



A necessary cost

Space is an expensive business, but it's inarguably a necessary cost that provides us with immeasurable gains from communications and broadcast satellites, interplanetary exploration, and a deeper understanding of our world and the universe we live in. We take for granted many modern technologies such as broadcast TV and GPS, which provide so many benefits, and which would not be here today if not for early space-based experiments.

I was recently sent a link by a friend outlining the cost of space projects compared with space-based movies. It was amusing to see that, when India became the first country to deliver a spacecraft into the orbit of Mars in September 2014 on its first attempt, the US\$74 million mission cost less than the US\$100 million production budget of the 2013 Hollywood blockbuster "Gravity," where astronauts played by Sandra Bullock and George Clooney are stranded in space following the destruction of their space shuttle.

At the time, India's Prime Minister Narendra Modi commented: "Our scientists have shown the world, a new paradigm of frugal engineering, and the power of imagination. This success of ours has deep historical roots."

Today, it's amazing to think that the costs of sending a mission to space is often comparable with the cost of pretending to! The first successful rover mission to Mars, when Sojourner was placed on the planet's surface in 1997, cost US\$365 million for manufacture, launch and operations, while in the 1998 film "Armageddon," Bruce Willis' character travels only a fraction of the way to Mars at a production cost of US\$200 million. The most expensive science fiction film to date, "Avengers: Age of Ultron," cost a whopping US\$280 million to produce in 2015, significantly more than the cost to launch an Ariane 5 rocket at US\$222 million, which in itself is set to fall to around US\$180 million very soon. Meanwhile, the US\$132 million production cost of the "Prometheus" film in 2012, the latest in the "Alien" franchise, would fund the Search for Extra Terrestrial Intelligence (SETI) for 52 years.

While the production costs may be staggeringly high, science fiction cinematography provides a great deal of value to the general public in terms of education and awareness. More realistic releases like National Geographic's 2016 six-episode "Mars" series, which sees a crew of six astronauts launched to Mars in 2033, delivers a much greater understanding of where space funding is going, what can be achieved through space exploration, and the kinds of projects we might be considering in future. Indeed, the "Mars" series draws on real-life interview footage with various scientists like Elon Musk and Neil deGrasse Tyson from 2016 about the challenges of such a mission.

Oscar Wilde said that, "Life imitates art," and this may hold true even for science fiction films. 50 years ago, the idea of sending humans to Mars seemed like just that: Science fiction. But today, we're edging ever-closer to that idea becoming a reality, and with the massive amounts of money being invested in space exploration, funding isn't likely to stand in the way.



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