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Dreams, machines and the march of progress

By Michael Lee

We're already married to the growing range of technologies enhancing our lives and world. As extensions and expressions of who we are and what sort of society we want, there's an undeniable ethical dimension to all technological advancement.

It's not just conscience that guides the march of progress towards a better world. Imagination still lies at the heart of these advances. Take the greatest technology achievement of all time, the 1969 Apollo 11 lunar landing, as a prototype. This momentous event was a triumph of science and collective management and still looks futuristic today more than four decades on.

But the Apollo adventure probably all started in the imagination of science fiction storyteller Jules Verne, himself inspired by Galileo's detailed telescopic studies of the moon's visible surface. The futuristic stories of Verne and H.G. Wells stimulated the imaginations of rocket pioneers like Dr. Robert Goddard and Dr. Wernher von Braun. As they became obsessed about the possibilities of space travel, they immersed themselves in technological experimentation and intensive research.

With amazing foresight, in his 1865 novel *From the Earth to the Moon*, Verne accurately predicted, a century ahead of time, that it would be Americans who would reach the moon first, launching an interplanetary projectile, with (you guessed it) *three* travellers, from (you guessed it again) *Florida*, which could enter lunar orbit. Then, in his sequel *Around the Moon*, this projectile successfully returned to earth to be rescued from the Pacific Ocean.

It was the politics of the Cold War that propelled this futuristic writer's 19th century dream of inter-planetary exploration, which had been scientifically and theoretically investigated by the rocket pioneers and engineers, especially Goddard and von Braun, into the realm of practicalities, technicalities and logistics.

The global space race had begun on October 4, 1957 with the daring Russian launch of the Sputnik 1 satellite into orbit. Fitted with four radio antennas, it could circle earth every ninety-six minutes. A month later, Sputnik 2 joined it in an orbit over a thousand miles above earth. The age of satellites had been born.

But alarm bells were ringing in America. Its technology seemed to be falling behind Russia's. In addition, there was the fear of its arch enemy's surveillance capability and rocket power. The so-called missile gap had opened up.

So a year after Sputnik 1, almost to the day, Eisenhower established the National Aeronautics and Space Administration (NASA). This was before the word astronaut had even been invented, not to mention space rendezvous and the systems of mission control.

The national anxiety about falling behind Russia intensified on April 12, 1961 when cosmonaut Yuri Gagarin became the first space traveler as his Vostok spacecraft raced around an orbital circle above Earth. The implications of this breakthrough were immediately apparent to newly elected President, John F. Kennedy.

When the Cold War landed right on his doorstep in October 1962 with the Cuban Missile Crisis, brought about, in turn, by the embarrassment of the failed Bay of Pigs invasion, the forward thinking young President was left without much choice but to set his sights high. It was then that he laid down his dream of landing a man on the moon and returning him safely to earth before the end of the 1960s. Kennedy desperately wanted America to win the space race hands down.

His challenge set in motion the largest and most complex research and development effort ever undertaken. The Mercury, Gemini and early Apollo space programs paved the way for the 1969 victory in this race against time and the technology of its global rivals. Under the brilliant supervision of von Braun, Saturn 5's research, design, manufacturing, testing and preparation had employed the services of over 300 000 scientists, engineers, technicians and craftsmen from more than 20,000 companies. An entire new scientific-industrial complex, centred in NASA, had been built to combat the threat of Russian superiority.

And the scientific spoils of Apollo 11, in terms of increased lunar and cosmological knowledge, and the hope given to humanity about a new human capacity to travel in space, created a win-win for the world as well as for America.

This good-will from the civilian space agency was symbolised both by Armstrong's unforgettable first words on the moon and by the memorial plaque he unveiled and left behind.

“That's one small step for (a) man; one giant leap for mankind.”

Neil Armstrong

“Here men from the planet earth first set foot upon the moon July 1969, A.D.

We came in peace for all mankind.”

NASA's Apollo 11 memorial plaque

Here NASA decisively transcended politics, even of the intense Cold War variety, showcasing the need to put ethics and science, not politics, at the forefront of technology. Left behind in the lunar dust were memorials both to fallen US astronauts and Russian cosmonauts, heroes alike who had died in the pursuit of progress in space science.

After all, the man whose team built the greatest rocket the world has ever seen, Wernher von Braun, had once been forced to develop weapons of mass destruction under Hitler's regime, some of which rained down on London during the Blitz. He'd been brought over to the USA at the end of World War 2 in Operation Paperclip, a secret US Army program to import German rocket, aircraft and atomic specialists.

In 1969, von Braun must have been very proud of his masterly peace offering to the world, fulfilling, at the same time, the long-held dreams of his youth about exploring outer space originally inspired by mind-expanding stories of science fiction.

Michael Lee is author of *Knowing our Future* and the upcoming *Codebreaking our Future* – see <http://www.infideas.com/books/codebreaking-future-2/> and <http://www.amazon.com/Codebreaking-our-future-Deciphering-futures/dp/1908984260>