s neon fluorescent lighting powered by his A/C system, it was a spectacle that amazed the world. Then he lost everything when his laboratory was burnt to the ground. Some suspected foul play. He was saved by George Westinghouse who had already invented railway train air brakes. Westinghouse bought up all Tesla’s patents and the two worked together for several years. Later they formed the first hydroelectric company at Niagara Falls and developed a complete system of generators, transformers, transmission lines, motors and lighting, an approach still in use today. Tesla was convinced that electricity could be transmitted wirelessly and persuaded J P Morgan to finance a major experiment. This involved building a high tower at Wardenclyffe on Long Island and transmitting very high currents but because of the quartz in the local granite electric shocks were recorded for five miles around. These shocks could be fatal. This led to the invention of the electric chair.

Tesla lived his final years, poverty stricken despite owning a large number of patents, in a small New York hotel. He spent much of his time there on the roof feeding the pigeons. After his eventual death in 1943 a number of large boxes from his room were taken away by the government, the rest were taken away by his family. The content of the boxes taken by the government remains unknown.

Charles Villiers